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# YUCCA MOUNTAIN PROJECT: HAVE FEDERAL EMPLOYEES FALSIFIED DOCUMENTS?

## HEARING

BEFORE THE

SUBCOMMITTEE ON THE FEDERAL WORKFORCE AND AGENCY ORGANIZATION

OF THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

APRIL 5, 2005

**Serial No. 109–60**

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# YUCCA MOUNTAIN PROJECT: HAVE FEDERAL EMPLOYEES FALSIFIED DOCUMENTS?

**TUESDAY, APRIL 5, 2005**

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

The subcommittee met, pursuant to notice, at 10 a.m., in room 2247, Rayburn House Office Building, Hon. Jon Porter (chairman of the subcommittee) presiding.

Present: Representatives Porter, Berkley, Tom Davis of Virginia, and Gibbons.

Staff present: Ron Martinson, staff director; Chad Bungard, deputy staff director/chief counsel; Chris Barkley and Shannon Meade, professional staff members; Reid Voss, legislative assistant/clerk; Patrick Jennings, OPM detailee serving as senior counsel; Mark Stephenson and Tania Shand, minority professional staff members; and Teresa Coufal, minority assistant clerk.

Mr. PORTER. I'd like to bring the meeting to order. A quorum is present, the Subcommittee on the Federal Workforce and Agency Organization will come to order. Thank you all for being here this morning. We appreciate hearing from you and appreciate additional comments after the meeting.

As you know, we just finished a 2-week work session, so many Members are still en route to D.C. This is the first of many hearings, we are going to plan on additional meetings, the first one being next Wednesday April 13th at 10 a.m., I believe is the correct time. And to remind Members that there are votes at 6:30 this evening, and for those that aren't able to attend today, those Members, there will be other opportunities to provide their statements.

As a Member of this body, and a public servant for over 20 years of my life and throughout this time, I have represented Nevada on countless issues, and I am honored to have done so. But as chairman of the subcommittee, I now have a much larger role. I must now work to ensure that the Federal Government, including its employees, is serving the taxpayers honestly, ethically and effectively.

There is no secret that the greater Las Vegas Valley is the fastest growing community in the United States of America. I could go on and on with statistics that show that the Las Vegas community is not as far as it may seem to some, as it was in the early 1980's, when Yucca Mountain was first being considered as our Nation's first high level nuclear waste repository. With every day that Yucca Mountain is being considered, more people begin to call Las Vegas

home and more visitors are beginning to explore the resources we have to offer.

Though this issue is of paramount importance to the people of Nevada, this is also an issue of national concern. Many more people than the citizens of Nevada are affected by the decision to dispose of nuclear waste in Yucca Mountain. This decision affects the safety and welfare of the entire Nation.

When I first heard the news that some of the scientific data by the U.S. Geological Survey may have been falsified, I was outraged and appalled. The citizenry of this country trusts Federal public officials and employees to do the right thing. The actions by the Federal employees at issue today worked to eviscerate that trust. These Federal employees were trusted with developing true and honest data relating to Yucca Mountain but chose the very opposite path. This type of action cannot be tolerated under any circumstances. This is nothing short of criminal behavior, and we as Members of Congress must not allow this sort of behavior to happen again.

Just last month I testified before the House Energy and Commerce Committee where some of the same people who are here today spoke about how they believe that the Yucca Mountain project is the safest place to store our Nation's high level nuclear waste. Then just a few days later, e-mails between Federal employees emerged showing that vital scientific information gathered between 1998 and 2000 in relation to this project had been falsified.

All of my colleagues and the President and former Presidents have made decisions on the project based on so-called sound science. Unfortunately, it seems now that those decisions may have been made on nothing more than science fiction.

The e-mails between Federal scientists at the project discussed the falsification of documents and records that go to the heart of the science or the science fiction that was used to justify the project. Let me just highlight a few disturbing exchanges between the employees involved. What's worse is that in the last 24 hours we have discovered that there are more documents that were not provided upon our initial request.

First, if I may quote from an e-mail, "Like you said all along, the Yucca Mountain project has now reached a point where they need to have certain items work no matter what. The infiltration maps are on that list." E-mail No. 2, "Why can't they figure out that nothing I provided them is quality assured? If they really want the stuff they'll have to pay to do it right." The third: "We're not sure how smoothly this is going to go, but this is the approach. Like you said all along, the YMP," which is Yucca Mountain project, "has now reached the point where they need to have certain items work no matter what. And the infiltration maps are on that list."

A fourth example, "The bottom line is forget about the money. We need a product or we're screwed, and we'll blank the blame." The fifth example, very telling: "Science by peer pressure is dangerous, but sometimes it's necessary." The sixth example: "Here's the weird news. To get this milestone through quality assurance, I must state that I arbitrarily selected the analog sites." And the seventh: "Dealing with the QA," quality assurance, "the QA is bull and is really starting to make me sick."

The eighth example, very telling: "In the end, I keep track of two sets of files, the ones that will keep quality assurance happy and the ones that we've actually used." The ninth: "There is of course no scientific notebook for this work." The tenth: "I don't have a clue when these programs were installed, so I've made up the dates and the names." Let me repeat: "I don't have a clue when these programs were installed, so I've made up the dates and the names. This is as good as it's going to get. If they need more proof, I'll be happy to make more stuff."

Ladies and gentlemen, this is unacceptable. The reason we're here today is to find out exactly what this means. We provided an internal document from DOE which seems to capture the Department's concerns with this project. If I can quote from the document, "These e-mails may create a substantial vulnerability for the program." Although DOE clearly recognizes the vulnerability of the project, it understates the gravity of the misconduct. The legitimacy of the science surrounding the storage of nuclear waste at Yucca Mountain is indeed in question.

Moreover, the e-mails convey a clear intent by Federal employees to falsify their work to advance a political project, a project that carries the potential of horrific and unnecessary dangers to Nevadans and our whole country. The e-mails also seem to indicate there may have been pressure on the employees from the top of the food chain. As chairman of this committee, I must work to make sure that the Federal agencies and their employees are held accountable for their actions, especially those that have such a major impact on this country.

Yes, there are many questions yet to be answered. And I do not plan on stopping here today, as I mentioned earlier. Today I will be sending out invitations to witnesses for our meeting on April 13th to additional Federal employees who have been involved in the e-mail exchanges to come testify before this subcommittee, next Wednesday at 10 a.m.

I would like to thank all the witnesses who have traveled so far to be with us here today, of course, my good friend, Governor Kenny Guinn, Attorney General Brian Sandoval, we've been friends for many years and I have great respect for you and your perspective. I also have known Bob Loux and Joe Egan for some time, and they will be testifying and I appreciate their expertise. It has been helpful on this Yucca Mountain related issue, and certainly the information they provided to other Members of Congress for many years.

Of course, I also recognized my distinguished colleague, Senator Harry Reid, who is with us here this morning, and Senator Ensign. I would like to thank them for taking time out of their busy schedules to help testify today, Senator Reid, for your assistance, and from your staff, who has also been most invaluable and we truly appreciate it.

As I mentioned to my friends, Senator Reid and Senator Ensigns, they have been outspoken in their views on Yucca Mountain and have been champions to make sure that America remains safe, and their leadership and tenacity have been greatly appreciated.

Congressman Jim Gibbons and Congresswoman Shelly Berkley have also been involved in Yucca Mountain for many, many years.

Although they are not members of the Subcommittee on the Federal Workforce and Agency Organization, I have invited them to be here with me today during this hearing. I welcome their comments and their questions.

To all other witnesses here today from the Department of Energy and the Department of Interior, I thank you for your attendance, and I do look forward to hearing your testimony this morning.

I would like to at this point recognize my colleague and friend from Nevada, Congresswoman Shelly Berkley.

Ms. BERKLEY. I want to thank you, Congressman Porter, for holding this important hearing and for allowing me to participate with you. I appreciate it very much.

This hearing is of utmost concern to me and the people I represent, all those that call Nevada home. As with Congressman Porter, I am appalled, to say the least, at the Department of Energy's continued mismanagement of the Yucca Mountain project. In all of my years of fighting this project, I knew instinctively that it couldn't possibly be based on sound science. But I never thought the day would come when Federal employees would purposely falsify documents to accommodate the lack of basic science.

These actions jeopardize the health and safety of all Americans, especially the people of Nevada. The documentation in question relates to computer modeling involving water infiltration and climate, two of the most fundamental factors involved in establishing whether or not the proposed repository can safely isolate radioactive waste and prevent groundwater contamination. In the e-mails, the suspected USGS employees fabricated dates and names of programs used in modeling for quality assurance, audits and deleted information that did not fit favorable conclusions. "Don't look at the last four lines, those lines are a mystery. I deleted the lines from the official QA version of the files."

In the end, as Congressman Porter cited, this e-mail said, "I keep track of two sets of files, the ones that will keep the QA happy and the ones that were actually used." USGS employees made it clear that QA was not a priority of the project, but rather an obstacle, exactly the opposite of what they told us.

"At any rate," states another e-mail, "it's a damned shame to be wasting time on this sort of thing." There can be no doubt to anyone reading these e-mails that the integrity of the project and the scientific research are compromised. The Yucca Mountain project has been continually plagued with problems, and more importantly, has failed to meet the necessary standard of science the administration promised not only Nevadans, but all Americans.

In the past year, the Yucca Mountain project has faced a series of setbacks. Multiple lawsuits have been brought forth challenging the site. The U.S. Court of Appeals ruled that the radiation standards for the proposed repository did not follow the recommendations of the National Academy of Sciences and would not protect the health and safety of our Nation. The Nuclear Regulatory Commission has refused to certify an electronic data base required for licensing the repository.

These latest allegations of falsification of the scientific documentation only compound existing deficiencies in the quality assurance program for the Yucca Mountain project. Last year, the Gov-

ernment Accountability Office found instances of mismanagement and incompetence which were outlined in an April 2004 report entitled "Yucca Mountain: Persistent Quality Assurance Problems Could Delay Repository Licensing and Operation." According to the audit, the GAO concluded that the DOE has failed to fix persistent problems with data, models and software.

In addition, continuing weaknesses in management have led to a work environment at the Yucca Mountain project that does not allow for employees to raise concerns without fear of retaliation from the DOE. On their own, any one of these issues is significant enough to stop Yucca in its tracks. Together, they spell disaster. Common sense dictates that this project be halted immediately. An in-depth, comprehensive, independent investigation into the falsification allegations must be completed before we spend one more nickel of taxpayers' dollars on a project that should have been terminated years ago. DOE should not be permitted to proceed with further licensing activities.

It is crucial for the safety of our citizens that we delve into these issues thoroughly and ensure that nothing is swept under the rug. It is also crucial to recognize that the immediate future of nuclear power in this country does not depend on Yucca Mountain. A project this dangerous and risky must be scientifically sound, period. And as appalled and angry as I am, the nuclear industry should be twice as outraged, because rather than looking for alternative methods of storage of nuclear waste, they have relied entirely on the misrepresentations of the DOE to continue the Yucca Mountain project.

It is my belief that the DOE has known for some time that this project was fatally flawed, that corners were cut, that the science did not support the conclusion and that the data was doctored. How can anyone who knew what was going on, DOE officials, the contractors, the subs, the supervisors and the employees, how can they live with themselves knowing they were putting their fellow Americans, their friends, their neighbors, and their own families at risk? There is no possible excuse for this wanton behavior.

Yucca Mountain is based on a lie. There is no believable scientific foundation upon which to build this project. When you have a weak foundation, your building collapses. That is why Yucca Mountain's project is collapsing before our very eyes. Those e-mails provide demonstrable evidence that the DOE is building Yucca Mountain on a weak foundation, based on lies, fraud, intimidation, deception, and non-existent science.

The FBI has announced that it is launching its own investigation into Yucca. If ever there was a reason for the FBI to investigate, this is it. The people who knowingly falsified the scientific documentation potentially jeopardized the health and safety of millions of Americans and squandered billions of taxpayers' money. They should be prosecuted to the full extent of the law.

Once again, thank you, Congressman Porter, for holding these important hearings. I look forward to the testimony of the panels. Thank you.

[The prepared statement of Hon. Shelly Berkley follows:]

**Statement of Congresswoman Shelley Berkley**
**Committee on Government Reform**
**Subcommittee on Federal Workforce and Agency Organization**
**Safety of Yucca Mountain Nuclear Waste Repository**
**Washington, D.C.**
**April 5, 2005**

I would like to thank Congressman Porter and Ranking Member Davis for holding this important hearing and offering me the opportunity to speak today. This hearing is of utmost concern to me and the people we represent, who call Nevada home.

I am appalled, to say the least, at the Department of Energy's (DOE) continued mismanagement of the Yucca Mountain Project. In all my years fighting this project, I knew instinctively that it wasn't scientifically sound, but I never thought the day would come when federal employees would purposely falsify documents to accommodate for the lack of basic science.

These actions jeopardize the health and safety of all Americans, especially the people of Nevada. The documentation in question relates to computer modeling involving water infiltration and climate, two of the most fundamental factors involved in establishing whether or not the proposed repository can safely isolate radioactive waste and prevent groundwater contamination.

In the e-mails, the suspected USGS employees fabricated dates and names of programs used in modeling for quality assurance (QA) audits and deleted information that did not fit favorable conclusions. "Don't look at the last four lines. Those lines are a mystery...I've deleted the lines from the official QA version of the files. In the end, I keep track of two sets of files, the ones that will keep the QA happy and the ones that were actually used." Furthermore, USGS employees made it clear that QA was not a priority of the Project, but rather an obstacle. "At any rate, it is a damn shame to be wasting time on this sort of thing."

There can be no doubt to anyone reading these emails that the integrity of the project and the scientific research are compromised. The Yucca Mountain Project has been continually plagued with problems, and more importantly, has failed to meet the necessary standard of science the Administration promised not only Nevadans, but all Americans.

In the past year, the Yucca Mountain Project has faced a series of setbacks. Multiple lawsuits have been brought forth challenging the site.

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not follow the recommendations of the National Academy of Sciences (NAS) and would not protect the health and safety of our nation. The Nuclear Regulatory Commission (NRC) has refused to certify an electronic database required for licensing the repository.

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According to the audit, the GAO concluded that DOE has failed to fix persistent problems with data, models, and software. In addition, continuing weaknesses in management have led to a work environment at the Yucca Mountain Project that does not allow for employees to raise concerns without the fear of retaliation from DOE.

On their own, any one of these issues is significant enough to stop Yucca in its tracks. Together, they spell disaster. Common sense

dictates that this project be halted immediately. An in-depth, comprehensive, independent investigation into the falsification allegations must be completed before we spend one more nickel of taxpayer dollars on a project that should have been terminated years ago. DOE should not be permitted to proceed with further licensing activities.

It is crucial for the safety of our citizens that we delve into these issues thoroughly and ensure that nothing is swept under the rug. It is also crucial to recognize that the immediate future of nuclear power in this country does not depend on Yucca Mountain. A project this dangerous and risky must be scientifically sound–period!

It is my belief that DOE has known for some time that this project was fatally flawed, that corners were cut, that the science did not support the conclusions and that the data was doctored.

How can anyone who knew what was going on: DOE officials, the contractors, the subs, supervisors, and the employees live with themselves knowing they were putting their fellow Americans, friends, neighbors, and their own families at risk. There is no possible excuse for this wanton behavior.

Yucca Mountain is based on a lie. There is no believable scientific foundation upon which to build this project. When you have a weak foundation, your

building collapses–that is why the Yucca Mountain Project is collapsing before out very eyes. Those emails provide demonstrable evidence that DOE is building Yucca on a weak foundation–based on lies, fraud, intimidation, deception, and non-existent science.

The FBI has announced that is it launching it own investigation into Yucca. If ever there was a reason for the FBI to investigate, this is it. The people who knowingly falsified the scientific documentation potentially jeopardized the health and safety of millions of Americans and squandered billions of taxpayer money, and they should be prosecuted to the full extent of the law.

Once again, thank you, Chairman Porter and Ranking Member Davis, for holding this important hearing. I look forward to the testimonies of the panel members.

Mr. PORTER. Thank you very much for your testimony.

There are three individuals here that are going to have to leave for other meetings: Senator Reid, Senator Ensign. But I would like to first recognize the chairman of our full committee, Tom Davis, who also has to leave shortly. So Chairman Davis, thank you for being here.

Mr. DAVIS OF VIRGINIA. Well, thanks for taking the lead and holding a very important hearing on recent developments at the Yucca Mountain project. I am going to be brief, because I want to hear from our speakers and get them back to work.

These are very serious allegations involving Federal employees working at the project that they falsified documents. It raises grave concerns about the sound science underpinnings of this project. This subcommittee has jurisdiction over the work force. We are here to examine the veracity of these allegations. I doubt this will be our only hearing, and we are going to continue our investigation to get to the bottom of this matter.

If confirmed, this alleged behavior not only casts serious doubt about the safety of this extremely important project, but also negatively impacts the public's perception, which has been improving, on the Federal work force. That is of great concern, I think, to all of us. All the more reason why this subcommittee should use its investigative and oversight authority to confirm or dismiss the allegations, give the American people in general, the residents of Nevada in particular, reassurance that their interests are held at the highest priority in the forthcoming decisions and how to proceed on the Yucca Mountain project.

I have, I think, been fairly neutral on this project as it has moved through the process through the years. I have expressed some skepticism, but I don't share the strong opposition of my colleagues here from Nevada. But these allegations are disturbing, and I just wanted to say, as chairman of the full committee, we want to work with you to get to the bottom of the matter. I appreciate your bringing this to our attention.

Mr. PORTER. Thank you, Mr. Chairman. We appreciate your comments.

I would now like to call on Senator Harry Reid.

## STATEMENTS OF HON. HARRY REID, A U.S. SENATOR FROM THE STATE OF NEVADA; HON. JOHN ENSIGN, A U.S. SENATOR FROM THE STATE OF NEVADA; AND HON. JIM GIBBONS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEVADA

### STATEMENT OF HON. HARRY REID

Senator REID. Thank you very much.

Mr. Chairman, members of the subcommittee, since September 11th, every indication that they are going to try to haul nuclear waste has been a target of opportunity for terrorists, every train load or truck load of nuclear waste. The taxpayers and ratepayers have spent about $10 billion on Yucca Mountain so far. It is a flawed project. It should be brought to a stunning halt. We should stop as of now.

There will be excuses, I've seen them already coming from the DOE, well, this stuff doesn't really matter. This matters. It shows clearly what has gone on, that there has been false science.

The situation should be that the legislation that has been introduced by Senator Ensign and me to leave the nuclear waste where it is, store it onsite, in drycast storage containers, it would be safe for 100 years, and it would save the country billions of dollars. Billions of dollars. And we would have a safer society, and maybe in the future there would be some nuclear power that could be generated, new nuclear power in this country.

I think that what has transpired here makes, as Congressman Davis indicated, makes the Federal Government look bad. I think it's important that this subcommittee gets to the bottom of this. I think, as Congressman Berkley said, that people should be prosecuted. You can't take science and have malpractice committed there. People are making fun of their own science. And this is leading to the wasting of money.

We have known they rushed through that, as they cut through that mountain, they wouldn't even bother to wet down the drilling areas, knowing that people would get sick from mesothelioma. This whole project is a lesson in what's bad about Government. That is too bad.

I would ask that my full statement be made a part of the record. I would ask that I be excused, please, Mr. Chairman.

[The prepared statement of Hon. Harry Reid follows:]

House Committee on Government Reform
Subcommittee on the Federal Workforce

"Yucca Mountain Project: Have Federal Employees Falsified Documents?"

Senator Harry Reid
April 5, 2005

Mr. Chairman, I appreciate you holding this hearing today to discuss the falsification of documents by federal employees regarding the Yucca Mountain project.

The announcement on March 16 that employees at the U.S. Geological Survey falsified documents and models about water infiltration at Yucca Mountain is of grave concern. Also, several Department of Energy employees have raised questions on e-mail about the accuracy of certain scientific instruments used in the evaluation of project.

I am pleased that the Federal Bureau of Investigation is investigating this matter; they should pursue the culprits to the fullest extent of the law. Nevadans – including me – have said for years that the science supporting Yucca Mountain was fishy. This proves us right. In the meantime, the Department of Energy should put its license application on hold.

The Yucca Mountain has been plagued by quality assurance problems for years. On April 30, 2004, the Government Accountability Office issued a report on the quality assurance problems with the project. The GAO found that the DOE "have not solved the quality assurance problems or corrected management weaknesses, and that future actions are needed . . . and the quality assurance problems could delay the licensing process."

There are several significant events that have taken place over the last year regarding Yucca Mountain. Here are some of the highlights:

On July 9, 2004 the D.C. Circuit Court of Appeals sided with the people of Nevada in an argument to stop the Yucca Mountain project. The court decided that EPA's radiation standard for the site is not stringent enough to protect the public from the significant risks associated with nuclear waste and failed to follow the recommendation by the National Academy of Sciences.

On August 31, 2004 the NRC's Atomic Safety and Licensing Board rejected DOE's Yucca Mountain document database, saying it had failed to make public many of the documents that it had in its possession.

The Licensing Board said, "Given the 15 years that DOE had to gather, review, and produce its documents and the fact that the date of production, and the incompleteness of

its privilege review, it is clear to us that DOE did not meet its obligation, in good faith, to make all reasonable efforts to make all documentary materials available."

On October 4, 2004, the DOE Inspector General found that DOE gave away more than $500,000 worth of Yucca Mountain construction equipment in 2003. Half a million dollars in most people's lives is a lot of money.

On November 22, 2004 the Nuclear Waste Technical Review Board said DOE does not have a plan for safely transporting nuclear waste to the proposed repository.

On February 7, 2005 Dr. Margaret Chu, most recently the Director of the Office of Civilian Radioactive Nuclear Waste, said the project would be delayed until 2012 and DOE's license application to the Nuclear Regulatory Commission would not be filed until December, a year after the application was expected to have been filed.

On February 8, 2005 the Nuclear Waste Technical Review Board called for hearings next month to review concerns over the corrosion of the titanium drip shields that are intended to keep water from leaking into casks inside Yucca Mountain.

On February 28, 2005, a DOE official said the proposed Yucca Mountain repository may not open until 2017.

It should be obvious to everyone now that Yucca Mountain isn't going anywhere. It is abundantly clear that there is no such thing as sound science at Yucca Mountain.

Given DOE's abysmal Yucca Mountain track record, I am confident they will be unable to meet the delayed deadline. I do not believe Yucca Mountain will ever open, and Nevada and our nation will be safer for our successful efforts to stop the project.

Similarly, it is also true that DOE have not studied the transportation issues and there are no assurances that DOE can do any of this safely.

I do not understand how DOE can consider beginning a licensing process for the repository when you do not even know how you would transport all this waste or if you can even do this safely. There is no way to guarantee the health and safety of Nevadans or any other Americans.

I also believe it is time to look at other nuclear waste storage alternatives.

One option is for the federal government take responsibility for the nuclear waste at the reactor sites. This is the right thing to do. I believe we should: 1) require commercial nuclear utilities to transfer nuclear waste from spent nuclear fuel pools into dry storage casks within 6 years after enactment or 6 years after the waste is produced, whichever comes first; 2) requiring the Nuclear Regulatory Commission to issue regulations for safely transferring the waste, and to certify operator compliance with the regulations; and

3) require the Department of Energy to take title to, and full responsibility for the waste at the reactor sites after it has been transferred to dry cask storage.

Mr. Chairman, thank you for holding this important hearing and I would be happy to answer any questions.

Mr. PORTER. Absolutely, thank you, Senator. We appreciate your testimony this morning.

Senator Ensign.

**STATEMENT OF HON. JOHN ENSIGN**

Senator ENSIGN. Thank you, Mr. Chairman. I want to thank you for holding this hearing on Yucca Mountain. I know that you share my outrage and the outrage of the people of the State of Nevada that a USGS scientist apparently falsified documents regarding the Yucca Mountain quality assurance program.

At this time, we have more questions than answers. What we do know is that Nevadans were promised that decisions concerning Yucca Mountain would be based on sound science. It now appears that the science may have been falsified. These e-mails have finally blown the lid off this fraudulent and ill-conceived project.

According to the Washington Post, "E-mails by a Government scientist on the Yucca Mountain nuclear waste dump project suggests the worker was planning to fabricate records and manipulate results to ensure outcomes that would help move the project forward." Mr. Chairman, I am dismayed to find that quality assurance documents are fraudulent, but frankly, I am not surprised. The DOE has regularly cut corners in the very program which has been set up to verify that all scientific data and engineering designs submitted to support a license for Yucca Mountain are accurate and reliable.

In 2004, the GAO completed a report that Senator Reid and I requested on this very subject. The report was entitled, "Yucca Mountain: Persistent Quality Assurance Problems Could Delay Repository Licensing and Operations." I would like the entirety of this report to be submitted for the record. It makes for extraordinary reading.

Mr. PORTER. I ask unanimous consent. Hearing no objection, so moved.

[NOTE.—The GAO report entitled, "Yucca Mountain, Persistent Quality Assurance Problems Could Delay Repository Licensing and Operation," may be found in subcommittee files.]

Senator ENSIGN. It shows that the DOE has been unable or unwilling to correct quality problems with data, models, software, and management since 1998. It indicates that some data sets could not be traced back to their sources, model and validation procedures were not followed. It also shows the DOE's arrogance. The DOE rejected the GAO findings and recommendations, while the NRC agreed with the conclusion but suggested flexibility in the ways to achieve and measure performance.

It is my hope that the DOE will be more willing to look at recommendations now that its quality assurance program has been revealed for what it is: a fraud. I am stunned by the number of references to deleting and destroying e-mails, fudging information and not telling anyone how something was done. From "I will be happy to make up more stuff" to "science by peer pressure is dangerous but sometimes it is necessary" the e-mails are proof that the only thing necessary at this point is that we get to the truth.

It seems that Yucca Mountain's destiny is that of a mountain of lies and nothing else. As this matter continues to be investigated,

it is highly possible that more falsified documents will come to light. Lawyers working for Nevada recently uncovered an Energy Department audit from 2000 that reviewed Yucca documents from 1997 to 1998. The audits showed problems with USGS documentation, including that USGS officials claimed that they had calibrated instruments that did not exist at Yucca. This is emblematic of the shoddy work and perhaps criminal acts that have plagued this program.

Mr. Chairman, the quality assurance program was put in place as part of the NRC licensing process to verify the accuracy and credibility of work that has been completed to protect public health and safety. The fact that the alleged fraud deals with the issue of water infiltration is critical, because it impacts the corrosion of casks and the containment of radioactivity.

We are not talking about how realistic this scenario would be for a science fiction novel or movie script. The corrosion of casks and the containment of radioactivity are frightening realities that Nevadans and all Americans face should this project proceed based on fraudulent science.

Mr. Chairman, I want to underscore, this is only the last in a series of setbacks for the Yucca Mountain project. A Federal appeals court last July ruled that new radiation safety standards must be established before the Department could file the licensing application with the Nuclear Regulatory Commission. The standards must be at the point when the waste will be at its peak radiation. That could be 300,000 years from the time the waste is sent to Yucca Mountain, instead of the arbitrary EPA standards of 10,000 years. The EPA has yet to set that new standard.

The 1982 Nuclear Waste Policy Act gave the Department of Energy until 1998 to open a permanent, underground geologic repository for high level nuclear waste. Up until recently, Yucca Mountain was scheduled to open in 2010. That date has slipped indefinitely.

Mr. Chairman, we are beyond the point where we need to abandon this ill-conceived and problem-riddled project, and focus on safer, smarter and more reasonable alternatives. I think we need to amend the Nuclear Waste Policy Act of 1982 to require the title to all spent nuclear fuel stored in dry casks to be passed on to the DOE upon the site transfer from storage pools to casks.

Senator Reid and I, as he mentioned, are planning to introduce legislation to allow the DOE to assume liability of the waste onsite before it is transferred to Yucca Mountain. Conveying the title means that DOE will have full responsibility for the possession, stewardship, maintenance, and monitoring of all spent nuclear fuel. Through the act, the DOE would also be made responsible for various maintenance and oversight that would be associated with implementation.

Furthermore, we need to invest in new technologies at our national labs to recycle the waste without producing weapons grade plutonium as a byproduct. Recycling has advantages over burying high level waste. The residual activity and radio toxicity of the waste in the repository following the recycling process would be dramatically less than for a non-assisted repository. The volume would be substantially lower as well.

In conclusion, Mr. Chairman, I want to thank you for holding this hearing on possibly fraudulent quality assurance documents. I have no confidence in the Department and the Department of Interior to get to the bottom of this fraud and to make sure that the science underpinning Yucca Mountain program is truly sound. I have 8 years worth of evidence to back up my position: these agencies have nothing but empty promises.

Senator Reid and I have asked the Department of Justice and the FBI to protect and preserve any and all records associated with the Yucca Mountain project. We have also asked for an independent investigation of the document review and DOE's license application. I hope this committee will join us in these efforts. There needs to be an independent review of the science behind Yucca Mountain. By independent, I mean the scientists who are experts in the field and have never been on the DOE payroll.

I am tired of hearing comments by DOE officials that the fraud isn't scientifically important, because the computer models work. This is the kind of attitude that caused these kinds of problems in the first place and the kind of approach which reveals that DOE is not up to the job of fixing it.

Mr. Chairman, I conclude my testimony at this point and ask that the rest of my testimony be made part of the record. I ask to be excused.

[The prepared statement of Hon. John Ensign follows:]

Senator John Ensign
Testimony—House Government Reform Subcommittee
April 5, 2005

Mr. Chairman, I want to thank you for holding this hearing on Yucca Mountain. I know that you share my outrage that a USGS scientist apparently falsified documents regarding the Yucca Mountain Quality Assurance Program. At this time, we have more questions than answers. What we do know is that Nevadans were promised that decisions concerning Yucca Mountain would be based on sound science—and it now appears that the science may have been falsified. These e-mails have finally blown the lid off this fraudulent and ill-conceived project. According to the Washington Post, "e-mails by a government scientist on the Yucca Mountain nuclear waste dump project suggest the worker was planning to fabricate records and manipulate results to ensure outcomes that would help move the project forward."

Mr. Chairman, I am dismayed to find that quality-assurance documents are fraudulent—but frankly I am not surprised. The DOE has regularly cut corners on the very program which has been set up to verify that all scientific data and engineering designs submitted to support a license for Yucca Mountain are accurate and reliable. In April 2004 the GAO completed a report that Senator Reid and I requested on this very subject. The report was entitled, "Yucca Mountain: Persistent Quality Assurance Problems Could Delay Repository Licensing and Operation." I'd like the entirety of this report to be submitted for the record. It makes for extraordinary reading. It shows that the DOE has been unable or unwilling to correct quality problems with data, models, software, and management since 1998. It indicates that "some data sets could not be traced back to their sources, model and validation procedures were not followed." It also shows the DOE's arrogance. The DOE rejected the GAO findings and recommendations—while the NRC agreed with the conclusion but suggested flexibility in the ways to achieve and measure performance. It is my hope that the DOE will be more willing to look at recommendations now that its quality assurance program has been revealed for what it is—a fraud.

I'm stunned by the number of references to deleting and destroying e-mails, fudging information, and not telling anyone how something was done. From 'I will be happy to make up more stuff' to 'Science by peer pressure is dangerous but sometimes [SIC] it is necessary,' the e-mails are proof that the only thing necessary at this point is that we get to the truth. It seems that Yucca Mountain's destiny is that of a mountain of lies and nothing else.

As this matter continues to be investigated, it is highly possible that more falsified documents will come to light. Lawyers working for Nevada recently uncovered an Energy Department audit from 2000 that reviewed Yucca documents from 1997 to 1998. The audits showed problems with USGS documentation including that USGS officials claimed that they had calibrated instruments that did not exist at Yucca. This is emblematic of the shoddy work—and perhaps criminal acts—that have plagued this program.

Mr. Chairman, the quality assurance program was put in place as part of the NRC licensing process to verify the accuracy and credibility of work that has been completed to protect public health and safety. The fact that the alleged fraud deals with the issue of water infiltration is critical because it impacts the corrosion of casks and the containment of radioactivity.

We're not talking about how realistic this scenario would be for a science fiction novel or a movie script. The corrosion of casks and the containment of radioactivity are frightening realities that Nevadans and all Americans face should this project proceed based on fraudulent science.

Mr. Chairman, I want to underscore that this is only the last in a series of serious setbacks for the Yucca Mountain project.

- A federal appeals court ruled last July that a new radiation safety standard must be established before the Department could file the licensing application with the Nuclear Regulatory Commission. The standard must be at the point of when the waste will be at its peak radiation. That could be 300,000 years from the time the waste is sent to Yucca Mountain, instead of the arbitrary EPA standard of 10,000 years. The Environmental Protection Agency has yet to set that new standard.
- The 1982 Nuclear Waste Policy Act gave the Energy Department until 1998 to open a permanent underground geologic repository for high-level nuclear waste. While up until recently Yucca Mountain was scheduled to open in 2010, that date has slipped indefinitely.

Mr. Chairman, we are beyond the point where we need to abandon this ill-conceived and problem-riddled project and focus on safer, smarter, and more reasonable alternatives.

I think that we need to amend the Nuclear Waste Policy Act of 1982 to require the title to all spent nuclear fuel, stored in dry casks, to be passed on to the DOE upon on site transfer from storage pools to casks. Senator Reid and I are planning to introduce legislation to allow the DOE to assume liability of the waste onsite, before it is transferred to Yucca Mountain. Conveying the title means the DOE will have full responsibility for the possession, stewardship, maintenance, and monitoring of all spent nuclear fuel. Through the Act, the DOE would also be made responsible for various maintenance and oversight that would be associated with implementation.

Furthermore, we need to invest in new technologies at our National Labs to recycle the waste without producing weapons-grade plutonium as a byproduct. Recycling has advantages over burying high level waste. The residual activity and radiotoxicity of waste in the repository following the recycling process would be dramatically less than that for a non-assisted repository. The volume would be substantially lower as well.

CONCLUSION

Mr. Chairman, I want to thank you for holding this hearing on possibly fraudulent quality assurance documents. I have no confidence in the Department of Energy and the Department of the Interior to get to the bottom of this fraud and to make sure that the science underpinning the Yucca Mountain program is truly sound. I have eight years worth of evidence to back up my position. These agencies have nothing but empty promises.

Senator Reid and I have asked the Department of Justice and the FBI to protect and preserve any and all records associated with the Yucca Mountain project. We have also asked for an independent investigation of the document review and DOE's license application. I hope this Committee will join us in these efforts. There needs to be an independent review of the science behind Yucca Mountain. And by independent, I mean by scientists who are experts in this field and have never been on the DOE payroll. I'm tired of hearing comments by DOE officials that the fraud isn't scientifically important because the computer models work. This is the kind of attitude that caused these problems in the first place—and the kind of approach which reveals that the DOE is not up to the job of fixing it.

On the broader question of nuclear waste storage, I want to underscore that Yucca Mountain is not a permanent solution to our nation's nuclear waste problem. Even with a central repository, there will continue to be nuclear waste stored at all operating reactor sites. Mr. Chairman, we produce 2,000 metric tons of nuclear waste a year. The DOE plans to transport 3,000 metric tons a year. Just do the math. Under the current plan we won't get rid of the nuclear waste backlog for nearly a century.

And at what cost do we forge ahead with the Yucca Mountain site? Then to bury it in a location where science has taken a back seat to fraud and politics—is completely reckless. We cannot afford to continue this project.

If there is a positive side to this potentially criminal activity regarding Yucca Mountain, it has given impetus to the nuclear industry and other supporters of enhanced nuclear power opportunities to be open to other ideas for waste disposal. I hope that our nation gives a long hard look at other options, because $58 billion is a lot to pay for a repository that is not based on sound science and will not be licensed in the foreseeable future.

Mr. PORTER. Thank you, Senator Ensign. I appreciate your comments, and welcome back to the House. It's always good to see you.

Thanks again to our Minority Leader, Senator Reid, for his comments.

I would like to now bring it back to the panel and introduce Congressman Jim Gibbons from Nevada.

**STATEMENT OF HON. JIM GIBBONS**

Mr. GIBBONS. Thank you very much, Chairman Porter. And to my friend and colleague who just left, Chairman Davis, I also want to thank you for inviting us to be part of this panel for this very important hearing.

Ladies and gentlemen, this is no small matter. This is no trivial issue. I would ask that the panels following the Governor and my friends out here that are out here today that testify from DOE and the USGS, that they do not attempt to trivialize the wrong that was done under their watch. This is significant. There are significant safety issues involved, there are significant sums of money involved. This will not go away by a mere statement of saying, they are small, unimportant, trivial mistakes. I implore you, don't come to the table and make that statement.

I commend Chairman Porter for his prompt action in undertaking this hearing today. This is a significant and important issue before not just Nevadans, but before every American. Again, I want to welcome my friends that are here, the Governor of Nevada, Kenny Guinn, and the Attorney General, Brian Sandoval, along with our two Senators who had to leave earlier, and my other colleague, Congresswoman Shelly Berkley, who are here as well, feeling that this is so important, so significant that we have to make sure that the American public understands what's going on.

And let me say that I as a geologist, as a scientist, have long had many questions and grave concerns about the scientific integrity of Yucca Mountain over the years, from what I have seen be reported by their scientists. I have never been convinced that the Department of Energy could soundly stand on science as the basis for making Yucca Mountain a nuclear repository.

Like many Nevadans, like everyone on this panel, I was shocked and dismayed to learn that Government scientists and their superiors had falsified testimony and science relating to the possible water infiltration problems at Yucca Mountain. These are serious allegations, ladies and gentlemen. As I said, these are allegations that are not going to go away until they are resolved.

This administration, President Bush's administration has prided itself on Government accountability. I have applauded their effort in that accountability. Now it is time for Congress, even if it is just this committee, it is time for Congress to hold the feet to the fire, hold the line on integrity and get to the bottom of what really is happening at Yucca Mountain.

As I said, it's time for everyone to measure up to what the standards of Yucca Mountain are today and whether or not, for 100,000 years, they will meet the needs and the safety of the American public. I daresay to each one of you at DOE, you come to Nevada and you explain to the people out there why your callous disregard of safety allowed for the waters of the western part of the United

States to be contaminated with nuclear radioactive materials. Something, ladies and gentlemen, has to be accounted for. You are the ones whose feet are going to be held to the fire.

Mr. Chairman, I have a tremendous amount of information in my statement that I would like to have entered into the record. Right now I simply would like to close by saying that please, when you come to this table, when you come to testify before this committee, do not trivialize. This goes beyond the veracity of the framing science for the basis of the decision for moving forward with Yucca Mountain. This goes to the basis of believability of the U.S. Government. Those people on the next several panels are going to have the responsibility to answer the American public's questions about what went on and why it went on and importantly, what you are doing to correct it.

With that, Mr. Chairman, I would like to offer my complete written statement for the record and yield back the balance of my time.

Mr. PORTER. Thank you, Congressman.

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 record and any answers to written questions provided by the witnesses also be included in the record. Without objection, so ordered.

I ask unanimous consent that all exhibits, documents and other materials referred to by Members and the witnesses may be included in the hearing record, that all Members be permitted to revise and extend their remarks. Without objection, it is so ordered.

It is a practice of this committee to make sure that we administer the oath to all witnesses. Would you please all stand with me and also, I believe Mr. Ziegler is here, if he would stand also.

[Witnesses sworn.]

Mr. PORTER. Let the record reflect that all witnesses have answered in the affirmative, and please be seated. Thank you.

As I mentioned earlier, we had an adjustment in the schedule to make sure the Senators could go back to their house and take care of business, also our Chairman Davis. So now I would like to move into our first panel, and we would like to hear from the Governor of Nevada, the Honorable Kenny Guinn. Governor.

## STATEMENTS OF KENNY C. GUINN, GOVERNOR OF NEVADA; AND BRIAN SANDOVAL, ATTORNEY GENERAL OF NEVADA

### STATEMENT OF KENNY C. GUINN

Governor GUINN. Mr. Chairman and members of the committee, for the record, I am Kenny Guinn, Governor of the State of Nevada. I would like to begin by thanking you, Mr. Chairman, for taking the initiative and arranging for this very important hearing today.

I also want to thank all of you as members of the subcommittee for devoting your time and effort to address a matter of critical importance not only to my State, but also to the entire country. The recent disclosure by Secretary of Energy Bodman that scientists working on the Yucca Mountain project may have falsified data is nothing short of criminal behavior. While it is certainly possible for there to be honest differences of opinion among scientists and technical experts, in a project as complex and controversial as a nuclear

waste repository, the fact that data may have been intentionally fabricated in service of shoring up predetermined and politically driven conclusions, calls into question the very legitimacy of the entire program.

I am shocked by this development and I join our Attorney General and congressional delegation that you have heard from here today in calling for an immediate and thorough investigation. For too long in this project, we have watched politics trump science over and over again.

In 1987, when Congress decided to arbitrarily abandon the step by step scientifically based approach to repository site selection embodied in the original Nuclear Waste Policy Act of 1982, and singled out Nevada's Yucca Mountain as the only site to be considered, it did so for purely political reasons. Frankly, it has all been downhill from there. What began as a noble effort to blend science and policy into a sound approach for solving a difficult and controversial technical problem has deteriorated into a quagmire of politics where the laws of expediency prevail over the laws of science.

Mr. Chairman, less than a month after my election as Governor to the State of Nevada, but before I was sworn into office, I co-authored a letter with then-Governor Bob Miller to Energy Secretary Bill Richardson urging that Yucca Mountain be immediately disqualified as a repository site, citing strong and compelling scientific evidence indicating the site was incapable of safely isolating deadly radioactive waste.

One of the main points raised in that letter was ironically the existence of very rapid groundwater pathways and evidence showing that rapid water movement through the site would expedite the corrosion of waste disposal containers underground at Yucca Mountain and very quickly transport radioactive materials to the aquifer and from there to water sources used by the people in the various communities.

Little did we know then that the very information the Secretary of Energy relied on in subsequently denying my request was very likely based on fabricated data, given the fact that from published reports, at least, the data believed to have been compromised involved U.S. Geological Survey studies of groundwater movement at Yucca Mountain. It is certainly suspicious, if not outright incriminating, that those USGS studies were ordered by DOE in an attempt to contradict earlier DOE and State of Nevada research findings that were not to DOE's liking.

In 2002, when President Bush, acting on Secretary Abrams' advice, recommended that Congress endorse continuing the Yucca Mountain project, he was likely also acting on information that was grounded in falsified data. The President, in a personal meeting with me, eye to eye, face to face, told me that he would base his decision on sound science.

I wonder how many of you in Congress would have voted in the summer of 2002 to override my veto on the project would have done so if you had known that a fundamental underpinning of the Yucca Mountain project was based on fraudulent and intentionally falsified data? It is a sad day for my State and for America when we can no longer trust Government scientists to report their findings

honestly and not mislead, misrepresent or falsify the facts, especially when we are dealing with such a critical, important, and risky technical issue as nuclear waste disposal.

It would be far worse for the country, however, if such fraudulent science would be allowed to be swept under the rug. To quote Thomas Jefferson, "It is more honorable to repair a wrong than to persist in it." That, Mr. Chairman, is the task before this subcommittee today. Already, DOE officials are seeking to minimize the importance of Secretary Bodman's disclosure. The wagons are being circled, and without swift and decisive action to get to the whole truth in this matter, I am very concerned that the true extent of any wrongdoing in the Yucca Mountain program will never be known.

Despite calls from the Nevada Attorney General, Nevada's congressional delegation, others and me, for DOE to release the e-mails and other materials that prompted Secretary Bodman's disclosure of likely data falsification, DOE has refused to make the materials available. Instead, DOE representatives have been seeking to downplay evidence as merely paperwork problems, or as minor quality of assurance matters.

If that is in fact the case, Mr. Chairman, why has DOE not made the evidence available to the State of Nevada and other entities charged by the Nuclear Waste Policy Act with overseeing DOE-Yucca Mountain activities? Before becoming Nevada's Governor, I was the CEO of the largest utility company in Nevada, and one of the largest ones in the State of Arizona and a part of California. For more than a year, I was the acting president of the University of Nevada and Las Vegas. Let me tell you, if any scientists or engineers working for me were found to have fabricated or otherwise misrepresented information regarding academic work at the University or any Southwest Gas project, they would have been dealt with swiftly and harshly.

Yet here we sit today, 3 weeks, 3 weeks since Secretary Bodman disclosed the existence of falsified Yucca Mountain date, and no one has been permitted to see the e-mails in question or interview the scientists in totality. What we get from DOE is simply obfuscating and damage control. During the past year, the country has seen CEOs of major industries dragged before the courts for cooking the books and fabricating information to make corporate profits appear better than they were in reality. I see no difference between those scandals and what appears to have occurred in DOE's Yucca Mountain program.

In the case of ENRON, WorldCom, or other corporate wrongdoing, the motive was a maximizing of profits and avoiding losses, while the fraudulent actions involved falsifying embarrassing and incriminating accounting and reports, all for money. In the case of Yucca Mountain, the motive was covering up and countering incriminating and embarrassing information that could have meant disqualifying the entire project. And the questionable actions involved, doctoring scientific findings and quality assurance records.

If we treat corporate fraud, which after all hardly compares to the seriousness of fraud involving the safe disposal of some of the most deadly and long-lived substances known to man, as such a serious matter, how can we not demand equally intense scrutiny of

apparent fraud in a public sector program that has the potential to impact many generations of people and do irascible damage to the credibility of agencies and institutions whose sole role it is to address some of the most pressing and scientific and technical issues of our day?

The foot-dragging and game-playing must stop, and a real, legitimate investigation must be immediately initiated.

Let me conclude, Mr. Chairman, by reminding this subcommittee and other Members of Congress that from the very beginning of the Government's high level nuclear waste repository program, we in Nevada have asked just one thing of the Department of Energy. Be honest with us and carry out a scientifically sound and credible screening program that has as its goal the identification of a site capable of isolating deadly radioactive waste from the human waste and the environment for the extraordinarily long time that it would require. DOE has never lived up to that expectation and now, with these revelations about falsified scientific data, the curtain has been pulled back to reveal just how bankrupt and fraudulent the Yucca Mountain program may have been all along.

The evidence is becoming overwhelming that the Yucca Mountain program is broken beyond repair. It is hemorrhaging money and cannot meet appropriate health and safety standards. It is falling farther and farther behind schedule. Even its most ardent supporters are beginning to question its wisdom and now the project has lost whatever scientific credibility that might have been remaining.

Let us, Mr. Chairman, find a way to make this fraudulent, bankrupt, and unnecessary project stop, not only for the sake of the people and environment in my State, but in the best interests of America's people and its environment. I want to thank you again for the opportunity to address you here today on this very important issue, and we will be happy to cooperate with you in any way that we possibly can. But we are demanding that we also see public records from the e-mails so that we can defend our case against this project.

Thank you very much.

[The prepared statement of Governor Guinn follows:]

Governor Guinn's Testimony

Mr. Chairman and members of the subcommittee, for the record I am Kenny Guinn, governor of the State of Nevada. Let me begin by thanking Representative Jon Porter for taking the initiative in arranging for this very important hearing. I also want to thank all of the members of this subcommittee for devoting your time and effort to address a matter of critical importance not only to my state, but also to the entire country.

The recent disclosure by Secretary of Energy Bodman that scientists working on the Yucca Mountain project may have falsified data is nothing short of criminal behavior. While it is certainly possible for there to be honest differences of opinion among scientists and technical experts in a project as complex and controversial as a nuclear waste repository, the fact that data may have been intentionally fabricated in service of shoring up predetermined and politically-driven conclusions calls into question the very legitimacy of this entire program.

I am both shocked by this development and I join our Attorney General and Congressional delegation in calling for an immediate and thorough investigation. For too long in this project we have watched politics trump science over and over again. In 1987, when Congress decided to arbitrarily abandon the step-by-step, scientifically based approach to repository site selection embodied in the original Nuclear Waste Policy Act of 1982 and singled out Nevada's Yucca Mountain as the only site to be considered, it did so for purely political reasons. And, frankly, it has been all down hill from there. What began as a noble effort to blend science and policy into a sound approach for solving a difficult and controversial technical problem, has deteriorated into a quagmire of politics where the laws of expediency prevail over the laws of science.

Mr. Chairman, less than a month after my election as Nevada's governor but before I was sworn in to office, I co-authored a letter with then-governor Bob Miller to Energy Secretary Bill Richardson urging that Yucca Mountain be immediately disqualified as a repository site, citing strong and compelling scientific evidence indicating the site was incapable of safely isolating deadly radioactive waste. One of the main points raised in that letter was, ironically, the existence of very rapid groundwater pathways and evidence showing that rapid water movement through the site would expedite the corrosion of waste disposal containers underground at Yucca Mountain and very quickly transport radioactive materials to the aquifer and from there to water sources used by people and communities.

Little did we know then that the very information the Secretary of Energy relied on in subsequently denying my request was very likely based on fabricated data, given the fact that, from published reports at least, the data believed to have been compromised involved U.S. Geological Survey studies of groundwater movement at Yucca Mountain. It is certainly suspicious, if not outright incriminating, that those USGS studies were ordered by DOE in an attempt to contradict earlier DOE and state of Nevada research findings that were not to DOE's liking.

In 2002, when President Bush, acting on Secretary Abraham's advice, recommended that Congress endorse continuing the Yucca Mountain program, he was likely also acting on information that was grounded in falsified data. The President personally told me that he would base his decision on sound science.

I wonder how many of you in Congress, who voted in the summer of 2002 to override my veto of the project, would have done so if you had known that a fundamental underpinning of the Yucca Mountain project was based on fraudulent and intentionally falsified data.

It is a sad day for my state and for America when we can no longer trust government scientists to report their findings honestly and not mislead, misrepresent or falsify the facts, especially when we are dealing with such a critically important and risky technical issue as nuclear waste disposal. It would be far worse for the country, however, if such fraudulent science were allowed to be swept under the rug. To quote Thomas Jefferson, "It is more honorable to repair a wrong than to persist in it." That, Mr. Chairman, is the task before this subcommittee today.

Already, DOE officials are seeking to minimize the importance of Secretary Bodman's disclosure. The wagons are being circled, and without swift and decisive action to get at the whole truth in this matter, I am very concerned that the true extent of any wrongdoing in the Yucca Mountain program will never be known.

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Yet, here we sit today, three weeks since Secretary Bodman disclosed the existence of falsified Yucca Mountain data, and no one has been permitted to see the emails in question or interview the scientists involved. What we get from DOE is obfuscating and damage control.

During the past year, the country has seen CEOs of major industries dragged before the courts for cooking the books and fabricating information to make corporate

profits appear better than they were in reality. I see no difference between those scandals and what appears to have occurred in DOE's Yucca Mountain program. In the case of Enron, World Com and other corporate wrong-doing, the motive was maximizing profits and avoiding losses, while the fraudulent actions involved falsifying embarrassing and incriminating accounting records and reports. In the case of Yucca Mountain, the motive was covering up and countering incriminating and embarrassing information that could have meant disqualifying the project, and the questionable actions involved doctoring scientific findings and quality assurance records.

If we treat corporate fraud, which after all, hardly compares to the seriousness of fraud involving the safe disposal of some of the most deadly and long-lived substances known to man, as such a serious matter, how can we not demand equally intense scrutiny of apparent fraud in a public sector program that has the potential to impact many generations of people and do irreparable damage to the credibility of agencies and institutions whose role it is to address some of the most pressing technical issues of our day?

The foot-dragging and game playing must stop, and a real, legitimate investigation must be initiated immediately.

Let me conclude, Mr. Chairman, by reminding this subcommittee and other members of Congress, that, from the very beginning of the federal government's high-level nuclear waste repository program, we in Nevada have asked just one thing of the Department of Energy: Be honest with us and carry out a scientifically sound and credible screening program that has as its goal the identification of a site capable of isolating deadly radioactive waste from people and the environment for the extraordinarily long time required. DOE has never lived up to that expectation, and now, with these revelations about falsified scientific data, the curtain has been pulled back to reveal just how bankrupt and fraudulent the Yucca Mountain program may have been all along.

The evidence is becoming overwhelming that the Yucca Mountain program is broken beyond repair. It is hemorrhaging money, it cannot meet appropriate health and safety standards, it is falling farther and farther behind schedule, even its most ardent supporters are beginning to question its wisdom, and now the project has lost whatever scientific credibility that might have been remaining.

Let us, Mr. Chairman, find a way to make this fraudulent, bankrupt and unnecessary project stop, not only for the sake of the of the people and environment in my state, but in the best interests of the country as a whole.

Thank you again for the opportunity to address you today.

Mr. PORTER. Thank you, Governor. We appreciate your testimony.

Now our Attorney General of Nevada, Mr. Brian Sandoval.

Ms. BERKLEY. Mr. Chairman, if we have questions of the witnesses, shall we wait until the panel has finished?

Mr. PORTER. Yes.

Ms. BERKLEY. All right, thank you.

**STATEMENT OF BRIAN SANDOVAL**

Mr. SANDOVAL. Good morning, Mr. Chairman, members of the committee. My name is Brian Sandoval, Attorney General for the State of Nevada.

First, Mr. Chairman, I would like to compliment you and thank you in your leadership in scheduling this meeting. I would also like to thank Congressman Gibbons and Congresswoman Berkley for your leadership on the Yucca Mountain issue and for exposing the science fiction associated with the Yucca Mountain project.

The recent disclosure by the U.S. Department of Energy that key Yucca Mountain scientific studies concerning water infiltration were falsified undermines the credibility of the Yucca Mountain project, a multi-billion dollar project that is increasingly confronted with potentially insurmountable problems. The question of falsification of critical data goes directly to the suitability or unsuitability of Yucca Mountain to safely house this country's first permanent high level nuclear waste repository.

The question of falsification also calls into question the health and safety of Nevadans and all Americans. The studies that are now circumspect form the basis of the Department of Energy's site recommendation to the President of the United States and the President's recommendation of the Yucca Mountain site to Congress. Such falsification irreparably damages the legality of the project, its scientific integrity, and public confidence in the project. Of course, all these are and must be fundamental prerequisites to the viability and safety of the project.

Some of my colleagues will attest to other fraudulent conduct at Yucca Mountain that further undermines the suitability of the site. Such fraudulent conduct by DOE and its contractors could actually result in a rejection by the Nuclear Regulatory Commission of DOE as a qualified applicant for an NRC license to construct the project, assuming DOE ever files a license application.

In a March 17, 2005 letter to Attorney General Alberto Gonzales, I requested that all relevant e-mails be made available to my office, that the Yucca Mountain data base be immediately frozen as to prevent damage to other vital evidence, and most importantly, that an independent investigation into the potential criminal activity be conducted.

To date, although I am aware through media reports that the FBI is conducting a criminal investigation, I have not heard from the Department of Justice. I am also trying to schedule with the Attorney General, schedule a meeting with the Attorney General of the United States to personally discuss my concerns with him.

Finally, as Nevada's Attorney General, I am responsible for protecting the health and safety and welfare of Nevada's citizens. To that end, I will pursue all appropriate legal remedies available

under Nevada law to protect the people of Nevada and the millions of visitors that travel there every year.

Mr. Chairman, in closing, I urge this committee to demand immediate action. I ask that you request an independent investigation of all the issues that we have heard discussion about today, that an independent commission be formed to conduct this investigation of all the science associated with the Yucca Mountain project, someone without bias, to give credibility to the investigation, and that the entire data base, not a portion, but the entire data base, be looked at. Because it all may be affected.

No. 2, I ask that an absolute provision of all the information be allowed to be given to the State of Nevada unfettered and without a request of privilege. Third, I encourage an aggressive continuation of a criminal investigation into potential wrongdoing associated with the science at Yucca Mountain.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Sandoval follows:]

**STATEMENT OF BRIAN SANDOVAL**
**NEVADA ATTORNEY GENERAL**

**BEFORE THE SUBCOMMITTEE ON FEDERAL WORKFORCE AND AGENCY ORGANIZATION OF THE UNITED STATES HOUSE OF REPRESENTATIVES COMMITTEE ON GOVERNMENT REFORM**

**April 5, 2005**

Good morning Mr. Chairman and members of the subcommittee. I am Brian Sandoval, Nevada Attorney General. I appreciate this opportunity to address you today.

You have asked me to appear before you to provide testimony concerning the deeply disturbing disclosure by the U.S. Department of Energy (DOE) that certain critical data supporting the controversial Yucca Mountain project has been falsified by U.S. Geological Survey (USGS) scientists. The falsification of scientific data is evidenced in emails exchanged among USGS employees as part of scientific studies relating to water infiltration and climate at the Yucca Mountain site. The communications in question relate back to specific exchanges which occurred between 1998 and 2000, and which call into serious question the particular scientific work under discussion as well as other key scientific underpinnings of the project.

Falsification of scientific data concerning water filtration relates directly to the suitability or unsuitability of Yucca Mountain to house the nation's first high-level nuclear waste repository. The USGS studies form the very foundation of the federal government's recommendation to the President. The presidential recommendation in turn supports Congress' decision to override Nevada's notice of disapproval of the site and Congress' direction to DOE to pursue licensure for the project. That such disreputable actions have undermined the government's recommendation goes without saying. It also goes without saying that the public's confidence in the integrity of the Yucca Mountain project has been severely, if not irreparably, damaged.

Following DOE's troubling disclosure, I immediately sent a letter to the United States Attorney General, Alberto Gonzales. In that letter, I specifically requested that the Attorney General direct DOE to make all emails relevant to this matter available to my office. To date, this has not occurred. In addition, I asked Attorney General Gonzales to secure the entire Yucca Mountain data base to protect it from further manipulation by individuals likely to be motivated to hide other incriminating information. Finally, because of the possibility of criminal conduct, I requested that an independent investigation be undertaken at the earliest possible time so that the full effect of DOE's and its contractors' conduct can be understood and addressed in the swiftest and most appropriate way possible.

As Nevada's Attorney General, my responsibility is to protect the public health and safety of Nevada's citizens. I am profoundly concerned that I have not yet been advised that urgent federal action is being pursued to freeze data and to secure information sources that may contain further evidence of data falsification, fabrication and manipulation. I stand ready to pursue available remedies under state law and to fully support appropriate independent federal action.

I strongly urge this Committee to demand immediate action to fully expose the extent of federal malfeasance. Thank you for this opportunity.

Mr. PORTER. Thank you, Mr. Sandoval.

We are now going to move into the question and answer segment of the hearing. I do have a question for you, Mr. Sandoval.

I know there has been numerous lawsuits that have been initiated by the State of Nevada and other individuals. Based on the information that has been provided in the last few hours, 48 hours, 72 hours, regarding the e-mails and internal documents, if you knew then what we know now, how would this have impacted some of our lawsuits that either have closed or are currently pending?

Mr. SANDOVAL. Thank you, Mr. Chairman. Certainly I think it would have changed our approach by 180 degrees. Although I think we may have never have gotten to litigation, because there may never have been a recommendation to the President of the United States by the Secretary of Energy who would not have been able to make that recommendation because of the falsified data associated with the presentation to him, who in turn made the recommendation to this Congress.

But certainly I believe that it would have strengthened, if we would have had this information, strengthened our lawsuits and we would have been even more successful than we have already been.

Mr. PORTER. I think we may hear testimony this morning, just having read some of the backup, that the agencies may declare that this is a success, because they in fact discovered these documents, brought them forward to the public for review. Could you comment on that approach by the Department of Energy and the Department of Interior and the USGS?

Mr. SANDOVAL. Thank you, Mr. Chairman. My only comment is this, that it's our belief that this disclosure was not voluntary, that it was a result of our aggressive prosecution of this case and a demand that these types of documents be turned over. Had it not been for Nevada's aggressive approach in terms of requiring the presentation of these documents, we may never have heard about this.

Mr. PORTER. Thank you. And I would concur, again, reading our testimony and seeing some of the press statements, that they are good citizens by releasing this information, the facts remain, this information would not be before this committee today if it wasn't for the State of Nevada and your office and those involved, of calling for this information to be released. So I appreciate that. Thank you.

Mr. SANDOVAL. Thank you, Mr. Chairman.

Mr. PORTER. Congresswoman Berkley.

Ms. BERKLEY. Thank you, Mr. Chairman.

Governor Guinn, there is no doubt in my mind that you were eye to eye with the President, pleading Nevada's case and doing a very good job, at that. There is no doubt that the President believed at the time that he was basing his decision on sound science.

My concern now is, how are we going to communicate these latest findings to the President? According to the Associated Press today, there is a memo, a section is entitled, "Key Points for Your Discussion with the Secretary," and among those points, this is the Department of Energy officials, "we do not believe that the questionable data has any meaningful effect on the results supporting the site recommendation."

Now, the Secretary of Energy is relatively new. He hasn't been dealing with this the last 20 years, as the rest of us have. He is getting that type of guidance from the people below him. He is going to take the information they give him and take it to the President of the United States. And if he follows the recommendations that are cited in this memo, he is going to be telling the President that these falsified scientific documents are not relevant to the future of Yucca Mountain.

What are you planning to do to take our message to the President, so that he gets an unfiltered and correct version of what's going on?

Governor GUINN. Well, of course, Congressman Berkley, we would be at a definite disadvantage if we are not able, hopefully through this subcommittee's actions, to be able to get the entire data that we need. Because we are only getting various e-mails that are leaked out or coming through. I haven't seen anything other than what I've seen on national television and read a couple of them in the paper.

So through the Attorney General, we are asking for this data so that we can prepare our case. We would not like to have to do it halfway. I think it's important for us to have the data that we need to go to the White House, just like we did once before. We got the opportunity to meet with President Bush on the basis that there is a law that requires that he has to make a decision off of supposedly the data that is presented to him. Then I had the right to veto that, and it could only be overridden by congressional action by both the Senate and the House.

So in my meeting with him, he was very firm. I know him from our Governor days, I know him to be a man that is fair and certainly convinced to do things in his mind from a scientific basis. He told me that he would only make his decision on scientific data and sound science. I think this shows that there are a lot of questions to the data that he had to make that decision.

We will certainly do everything we can to get this data, working with you, working through our own process. If we can't, then we would have to go there just on what we know. But I assure you that we will be working to get another sit-down, face to face discussion with the President of the United States. Because the facts have changed, there is no doubt about that.

Ms. BERKLEY. And I would urge you to do that sooner than later, because I have no confidence in the Department of Energy, that they are going to be forthcoming. And 6 months from now, no mater how hard we're trying, they could still be dragging their feet. And I don't think we have the luxury of waiting 6 months to get this information before the President, even if we don't have the full, all the documentation, we are going to need to give him another point of view, because I guarantee, with or without the documentation, they are going to be all over him.

Governor GUINN. I would just like to say in conclusion to your question, this is not the only issue that we have difficulty getting information on. I have written my second letter asking for permission to see some of the data they have that is not related to the e-mails. The only way I can get that is to sign a joint agreement with them that it would never, any of it, be made public.

This is not like it's national security. This is a problem inside our own borders and an issue that has been discussed over the last 20 years. So we have difficulty getting that, because if we sign an agreement like that, and it's the only way we can get this information, which should be shared with us, we would share with them anything that we have, then it means that if we sign that agreement and then we have litigation, we are not able to disclose it. That's just not a fair playing field.

So we have trouble getting that data anyway. But this is one that's even more serious, and we will go directly, in my opinion, to the White House for another sit-down discussion.

Ms. BERKLEY. I would urge you to do that, as I said, sooner than later.

General Sandoval, I appreciate the step by step approach that you are taking. Could you give us some idea, as Nevada's attorney, what you think the next appropriate legal move should be in this issue?

Mr. SANDOVAL. Thank you, Mr. Chairman and to Congresswoman Berkley. I think the next step should be a legal one in terms of seeking the documents, so that we can get to the bottom of this and then take the appropriate action thereafter. We have tried to do it the kind way and the polite way. If that way doesn't work, then we have to do it the legal way.

Ms. BERKLEY. Thank you.

Mr. PORTER. Congressman Gibbons, do you have any questions?

Mr. GIBBONS. Yes, I do, Mr. Chairman, thank you very much. And to the Governor and the Attorney General, thank you again for your time and your testimony here today. It has been very helpful to us to understand this issue a little better.

On March 24th of this year, I sent a letter both to the Department of Energy, the Secretary of Energy, as well as to the President of the United States, asking for an immediate shut-down of the Yucca Mountain project, pending the outcome of this investigation. I would just like to ask, Mr. Attorney General, have you seen the redacted documents that were supplied to Congress regarding the e-mails at this point in time? Have you seen those?

Mr. SANDOVAL. Mr. Chairman and Congressman Gibbons, no.

Mr. GIBBONS. So these documents were never part of your litigation as to the veracity or the suitability of Yucca Mountain during its pending course in court?

Mr. SANDOVAL. No, they were not.

Mr. GIBBONS. On March 29th, there was a secondary list of original documents, I believe, that were sent to us, and I'm holding them up here. I don't presume you have seen these. This is the first time I have seen these. I would like to have your thoughts, when you get a moment, when you go over these e-mails, to see whether or not this would have any pending change in your strategy, both you, the Governor and the Attorney General, to look at these documents when you have a moment, to determine whether that would change the strategy of the State of Nevada with regard to its approach to Yucca Mountain when you have that moment.

One analogy that I'm sure will bring a smile to your face. If I were to design an airplane that you were to fly in to risk your life, and I were to tell you that the quality assurance was something

I didn't care about and that I took steps to avoid and that I intentionally fabricated the science and engineering related to that airplane, would you fly on that airplane? I would hope your answer is no.

Governor GUINN. If you're asking me, no. [Laughter.]

Mr. SANDOVAL. I wouldn't fly it either, and I would ask you to fly it.

Mr. GIBBONS. I wouldn't fly it myself. That's what the Department of Energy and the U.S. Geological Survey is asking the people of the State of Nevada, in fact, the people of America, to do by accepting their science and their engineering regarding the security of the Nation's most toxic, deadly material and the security of their water supplies for hundreds of thousands of years thereafter.

So with that, I want to, Mr. Chairman, thank you again for allowing me to ask those questions, and again, thanks to our witnesses here as well today.

Mr. PORTER. Thank you, Congressman.

I would like to move into our next panel. To help expedite the process this morning, I'm actually going to combine the second and third panels. So I would now like to invite our second and third panels of witnesses to please come forward.

First, we will bring in Dr. Charles Groat, Director of the U.S. Geological Survey at the Department of Interior. Following him will be Mr. Ted Garrish, Deputy Director of the Office of Civilian Radioactive Waste Management at the Department of Energy. Then we will hear from Mr. Earl Devaney, the Inspector General at the Department of Interior.

After Mr. Devaney, we will hear from Gregory Friedman, Inspector General at DOE. Then we will hear testimony from Mr. John Garrick, chairman of the Nuclear Waste Technical Review Board. After Mr. Garrick, we will hear from Judy Treichel, the executive director of the Nevada Nuclear Waste Task Force. Then we will hear from Mr. Egan, attorney for the Nevada Office of the Attorney General. Following that will be Mr. Loux, executive director of the Nevada Agency of Nuclear Projects, followed by Mr. John Mitchell, the Yucca Mountain Project Manager for Bechtel. I will allow you all a moment to get situated.

Thank you for your patience. I would now like to open with Mr. Charles Groat, Director of U.S. Geological Survey at the U.S. Department of Interior. Welcome.

**STATEMENTS OF CHARLES G. GROAT, DIRECTOR, U.S. GEOLOGICAL SURVEY; TED GARRISH, ACTING DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, U.S. DEPARTMENT OF ENERGY; EARL E. DEVANEY, INSPECTOR GENERAL, U.S. DEPARTMENT OF INTERIOR; GREGORY H. FRIEDMAN, INSPECTOR GENERAL, U.S. DEPARTMENT OF ENERGY; JUDY TREICHEL, EXECUTIVE DIRECTOR, NEVADA NUCLEAR WASTE TASK FORCE; B. JOHN GARRICK, CHAIRMAN, U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD; JOSEPH EGAN, NEVADA ATTORNEY GENERAL'S OFFICE; BOB LOUX, EXECUTIVE DIRECTOR, NEVADA AGENCY FOR NUCLEAR PROJECTS; AND JOHN MITCHELL, PROJECT MANAGER, BECHTEL CORP.**

**STATEMENT OF CHARLES G. GROAT**

Mr. GROAT. Thank you, Mr. Chairman.

Good morning to you and to members of the subcommittee, and thank you for the opportunity to speak with you on behalf of the U.S. Geological Survey on the Department of Energy's Yucca Mountain Project.

On March 14, 2005, we learned from the Department of Energy that improprieties in studies and the quality assurance process were allegedly committed 6 years ago by USGS scientists working on the Yucca Mountain waste repository project. I referred the matter to the Department of Interior's inspector general for action. We take these charges very seriously, Mr. Chairman, and we will do everything we can to ensure that the scientific information the USGS provides the Nation meets the highest standards of accuracy and credibility.

Throughout the entire history of the Yucca Mountain project, USGS scientists have been major participants in the earth science research that has been conducted on behalf of the Department of Energy. My written testimony provides the history of our involvement and has been submitted for the record. I will limit my comments to the present situation.

E-mails that are the subject of the current investigation were sent between 1998 and 2000. And as you have mentioned, referred to an analysis and model reports concerning water infiltration and climate. I have seen these e-mails, and I agree with you that they raise serious concerns.

Inasmuch as this matter is under investigation by the inspector general, we are unable to pursue our own assessment or discuss the matter until that investigation is complete. When these steps are concluded, we would be happy to provide a briefing or meet with members to discuss the situation further.

The objectivity and credibility of our scientists and their work is of supreme importance to us, and has been throughout our 125 year history. Misrepresentation and falsification of data or of the documentation of scientific processes is contrary to the very essences of the scientific process and must be dealt with firmly. Once we determine the extent of these acts and their severity, we will take the appropriate personnel actions.

The significance of what has happened for the Yucca Mountain waste repository project needs to be determined. This will require

an open, objective review of the extent of the wrongful acts, their consequences for the specific projects they affected, and for the overall assessment of the suitability of Yucca Mountain for the storage of nuclear waste. Then we can deal with what needs to be done: redoing certain projects, additional scientific investigations, or other actions appropriate for this stage of the site approval process.

Designing the objective review, as many of you have mentioned, is the next critical step and will require input from many parties. We are eager to begin this phase of the inquiry.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Groat follows:]

Statement of
Charles G. Groat
Director
U.S. Geological Survey
U.S. Department of the Interior
Before the
House Committee on Government Reform
Subcommittee on the Federal Workforce and Agency Organization
On
The Yucca Mountain Project

April 5, 2005

Good morning, Mr. Chairman and Members of the Subcommittee. Thank you for the opportunity to speak with you on behalf of the U.S. Geological Survey (USGS) on the Department of Energy's (DOE) Yucca Mountain Project. Let me emphasize from the outset how seriously USGS takes this situation. USGS is a large – approximately 9000 person – organization. We have a 125-year reputation for sound, unbiased science. Anything that casts aspersions on that reputation disturbs us greatly. We, as do you, look forward to the completion of the ongoing investigations to fully determine the impacts and appropriate responses.

At USGS, our most valuable assets are our employees, who are the underpinning of our longstanding and first-rate reputation for sound, objective science. On March 14, 2005, we learned from DOE that improprieties in the quality assurance process were allegedly committed by USGS scientists working on the Yucca Mountain Waste Repository project six years ago. I have referred the matter to the Department of the Interior's Inspector General for action. I take these charges seriously, and will do everything I can to ensure that the scientific information the USGS provides to the Nation meets the highest standards of accuracy and credibility.

Throughout the entire history of the Yucca Mountain Project USGS scientists have been major participants in the earth science research that has been conducted on behalf of the Department of Energy. The emails that are the subject of the current investigation were sent between 1998 and 2000 and refer to data incorporated into two Analysis and Model Reports concerning water infiltration. These reports are available on the Department of Energy website. Inasmuch as this matter is under investigation by the Inspector General, we are unable to discuss it until the investigation is complete. At that time we would be happy to provide a briefing or meet with Members to discuss this matter. I am eager to have a full and impartial review of what occurred and the implications for the scientific work and the project as a whole. However, this statement will provide you with a brief history of USGS involvement in studies of high-level nuclear waste disposal and the Yucca Mountain Project, highlighting a few of the most significant USGS contributions.

**History**

In 1955, the National Academy of Sciences (NAS) invited a group of 65 distinguished engineers, geologists, and other scientists to discuss disposal of high-level nuclear waste. The USGS contribution included one member of the steering committee and nine of the invitees to the Committee. The final report (NAS National Research Council Publication 519) espoused the concept of geologic disposal and concluded that salt deposits seemed most promising as a host geologic medium.

In the late 1960's, the U.S. Atomic Energy Commission (AEC) studied a salt deposit near Lyons, Kansas, as a potential high-level waste disposal site. Studies of salt domes in the Gulf of Mexico area followed.

Late in 1972, AEC asked USGS to evaluate the geohydrologic possibilities of placing high-level waste in geologic formations, principally other than salt. The final report (USGS Open-File Report 74-158) cited 30 previous reports on the subject and concluded with several optimal considerations for the site:

- Hydrologic isolation was paramount and, therefore, low permeability rock and a virtually fault-free site were recommended.
- Low seismic risk.
- Low possibility of flooding by rising sea level.
- Low potential hazard for surface- or ground-water regimes in glacial or rainy climates.
- Low potential for exhumation by erosion.

One specific recommendation reads, "The Basin and Range province of the western United States, particularly the Great Basin exclusive of seismic-risk zone 3, appears to have potential for mined chambers above the deep water tables in tuff, shale, or argillite." The body of the report provides several examples of favorable geologic features at the Nevada Test Site.

In 1976, USGS Director Vincent McKelvey wrote to the Department of Energy (DOE) and suggested the Nevada Test Site as a potential high-level waste site, noting its remoteness, its varied geologic environments, and that we already had significant data collection and interpretation at the site.

Throughout the 1970s and 1980s, USGS was tasked by Congress to study and comment on the problem of disposal of high-level radioactive waste. Conclusions (USGS Circular 779) evolved to the following:

(1) Salt deposit sites were less than ideal for a retrievable system of waste disposal in a geologic medium
(2) Systematic examination of media other than salt should continue
(3) Major studies of flow and transport are needed, especially in fractured rock
(4) More tools should be developed to evaluate potential repositories (e.g.,

methods of dating old ground water)

(5) More research is needed on the extent to which the repository itself can localize escape of radionuclides to the environment.

(6) Uncertainties in earth-science predictions should be recognized as well as importance of multiple barrier approach for radionuclide containment.

In 1978, DOE established the Nevada Nuclear Waste Storage Investigations (NNWSI) project. The spent fuel test at Climax, Nevada, was one of its first tests.

In 1979, investigations started in Area 25 of the Nevada Test Site at Yucca Mountain and in the Calico Hills. Both were below the water table. To address some of the technical complexities of operating below the water table, enhance the accessibility and monitoring throughout the operational period, and provide for possible retrieval of waste, USGS later (1982) proposed siting a repository above the water table in the thick (400-600 m) unsaturated zone in arid regions (USGS Circular 903).

In 1980, USGS had a lead role in developing the Earth Science Technical Plan for Disposal of Radioactive Waste in a Mined Repository, which was written by 17 scientists from five organizations.

In 1981, the USGS and seven State agencies (Arizona, California, Idaho, Nevada, New Mexico, Texas, and Utah) began evaluating the Basin and Range province for possible sites for the disposal of high-level radioactive waste. The results were published in a series of eight USGS Professional Papers.

In 1982, Congress enacted the Nuclear Waste Policy Act of 1982 which required DOE to develop criteria for recommending candidate sites for a repository. In 1984, DOE completed 10 CFR 960, which set out criteria for recommending potential repository sites to the President, and provided guidelines for developing the Site Characterization Plan (SCP).

In 1986, USGS, with input from three DOE National Laboratories, produced a first draft of section 8.3.1 of the SCP for DOE. In 1987, the Nuclear Waste Policy Act of 1982 was amended to direct DOE to characterize only Yucca Mountain, Nevada. In 1988, DOE released a final version of the SCP, with increased level of detail, and the development of 78 study plans.

Eventually over 200 holes were drilled, nearly 100 fault trenches excavated, and detailed mapping at 1:240 to 1:12,000 was completed, including fracture maps. The work has involved scientists from USGS, DOE national laboratories, universities, and private contractors. A final major addition to the data set has come from the 8-km long Exploratory Studies Facility and cross drift which have provided much better access for the subsurface characterization, including detailed mapping and secondary-mineral evidence for the long-term history of the unsaturated zone.

In addition to DOE funding, the USGS was funded separately by Congress to carry out investigations related to nuclear waste hydrology from 1979 to 1993 and by the Nuclear Regulatory Commission to carry out research on the hydrology and geochemistry of nuclear waste during the 1980s and 1990s.

**Recent**

In 1998, DOE released to the public a five-volume synthesis of 15 years of study of Yucca Mountain, entitled "Viability Assessment of a Repository at Yucca Mountain." I convened a five-person panel of senior scientists to review and comment on central earth science issues. The panel's evaluation of DOE's viability assessment was released to the public as USGS Circular 1184, "Yucca Mountain as a Radioactive Waste Repository."

In 2001, the Acting Director of DOE's Office of Civilian Radioactive Waste Management asked the USGS to comment on the Preliminary Site Suitability Evaluation. Questions included:

- Is the scientific basis adequate for finding the site suitable? If not, what more was needed?
- Should the Secretary of Energy proceed to recommend the site?
- Is there any reason for the President not to recommend development of an application for a license to construct?
- Any other comments on any relevant aspect of the Yucca Mountain site for use as a repository.

The USGS provided comments only within the scope of our earth science expertise. We noted that:

- Studies to date by the USGS and other earth scientists continue to support the concept of geologic disposal as the only viable, long-term approach for dealing with long-lived radioactive waste.
- Scientific data gathered to date supports the decision to recommend the site
- After site recommendation, additional studies need to be performed.
- As the final design of the repository is prepared, the USGS strongly supports the inclusion of three design considerations: (1) maintaining the surrounding rock at a temperature less than boiling, (2) use of forced and natural ventilation, and (3) a period of retrievability and monitoring.
- Recognizing that uncertainty in the future performance of the repository remains, the USGS endorses a stepwise decision-making process and phased implementation of the repository program.

Mr. Chairman, this concludes my remarks. I will be pleased to respond to questions that Members of the subcommittee may have.

Mr. PORTER. Thank you. We will now have Mr. Garrish, Acting Director, Department of Energy.

**STATEMENT OF TED GARRISH**

Mr. GARRISH. Thank you, Mr. Chairman. I appreciate being here to tell you our side of this story. I am accompanied today by Joe Ziegler, our licensing manager from the Yucca Mountain project.

The program has undergone considerable criticism today, but I would like to make a couple of points and then respond to your questions. First, any falsification is unacceptable and inexcusable, but that does not condemn the work of thousands of responsible scientists on this project. The reason that we are here today is because we brought this issue forward. As soon as we knew the facts, we came out forthrightly and freely. We notified congressional committees, the State of Nevada issued a press statement.

However, our first call was to the Nuclear Regulatory Commission. This is consistent with our commitment to being responsible and informing the public. My point is, we found the problem, we identified it, and we will do what is required to rectify it.

We initiated investigations on this specific issue but ultimately it will be the responsibility of the Nuclear Regulatory Commission to adjudicate this case and to decide whether or not we have met our burden of proof that the repository is safe. The NRC process lies before us. Once we file our license application for the next 3 to 4 years, every imaginable allegation is likely to come to light. These include such things as differences of professional opinion, mistakes and the like. I expect that we will adjudicate all of these points. Everything will be on trial—all of these e-mails, all of the calibrations, all of the conflicting scientific opinions. It will be up to the NRC to decide is the repository safe.

We will undergo a rigorous multi-year proceeding with thorough NRC expert review and legal adjudication, with the opportunity for participation by the NRC staff, the State of Nevada and other interested parties. But that process has not started yet. When we discovered these e-mails, they were part of our pre-licensing activities, and these activities are still ongoing. The impact of this issue has yet to be determined.

And yes, we are concerned about the integrity of the data. What was done is inexcusable. But let me tell you what we are doing about it. We are doing three things. First, we are requesting the DOE Inspector General to investigate the non-technical implications of what was done. The Department of Interior, as you have heard, has also requested a similar investigation by their IG.

Second, we are reviewing the impact that this may have on the science involved and how it could affect the technical work. We have identified two analyses and model reports and how they are potentially affected.

Third, we are conducting a review of the overall quality assurance and management culture. DOE will be the organization doing these last two actions. These steps will be done methodically and as expeditiously as possible.

As we move into the transition of becoming a licensee, it is important to note NRC not only licenses the repository, but it also licenses the people that run it. And our people must have the quali-

fications and values that are essential to a nuclear safe culture. We believe that we have demonstrated these values by bringing this issue forward. Let me outline and explain the importance of these values to us.

They are, first, openness. As I said, we are the ones that brought this issue forward. The issue arose while we were evaluating millions of documents and e-mails. The model reports in question have been on the Internet for years. They have been subject to the key technical issue agreements with the NRC. All of these e-mails are destined to be fully public and searchable on the LSN.

Second, the second value of importance is self-identification. To let you know this is an important value for us to maintain. We found this problem ourselves and we encourage our employees to have a questioning attitude.

Third is self-correction. We need not only self-identify problems, but we need to also correct them. Systematic quality assurance improvements have been undertaken over a number of years, and we are doing a formal review to see whether or not they are sufficient.

Fourth, we need to promote a safety conscious work environment. This is an extremely important element of our culture. Everyone has the ability and obligation to raise issues without fear or retribution. Over the last 3 years, employees have raised over 400 concerns to our employee concerns program of differing professional opinions, internal audits and some directly to the NRC. We will followup on every one of these.

Employees are encouraged to come forward, are not harassed or intimidated, and in our 2004 safety conscious work environment survey, 80 to 90 percent of our workers responded that they have confidence in a retaliation-free work place.

Finally, we need commitment to data integrity. The e-mail suggests that one or more employees have deliberately circumvented our procedures. But they also feel that we have well defined standards for data integrity and a QA program that they were well aware of.

We need to maintain this data integrity. These are the values that we are bringing to the nuclear culture and to this project. When we find one of these issues, which has been the subject of this hearing, they will be appropriately dealt with.

So Mr. Chairman, that is what we are doing. So now our next step is to proceed and complete our license application and in doing so, I stand with the thousands of scientists associated with this project who are doing it right. It is truly unfortunate that the good work of so many scientists has been impugned by this conduct.

I am accompanied here by Mr. Ziegler, and he and I are pleased to respond to your questions at the appropriate time. Thank you.

[The prepared statement of Mr. Garrish follows:]

**Statement of**
**Theodore J. Garrish, Deputy Director**
**Office of Civilian Radioactive Waste Management**
**U.S. Department of Energy**
**Subcommittee on the Federal Workforce and Agency Organization**
**Committee on Government Reform**
**U.S. House of Representatives**
**April 5, 2005**

Mr. Chairman and members of the Committee, I am Ted Garrish, Deputy Director of the Department of Energy's Office of Civilian Radioactive Waste Management. I am accompanied by Joe Ziegler, Licensing Manager at Yucca Mountain. I appreciate the opportunity to address your concerns regarding the Department's announcement that some project quality assurance documentation may have been falsified, how this impacts the science involved, what we plan to do in light of these recent events, and a brief status of the Program. The Department also received your letter of March 23, 2005, requesting a copy of the records relating to the possible falsification of documents, and a copy of the records has been provided to your Committee.

The critical importance of this issue requires action to ensure that the scientific basis of the Yucca Mountain repository project is sound. The safe handling and disposal of nuclear waste and maintaining public confidence in the safety of the repository are essential.

The data from over twenty years of scientific study of Yucca Mountain were collected by some of the best and brightest seismologists, hydrologists, geophysicists, metallurgists, and engineers in the world from the National Laboratories and the U.S. Geological Survey. As a group, their credentials are unsurpassed. Their cutting edge work is the basis for the Yucca Mountain repository safety analysis.

The Department of Energy is currently assembling this scientific work and supporting documentation to prepare a license application for submission to the Nuclear Regulatory Commission (NRC). In order to obtain a license from the NRC to build and operate a repository, the burden is on us to demonstrate that the performance of the waste, its containment system, and the geology of Yucca Mountain will meet the regulatory standards.

This formal process will be initiated when DOE files the license application with the NRC. The application and supporting documents provide DOE's regulatory case, subject to thorough NRC expert review and legal adjudication, with opportunity for participation by the NRC staff, the State of Nevada, and other interested parties. These proceedings will be extensive and will involve exhaustive scrutiny into the evidence the Department provides. The adjudicatory part of the licensing process will be conducted by administrative judges of the Atomic Safety and Licensing Board Panel, a group of judges who are independent of NRC staff.

It is up to the Department to prove its case. At the conclusion of the licensing adjudication process, if the Program has sufficiently demonstrated to the Commission that there is reasonable expectation of the safe disposal of spent nuclear fuel at Yucca Mountain in accordance with

NRC regulations, the NRC can grant a construction authorization. Pertinent issues related to the alleged falsification of documentation could be subject to NRC's adjudicatory process, if admitted as contentions. This process will be an open one, and the public will be able to see how well we prove our case.

Today, we have not yet begun the formal licensing process. We are still assembling the information we intend to submit and make available to the NRC and other interested parties. The information you have been provided is part of our pre-licensing efforts to collect literally millions of documents for the License Support Network, including employee emails. We take the potential falsification of records seriously and have come out forthrightly and freely, under no regulatory requirement, so the integrity of our work can be evaluated.

**The Specifics of the Issue**

During the cataloging of materials for the license application, the Department's contractor discovered certain emails that reveal an employee may have falsified quality assurance process documentation regarding the dates when some software was logged into his scientific notebook. The emails were written between 1998 and 2000. The employee indicated that he documented work after it was done, not as it was being done, thereby backdating the records.

There have been misunderstandings relative to what the e-mails allege. I want to clarify that it appears the documentation the employee allegedly falsified and discussed in his emails was the backdating of entries for quality assurance requirements. This appears to be a lapse in quality assurance protocol and, at this time, we have no evidence that the underlying science was affected.

However, the fact that any documentation, no matter how inconsequential, may be falsified is reason to request an investigation of wrong doing and to review the matter as it relates to the science. Therefore, we have taken the following steps:

> First, to request that the DOE Inspector General investigate the non-technical implications of wrong doing by the individuals involved. We believe the Department of the Interior has also requested their Inspector General to investigate. Separately, the Secretary of Energy has directed that any wrongdoing that is found through the investigations be appropriately addressed.
>
> Second, to conduct a review of the impact this may have on the science involved and how the violation of process procedures could affect the technical work produced. This technical review is being conducted by DOE and our contractors to trace the comprehensive set of data, information and records created by the implicated individual, and to determine if there could have been an impact on the Site Recommendation or the Draft License Application and supporting documentation. If there are any impacts, this review will recommend corrective actions.
>
> Third, to conduct a review of the overall Quality Assurance and Management Culture to evaluate the changes and transitioning of the project over the years from site

characterization to the present and ensure nothing affects the ability of DOE to be a licensee or the effectiveness of information and documentation supporting the license application.

We believe these steps taken together will show us exactly what happened and why. In addition, these steps will set us on a path of corrective actions that will further strengthen our operating procedures and safeguard the integrity of our scientific work.

**Data Integrity**

In all scientific endeavors, data integrity is paramount and we have taken extraordinary measures to ensure the quality of our data. A technical program as large and complex as Yucca Mountain cannot rely on one data set or one analytical method to demonstrate our safety case. Redundant approaches and modeling methods are used to gain further understanding, and external checks and peer reviews are done on both processes and data to validate results.

We have a rigorous and effective quality assurance program that we believe meets all NRC requirements. Under our quality assurance program, work is planned before it is initiated. There are built-in controls to ensure that the work is independently reviewed, including independent audits and surveillances, to ensure that the work is being performed in conformance with program requirements. The issue at hand is whether certain employees actually followed the requirements of the program.

The data referenced in the emails are related to climate and infiltration and have been incorporated into two Analysis and Model Reports that have had extensive scrutiny by the technical, regulatory, and oversight communities and the State of Nevada. These reports have been publicly available on our website as early as 2003.[1] As is the case with all our scientific data, the technical information in the reports has been through an exhaustive review process. This process ensures that data is:

- Validated for its specific use;
- Verified through independent reviews;
- Audited by quality assurance auditors;
- Entered, controlled and tracked through a controlled database.

The reports have been publicly available and the technical content has been the subject of reviews and communication with the NRC and the Nuclear Waste Technical Review Board. Although we have no reason to question the validity of the data and the underlying science at this point, in light of the emails, we will review the technical work associated with the emails, and as stated earlier, conduct a review of the scientific data, software, and scientific models used to

[1] The Analysis and Model Reports supporting the License Application that are directly impacted by potential data, models, and software issues raised in the emails are available on the OCRWM website, www.ocrwm.doe.gov. The specific Analysis and Model Reports are the following: MDL-NBS-HS-000023, Rev 00: Simulation of Net Infiltration for Present-Day and Potential Future Climates, at http://ocrwm.doe.gov/documents/amr/u0010/u0010.pdf and ANL-NBS-HS-000027 Rev 01, Analysis of Infiltration Uncertainty, at http://ocrwm.doe.gov/documents/amr/22492/22492.pdf

support the Site Recommendation and the Draft License Application. If any deficiencies are identified, they will be appropriately addressed.

**Values**

Exposing the actions that have brought us here today is an example of the importance we place on nuclear safety culture in our project, so that any wrong doing can be self-identified and corrected. The actions we have initiated are evidence of our commitment to conduct this investigation in a thorough and professional manner to self-identify issues and reinforce the disciplined nuclear safety culture that NRC demands from its licensees.

In order to earn the confidence of the NRC and the public, we need to possess and demonstrate a number of values. It is important to note that the repository facilities and the people who operate them will be subject to NRC regulations. Those people must possess the qualifications and the values essential to protect the health and safety of the public pursuant to the authorizing statute. The NRC's requirements of openness, self identification, self correction, traceability, reproducibility, and an employee safety conscious work environment are nuclear cultural values essential to ensuring safety.

I believe the Program's response, immediately upon being informed of these emails, indicates how fully we have incorporated these values into our work.

> Openness – We notified the NRC, the Secretary, the Inspector General, and the U.S. Geological Survey when the Program management was informed of the emails, and soon thereafter notified Congressional Committees and the State of Nevada and issued a public statement. The project manager prepared a statement to all employees providing the information he had at the time. Senior management has met with personnel in both Las Vegas and Washington to re-emphasize the importance of strict adherence to quality assurance procedures.
>
> Self Identification – The Program encourages all of its personnel to have a questioning attitude and to perform self assessments of their work such that issues are promptly identified and corrected. Through our quality assurance program we undertake self-assessments to continually identify areas for improvement in implementing a nuclear safety culture. The issues in question were self identified, and I believe this is an example of how the cultural transition from a scientific investigation effort to a prospective applicant for a nuclear facility license has progressed significantly.
>
> Self Correction - We have initiated an evaluation to determine if the systematic quality assurance improvements undertaken over the last four years are sufficient to prevent the recurrence of a similar situation. A formal review team has been formed in response to the identified issues and will be responsible for conducting the evaluation and formally reporting its results to management, documenting any impact to the technical basis or process underlying the Site Recommendation and the Draft License Application.

Traceability - Data produced as a result of scientific investigations are reviewed, approved, and controlled within a central database. Controls placed on the database ensure that only current, approved data are used to support the license application. Further use of the data, such as input to models or as design input, is controlled in a manner which allows its use to be traced back to its origin. Our review of the data implicated by the emails will ensure that all of these steps have been followed and documented; the data we rely on to show repository safety will meet all quality assurance requirements.

Reproducibility – The Program requires that scientific investigations be planned, performed, and documented in accordance with approved procedures. Results, including those documented in scientific notebooks, are subject to thorough independent reviews. The results must also be presented in a manner that fully identifies the inputs used in performing the work and the methods used to generate the results. This includes detailed descriptions of software, models, calculations and assumptions. As we conduct our review of the data implicated by this employee's actions, any of the work that forms the safety basis of the repository in our license application will conform to all requirements.

Safety Conscious Work Environment – A core value of a nuclear safety culture is the ability and the obligation of everyone to raise issues, concerns, or problems in their activities that may have safety implications, and to suggest improvements, without fear of retribution. Programs now in place provide the opportunity for staff to discuss potential concerns with management and to have confidence that their issues will be taken seriously and resolved expeditiously. The Program has established an Employee Concerns Program and a Corrective Action Program to help identify concerns related to the safety of this project by employees without fear of retribution. No submitted items are dismissed. The concerns program provides an avenue to raise concerns anonymously. Issues are fully documented, investigated and resolved.

**Status of the Program**

While the subject of this hearing today has caused us to pause and undertake some necessary re-evaluations, it is also important to recognize that progress continues on the Program. The Program has achieved several significant milestones.

- We have an approved site for the geologic repository. Congress approved the Yucca Mountain site in Nye County, Nevada for development as a repository. Lawsuits have affirmed the constitutionality of the process; therefore, we have a location for the development of a repository site.

- We have a draft of the license application in the process of refinement. We are making improvements to the analysis and presentation of information, with the objective of completing preparation of a high quality license application by the end of this calendar year.

- Transportation activities have begun in earnest. We issued Records of Decision for both transportation mode and the rail line corridor through Nevada. We are currently preparing an Environmental Impact Statement for the specific rail alignment within that corridor. Institutional activities to include the States as partners have also begun.

- The Administration continues its strong support of the Program as we move forward with its implementation.

There are two issues that need to be resolved: the revision of EPA's Yucca Mountain radiation standard and adoption of program funding reform. The Department remains hopeful that EPA's work in promulgating the standard will be contemporaneous with our work on the license application. The Administration remains interested in pursuing funding reform and we intend to have further discussions with Congress. We are confident these issues will be addressed, allowing the program to succeed.

**Conclusion**

In conclusion, the issues regarding the falsification of documents needed to meet quality assurance procedures are under investigation. In addition, our review of the impact on the science will assess not only the actions revealed specifically in the emails, but also any related effects. If, in the course of that review, any work is found to be deficient, it will be revised as necessary to meet all quality requirements. Only scientific and technical analyses that meet appropriate quality assurance standards will be utilized to assure the scientific basis for the safe operation of the repository in the license application. I am grateful our review process has brought this issue to light. It verifies the openness of our unique project. This situation demonstrates the multiple lines of evidence we are developing to assure safety of the repository. I believe the fact that this has come to light is actually evidence of the strength of our Program's progress towards operating within a strong nuclear safety culture.

The fact remains that this country needs a permanent geologic repository for spent nuclear fuel and high-level radioactive waste, and the Department will continue to pursue its mission. We are committed to doing this right, to safely dispose of the Nation's nuclear waste, and to move the waste currently near America's major cities and waterways to a protected desert environment.

The mission of the Program is vital to our national interest. The success of the Program is necessary to protect the public, to maintain our energy options and national security, to allow the cleanup of former weapons production sites, to continue operation of our nuclear powered naval vessels, and to advance our international non-proliferation goals.

We will continue in our efforts to be ready to submit the license application by the end of the year. The NRC review process will then decide if we have provided the documentation necessary to receive a license. The NRC and the public, through the NRC licensing process, will ultimately decide whether the Program has provided sufficient science and engineering with adequate documentation to provide a level of confidence sufficient to receive a license. I have confidence that the process will decide the credibility of our work.

This concludes my prepared statement. Joe Ziegler and I will be pleased to respond to any questions the Committee may have.

Mr. PORTER. Thank you, Mr. Garrish.

Now I'll call on Mr. Earl Devaney, the Inspector General at the Department of Interior. Welcome.

**STATEMENT OF EARL E. DEVANEY**

Mr. DEVANEY. Mr. Chairman and members of the subcommittee, thank you for the opportunity to address the subcommittee this morning concerning the investigation being conducted by my office, Mr. Friedman's office, and the FBI into allegations of falsification of documents and records relating to the proposed Yucca Mountain project.

Because this investigation is ongoing, I can't discuss any of the details here today. What I can do is talk briefly about the authorities of my office, the investigative process, and how the results of an investigation such as this might be put to use.

As I'm sure you know, my office is a statutorily independent organization which, among other things, conducts investigations relating to alleged wrongdoing on the part of Department of Interior employees. The IG Act gives me the authority to obtain access to all employees and records of the Department. In my view, this independence and authority is particularly important when we conduct criminal investigations. Criminal investigators in my office have full Federal law enforcement authority. This includes the authority to carry weapons, make arrests, and refer potential criminal violations to the Department of Justice for prosecution.

The majority of our investigations begin with criminal prosecution in mind. As a result, we typically work in close cooperation with the Department of Justice. In this case, we're working with the U.S. Attorney's office in Las Vegas.

Our investigations arise from any number of sources: credible allegations by DOI employees, public citizens or anonymous sources, requests from Congress or from the Department itself. Regardless of the source, we conduct our investigations the same way—prudently, thoroughly, and completely. We always attempt to proceed as quickly as possible, but we will not compromise accuracy for speed. Although we are often pressured to do so, we will never rush an investigation to meet the specific needs of any source. Most of our high profile investigations involve issues that stir up strong emotions and opinions, and the Yucca Mountain project is no exception.

The protections that my office enjoys under the IG Act gives us the luxury to proceed with an investigation having no preconceived notions and no preordained outcomes. The integrity of my office is at stake each time we conduct an investigation, and I fully expect that my investigators will always demonstrate the utmost professionalism, independence, and objectivity.

I believe the content of our previously issued investigative reports reveals these very qualities. When appropriate, I will condemn the Department for wrongdoing. On the other hand, I will publicly exonerate the Department when the allegations prove unfounded. My office generally conducts investigations from the lowest level to the highest, starting with individuals who appear to be the least culpable and making our way to those who are most to blame.

Our investigators travel throughout the country to interview witnesses, obtain documents, and gather physical evidence. When we are faced with a highly technical issue, we routinely seek the assistance of independent subject matter experts. Or we may partner with other law enforcement organizations, like in this case.

We report the results of our investigations in any number of formats. If we are referring a case for criminal prosecution, we will present it to the U.S. Attorney's office in a formal report of investigation. This report will typically contain all witness interviews, evidentiary documents and investigative activity reports. If we are referring a matter to the Department for an administrative action, we will attempt to tailor our reports to address the conduct of individual employees so that we can provide the Department with the facts it needs to take disciplinary action.

In preparing a report for release to the public, we will often write the report in a narrative form which excludes confidential personal privacy and privileged information. Whether investigation results in a prosecution or a conviction of a criminal defendant or a disciplinary action against the employees who engage in misconduct, I am most pleased when the results of one of our investigations also gives the Department insight on how to prevent the problem from happening again.

I will conclude my remarks by giving you my assurance that all the investigators are working diligently to bring this investigation to closure. I will keep you updated on our progress and I will also provide you with the results of our investigation as soon as we are able to do so.

Mr. Chairman and members of the subcommittee, this concludes my oral remarks. I will be pleased to answer any questions.

[The prepared statement of Mr. Devaney follows:]

TESTIMONY OF THE HONORABLE EARL E. DEVANEY
INSPECTOR GENERAL FOR THE DEPARTMENT OF THE INTERIOR
BEFORE THE SUBCOMMITTEE ON THE FEDERAL WORKFORCE
AND AGENCY ORGANIZATION
UNITES STATES HOUSE OF REPRESENTATIVES
APRIL 5, 2005

Mr. Chairman and members of the Subcommittee, I want to thank you for the opportunity to address the Subcommittee this morning concerning the investigation being conducted by Office of Inspector General (OIG) for the Department of the Interior (DOI) into allegations of falsification of documents pertaining to the proposed Yucca Mountain nuclear waste repository.

The OIG investigation into this matter is ongoing; as such, I cannot discuss the substance of the investigation today. What I am prepared to do, however, is provide the Subcommittee with testimony relative to the authorities of my office, the investigative process, and the uses to which the results of an investigation such as this might be put.

Pursuant to the Inspector General Act (IG Act), the OIG is an independent and objective organization authorized to conduct audits and investigations relating to the programs and operations of DOI. The IG Act dictates that I keep both the Secretary of the Interior and Congress fully informed on problems and deficiencies relating to the administration of these programs and operations. The IG Act provides me with access to all information available to DOI relative to the responsibilities of my office.

Given these authorities, the OIG is armed with the utmost independence in advancing its mission: to promote economy, efficiency, and effectiveness, and to prevent and detect fraud and abuse in the programs and operations of the Department. This independence is particularly important in the conduct of our investigations.

OIG criminal investigators enjoy full federal law enforcement authority, which includes the authority to carry a firearm, make arrests and refer matters to the Department of Justice for criminal prosecution.

The majority of our investigations are launched with criminal prosecution in mind. As a result, we typically work in close coordination with, or at the direction of, the Department of Justice, often a United States Attorney's Office for the District in which the investigation is being conducted. In the Yucca Mountain matter, we are actively working with the United States Attorney's Office in Las Vegas, to whom we are providing briefings at least weekly.

OIG investigations spring from numerous sources: requests from Congress; requests from the Secretary or other senior DOI officials; and credible allegations by DOI employees, public citizens, or anonymous sources. Regardless of the source, our investigations are conducted prudently, thoroughly and completely. We always proceed at a deliberate pace, but speed never supersedes accuracy. Although often pressured to do so, we will not rush an investigation to meet the specific needs of any source.

The subject matter underlying most of our high-profile investigations is often fraught with fervent emotions, strong opinions and competing interests. The Yucca Mountain project is no exception. Armed with the protections afforded by the IG Act, however, we undertake investigations with no preconceived notions and no preordained outcomes. With the very integrity of the OIG at stake each time we conduct an investigation, we must demonstrate professionalism, independence and objectivity at all times. As the content of our previous reports demonstrates, we will condemn the

Department for wrongdoing and we will exonerate the Department when allegations prove unfounded.

We generally conduct our investigations from the lowest level to the highest; from the least culpable to the most. Our investigators travel throughout the country, as necessary, to interview witnesses and obtain documentary and physical evidence. When highly technical or specialized issues arise, we may secure the assistance of independent subject-matter experts, or partner with other law enforcement entities that possess a required expertise. In the Yucca Mountain matter, we are partnering with both the OIG for the Department of Energy and the FBI.

We report the results of our investigations in a variety of formats, choosing the most appropriate format for the purpose at hand. If we are referring a case for criminal prosecution, we do so by way of a formal Report of Investigation, a document which contains all witness interviews, evidentiary documents and investigative activity reports. If we are referring a matter for administrative action by the Department, we may tailor Reports of Investigation to address the conduct of individual employees, when such information can be reasonably segregated. If we are preparing a report for release to the public, it will typically be written in narrative form, but with confidential, personal privacy, and other privileged information redacted.

Whether an investigation results in the prosecution and conviction of a criminal defendant or disciplinary action against an employee engaged in misconduct, I am most pleased when the results of an investigation also give the Department insight and incentive to improve the way in which it conducts itself, and in doing so, prevents a problem from recurring.

I would like to conclude by giving this Subcommittee my assurance that OIG investigators are working diligently to bring to closure the allegations of falsification of documents in regard to the Yucca Mountain project. Although I am simply unable to give you a meaningful timeframe at this point, since many facts remain unknown and I do not control many aspects of the process, I will be glad to keep the Subcommittee apprised of our progress and provide the results of our investigation as soon as we are able.

Mr. PORTER. Thank you, Mr. Devaney.

Now we will hear from Mr. Gregory Friedman, the Inspector General at the Department of Energy.

**STATEMENT OF GREGORY H. FRIEDMAN**

Mr. FRIEDMAN. Mr. Chairman and members of the subcommittee, I am pleased to be here today to testify regarding allegations of misconduct involving documents associated with the U.S. Department of Energy's Yucca Mountain project.

Disposal of the Nation's high-level nuclear waste and spent nuclear fuel is one of the most sensitive and complex challenges facing the U.S. Government. Under the Nuclear Waste Policy Act, as amended in 1987, the Yucca Mountain site in the State of Nevada is the only site in the United States to be evaluated for this purpose. The act established a formal, step by step methodology for making this evaluation.

For the State of Nevada and all other interested parties, the process to evaluate Yucca Mountain as the potential repository has enormous implications. Paramount among concerns expressed is that the consideration and evaluation be objective and that it be based on sound scientific analysis. Public confidence in the evaluation and licensing process must also be assured.

On March 14, 2005, we became aware of allegations concerning possible falsification of records relating to aspects of the scientific assessment of Yucca Mountain. We assembled a team of highly qualified special agents and commenced a criminal investigation to gather the relevant facts.

As Mr. Devaney mentioned, we have been working jointly with his office, the Department of Interior's Office of Inspector General, and the Federal Bureau of Investigation. Since this is a criminal case, we are in regular consultation with the U.S. attorney's office in Nevada. Our plan is to conduct comprehensive interviews of Federal and contractor personnel and analyze the extensive documentary records surrounding this matter.

We have dedicated the resources necessary to ensure an independent, objective, and thorough investigation. We will follow the facts wherever they may lead. Because of the nature of the allegations and the importance of the Yucca Mountain project, we will proceed as expeditiously as possible.

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

[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

10:00 a.m., Tuesday, April 5, 2005

Mr. Chairman and members of the Subcommittee, I am pleased to be here today to testify regarding recent allegations of misconduct involving documents associated with the U.S. Department of Energy's Yucca Mountain Project.

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We will follow the facts wherever they may lead. Because of the nature of the allegations and the importance of the Yucca Mountain Project, we will proceed as expeditiously as possible.

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

Mr. PORTER. Thank you, Mr. Friedman. Now we will hear from Mr. John Garrick, chairman of the Nuclear Waste Technical Review Board.

**STATEMENT OF B. JOHN GARRICK**

Mr. GARRICK. Good morning, Mr. Chairman and members of the subcommittee.

I am John Garrick, chairman of the Nuclear Waste Technical Review Board. All 11 members of the Board are appointed by the President and serve on a part-time basis. In my case, I'm a private consultant specializing in the application of the risk sciences to complex technological systems in the space, defense, chemical, marine and nuclear fields.

As you know, Mr. Chairman, the board was created by Congress in 1987 to perform an ongoing, independent, technical and scientific evaluation of the DOE's implementation of the nuclear Waste Policy Act. I am pleased to represent the board at this hearing. With your permission, Mr. Chairman, I will now briefly summarize my comments and ask that the full text of my written statement be entered into the hearing record.

According to the letter inviting the board to participate, today's hearing has two purposes: to address whether Federal employees falsified documents related to work at the Yucca Mountain; and to examine whether sound science exists for the proposed Yucca Mountain project.

Mr. Chairman, it would be inappropriate for the board to draw any conclusions at this time about the impact on the DOE's technical work at Yucca Mountain from the group of redacted e-mails that were posted on the subcommittee's web site last Friday. As disturbing as it is to see such loosely framed discussions among scientists, the answers to important questions that might be raised by or about the e-mails or related documents should await the completion of comprehensive investigations already underway at the Departments of Energy and Interior.

The board will follow the progress of these investigations and when they are concluded, the board will evaluate the significance of the results to the DOE's technical and scientific work. We will then report our findings to Congress and the Secretary of Energy.

In the meantime, the board will continue its ongoing peer review of DOE activities. The Nuclear Regulatory Commission is the appropriate agency to address questions about the effects on the regulatory process of possible infractions of QA procedures.

Mr. Chairman, let me close by saying that the board looks forward to continuing its congressionally established role of unbiased and independent technical and scientific information to Congress and the Secretary. As I mentioned earlier, we will be able to comment better on the significance of the activities that are the topic of this hearing when the full results of the DOE and Interior investigations are known.

Thank you for the opportunity to present the board's views. I will be happy to respond to questions.

[The prepared statement of Mr. Garrick follows:]

**Statement of**
**Dr. B. John Garrick, Chairman**
**U.S. Nuclear Waste Technical Review Board**
**Before the**
**Subcommittee on the Federal Workforce and Agency Organization**
**Committee on Government Reform**
**U.S. House of Representatives**
**April 5, 2005**

Good morning, Mr. Chairman and members of the subcommittee. I am John Garrick, Chairman of the U.S. Nuclear Waste Technical Review Board. All eleven members of the Board are appointed by the President and serve on a part-time basis. In my case, I am a private consultant specializing in the application of the risk sciences to complex technological systems in the space, defense, chemical, marine, and nuclear fields.

As you know, Mr. Chairman, the Board was created by Congress in the Nuclear Waste Policy Amendments Act of 1987 to perform an ongoing independent evaluation of the technical and scientific validity of the Department of Energy's (DOE) efforts in implementing the Nuclear Waste Policy Act. The Board began its work in 1989 and has continuously reviewed the technical and scientific validity of DOE activities since that time. I am pleased to represent the Board at this hearing.

According to the letter inviting the Board to participate, today's hearing has two purposes. The first purpose is to question whether federal employees falsified documents related to work at the Yucca Mountain site. The second purpose identified in the letter is to examine whether sound science exists for the proposed project, in light of the allegations.

Mr. Chairman, it would be inappropriate for the Board to draw any conclusions at this time about the significance for the technical work at Yucca Mountain of the group of redacted e-mails that were posted on the subcommittee's web site on Friday afternoon. Answers to questions that might be raised by or about the e-mails should await the completion of comprehensive investigations already underway at the Departments of Energy and Interior. The Board will follow the progress of those investigations, and when they are concluded, the Board will evaluate the significance of the results for the DOE's technical and scientific work. We will then report our findings to Congress and the Secretary of Energy. In the meantime, the Board will continue its ongoing technical and scientific peer review of DOE activities. The Nuclear Regulatory Commission (NRC) is the appropriate agency to address questions about the effects on the regulatory process of possible infractions of quality assurance procedures.

As you know, Mr. Chairman, reporting to Congress and the Secretary at least twice a year is an important part of the Board's mandate. In accordance with that mandate, in late 2004, the Board sent to Congress and the Secretary a report summarizing areas of progress in the Yucca Mountain program; issues that, in the Board's view, require additional attention; and the Board's priorities for 2005. Since the second purpose of this hearing touches on technical and scientific validity, I will now summarize some of the Board's findings from that letter report.

The Board believes that over the last year or so, the DOE has made progress in several areas. For example, a key corrosion issue raised by the Board was addressed by DOE data and analyses, indicating that tunnel conditions during the thermal pulse will likely not lead to the initiation of localized corrosion of the waste packages due to deliquescence of calcium chloride. The Board also is encouraged by DOE efforts related to making earthquake ground-motion estimates more realistic and in completing an aeromagnetic survey that could shed light on igneous activity in the Yucca Mountain area. In addition, the DOE has made headway in developing a systematic approach to planning for the transportation of spent nuclear fuel and high-level radioactive waste.

Other issues require continued or additional attention, including an improved understanding and a clear explanation of the likely conditions inside repository tunnels during the thermal pulse; other corrosion issues related to the postclosure environment of the repository; the resolution of discrepancies among chlorine-36 studies; and improvements in the modeling of volcanic consequences. The Board also will follow with interest the work undertaken by the science and technology program established by Dr. Margaret Chu.

In addition to reviewing these important issues, the Board is establishing priorities for its technical and scientific review as the DOE prepares the information necessary to submit a license application to the NRC. In identifying its priorities, the Board considers (1) if the issue is important to the safe performance of the repository, (2) if the issue is important to public confidence, and (3) if the Board has special expertise and experience, which provide new and relevant perspectives on technical issues. In particular, the Board intends to review the DOE's technical and scientific work and analysis supporting total system performance assessment (TSPA). The Board will evaluate the extent to which the DOE has used TSPA as an integrative tool and how well the assumptions underlying TSPA results are supported by technical analysis and available evidence. Other Board priorities include an improved understanding of the performance of the hydrogeologic barriers, particularly regarding the magnitude and timing of the peak dose; how the DOE's thermal-loading strategy might affect trade-offs between preclosure and postclosure risk; issues affecting the waste-package lifetime; and the DOE's continued efforts to develop an integrated waste management system, including the handling, transportation, packaging, and disposal of spent nuclear fuel and high-level radioactive waste. The Board is especially interested in scientific work and analyses that may be undertaken by the DOE in response to likely changes in the regulatory compliance period for a Yucca Mountain repository.

Mr. Chairman, let me close by saying that the Board looks forward to continuing its congressionally established role of performing an independent evaluation of the DOE's technical and scientific activities related to the disposal, packaging, and transportation of the country's spent nuclear fuel and high-level radioactive waste and reporting to Congress and the Secretary. We will be in a much better position to comment on the topics of this hearing once we have reviewed the findings of the comprehensive investigations that are currently underway.

Thank you for the opportunity to present the Board's views. I will be happy to respond to questions from the subcommittee.

Mr. PORTER. Thank you, Mr. Garrick.

We would like to hear now from Judy Treichel, executive director of the Nevada Nuclear Waste Task Force. Welcome.

**STATEMENT OF JUDY TREICHEL**

Ms. TREICHEL. Thank you very much for the invitation to be here. My name is Judy Treichel, I am the executive director of the Nevada Nuclear Waste Task Force.

The task force is a public advocacy organization focused on the Yucca Mountain and nuclear waste issues. We attend and bring a public voice to technical meetings, and we provide information to the public.

The falsification of data by the Department of Energy or its contractors did not come as a surprise to us. The seeds for this situation were sown nearly 20 years ago. I have submitted my written statement which explains the long and sordid story that Nevada has had with this and previous Government atomic programs.

Since it began, the Yucca Mountain project has only survived because it has never been held accountable. The DOE began their scientific studies promising to follow all of the rules and passed the tests necessary to show that Yucca Mountain was a safe site for the mostly high radioactive waste. None of the rules could be met, so they were all changed, and they are still being changed. Now we know that when science was analyzed, since you can't change the laws of physics, the data was simply falsified.

The public, including Nevadans, understands the need to safely manage and ultimately permanently isolate nuclear waste. We have fought the Yucca Mountain project for over 20 years. But not because we just wanted somebody else to have the problem. This is not a case of not in my backyard, or NIMBY. We are not trying to simply have the Department of Energy stick a pin in another part of the U.S. map and try to make that work.

This is a futile project. Yucca Mountain cannot isolate waste. The only reason to create and carry out a nuclear waste disposal program is to improve the protection of public health and safety. How can any thinking person believe that people's communities and the environment are safer by handling the waste multiple times, shipping it by highway, rail and barge through nearly every State in the United States, and then dump it in a repository that was only able to built by changing the rules and falsifying the data?

This is a program that's been driven to meet deadlines and create the illusion that Yucca Mountain is on track. Now we know that in order to paint that picture, scientific credibility was sacrificed, as were ethic and accountability. The DOE's myopic goal is to obtain a license from the Nuclear Regulatory Commission and to get Yucca Mountain built and receiving waste. The first step in the licensing process is to open up the record. But huge numbers of those records, we are now finding, are being marked privileged. Therefore, one wonders how many will be found to have been falsified.

Now, there must be an end to congressional fixes and tolerance for dishonesty that has propped up this program for more than 20 years. The political divisiveness surrounding this program is not due to parochialism or selfishness. It is because the public recog-

nizes that Yucca Mountain is a failed and dangerous project and it must be ended once and for all.

Thank you very much.

[The prepared statement of Ms. Treichel follows:]

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**Statement of Judy Treichel**
**Executive Director**
**Nevada Nuclear Waste Task Force, Inc.**

**Before the**
**Subcommittee on the Federal Workforce and Agency Organization**
**of the**
**U.S. House of Representatives**
**Committee on Government Reform**

**April 5, 2005**

The Nevada Nuclear Waste Task Force was formed in 1987 when Yucca Mountain was singled out as the only site to be considered for a national nuclear waste repository. Judy Treichel was one of the founders and is the executive director. The Task Force is funded through contributions and serves as a public advocacy organization. It provides the people's voice and representative in technical meetings and workshops and strives to make scientific information available and understandable to the public.

Throughout the history of the US nuclear waste repository program, the Department of Energy (DOE) has exhibited a pattern of political expediency and obsession with deadlines that has overwhelmed careful scientific investigation. While frequently saying: "This is the most open program in the world," the reality has been and is just the opposite. The few examples cited here, clearly show that "making it work" was the primary goal at Yucca Mountain.

Twenty years ago, in 1985, when multiple sites were under consideration for a national high-level nuclear waste repository, the Department of Energy (DOE) wanted to confer "preliminary suitability"status on Yucca Mountain and other candidate sites. Ben Rusche, the head of the Department of Energy's Civilian Nuclear Waste Office spoke at a hearing held by the Nuclear Regulatory Commission and said that the demand that studies be done **before** a site is declared suitable, poses "an unacceptable risk" that a congressionally mandated 1998 deadline for having a dump in operation might not be met. He also said that the timing of such a determination is a "procedural issue, not a safety one."[i]

In 1986, as the political heat was increasing, the list of candidate sites was narrowed to three and when elected officials asked to see the working papers for repository selection, the Department of Energy first said that they were lost but later said that they had been discarded. A Congressman, not from Nevada, said: "We are left with only two possible conclusions: Either the

department is engaging in a cover-up and obstructing this subcommittee's investigation or incompetence has become the hallmark of this program." Nevada representatives called it a "setup."[ii]

Also in 1986 officials of the Department of Energy (DOE) came to Nevada vowing to: '"walk away" from Yucca Mountain if they find a fatal flaw in the mountain – such as earthquake activity or faults that would open the radioactive tomb to ground water movement."[iii] A year later Vieth said: "I think that we are comfortable in our analysis that the [Yucca Mountain] site would be capable of meeting the NRC requirements and the EPA requirements. The process of doing the modeling and the calculations that estimate the radioactive releases from the repository tells us that we may be five orders of magnitude below a very conservative EPA standard. (Emphasis added).[iv]

And at Christmas time in 1987 we learned that, what is known in Nevada as, " the Screw Nevada Bill" had passed, making Yucca Mountain the only candidate for the nation's high-level nuclear waste repository. At the same time plans for a second repository were also eliminated.

Citizens reacted angrily. Longtime residents recalled the oft repeated assurances they had gotten from the Atomic Energy Commission (AEC) in the 1950s at the beginning of atmospheric testing at the Nevada Test Site – "there is no danger." Families in Utah, Arizona and Nevada still have vivid memories of the tests and the fallout that caused illness and death to people and livestock. In fact, from time to time, cars that had been on the highway when a radioactive cloud went over were stopped so that the particles could be washed off. The deputy sheriff who made the traffic stops was on horseback. The name of his horse was Fallout because of the radiation burns on its back. Many people died or got sick with an especially high toll on children.

When residents began to demand that the tests stop, the AEC produced a film that the Commission's director said, "was designed as part of the education program to dispel the unwarranted worry among residents in Nevada and adjoining states about hazards from tests. This worry was threatening continued use of the test site." In the film, the narrator states, "The Atomic Energy Commission doesn't take chances on safety."[v] We learned later that people in some areas were exposed to radiation many times the allowable dose at that time. Some of those victims – the "downwinders," or their survivors, were finally compensated more than forty years later. Some families have struggled for decades. Medical information is still being gathered from Test Site workers, and those who qualify are paid a settlement.

When site characterization began at Yucca Mountain, officials of the project were faced with very angry audiences at public information meetings. The people recounted experiences and things they knew about serious illnesses and deaths related to earlier weapons testing at the Nevada Test Site. DOE officials continually told them that "that was then and this is now. Those sorts of things could never happen on this project." But lawsuits are already underway for workers and visitors to Yucca Mountain. While the tunnel for studies was being dug, unsafe levels of silica dust existed in the air and those exposed, some of whom have died or are now

sick, were not provided proper breathing protection. Understandably, with this history, where the mission of the program trumps safety concerns, Nevadans are inclined to be suspicious and distrustful of any DOE program.

According to political analyst Martin Schram, "There are two ways government officials lie to us: (1) By telling us things that are not true; or (2) By not telling us things that are true."[vi] We are here today discussing an agency guilty of both. This is not an isolated incident, it is clearly just the most recent. It is not a problem of one person who wrote inappropriate e-mails but rather, a systemic culture that fosters manipulation and coverup.

On March 16, 2005 the Secretary of Energy and the Director of the US Geological Survey issued press releases saying that scientific data collected during site characterization studies at Yucca Mountain may have been falsified. Immediately, the State of Nevada and public interest organizations, concerned with Yucca Mountain, asked to see the documents (e-mails) that contained this information. The answer was, and more than a week later, still is: "we are investigating." Energy Department officials told attendees at a meeting on March 23 that they will investigate the possibility of wrongdoing of the author and the potential damage to the scientific body of evidence and issue a report. The latter investigation is estimated to take between three and six weeks. The officials refused all requests for release of the documents and the investigation is being done with no observers or outside oversight.

At this time we understand that the falsification occurred between 1998 and 2000. That was a critical time period during the long life of the Yucca Mountain project. In the year 2000, the Task Force learned of an internal draft document called the Site Characterization Consideration Report (SRCR). We did not see the SRCR but we saw a "Note to Reviewers of the SRCR Overview." Among other things in the note were the following statements:

"The Overview provides information that potential supporters can use in expressing support for a site recommendation."

"The Overview presents a Yucca Mountain repository as the key component in DOE's proposed solution to the nuclear waste problem. It is not narrowly focused on the suitability of the site because decision makers and the public are equally concerned about transportation and other issues that bear upon the site recommendation decision. <u>In fact, the technical suitability of the site is less of a concern to Congress than the broader issue of whether the nuclear waste problem can be solved at an affordable price in both financial and political terms."</u> (Emphasis added.) Upon seeing this, the Task Force asked to see the comments that the Department had received and we were denied. We filed a Freedom of Information Act (FOIA) request and that was also denied, as was an appeal. In part, we were told: "In addition, after a thorough review of the comments at issue, we find that the factual material requested by Nevada in its Appeal is inextricably intertwined with the exempt material, and thus properly withheld."

At the same time, the Department of Energy's Inspector General conducted an investigation. One of the findings in the Inspector General Report is: "A second witness stated

his belief that the Department has not created incentives for people to question computer modeling assumptions or to "rock the boat." The witness stated that while the Department has changed assumptions when given supporting data, two factors must be true before assumptions will be changed: (1) the evidence must be unambiguous, and (2) the resulting change cannot threaten the program." Would not this implied policy or assumption by site investigators, almost assuredly be a formula for either omission or falsification of important negative data? The report also stated that "investigators were informed that feedback was provided via one-on-one personal discussions, email messages and telephone calls. According to JK Research Associates, complete electronic mail records were unavailable to the Office of Inspector General due to a computer malfunction. Consequently, because a complete record of interactions between the contractor and the reviewers was not available, the Office of Inspector General was unable to obtain a complete, verifiable history of the development of the draft Overview."[vii]

Based upon the FOIA denial which said that there had been a "thorough review of the comments at issue" and the Inspector General's statement that "complete electronic mail records were unavailable" and "a complete record of interactions between the contractor and the reviewers was not available," the Task Force wrote to then Secretary Abraham pointing out the inconsistencies and/or contradictions and asked for an explanation. Six months later we received a reply from the DOE office in Las Vegas saying that their document review had been thorough and that the denial of the FOIA was appropriate. The Department subsequently eliminated the SRCR and later issued the "Yucca Mountain Science and Engineering Report."

The actions of the Department now, regarding the current e-mails, is somewhat similar in that interested and involved parties are not only denied copies of the messages in question but are not being involved in the examination of possible damage caused by the falsification. How can anyone be satisfied with just another internal investigation and at its conclusion, assurances that everything is fine?

Even without the benefit of seeing the e-mails, we do know that they were written at the time that DOE was preparing, under severe time constraints, to make a Yucca Mountain Site Recommendation and the Department was focused on the critical topic of groundwater travel time. Secretary Bodman has said that the messages concern water infiltration. It was also during the time when all of the Yucca Mountain regulations were being re-written – the EPA standard, the NRC licensing regulations and the Department's own siting guidelines.

This is a partial list of events at the time:
November 1998 – over 200 public interest groups write to the Sec. Of Energy demanding that the site be disqualified due to unacceptably fast groundwater travel time and also demanding that DOE halt all revisions to the Guidelines (10 CFR Part 960).

December 1998 – Governor Miller and Governor-elect Guinn write a letter to the Sec. of Energy stating that Yucca Mt. should be removed from consideration because of groundwater travel time and other factors, reiterating a similar request made by Governor Miller in 1989.

December 1998 – Secretary Richardson replies that: "Analyses of data are not yet complete and do not support a finding either that the site is suitable or that it should be disqualified under the Department's siting guidelines." He further states: "The Department's current estimates, drawn from the most recent (1998) total systems performance assessment, suggest that the average groundwater travel time is greater than 1,000 years. However, given the inherent variability and complexity of any natural system, including Yucca Mountain, we believe additional study is warranted to gain a better understanding of the groundwater flow processes and the models utilized to assess those processes. Part of the ongoing research process will include continued data collection and refinements to the numeric models to reduce uncertainties in those models and increase confidence in the estimates. Absent the results from continued study, and based on present evidence and analyses, it is premature to make any finding on the basis of groundwater travel time. This is an extremely important issue, however, and it will receive significant attention as scientific and technical work at Yucca Mountain continues."

November 1999 – DOE proposes changes to the Guidelines even though in August 1994 the department had announced in the Federal Register that: "it intended to use the Guidelines as currently written." So concerned was DOE about water flow, it eliminated qualifying and disqualifying conditions including the Post-Closure Geohydrology Disqualifying Condition that states: A site shall be disqualified if the pre-waste emplacement ground-water travel time from the disturbed zone to the accessible environment is expected to be less than 1,000 years along any pathway of likely and significant radionuclide travel. ( 10 CFR Part 960.4-2-1)

November 2001 – GAO finds that: The department has suffered a "loss of management control" of studies into the safety and suitability of Yucca Mountain to hold thousands of tons of radioactive waste. The report describes the government's efforts at Yucca Mountain as "a failed scientific process" that has led the Energy Department to make continued changes in its suitability criteria.[viii]

In light of what was occurring at the Yucca Mountain project at the time of the falsification, it is indisputable that the e-mails referring to falsification could have and should have been discovered at the time written. It is also very clear that the working environment was one with disincentives for any discovery of data that would obstruct or stop the project. The Department was racing toward a Site Recommendation that they knew would require adjusted regulations that could appear to be met and all three rules were in the process of being promulgated. They also had to be able to convince supporters and Congress that the site was worthy and that the recommendation appeared to be based on "sound science." Once they had Presidential and Congressional approval, DOE assumed that we would forget all that had happened and that it would never surface again.

The current controversy surrounding the falsified data is being considered as DOE is rushing to prepare and submit a license application to the Nuclear Regulatory Commission. However the data in question are not just relevant to licensing They were pivotal and basic to the Secretarial and Presidential decision to recommend the Yucca Mountain site. The Site

Recommendation of February 2002 must be re-evaluated. Surely it is not sufficient to have a closed, internal review and then simply proceed to check the data involved in the pending License Application and, if history repeats itself, just continue on with the project until the next catastrophic event.

**Endnotes:**

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i. Las Vegas Review Journal 9/7/85

ii. Las Vegas Sun and Las Vegas Review Journal 7 & 8/86

iii. Donald Vieth, head of DOE's waste project office in Las Vegas – Reno Gazette Journal 5/29/86

iv. Before the Committee on Energy and Natural Resources, U.S. Senate – June 29, 1987

v. P. Fradkin, "Fallout: An American Nuclear Tragedy 1989"

vi. Scripps Howard News Service; Las Vegas Review Journal 3/27/05

vii. U.S. DOE Office of Inspector General, Case No. 101HQ005

viii. Las Vegas Review Journal 11/30/01

Mr. PORTER. Thank you for your testimony.

Next we will have Mr. Joe Egan, attorney from the Nevada Office of the Attorney General.

**STATEMENT OF JOSEPH EGAN**

Mr. EGAN. Thank you, Mr. Chairman and members of the subcommittee. My name is Joe Egan, I'm a nuclear lawyer and nuclear engineer. My firm, Egan, Fitzpatrick, Malsch and Cyncar was hired by the Attorney General in 2001 to represent Nevada's lead outside counsel on all the nuclear litigation taking place now and to be taking place at the Nuclear Regulatory Commission.

With the help of Bob Loux, the director of the Agency for Nuclear Projects, we have assembled a world class team of scientific experts to assist us with the review of the documents at Yucca, and we have put together a world class team of attorneys. I have five brief points I would like to make to supplement what my esteemed colleagues from Nevada have already testified to. I would also like to offer my extended testimony and prepared statement into the record, Mr. Chairman.

The first is that the issue of falsification at Yucca Mountain is nothing new to us. The most recent manifestation prior to these e-mails occurred only this January, when DOE disclosed that its workers at Yucca Mountain that were drilling the tunnels over the years had been unlawfully over-exposed to toxic silica dust without respiratory protection. We have industrial hygienists who have provided testimony under oath that documents there were falsified pertaining to the toxicity of the air in the tunnels, that they were falsified on nearly a daily basis. So falsification is not a new thing and we don't think it's limited to one USGS enclave.

The second thing is that this was not a voluntary disclosure by DOE. In April of last year, the inspector general of DOE disclosed in a public report to Senator Reid and Senator Ensign that there were 4 million archival e-mails that DOE was not planning to produce on the public docket available for licensing. We immediately went to the Licensing Board of Nuclear Regulatory Commissions and petitioned to have DOE's document certification struck on grounds that they had done an incomplete certification and one that was not conducted in good faith.

The Licensing Board agreed with us and struck the certification on three independent grounds, and ordered DOE to have human beings and not machines go through these archival e-mails and produce them on the electronic docket, which the DOE was planning to do in a couple of months. So DOE, having now been put in a position of having to disclose these e-mails, was faced with the decision of, do they let Nevada disclose or do they disclose. I think they did the honorable thing.

The third is that DOE is now apparently planning to withhold tens of thousands of additional documents from this electronic data base that we believe are vital to assessing the safety of the repository. They are doing this on grounds of privilege that seem to be ever-broadening as we go; privileges such as the delivered and processed privilege or the work product privilege applicable to attorneys. Our view is that this is a public process, public project involving the safety of Nevadans and other Americans, and there

should be nothing here to hide. We are very troubled by the extensive claims of privilege that DOE is planning to make.

Just to give you one example, we have asked in a formal request sent by the Governor to DOE that they produce a copy to us of the draft license application. We have yet to receive it. That request was turned down to the Governor.

Finally, the last point I'd like to make is that quality assurance and sound science are inextricably intertwined. There is no such thing as sound science without sound quality assurance. So the notion that DOE is advocating in testimony here today that we shouldn't be troubled because they can go to the NRC and demonstrate that the science is sound, that's only true if you believe that science can be separated from quality assurance. And as any professional in our field can tell you, it just cannot.

Thank you very much, Mr. Chairman.

[The prepared statement of Mr. Egan follows:]

# Statement of Joseph R. Egan

**Before the House Subcommittee**
**On the Federal Workforce and Agency Organization**

***"Yucca Mountain Project: Have Federal Employees Falsified Documents?"***

April 5, 2005

Mr. Chairman and members of the subcommittee, thank you for the opportunity to address you today on this important national issue. My name is Joe Egan. I am a nuclear engineer and an attorney specializing in nuclear safety and environmental litigation. My Tysons Corner firm, Egan Fitzpatrick Malsch & Cynkar, PLLC, has handled a wide variety of nuclear cases over the past decade, including several involving the Department of Energy complex. I have been asked to address two specific issues related to your investigation of falsified documents at DOE's proposed Yucca Mountain nuclear waste repository. One is quality assurance, and the other involves DOE's ongoing efforts to suppress information about the misdeeds of its Yucca contractors and the geologic inadequacy of the Yucca site.

## Introduction

On September 11, 2001, Nevada's Attorney General appointed me Special Deputy Attorney General to assist the Governor's Office and Nevada's Agency for Nuclear Projects in litigation and NRC licensing proceedings involving Yucca. I worked with those offices to assemble a small, world-class team of highly experienced nuclear and environmental attorneys and independent scientific experts to undertake this task. Our team has been performing a thorough evaluation of the scientific and legal integrity of the work done by DOE and its contractors at Yucca, and we have filed several lawsuits challenging that work.

One of those suits does not directly involve Nevada, though the State is closely following it. It is a class-action suit brought by private attorneys, including my firm, on behalf of the workers at Yucca who drilled five miles of tunnels into the silica-laden rock there without mandatory respiratory protection. It relies on the testimony of experienced industrial hygienists that DOE's contractors falsified air quality and health and safety records at the project to save time and money on drilling, leading to gross and dangerous overexposures to toxic dust. So document falsification is not a new issue at Yucca.

Approximately a year into our review of the technical record for the project, I opined publicly that there would never be an ounce of nuclear waste buried at Yucca Mountain. I strongly maintain that view today. Indeed, in light of problems now emerging at a dizzying pace, epitomized by those your subcommittee is investigating, I believe it is quite possible, if not probable, that an application for a construction permit for the Yucca project will never even be docketed by the NRC, let alone granted. The project appears poised to sink on the character and fitness of DOE to be an NRC licensee,

and on the profoundly defective quality and inaccuracy of the records and scientific analyses supporting DOE's technical work. It is of vital importance to Nevadans and the nation as a whole that these records and analyses not be suppressed or hidden by DOE.

**The Forced Disclosure of DOE's Emails**

Last June, DOE purported to certify to NRC that all of its relevant documents concerning the Yucca project – some 2.1 million – had been made publicly available on an electronic database called the Licensing Support Network, or LSN. We challenged that certification before an NRC Licensing Board, arguing that DOE had improperly withheld at least six million documents, including roughly four million emails it had misleadingly called "archival" emails. DOE tried to create the impression in its certification that these emails were so old as to no longer be relevant to the project. On examination by the Licensing Board, however, it was learned that these emails were not archival at all, but extended through at least the year 2002 or 2003. The Licensing Board agreed with us that DOE had not shown good faith, and that emails often offer the most candid, unvarnished assessment of the facts.

On August 31 of last year, NRC's Licensing Board granted our request to strike DOE's document certification on three independent grounds. Among other things, the Board required DOE to produce all of its "archival" emails and perhaps millions of additional withheld records. It is only because of our motion to strike and the Board's inquiry that the emails that are the subject of this hearing came to light. The Board's order forced DOE's outside attorneys to have to review these emails for various privileges that might apply. I commend those attorneys, Hunton & Williams, for advising Secretary Bodman to disclose publicly that some of the emails evidenced falsified scientific data by the government's own scientists. It bears noting, however, that DOE really had no option but to disclose this information, since the emails were about to be forced into the public domain under compulsion of the Board's order.

It will be troubling, to say the least, if your investigation reveals that DOE's Yucca managers knew of the falsifications for years prior to this forced disclosure, and long prior to having declared the Yucca site "suitable" and recommending it to President Bush and the Congress. The discovery of document falsification by anyone at Yucca should immediately have been brought to project superiors and been fully investigated. Such conduct should immediately have raised issues of whether DOE's contractors may or should have been subject to debarment under federal contracting laws, whether they may or should have been liable for treble damages under the False Claims Act, whether bonuses should have been withheld, whether other civil or criminal statutes were implicated, and whether DOE itself, if indeed it tolerated such conduct, possesses the character and fitness to be an NRC licensee under NRC's regulations that will now, for the first time ever, be applicable to DOE.

**Additional Troubling Emails**

Since Secretary Bodman's disclosure, we have been combing DOE's electronic database for additional evidence of document falsification. We have already located additional emails that do evidence such falsification, as well as DOE's knowledge of gross deficiencies in the quality and accuracy of the records supporting DOE's scientific analyses of Yucca Mountain. Some of these emails, which appear to be only the tip of the iceberg, are attached as exhibits to my prepared statement. Additional emails are posted on Nevada's Nuclear Projects Office website at http://www.canwin.org/LSN/. When coupled with the emails DOE has recently released to your subcommittee, what the documents appear to show is a project so amiss, and so tremendously adrift from what NRC's quality assurance rules require, that it is almost impossible to imagine that DOE could any longer establish the basic prerequisites to even complete its license application, let alone survive four years of NRC litigation over it.

Consider what the few e-mails available to us before DOE's recent disclosures show. They show current project management (Bechtel/SAIC) directing its quality assurance personnel not to use the word "violated" in their audit reports ("noncompliant," a less disturbing term, was preferred) (Exhibit 1); project personnel adopting the position that NRC should be given "minimum information" (Exhibit 2); project personnel afraid to call whole programs deficient because fixing them would be too expensive (Exhibit 3); secret communications that question whether critical representations to the NRC about safety priorities are correct (Exhibit 4); efforts to "keep some people in blissful ignorance" about technical problems (Exhibit 5); an assumption that the proof "that will get us through the regulatory hoops" need not be "rigorous" (Exhibit 6); a program that carefully manipulates statistics to assure that the results are always "in the right place"(Exhibit 7); a program where scientific instruments are documented as properly calibrated before they are even received, much less calibrated (Exhibit 8); a project where discord and distrust are so rampant that senior officials are called "swindlers," "certifiable jerks," and worse, and the management of the principal contractor is called "craven and ignorant" (Exhibit 9). They evidence a project where dramatic and unexpected information ("Water Water Everywhere") apparently gives DOE "ulcers" but not enough discomfort to delay a scientific report to Congress so the new information can be included (Exhibit 10).

To be sure, there are some good people who tried to do the right thing. For example, DOE quality assurance reviews in August of 2000 concluded that there was "evidence of major flaws in the approach taken towards implementation of an effective Quality Assurance Program," and "the wrong culture of the individuals involved" (Exhibit 11). One documentation manager complained, "I don't know how to fight lies and misinformation, and no one seems to care about the truth, or even making sure the right people are doing the right stuff"(Exhibit 12). But who at DOE listens?

NRC's quality assurance rules are designed to ensure that all technical findings in a license application are supported by a proper and believable document pedigree. For example, it is not enough for DOE simply to claim that the infiltration rate of water

through Yucca's rock is value X. DOE must also be able to show that the instruments used to measure the parameters necessary to calculate X were approved instruments that were properly calibrated, that the technician using those instruments was properly qualified and used the instruments properly, and that records of that technician's qualifications, his instrument calibrations, his findings and his calculations were properly preserved, checked or double checked, and filed.

But the documents emerging show that DOE will very likely not be able to do this. They evidence such things as the falsification of instrument calibrations. They show gross negligence in the taking and recording of data. They illustrate the almost total lack of pedigree of key numbers DOE has been using in its performance assessment of Yucca Mountain, painting a "garbage in, garbage out" picture.

It was problems such as these that in 1982 caused the multi-billion dollar, 97-percent complete Zimmer nuclear power plant in Ohio to be abandoned prior to completion of NRC licensing proceedings. Because of poor quality control, station operators could not warrant the accuracy and pedigree of their own design and construction documents. NRC considers quality assurance to be one of the most important features in licensing, and has referred to it, if not done properly, as the "Achilles heel" of a project.

Yucca appears likely to witness a similar fate as Zimmer.

**DOE's Efforts to Suppress Its Documents**

This may depend, of course, on whether Nevada and interested members of the general public get *full access* to the key documents that will illustrate what actually went on at the project. In a public project this important to the nation and to the health and safety of Nevadans and the environment, one would think that full disclosure of all documents would be a given, except of course those involving classified or homeland security sensitive documents. Why should *anything* be hidden about the Yucca project? What is it that Nevadans and the general public are not entitled to know about DOE's work at Yucca?

And yet, DOE has underway efforts carefully calculated to shield from public view broad categories of documents under the rubric of various "privileges." DOE is claiming it can withhold perhaps hundreds of thousands of key documents on privilege grounds. For example, DOE is withholding from the public its entire draft license application for Yucca Mountain. Our fear is that emails such as those provided to the subcommittee and other incriminating documents, as yet unknown, may soon be forever unavailable to the public due to the attempted application of such privileges.

DOE may even attempt to shield blanket categories of future scientific analysis that will go to the very heart of the suitability of Yucca Mountain to retain radioactive waste and to meet NRC regulations under new and stricter licensing rules. Last summer, as you know, the Court of Appeals for the D.C. Circuit invalidated the primary radiation

standard DOE had been using to assess the performance of the Yucca repository, claiming the government had "unabashedly rejected" the findings and recommendations of the National Academy of Sciences in setting that standard. As a result, the EPA and the NRC are now required to promulgate a new and stricter standard for DOE to use in its performance models, one consistent with sound science.

It would be tragic if DOE's input to a new radiation standard for the repository, or its technical analyses of Yucca's adherence to that new standard, are shielded from public view because of some specious claim involving the attorney work product or deliberative process privilege, for example. Yet, that appears to be the direction DOE is heading.

Governor Guinn has recently sought to invoke Nevada's prerogative under Section 117 of the Nuclear Waste Policy Act (NWPA) to demand full and complete information from the Secretary of Energy on the Yucca project. To date, the Secretary has declined to provide Nevada with the draft license application, for example, claiming that it is protected from disclosure due to privileges notwithstanding Nevada's rights under the NWPA.

In conclusion, the truth about the safety of the Yucca Mountain repository should not depend solely on what can be wrung by Nevada from civil and administrative litigation. Yucca is one of the nation's largest, and its most potentially dangerous, public works projects. It poses issues of profound importance to human beings and the nation for millennia to come. As today's hearing demonstrates, there should be no secrets associated with this project. What is there to hide?

* * * *

# EXHIBIT No. 1

Author: Nancy Voltura
Organization: RWDOE
From: CN=Nancy Voltura/OU=YD/O=RWDOE
PostedDate: 03/10/2004 02:44:32 PM
SendTo: CN=Denny Brown/OU=YD/O=RWDOE@CRWMS;CN=Kerry Grooms/OU=YD/O=RWDOE@CRWMS
CopyTo: CN=James Blaylock/OU=YD/O=RWDOE@CRWMS;CN=Roy Capshaw/OU=YD/O=RWDOE@CRWMS
ReplyTo:
BlindCopyTo: CN=Mario Diaz/OU=YD/O=RWDOE@CRWMS
Subject: FYI - CST Meeting 3/10/04
Body: Denny & Kerry -
Today, I attended the CST meeting for Jim Blaylock. You both need to be aware that CST members were told that BSC management does not want any new CR descriptions to state that a requirement was 'violated'. CRs are to be written to state that a 'condition is noncompliant with.....[reference a requirement]".

When questioned as to 'why', CST members were told that this is what BSC management wants and they do not want the word 'violate' used.

Whether CST members will 'screen' CRs to preclude use of the term 'violate' was not clear, but I believe you need to be aware of this management policy.

Nancy V

Message Addressees

To:
Denny Brown/YD/RWDOE@CRWMS;Kerry Grooms/YD/RWDOE@CRWMS

Copy To:
James Blaylock/YD/RWDOE@CRWMS;Roy Capshaw/YD/RWDOE@CRWMS

Blind Copy To:
Mario Diaz/YD/RWDOE@CRWMS

# EXHIBIT No. 2

DZK 001231578

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 08/01/2002 02:00:06 PM
SendTo: CN=Peter Swift/OU=YM/O=RWDOE@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: KTIA escalation?
Body: I will be glad to provide you the documentation if this comes up, but I think Rob has taken care of it.

In case he has not apprised you, I think the conflict has the two following features. One is their desire to meet their schedule. They wanted this paper to be close to the product we provided them in June. Our attempt to update this on the basis of what we presented and heard in the KTI technical exchange last week was something they saw as affecting their need to meet their July deadline. However, this also meant rejecting comments regarding grammar and spelling that we made.

The second problem is more important (and the reason I am giving you this explanation). Apparently the LAP position on these KTI papers is to provide minimum information to the NRC, hoping that will be sufficient. They would provide additional information as requested. Accordingly, they desire to reduce the technical content. Because they do not fully understand what we have written, their reduction results in discrepancies from what we can justify technically.

As I said, I think this particular conflict is addressed (except for the difference we have in how quality assurance of the analyses should be described--this one will get elevated. Our position is to state up front these are not Q and then to describe what we have to maintain traceability. Their approach is to discuss only what we have done as if following part of the procedure overcomes the problem. I consider this part of a much bigger problem--that LAP thinks we actually have to have Q analyses to justify our decisions (including the decision about how much validation is needed).
Peter Swift
08/01/2002 09:18 AM
To: Larry Rickertsen/YM/RWDOE@CRWMS
cc:
Subject: KTIA escalation?
User Filed as: Excl/AdminMgmt-14-4/QA:N/A

Larry, Rob tells me that you and he and Prasad had a difficult exchange yesterday involving a TSPAI KTI that addresses UZ flow. Can you send me the files? Our text, LAP's changes?

In case it comes up for management escalation, I'll need a copy in front of me.

Thanks

# EXHIBIT No. 3

Author: Catherine Hampton
Organization: RWDOE
From: CN=Catherine Hampton/OU=YD/O=RWDOE
PostedDate: 10/06/1999 05:54:47 PM
SendTo: CN=Don Horton/OU=YD/O=RWDOE@CRWMS;CN=Bob Wells/OU=HQ/O=RWDOE@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Records
Body: As a heads up - I had a discussion in the CAB meeting today related to the M&O's completion of CAR 002. Essentially - Keele is looking at the concept of writing a deficiency on the entire records program (he claims data is not traceable). Apparently CAR 002 committed to development of a records roadmap. In my view, that commitment can not be fulfilled at this stage of the project. If that is the issue, the commitment for the records roadmap should be backed out of the deficiency. I questioned whether the M&O was taking this approach for the alternative deficiency to cover the fact that they have not completed the committed actions in CAR 002. To be honest, I know that Keele has been positioning himself behind the scenes for a new job of "fixing the records program". Creation of a DR would cement that new position, while costing the DOE $$$$$$. I asked for permission to sit in on the internal M&O meetings on this but was told that they would get with Warriner first as "he is their client in this area". They are considering my request to sit in on their meetings. Warriner is not in but the potential exists that he is going to be blindsided if he supports what Keele says at face value. While not violating the concept of the QA Program where anyone can write a deficiency, the M&O needs to be sent the message that a deficiency related to the entire records program had better be 100% supported by DOE before it goes forward.

I will continue to push on this but I wanted Wells to know that I recognize I am muddling in his area (again).

# EXHIBIT No. 4

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 01/08/2002 08:03:20 PM
SendTo: Edctaylor@aol.com
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Intuition
Body: I just cleaned off my desk to get ready for this big push on the prioritization effort (by the way, everybody recognizes this is just a formal raindance that will boil down to a recommendation to close off work that the managers will have to decide if they have the willpower to sustain. I already saw a note Bo secretly sent to his favorite DOE folks arguing that prioritization based on any kind of TSPA results is not to be trusted.) In my cleaning, I found a note from you to Jan and me from May of 1996. You reported a phone conversation with Ike Winograd. After some discussion about diminishing infiltration, you noted that our (his) arguments are not sufficiently definitive for a "reasonable assurance" safety case. He began to handwave and mumble, finally talking about how it is better to put waste underground than to leave it on the surface. I did not realize how lame my arguments have been.

Author: Larry Rickertsen
Organization:
From: Larry Rickertsen
PostedDate: 08/21/1996 03:58:48 PM
SendTo: Jean Younker
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Technical Integration Report
Body: I am taking a minute from my PA wonking just to uncross my eyes.

I always like Ed's summary and synthesis of meetings like the Technical Integration meeting. He cuts so much out and, after thinking about what he leaves out, I conclude that, indeed, all that stuff is pretty much irrelevant. But here is something that was at least implicit in the meeting that I don't think is irrelevant.

We keep dodging what will be in the Viability Assessment. We know it will have some sort of summary of site characteristics, but beyond that we are ambivalent. We don't want to say that it will contain a clear, definitive statement of the capability of the site to contain and isolate waste, but it will have to say something about that one way or another. I always oversimplify this and you generally give me the more mature perspective on all this, but I have in mind what the purpose of this thing is. It is basically a justification to Congress to continue funding this program. Colin in an aside at the meeting gave me the analogy that we have this great idea to go with a new design for air bags that will cost $2B and we are going to the Board of Directors to justify it. It is a pretty clumsy analogy but there is a piece of it that applies. Our Board of Directors, Congress, will consult people like the NWTRB and the NRC about whether the data justify the viability of the site. The NWTRB will think of viability as suitability and the NRC will think of it as adequacy for a license application. Congress itself will almost certainly think of the Viability Assessment as their own analog of a license application: justification that a repository that will solve their problem can be built at an acceptable price.

So that tells me pretty much what will have to be in the VA. Someone once said it is like a status report. But it clearly has to be more than that. Although that philosophy would work with people that want the thing no matter what, it is too touchy for Congress to support without a pretty healthy safety argument. They will have to see more in it than a summary of site parameters.

I get the feeling that we are thinking of the LA. Aside from the stuff accompanying the LA, the LA itself has two pieces: (1) a descriptive piece and (2) a safety assessment piece (parts A and B). I think the status report people think we can get away with just the first piece for the VA, while the PISA is the second piece in embryo. Again, I don't think we can get away with it. Well, let me rephrase that. We might get away with it, but I don't think we want to. It is not much of a victory simply to put out words that don't give the decision makers anything solid and therefore does not constrain their ability to decide whatever they want. It is to our advantage to provide the clear succinct compelling cogent etc argument.

Now we don't want to let the world in on the secret of what it is we are going to do since, as Ed is fond of saying, it is a poor bureaucrat that can't kill off an idea given two weeks notice. But we do want to have that definitive statement that the thing will work. And we do have to have this understanding that that is what we girls intend to do.

A problem is that the current PA is an enigma to most of us. Nobody understands it now and as a consequence, no one is sure that it will give the cogent and compelling argument. So we back off on suggesting, even to ourselves, that we will have such an argument. I think if we could convice ourselves that the site actually works, we would more readily accept the notion

of showing that it works in the VA. The PA approach does not now, nor will it ever, give such confidence. Part of it is the complexity of it. It is simply the integration of too much stuff. The bigger part however is that the stuff

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you need to show the dose rates are small is unobtainable. There is a whole epistomology of this, but you know the liturgy.

I have the feeling that this is changing. I know it has changed here, at the NRC, at the NWTRB, and at EPRI. We have this terrible inertia, but I think it is inevitable in Las Vegas as well. My interactions with McNeish show me that there are things he just never realized. People will soon enough have to face the reality of the data. When they do, they will have to adopt a different approach, because the data simply do not allow the current approach to show low dose rates. I say that and Hanauer whines that it kills the site. The usual response of unimaginitive people. But then we step back and see how keeping the water away from the waste solves the problem. Whether you show there isn't much flow in the host rock and all of that is in isolated paths, or whether you use backfill to evaporate water, or whether you use double-walled packages, or whether you use ceramic coatings, or a combination of all of them, all your troubles are decreased when you focus on showing water does not pervasively contact waste. The argument is clear and cogent and supported by well defined and do-able experiments. It is the way to go. There are a hundred reasons people could give about why it isn't the way we do things in the project. But after all that, it is the only way to go.

Well, I have to recross my eyes and go back to wonking.

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# EXHIBIT No. 5

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 06/25/1998 07:04:15 PM
SendTo: Michael Scott@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Use of Natural Analogues
Body: Michael Scott
06/25/98 03:36 PM
To: Larry Rickertsen@CRWMS
cc: Paul Cloke@CRWMS
Subject: Re: Use of Natural Analogues

Larry - In my opinion, the real issue is not about what we call natural analogs and whether you've talked about given information elsewhere in the report; the issue is "flavor" and emphasis. Your prior text seemed to dismiss natural analogs as useless to date. That statement, which I believe you have already agreed to modify, is too emphatic and subject to arguments such as the "debate" we 3 have been having. Let's just avoid the issue by softening the statement as previously agreed and move on.

The real issue for me now is whether our spin to keep some people in blissful ignorance--as we have consistently done in natural analogue studies for 10 years--creates a problem for LA planning. Allowing that this work may have been of some use is not only possibly dishonest, it might provide leverage to continue this so-far useless work. That could mean money gets diverted from more fruitful areas, like drip shields, ceramic coatings, and C-22 corrosion. There is a competition for money between the geologists and the engineers and softening like that gives some edge to one side that may not be called for. Your request to avoid the issue seems to acknowledge that all that is a stake here is tone.

The question is whether softening sentences is dishonest or not. In my judgement the change from "no benefit" to "no significant benefit" is okay. But I wanted the debate to see if there was really something I was missing something. Paul's answers did not address natural analogues at all, but general scientific work. And your responses have also not provided any counter example, only a prudent advice that we should not inflame people. I think the lack of counter examples suggests that additional consideration of natural analogues (except in the specific areas identified in the text) is unwarranted.
Larry Rickertsen
06/25/98 01:27 PM
To: Paul Cloke@CRWMS
cc: Michael Scott@CRWMS, Bob Levich@CRWMS
Subject: Re: Use of Natural Analogues
Paul Cloke
06/25/98 12:39 PM
To: Larry Rickertsen@CRWMS
cc: Michael Scott@CRWMS, Bob Levich@CRWMS
Subject: Re: Use of Natural Analogues

Larry,

Also contrary to your surmise, I, like Mike, was not trying to initiate a debate. Nevertheless, it seems to me that you have some misunderstandings.

This sounds like a debate to me. I hope you did not take my statement about debating as pejorative.

First, I get the impression that you have not seen the definition of natural analogue that is used by the NRC. About 6 years ago I got involved in a considerable and extended -- from time to time for at least eighteen months --

interchange with various members of the NRC staff and people at Southwest Research. Specifically, I have had several conversations with Linda Kovach. These people insist that natural analogues include such items as comparisons of

volcanic processes at various localities, as well as many other rock forming and erosional processes. You and I, Bob Levich, and many others on the YM Project agree that such a broad definition is not useful. Unfortunately, Bob's and my arguments to the NRC have not changed their minds. They kept insisting that we needed to use natural analogues, and that we weren't doing so. This question seems to have been resolved during my last conversation with Linda about this at lunch break during a meeting of the ACNW in Bethesda. Linda finally asked her NRC colleagues whether the NRC really cared what we called the work, so long as we did it. The answer was no. I've heard no more about it since from her or anyone else at the NRC, or the Center. However, this does not mean, I believe, that we should totally ignore the NRC definition. I've asked Bob Levich to supply me a copy of that, because I'm almost sure I finally disposed of all that correspondence in my files just a couple of months ago.

It sounds to me as if you agree with the sense of my paragraph, if not the detailed wording. It sounds as if you agree that we have a bunch of work that we do not call natural analogue work in our Project but could, if we wanted to, define it that way. But we don't. It sounds as if, in the restricted sense of natural analogues that we have adopted in our program, you might agree with my statement.

Second, in two instances the geochemical analyses I've done have led to design changes in the waste package. Maybe you don't consider that significant. One of these is supported in part by the observation that rare earth phosphates are highly insoluble under natural conditions and persist for great lengths of time. The other one, not mentioned previously, is similar, this time dealing with the insolubility of zircon, $ZrSiO_4$, and baddeleyite, $ZrO_2$, (supported by natural observations as well as by calculations) and by analogy to corresponding Hf compounds. In the first case the result was a recommendation to add $GdPO_4$ to waste packages containing MOX spent fuel to ensure that no internal nuclear criticality could occur; this recommendation appears to have been accepted. The second instance, actually from an earlier recommendation, resulted in the addition of Hf to the ceramic waste form that has been accepted for immobilizing weapons Pu that isn't suitable for putting into the MOX.

I would not characterize this work as natural analogues. Was this work funded out of our natural analogue studies budget?

The question of whether or not the natural analogues for uranium deposits, as used in the report I cited, are important really amounts to whether or not we can prove that Bowman and Vennari are wrong. Namely, can we show that a large mass of fissile material will not form outside of the waste package? What we did was to consider every known type of uranium deposit and evaluate it in respect to the probability of a similar deposit forming as a consequence of the same depositional processes at Yucca Mountain. (The topic of formation conditions of ore bodies is typically considered ecnonmic geology, rather than geochemistry, even though the two are in this instance closely related.) Our conclusion was , no. In view of the great amount of controversy raised by Bowman and Vennari, I'm inclined to think that this application of natural analogues has some significance.
Another example, that I believe qualifies for use of natural analogues, at least in the sense of the NRC definition, if not ours, is the topical report on extreme erosion. In that report comparisons were made of erosion rates at

numerous places in analogy and contrast to those at Yucca Mountain. Clearly, this is not a geochemical example. My impression is that this helped acceptance of the conclusions, although I don't know whether this was ever officially done by the NRC.

Again, I would not characterize any of this work as natural analogue studies. I don't think it is meaningful to debate whether general studies of geomorphology in the region should be called natural analogue work. We normally do not call it that.

The sections I wrote preceding the one on natural analogues talk about all the information we have acquired about how YM works and about disruptive processes and events so all that stuff about erosion and criticality and waste package design are all covered already. Now I come to a section natural analogues.
[]

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Should I repeat stuff I have already described? Should I move work from one section to this one? How do I divide up what goes into each section? If you will read the NRC requirements, they do not make the distinction among different sources of information--in fact the regulations do not require natural analogue work at all (in spite of individuals on the Staff who feel such work is required)--they simply require that our models be backed by laboratory studies, field work, and natural analogues. The distinction among sources of information is really an organizational issue.

I certainly do agree that we have considerable difficulties with colloidal transport issues. In view of the difficulties of obtaining definitive answers in the Swedish and Swiss programs it does not seem to me, however, that we will be able to accomplish much in a short time. To the best of my knowledge the Europeans haven't been able to perform the work quickly, and they have an easier case to analyze -- the saturated zone.

Sounds like you agree with my argument about the usefulness of natural analogue work for the LA--we essentially have to have everything we need a year from now.

I will be glad to provide further details, if you wish. My plea, like Mike's, is that we shouldn't make statements either that we can't defend, or that don't agree with what has actually been done, especially if it has some real significance.

Which statement of mine is it that you want me to defend? Are we still arguing about my statement that nothing has come from natural analogue studies that is significant for YM? That sentence is referring to the work not described in earlier sections that we normally think of as natural analogues of a Yucca Mountain repository. Morro de Ferro. Cigar Lake. Oklo. New Zealand uranium fields. Pena Blanca. Etc. As far as I know, none of that has provided anything applicable to YM. I hope you will give me any counterexamples that you have in this regard because I do not want to be wrong about this. But I am familiar with the performance assessment work and have not found anything in them today that has come from such analogue studies. Please tell me if I have missed something.

Paul

Larry Rickertsen

06/23/98 11:39 AM
To: Michael Scott@CRWMS
cc: Paul Cloke@CRWMS
Subject: Re: Use of Natural Analogues

I actually adopted your recommendation simply because it is not inconsistent with what I said (no information and no significant information are consistent with each other) and it reduces the red flags.

But since you want to debate this issue, in the sense you are talking about all information is analogue information. We do not have a repository that can be tested directly. Everything we know about volcanism has come from locations other than Yucca Mountain. All we know about transport of radionuclides has certainly not come from the site, but from "analogues." I hardly think the broader sense you are suggesting here is what is meant by natural analogues.

The issue is whether analogue work can help us for LA. Natural analogue work so far has not provided definitive information about the analogue site, let alone Yucca Mountain. It has not provided anything useful to us so far. Part of the problem is that analogue work has tended to focus on geochemistry as it affects transport, an issue that may be of general interest but that does not have much relevance to a Yucca Mountain repository. What we know is that almost all radionuclides are immobile at this site--all of the analogue studies so far have focused on radionuclides that are of no consequence for this site. We have some issues with mobile radionuclides, iodine and technetium isotopes,

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which almost by definition cannot be analyzed in terms of analogues because they travel so fast, nothing is left of them at any analogue site.

An exception to all of this is colloids. All our lab studies tell us that colloidal transport of radionuclides is not a significant issue, but everywhere you look in the field, it is obvious there is an issue. I believe that real work could be done in the next year on colloids at NTS, LANL, Hanford, and Oak Ridge. Much work has been done at these sites and we could review this information to support the process models that need to be finished next year.

Otherwise analogue work simply takes too long and provides too little of relevance to be of use for the LA.

The section I wrote reflects these implications. However, the modification you recommend by no means obviates them and so I made the change I mentioned above. There is some effort to beef this section up a bit more, but I think the position I outline here will withstand this.

Michael Scott
06/23/98 10:49 AM
To: Larry Rickertsen@CRWMS
cc: Paul Cloke@CRWMS
Subject: Use of Natural Analogues

In response to your request, Paul Cloke (who has been involved with natural analogue work) provided the following examples regarding use of natural analogues at YM. He also told me that he believes NRC defines natural analogue in a broader sense than you may. That is, for example, information regarding

broad topics such as volcanism elsewhere in the world that is used to address YM volcanism issues is an example of use of natural analogs. Hope I said this right - Paul, please correct if needed.

I think the examples make it clear that some useful, directly applicable information has been provided. Your statement in the VA document that NO information has been provided is, in my opinion, a "red flag" statement that should be softened. Suggest "limited information" or similar, instead.

Hope this helps.

-Mike-

-Mike-
---------- Forwarded by Michael Scott on 06/23/98 10:43 AM
---

Paul Cloke
06/23/98 09:30 AM
To: Michael Scott@CRWMS
cc:
Subject: Use of Natural Analogues

Mike, Here are a couple of examples:

1. In CRWMS M&O 1997. Analyses of Geochemistry Influenced by Waste Package in a Geologic Repository,.BBA000000-01717-0200-00050 REV 00. Mostly in Section 7.4, but also in the conclusions, etc. Natural analogues for U deposits were used to assess the liklihood of the formation of a U-Pu deposit outside of the repository as a consequence of migration of fluids, which contained fissile isotopes, from the repository followed by reactions with the environment in such a way as to create a critical mass. [Conclusion was that this was extremely unlikely.]

2. In CRWMS M&O 1998. Geochemical and Physical Analysis of Degradation Modes

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of HEU SNF in a Codisposal Waste Package with HLW Canister. BBA000000-01717-0200-00059 REV 01. This document recommends adding GdPO4 as a neutron absorber to waste packages that might otherwise undergo a criticaly event. This recommendation is based partly on the observation that rare earth phosphates, specifically, monazite and xenotime, persist in nature, e.g. beach sands, for millions of years without dissolving. The modeled geochemical analyses are consistent with this observation. Thus, unlike some other neutron absorbers that might be used, this one will not dissolve away in geological time.

I trust this will suffice for the present.

Paul

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# EXHIBIT No. 6

Author: Larry Rickertsen
Organization:
From: Larry Rickertsen
PostedDate: 09/03/1996 11:15:20 AM
SendTo: Larry Rickertsen @ CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Your response to my response to your comments
Body: To: Larry Rickertsen
cc:
From: Jerry McNeish
Office Phone:
Date: 08/28/96 03:53:11 PM PDT
Subject: Your response to my response to your comments

I would like to further discuss and try to come to some meeting of the minds on the points you said I failed to either understand or address your comment on the EBS report. I'm not sure how to do this as I think it would take some teaching by you as well as general discussion. Perhaps the next time you are out here we can sit for a few hours to go over the unresolved issues and see if they are just philosophical disagreements (I don't think so) or something technical that I'm not understanding (probably). Unfortunately, I will be leaving Aug 30 and gone until Sep 9 and in the meantime I have yet another deliverable.

Please let me know your thoughts.

-Jerry

I keep thinking about Jerry's note.

I think that the issues are epistomological. That is, the fundamental issue is whether calculations unsupported by measurements will be compelling in the public and regulatory arenas. The PA modeling is clever and has some technical basis for the most part. But until we provide measurements to back up our models, those models are simply not understood nor believable in those arenas.

So we model the corrosion of the waste package. We have no measurements regarding the environments nor for many of the corrosion mechanisms we are modeling. How do we know cathodic protection will work in the way or to the degree our models say? Clever models but no one believes them because we have plenty of experience that shows that we are non-conservative at least as often as we are conservative in our modeling.

Everybody knows that. But somehow we have drifted into a mode where we believe the world is going to be convinced by our TSPAs. In part our delusion is nourished by managers who misunderstand performance assessment and who impute to us more brains than we have and by the staff at the NRC who suffer from the same problems that we do in our programs. But both we and that staff will find ourselves disabused of our illusions when the real decision makers like the Secretary and the Commission have to actually understand what we do and seek for the technical support they need to support their decisions.

What can be proven? (I am not speaking of rigorous proof here, but proof that will get us through the regulatory hoops.) The only thing we have to do is say what we believe and give the reasons for that belief. Do we believe that the peak dose rate will actually be small at this site? What is our reason for that belief? TSPA calculations are interesting but do you actually believe them? Would you buy a car or a house or choose a place to live on the basis of calculations like these or would you rely on subjective, gut instincts? How do you increase your confidence? By doing more modeling? If you did that you would project that there would be no cesium in the shales at Oak Ridge because all the models show its retardation is so strong, yet cesium travel quite

freely through those shales. Would you situate your new home near the Oak Ridge golf course on the basis of overwhelming modeling work that shows perfectly good water there? What about the measurements that show substantial

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contamination of the ground water there? What are you going to believe, good modeling or measurements?

We believe the only arguments that will win in the end are those based on measurements. So we are trying to advocate an approach that focuses on quantities that you can measure.

In a day or two I plan to show you some modeling that shows what peak dose rates you get when you consider only models that can be justified on the basis of current and planned testing.

Meanwhile just as I was about to send this note off to you, somebody sent me the following interesting article. I have seen hundreds like it.

*17 CALIFORNIA: CONTROVERSY CENTERS ON AQMD COMPUTER MODELS

Critics are questioning whether the CA South Coast Air Quality Management District "engineered its computer modeling in order to appease politicians and businesses that want smog rules eased." Using the modeling, the AQMD "switched to much rosier predictions" of future pollution scenarios and relaxed proposed anti-smog rules (GREENWIRE, 8/5) "without having its methods scrutinized by independent experts or its own advisory council."

The US EPA and the state are reviewing the modeling, which provided data leading to AQMD's conclusion that the region's air could hold about twice as many emissions as previously thought without violating federal standards.

Meanwhile, AQMD executives say their analytical team "is sheltered from the political fray and followed the latest, scientifically sound practices" in developing the computer model. After holding public meetings detailing the new smog plan based on the model, the AQMD board expected to vote on the plan on 11/8 (Marla Cone, L.A. TIMES/DC edition, 8/28).

Now think of some manager looking at TSPA-VA and hearing similar criticisms of us. What do you
think that person will do when their necks are on the line and they are not capable of doing the
modeling themselves? Do you think they will simply defer to us modellers unless they have some
data to back up what they hear from us?

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Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 10/07/1997 11:32:32 AM
SendTo: Ed Taylor@CRWMS
CopyTo: Robert Andrews@CRWMS
ReplyTo:
BlindCopyTo:
Subject: Re: Real Trouble Ahead
Body: Ed Taylor
10/07/97 08:26 AM
To: Larry Rickertsen@CRWMS
cc: Robert Andrews@CRWMS
Subject: Re: Real Trouble Ahead

The other repositories use bentonite to take care of plutonium colloids.

1) I don't remember if KBS actually tested to show colloids won't diffuse through colloids.
2) Bentonite won't work for us because the heat will alter it to an illitic clay which will have openings in it.

Larry Rickertsen
10/07/97 10:51 AM
To: Ed Taylor
cc: Robert Andrews
Subject: Re: Real Trouble Ahead

You realize that all of this applies to any geologic repository (and any storage facility): colloids exist everywhere and they are mobile in the UZ as well as the SZ. We know that if we invoke a little bit of engineering, the numbers drop down by orders of magnitude (Bob Andrews told me he gets 10 rem/year), but it is clear that colloidal plutonium is a very serious issue for geologic disposal, let alone Yucca Mountain.

We will be talking with the experimenters about what we can say about radiocolloids and pseudocolloids (those are the terms they want us us to use: radiocolloids are the intrinsic colloids made from the radionuclides themselves and pseudocolloids are colloids onto which radionuclides or radiocolloids have sorbed). I personally believe it is unlikely that we will be able to say anything at all that will preclude transport of Pu and other radionuclides by colloids to the water table, but we will talk about it.

The answer is clearer than ever. Engineering has to do the job. When we were talking about I-129 and Tc-99, people really did not have a feeling we had a serious problem. The concern was something on the order of a few hundred mrem/yr and we felt we were close enough to the standard that something could be invoked. Now that we have tens of rem/yr (or thousands), I think a lot of people will be scared.

Ed Taylor
10/07/97 06:50 AM
To: Larry Rickertsen@CRWMS
cc: Julian Levine@CRWMS
Subject: Real Trouble Ahead

Forget that Napierian e stuff I suggested yesterday. The time axis is in the same notation, and I'm sure 1e+04 means 10,000 years. That means Shettel has

used the "continuing support" of the State of Nevada to publish a calculated release of 100,000 curies in 10,000 years from 1000 MTU. For analysts, the rest is easy. That's 50,000 rems per year per MTU out of the repository. No

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matter what you assume about dilution in the saturated zone, that's a totally unacceptable 1000s of rems per year to any farmer in the accessible environment! Shettel claims this comes from Argonne experimental data (He references P. A. Finn et al.) and ORIGIN, and he calls the calculations "realistic and conservative." What do we say to that, given Lake's demand that we have a basis for anything we say? I'm scared!

Here's the story the GAO might put together:

DOE never included plutonium in the TSPA calculations--they assumed it is insoluble. When Argonne showed that plutonium did come off as a colloid under realistic wetting conditions, DOE allowed a possible factor of three increase in dose, assuming plutonium colloids do not propagate very well--or something. When NTS measured plutonium one mile away from its source in 30 years, DOE invented a parametric calculation, and simply chose parameters that made plutonium effects at the accessible environment negligible. There is no basis for the calculation or the parameters. There is a lot of plutonium in the spent fuel; there is a mechanism for the plutonium to enter the flow of ground water; and there is evidence the plutonium will travel in the ground water ot the accessible environment. Plutonium has an unusually high toxicity. There is now plenty of experimental evidence that plutonium is a problem, and there is no evidence that it isn't.

There is also a possible interesting GAO story on our use of outside data--consider the Frishman letter to Science and the Negev desert for starters. Consider how we continue to ignore the Gelhar/Neuman research. Consider the Karsten Pruess critique of the Livermore calculations. Consider our dose factors. etc. etc.

If you accept the Simon-says agreement that prevails in Las Vegas, then these questions fall in the Larry Hayes area. However, I think both of us have responsibility here--Mike and Jean, too. You might be interested to know that Julian is thinking of writing a memo to Strickler on the general problem of our reaction to outside developments. I think this time obfuscation may kill us. What do you think?

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Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 02/24/1999 11:37:09 AM
SendTo: CN=Jerry King/OU=YM/O=RWDOE@CRWMS
CopyTo: CN=Dennis Richardson/OU=YM/O=RWDOE@CRWMS;CN=Mark Wisenburg/OU=YM/O=RWDOE@CRWMS
ReplyTo:
BlindCopyTo:
Subject: defense in depth
Body: See below.

---------- Forwarded by Larry Rickertsen/YM/RWDOE on 02/24/99 08:31 AM ----------

Lydia Jones
02/24/99 07:02 AM
To: Mark Wisenburg/YM/RWDOE@CRWMS, Larry Rickertsen/YM/RWDOE@CRWMS
cc:

Subject: defense in depth

---------- Forwarded by Lydia Jones/YM/RWDOE on 02/24/99 07:02 AM ----------

Jerry King
02/23/99 05:07 PM
To: Dennis Richardson/YM/RWDOE@CRWMS
cc:

Subject: defense in depth

The graphics in the NWTRB presentation on d-i-d did a good job of demonstrating the importance of various barriers, in the reference design, to meeting a 25 mrem performance standard, but they, unfortunately, were interpreted by a lot of people to mean that the natural barriers at the site do not contribute much, and to mean that we are relying almost totally on engineered systems for waste containment and isolation. Do you have anything in the works to rectify this misperception and to show how much the site contributes?

As you know, the site is great for the vast majority of radionuclides. However, the site is insufficient for the mobile radionuclides and, because these are the only ones seen in the PA and DID curves, it looks like the site does nothing. We are developing graphs that show how the site alone can deal with this immobile majority. The attached file is an example.

But the fact is the site alone is insufficient to meet the performance objective. It is that simple.
Attachment: site.ppt

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 10/29/1997 03:23:46 PM
SendTo: Ed Taylor@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Plumed Out
Body: Gamesmanship. At first I thought he was saying we agree we need both engineered and natural barriers and, by the way, we have these big uncertainties in engineered barriers because the "EBS program lacks the maturity needed to support the major project goals." Then I see what he means is that we are not ready to go forward with anything yet: a few more years research on engineered barrier materials is fine with him because we can be doing good work in the SZ while we are waiting for the answer. This guy is very impressive.

---------- Forwarded by Larry Rickertsen on 10/29/97 12:19 PM
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William Dudley
10/29/97 09:41 AM
To: Larry Rickertsen@CRWMS
cc: Jean Younker@CRWMS, Robert Andrews@CRWMS, Robert Craig@CRWMS, Larry Hayes@CRWMS, Ed Taylor@CRWMS
Subject: Re: Plumed Out

We're so close to agreement that it's scary. Most of our relatively minor differences seem to stem from the fact that we speak different dialects.

Let's quit while were ahead!
---------- Forwarded by Larry Rickertsen on 10/29/97 12:19 PM
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William Dudley
10/29/97 10:27 AM
To: Ed Taylor@CRWMS
cc: Robert Craig@CRWMS, Larry Hayes@CRWMS, Larry Rickertsen@CRWMS, Jean Younker@CRWMS
Subject: Re: Plume Width Discussion

Ed --

You zeroed in accurately on one of my concerns -- that we haven't addressed crucial technical issues associated with the engineered barrier. I'm comforted to see that both you and Larry acknowledge that the EBS program lacks the maturity needed to support the major project goals, VA and LA.

My other major concern regarding the top-level approach is that the project often seems perilously close to writing off the site's contributions to waste isolation in favor of poorly defined and largely unevaluated engineered barriers, and despite several reasons -- scientific, regulatory, and political -- for maintaining a viable site program.

Bill

Ed Taylor
10/27/97 08:49 AM
To: William Dudley@CRWMS
cc: Jean Younker@CRWMS, Robert Andrews@CRWMS, Robert Craig@CRWMS, Larry Hayes@CRWMS, Dwight Hoxie@CRWMS, William Scott@CRWMS, Roger Henning@CRWMS,

Michael Voegele@CRWMS
Subject: Re: Plume Width Discussion

Bill

Good assessment. As I read Roseboom and Winograd, they knew a long time ago we'd get here. Their idea was to use ceramic drip shields as a compensation for invincible ignorance, and not to improve a black-box calculation. Even the NRC of the early 1980s saw it just that way. Your complaint appears to be that we haven't addressed crucial technical issues associated with the engineered barrier. If so, I agree.

Ed

William Dudley
10/22/97 08:01 PM
To: Larry Rickertsen
cc: Jean Younker, Robert Andrews, Robert Craig, Larry Hayes, Dwight Hoxie, William Scott, Roger Henning, Ed Taylor, Michael Voegele
Subject: Re: Plume Width Discussion

Larry --

Sorry to be so silent in the last week --- I ran low on multitasking skills. I'm responding to your message of 10/13/97 in response to mine of 10/10/97.

I'm not clear as to the identification of your implications with which you request my agreement, but let's start with your 3rd and 4th paragraphs.

You indicated that simplifications of the flow system in olden days, when matrix flow was believed to dominate the UZ, seemed to result in persistent predictions of long travel times and negligible releases. However, more recent evidence shows that rapid flow cannot be precluded, and, if we account "fairly" for complexities and uncertainties about the system, apparently any release at all results in unacceptable calculated dose rates. You parenthetically define "fairly" as taking proper cognizance of what we do not know rather than assuming favorable properties.

What has been bothering John Stuckless and me is that these results seem to emerge from the proverbial black box, and we're very suspicious that "proper cognizance" effectively means "worst possible case". It's hard to swallow that any release at all results in unacceptable doses but, once swallowed, it's a swell justification for relying on a foolproof engineered barrier, despite that the foolproof barrier hasn't actually been designed or evaluated.

In your final discusion, you indicate that, aside from uncertainties regarding transport mechanisms, my memo suggested to you a general difficulty of presenting a defensible argument in the VA time frame, and probably in the LA time frame as well.

I'm glad that you excepted transport mechanisms as that topic is high on my list of ineptitudes. Nonetheless, your perception that I predict some difficulties with some aspects of the viability and licensing arguments is correct. I expect that I am far from being alone in that discomfort; as a matter of fact, I haven't heard anyone predict smooth sailing through either VA or LA. Specifically, my discomfort relates to how well we know some of the hydrogeologic aspects of the expanded site and, thus, how badly our necessarily simplified models misrepresent the natural system. A case in point is our futile attempts to predict the maximum credible plume width at the Amargosa Farms latitude. We simply do not have the geologic and hydrologic data to define the framework for modeling the vertical and lateral convergence and subsequent divergence of flow that I propose based on indirect regional information. Therefore, we're forced to play with dispersion coefficients in a generic aquifer independent of geologic constraints.

It's been fun -- almost like a stimulating debate over a pitcher of beer. However, I note that the growing audience to these exchanges has been strangely -- and probably wisely -- silent. Meanwhile, I really need to get on to other tasks. Out of morbid curiosity, I'd be interested in knowing what position Lake Barrett takes on the plume-width question.

Bill

# EXHIBIT No. 7

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 01/28/1998 01:06:49 PM
SendTo: Ed Taylor@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: reply
Body: I gather you think I am one of the enemy. Maybe. I just took my VA training. The instructions there explicitly say that the document production process is more important than scientific data. I guess if I respect those instructions, I am part of the problem.
Ed Taylor
01/27/98 11:57 AM
To: Larry Rickertsen@CRWMS
cc:
Subject: reply

Thanks for the comments--they reveal I haven't been clear enough. Also, we have somewhat different interpretations of various things. Here are some comments on your comments.

#1. Articulation of the Performance Assessment. The basic question is how to tell the scientific community and the public what we have learned about the effects of disposal of radioactive waste at Yucca Mountain. The Panel believes the assessment should rest on an explicit data-based safety case, where uncertainties are convincingly compensated by defense-in-depth (redundancy). The Project believes the assessment should rest on a total-system computation that takes account of all elements at once, and where the key result is the history of the dose rate with 95-percent confidence limits. The Panel would emphasize physical measurements; the Project would emphasize expert elicitations that convert data into probability distributions.

The Project does not emphasize expert elicitations that convert data into pdf's, but uses statistics whereever they are available. [Where are they available?] In the absense of statistics, they have relied on expert opinion alone [But mostly internal experts, like Bruce.]. I would not characterize this as emphasizing elicited information [Who's kidding who? These guys are going to assign probability distributions that keep the expected values in the right place. Bob Andrews is the experts]. Your description here seems to me to skirt the real issue which is whether reliance on opinion alone in any area is acceptable [That's the real issue. I tried to express it prudently.]. My feeling is that one theme of the Panel's report is that such an approach, even if it is all you can do, is not consistent with "reasonable expectation" (even though it leads to various calculated moments of a dose rate pdf, including an "expected value") [I agree, and I intended that the last line to convey that theme in Project language. I hope we find out if it did.].

Ok, I said if you were aware of the issue, throw this away. An issue is that the Project says you misrepresent them. Even if it is all semantics or nuances of words, it is good to know what is going on. That is the only point of the first part of my stuff here.

#2. Thermohydrological Modeling. There is no generally accepted way to calculate the behavior of the geohydrological environment as a function of heat releases from the disposed waste. The time constants of the processes are such that there can be no confirmation of any calculation process for many years. The issue is whether we can satisfactorily describe the effects of waste heat on seepage for the Viability Assessment, or whether we must design around ignorance of those effects.

What the Panel said is that the Drift Scale Test is a good thing, a major step forward. There was nothing in that conclusion that indicated the situation was hopeless; rather that the test will lead to a reduction of uncertainties and that this reduction would important to the LA. The conclusion here is yours, not theirs [Hold on there! What I said is exactly what Payer said. What I'm

trying to do here is get Payer's comment into the discussion of flow modeling--that's what the report didn't do and should have done.]. I guess I don't have trouble with that.

I did not attend the first meeting. I could not find what you reported in the 2nd report or in the 2nd meeting. I don't recall Payer saying anything about thermohydrology at all.

#3. Waste Package Life. Performance analyses reveal that waste packages must remain intact for tens of thousands of years. The issues are what materials to use and how to use existing data and short-term measurements to demonstrate such lifetimes.

#4. Waste Form Dissolution. Until very recently performance analyses assumed that the maximum dissolution rate for waste forms is one part in ten thousand per year. This was based on interpretation of measurements of the dissolution of uranium dioxide completely immersed in water. Similar experiments indicated that the solubility of actinides is low. Recent measurements with radioactive spent fuel in dripping water suggest the dissolution process is different, that the dissolution rates may be higher, and that actinides can come off as colloids. The issue is how to credibly describe the mobilization of radionuclides while taking full account of knowledge accumulating in the scientific community. [You don't think this is very important?]

I do not believe SNF will generate colloids, while glass will. I could be wrong about both sides of that, but it is clear the issue is different. I am quite sure that the issue for Ewing regarding waste form problems is with glass, only giving standard lip service to SNF.

I looked for this but could not find it [Ewing does make an issue of the unconquerable mysteriousness of colloids.]. Ewing's problem is with the glass waste dissolution [not trivial! the referenced article in Science (p649, 1 May 1992) says "Thus, the EBS system should be designed to inhibit colloid transport in case of unexpected liquid water contact with the waste . . . The colloid phases generated and their transport properties will likely vary, depending on the type of waste form (spent fuel or glass) and on the glass composition."] I do not believe the drip tests show the dissolution of SNF is greater than le-4/yr. [Ewing said in his first oral presentation that the fuel may go away in less than a thousand years. I don't really care about that. I care about the production of colloids--no matter what the dissolution rate.] If I am right here, your representation of the issue is not very important. [Colloid production is important.]

#5. Transport of Radionuclides. Recent studies of percolation flux magnitudes and flux patterns at Yucca Mountain suggest that the significant flow in the unsaturated zone will be in fractures, and that the radionuclide retardation measured in laboratory experiments is not relevant. In addition, observations at several DOE sites confirm that radionuclides tend to move farther and faster than model predictions. Expert elicitation for flow in the saturated zone has revealed that existing models are also optimistic, and that dilution will be significantly less than calculated in past TSPAs. The issue is how to either credibly calculate low magnitudes for radionuclide concentrations at the accessible environment, or to design against the signficant release of radionuclides.

#6. Engineered Enhancements. At present the uncertainties in all reference process models are large. Expected dose rates computed from the reference models are marginally acceptable. This implies a requirement for additional barriers that are robust enough to compensate for the uncertainties in the reference processes. We do not yet have sufficient data to fully assess any of the proposed engineered barriers. The issue is how to proceed to establish the feasibility of the additional barriers for the Viability Assessment.

# EXHIBIT No. 8

Author: James Raleigh
Organization: RWDOE
From: CN=James Raleigh/OU=YM/O=RWDOE
PostedDate: 06/15/2000 12:59:35 PM
SendTo: CN=Mike Jaeger/OU=YM/O=RWDOE@CRWMS;CN=Don Bucci/OU=YM/O=RWDOE@CRWMS;CN=Gary Canori/OU=YM/O=RWDOE@CRWMS;CN=Ronald Casassa/OU=YM/O=RWDOE@CRWMS;CN=Paul Ortstadt/OU=YM/O=RWDOE@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Review of Resolution Package for DTN LB980120123142.004
Body: ---------- Forwarded by James Raleigh/YM/RWDOE on 06/15/2000 09:59 AM ----------

James Raleigh
05/30/2000 10:59 AM
To: Suzanne Link/YM/RWDOE@CRWMS
cc: Darrell Gardner/YM/RWDOE@CRWMS, Terry Grant/YM/RWDOE@CRWMS, Ronda Fulkerson/YM/RWDOE@CRWMS

Subject: Review of Resolution Package for DTN LB980120123142.004

Hi Suzanne,

During the data verification review of the resolution package for DTN LB980120123142.004, I came across a number items that need to be provided, reconciled, or explained further. Please address the following comments:

Checklist Item #1.A:

No record accession numbers are provided for the raw data from the referenced Scientific Notebook. A reference to CDs does not satisfy the requirement to provide raw data records.

Checklist Item #1.B:

Records providing evidence that the data reduction calculations are accurate (checked by hand calculations or other means) have not been provided.

Checklist Item #2.A:

Documentation that describes the specific procurement process is not provided.

MOL.19980217.1087 is incomplete in that it does not contain all the information identified as part of the Records Package Cover Sheet. An Acceptance Inspection Report is among the missing information from the record. The record also contains a procurement Final Procurement Review for the calibration of a Keithley Digital Multimeter, Model 2001 that was completed prior to the receipt of the equipment and the equipment calibration, which does not appear appropriate.

MOL.19980217.1045 contains a procurement Acceptance Inspection Report for the calibration of Sierra Instruments Mass Flow Controllers. The Acceptance Inspection Report was not performed in compliance with the applicable procedure. The report form was not completed and submitted to records within 30 days of receipt of the service. Additionally, the Final Procurement Review was completed prior to the receipt of the equipment and the equipment calibration, which does not appear appropriate.

MOL.19980217.1040 contains a procurement Acceptance Inspection Report for necessary RTD calibrations. The Acceptance Inspection Report was not performed in compliance with the applicable procedure. The report form was not completed and submitted to records within 30 days of receipt of the service.

The RTD procurement record (MOL.19980217.1040) also contains a Final

Procurement Review that is suspect (gives the appearance that it was falsified). The "Part I - Identification" block is dated December 5, 1997, whereas the remainder of the form, Parts II, III, and IV, are all dated May 13, 1997.

The TRW procurement under PO A02482JM7C needs to be entered into TDMS/RIS and the Road Map.

No record accession numbers are provided for the Setra Sensor procurements and calibrations.

Checklist Item #2.B:

The title of MOL.19980217.1088 needs to be amended to include the second multimeter discussed (S/N 0669479) in the documentation, or have a separate record created. Additionally, the calibration certificates are not signed and dated.

MOL.19980217.1047 does not provide as found and as left data, does not include the acceptance criteria, and the calibration date should be established as the date when the form is completely approved.

MOL.19980217.1048 does not provide as found and as left data, does not include the acceptance criteria, and the test date contradicts itself from page 1 to page 2.

MOL.19980217.1050 does not provide as found and as left data, does not include the acceptance criteria, the calibration date should be established as the date when the form is completely approved, and the test date contradicts itself from page 1 to page 2.

MOL.19980217.1051 does not provide as found and as left data, does not include the acceptance criteria, the calibration date should be established as the date when the form is completely approved, and the test date contradicts itself from page 1 to page 2.

MOL.19980217.1041 does not provide as found and as left data, does not include the acceptance criteria, it is not clear which LOT number this record is for (LOT M022103??), the calibration date should be established as the date when the form is completely approved (May 15 not May 14), the "Contents of Record" field states "S/Ns 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12" when it should read ID Nos. 1 through 14, and the third page of the record contradicts pages 1 and 2 with respect to the calibration date and M.O. number (M.O. GO36220 vs. M.O. GO33390). The calibration date and M.O. number discrepancies would lead an auditor to believe the record had been falsified. It gives the appearance that the proper signature page is not available and another record's signature page was used in its place. In fact, the signature page is the same as attached as page 3 to MOL.19980217.1042.

MOL.19980217.1042 does not provide as found and as left data, does not include the acceptance criteria, the "Contents of Record" field states "S/Ns 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12" when it should read ID Nos. 1 through 14, and the May 14, 1997 calibration date should be removed from this field as well.

MOL.19980217.1043 does not provide as found and as left data, does not include the acceptance criteria, the calibration date should be established as the date when the form is completely approved (May 15 not May 14), the "Contents of Record" field states "S/Ns 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12" when it should read ID Nos. 1 through 14, and the third page of the record contradicts pages 1 and 2 with respect to the calibration date and M.O. number (M.O. GO36221 vs. M.O. GO33390).

MOL.19980217.1044 does not provide as found and as left data, does not include the acceptance criteria, the "Contents of Record" field states "S/Ns 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12" when it should read ID Nos. 1 through 14, and the third page of the record contradicts pages 1 and 2 with respect to the calibration date and M.O. number (M.O. GO36222 vs. M.O. GO33390).

MOL.20000330.0799 mentions 2 CDs but only provides 1 CD title name.

Checklist Item #3:

It is not clear from the discussion that the subroutines mentioned are internal to the LabView Software. If routines were written for the purposes of data acquisition or reduction, the software would not be considered M&TE and would not be exempt from AP-SI.1Q requirements. Software responses should be coordinated with John Pelletier for proper interpretation and consistency.

Record Road Map:

The "Record Type(s)" field does not include the page count for the record.

Record Titles need to be cut and pasted from TDMS/RIS. If they are incorrect in TDMS/RIS, contact Judy Herbert (702-295-6195) to have the record revised.

General:

The TRW procurement mentioned above remains open and will need to be verified.

Many items on the Record Road Map still require accession numbers, title verification, and page counts.

If you have any questions or require further information, please contact me.

Jim
(702) 295-0353

# EXHIBIT No. 9

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 09/25/1998 11:23:39 AM
SendTo: Ed Taylor <ed-taylor@erols.com>
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: New Review of System Engineering#2
Body: I like this message very much. I have a hard time with the part about Bailey and I taking over--always have had that kind of difficulty when you suggest some variant on it--but that is probably because I don't have the experience you do.

On the other hand there is something fundamental in my hesitancy. Not sure what. Maybe this: we have two system engineering jobs--one is to figure out the physics, the glitches in our thinking, compelling ways to overcome them, and then see to the details that have to be attended to to get people to buy in. But the second one is just as important. What do you do about truly stupid people and conflicting agendas and other constraints. One of the several approaches to that problem is what you do about the other one--a KISS solution, compelling described, over and over until they finally get it. As Feyerabend says, selling ideas is just like any other sales job.

But you still have stupid people and agendas to deal with. Those things fundamentally require participation of more than one or two heros. If just Jack and I (or any other Lone Ranger and Tonto) try to do it, it isn't the solution. At least I agree with that postmodern concept. However, don't jump to the conclusion that I, in any way, subscribe to the Jean Younker school of concensus building. Sometimes the solution, like dripshields, is to divert them. Sometimes it is to become their trusted courtier, like Jan was suggesting. Sometimes something. It is different in every case--after all it is a system engineering problem: those are, by definition, different in every case. But I feel that in this case, there is something by way of James T. Kirk-type action, and there is something else that requires a broader based integration effort.

I was going to try to come up with an example, but the examples to make my point that I can think of right now are so artificial that I wind up arguing what you argue below (that is one reason I like your paragraphs). Let me give instead something that I am in the process of doing. I showed you my mathematical approach to defense in depth, but I now know that it will not work. (Somehow I feel I have told you all this either in a memo I sent, or one I started and never sent). One reason it won't work is that it requires calculators with ingenuity, not constrained by their black box models. I told you Bob Andrews said he could not do the calculations I mapped out. But there is a more fundamental reason. The method I mapped out was specially designed to show how important water diversion barriers are and the need to provide redundancy there. The examples I worked out to illustrate the approach looked ok. But I learned from those examples something that should have been obvious without them: the system works only as long as the barriers last--then it fails. So if you are interested in negligible releases for 100,000 years, you need water diversion barriers that last 100,000 years. But if they last 100,000 years, then the calculational approach gives nothing at all. In other words, the calculational approach works only for those systems that fail.

Why do I have to keep learning this lesson over and over? Because I still have a lot of clock-mind in me where I just go based on memorization rather than physics in the gut.

Anyway the method is no good. So I have invented another, one where you simply identify barriers that might work and ask if they can perform reliably for the desired time. Sound familiar? Now I have to make it a little more complex than that because I have to acknowledge that there are people who are still worried about the semi-mobile radionuclides even though the solution to the mobile radionuclides takes care of them. Jack is one of those. He can't get the physics into his gut. His conflict is that he knows there is uncertainty

in any barrier system, so he wants to have lots of subsystems in there. That is why his eyeball diagram is so cluttered. He simply is not moved when I tell him the simple problem--he says that is my representation of the thing.

So how do you compute this? Here is this highly intuitive guy. Absolutely brilliant in my opinion. But he is unable to make that representation his because he doesn't have that theoretical physics capability. Yet. I wonder if it is latent in him and he just never got it in his engineering curriculum at school. I have no doubts at all that he could ace the physics courses, but he just may not have decided that physical intuition is something more than what you need to get a good grade.

In any event, he too is part of the second system engineering problem. The approach has to be a little complex to have credibility with him. At the same time it cannot be so complex that the real answer gets diluted or obscured by everything else. I think I have it.

Now having written all that, I have this feeling that your paragraphs are exactly right. If you skipped ahead from the first paragraph to get to this bottom line, you don't need to read any of the brilliant gobbledegook in between. I now understand that the real system engineering problem is to convince Jack of how simple the physics really is, not to show off with some complex mumbo-jumbo. I did not get to this point instantaneously but it did not take all that long.
Ed Taylor <ed-taylor@erols.com> on 09/24/98 07:59:56 PM
To: Larry Rickertsen/YM/RWDOE
cc:
Subject: Re: New Review of System Engineering#2

I agree Brocoum is paranoid and that he listens to the bunch of certifiable jerks who make up his security blanket. The real problem is that the Las Vegas DOE (and the jerk advisors, apparently) believe the best course is to go along with the labs, who are the brains of DOE--even Moniz thinks so. To the DOE, TRW, Woodward-Clyde, and even Intera are relatively ignorant. When Larry Rickertsen and Ed Taylor declare that Bo is a swindler and that Los Alamos is scientifically out of it, Brocoum has a knee-jerk response--"These assholes don't understand; they're just making trouble. And those foolish E-Mails can be real trouble if the State of Nevada gets them. I'm going to tell Lake to tell Strickler to get on the team."

Given the above, and given the craven and ignorant M&O management, we need some kind of deus ex machina. I hope--as you do--the NRC contingent that wrote the pt 61 strategy runs the intellectual show. But if they are the solution, it will take years before they count. The repository program may die by then.

Why don't you and Jack Bailey--Strickler's regulatory team--grab the intellectual reins. Kick the pt 61 strategy into the hopper with a solid briefing. It may scare Brocoum.

-----Original Message-----
Fr
From: Larry_Rickertsen@notes.ymp.gov <Larry_Rickertsen@notes.ymp.gov>
To: Ed Taylor <ed-taylor@erols.com>
Date: Thursday, September 24, 1998 8:25 AM
Subject: Re: New Review of System Engineering#2

>
>
>
>
>
>Ed Taylor <ed-taylor@erols.com> on 09/23/98 07:44:21 PM
>
>To: Larry Rickertsen/YM/RWDOE

>cc:
>Subject: Re: New Review of System Engineering#2
>
>
>
>
>All that sounds good, but doesn't Craun report to Brocoum? I can't imagine
>Brocoum tolerating a declaration that we need engineering, let alone a
>declaration that the site is no good. Nevertheless, it is good to know
>that Abe isn't going to continue defending the flow and transport models.
>
>At least Brocoum and Van Luik are acting out of principle. Strickler's
>performance is craven.
>
>One more thing on the computer model thing. Experimental scientists are
>trained to master and use handbooks; theoretical scientists are trained to
>make and remake handbooks. We have completely different sets of sins and
>virtues. By its very nature, system engineering in first-of-a-kind systems
>requires theoretical types. Having a dictator like Brocoum--no
>theoretician--in charge is the fundamental problem.
>
>
>What I was trying to get at is this is not a modernism vs postmodernism
>thing at all. Further, I cannot articulate the Brocoum-Van Luik thing at
>all. It is important to try to do so because that is the real system
>engineering problem. I think a take on Brocoum as purely a geologist
>trying to preserve geology is incorrect. That would indeed reflect some
>sort of modernist principle. I would characterize him instead as deeply
>paranoid. He has people around him who reflect the geologist mentality and
>some of those are driven by job insecurity. He listens to them because he
>is afraid of them. He also has nonthinkers advising him like Gamble and
>Cline. He keeps them close because he trusts them and he listens to them
>because he needs to keep their support. The way to deal with him is to
>address his paranoia. I think he is a very intelligent man and grasps the
>truth of what we are saying through his fog, but we have to be able to deal
>with his cadre of "advisors."
>
>Jack Bailey told me the other day that one of his most significant
>challenges is to get me back into Brocoum's good graces. My reaction then
>was to think that I did not want to be the kind of person who did so. I
>now see that Jack has homed in on the essential problem. (I am not sure he
>has done so in conscious, deliberate way.)
>
> I think he is trying to get at the "theoretician in charge" problem as
>well.
>
>Van Luik is a different animal. He is not principled, but purely
>manipulative. He fits the modernist mold very well. I can deal with him,
>because his disingenuousness is obvious.
>
>
>

- att1.htm

Attachment: att1.htm

# EXHIBIT No. 10

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 04/01/1998 05:45:40 PM
SendTo: CN=Jan Docka/OU=MV/O=RWDOE@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Water Water Everywhere
Body: Thought you might enjoy this.

---------- Forwarded by Larry Rickertsen on 04/01/98 02:46 PM
----------

Larry Rickertsen
04/01/98 02:29 PM
To: Ed Taylor/MV/RWDOE@CRWMS
cc:
Subject: Water Water Everywhere

I will send a summary of the observations separately. The file has graphics and is big so it takes a while. The situation now is the following.

1) We are not sure if the water seen is the result of mobilization of resident water by the heater or if it is condensation from warm humid air that has come into contact with cool rock and bulkhead. Either explanation is consistent with the amount and sporadic nature of the dripping.

2) Alan Flint will bore into the roof and monitor moisture tension and saturation to determine direction of the moisture front, whether laterally or from above (i.e., mobilization of resident water) or from below (i.e., imbibition of condensation from below).

3) Results will be compared with Buscheck predictions already made for these quantities.

Unlikely to be detailed agreement. People did not expect the puddling on the floors or the sporadic nature so they clearly were not in the calculated results. Further these effects are like trying to predict the bubbling in a boiling pot: you can't get the details right but can predict the general nature of the activity. So the comparison is likely to tell you something about the goodness of the modeling.

Note every heater test gives such effects. You always get water rushing into things and the flows are always sporadic. In the previous cases the reason was that the mobilized water found different pathways having different travel times. I would not at all be surprised if the flow in this case is simply water mobilized by the heater and finding various fracture flow pathways.

To me the most useful thing about this test will be the demonstration of how the flow goes: chaotically, reflecting the self-organizing character expected when you have complexity (many contributing processes) and nonlinear processes (e.g., friction, hysteresis, nonlinear flow properties, channeling within fractures). Our DKM models are likely to reproduce this situation and should provide valuable insight into the modeling situation that should serve us well as we provide perspective on that situation in the VA and LA. The first response to these situations is shock and surprise because our previous intuition was based on overly simple modeling. The more mature response (i.e., measurement-based) is that things look qualitatively just like we would have expected.

I will send you the summary next.
---------- Forwarded by Larry Rickertsen on 04/01/98 02:46 PM
----------

Larry Rickertsen
04/01/98 02:30 PM
To: Ed Taylor/MV/RWDOE@CRWMS
cc:
Subject: Moisture Movement Through DST Bulkhead

---------- Forwarded by Larry Rickertsen on 04/01/98 02:08 PM
----------

Alan Flint
04/01/98 01:21 PM
To: Larry Rickertsen@CRWMS
cc:
Subject: Moisture Movement Through DST Bulkhead

---------- Forwarded by Alan Flint on 04/01/98 12:05 PM
----------

William Boyle
03/25/98 05:48 PM
To: Alan Flint@CRWMS
cc:
Subject: Moisture Movement Through DST Bulkhead

Here is the current explanation of the drip. It is a big file.

---------- Forwarded by William Boyle on 03/25/98 05:55 PM
----------

Robin Datta
03/24/98 12:37 PM
To: William Boyle@CRWMS
cc: Robert Yasek@CRWMS, Mark Peters@CRWMS, Ralph Wagner@CRWMS
Subject: Moisture Movement Through DST Bulkhead

Here is the finalised version
---------- Forwarded by Larry Rickertsen on 04/01/98 02:47 PM
----------

Larry Rickertsen
04/01/98 02:40 PM
To: Ed Taylor/MV/RWDOE@CRWMS
cc:
Subject: Water Water Everywhere

The more I think about this the more fun it gets. Another explanation (or a hybrid) is that we are seeing condensation of warm vapor generated from the water mobilized in the rock. As the pore water is boiled, the vapor is driven off through fractures, some of which finds its way into the drift and then condenses on the relatively cool bulkhead door. This tells me that Alan's measurements are liable to tell you little for you will probably have lots of stuff going on (including both mobilization of water in the rock and imbibition of condensate). I think this will be our hardest modeling problem. And it is coming when nobody can include it in the VA. If the DOE's stomachs were churning about the VA were churning before, this has got to really cause ulcers.

By the way, note the observation that a portion of the heater itself is getting rained on. Hoorah for drip shields.

---------- Forwarded by Larry Rickertsen on 04/01/98 02:38 PM

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Larry Rickertsen
04/01/98 02:29 PM
To: Ed Taylor/MV/RWDOE@CRWMS
cc:
Subject: Water Water Everywhere

I will send a summary of the observations separately. The file has graphics and is big so it takes a while. The situation now is the following.

1) We are not sure if the water seen is the result of mobilization of resident water by the heater or if it is condensation from warm humid air that has come into contact with cool rock and bulkhead. Either explanation is consistent with the amount and sporadic nature of the dripping.

2) Alan Flint will bore into the roof and monitor moisture tension and saturation to determine direction of the moisture front, whether laterally or from above (i.e., mobilization of resident water) or from below (i.e., imbibition of condensation from below).

3) Results will be compared with Buscheck predictions already made for these quantities.

Unlikely to be detailed agreement. People did not expect the puddling on the floors or the sporadic nature so they clearly were not in the calculated results. Further these effects are like trying to predict the bubbling in a boiling pot: you can't get the details right but can predict the general nature of the activity. So the comparison is likely to tell you something about the goodness of the modeling.

Note every heater test gives such effects. You always get water rushing into things and the flows are always sporadic. In the previous cases the reason was that the mobilized water found different pathways having different travel times. I would not at all be surprised if the flow in this case is simply water mobilized by the heater and finding various fracture flow pathways.

To me the most useful thing about this test will be the demonstration of how the flow goes: chaotically, reflecting the self-organizing character expected when you have complexity (many contributing processes) and nonlinear processes (e.g., friction, hysteresis, nonlinear flow properties, channeling within fractures). Our DKM models are likely to reproduce this situation and should provide valuable insight into the modeling situation that should serve us well as we provide perspective on that situation in the VA and LA. The first response to these situations is shock and surprise because our previous intuition was based on overly simple modeling. The more mature response (i.e., measurement-based) is that things look qualitatively just like we would have expected.

I will send you the summary next.
Attachment: Bhdh2o3.doc

# EXHIBIT No. 11

Author: James Raleigh
Organization: RWDOE
From: CN=James Raleigh/OU=YM/O=RWDOE
PostedDate: 08/03/2000 06:33:42 PM
SendTo: CN=George Alameddin/OU=YM/O=RWDOE@CRWMS
CopyTo: CN=Patrick McKinley/OU=YM/O=RWDOE@CRWMS;CN=Mike Jaeger/OU=YM/O=RWDOE@CRWMS;CN=Don Bucci/OU=YM/O=RWDOE@CRWMS;CN=Gary Canori/OU=YM/O=RWDOE@CRWMS;CN=Ronda Fulkerson/OU=YM/O=RWDOE@CRWMS
ReplyTo:
BlindCopyTo:
Subject: Review of Resolution Package for DTN GS971108312232.007
Body: Hi George,

During the data verification review of the resolution package for DTN GS971108312232.007, I came across a number of items that need to be reconciled or explained further. Please address the following comments:

Checklist Item #1A:

Is there a Scientific Notebook and/or Equipment Notebook for this data acquisition effort? Where are the equipment requirements for the shelters clearly stated? If USGS Technical Procedure NWM-USGS-HP-137, "Operation of UZ Borehole Instrumentation Sites," was used, where is compliance with the procedure documented?

The USGS Calibration records provided do not properly bound the data acquisition time frame. See Record Road Map comments.

Checklist Item #2A:

See Record Road Map comments.

Checklist Item #2B:

The USGS Procurement and Calibration records provided do not properly bound the data acquisition time frame. See Record Road Map comments.
If USGS Technical Procedure NWM-USGS-HP-137, "Operation of UZ Borehole Instrumentation Sites," was used, it requires that the entire data acquisition rank be checked with an HP-270 as a system to ensure that the system is operating within required tolerances at least once every six months. Where is compliance with this procedural requirement documented, i.e., where are the six-month data system check records?

Checklist Item #3:

The response provided to this question does not include the full software version, title, and/or unique identifier. Furthermore, the computational aids need to be accompanied by a record or records containing verification evidence that the calculations are providing accurate results. Software responses should be coordinated with John Pelletier for proper interpretation and consistency.

Record Road Map:

MOL.19980226.0611: The "Record Title" field in RISweb needs to be corrected to state "DATA" instead of "DTA".

MOL.19950626.0324; MOL.19960129.0325; NNA.19931123.0022; and MOL.19951120.0075: These records are Not Relevant to this DTN since the effective dates of the procedures/instructions expire well before the data acquisition period.

MOL.19960715.0015: The "Record Title" field needs to reflect exactly (i.e., use cut and paste) what is contained in RISweb.

MOL.19981201.0521; MOL.19990709.0157; NNA.19940427.0165; MOL.19981201.0615; MOL.20000316.0560; and MOL.19981201.0551: These records are Not Relevant to

this DTN. All referenced calibrations that occurred prior to July 1, 1996 or after September 30, 1998 are Not Relevant.

MOL.19981201.0613: This record indicates that re-calibration was due September 24, 1997, which was during the data acquisition time frame. Where are the records for the re-calibration and closing calibration?

NNA.19940427.0164; MOL.19981201.0569; MOL.20000316.0732; MOL.19981201.0610; MOL.19981201.0513; MOL.20000316.0731; MOL.19981201.0564; and MOL.19960924.0654: These records are Not Relevant to this DTN. All referenced calibrations that occurred prior to July 1, 1996 or after September 30, 1998 are Not Relevant.

MOL.19990709.0157 (pp. 397-405): This road map entry has completely the wrong title, document types, and pagination. It appears to be a cut and paste error.

MOL.19990709.0157 (pp. 448-464): This road map entry has completely the wrong title, document types, and pagination. It appears to be a cut and paste error.

MOL.19981202.0099: The "Record Title" field needs to reflect exactly (i.e., use cut and paste) what is contained in RISweb.

MOL.19981202.0101: The document is not signed and dated. If it is to be used in support of this DTN, it will require an impact evaluation.

MOL.19990709.0157 (pp. 543-556): This road map entry has completely the wrong title, document types, and pagination. It appear to be a cut and paste error.

MOL.19981201.0465 and -.0466: These records demonstrate that the equipment was calibrated before and during data acquisition. A closing calibration record will be needed for this piece of equipment or it will require an impact evaluation.

MOL.19981201.0618 and -.0619: These records demonstrate that the equipment was out of calibration for over 3 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment or it will require an impact evaluation.

MOL.19981201.0622 and -.0623: These records demonstrate that the equipment was out of calibration for 6 days. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment or it will require an impact evaluation.

MOL.19981201.0635 and -.0636: These records demonstrate that the equipment was out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.2000316.0733: The record is Not Relevant to this DTN. All referenced calibrations that occurred prior to July 1, 1996 or after September 30, 1998 are Not Relevant. Furthermore, "precision" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0001 and -.0002: These records demonstrate that the equipment was out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0007 and -.0008: These records demonstrate that the equipment was out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0013 and -.0014: These records demonstrate that the equipment was

out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0019 and -.0020: These records demonstrate that the equipment was out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0026 and -.0027: These records demonstrate that the equipment was out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0032 and -.0033: These records demonstrate that the equipment was out of calibration for over 2 months. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field.

MOL.19981202.0038; -.0043; -.0048; -.0053; and -.0058: These records demonstrate that the equipment was calibrated before data acquisition. A closing calibration record will be needed for each of these pieces of equipment or they will require an impact evaluations. Furthermore, "resistor" is spelled incorrectly in the "Contents of Record" field for these records.

MOL.19981201.0470 and -.0471: These records demonstrate that the equipment was Out Of Tolerance before and during the data acquisition period. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment.

MOL.19981201.0472 and -.0473: These records demonstrate that the equipment was Out Of Tolerance before and during the data acquisition period. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment.

MOL.19981201.0475 and -.0476: These records demonstrate that the equipment was Out Of Tolerance before and during the data acquisition period. An impact evaluation will be required. Additionally, a closing calibration record will be needed for this piece of equipment.

NNA.19940427.0147; MOL.19951003.0074; MOL.19960805.0276; MOL.19980225.0365; and MOL.19980225.0254: These records are Not Relevant to this DTN. All referenced procurements that are not effective during the data acquisition period are Not Relevant.

MOL.19960805.0276: The "Document Type(s)" field needs to include "Calibration."

MOL.20000407.0112; -.0111; and MOL.20000331.0574: These records are Not Relevant to this DTN.

MOL.19941116.0052: The "Record Title" field needs to reflect exactly what is contained in RISweb.

NNA.19940524.0134; MOL.19990604.0211; and MOL.19990603.0153: These records are Not Relevant to this DTN.

Other Observations:

The inclusion of superfluous information to the DTN Checklist and the Record Road Map provides auditors/evaluators/inspectors with unnecessary opportunities to identify deficiencies. An example from this DTN Checklist is provided below:

MOL.19990603.0153: This record is a Supplier Evaluation Report, dated April 23, 1999, for an Audit performed on Sandia National Laboratories (SNL) Primary Standards Laboratory's (PSL's). This record is not directly relevant to this DTN. The report states that "one deficiency was noted." However, this "one deficiency" describes seven (7) potentially significant Quality Assurance (QA) issues. These issues include: a lack of independence of individuals performing quality verifications, extensions of Metrologist authorizations beyond the three year period, no evidence of Quality Council review and approval of two Operations and Procedures documents, a lack of procedural requirements for the independent review of calibration procedures by technically qualified individuals, no evidence of a formal corrective action process, the failure to perform Quality Audits on an annual basis as required, and no evidence of testing and version control for several software applications. There was also a deficiency related to a failure to reference procedures in calibration certificates that was addressed during the audit.

Most of these deficient QA issues are contrary to 10 CFR 50, Appendix B, "Quality Assurance," which is referenced by 10 CFR Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories," and the Quality Assurance Requirements Document (QARD). Yet, with these deficiencies noted, the QA Program Element checklist contained in the report finds these quality assurance areas satisfactory and recommends that PSL remain on the Qualified Suppliers List without restriction. The report goes on to state that "PSL has made significant progress since the last audit" and that "the deficiencies noted above do not represent an impact on previous work."

The audit report conclusion that these QA Program Elements are satisfactory is contrary to Quality Assurance standards and indicates a QA culture that is not in compliance with the Commercial Nuclear Power Industry. Furthermore, the conclusions infer that previous audits showed even more deficiencies. Deficiencies of this nature would result in PSL being declared unacceptable in the Commercial Nuclear Power Industry.

From a regulatory perspective, the conclusions presented in this audit report are evidence of major flaws in the approach taken towards implementation of an effective Quality Assurance Program. The review and approval process for this audit report displays a lack of understanding of what is required in an adequate Quality Assurance Program, a lack of rigor and attention to detail in the review of documentation for signature approval, and the wrong culture of the individuals involved.

If you have any questions or require further information, please contact me.

Jim
(702) 295-0353

# EXHIBIT No. 12

Author: Larry Rickertsen
Organization: RWDOE
From: CN=Larry Rickertsen/OU=YM/O=RWDOE
PostedDate: 03/23/1998 11:33:26 AM
SendTo: CN=Jan Docka/OU=MV/O=RWDOE@CRWMS
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: fruits, vegetables, and other growing things
Body: From: Jan Docka on 03/21/98 01:43 PM EST
To: Larry Rickertsen@CRWMS
cc:
Subject: Re: fruits, vegetables, and other growing things

First job of system engineering is to filter through all the crap and figure out what the real problem is. Ed's view is that you can't do that if you aren't brilliant and do not have the ability to synthesize. I think another potential constraint is that the people who are supposed to be doing the system engineering may be part of the system they are trying to figure out. Your statement below suggests you think the problem is knowing how to do something. I hardly think so. It may be that you still have not figured out what the problem is.

i may not be a good systems engineer. i don't know how to fight lies and misinformation. and no one seems to care about the truth. or even making sure the right people are doing the right stuff.

Good system engineering is what you do to deal with the Duguid problem.

Mr. PORTER. Thank you, Mr. Egan.

We will now hear from Mr. Bob Loux, executive director of the Nevada Agency for Nuclear Projects.

**STATEMENT OF ROBERT LOUX**

Mr. LOUX. Good morning, Mr. Chairman. Thank you for the hearing and thank you for your patience.

I am Bob Loux, executive director of the Nevada Agency for Nuclear Projects. The agency was established by the legislature in 1985 to carry out oversight duties under the act. I have been the director since then.

Mr. Chairman, it's difficult to imagine a situation more damaging than Secretary Bodman's recent disclosure of scientific information may have been fabricated to support the DOE's determination that Yucca Mountain is suitable for development as the Nation's high-level nuclear waste depository site. It is imperative that steps be taken immediately to answer critical questions before we have any further advances in this suspect program.

But first we, the American people, especially the people in Nevada, must have the opportunity to examine all of the documents that led Secretary Bodman and the USGS to announce its crucial falsification regarding water infiltration and future climate at Yucca Mountain. These parameters are at the very core of any safety determination that can be made about the Yucca Mountain repository.

Through the history——

Ms. BERKLEY. Could you go a little slower, please, so we could hear every word you are saying?

Mr. LOUX. My apologies.

Given the history of the repository program for more than 20 years, and our direct experience with it over that entire time, without all the documents at hand we have no basis for any assumptions of the credibility and integrity of the outcome of any internal investigation of this program. Here we frequently investigate this with almost no results. The question that must be answered include: What other documents may be inspected by these tainted sources? Are there similar documentations of fraud in the balance of the DOE's purported science program at Yucca Mountain? How does this fraudulent activity affect the analysis that led the Secretary of Energy, the President and the Congress to find Yucca Mountain suitable and safe for repository development?

The looming question that must be at the forefront of any inquiry: How pervasive has the falsification and manipulation of information been in the Department of Energy's relentless zeal to meet mission expectation? Since the current example seems to be discovering something through a random check, further investigation by truly independent commission of program data and documentation, once integrity has been appropriately protected, would be warranted.

Mr. Chairman, I also want to indicate that this is not an isolated incident. We heard just yesterday in a similar situation that the press has reported that DOE has attempting to steal water, allegedly steal water from the State of Nevada in direct violation of a Federal district court order. We don't know the bottom of this yet,

it was just revealed to us yesterday. I'm certain that the Nevada officials will be investigating, including the water engineer, as well as the Attorney General.

But these are hardly isolated incidents going on in the entire program.

I would like to also call the Department of Energy to release all of its employee concerns program documentation so that we could actually look at what the employees' concerns really are, and what other aspects of the program they are calling into question. It is time for a full, independent review of the whole policy, and this is not the first time Congress has seen the program off-track. But now more than ever, careful scrutiny of the track itself is in order.

Mr. Chairman, the e-mails provide us an interesting observation. They certainly provide an insight into the Department of Energy's information program that they try to pass off as good science. It also reveals a climate, it appears, of trying to find the right answer and not scientific truth. DOE management set unreasonable politically motivated deadlines and goals, created pressure to get the right answer, and they are also responsible for any outcome of this.

Mr. Chairman, this issue is far more serious than what has been revealed today. We believe that much of the information is yet to be discovered. We call on DOE to release the entire full data base for us to review, not only those things that are currently on the LSN, but all of the 4 million to 5 million e-mails that are out there for us to take a look at as well.

I hope that your subcommittee can be instrumental in helping us to receive that information. With that, I thank you and look forward to questions.

[The prepared statement of Mr. Loux follows:]

# STATEMENT OF ROBERT R. LOUX
# EXECUTIVE DIRECTOR
# STATE OF NEVADA
# AGENCY FOR
# NUCLEAR PROJECTS

## BEFORE THE
## SUBCOMMITTEE ON FEDERAL WORKFORCE
## AND AGENCY ORGANIZATION

## OF THE
## U.S. HOUSE OF REPRESENTATIVES COMMITTEE
## ON GOVERNMENT REFORM

**APRIL 5, 2005**

**STATEMENT OF ROBERT R. LOUX**
**EXECUTIVE DIRECTOR**
**STATE OF NEVADA AGENCY FOR NUCLEAR PROJECTS**

**BEFORE THE**
**SUBCOMMITTEE ON FEDERAL WORKFORCE**
**AND AGENCY ORGANIZATION**

**OF THE**
**U.S. HOUSE OF REPRESENTATIVES COMMITTEE**
**ON GOVERNMENT REFORM**

**APRIL 5, 2005**

Mr. Chairman and members of the subcommittee, my name is Robert Loux. I am the executive director of the Nevada Governor's Office Agency for Nuclear Projects. In that capacity, I have been closely involved with the U.S. Department of Energy's (DOE) Yucca Mountain program for over two decades. I appreciate the opportunity to testify today on a matter of critical importance to the State of Nevada and, indeed, the nation.

As Congress crafted the original Nuclear Waste Policy Act in the early 1980s, one fundamental and universally accepted principle permeated the basic fabric of the bill that was ultimately signed into law by President Reagan on January 7th, 1983, namely that public confidence in the integrity of siting, licensing, constructing and operating a high-level nuclear waste repository was absolutely essential if such a controversial and negatively perceived project was ever to be successful.

Mr. Chairman, it is difficult to imagine a situation more damaging and more subversive to that fundamental principle than Secretary of Energy Bodman's recent disclosure that scientific data may have been fabricated in the course of DOE's site characterization activities. Yet for those of us who have been intimately involved with the Yucca Mountain program for many years, the admission by DOE that its scientists may have falsified crucial site suitability information is not especially surprising. DOE's scientists and researchers have been under tremendous pressure almost from the beginning to report findings supporting DOE's predetermined conclusions about the Yucca Mountain site, even though the data coming out of DOE's own site characterization studies was painting a vastly different picture of Yucca Mountain's waste isolation capabilities (or lack thereof) than DOE envisioned.

The fact is, Mr. Chairman, DOE has been practicing 'advocacy science' at Yucca Mountain since the inception of the repository program. The question, "Is Yucca Mountain suitable and safe?" hasn't been asked around DOE for a long time. Instead, the

message emanating from DOE higher-ups – at least since 1987 and possibly before that – has been, "Whatever it takes, make the site work – or at least make it appear to work."

Nevada's Yucca Mountain oversight representatives have long suspected collusion and data manipulation on the part of DOE and its contractors charged with evaluating the site and developing information for licensing. The way DOE kept constantly changing the repository design and its performance models – everything from waste disposal package performance to predictions about climate change, hydrology, groundwater travel times, the potential for renewed volcanic activity, and the like – made it obvious that DOE was shopping for acceptable data and findings, throwing out things that didn't fit the conclusions they were seeking, and exerting tremendous pressure on scientists and others to toe the party line.

As early as the late 1980s DOE was desperate to counter data developed by State of Nevada scientists showing fast water pathways or "fracture flow" through the Mountain, a condition that could and should have disqualified the site. The emails detailing falsified documents and data that are the subject of Secretary Bodman's recent admission appear to be directly related to this troublesome problem, even though work by the Los Alamos National Laboratory later confirmed the State's findings.

In the late 1980s and early 1990s DOE sought to suppress information indicating a repository at Yucca Mountain would emit so much radioactive Carbon 14 gas that it would not be able to meet EPA's Carbon 14 release limits. When the information finally came out despite DOE's efforts to hide it, DOE prevailed on Congress to exempt Yucca Mountain from radiation release standards altogether, even though these same standards were seen as acceptable for DOE's Waste Isolation Pilot Plant facility, a repository for transuranic waste in New Mexico.

In some respects, the crippling impact these charges of data fabrication are having on the Yucca Mountain program is directly related to another DOE obfuscation strategy. Had DOE retained the original site screening criteria that addressed individual technical areas of repository performance spelled out in the original NWPA (such as hydrology, seismic activities, geophysics, etc.), the fabrication of data regarding any one of these criteria, while still damning, might not be as serious as the situation faced by the program today. That is because, in 2002, DOE summarily abandoned the original, criteria-based Yucca Mountain site screening guidelines and substituted an amorphous performance assessment approach, whereby data on all of the various technical areas is integrated into a single computer model, which then uses the data (together with a whole array of assumptions and expert judgments that substitute for hard data) as inputs to calculate how Yucca Mountain performs with respect to the amount of radiation exposures that can be expected for people living a certain distance from the facility at given points in time.

Because of the nature of the performance assessment approach, falsified or fabricated data unavoidably infects the entire Yucca Mountain database and renders any analysis of site performance not only suspect, but, in this case, essentially useless. It may

be that the entire twenty-plus year project database is so infected and compromised that it may have to be completely replaced before work can proceed with any confidence.

If, as many suspect, the fabrication and falsification of data is not just an isolated occurrence, but a more pervasive and systemic problem, it may turn out to be more prudent to simply cancel the Yucca Mountain project rather than suffer the crushing blow such a situation would deliver to the credibility of DOE and the scientific organizations and companies that would be implicated. Such a revelation of widespread scientific fraud at Yucca Mountain would irreparably damage the federal government's credibility in any renewed search for a future repository.

Mr. Chairman, it is imperative that steps be taken to immediately address crucial questions that must be answered before any further work is permitted on the Yucca Mountain program:

- How pervasive is the falsification of data and the manipulation of information? Are the recent disclosures merely, as many suspect, only the tip of the iceberg?

- What was DOE's role in fudging data? Is it reasonable – or even believable – to think that the USGS scientists blithely did this on their own, or were they acting on instructions from DOE managers?

- Is it reasonable to assume that this is an isolated instance implicating only one DOE contractor, USGS, or is there evidence of a broader, program-wide effort to coerce contract scientists to manipulate information to fit predetermined conclusions?

As disturbing as Secretary Bodman's revelation is, I am convinced that the emails uncovered in the course of sifting through materials required for NRC's licensing support network are but the tip of a very large iceberg, and that Yucca Mountain, like the Titanic, is on a collision course that must ultimately cause this irreparably damaged project to sink under its own increasingly disreputable weight. DOE is not acting like an innocent party in this matter. If this were just an isolated instance involving minor quality assurance or paperwork irregularities, one would have expected DOE to have immediately released the emails and other materials and made the implicated scientists available very quickly to clear the air. Instead, DOE is refusing to release any information, circling the wagons in full damage control mode.

Only a full scale investigation by a body with absolutely no ties to and no history of involvement with DOE or USGS can answer these questions. Even those within DOE recognize that the Department's history of investigating itself is suspect. Testifying recently before the House Energy and Commerce Committee on DOE security matters, the Department's director of the Office of Security and Safety Performance Assurance acknowledged that , "This department [DOE] spends a lot of time checking on itself with almost no results." What can we expect of DOE's current investigation of the data falsification matter when DOE refuses to grant public access to pertinent evidence?

The conclusion is obvious and unavoidable: No investigation by – or any statements or assertions coming from – DOE in this matter can have any credibility whatsoever.

Nevada Attorney General Brian Sandoval and senators Harry Reid and John Ensign have rightly called for the Department of Justice and/or the FBI to immediately step in and secure all of DOE's written and electronic files, least incriminating evidence disappear now that this scandal has come to light. A full and complete investigation is the only way to get to the bottom of this extremely serious matter and attempt to impart confidence and credibility to the high-level radioactive waste management program.

When combined with the recent ruling by the District of Columbia federal appeals court vacating the unlawful radiation health protection standards for Yucca Mountain, DOE's woefully inadequate approach to NRC licensing, persistent budget problems facing the project, massive cost escalations, ongoing and pervasive management problems, and indications that congressional and nuclear industry support for the project may be waning, disclosures about fraudulent science at Yucca Mountain may very well be the last straw in a litany of disastrous events requiring a complete and total overhaul of the nation's spent nuclear fuel and high-level waste policy.

Lest members of Congress and others think this is just an issue that affects the State of Nevada, it is important to recognize the serious consequences to the country as a whole if fraudulent science is tolerated in the Yucca Mountain program or its extent covered up. Forty-four states, hundreds of major metropolitan areas, and thousands of cities and communities around the nation will be affected by tens of thousands of shipments of spent nuclear fuel and high-level radioactive waste if Yucca Mountain is permitted to go forward. How much confidence will the people and public officials in those states and communities have in DOE's, the Administration's, and even Congress' assurances about the safety of such shipments with the mushroom cloud of fraudulent science hanging over the program?

Thank you again for the opportunity to address the committee on this extremely important matter.

Mr. PORTER. Thank you, Mr. Loux.

Now I would like to call on Mr. John Mitchell, project manager with Bechtel.

**STATEMENT OF JOHN MITCHELL**

Mr. MITCHELL. Mr. Chairman, members of the subcommittee and members of the Nevada Delegation, my name is John Mitchell, and I am the president and general manager of Bechtel SAIC.

In 2001, we had the management and operating contract for the Yucca Mountain project for the DOE. Our contract scope included maintenance and operation of the site itself, preparation of the license application and planning for the design and execution of the repository.

Since our full testimony has already been accepted for your record, I will paraphrase my summary. The work that has been performed over the past 20 years has been performed by many individuals and many organizations. The willful actions of the individuals in question is an insult to the integrity of those who created this scientific understanding and applied it to the specific use of the definition and description of the geologic repository and rigorously adhered to the highest standards of quality.

The license application that will be provided would not only provide the scientific base but will meet all the quality standards demanded by the NRC.

In the interest of time, I will stop at that point and await your questions.

[The prepared statement of Mr. Mitchell follows:]

**Statement of**
**John T. Mitchell, Jr.**
**Bechtel SAIC Company, LLC**
**Subcommittee on the Federal Workforce and Agency Organization**
**Committee on Government Reform**
**U.S. House of Representatives**
**April 5, 2005**

Mr. Chairman and members of the Committee, I am John Mitchell, the President and General Manager of Bechtel SAIC Company, LLC (BSC). BSC holds the management and operating contract from the Department of Energy for the Yucca Mountain Project. Our contract scope, in addition to general and task order services, is focused on the operation and maintenance of the site at Yucca Mountain, the preparation of the repository License Application and the planning and execution of the design and construction activities related to the geologic repository. I appreciate the opportunity to respond to your questions this morning.

The License Application under preparation is intended to precisely state the scientific and technical information related to the repository and its compliance with the Nuclear Regulatory Commission requirements and associated standards. It is required that any information provided be substantiated to meet rigorously defined quality standards. For over twenty years, thousands of individuals and many organizations have invested their scientific, intellectual, professional, and personal integrity to support the national priority of a geologic repository. Additionally, to be acceptable as an NRC licensee, the Department of Energy and its supporting organization must establish and demonstrate an open culture where individuals can and will question and report areas of concern or failure to conform to published policies, procedures, and practices. Both the License Application itself and the demonstrated culture of the organization supporting its development and execution are necessary for successfully processing the application to the NRC for a license.

While the License Application has not yet been submitted to the NRC, BSC's efforts have brought to light a specific area where the willful actions of specific individuals may not have been consistent with the required standards of quality program execution. As is the case in every instance where a question is raised about rigorous adherence to quality standards, we have initiated specific actions to determine the facts, identify potential implications, and take actions to assure that the information supplied with the License Application is, when submitted, fully supportable and accurately portrayed. It is too early in this specific instance to speculate on implications or corrective actions. But I assure the Committee that the License Application we prepare to support the Department of Energy will fully and accurately describe the natural and engineered systems involved and their interaction in the specific application of the geologic repository so as to meet all document standards and requirements.

The work performed over the past twenty years has been performed by many individuals and organizations. The willful action of the individuals in question is an insult to the integrity of those who have created new scientific understanding, applied it to the specific use of the definition and description of the geologic repository, and rigorously adhered to the highest quality standards. Our systems and processes for utilization of this information must and will

assure the validity and accuracy of the License Application. The burden of proof is on us and we will meet it.

This completes my prepared statement and I will be pleased to answer any questions posed by the Committee.

Mr. PORTER. Thank you, Mr. Mitchell. We appreciate that.

I'd like to note for the record that there will be numerous questions that we will not be able to ask today because of our time constraints. But we will ask that once these questions are presented to each of you, following the meeting, we would like to have them returned to the committee as soon as possible, no later than Monday of next week if at all possible.

I would like to begin with a few questions myself, I think, for Mr. Garrish. Are there any of the employees in question who are still working at Yucca Mountain?

Mr. GARRISH. Are any of the employees with these e-mails, is that what you're asking?

Mr. PORTER. That's correct.

Mr. GARRISH. The individuals, I think there are principally 10 individuals that are involved in those initial e-mails, and I'm not sure if any of those are fully—yes, there are some, but not the ones, I think, that are subject to this inquiry. They went off the project, I think, in the year 2000. So in other words, I think there are two individuals that most of these e-mails were involving. They left the project in the year 2000. There are other USGS personnel still on the project, if that's your question.

Mr. PORTER. My question is, if you have any of those individuals that were employed or are currently employed or are on leave at this point because of any of the allegations.

Mr. GARRISH. That's really a subject for USGS to respond to.

Mr. PORTER. Thank you. And absolutely, that will be my next question. Mr. Groat.

Mr. GROAT. Mr. Garrish is correct, Mr. Chairman, in that the individuals involved in this are no longer working on the Yucca Mountain project. In answer to your question, no one has current been suspended or terminated as a result of the ongoing investigation.

Mr. PORTER. Is that an outrage? We have documents that state there is falsification. I pull up your Web site and I see that they are still employed, a number of the individuals that have admitted, as have internal documents admitted, from the Department of Energy, that in fact there are falsified documents. I can't believe that these folks are still on the payroll.

Mr. GROAT. Mr. Chairman, I can assure you that the appropriate action will be taken, all the way from administrative actions to dismissal. Our position has been that because the investigation is ongoing, the extent and number of individuals that have been involved, their involvement in particular parts of this needs to be ascertained by the Inspector General and by ourselves, so that we do take the appropriate action, and in fact, we take action on all those that were involved, both laterally and vertically in the management chain, which may or may not be disclosed through the e-mails.

So we are not putting off taking action because we don't plan to take it, we definitely do. We want to be sure we have the best case and best information so we take appropriate action.

Mr. PORTER. So what you're saying today is, these same individuals that have admitted to falsifying documents, they are currently

still on, or are working on other projects that could impact major projects around the country?

Mr. GROAT. They are working on other projects, yes, sir.

Mr. PORTER. Have you met with these individuals?

Mr. GROAT. I have not.

Mr. PORTER. Has anyone met with these individuals?

Mr. GROAT. Only their immediate supervisors, Mr. Chairman.

Mr. PORTER. If I may interrupt, how seriously do you take these allegations?

Mr. GROAT. We take them very seriously. We are——

Mr. PORTER. Obviously you don't.

Mr. GROAT. I don't understand that point, Mr. Chairman. We, as I said in my testimony, we initially, when we heard of these allegations, both asked our Inspector General to participate and then began our own internal investigation, so that we could determine for ourselves the extent of what was done and the impact of what was done. We were advised by the Inspector General that our own internal management review, both of these individuals and the import of what they had done, needed to wait until the Inspector General had finished his criminal investigation.

So we do not have our own internally derived information available to us upon which to base the actions that you mentioned. I assure you that when we do have that information, we will take the appropriate action.

Mr. PORTER. Again, I'm not only appalled about the e-mails, but the fact that you have this cavalier attitude that, well, some other agency is going to take care of this problem. This is a very, very serious and in fact, internal documents have stated from the Department of Energy that in fact these are falsified documents. Do you feel confident that you are turning the full responsibility to some other agency, that you don't feel you have responsibility for these employees?

Mr. GROAT. No, I feel we do, Mr. Chairman, have responsibility. Our Inspector General is currently manifesting responsibility that the Department of Interior and U.S. Geological Survey has, to understand exactly what was done and what the impact of what has done, and our own Bureau's, USGS responsibly, will depend on our own management review of their actions and the impact of their actions. Once we determine the outcome of both of those investigations, we will take appropriate action. We do take this very seriously, and can assure Mr. Gibbons and others that this is not a trivial matter.

Mr. PORTER. If I may interrupt, please, I of course don't have in front of me your policy and personnel manual as far as falsification, unethical behavior. I would assume that somewhere in your documents and your personnel manuals you have a process in place to handle this type of activity. Is laying people off or reducing their salary or putting them on leave a part of your documents when it comes to personnel and unethical falsification of documents?

Mr. GROAT. Yes, sir, it is.

Mr. PORTER. It is currently a part of that? And have you followed the procedures within your own personnel manuals of these individuals?

Mr. GROAT. We have not followed the procedures based on our own investigation, because we have not investigated it ourselves. We are waiting for the Inspector General.

Mr. PORTER. Mr. Groat, I think you summarized the whole problem this morning, in that you have not investigated this yourself. Of course, we are going to be asking for additional information, and one of those items is going to be the names of the supervisors. We will get that to you.

I would also like to ask you another question. As I mentioned numerous times, in the internal documents from the Department of Energy, they state that they feel that this could create substantial, based on these e-mails, that it could create substantial vulnerability to the project. Do you think that these e-mails could create a substantial vulnerability to this project?

Mr. GROAT. We are deeply concerned by the e-mails. We are deeply concerned about the integrity of the scientific investigations toward the Yucca Mountain project. We are very much interested and anxious to have a thorough, objective review of what these actions mean in terms of the projects our scientists have been working on, the results of those projects, and the impact those results have on the Yucca Mountain project.

If they were seriously affected, both infiltration and climate effects on the Yucca Mountain repository are extremely significant. If they are materially affected by our actions, then they could have a significant impact on the total project. We don't know the answer to that yet.

Mr. PORTER. And you haven't asked the questions yet, because you haven't talked to these people?

Mr. GROAT. We have not been given the opportunity to do that, sir. We have been asked not to participate or conduct any internal investigation of those consequences until the——

Mr. PORTER. So you have been asked not to use your own personnel manuals when it comes to this particular case? Who were you asked by to not follow your own procedures?

Mr. GROAT. We were not asked not to take administrative actions. That was our own position. We were asked not to conduct our own internal review of either the actions the employees took or the implications for the project until such time as the Inspector General has concluded his investigation.

Mr. PORTER. Mr. Garrish, I would like to ask you the same question. Based on your internal documents, it says that it will create, these e-mails could create substantial vulnerability to the project. Do you believe that's the case?

Mr. GARRISH. Well, that is going to be investigated as to phase two, that I mentioned in my oral testimony. One of the elements that we are going to look at is the extent to which the science has been impacted on this. If I could, I would like to have Mr. Ziegler, our licensing manager, respond to that and explain to the committee exactly what is going to be undertaken in that review.

Mr. ZIEGLER. Yes, the vulnerability is a vulnerability that exists, and how the technical information was created and is used in the modeling and safety analysis for the repository. What we are focusing on right now concurrent with the Inspector General's reviews is the two-part review that looked at the direct implications in

these e-mails of the statement of the apparent actions by these individuals and how that would directly affect the safety analysis of the repository and the specific implications of these actions on the records and how they might actually affect scientific and technical information. Once that is determined, an appropriate action would be taken to make sure that only fully quality assurance information is used in the safety analysis.

Beyond that, however, we are not going to limit our reviews to just what these individuals apparently have done. We are going to look further than that to re-look at what we have already done on models data and software going backward in time, to make sure that all the information we use in our safety analysis is fully valid.

Mr. PORTER. We're going to move on to my colleague on the left to followup on this. So would you support what we are hearing from the USGS, that they shouldn't follow their own personnel procedures at this time?

Mr. GARRISH. Maybe I can respond to that. I just want to maybe put this in the context of a nuclear culture. If this were a nuclear plant, and there were employees that had falsified data that related to a quality protocol, they would not be employed very long in that culture. They would be moved from those jobs, and that would be the kind of culture that we would attempt to foster in the future on this program. The nuclear culture is very strict on quality assurance, and those are the sorts of values we want to bring to this project. It will be required, under the regulations by the Nuclear Regulatory Commission, because as I said, they not only worry about the repository, they worry about the people that run the repository and they want to make sure that they have the right values and culture to go forward and operate this.

Mr. PORTER. Thank you, Mr. Garrish.

Congresswoman Berkley.

Ms. BERKLEY. Thank you, Mr. Chairman.

Mr. Egan, can you explain to me very briefly what the courts ruled about the radiation standards that the DOE was using for this project?

Mr. EGAN. Yes, I can. Last summer the Court of Appeals ruled that DOE had been using a standard promulgated by the EPA that had unabashedly rejected the findings and recommendations of the National Academy of Sciences concerning the duration of the regulatory compliance period for Yucca Mountain. And what the Academy had recommended is that Yucca Mountain had to be regulated through the duration of the peak dose or the peak hazard, whenever that was.

The EPA arbitrarily limited that time period to 10,000 years. That was the basis upon which DOE did its performance analysis for Yucca Mountain.

Ms. BERKLEY. And the court's rule, or the National Academy of Sciences finding was that the radiation reached its peak levels at 300,000 years?

Mr. EGAN. No, Congresswoman, they didn't make any finding that way. What they said is, based on DOE's models, they saw a peak dose occurring at 300,000 years. But that was based on a waste container that would last for an exceptionally long period of

time. If the waste containers fail at Yucca Mountain, the peak hazard could occur at 2,000 years.

Ms. BERKLEY. Does any such container currently exist that could store the nuclear waste safely for 300,000 years?

Mr. EGAN. No, ma'am.

Ms. BERKLEY. We have information that the DOE has improperly held at least 6 million documents, including roughly 4 million e-mails, that it has misleadingly called archival e-mails. Can you tell me again and reiterate your concerns about the DOE being forthcoming with information that it should be disclosing to the public, since Mr. Garrish spoke glowingly of the openness of the DOE in this process?

Mr. EGAN. Well, Congresswoman, based on the Inspector General's finding at DOE, we had asked to see all of these so-called archival e-mails posted on the licensing support network. DOE took the position in litigation before the licensing board that they were not relevant. The standard is relevant documentary material. DOE claimed they were not relevant. They claimed they were not relevant because they were too old.

In cross-examination by the hearing officers, it was discovered that these e-mails go all the way up to the year 2003 and covered people like Leif Barrett, who used to run the programs, his e-mails were among that package. So the licensing board ordered that they all be produced, and it was that order that——

Ms. BERKLEY. Have they been produced?

Mr. EGAN. No, because they wouldn't be produced until the time at which DOE attempts to recertify its documents.

Ms. BERKLEY. I see. We also understand that the DOE tried to steal water for the Yucca Mountain project. There are allegations, obviously, that they didn't provide the information for their employees that are silicosis related. Could you comment on that?

Mr. EGAN. Well, our view is that DOE will have a very difficult time proving one requirement of the Atomic Energy Act that all NRC licensees must demonstrate character and fitness required to be a licensee. We think that there is a pattern of mismanagement and a pattern of malpractice at Yucca Mountain, principally extending from 1996 onward, that really suggests DOE can't meet that test.

The silica document falsification is one of them. The water theft, if indeed it occurred, would be even a more serious infraction, because it would violate a State engineer's ruling and a court order. And we will be looking into that. The Attorney General has the full power of Nevada law in that case as well.

Ms. BERKLEY. What has been Nevada's role in discovering the falsified materials submitted to the licensing support network?

Mr. EGAN. It was our petition to strike the certification on grounds that these e-mails were not there that precipitated the board's order that they be produced.

Ms. BERKLEY. So the DOE didn't voluntarily come forth with this information?

Mr. EGAN. Well, that leads to a mystery, Congresswoman. Because DOE says that it was only in their review of these e-mails that they discovered this problem and that only occurred in December 2004. But as you can see by exhibits 8 and 11, attached to my

prepared statement, we have documents that we found ourselves, e-mails from DOE's own quality assurance inspectors in the year 2000 that point to various document falsification and extraordinary inaccuracies and errors in quality assurance.

Ms. BERKLEY. Thank you, Mr. Egan.

Mr. Loux, listening to the DOE's testimony today, one would believe that there are a few bad apples that wrote these, a few bad employees that wrote these e-mails and they are really not demonstrative of the thousands of employees that work for the Department of Energy on this project. It's my understanding that there has been a pattern here, and this is just the tip of the iceberg. What has been your experience with this?

Mr. LOUX. Well, I guess my assumption is that No. 1, that these fellows didn't do this on their own, that these people didn't voluntarily try to create these, that there was pressure from management at the top to actually produce the right answer. I think some of the e-mails are very explicit about the pressure from management to find the "right answer."

Moreover, what about the USGS employees that saw, knew and watched what was going on and actually said nothing over the years to management about a problem, if it is just one or two isolated individuals? Frankly, in the last several years, our office has received hundreds of phone calls of various employees at Yucca Mountain wanting to voice various concerns about what's going on in the program, their concerns about the very issues we're talking about today in terms of fabrication of data.

Moreover, we have learned that some of the people that are making allegations about the theft of water, that they were directed by management, in this case Bechtel, to actually construct devices that would bypass the meter that had been placed to monitor how much water was available to them under the court order.

So far from being an isolated incident, we see this as endemic in the entire project. Again, if in fact DOE is to be believed about forthrightness, then we would like to see what the Governor has been asking for, the draft license application, the current TSPA and related documents. We would also like to see the employees' concerns program, albeit with names deleted, so we can actually see the extent of what's being reported inside DOE by employees having concerns with the program.

Ms. BERKLEY. Thank you, Mr. Loux.

Mr. Groat, I think what the chairman was getting at is that you have employees, we know there were at least 10 employees that wrote those e-mails. According to what you were telling us, most of them are no longer with the project. But the fact is that they are still under our employ in some project or another.

Now, it would occur to me if they were so bad, such blatantly, wantonly bad employees on the Yucca Mountain project and that they were falsifying scientific documentation on this project, what would ever lead you to believe that they would behave any differently on another project? That is why you need to speak with them and you need to relieve them of their responsibilities. If they are willing to do this with a project that is so sensitive as Yucca Mountain, what would be in your mind, what would you think for a minute, they wouldn't do this someplace else?

Mr. GROAT. Congresswoman, referring to Mr. Garrish's comment about 10 people being involved, on the e-mail list there were only two that were principally involved in the communications. Others received a copy.

Ms. BERKLEY. Have you spoken to those two?

Mr. GROAT. No, ma'am, we have not been able to speak to those yet.

Ms. BERKLEY. Don't you think it is in the best interest of the people of this country that whatever project they are working on now, perhaps they are fudging the same scientific types of documentation that they have done according to their e-mails for Yucca Mountain? Why would we want those people in our employ? I would not want them in my congressional office.

Mr. GROAT. If we discover that their actions were of such severity or involvement was so deep that they understood a situation this critical and did not react properly, then they will be——

Ms. BERKLEY. And how will you find that out if you're not speaking to them?

Mr. GROAT. Well, we're not able to speak to them, as I mentioned earlier, we're not able to conduct our own internal investigation until such time as the Inspector General frees us to do that. We will do that, I can assure you, Congresswoman.

Ms. BERKLEY. And when will that take place? Do we have a timetable? Six months, a year, 10 years from now? Will I still be in Congress when this takes place? Will you still be employed?

Mr. GROAT. We certainly hope it takes place very soon. We hope sooner than later, Congresswoman, and we will depend on the Inspector General's decision as to what point it is appropriate for us to take those actions.

Ms. BERKLEY. There is another concern I have. Even though those employees are no longer working for the Yucca Mountain project, their data, their information, their falsified scientific findings are still part of the general scientific findings of the Yucca Mountain project. So their successors are operating with their information that they left behind. Doesn't that somewhat disturb you?

Mr. GROAT. It's not clear from the e-mails, and that's all we have to go on, that there was any falsification of scientific data.

Ms. BERKLEY. There's e-mails that say that they made up the dates, that they made up the information, that they weren't, that quality assurance was a damned pain in the neck.

Mr. GROAT. The parts that they have alleged that they made up related to parts of the quality assurance program. I'm not minimizing the significance of that, it is significant. So I can't answer your question about scientific data themselves and their continued involvement in the program until we determine, which we have not yet, if those data were significantly affected and to the extent that impacts the program, we don't know what data to pull out and what work needs to be redone. We are as a scientific organization very anxious to understand that, so we can take the appropriate action.

Ms. BERKLEY. Why would we not put a halt to the Yucca Mountain project instead of continuing on what may be very, very faulty science? I mean, we are just spending more time and more tax-

payers' money on a project that may be some compromised scientifically that it is unredeemable.

Mr. GROAT. I think that judgment as to whether it is compromised scientifically to that point is beyond our scope. That's a judgment that DOE has to make.

Ms. BERKLEY. All right. Mr. Garrish, I'll be in touch.

Mr. PORTER. Congressman Gibbons.

Mr. GIBBONS. Thank you very much, Mr. Chairman. And to our witnesses here on both panels, thank you very much for taking the time out of your busy days to be here to help us better understand this very troubling issue. I hope to be very respectful to each of you for your time as well as your presence and your position that you hold within your respective entities.

I did want to say to Mr. Groat and Mr. Garrish that this is not a condemnation, nor is it ever intended to be a condemnation of all the good, hard-working people, both at the USGS and the Department of Energy. What it is is a scathing rebuke of a few scientists and a culture of management within the USGS and the Department of Energy which has gone forward from day 1 with the idea that you could pound a square peg into a round hole at any cost.

We are seeing that today. The e-mails that we have before us, gentlemen, are not isolated incidents, but show what I feel is pressure from above to get a product out, let me quote. In one of the e-mails dated on, I believe it is December 17, 1998, it says, "We only win if we get this final product out," meaning Yucca Mountain project.

And you look at the response to that, and this is probably from 1 of these 10 scientists that are here, we're talking about today. On December 18, 1998, it's responded, it says, "YMP," Yucca Mountain Project. Presumably, in my view, when I read YMP, that's the management of Yucca Mountain. "YMP is looking for the fall guys." Obviously they felt that pressure. They knew there was something going on. They knew you were still trying to pound that square peg in the round hole.

The memo goes on to further state, "And we are high on the list." That's not the errant scientist giving bad data. That stems from a cultural problem of management. So far, what I've heard from you today is that you're only looking at the errant scientist, not the management philosophy and the culture within the agency. We need to broaden our minds and go a little bit further than just looking at 10 little people and finding the falls guys that you want to find today.

So this is not a condemnation of every worker. But it is a scathing rebuke of those scientists and the management culture within your two organizations.

Mr. Friedman, let me jump over to you real quick and ask a question. Because as we talked about earlier, what's your estimation of how long the IG investigation is going to take? And also tell me why in your answer. Why it is that you're doing a non-technical investigation and where do we go to get a technical review, a technical investigation of this? And is your investigation, the non-technical side, doing fraud from mismanagement, fraud from misappropriation?

Because as I see it, when we look through some of these memos here, people are talking about dollars. It says in that same memo on December 17, 1998, the bottom line is forget about the money. Obviously, somebody is concerned about money going some place there. So answer my question if you could, Mr. Friedman. I didn't structure it very well, but I think you get the intent.

Mr. FRIEDMAN. I think there are three parts to your question, and if I don't answer them all, please refresh my memory. No. 1, what is the timeframe. As I sit here today, we have been involved in this, Mr. Gibbons, for about 2 weeks. It was brought to our attention on March 14th.

We are faced with interviews of numerous individuals, both DOE individuals, contractor individuals, USGS individuals and people who have left the site over the years. After all, the most offensive memos that have been published were written in 1998 and 1999.

So we face, in addition, we face the task of reviewing literally thousands of documents, thousands of e-mails and thousands of other documents. So it would be almost irresponsible of me to try to sit here today and try to give you a timeframe. What I can assure you of is, we are committed, we have placed the people on the task to get this done as expeditiously as we possibly can in a thorough and objective way. We are working closely with Mr. Devaney and with the FBI and with the U.S. Attorney's Office to make sure that happens.

Help me out.

Mr. GIBBONS. The other two were whether it was going to undertake fraud, mismanagement——

Mr. FRIEDMAN. Yes. The answer is, this is a criminal investigation. We will follow the facts where they take us. And the financial aspect certainly will be part of our investigation.

Help me out one more time.

Mr. GIBBONS. Well, the following part would be the technical side of the study versus the non-technical.

Mr. FRIEDMAN. Right. We are initiating this as a criminal investigation, looking at primarily questions of false statements made by individuals up and down the line, both vertically and horizontally in the management structure as well. That's the floor of our review. It may expand as this thing evolves. So I would say, we'll have to wait and see where this takes us.

Mr. GIBBONS. Mr. Chairman, may I engage in just one more line of questioning? I know my time is up, but I do want to follow on with this line of questioning just for one brief moment.

I want to go back to Mr. Groat and to Mr. Garrish over here with DOE. If you are not taking any action against these individuals, as what I heard and as you just now acknowledged, that is the case, are you still moving forward with the project?

Mr. GROAT. Mr. Chairman, as mentioned earlier, or Mr. Gibbons, these employees are no longer involved, so they themselves are not moving forward with the project. We do have other USGS scientists who are still involved with the project.

Mr. GIBBONS. And I presume, Mr. Garrish, that's the same for DOE?

Mr. GARRISH. Well, we are proceeding to put the license application together currently. We are doing this broader review, we're

trying to see these USGS scientists, these particular individuals, we are going to pull their work, we are going to do an evaluation of everything that they touched. We are going to evaluate what they did.

Now, that's not going to be the end of it. But once we get our evaluation in, we are also going to look at our QA culture across the entire operation, across the entire project.

Mr. GIBBONS. If I may interrupt, because I think it's important, what we're doing here. You felt it was so compelling that you not talk to, not intervene in the status of these individuals until the Inspector General has completed his task. But yet, you've already formulated an opinion in your own mind that it's irrelevant what they did because you're going forward with the project. How do you balance the two out?

Mr. GARRISH. I didn't say it was irrelevant. We are going to evaluate it. But we're——

Mr. GIBBONS. If it's not irrelevant, then you should shut down the project until you have the evaluation done and the science completed until you know that you can, if you're building a bridge, that the footings on either side or sound. It doesn't matter how well you build the structure if the footing isn't sound.

Mr. GARRISH. I understand your position, Congressman.

Mr. GIBBONS. I think you get where we're going.

Mr. GARRISH. I understand.

Mr. GIBBONS. And I understand your answer is you're still going to go forward. I would have expected that from you.

We will have, hopefully, another round of questions, Mr. Chairman.

Mr. PORTER. Thank you, Congressman.

Mr. Mitchell, again, thank you for being here today. Is Bechtel aware of any additional falsified documents, and when and if, when were you made aware of these particular documents that are in question today?

Mr. MITCHELL. I'm not aware of any others, of course. I personally became aware on either March 9th or 10th, a Thursday or Friday of the week just immediately before the announcement.

Mr. PORTER. Have you asked any internal, or any of your employees as to when your company discovered the falsified documents and when they were brought to light to your staff?

Mr. MITCHELL. Yes. At that time I was also aware that the documents originally had surfaced as early as December, and that as a result, how that was carried out. They had not been forwarded to management until a later time. I could discuss that if you would like.

Mr. PORTER. So you're telling me that someone in Bechtel was aware of this in December?

Mr. MITCHELL. Yes.

Mr. PORTER. Would you please explain?

Mr. MITCHELL. Certainly. The way the documents came to light, as part of this process of reviewing the various e-mails, several thousand e-mails we're talking about, we have people going through a systematic review of all those e-mails, people in that process identified these e-mails as being in question, because of not only what they said, but how they were marked. Our instructions

to them were to bring them forward to legal counsel, that whole process involves making legal matters relevant, that sort of thing.

When those matters were brought forward, they were discussed with legal counsel. Unfortunately, the way that conversation went, it was less clear than it might have been as to what actions should be immediately taken. No action was immediately taking until some time later.

Mr. PORTER. So if I understand correctly, your company, Bechtel was aware in December but prior to March 9th, is that the date you mentioned, then you heard from who on March 9th?

Mr. MITCHELL. I actually heard it from my employees concerns program manager. That was the first time it actually came to me.

Mr. PORTER. So once you found out on March 9th, what steps did you take in your role with Bechtel to take care of these problems?

Mr. MITCHELL. Several. Noting the discrepancy of the timing, of course, I asked my internal audit manager to conduct a series of interviews with the people that had been involved to establish as factually as we could and as quickly as we could who knew what when. That was done. We turned our attention immediately also to the technical issues of the implications of this, in our case, since we have the responsibility for coordinating the license application. We started making the decisions one would make about what were then possible implications, how would we proceed, we started to put together the various things that Mr. Garrish was talking about, various lines of inquires to establish the technical basis on how it was done, what was the quality basis and how we could proceed on that basis.

Mr. PORTER. So when did Bechtel notify the Department of Energy of their findings?

Mr. MITCHELL. The notification that went from our employee concerns, the DOE was informed on our department ECC, employee concerns organization informed the DOE employee concerns organization, I believe on the 11th or 12th. I think on the 11th.

Mr. PORTER. Of March.

Mr. MITCHELL. Same timeframe, yes, sir.

Mr. PORTER. So you found out, someone in your company found out in December and there wasn't correspondence until after or shortly before the release of the documents?

Mr. MITCHELL. It was before the release. Individuals in the organization were aware of the e-mails. They did not take action to bring them to our employee concerns program or others. As soon as that was done in March, we notified the Department of Energy.

Mr. PORTER. What is your protocol when dealing with USGS individuals? Did your management discuss it with the individuals or discuss it with management of USGS? What happens internally when this is discovered?

Mr. MITCHELL. We are a contractor with DOE. Our relationship with USGS is to provide casting through the Department of Energy back to the USGS, provide data for the license application. We have no direct management relationship with them.

Mr. PORTER. Your understanding is that Bechtel Corp. is not aware of any additional falsified documents regarding the Yucca Mountain project?

Mr. MITCHELL. I assure you if we actually knew they were falsified, we would have notified DOE before this time.

Mr. PORTER. Or any allegations of such?

Mr. MITCHELL. Allegations in the employee concerns program that arise, there are a variety of things to handle those processes. If some of those had been led to a point where there is some reason to believe there is a falsification, we would present that.

Mr. PORTER. Thank you so much.

Mr. Garrish, and Mr. Groat, I have a question regarding independent investigation. Something that has come up numerous times, and I think you're going to hear about it in my closing. But would you support and accept an independent investigation?

Mr. GARRISH. Well, one of the things that we are doing now is not only internally to try to determine exactly what happened with these particular e-mails, and how it impacted the science, which is an undertaking that we are doing. But the second part, which is the QA analysis and evaluation, we are going to bring in outside people that are not currently associated with the project and have their evaluation made to us and their recommendations to us on that, on the entire quality assurance program. So that's what we're intending to do, is ask a lot of outsiders for their assistance and evaluation as to whether or not this program is doing the job.

Mr. PORTER. So you're saying yes to an independent investigation? Would you support an independent investigation?

Mr. GARRISH. I have a hard time understanding what is different from bringing in outside individuals like we're doing now. These are independent of us. They are coming in to take a look at the quality assurance program.

Mr. PORTER. Well, possibly I could help. The problem is, it was under your watch when this happened before. That's the problem with bringing in another individual under your watch. The question is, there are employees that have falsified documents. So would you support an independent investigation?

Mr. GARRISH. I'm not certain I understand how this is under my watch.

Mr. PORTER. Would you answer my question? Would you support an independent investigation?

Mr. GARRISH. Well, I'd like to know exactly what is being proposed, and I'm certain the Department would have a position as to whether or not it would support it.

Mr. PORTER. So that's a no at this point?

Mr. GARRISH. No, it's that we would like to know what it is that you propose, and we would be happy to respond in the appropriate way and at the appropriate time.

Mr. PORTER. Mr. Groat, would you support an independent investigation?

Mr. GROAT. We would welcome an independent investigation.

Mr. PORTER. Thank you very much. I appreciate that.

Also, Mr. Garrish, you had mentioned on numerous times that it's going to be up to the NRC to make these determinations. It appears to me, and maybe I'll ask you to clarify your testimony, that it doesn't matter if there is a significant lapse in quality assurance, it's going to be up to the NRC to make this decision. Is that what I heard you say?

Mr. GARRISH. Well, the NRC, as one of the things that they will evaluate, is our QA program. So as part of their process, all of these allegations will be litigated and adjudicated before the Atomic Safety Licensing Board. At that time, they will make their determination relative to not only the data but the quality assurance program.

Mr. ZIEGLER. Before it gets to NRC, unless we can assure ourselves that the technical basis for the safety analysis is fully valid, we will not submit the licensing application. It's our job first to make sure that the technical basis is valid, and NRC has the job to make sure, in their independent reviews, before they actually grant a license, that everything is as it should be.

Mr. PORTER. Thank you.

Ms. BERKLEY. Thank you, Mr. Chairman.

Mr. Mitchell, there was an AP report yesterday that, and I'll read a piece of it to you, "Pipefitters at Yucca Mountain say they were instructed to damage the tunnel's main water line and install a pipe to bypass the State water meter at the Federal nuclear waste repository. Ron Dolan of Terrum said he was harassed before Yucca Mountain project contract Bechtel-SAIC fired him in May 2003 for reporting what he called were violations of worker safety and EPA laws, including the Clean Air Act and Clean Water Act. Dolan said pipefitters made a pipe in 2003 to reroute groundwater pumped from a nearby well around the State water meter."

Is that the type of business as usual that Bechtel is, is that the type of product we are expecting from Bechtel?

Mr. MITCHELL. Congressman, Mr. Dolan has made a series of accusations. There was a lawsuit. They are being handled in the courts at this time. Obviously that matter has to resolve itself legally.

In the meantime, I will state unequivocally, that is not the way we do business nor have we done business.

Ms. BERKLEY. And what if it's adjudicated true?

Mr. MITCHELL. Then I'll be wrong.

Ms. BERKLEY. I can't hear you.

Mr. MITCHELL. Then I will be wrong.

Ms. BERKLEY. And what will you do about that?

Mr. MITCHELL. I suspect there will be lots of things in that case. If it turns out, first of all, I'm not going to prejudge what was done.

Mr. BERKLEY. Mr. Garrish, after I had been in office for about a year, I was invited to a meeting of former Nevada test site workers who had worked at the test site for the Atomic Energy Commission, which is of course the precursor of the Department of Energy. There were about 200 men, mostly men there, a few women, but mostly men. And at a certain point in the discussion with these 200 former Nevada test site workers, a question was posed to them and it went something like this. Everybody here that is suffering from some form of cancer please stand up. Every 1 of the 200 plus former employees of the Nevada test site stood up. They were all dying of some form of cancer.

Now, the Atomic Energy Commission told these workers that all they had to do was go home and take a shower and wash their clothes and there would be no danger of radiation poisoning. That turned out not to be the case. So you will forgive me if I'm not par-

ticularly high on the trust level that I have for the Department of Energy. It is not exactly the best track record that I can imagine. And the very idea that you are investigating yourself is a joke to me. Because it's been proven in the past that it doesn't work.

Now, you have said, and these are the five things that you thought were very important, that the DOE believes in openness. Well, we've got whistleblowers coming out of the wazoo telling us that there is no such thing as openness with the DOE. We know that the revelations of the e-mails were actually known in December and they weren't disclosed until March. We know that you're hiding information now.

And according to the testimony of the Governor of the great State of Nevada, its Attorney General, and our outside counsel, Joe Egan, you're still not forthcoming with the information that they've requested, which is a slap in the face not only to the Governor of the State and the Attorney General, but to all the people of the State of Nevada, who are only interested in this information in order to protect the health and well-being of their families.

You talk about self-identification. We know that is impossible to be able to do. You did not come forward with the information until you absolutely had to. Self-correction, I don't know if that's possible, because you still have a mind set that this is just an aberration and you're going forward with the licensing when we don't know that the basis of the licensing isn't based on faulty documentation and scientific documentation.

You talk about employees and how valued they are. We have e-mails that demonstrate otherwise. There was not a culture of valuing the employees. There was quite a culture of intimidation and having them fudge the data. And I can't understand what the use of having standards are, if they are systematically ignored by the supervisors and employees that work for you.

So I cannot understand for the life of me why the DOE is going forward with this licensing procedure when we do not know whether or not the scientific documentation upon which you are basing your decisions is in fact flawed. And until this investigation, which I believe should be an independent investigation, is conducted and completed, it makes absolutely no sense to me that you're going forward with your licensing procedures.

Why? Why would you possibly be going forward with this and not calling a halt to it until we know for sure what's going on at Yucca Mountain?

Mr. GARRISH. Congresswoman, you had a number of issues there, but let me just try and deal with a couple if I could. And I would ask that you please judge us by how we respond and what we do. Let us do our investigation. Undoubtedly you will see those results very soon. And we will be able to tell you what the impact is. And then eventually we will have, we believe, an independent reviewer on this entire project. That's the Nuclear Regulatory Commission.

Ms. BERKLEY. Why would you let it go to that point and continue to spend time and millions of dollars of taxpayers' money when you don't know what the investigation is going to disclose?

Mr. GARRISH. Well, I would ask first that you let us finish our investigation, determine what action is appropriate, and then you can judge us at that time.

Ms. BERKLEY. For the life of me, I can't understand why you think we would trust your investigation of yourself, when we have a series, over the last 20 years, of debacles and cover-ups that I didn't trust you then and I certainly don't trust you now and the information you are going to provide for us after your own investigation, rather than an independent, outside investigation. In my mind, it's suspect from the beginning.

Mr. GARRISH. I understand your point of view.

Ms. BERKLEY. And what do you say about that point of view? I'm glad you feel my pain, but I'd like to get some information from the Department of Energy.

Mr. GARRISH. Well, my point is that we believe that we should go through our investigation——

Ms. BERKLEY. Why do you think you should be doing the investigation and not an outside, independent body?

Mr. GARRISH. I don't know what body you're suggesting would review us. We are going to have, individuals from the Inspector General are going to look at the facts in this case. We are going to have individuals outside the Department to help us with our QA system. The scientists that are responsible for presenting this case to the Nuclear Regulatory Commission are the ones that are going to take a look at exactly what happened to the science and whether or not we can go forward with it or not.

And we will have those results and then please judge us at that time as to whether or not you think it's sufficient.

Ms. BERKLEY. According to your oral testimony, and I just want to clear this up, you stated that you don't believe for a minute that sound science is separate and distinct from quality assurance, do you? I mean, they are interconnected in your mind, I believe, I would hope. Can you delineate the two, that there is no quality assurance but this project is based on sound science?

Mr. GARRISH. The quality assurance aspects of what we do relates to the Nuclear Regulatory Commission presentation of our case. There is a lot of science that goes on in the world that does not follow the Nuclear Regulatory Commission requirements. And there can be science that does not go through quality assurance. And that science can be good.

However, what we have to do is not only do sound science, we have to present that sound science to the Nuclear Regulatory Commission, using quality assurance protections.

Ms. BERKLEY. Do you intend to repeat the models on water infiltration and climate, or are you just going to go on the same information?

Mr. GARRISH. I don't know the answer to that until we are done with our evaluation.

Ms. BERKLEY. Don't you think that would be a fundamental scientific issue regarding Yucca Mountain and whether or not it can support storage of 77,000 tons of toxic nuclear waste?

Mr. GARRISH. We are going to look at that exact issue when we do our evaluation.

Ms. BERKLEY. How can you do an evaluation if we know for a fact that the e-mails are documenting that they fudged on the model that is the very essence of probably the most fundamental science with the Yucca Mountain project?

Mr. GARRISH. If I may ask Mr. Ziegler to respond to this. There are ways in which we scrutinize the data in other ways. I would like to have him explain some of the techniques, if I could.

Mr. ZIEGLER. Yes, first off, the direct implications in the e-mail are regarding the timing of the documentation, the dates. There are some other words in there that may lead to other implications. But until there is a——

Ms. BERKLEY. Yes, but they made up the dates. "I have no clue what the dates are, so I made them up. And if they need any more information, I'll make that up, too."

Mr. ZIEGLER. Right now, the direct implications of the processes, as far as the scientific information, I think we need to look further to know the implications on that. We certainly take it very seriously. We want to make sure that the data and information used in the safety analysis is fully valid.

Ms. BERKLEY. What worries me is that data and information is still in place and that's what you're using to go forward with the licensing. It hasn't been disproved, you haven't redone the modeling. You haven't redone the science. So we are going forward on the licensing process with the faulty information, with the faulty scientific findings on the very fundamentally most important aspects of the Yucca Mountain Project, whether to not it's going to pollute our groundwater.

Mr. ZIEGLER. Actually, as I think I said earlier when I spoke, unless we can show that the technical basis for the safety analysis is valid, we are not able to go forward, we would choose not to go forward.

Ms. BERKLEY. So have you halted the Yucca Mountain project? Or are you continuing to go forward with your licensing process?

Mr. ZIEGLER. We have not made an application, license application, to the Nuclear Regulatory Commission yet. There are many aspects of the project that are not in question here. So those aspects are continuing.

Until we are able to show that the scientific basis is valid, we will not go forward with that information.

Ms. BERKLEY. OK. One more question. OK, I guess we're having a third round.

Mr. PORTER. Mr. Gibbons.

Mr. GIBBONS. Thank you very much, Mr. Chairman.

Mr. Ziegler, thank you for bringing your testimony here before us as well. I am amazed when I hear you say that, because I want to read to you, when I hear your statement saying, well, and maybe Mr. Garrish saying, that you know, all these memos had to deal mostly with time, when we were going to submit the data and that.

I want to read something to you. And I want your opinion. It's a memo, one of these e-mails, dated April 3, 1998, written at 4 hours, 19 minutes, 40 seconds p.m., to be very specific, by somebody I don't know, but it's titled, subject is, infiltration and UZ, capital words, UZ flow. Let me read it to you.

It says, "I have some maybe bad and maybe good news that you should be aware of. Blank called me 2 weeks ago and said that he had tested the first sample of core from blank at blank, and it had a concentration of 39 micrograms per liter of chloride. This means that the flux is at most 2 or 3 millimeters per year in this high

infiltration zone. Blank is at the crest of Yucca Mountain. There are some implications," and this is what I want you to pay attention to. "There are some implications that I did not realize until I talked them over with blank yesterday. Basically, either our infiltration model is wrong or our flow blank or UZ flow model is wrong."

Now, does that sound like time to you, or does that sound like science and technology?

Mr. ZIEGLER. It sounds like a discussion by these individuals, I don't know them either, but I have seen the e-mails, of information and how they may or may not have used that information. I think until we go back and see what was actually done and then evaluate the scientific validity of what was done independent of these individuals who have implicated themselves, then I think we don't know.

Mr. GIBBONS. Mr. Ziegler, are you a scientist?

Mr. ZIEGLER. I'm a nuclear engineer.

Mr. GIBBONS. OK, pretty close to one, anyway. Something that says, "our model is wrong" or "our blank flow is wrong" tells me that's science. That's not just merely a discussion. Here is an opinion of somebody who is a scientist writing this memo, and you are sitting here before us saying, well, it's just a discussion and I want to look at it and make sure I know what's going on.

I can appreciate that opinion. But I wanted to tell you, not all of these e-mails have to deal with time or when the information was submitted. Because in this one, we're talking about some very specific information.

Now, not to leave people unattended to in this discussion. Mr. Garrick, in your testimony, you said that these e-mails were rather loosely framed statements, and I think you were trying to put a happy face on them. If I read you that same statement that I just read Mr. Ziegler, the e-mail of April 3, 1998, would you say that the statement of that individual is a loosely framed statement?

Mr. GARRICK. What I was trying to say was that——

Mr. GIBBONS. Well, I mean, I'm only asking if you would apply your standard to that e-mail. Do you think that's a loosely framed standard?

Mr. GARRICK. I think that particular statement was probably pretty specific. And I think also that statement could be a concern by the scientists that there was a possibility that the infiltration rates that were being used were not as low as they should be.

Mr. GIBBONS. Well, in his word, out of this statement, wrong.

Mr. GARRICK. Well, sure, they're wrong. But I'm just pointing out that the wrong could be in the direction of opposite from doing damage, but in the direction that the infiltration rates are too conservative.

Mr. GIBBONS. Builds our point.

Mr. GARRICK. Yes.

Mr. GIBBONS. You don't know what the science is at this point in time. You don't know whether it's conservative or wrong. You don't know whether it's good or bad. You don't know.

Let me jump over on Mr. Friedman, I didn't get a chance to talk to you, a little bit more. You said there were about 2 weeks worth of studies to go on in all these e-mails. The e-mails were from 1998

to 2000, I believe, that's part of your IG investigation. Is that correct?

Mr. FRIEDMAN. In trying to describe to you, Mr. Gibbons, why I can't tell you how long this is going to take, I was trying to indicate that some of the e-mails go back to 1998, 6 or 7 years ago. And there is a huge body of information that we are going to have to look at.

Mr. GIBBONS. Are there potentially e-mails outside of the timeframe from today back to 1998 that would be relevant, that would be pertinent, would be applicable to your investigation?

Mr. FRIEDMAN. There are not only e-mails that would fit your characterization, but there are other documents that would fall into the same category.

Mr. GIBBONS. OK, thank you. Mr. Egan, I appreciate your legal skills and the fact that you are also a nuclear engineer as well. There is such a thing in the legal doctrine of privilege, is there not? A doctor has a privilege with his patient, a lawyer has it with his client, a priest has it with a penitent. That is an accepted doctrine in courts in the law today.

I'm wondering, in your jurisprudence experience, have you ever seen an exception or a privilege granted between a scientist and his supervisor or a scientist and his management?

Mr. EGAN. No, sir, in fact, the scientific method, which really is the foundation of quality assurance, in fact, but the scientific method is really predicated on full disclosure of everything. So if a scientist publishes his findings in a peer reviewed journal, the peer review team can look at his work papers, his notes, he's not entitled to shield anything from that peer review. The whole idea is, let's get to the bottom of this, let's find the truth.

In law, there are privileges, and there are appropriate privileges to apply to litigation that might not necessarily be in the public interest on a project like this. But at any rate, my concern is with the effort by DOE to claim broad categories of privilege. Let me just give you one example that I fear could happen. We had the court case, we have the EPA setting a new standard. We know we're going to have DOE opining about what that standard should be and we know when that standard is set, we know we're going to have DOE evaluating whether Yucca can meet that new standard.

Well, we think that analysis and that round of opinion ought to be public knowledge, especially on an issue of this importance that they got wrong the first time. We are concerned that DOE would have its lawyers instruct the entire organization, please do the following, please evaluate the new EPA standard, please evaluate whether Yucca Mountain meets that standard. And oh, by the way, this is all attorney work product.

Arguably, there is a technical way to do that a technician in a court room could say meets the attorney work product standard. But we think that certainly goes against the grain of what Mr. Garrish has testified to about full disclosure. And we don't think it's appropriate, and hopefully the NRC will agree with us that it's not appropriate, if that's done. Right now it's a fear that it will be done based on some discussions we have had.

Mr. GIBBONS. Thank you, Mr. Egan, and I know that privileges do have a sound public policy purpose why they are enacted and certainly let's hope that we see a sound, reasonable decision made by the NRC.

Thank you, Mr. Chairman.

Mr. PORTER. Thank you, Congressman.

This is for Mr. Devaney and Mr. Friedman. What I have heard from Mr. Garrish and Mr. Groat are really two different answers to a similar question. That is, Mr. Groat is saying that he's been told he can't investigate, he can't interview, can't talk to his employees regarding the possible falsification of documents. I hear Mr. Garrish saying that he is going to do his own investigation and he is going to get to the bottom of it, he's going to take care of the science and take care of the employees.

I'm confused. Can one of you gentlemen help me with this?

Mr. DEVANEY. Mr. Chairman, I think we have to talk about which investigation we're talking about. The FBI and Mr. Friedman's office and my office are conducting a criminal investigation. When we do that, it is not helpful to have the agency doing the same thing at the same time.

We are working with the U.S. Attorney, we have an investigative strategy. I'm talking about any criminal investigation, not just this one. We have an investigative strategy that is developed in part with the U.S. Attorney. We are doing the interviews in an informed way in the order in which we want to do them.

With all due respect to Mr. Groat, lying to Mr. Groat is not a crime, lying to Federal agents is a separate crime. So there are a lot of nuances in conducting a criminal investigation that would be interfered with if Mr. Groat was conducting a similar, internal investigation about the falsification of records and documents.

Now, maybe Mr. Groat might need to have a chat after the meeting, because I wouldn't be opposed to Mr. Groat reassigning these employees to some other—I understand they're not on this project right now. But how he reassigns them is his business. He could also put them on administrative leave without pay if he wanted to.

Taking an adverse action against the employee without the facts would be premature. So he needs to get the facts from us. But first we have to present the facts to the U.S. attorney. Because the goal of any criminal investigation is seeing if we can put somebody in jail. Before I was an IG, I spent 30 years in Federal law enforcement trying to do that. I might add I was at one point the special agent in charge of the Secret Service in Las Vegas. So even then, I was familiar with this issue. And that's the goal of our criminal investigation, is to see if anybody has committed a crime, and if they have, to bring them to justice.

Mr. PORTER. Well, then hypothetically, Mr. Devaney, we have an agency that has at least serious indications that there have been falsified documents. What I hear you saying is that you would not discourage them from reassigning or taking them off of these projects and putting them into another role.

Mr. DEVANEY. I am in a fact-gathering mode. What happens to those employees is Mr. Groat's concern right now. He has to make those decisions. I can't help him make those decisions. At some point, I will present him with a fact-based report where he might

want to consider taking adverse action against these employees, but we're not there yet.

Mr. PORTER. Mr. Friedman, the testimony by Mr. Garrish was such that they were going to perform all these investigations, that they feel confident that they have the systems in place. So what is your advice to this panel as to those comments from Mr. Garrish?

Mr. FRIEDMAN. Well, first let me say, Mr. Chairman, in response to your earlier question, that my position parallels that of Mr. Devaney. Mr. Garrish and I have had this discussion, or have had a discussion. It's clear to me that he is not doing a criminal investigation. He understands the firewall that exists, and that's my responsibility.

Mr. PORTER. If I understand that, Mr. Groat does not understand the firewall, is that what we hear?

Mr. FRIEDMAN. I haven't discussed—Mr. Groat is not within my purview, and his activities. So I have not had a discussion with Mr. Groat on this issue.

I think we have to wait. We intend to take a look at the study that the Department does, and I'm pleased to hear that the technical review board will be looking at it as well. We may have to proceed independently once we take a look at the work that they've done to confirm their findings to our satisfaction.

Mr. PORTER. Thank you very much.

Mr. Garrish, the report from GAO, which was initiated by Senator Reid and Senator Ensign last year, the summary of April 30, 2004, so it wasn't that long ago, has to do with persistent quality assurance problems which could delay repository licensing and operations. You comment consistently how you have this quality assurance program that is one of the best, correct? At least that's my understanding in summarizing what I hear you saying.

But throughout this report, the GAO is consistent in stating that you are not. But yet, quality assurance, although I believe that is a wrong term, that would be about public health and safety and welfare, it's not about quality assurance of apples, it has to do with life, I still question that you are in a position to do research when the GAO has been, just last year, stating that you haven't followed through with, over a 3-year study of quality assurance problems and challenges. I don't understand. Here's the report.

And of course, on page 31 in this report, and as you know, GAO is probably as fine an organization as any in getting to the bottom of problems. But on page 31 it states, a list of concerns by employees, it shows management problems, it claims mismanagement, 26 substantiated concerns, human resource problems, 8 substantiated concerns, harassment, intimidation, retaliation, discrimination, 4 substantiated concerns, quality, fraud, waste, we can go on and on.

Again, Mr. Garrish, what are your plans to comply with the GAO's request before you start looking at your own back yard? You need to fix your back yard.

Mr. GARRISH. Mr. Chairman, quality assurance is one of the cornerstones of a nuclear culture. This, the way I would refer to it, has been a long and improving process. When GAO did their initial investigation, they took it at a slice in time. We took seriously what they have said and by the time they issued the report, many of

those things that were included in the report had already been improved.

And we are continuing to want to improve this program, and in fact, that is one of the things that we are going to be looking at at our independent investigation.

So I understand your concern, I agree that we need to continue, have a continuing program of improvement on QA. And we have a ways to go. But I believe we are making progress.

I would like, if I could, to just make a comment relative to our earlier comments to the inspectors general, relative to what we are doing or not doing. I do want to set the record straight that we are not conducting any criminal investigation and we are not investigating the falsehoods. But what we are doing is evaluating separately from what the inspectors generals are doing, is the science, what the people have touched, and evaluating the science to see how it is impacted. We are separately evaluating the QA.

Mr. PORTER. Thank you, Mr. Garrish.

Unfortunately, the GAO's comments are contrary to yours, consistently stating that corrective actions have not yet been successful in correcting the weaknesses of DOE regarding quality assurance. We have a definite disagreement between DOE and GAO.

Actually, that will conclude my questions.

Ms. BERKLEY. Thank you, Mr. Chairman.

Mr. Mitchell, in the same report that the chairman just cited, it says in its audit of Yucca Mountain, the GAO found consistent quality assurance problems. Could you give us some idea of how many times it has been necessary for the DOE or Yucca Mountain contractors like Bechtel to revise their quality assurance programs?

Mr. MITCHELL. I certainly couldn't give a realistic estimate of the number of times all of the processes and procedures, of which there are hundreds, have been revised over the last 5 to 6 or 8 years. It would be an extremely large number. Those processes and procedures are revised both as the program phase changes, both as we gain additional information, as we amplify and clarify them. So there is a revision state that goes on.

The standards to which those processes and procedures apply are in fact not revised. The quality assurance procedures that apply to us through the contract are changed only at infrequent intervals, sometimes it's because of a change of a standard, sometimes an interpretation. The implementation of those through our processes and procedures is a process of continuous improvement.

Ms. BERKLEY. Could you tell me if an employee voices his or her concerns what's the procedure that they follow to get those concerns heard?

Mr. MITCHELL. There are a number of processes and procedures available to them. First and foremost, we would assume they would go to their supervisor, if they chose to do so. That's the one we encourage. In addition to that, we encourage them to take advantage of any other process they use. There are employee concerns programs both in the company and in the Department of Energy. And they have access to the employee concerns process of the NRC.

Ms. BERKLEY. Why do you think there is such a large number of employees that are complaining that they are intimidated, and

that once they bring a problem forward that they are either fired or punished in some way? Are all of these disgruntled employees?

Mr. MITCHELL. I have no idea which data base you reported those numbers from. Our information shows right now that at least over the last couple of years, the surveys we have conducted, that there is in fact no climate of intimidation.

Ms. BERKLEY. Well, that's unfortunately contrary to the words we're getting from the employees.

Given what you know now regarding various problems with the project, the moving of pipes, possible destruction of water pipes, the misappropriation of Nevada's water, do you think Bechtel is entitled to any portion of the pending bonuses for the Yucca Mountain project?

Mr. MITCHELL. First of all, as I believe we stated, we do not believe those allegations are in fact correct.

Ms. BERKLEY. If they are?

Mr. MITCHELL. If they are, that's a decision for the Department of Energy to make. Our fee structure is governed by the instant contract we have with the Department of Energy, and that is in fact their decision to make.

Ms. BERKLEY. Do you think it would be appropriate if these charges are proven true that Bechtel accept that bonus money? Have you earned that bonus money?

Mr. MITCHELL. The fee terms of any contract are a mutual deal between the Department and ourselves. They are documented, they are clearly available. We would expect to comply with them.

Ms. BERKLEY. Let me ask one more question. Mr. Garrish, I'm not sure I heard your answer when I asked you whether or not you were going to release the information and documentation that the Governor of the State of Nevada and the Attorney General have requested. Is it your plan to release that information to them?

Mr. GARRISH. Ultimately, all of this information goes before the Nuclear Regulatory Commission. He has asked——

Ms. BERKLEY. That's not my question. The question is, are you going to comply with the request of the Governor and Attorney General of the State of Nevada?

Mr. GARRISH. That's under consideration as we speak.

Ms. BERKLEY. What would possess you not to?

Mr. GARRISH. As I said, all of this information will be available on our licensing support network. That's the way the Nuclear Regulatory Commission intended us to provide it. And the final license application, not a draft, will be presented to the Nuclear Regulatory Commission. So instead of having non-policy information as to preliminary information, that it will not go forward, we believe that it is more appropriate to provide the actual copy of the license application and provide the certification and all the information in the manner in which the Nuclear Regulatory Commission has set forth.

Ms. BERKLEY. So you expect the Governor and the Attorney General to wait until the licensing procedure is completed to get the information?

Mr. GARRISH. No. They will get that at least 6 months in advance of the filing of the license application.

Ms. BERKLEY. And what if the licensing application is not filed for the next 10 years? Don't you think that the Governor of the State of Nevada and the Attorney General are entitled to this information? You said in your testimony that one of the things you pride yourself on the most is your openness. Don't you think that this is not a demonstration of openness?

Mr. GARRISH. No, they will get this information. I'm telling you that, and we——

Ms. BERKLEY. You're saying that they will get this information?

Mr. GARRISH. They will get the information. We will do the licensing support network, we will file that information we believe this summer. That information, much of the information they are currently requesting is on the license support network. The only issue is really the question as to whether or not a non-policy draft of the license application will be made available to the State. That question is under consideration now at the Department.

Ms. BERKLEY. I should think it would be.

Let me ask you one final question. In your Department's press release on this matter, you stated that the safe handling and disposal of nuclear waste and the sound scientific basis for the repository safety analysis are priorities for the administration and the DOE. All related decisions have been and will continue to be based on sound science.

Now, how can you possibly state that all related decisions have been based on sound science before you have completed or begun your investigation into the scientific data, analyses or documentation related to the program that you suspect were falsified? What sound science are you talking about?

Mr. GARRISH. It is our commitment to the people of the State of Nevada and others around the country that we will not move forward with any decisions on nuclear waste that are not based on sound science. That is our commitment to you. We are in the process of evaluating this information, and we will not go forward if we cannot demonstrate that this is based on——

Ms. BERKLEY. You are going forward as we speak, are you not?

Mr. GARRISH. We are preparing a license application, we are evaluating——

Ms. BERKLEY. So you are going forward even though there is a very strong possibility that this entire project is not based on sound science, yes or no?

Mr. GARRISH. We are preparing the documents to move forward with this. But we have not made a final decision yet as to when and whether to file those documents. Some of that evaluation will be dependent on what we find in this investigation, or excuse me, this evaluation that we're doing now. And that is a process that will occur over the next several months. But I can assure you we will not go forward unless we can have the feeling ourselves first that this repository will be safe and would, and only a safe repository would be included in a license application.

Ms. BERKLEY. It is my opinion that you have misled the people of the State of Nevada. You have misled the people of the United States. You are misleading the U.S. Congress. And you have misled the President of the United States. I would like to see someone in the DOE with the guts or common decency to stand up and halt

this project. It is not based on sound science and quite frankly, Mr. Garrish, you ought to be ashamed.

Mr. PORTER. Congressman Gibbons.

Mr. GIBBONS. Thank you very much, Mr. Chairman.

And to our witnesses, as we wind down this very eventful and sometimes painful day for each of you, I again want to thank you for the time you've spent before us today. As I started off saying, I hoped that you would not come before us and trivialize this matter. I think you can understand from the frustrations and the sense of what we heard today that this is not a trivial matter. This is no small matter for the people of Nevada or the American people in general.

This goes not only to the veracity of the science that was forming the basis of your decisions to move forward with Yucca Mountain, but this goes to the trust, goes to the confidence, goes to the believability of our Federal Government, and therefore has a significantly important and weighty responsibility on the shoulders of each and every one of you here today.

I only want to close with a statement from one of these e-mails, because I think it senses the frustration of individuals who are working on the project and the management culture that we've talked about this whole time. This e-mail is what I will close with. And I apologize to the audience and to all of you because it contains swear words. But it was dated February 23, 1998, written at 1:28 a.m. This is an individual sitting at his computer in the wee hours of the morning, probably after a very long and frustrating day. Sitting there typing this e-mail to someone. It's redacted, so I can't tell you who or who received it.

And it quotes, "Blank, you are just starting to wake up to what the hell is going on in the Yucca Mountain project. I can't teach it to you. I've learned, and that's why I'm in blank." I don't know, is that Timbuktu? "I would have liked to bring more people with me, but nobody ever figured it out, as much as I tried to tell you, I couldn't do it directly because you have to learn by experience. Once you learn, you learn. There is more to it than you think, that's why I'm still on the project. They won't get rid of me. You are on the verge of figuring this shit out. Good luck. Blank."

A sense of what was being felt on that project by this individual at 1:30 a.m. Obviously not something that he was happy about. Obviously something that troubled him greatly. Obviously when it came out, it reflected what he has sensed about the management of what was going on at the project.

Now, what this applies to, we will only find out later on when this investigation is finally finished. But I will say to each and every one of you here today that it is troubling to have people who are working with you with the dedication that many of these people have that resulted in this type of an attitude and this type of a feeling at 1:30 a.m., wrote an e-mail expressing himself about his thoughts about the Yucca Mountain project. This is the same type of frustration that we have known and felt for a long time in the State of Nevada. We are just now seeing that people in the Yucca Mountain project are more responsible for what we find are troubling us today than we had ever imagined.

Ladies and gentlemen, thank you for being here today. I look forward to working with Chairman Porter as we move forward in this process. I believe strongly that we will find the answer. But until that day, I believe strongly that it is up to you, the obligation is yours, for the USGS and the Department of Energy, to stop working on Yucca Mountain until the answers are done.

Thank you, Mr. Chairman.

Mr. PORTER. Thank you, Congressman Gibbons, and Congresswoman Shelly Berkley. I think we need to stress it one more time, that there are many hard-working, honest, truly professional individuals working for the Department of Energy, working for the USGS. But also make note that the comments today, although seeming very specific to Yucca Mountain, it shows a systematic problem in the Department of Energy around the country.

To my colleagues that would think that Yucca Mountain is truly a parochial issue, what we're hearing today is continual management challenges that have been put forth by the Department of Energy, an agency that has oversight over nuclear power plants, energy, terrorist activity and law enforcement in protecting our facilities.

So today wasn't just about Yucca Mountain. It's about the Department of Energy.

The important thing about these recently discovered e-mails, aside from the evidence of corruption and fraud, is that they demonstrate that Yucca Mountain truly did flunk the test of science. That's why it's so important to view them in the context of what's happening at Yucca Mountain at this time.

In 1996, DOE had just completed its first major site characterization study in the exploratory tunnel it had dug. The first of many tests it believed necessary to properly assess Yucca. The results of that test were spectacularly bad. They showed that rainfall would infiltrate the Yucca Mountain rock and get into the repository cavity far more quickly than would have been thought, 50 years instead of the thousands of years predicted by DOE's geologists.

That is critically important, since water can corrode the waste containers and it leaks into the regional water supply. It appears we need to protect the waste from the mountain, based upon the studies that have been brought forward.

Over the next 3 years, DOE and USGS geologists scrambled to regroup. This is the time period during which, under severe budget crunch and pressure by DOE to produce, they produced an array of deeply troubling e-mails. Those e-mails were not simply the ones produced to the subcommittee. Nevada has chronicled dozens of additional e-mails during this same time period from DOE's public records and has posted them on the Nevada Agency for Nuclear Projects Web site.

Plus, I discovered numerous e-mails in the newspaper that were not provided to us. Together they show that DOE's own scientists knew Yucca had flunked the site suitability rules then on the books at DOE. They show a quick and dirty effort by DOE to change the rules, so DOE could disregard the mountain and rely for containment almost completely on man-made waste containers.

They show the wholesale abandonment by DOE of any additional site characterizations. But most troubling, they show data being fabricated, instruments being calibrated that were not even in their possession, dates and names changed, two sets of books, one for inspectors, one for representing the real data. They show a complete programmatic breakdown of quality assurance. Consistently even the GAO has reported troubles of quality assurance.

Equally troubling, e-mails Nevada discovered suggest that DOE's quality assurance inspectors knew about the falsifications. They knew about the bogus data as early as the year 2000, not 2004, and you will find it in the backup testimony.

They appear to show knowledge by DOE of gross improprieties long before recommending the Yucca site to the President and the Congress. They show an utter disregard for sound science in the performance models for the repository.

This is not a mere housekeeping matter. The issue of the precipitation of rain and its infiltration in the repository has become the key issue in whether or not Yucca can even be licensed. DOE says water will not get into the repository. Nevada's experts say it will. Now we know that DOE's models that will show very infiltration rates are bogus. Can we rely on anything DOE now says about the safety for our citizens?

What are we left with? Dr. Garrick suggests in his prepared statement that we don't yet know whether the falsifications are technically significant for the project. But even if that were true, it seems to beg the question. The question is, how can conduct like this occur on one of the most potentially dangerous waste projects in the history of the world, in a project we spent $9 billion studying? And we haven't even got to nuclear waste yet. This is about water tests.

If they didn't know at the time, where were the quality assurance managers? Where were the managers, if they did know at that time, why wasn't prompt action taken? What does this say about the character and fitness of the DOE to be an NRC licensee?

The Atomic Energy Act requires NRC to assess the character and fitness of all license applicants to be an NRC licensee. I submit that DOE has not demonstrated such character and fitness. It cannot pass the test. Consider what we have seen: e-mails showing fraud and apparently criminal falsifications; silica, class action cases where industrial hygienists allege document falsification of health and safety records for tunnel records; theft of Nevada's precious water at a time when a Federal judge and the State engineer have put legal restrictions on what DOE may use; horrible quality assurance, raising issues of whether the safety of the repository can ever really be demonstrated; agency changing the rules every time a test fails, and agency hiding documents from Nevada and the public.

Ladies and gentlemen, it seems to me that we have had to search far and wide to find an organization such as this that could build the Yucca Mountain project. I don't think we could find a worse organization at this time. It's not the men and women that are working every day. It is the management. There is something rotten here and it's rotten to the core.

That's why I am going to be calling, and I believe the support of our committee, and I will bring it back for the full committee, that I am going to call for an independent commission to analyze the impacts of document falsification, the lack of quality assurance and the ability of DOE to demonstrate the safety of Yucca Mountain. We cannot move forward on this project until we have answers to the question of whether this mountain flunks the test of science or whether it just needs a few studies redone. It is necessary but not sufficient for the Inspector Generals of Interior and Energy to investigate. They will not make a determination as to the impact of such conduct on the ultimate science of the repository.

After the Three Mile Island nuclear accident in 1979, the President appointed John Kemeney, then-president of Dartmouth College, to chair a commission to investigate what went wrong. This may be something that we need to do in a manner that the public can embrace and that will be unbiased.

The President recognized that a matter like this could not be investigated by lawyers at that time, the public relations specialists and the NRC bureaucrats. The commission at that time had subpoena power and they had a few additional privileges. It got to the truth about Three Mile Island and mismanagement that occurred and suggested appropriate change. The commission report, when finished, was a great success, leading to a very significant retooling of the nuclear regulatory regime governing nuclear power plants and ultimately greatly increasing the safety.

The same sort of vehicle is needed here, ladies and gentlemen. The public and Nevadans in particular have lost faith and confidence in DOE as its Yucca contractor. We no longer can believe sound science that truly may well be science fiction. There are many unanswered questions and it certainly begs additional questions, but it means that we must pause this project so we have time to get to the bottom of the fraudulent acts to the gross mismanagement that has been occurring. It was haste and mismanagement that got DOE into this problem. It would be tragic if haste and mismanagement again shuffled it under the rug.

So I am going to be asking specific things. We are going to be asking for a copy of the draft application with a chain of command, an employment flow chart, so we know who has been working on the projects. And we will get you these formal requests. Employee lists, we've had numerous people call my office, as I know my colleagues have, so we would also like to have a copy of the whistleblower files so we'll have them available.

Under the independent investigation, we will be working in concert with our delegation. But it must not be a Federal agency. It must be totally independent. We also call upon DOE, as has been mentioned numerous times today, for DOE to halt the project as we know it today. We will be passing a letter that will be coming from members of the delegation. And on April 13th, as I mentioned, we are going to be inviting, for a meeting on April 13th, we are inviting employees to come in that are directly impacted and have information.

Again, I applaud those individuals who have come forward. I thank this committee. I would also like to thank Chairman Don

Young for allowing us to use this facility of the Transportation Committee and his staff. And if Members have additional questions for our witnesses today, they can submit them for the record.

I would like to again thank all of our witnesses for being here today.

The hearing is now adjourned. Thank you.

[Whereupon, at 1:17 p.m., the hearing was adjourned.]

[Additional information submitted for the hearing record follows:]

TOM DAVIS, VIRGINIA,
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BERNARD SANDERS, VERMONT,
INDEPENDENT

March 23, 2005

The Honorable Gale A. Norton
Secretary
U.S. Department of the Interior
1849 C Street NW
Washington, D.C. 20240

Re: Request for Documents

Dear Secretary Norton:

Pursuant to its authority under Rules X and XI of the House of Representatives, the Subcommittee on the Federal Workforce and Agency Organization hereby requests certain records in furtherance of its investigation into the alleged falsification of documents used in scientific studies by Federal employees of the U.S. Geological Survey (USGS) to establish the safety of the proposed Yucca Mountain nuclear waste repository.

Please produce the following items, in unredacted form, to the Subcommittee:

All documents and records, including electronic communications, relating to, identifying, or discussing the falsification and/or fabrication of documents or records by any Federal employee, contractor or any other person used in relation to the proposed Yucca Mountain nuclear waste repository, including any and all electronic communications sent between any Department of Interior employees that discuss any falsification of documents or records relating to the proposed repository.

Please produce the requested items by March 29, 2005. If you have any questions about this matter, please have your staff contact the Subcommittee's Chief Counsel and Deputy Staff Director, Chad Bungard, at (202) 225-5147.

Sincerely,

Jon Porter
Chairman

cc: The Honorable Danny Davis, Ranking Minority Member

TOM DAVIS, VIRGINIA,
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ONE HUNDRED NINTH CONGRESS

# Congress of the United States
## House of Representatives

COMMITTEE ON GOVERNMENT REFORM

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WASHINGTON, DC 20515–6143

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INDEPENDENT

March 23, 2005

The Honorable Samuel W. Bodman
Secretary
U.S. Department of Energy
1000 Independence Avenue SW
Washington, D.C. 20585

Re: Request for Documents

Dear Secretary Bodman:

Pursuant to its authority under Rules X and XI of the House of Representatives, the Subcommittee on the Federal Workforce and Agency Organization hereby requests certain records in furtherance of its investigation into the alleged falsification of documents used in scientific studies by Federal employees to establish the safety of the proposed Yucca Mountain nuclear waste repository.

Please produce the following items, in unredacted form, to the Subcommittee:

All documents and records, including electronic communications, relating to, identifying, or discussing the falsification and/or fabrication of documents or records by any Federal employee, contractor or any other person used in relation to the proposed Yucca Mountain nuclear waste repository.

Please produce the requested items by March 29, 2005. If you have any questions about this matter, please have your staff contact the Subcommittee's Chief Counsel and Deputy Staff Director, Chad Bungard, at (202) 225-5147.

Sincerely,

Jon Porter
Chairman

cc: The Honorable Danny Davis, Ranking Minority Member

# Documents

# From

# Department Of Energy

**Department of Energy**
Washington, DC 20585

QA: NA

March 29, 2005

The Honorable Jon Porter
Chairman
Subcommittee on the Federal Workforce
and Agency Organization
Committee on Government Reform
U.S. House of Representatives
Washington DC 20515-6115

Dear Mr. Chairman:

This is in response to your March 23, 2005, letter to Secretary Bodman requesting information regarding possible falsification of documentation by the employees of the United States Geological Survey at the Yucca Mountain project.

Some documents being supplied to you today contain information that is subject to the attorney-client and attorney work product privileges, as well as documents that contain personal privacy information, and many which, if disclosed, could harm administrative and criminal investigations. The enclosed documents being disclosed today are not redacted. They also contain information about individuals and organizations that are not involved in the ongoing investigation and have not been implicated in any alleged wrongdoing. The Department of Energy's (DOE) disclosure of these documents does not constitute a wavier of any applicable privilege or any exemption under the Freedom of Information Act (FOIA) that DOE may claim in response to FOIA requests for these documents. DOE's disclosure of these documents also does not constitute a waiver of any applicable legal privileges or protection that DOE or any other party may claim in litigation or other proceedings. DOE, therefore, requests that you preserve the confidentiality of the documents provided to you today by refraining from providing copies of them or from otherwise communicating their content to persons other than those with a need to know as part of your congressional oversight and investigatory review.

Printed with soy ink on recycled paper

DOE is continuing to search for and review other documents and records that may be responsive to your letter, and we will provide them at a future date. If you have additional questions, please contact me at 202-586-5450.

Sincerely,

Jill Sigal
Acting Assistant Secretary
Congressional and Intergovernmental Affairs

Enclosures

cc w/o enclosures:
The Honorable Danny Davis
Ranking Minority Member

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| Sender | Receiver | Subject | Copied | Date |
|---|---|---|---|---|
| [redacted] | [redacted]<br>[redacted]<br>(USGS)<br>[redacted]<br>[redacted](LBL)<br>[redacted](LBL) | UZ Flow (+climate+infiltration) section 4 TSPA-VA document | [redacted]<br>(TRW)<br>[redacted](SNL)<br>[redacted]<br>(TRW)<br>[redacted](TRW)<br>[redacted](SNL)<br>[redacted](SNL)<br>[redacted](SNL)<br>[redacted](SNL | 05/11/98 |
| [redacted] | [redacted] | UZ Flow (+climate+infiltration) section 4 TSPA-VA document | | 05/11/98 |
| [redacted] | [redacted] | RE: | | 06/18/98 |
| [redacted] | [redacted] | Jury Summons | [redacted] | 10/27/98 |
| [redacted] | [redacted] | RE: Jury Summons | | 10/27/98 |
| [redacted] | [redacted] | RE: Jury Summons | | 10/27/98 |
| [redacted] | [redacted]<br>[redacted] | Design Features 23/24 – period of effectiveness | [redacted] | 10/28/98 |
| [redacted] | [redacted] | Re: Design Features 23/24 – period of effectiveness | [redacted]<br>[redacted]<br>[redacted] | 10/28/98 |
| [redacted] | [redacted]<br>(USGS) | Re: Design Features 23/24 – period of effectiveness | | 10/29/98 |
| [redacted] | [redacted] | Re: Design Features 23/24 – period of effectiveness | | 10/29/98 |

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| | | | | |
|---|---|---|---|---|
| [redacted] | [redacted] | Re: Design Features 23/24 – period of effectiveness | | 10/29/00 |
| [redacted] | [redacted] | Re: Discussiou w Stu Stothoff | [redacted] | 11/18/98 |
| [redacted] | [redacted] | Re: Funding Woes | | 11/18/98 |
| [redacted] | [redacted] | Re: Funding Woes | | 11/19/98 |
| [redacted] | [redacted] | Re: QA'd models | [redacted] GS) | 11/19/98 |
| [redacted] | [redacted] | FW: QA'd models | [redacted] (SNL)<br>[redacted]<br>(SNL)<br>[redacted]<br>(TRW)<br>[redacted] (USGS)<br>[redacted] (TRW)<br>[redacted] (LBL)<br>[redacted] LBL)<br>[redacted]<br>[redacted]<br>(LBL)<br>[redacted]<br>(USGS)<br>[redacted] | 11/20/98 |
| [redacted] | [redacted] | Beaten to death | [redacted] | 11/21/98 |
| [redacted] | [redacted] | Re: AP[redacted]Q | [redacted] | 12/17/98 |
| [redacted] | [redacted] | Re: AP[redacted]Q | | 12/17/98 |
| [redacted] | [redacted] | Re: AP[redacted]Q | [redacted] | 12/17/98 |
| [redacted] | [redacted] | Re: AP[redacted]Q | | 12/17/98 |
| [redacted] | [redacted] | Re: AP[redacted]Q | | 12/17/98 |
| [redacted] | [redacted] | Re: AP[redacted]Q | | 12/18/98 |

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|---|---|---|---|---|
| [redacted] (USGS) | [redacted] | [redacted] | [redacted] | 03/15/99 |
| [redacted] | [redacted] (USGS) | [redacted] | [redacted] | 03/15/98 |
| [redacted] (TRW or LLNL) | [redacted] | Status of LABS phase 1 calc. report - USGS | [redacted] (USGS contractor) [redacted] | 03/26/99 |
| [redacted] | [redacted] | Status of LABS phase 1 calc. report - USGS | | 03/26/99 |
| [redacted] | [redacted] | QA | [redacted] | 04/22/99 |
| [redacted] | [redacted] | Re: QA | [redacted] | 04/22/99 |
| [redacted] | [redacted] | Re: QA | [redacted] | 04/22/99 |
| [redacted] | [redacted] (USGS) | Status of New Climate Net-Infiltration Modeling | | 04/22/99 |
| [redacted] | [redacted] | Re: SN-[redacted] | | 08/05/99 |
| [redacted] | [redacted] | Re: SN-[redacted] | | 08/05/99 |
| [redacted] | [redacted] | Thanks for the Cool Refs | [redacted] | 11/15/99 |
| [redacted] (QATSS) | [redacted] | AMR [redacted] | [redacted] (QATSS) [redacted] (TRW) [redacted] (QATSS?) [redacted] (MTS) [redacted] (MTS) [redacted] (QATSS) [redacted] | 01/05/00 |
| [redacted] | [redacted] | AMR [redacted] | | 01/05/00 |
| [redacted] | [redacted] | AMR [redacted] | | 01/06/00 |

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|---|---|---|---|---|
| [redacted] | [redacted] | 'AMR [redacted] | | 01/06/00 |
| [redacted] | [redacted] | Re: AMR [redacted] | | 01/06/00 |
| [redacted] | [redacted] | Finallly the dam coordinates | [redacted] | 02/17/00 |
| [redacted] | [redacted]) | Re: USGS AMRs | [redacted] | 03/06/00 |
| [redacted] | [redacted]SGS) | Re: USGS AMRs | [redacted] (TRW) | 03/06/00 |
| [redacted] | [redacted] | Re: USGS AMRs | [redacted] | 03/06/00 |
| [redacted] | [redacted] | Re: USGS AMRs | [redacted] | 03/06/00 |

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|---|---|---|---|---|
| [redacted] | [redacted] | Re: USGS AMRs | [redacted] | 03/06/00 |
| [redacted] | [redacted] | Re: USGS AMRs | [redacted] | 03/06/00 |
| [redacted] | [redacted] | Re: USGS AMRs | [redacted] | 03/06/00 |
| [redacted] | [redacted] | Re: USGS AMRs | [redacted] (USGS) | 03/06/00 |
| [redacted] | [redacted] | Developed daily precip record | | 03/07/00 |
| [redacted] | [redacted] | [redacted] | [redacted] | 03/09/00 |
| [redacted] (TRW) | [redacted] (USGS) | Installations | [redacted] (TRW) | 03/29/00 |

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| | | | | |
|---|---|---|---|---|
| [redacted] | [redacted] | Installations | [redacted] | 03/30/00 |
| [redacted] | [redacted] | Installations | [redacted] | 03/30/00 |

From:
PostedDate: 10/15/1999 11:14:47 AM
SendTo:
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Meeting Notes from September 16, 1999 TSPA Meeting (FEIS, LA and SR implications)
Body:

The climate thing, now in regard to SR and LA, is again a topic of concern. As you can see, has asked me to advise. I forwarded this information to last week and we discussed it by telephone. A summary of that discussion, along with an e-mail attachment on the subject sent to you, last December by was sent to by me. I am also forwarding that e-mail transmission.

In view of the fact that the USGS-recommended expert panel has not been convened, wants help in determining the best course of action to get a climate story and model for and that "USGS won't piss on." He also wants to know who, if anyone, is in charge of this. Any ideas you may have to preclude escalation of this matter would be appreciated. I understand that about 30 seconds were spent on this topic at last week, concerning a new three-stage climate scenario for the 10k-year period provided by . I'm at today.

---

10/04/99 05:18 PM
cc:
Subject: Re: Meeting Notes from September 16, 1999 TSPA Meeting ( , and implications)

---

09/28/99 09:21 PM
To:
cc:

Thanks for the enlightenment, . I was definitely under the wrong impression on the work being done for SR and also regarding the nature of the P and T trends with a climate change.

Looking back over my emails i see that I misstated what was a discussion of changes relative to previous assumptions, NOT true out of that specific context. In fact, out of that context the opposite was true. The non-traceable and non-transparent statement after it was disconnected from its



4

[redacted]

parent context and became flat-out wrong.

Now the real question is: is the climate [redacted] going to meet the need for the [redacted] and the [redacted] to have long term climate states (and infiltration changes accompanying those states) that are defensible???

I think showing it doesn't matter from a [redacted]-dose perspective is not sufficient to establish whether or not this part of the analysis is credible and has a defensible basis. We would all agree that showing that it has no impact on system performance does lower the burden of proof necessary to support the modeling (the confidence-burden), however.

Finally, the agreement to show only 10,000 year calculations in [redacted] and [redacted] is not an agreement that DOE was aware of at the upper levels of management, and is being revisited. We will likely need to show calculations, up to peak dose if necessary, in all 3 documents, if they clarify the content of the 10,000 year calculation. This is a dialogue that needs to be had internally, but my announcing to the NRC that we would do 10,000 years only led to a very negative reaction and caused a negative counterreaction in DOE management. NRC said whatever parts of the [redacted] they need to consult to understand the 10K year calculation will need to be Q, and the reaction of DOE management on the scene was -- OK, let's put all of that in the [redacted] and [redacted] rather than make the FEIS a Q document!

[redacted] 09/25/99 12:22:06 PM
To: [redacted]
cc: [redacted]

Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting

[redacted] I have been out of town till today. [redacted] and I are definitely not working on a superpluvial model and I have no idea what you are talking about below in terms of incorportating a superpluvial into existing models. And some how or another doing a tweak on [redacted] won't work. Recall in [redacted] the [redacted] model couldn't address the effects of temperature, so I pushed up the estimate of MAP (in conversation with [redacted]) to try and compensate for the absence of an evaporation (temperature) term. The fact that we wrote the [redacted] document on a newspaper deadline and did not include the rationale for our MAP caused the survey reviewers to flag the MAP estimate as way too high. So trying to now in the midst of an AMR overdue deadline to figure out how to either run a real estimate of MAP with a model that can deal with MAT or alternatively trying to guesstamate effective moisture and compensate for a no MAT term is not possible (or at least should be given more thought time than is available). Further the recent Ku et al paper in Quaternary Research suggests the lake in [redacted] was at least 175 meters deep for the better part, about 35k, of the core stage 6 i.e. the superpluvial and penultimate glaciation. Other data indicate alot of the water in the superpluvial lake came from the Amargosa or perhaps the [redacted] drainages. This large and persistent lake likely owes alot of its existence to a very low MAT (at least 10 C and perhaps more colder than today) but must have also been due to higher MAP. In that a much smaller lake existed in [redacted] during the last glaciation and we believe climate for the last glaciation was about 7 C colder than today with an average MAP range of about 280 to 320 mm (USGS open-file 99-338, http://[redacted]/pub/open-file-reports/ofr-99-0338/) then the superpluvial should have a yet higher real (ie not adjusted) MAP. How much higher and how much colder and how much more persistent would require time to think about such things. And if we still can not properly deal with temperature then the compensating MAP value would likely be a very high and model distorting number that no one would be happy with. [redacted]

[redacted] wrote:
> I would like to make three comments:
>
> 1. This is the first I have heard of any plans to produce a new superpluvial
> climate description. [redacted] are you really working on that?

[redacted]

>
> 2. I don't think it's true that using a superpluvial climate is unarguably
> conservative. What we have seen is that climate changes are what produce
> dose peaks (take a look at Figure 5-2 in [redacted] Vol. 3). Having a steady
> superpluvial climate may not be as bad as switching between dry and
> superpluvial climates, for example.
>
> 3. However, I agree with [redacted] comment below that it isn't a big deal, for
> several reasons: (a) A calculation run after the [redacted] with everything the
> same except for no superpluvials produced a peak-dose CCDF only a factor of
> 2 or 3 lower than the [redacted] base case, which is a small effect compared to a
> lot of other things. [redacted] would want me to add a disclaimer here that the
> [redacted] calculations may have underestimated the effect of the superpluvials.)
> (b) We expect less sensitivity to seepage/infiltration/climate in [redacted] because
> of changes being made in the design and in the WPD model (early information
> indicates that the [redacted] and [redacted] corrosion models will not depend on the
> presence or absence of seepage). (c) The averaging over climate-change
> times that occurs when calculating the "expected annual dose" will further
> damp any spikes associated with climate changes (compare the size of the
> spikes in the "mean" curve in Figure 4-28 as compared to the spikes in
> individual realizations in Figure 4-27).
>
> I think that we should either simply extend the glacial-transition climate
> out to longer times or include climate changes similar to the [redacted]. The main
> problem with the latter is that we have focused [redacted] development on 10,000
> years and do not have updated, or even Q, information on the climates and
> durations beyond that (unless [redacted] tell me I'm wrong about #1
> above). This is an example of cutting scope to what we considered the
> minimal necessary work!
>
> [redacted]
>
> -----Original Message-----
> From: [redacted]
> Sent: Monday, September 20, 1999 6:09 PM
> To: [redacted]
> Cc: [redacted]
> Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting
>
> You should be involved/aware of this discussion.
> [redacted]
> ---------- Forwarded by [redacted] on 09/20/99 05:16
> [redacted]
> ----------
>
> [redacted]
> 09/20/99 05:14 PM
>
> To: [redacted]
> cc: [redacted]
>
> Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting (Document
> link
> not converted) >
> I tend to agree with [redacted] that this is not a big issue, we need to pick an
> approach and agree on it.
>
> I understand that we have a USGS adjustment coming this year for the
> superpluvial, a corrected [redacted] and [redacted] (mean annual precip and temp).
> According
> to an informal preview of that new superpluvial from [redacted], the
> [redacted]
> goes up from what it was, but so does the [redacted], allowing for a downward
> adjustment in mean annual infiltration. [redacted] can correct my
> impression
> if it is off base.

[redacted]

>
> It seems to me that beyond 10K years we could use either (1) the updated
> SR-equivalent of the [redacted] long-term-average climate, or (2) the updated
> SR-equivalent of the [redacted] super-pluvial, with net mean annual infiltration
> corrected for [redacted] changes. The latter would be unarguably conservative. The
> former more realistic, perhaps, although it assumes that mean annual dose
> effects from expected dry climates and the expected wettest climates have
> little
> effect on the very long term dose histories. This would require sensitivity
> studies to first evaluate and then support.
>
> The [redacted] approach was a good one, but defending the time-history of climate
> changes is something that would be nice to avoid since it could lead to
> challenges and then having to evaluate the more conservative scenario anyway
> to
> show that assumptions meant little in the way of peak annual average doses.
>
> So my vote, until I am swayed by a discussion that argues well for the
> other, or
> an other, alternative, is to go with (2) as described above. I am inviting
> discussion. [redacted]
>
> [redacted]
> 09/17/99 12:03 PM
>
> To: [redacted]
> cc: [redacted]
>
> Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting (Document
> link
> not converted)
>
> we can either:
>
> 1. continue the 10k climate for the rest of the duration (or pick highest
> climate state and run out to 1 M yr)
> 2. use the superpluvial climate used in the [redacted] for the rest of the duration
>
> In either case, we will look at the "expected" dose, which will "smooth out"
> the
> individual peaks (peak of mean approach in part 63) that may have occurred
> in
> the [redacted] when we looked at the mean of the peaks.
>
> The distinction is small. Perhaps we should run both for a single case
> (nominal
> performance, nominal inventory, nominal distance), see which is worse and
> run
> that for all other cases in the [redacted] I will assume that approach for now.
>
> Bottom line, I don't think it requires management attention, we will simply
> do
> the reasonable thing and make the final assessment demonstrably conservative
> wrt
> future climate states.
>
> [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 10/18/1999 11:39:18 AM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting ([redacted] and [redacted] implications)
Body:

---------- [redacted]
---

[redacted]
10/15/99 11:14 AM
[redacted]
cc:
Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting ([redacted], [redacted] and [redacted] implications)

[redacted] The climate thing, now in regard to [redacted] and [redacted], is again a topic of concern. As you can see, [redacted] has asked me to advise. I forwarded this information to [redacted] last week and we discussed it by telephone. A summary of that discussion, along with an e-mail attachment on the subject sent to you, [redacted] last December by [redacted], was sent to [redacted] by me. I am also forwarding that e-mail transmission.

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---------- [redacted]
---

[redacted]
10/04/99 05:18 PM
To: [redacted]
cc:
Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting ([redacted], [redacted] and SR implications)

[redacted] climate argument--is this important?-[redacted]
---------- [redacted]
---

[redacted]
09/28/99 09:21 PM
To: [redacted]
cc: [redacted]

[redacted]

Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting ([redacted], [redacted] and [redacted] implications)
Thanks for the enlightenment, [redacted] I was definitely under the wrong impression on the work being done for [redacted] and also regarding the nature of the P and T trends with a climate change.
Looking back over my emails i see that I misstated what was a discussion of changes relative to previous assumptions, NOT true out of that specific context. In fact, out of that context the opposite was true. The non-traceable and non-transparent statement after it was disconnected from its parent context and became flat-out wrong.
Now the real question is: is the climate AMR going to meet the need for the [redacted] and the [redacted] to have long term climate states (and infiltration changes accompanying those states) that are defensible???
I think showing it doesn't matter from a TSPA-dose perspective is not sufficient to establish whether or not this part of the analysis is credible and has a defensible basis. We would all agree that showing that it has no impact on system performance does lower the burden of proof necessary to support the modeling (the confidence-burden), however.
Finally, the agreement to show only 10,000 year calculations in [redacted] and [redacted] is not an agreement that DOE was aware of at the upper levels of management, and is being revisited. We will likely need to show calculations, up to peak dose if necessary, in all 3 documents, if they clarify the content of the 10,000 year calculation. This is a dialogue that needs to be had internally, but my announcing to the NRC that we would do 10,000 years only led to a very negative reaction and caused a negative counterreaction in DOE management. [redacted] said whatever parts of the FEIS they need to consult to understand the 10K year calculation will need to be Q, and the reaction of DOE management on the scene was -- OK, let's put all of that in the [redacted] and [redacted] rather than make the FEIS a Q document!

[redacted]

Subject: Re: Meeting Notes from September 16, 1999 [redacted] Meeting

[redacted] I have been out of town till today. [redacted] and I are definitely not working on a superpluvial model and I have no idea what you are talking about below in terms of incorportating a superpluvial into existing models. And some how or another doing a tweak on [redacted] won't work. Recall in [redacted], the [redacted] model couldn't address the effects of temperature, so I pushed up the estimate of MAP (in conversation with [redacted]) to try and compensate for the absence of an evaporation (temperature) term. The fact that we wrote the [redacted] document on a newspaper deadline and did not include the rationale for our [redacted] caused the survey reviewers to flag the [redacted] estimate as way too high. So trying to now in the midst of an [redacted] overdue deadline to figure out how to either run a real estimate of [redacted] with a model that can deal with MAT or alternatively trying to guesstamate effective moisture and compensate for a no MAT term is not possible (or at least should be given more thought time than is available). Further the recent [redacted] et al paper in [redacted] suggests the lake in [redacted] was at least 175 meters deep for the better part, about 35k, of the core stage 6 i.e. the superpluvial and penultimate glaciation. Other data indicate alot of the water in the superpluvial lake came from the [redacted] or perhaps the [redacted]

end part not printed

[redacted]

[redacted]

[redacted]

PostedDate: 08/05/1999 07:51:57 PM

[redacted]

CopyTo:
ReplyTo:
BlindCopyTo:
Subject: RE: [redacted]
Body:

Still planning to meet the Aug 31 deadline with 1st draft into tech review, so I'll be charging full-time to 4b this month (and probably next)..... I think 4b (is it [redacted]???) is running a surplus right now, but [redacted] may also be charging to this. [redacted] are helping me with the 1st draft as we speak. I've been boggled down with the Yucca Mt. site-scale AMR stuff which includes all the software QA. [redacted] has put a high priority on the deliverables for both the site and regional work so I'm burning the candle at both ends. The good news is that I'll be a lot more productive in [redacted] The bad news is that my productivity has been real bad the past month or two with all this moving and house buying crap. Life has been crazy ever since the gathering at the Longstreet Inn. But it feels real good to be working out of the [redacted] in the middle of [redacted]

Hopefully the proposals for the NTS work (the stuff we sent [redacted]) will go thru and then we'll be doing some serious leveraging of resources for FY00. I also need to get serious about getting together with [redacted] for the [redacted] stuff.....

got to go

[redacted] on 08/05/99 03:53:14 PM

[redacted]

cc:

Subject: RE: [redacted]

Piss on QA, how's your recharge report (due Aug 31, 1999) coming. By the way [redacted] may want to fund the transient recharge work!!!! Perfect for all you [redacted] types!

> -----Original Message-----
> From: [redacted]
> Sent: Thursday, August 05, 1999 3:51 PM
> To: [redacted]
> Cc: [redacted]
> Subject: [redacted]
>
>
>
>
> FYI
>
> [redacted] and I have responded to the recent issues concerning
> [redacted] We believe
> we've fixed all of the problems identified so that a stop work
> order should be
> averted. A copy of the fixed notebook was forwarded to [redacted]
> [redacted]. We have
> not yet heard anything back from QA.
>
> [redacted]
>
>

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/18/1998 01:02:35 AM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Additional Pieces for [redacted]
Body:
I agree. I had an interesting talk with [redacted]. I may piss him off but I'm going to attack him shortly. He is way out of line on what he is doing. I have an assignment for providing information for [redacted] and I will need to have it done Thursday morning.
[redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 03/18/1998 01:02:35 AM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Additional Pieces for [redacted]
Body: I agree. I had an interesting talk with [redacted] I may piss him off but I'm going to attack him shortly. He is way out of line on what he is doing. I have an assignment for providing information for [redacted] and I will need to have it done Thursday morning.
[redacted]

[redacted]

[redacted]:

From: [redacted]
PostedDate: 03/22/1999 06:08:37 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Just Checking In
Body:
1. Software QA for the latest version of the model is coming along crappy. This is because there are some 11th hour changes taking place. The fall-back position is that the new models will be used only as supporting info for the developed data packages supporting the FY99 milestone report (we will use the 96 version of the infil code, which has been QA'd, to generate the final FY99 result.... this is mostly what [redacted] wants anyway).
2. Here's the minimum input data being used (both 96 and 99 version of model), which has for the most part already been QA'd:
1. Digital elevation data (data already QA'd)*
2. Geologic classification GIS map (already QA'd)*
3. Vegetation classification GIS map (already QA'd)*
4. Stream channel GIS map (already QA'd ?????)*
5. Daily precipitation data (already QA'd for 96 version of [redacted] model.... I need to double check this. There's some important data from NTS precipitation stations in here that have always been a QA gray zone)
6. Soil property data (already QA'd)
7. Bedrock permeability (mostly already QA'd or available... I think)
* I'm trying to complete the northward expansion to match the new area of the SZ model. I'm not sure what the QA status is for the new GIS coverages for data sets 1-5.
Here's what I'm hoping to add to this, if all goes well:
1. USGS stream flow data: this is all available data .... no QA needed. (This is used for calibration)
2. NCDC (Earth-Info) daily climate data (precip, air temp, snow cover): also available data, no QA needed
3. Better soils data. If we use the [redacted] data, I don't think it needs to be QA'd
3. I've had my [redacted] training (doesn't mean I know what I'm supposed to do, but I have hard copies of everything).
4. Scientific notebook OK (not perfect, but I'm getting help from [redacted] in this department).
5. For now, I'm hiding out from all tiger teams, like some outlaw in a Spaghetti Western. We're heading underground with the real work. Tell [redacted] he was supposed to destroy that memo.
[redacted]
03/22/99 02:27 PM
To: [redacted]
cc:
Subject: Just Checking In
[redacted] Just checking in to see how everything is going.
How's the software QA coming?
How's the model? Keeping up w/ the Scientific Notebook?
Have you had the [redacted] training? Do you understand what's required? Do you have any questions?
And the biggest one in my mind: what data are you using in the model?? Is any of it either unpublished, non-YMP or unreviewed YMP? Data package assembly has become even more onerous than before (hard to believe) and it's taking longer than ever to get data packages processed. If you have anything that is going to need review you'd better call me ASAP so we can get started on it.

I saw your emails to [redacted] about the [redacted]. Any new news on their plans for you??

Write back when you get a chance.

[redacted]

From:
PostedDate: 03/15/1999 10:14:50 PM
SendTo:
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Hell
Body:

This memo actually hits the nail on the head. You are exactly right: One, yes, we will do the work, Two, yes, screw the tiger team (I don't know how yet but I'll figure it out), Three, yes, destroy this memo!

03/15/99 12:18 PM
To:
cc:

Subject: Re: Hell

and I have been trying to figure out what's really coming at us with the tiger team effort. So far we've learned that they don't have a solid plan of action yet. I've formulated a "potential impact list" that is prioritized according to what work gets impacted 1st; 1. FY99 support to (includes all the workshop stuff), 2. regional recharge report, 3. site-scale infiltration modeling report. Some of the work the tt effort calls for was scheduled under QA anyway, but we started hearing rumors of things like re-doing all the QA work for the neutron logging data, which will stop us dead in the water.

Now I'm going to give you the inside scoop: I'm going to continue the regional modeling, even if it means ignoring direct orders from management. I'm also going to be working on reports, even if it means ignoring direct orders from management. and have a pretty clear vision of the type of work that needs to be done to stay alive for the long-haul, and it very definitely involves getting product out there for the users and the public to see. The regional modeling work fits that bill. Screwing around with tiger teams does not. In the end, its going to be the reports that move everything else forward. efforts will just be vaporized.

So, the work may be slowed, but I will not let it stop. At this point, I am still working to the plan that we've all spent a significant amount of time on to make things happen for FY99. That's the insider scoop. The position we will take for the planners may be much different. So delete this memo after you've read it.

Please respond to

To:
cc:

Subject: Hell

I understand you're going to be sucked into the for site infiltration. Any idea how that will impact timing for your regional recharge model product for the year's end. Or are your just working every weekend and waking moment like all the rest of us?

[redacted]

From: [redacted]
PostedDate: 03/15/1999 03:18:46 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: [redacted] Hell
Body:

[redacted] and I have been trying to figure out what's really coming at us with the [redacted] effort. So far we've learned that they don't have a solid plan of action yet. I've formulated a "potential impact list" that is prioritized according to what work gets impacted 1st; 1. FY99 support to [redacted] (includes all the workshop stuff), 2. regional recharge report, 3. site-scale infiltration modeling report. Some of the work the tt effort calls for was scheduled under [redacted] QA anyway, but we started hearing rumors of things like re-doing all the QA work for the neutron logging data, which will stop us dead in the water.

Now I'm going to give you the inside scoop: I'm going to continue the regional modeling, even if it means ignoring direct orders from YMP management. I'm also going to be working on reports, even if it means ignoring direct orders from YMP management. [redacted] have a pretty clear vision of the type of work that needs to be done to stay alive for the long-haul, and it very definitely involves getting product out there for the users and the public to see. The [redacted] regional modeling work fits that bill. Screwing around with [redacted] does not. In the end, its going to be the reports that move everything else forward. [redacted] efforts will just be vaporized.

So, the work may be slowed, but I will not let it stop. At this point, I am still working to the plan that we've all spent a significant amount of time on to make things happen for FY99. That's the insider scoop. The position we will take for the M&O planners may be much different. So delete this memo after you've read it.

[redacted]

Please respond to [redacted]

To: [redacted]
cc: [redacted]

Subject: [redacted] Hell

I understand you're going to be sucked into the [redacted] for UZ site infiltration. Any idea how that will impact timing for your regional recharge model product for the year's end. Or are your just working every weekend and waking moment like all the rest of us?

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/22/1999 09:52:39 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: status of new climate net-infiltration modeling
Body:
I thought I'd give you a "heads up" on the progress of work I've been doing with the results you've provided. Model simulations have been in progress but about 3 weeks ago I found a small error in the model input that was generated using the [redacted] data. The error was minor but would have created a QA nightmare so this was fixed and the simulations are being re-done (I'll send you a summary of the results when I get to this point).
I am about to submit a "developed datapackage" milestone consisting of the climate input files (7 files for the 7 sites you identified) that are being used by the net-infiltration model. The input files are basically re-formatted [redacted] export files with a minor amount of parameter estimation occurring to fill small gaps in the record (even for the high ranking sites, there are gaps all over the place).
Here's the weird news; to get this milestone through QA, I must state that I have arbitrarily selected the analog sites. At first, I was going to include your email as supporting information in the data package, and discuss the work we did using the worksheets consisting of candidate sites, but since there is no [redacted] for your results the message I am getting from QA is that I can't use or refer to those results. In other words, I was trying to give you credit for your part in all this, as well as provide all info possible for the traceability of the analog climates, but this seems to create problems rather then solving them.
So for the record, the seven analog sites have been arbitrarily (randomly) selected. Hopefully these sites will by coincidence match the sites you have identified.
[redacted]
P.S. **please destroy this memo**

[redacted]

[redacted]

Author: [redacted]
From: [redacted]
PostedDate: 04/03/1998 10:14:24 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: Infiltration and UZ flow
Body: [redacted]

So, you now have more hard evidence for the [redacted] model? I'm surprised you didn't say "I told you so!".
Could our [redacted] approximation suffice to model the phenomena you discuss below?
I suggest you send your e-mail to [redacted] and others in 1.2.3. Also, to [redacted]
Also, to [redacted] to get his dander up.

I think the main thing here is that if you think the flow will contact significantly fewer waste packages than what we are saying in our base case, then we are being way over conservative, especially considering that the fraction of packages seeped upon in the [redacted] is the most important performance parameter.

It seems too late now to change the base case. What do you propose?

[redacted] 04/03/98 04:19:40 PM
To: [redacted]
cc:
Subject: Infiltration and UZ flow

[redacted]

I have some maybe bad and maybe good news that you should be aware of. [redacted] called me 2 weeks ago and said that he had tested the first sample of core from [redacted] at [redacted] and it had a concentration of 39 mg/l of chloride. This means that the flux is at most 2 or 3 mm/yr in this high infiltration zone ([redacted] is at the crest of YM). There are some implications that I did not realize until I talked them over with [redacted] yesterday: basically, either our infiltration model is wrong or our [redacted] flow model is wrong or both.
Infiltration model wrong? If we look at 2 analog sites, we see much different behavior than predicted by our infiltration model. At [redacted], the best estimate for infiltration is about 24 mm/yr in the center, under a wash, decreasing to about 10 mm/yr a mile away, decreasing to virtually nothing around G-tunnel (the southern edge). Also, the [redacted] method predicts a recharge of ~20 mm/yr. Our infiltration model predicts about 40 mm/yr--our [redacted] climate.
At [redacted], the [redacted] and [redacted] site in [redacted], there are drips in 2 parts of the tunnel: under a perched water body and under a wash. The drips under the wash are significant, but only immediately after the wash is flowing. Our infiltration model has virtually no infiltration in washes; what infiltration there is in washes is basically put there as a fudge factor. (I don't want to be too critical here--I could probably tear apart any of our models. Did somebody say seepage? And [redacted] did do us a great favor n helping us out for [redacted])
[redacted]-flow model wrong? Looking at the same analog sites, we see that flow is not ubiquitous. It is in isolated paths, typically associated with locally saturated conditions. If flow is in isolated paths, we would get high chloride in the [redacted] almost everywhere we look (and

[redacted]

we would get high Cl-36 in a few places in the ESF too, but that is another story). At [redacted], the drips average 100+ m apart (from the memory of [redacted], not from data). Also at [redacted], the perched water is in vertical slices separated by sections of dry fractures and faults. There is no evidence that the perched water flows along the top of the vitric/interface. Rather, it is more likely (from geochem data) that the perched water drains from below (I am guessing because it builds up a head). Again, this behavior suggests isolated flow paths. I will not go into [redacted] but the message there is similar.

Both wrong? The analogs, and now the chloride data, suggest a model where most infiltration/recharge is in isolated zones, perhaps at points along washes, and that most flow occurs in isolated, locally saturated ribbons immediately below the infiltration points.

Does it matter? Well, the good news is, as [redacted] pointed out to me, that most of this is probably better for performance. (The only thing that could hurt performance is that flow in CHnv might not be in the matrix either.) The bad news is that it might hurt our credibility.

The point we probably need to make in [redacted] is that our modeling is conservative, because: (1) the lower the infiltration, the fewer containers are contacted, and the less waste is released; (2) the more isolated the flow paths, the fewer containers are contacted, etc.; and (3) diverting the water around the zeolitized rock minimizes retardation. The unfortunate thing here is that the way we have the natural system modeled, we are probably not giving it enough credit.

[redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 04/03/1998 10:14:24 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: Infiltration and UZ flow
Body: Dear [redacted]

So, you now have more hard evidence for the [redacted] model? I'm surprised you didn't say "I told you so!".

Could our DKM Weeps approximation suffice to model the phenomena you discuss below?

I suggest you send your e-mail to [redacted] and others in 1.2.3. Also, to [redacted]. Also, to [redacted] to get his dander up.

I think the main thing here is that if you think the flow will contact significantly fewer waste packages than what we are saying in our base case, then we are being way over conservative, especially considering that the fraction of packages seeped upon in the LTA is the most important performance parameter.

It seems too late now to change the base case. What do you propose?

[redacted]

[redacted] on 04/03/98 04:19:40 PM
To: [redacted]
cc:
Subject: Infiltration and UZ flow

[redacted] --

I have some maybe bad and maybe good news that you should be aware of. [redacted] called me 2 weeks ago and said that he had tested the first sample of core from PTn at [redacted] and it had a concentration of 39 mg/l of chloride. This means that the flux is at most 2 or 3 mm/yr in this high infiltration zone ([redacted] is at the crest of YM). There are some implications that I did not realize until I talked them over with [redacted] yesterday: basically, either our infiltration model is wrong or our UZ flow model is wrong or both.

Infiltration model wrong? If we look at 2 analog sites, we see much different behavior than predicted by our infiltration model. At [redacted], the best estimate for infiltration is about 24 mm/yr in the center, under a wash, decreasing to about 10 mm/yr a mile away, decreasing to virtually nothing around G-tunnel (the southern edge). Also, the [redacted] method predicts a recharge of ~20 mm/yr. Our infiltration model predicts about 40 mm/yr--our [redacted] climate. At [redacted], the [redacted] and [redacted] site in [redacted], there are drips in 2 parts of the tunnel: under a perched water body and under a wash. The drips under the wash are significant, but only immediately after the wash is flowing. Our infiltration model has virtually no infiltration in washes; what infiltration there is in washes is basically put there as a fudge factor. (I don't want to be too critical here--I could probably tear apart any of our models. Did somebody say seepage? And [redacted] did do us a great favor in helping us out for [redacted])

UZ-flow model wrong? Looking at the same analog sites, we see that flow is not ubiquitous. It is in isolated

[redacted]

paths, typically associated with locally saturated conditions. If flow is in isolated paths, we would get high chloride in the PTn almost everywhere we look (and we would get high Cl-36 in a few places in the ESF too, but that is another story). At [redacted], the drips average 100+ m apart (from the memory of [redacted] not from data). Also at [redacted] the perched water is in vertical slices separated by sections of dry fractures and faults. There is no evidence that the perched water flows along the top of the vitric/interface. Rather, it is more likely (from geochem data) that the perched water drains from below (I am guessing because it builds up a head). Again, this behavior suggests isolated flow paths. I will not go into [redacted], but the message there is similar.

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The bad news is that it might hurt our credibility.

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-- [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/06/2000 01:54:51 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: USGS AMRs
Body:

What a circus (see emails below).....
I re-wrote blockr7 to use the following [redacted] grid files as input:

[redacted]: the composite DEM created by [redacted]
[redacted]: latitude (decimal degrees) for each grid cell calculated by [redacted]
[redacted]: longitude..... calculated by [redacted]
[redacted]: slope calculated by [redacted]
[redacted]: aspect calculated by [redacted]
[redacted]: the soil type map, rasterized by [redacted]
[redacted]: the depth class map, rasterized by [redacted]
[redacted]: the rock type map ([redacted] and [redacted] only), rasterized by [redacted]
[redacted]: the topographic ID (I must assume that this was produced in ARCINFO by [redacted] using the [redacted]. Because it is only a place holder and not actually used by the model it doesn't matter but the parameter has been carried through the pre-processing and is in all the *.[redacted] files used as input for [redacted])

So once the DEMs, the geology, the soil type, and the soil depth class maps make it into the TDMS, [redacted] will provide a link to [redacted] which is the file I started with in 1996. The link between the source data in the TDMS and the ASCII grid files above are all standard [redacted] operations (except for maybe the topo ID stuff) so this should get us to full traceability.

I checked the blocking ridge calculations using [redacted] and they do not match what is in [redacted]. The skyview map produced by the new version of [redacted] looks reasonable. I have not yet incorporated [redacted] latest fixes to [redacted] for the improved version. I am just trying to re-produce the blocking ridge values provided to me in [redacted] back in 1996, and I have not yet been able to do this. Again, the original calculation was not done by me and at this point I have no direct trace of the the blocking ridge values in [redacted] to the actual calculation. I do have a copy of [redacted] provided to me by [redacted] and I am now using this to check the [redacted] calculations. [redacted] do you have the original [redacted] program that was used to create the values in [redacted]? Also, could you send me a copy of the improved version so that we can start with the better numbers for the regional modeling?

I can fudge the attachment for [redacted] for now but eventually someone may want to run [redacted] to see what numbers come out and at that point there will be problems, although it is my belief for now that an impact analysis would reveal that the differences are not critical to the end result.

---------- Forwarded by [redacted] 03/06/2000 10:19 AM ----------

[redacted]
03/06/2000 09:33 AM
To: [redacted]
cc: [redacted]

Subject: Re: USGS AMRs

Yes - will fedex it and fax it to [redacted]
What is your fax number so we can copy you on it . [redacted]
03/06/2000 08:12 AM
To: [redacted]

[redacted]

cc: [redacted]

Subject: Re: USGS AMRs
I think we're on board - you or [redacted] will iniate a 3.14 request?

[redacted]
03/06/2000 08:11 AM
To: [redacted]
cc: [redacted]

Subject: Re: USGS AMRs
Please note that these are two separate issues:
[redacted] - is an output data transmittal needed for a number of AMRs. This is needed in the TDMS regardless of the status of the AMR [redacted] We are burning CDs and sending you copies of what you sent us for this transmittal and the other [redacted] data recevied. Please note that [redacted], in Las Vegas ([redacted]) also has copies of these data. We will also send you these by email, though I am concerned that the files are large and may be difficult to transmit (We will send the files later this morning in separate emails).
[redacted] of the AMR [redacted] - If the AMR will not be complete by the time the [redacted] PMR is issued, then the AMR itself (a DRAFT version) must be submitted as an [redacted] transmittal. Otherwise the PMR can not be finalized. This is a recent approach to deal with the possibility of an AMR not being complete before the due date of the PMR.
I hope this clarifies these two separate issues.

[redacted]
03/06/2000 05:34 AM
To: [redacted]
cc: [redacted]

Subject: Re: USGS AMRs
I am not sure what you mean by "This is a different [redacted] Transmittal." Is this not [redacted] that we have been talking about? If not what is the correct [redacted] Input Transmittal number? I am not aware of one for the DRAFT version of AMR [redacted]. Are you saying that a copy of the DRAFT version must be placed in the TDMS? Or are you just asking for a copy be transferred to LBNL through an [redacted] Transmittal Request?
The [redacted] process does not include a step that maintains a copy by the originating office (in the case of [redacted]) to be placed in the TDMS. USGS management is developing a process to do this at this time. However, because our Data Management Section does not have a copy of the data transmitted to you through [redacted] nor do we have the data nor a data summary sheet explaining the pertainent information about the data. We are having difficulty recreating the data set that you were given and placing it in the TDMS. I assumed after our phone conversation last week that you would help provide that needed information, but have not received anything from you yet. If you cannot provide the information, please let me know and I will try other means.

[redacted]
03/04/2000 06:21 PM
To: [redacted]
cc: [redacted]

Subject: Re: USGS AMRs
This is a different [redacted] Transmittal. It will be necessary to transmit a DRAFT verison on the AMR [redacted]. The previous transmittal was for the output data. This is required because the document and its conclusions are referenced and utilized in the PMR.

[redacted]
03/03/2000 12:34 PM

[redacted]

To: [redacted]
cc: [redacted]

Subject: Re: USGS AMRs
The information was transferred via [redacted]ast fall.

[redacted]
03/03/2000 12:25 PM
To: [redacted]
cc: [redacted]

Subject: Re: USGS AMRs
[redacted]
In order for the PMR to be submitted with the Infiltration AMR unfinished, any information used in the PMR from this AMR will have to be covered through use of a [redacted] preliminary input transfer. If the AMR is not far enough along to be used in draft form, then an alternative will have to be developed. I assume [redacted] will work with [redacted] and [redacted] to make sure we have the paperwork correctly done to make this happen.
[redacted]

[redacted]
03/03/2000 08:27 AM
To: [redacted]
cc: [redacted]

Subject: USGS AMRs
I'll cut to the chase:
Infiltration AMR: Will not be completed by 3/13 - it needs to be put into the category of "the rare ones that get completed after the PMR is submitted. We fully intend to complete during the period of the DOE PMR review. It has not been submitted for checking at this point. The Infiltration AMR should be taken off the interactive review schedule next week.
Climate AMR: Issues remaining, get the damn [redacted] in shape and a couple of other minor issues - we've already received [redacted] comments, have proposed responses, and as soon as [redacted] stuff is fixed will return for concurrence of responses. I'm not sure the interactive review next week will help - especially as [redacted] will not be there. I do believe we can get this one approved prior to 13th!

197

[redacted]

[redacted]

From: [redacted]
PostedDate: 07/08/1998 03:48:13 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: don't be jeolous
Body:

You may be jeolous about a one-day event I had, but I'm sure as hell jeolous about the office you get to work in 5 days out of 7. I don't know how much longer I can take this cube shit. There are days when I seriously ponder the thought of quitting.

[redacted]

[redacted]

From: [redacted]
PostedDate: 05/11/1998 03:44:35 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: [redacted] Flow (+climate+infiltration) section for [redacted] document
Body:
FYI. Still don't know quite how to handle the air temp glitch. I'm continuing to keep mum about this, but, from a scientific integrity standpoint, it is tempting to let the end users know exactly what was provided to them in terms of effectivley cooler future climate simulations. Problem is, I don't know how to do this without looking bad. If we can let it all pass without trying to attach DTN numbers to these results (the prefered choice), then I can forget about it and just concentrate on getting results out for the new model. If they (DOE) force us to put DTNs on these things, I would rather the truth come out sooner than later.
Don't need to respond to this, we can talk about it later.
---------- Forwarded by [redacted] on 05/11/98 12:24 PM
---

[redacted] on 05/04/98 03:00:49 PM
To: [redacted]
cc: [redacted]
Subject: [redacted] Flow (+climate+infiltration) section for [redacted] document

---
[redacted]: text
[redacted]: text
[redacted]: text
[redacted]s-ascii
[redacted]Lines: 15
To all --
Attached is the first draft of the [redacted] Flow section (which includes climate and infiltration as well as flow) for the [redacted] document. It is in two Word 97 files, one for the text and one for the figures. We are already behind schedule in submitting this section to the [redacted] Electronic Storyboard, so I would appreciate any comments or suggestions you may have by the end of this week (May 8). It is about 15 pages of text, and several figures. You are welcome to comment only on the sections that you are interested in, of course.
If you can't read the [redacted] files, let me know and we can get it to you in some other format.
-- [redacted]
---
[redacted]: default-app
[redacted]: default
[redacted]
[redacted]: uuencode
[redacted]
---
[redacted]

[redacted]

---
Attachment: [redacted]
Attachment: [redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 06/18/1998 04:48:09 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re:
Body: Actually I like the [redacted] study but I'm now tracking down [redacted] discharge data. I asked [redacted] for help tracking it down but I would suggest we start an all out effort to track down ALL stream flow records for our study area. That may be all the data we have to calibrate with. I need the NTS precipitation data fairly soon (I know, I also have way to much stuff to do). Send me the address, or person to call, to get the [redacted] data on CD, I'll order another copy and start working with that. Actually I may not need the [redacted] as I am getting a copy tomorrow of all the data for the [redacted] going back to 1900 (hand entered to 1948 from microfiche, the rest came from [redacted]) and I sort of promised to share the [redacted] data. They are USGS people in [redacted] and we will be working with them next year. Did you know there is a USGS map of every precipitation event for the [redacted] since 1948? At least that's the rumor. They (I actually don't know who they are yet but may be in [redacted]) use precipitation data from every station available and then used some sort of elevation correlation (they don't have the [redacted] stations). I'm looking into that now and should get all the maps by mid July (we may get scooped on a bunch of stuff). Fun being busy isn't it?

[redacted]

06/18/98 01:47 PM
To: [redacted]
cc:
Subject: Re:

I'm finishing up the [redacted] report (concentrating only on those items [redacted] originally requested me to look at ... I talked this over with [redacted] yesterday). I've been meaning to send you a program that will convert the 6 regional strips you have back to the original *.[redacted] file format, but I got sidetracked a little with the planning stuff. Let me finish [redacted] and I will get you the code (I'm close to finishing it). I wanted to have these simulations running this week. But I also wanted you and [redacted] to look at what I'm using for effective permeabilities. I'm trying to clean up a worksheet I have so that you and [redacted] can understand it.

As far as FY99 modeling goes, there are several areas that we can always use help in; programming, GIS, and anyone capable of getting a simulation going, compiling the results, creating maps and graphs of the output, and helping me compile and update the climate database, streamflow records (along with any other calibration data), and the future climate stuff. You and I may be the only ones developing the model code, but even some part-time help from someone with programming skills would be a tremendous boost to keep things going (the small re-formatting program above is a great example), and to have software QA keep in step with model improvements. I don't know who this person would be, and there we have a dilema. At least we are making an effort to improve out GIS expertise.

As far as the [redacted] stuff and the regional stuff goes; 1. We never seem to be certain about the funding level from [redacted] until the planning is over and done with ..... I wanted to have a backup to keep the regional effort going. 2. We are doing the same amount of work on the regional scale wether we get the money for [redacted] or not, so why not try to get the money? All we have to do is a few extra simulations in [redacted]. Its like we'll get paid twice for the same work (and I don't feel bad about this considering how little we're getting paid for the work this year .... in my mind it will all even out in the end). 3. I'm still not convinced that there will not be another round of planning where we have to try to cut 50% of the funding we are asking for now. Then we can just get rid of the [redacted]. Geeze... I spent too much time on this email... gotta go!

[redacted]

[redacted]

From: [redacted]
PostedDate: 06/18/1998 04:47:34 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re:
Body:
I'm finishing up the [redacted] report (concentrating only on those items [redacted] originally requested me to look at ... I talked this over with [redacted] yesterday). I've been meaning to send you a program that will convert the 6 regional strips you have back to the original [redacted] file format, but I got sidetracked a little with the planning stuff. Let me finish [redacted] and I will get you the code (I'm close to finishing it). I wanted to have these simulations running this week. But I also wanted you and [redacted] to look at what I'm using for effective permeabilities. I'm trying to clean up a worksheet I have so that you and [redacted] can understand it.
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Geeze... I spent too much time on this email... gotta go!

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/17/1999 07:10:05 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Jury summons
Body:

They want me to go down on April 19nth. I've been putting together the new future climate input sets; I need to be running simulations while I'm writing reports. I'm also putting together a real simple snow cover model for now; the degree-day approach. I've been working on programs that pull in the earthinfo export files (precip, max temp, min temp), combine the files into one, check for gaps, estimate missing values, and generate output that is usable for [redacted] modeling or the next step in climate modeling; spatial interpolation of daily input. I think when I'm done this will be applicable to the [redacted] study. I think we can generate one file that will contain a precip map for each day for a 100-year record.

This work also needs to get done for a level 4 milestone coming up end of April for [redacted]. Basically I have two weeks left to get this done so [redacted] can start the technical reviews of the developed data 1st part of April. Also, I need to get it out of the way so we can have some lee-way for putting the [redacted] stuff together, and so I can get back to writing.

Either the regional modeling or the site scale modeling will get into trouble if I'm the only one working in it. The 176k for [redacted] assumed about .5 FTE beyond my time for things like model calibration, QA, model development, and up-dating input files. At this point the regional modeling is suffering because I've focused everything on [redacted]. You and I are the only ones that seem to know [redacted] programming so that puts us in a bind. On the other hand, it wouldn't take that much time to show someone like [redacted] or [redacted] how to run the model for calibration (only worksheet skills are needed here, although [redacted] skills are also very helpful). I'm hoping to have a final FY99 site-scale model together by the time I come out to [redacted] (1st or 2nd week of April) so we can go into full-time calibration run mode.

What resources beyond our own group could I be tapping to solve the [redacted] FTE problem? For example, I've thought about: 1. [redacted] student help (administrative hassle factor may be high), 2. [redacted] (administrative hassle factor high), 3. [redacted] support [redacted] is ready to help us out with the uncertainty analysis.... I think we can make some headway without handing over the source code, which has been my biggest worry), 4. Student help from either [redacted] or [redacted], 5. YMP USGS ([redacted].... )

Gotta go... I've spent way too much time on this email

[redacted]
03/16/99 07:29 PM
To: [redacted]
cc:

Subject: Re: Jury summons

I think you're stuck. You get USGS pay and they, supposedly, get the money. I think you should just go in an do the jury duty. Chances are there will be 50 people of whom 12 will be picked. If you are picked it will likely be for only a day. Sorry.

[redacted]
03/16/99 11:47 AM
To: [redacted]
cc: [redacted]

Subject: Jury summons

[redacted]

[redacted].

I've just received my 2nd notice for a summons to the [redacted] judicial district court jury duty in [redacted] (I ignored the 1st one back in October 98). This one warns me that I could go to jail if I continue to ignore this. I called the court today and they want me to find out how the USGS handles pay for this leave situation.

Is there a way to have the USGS over-ride this summons? I cannot afford to stop working on what I'm working on now to go sit in a Jury (unless the trial doesn't last longer than half a day), and it has nothing to do with money.

At any rate, I don't think I can just say the dog ate it.

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 10/29/1998 07:41:37 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Design Features 23/24 - Period of Effectiveness
Body:
enjoyed the ranting and raving. We're trying to work with the engineers because thats where the funding's going. Leveling the top of the mountain seemed humorous but it gave me the chance to make some more cool figures. This little task is history now. Wait till they figure out that nothing I've provided them is QA. If they really want the stuff they'll have to pay to do it right.

[redacted]
10/29/98 03:31:59 PM
To: [redacted]
cc:
Subject: Re: Design Features [redacted] - Period of Effectiveness
This sure is an interesting viewpoint. The desert pavement forms on areas where the slope is generally less than 1 to 2 percent. You don't generally see pavement on slopes of 10% or more. The other idea that I love is engineered modifications. As he notes, the natural system is very stable, so why do we have to fool with it. The other idea they are not looking at is caliche. In area where there is well developed caliche, one could expect erosion to that surface but then extremely limited erosion of the well cemented carbonates. These are usually old truncated surfaces that have had new material deposited on them. These show part of the erosion/deposition processes that occur in arid environments. The natural system exists for a reason and it got there without engineers screwing with it. I am starting to rant and rave so I should get back to my other work.
Thanks for sending the information to me. I find these things interesting.
[redacted]

[redacted]
10/29/98 03:21 PM
Sent by: [redacted]
To: [redacted]
cc:
Subject: Re: Design Features [redacted] - Period of Effectiveness
FYI: The engineering perspective on this. I meant to send this earlier (If I already did, ignore this... I may have gone senile)
---------- Forwarded by [redacted] on 10/29/98 02:24 PM
---

[redacted]gov on 10/28/98 04:26:21 PM
To: [redacted]
cc: [redacted]
[redacted]
Subject: Re: Design Features [redacted] - Period of Effectiveness
Thought I would put in my 'two bits worth" on this subject. Afterall, the [redacted] life expectency has a lot to do with the engineering design. I would welcome comments.
The design for [redacted] calls for armoring the soil blanket with rip-rap. In nature, desert nature that is, the rip-rap is called desert pavement. We can see that the desert pavement effectively protects the soil from wind, rain, snow, sleet, etc, so that the mass transport erosion is confined mainly to the washes. If the rip-rap is applied properly to imitate nature, then why can't we assume a similar protection for our man-made desert pavement? Also, the average erosion rates there are extremely small - 0.19 cm/ka average for Yucca Mountain hillslopes. Could expect similar erosion rates with the rip-rap protection? If we look at the ages of the hillslopes at YM, we see it ranges from 170 to 760 ka. I would not suggest that our engineering effort could last this long, but it is certain to last at least 1 ka., and possibly 10 ka's or more (100's of ka's?). I proposed at one time a very conservative approach with 1000 years. Let's face it, the desert topography is very stable and long living so why can't we expect

[redacted]

our modifications to last just as long? Comments?
For design [redacted], I would think that this would last somewhat shorter than [redacted]. Eventually, chemical, and mechanical erosion of the bedrock will creat soil over the exposed bedrock. I am not sure how fast it would form, but it would be very slow. I would think that the 1000 year life would be conservative. Comments?
[redacted] on 10/28/98 03:59:33 PM
To: [redacted]
cc: [redacted]
Subject: Design Features 23/24 - Period of Effectiveness

[redacted]
In the analysis of [redacted] & [redacted], we will need to make an assumption regarding how long these surface modifications remain effective.
Can you fellows suggest a reasonable range of time periods that can be assigned to these two features? I propose doing RIP calculations where the infiltration maps are changed depending on the time period of DF effectiveness.
Alternatively, if you can provide a technical basis for assuming these DFs would be effective for 10,000 yrs, this would work also.
We will need this input from you this week in order to stay on schedule.
Thanks, [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 12/18/1998 05:25:24 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: AP [redacted]
Body:
Wow! Thanks for this very thoughtful and philosophically charged wealth of advice. I here exactly what you say. YMP is looking for the fall guys, and we are high on the list. I got a strong feeling at the [redacted] meeting that high level folks are starting to pay very close attention to who they will come after when things hit the fan. Who got how much funding at what time will all be long forgotten when the lawyers start challenging credibility of results. It was made clear that this will be like the OJ trial, where results are completely thrown out because of minor procedural flaws or personal attacks on credibility. As [redacted] told the lawyer who was there, YMP doesn't stand a snowball's chance in hell of making this work if that is the approach.
As far as the 98 and 99 modeling, I'm starting the write-ups now. Much of this is already being covered in the NLPs and APs so I can kill 2 birds with the same stone. I much as I think [redacted] may help us out with some things, I am going to be very careful that [redacted] doesn't end up taking credit for our work.

[redacted]

12/17/98 08:47 PM
To: [redacted]
cc:
Subject: Re: AP 3.10Q

I agree with your analysis. We only win if we get the final product out. I have to think through this carefully but where I'm headed is this. [redacted] and I will make sure we get the 96 report done (you need to call [redacted] ASAP, just in case she needs input from you on Friday). You, on the other hand, need to start the FY99 report, assuming the FY96 gets approved. You need to lay out the changes you've made to the model, how you've tested or calibrated those changes (stream gage, neutron (I've already started working on a new neutron hole analysis which I had hoped to finish this vacation but won't be done until later I'm sure)), what the results are, and what difference it makes. Do this for the site scale as your basis for the change to the model and as the basis of the report. Then start another report, which uses the first report, to lay out the regional model. Both report will address past and future climates. That's where I'm heading but I'm not there yet. We can discuss this tomorrow.

[redacted]

The bottom line is forget about the money, we need a product or we're screwed and will take the blame. EVERYBODY will say they told us to go ahead without a plan or budget in place (even though [redacted] said no hires). This is now CYA and we had better be good at it. I seem to have let this one slip a little to much in an attempt to cover all our work (and get us the hell out of the long term problem of Yucca Mountain) but now it's clear that we have little to no choice. In all honestly I've never felt well managed or helped by the USGS YMP folks, in fact, as you know, I've often felt abandoned. This time it's no different, or worse, and we have to work together to get out of this one. I'm still overwhelmed trying to protect the rest of the program from the ravages of what's happening in [redacted] (funding, which we seem to be blamed for because we got funding) and the current [redacted] fiascoes in the [redacted]. That is to say we're not working on our own as we have for the past 12 years, now were being threatened (and carefully watched) by the people who use to simply ignore us. These are very dangerous time, both funding wise and professionally. Mark my words on this one, it will not be long before our technical credibility with be challenged in an attempt to discredit us and redirect funding!
Oh, by the way, you did a great job in response to [redacted] request. Bravo!!

(keep my last paragraph prvate or among friends, if you know who they are)

[redacted]

[redacted]

12/17/98 06:57 PM
Sent by: [redacted]
To: [redacted]
cc:
Subject: Re: [redacted]

FYI: The work plan PA has put together as a result of the meeting this week includes model hand-offs (TBVs documented using NLP [redacted]) which will all eventually be QA'd using [redacted] (see attachment below). [redacted] is going to be the PA lead on the [redacted] for the FY98 model. We're not sure how smoothly this is going to go but this is the approach. Like you've said all along, YMP has now reached a point where they need to have certain items work no matter what, and the infiltration maps are on that list. If USGS can't find a way to make it work, [redacted] will (but for now they are definately counting on us to do the job). [redacted] totally supports paying for a USGS report on the FY98 model, but they fully realize the problems we're having with the [redacted] approval thing.

I've had no response from [redacted] concerning my response to his request for an FY99 work plan using the close-out funds. [redacted] has indicated that I can charge all my time this year to the [redacted] account. There was also good indication this week that [redacted] is willing to support us in FY00 to continue on with model validation and uncertainty work, and to deal with FEPs addressing the infiltration maps. The 110k provided to USGS was in direct response to the telecon and was specifically intended for infiltration modeling work. I can no longer wait for USGS to figure this out; I'm moving ahead according to the [redacted] work plan we put together this week.

What I really need now are some warm bodies to review the work I've been doing.

Like [redacted] said, "Live by the sword, die by the sword!".

---------- Forwarded by [redacted] 12/17/98 06:15 PM
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[redacted]

12/17/98 05:01 PM
Sent by: [redacted]
To: [redacted]
cc: [redacted]
Subject: Re: [redacted]

[redacted]

Thanks much! Yes, I very much need to take a close look at this. I was just about to request this when I saw your note.
[redacted] has been mentioned quite a number of times this week.

[redacted]

12/17/98 12:01 PM
To: [redacted], [redacted]
cc:
Subject: AP [redacted]

Hello, I thought you might like an electronic copy of the new AP. Like? Well, anyway, will need to be familiar with....
Merry Christmas
---------- Forwarded by [redacted] on 12/17/98 02:04 PM --------
---

[redacted]

12/17/98 11:05 AM
To: [redacted]
cc:
Subject: AP [redacted]
Per your request below is the electronic version of [redacted] as it was approved.

[redacted]
---------- Forwarded by [redacted] 12/17/98 10:04
AM ----------

[redacted]

[redacted]

12/08/98 04:18 PM
To: [redacted]
cc: [redacted]
Subject: AP [redacted]
They restored our files - so here it is.
---
Attachment: [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 12/17/1998 11:47:08 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: AP[redacted]
Body:

I agree with your analysis. We only win if we get the final product out. I have to think through this carefully but where I'm headed is this. [redacted] and I will make sure we get the 96 report done (you need to call [redacted] ASAP, just in case she needs input from you on Friday). You, on the other hand, need to start the FY99 report, assuming the FY96 gets approved. You need to lay out the changes you've made to the model, how you've tested or calibrated those changes (stream gage, neutron (I've already started working on a new neutron hole analysis which I had hoped to finish this vacation but won't be done until later I'm sure)), what the results are, and what difference it makes. Do this for the site scale as your basis for the change to the model and as the basis of the report. Then start another report, which uses the first report, to lay out the regional model. Both report will address past and future climates. That's where I'm heading but I'm not there yet. We can discuss this tomorrow.

[redacted]

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Oh, by the way, you did a great job in response to [redacted] request. Bravo!!

(keep my last paragraph prvate or among friends, if you know who they are)

[redacted]
12/17/98 06:57 PM
Sent by: [redacted]
To: [redacted]
cc:
Subject: Re: [redacted]

FYI: The work plan [redacted] has put together as a result of the meeting this week includes model hand-offs (TBVs documented using [redacted]) which will all eventually be QA'd using AP [redacted] (see attachment below). [redacted] is going to be the PA lead on the AP [redacted] for the FY98 model. We're not sure how smoothly this is going to go but this is the approach. Like you've said all along, YMP has now reached a point where they need to have certain items work no matter what, and the infiltration maps are on that list. If USGS can't find a way to make it work, [redacted] will (but for now they are definately counting on us to do the job). [redacted] totally supports paying for a USGS report on the FY98 model, but they fully realize the problems we're having with the [redacted]

approval thing.

[redacted]

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Like [redacted] said, "Live by the sword, die by the sword!".

---------- Forwarded by [redacted] on 12/17/98 06:15 PM ----------

[redacted]
12/17/98 05:01 PM
Sent by: [redacted]
To: [redacted]
cc: [redacted]
Subject: Re: AP [redacted]

[redacted]
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AP[redacted] has been mentioned quite a number of times this week.

[redacted]
12/17/98 12:01 PM
To: [redacted]
cc:
Subject: AP [redacted]

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Merry Christmas
---------- Forwarded by [redacted] on 12/17/98 02:04 PM ----------

[redacted]
12/17/98 11:05 AM
To: [redacted]
cc:
Subject: AP [redacted]

Per your request below is the electronic version of AP-[redacted] as it was approved.

[redacted]

---------- Forwarded by [redacted] on 12/17/98 10:04 AM ----------

[redacted]
12/08/98 04:18 PM
To: [redacted]
cc: [redacted]
Subject: AP [redacted]

They restored our files - so here it is.
---
Attachment: [redacted]

[redacted]

[redacted]

From: CN=[redacted]
PostedDate: 03/26/1999 01:59:05 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Status of LADS phase 1 calc. report - USGS
Body:
Between you and me, I put my 6k effort in months ago. My work gets charged to [redacted] and [redacted] This is where we invested our time and energy in promoting, planning, and actually doing the work. I'll admit that I have not devoted a full-time effort towards LADS. I've been working on the daily climate data-base, the new future climate simulations, the regional modeling, and the backlog of reports. Yes the LADS work is now behind schedule but so is everything else because I'm the only one doing this work, and I'll be damned if I drop everything else and work on nothing but LADS. I'd be very happy to just hand the work over to someone else at this point. It seems I do not have this option, thus all I can say is that the work will get done, but not by sacraficing everything else that's going on. I do not need to be developing M&O hoop jumping skills. The skills I am interested in developing are ones that will benefit the [redacted] district and our careers.
I'm not directing this at you. This is just to let you know where I stand at this point in time.
I guess this is another one of those memos that need to be destroyed.
[redacted]

---------- Forwarded by [redacted] 03/26/99 10:39 AM ----------

[redacted]
03/26/99 09:56 AM
To: [redacted]
CC: [redacted]
Subject: Status of LADS phase 1 calc. report - USGS
[redacted]
On Feb. 19 I requested the following steps from USGS staff, to complete the calculation report for LADS [redacted] and [redacted] (formerly designated DF [redacted] and [redacted]):
1. Train [redacted] and a checker to QAP [redacted]. Train [redacted] to XAP [redacted]. Also, train [redacted] to [redacted] for classification of software as "software routines."
2. Assign a DTN, and prepare a TDIF with input/output files (i.e. implement [redacted]). Typically this means that all input/output files, and code listings, are put on a CD-ROM. The originating organization should be NEPO, to avoid complications from USGS policies.
3. Designate all software used in this calculation as "software routines." This means the software does not have to be qualified. The calc. report should include source code listings, description of routines and how they fit together, exact specification of compiler and CPU (with S/N's), and a test case that exercises all the routines.
4. Revise [redacted] calc. report with [redacted], and software routine documentation. Note that the report should state whether all input data are "Q." If not, then the calculation results should be clearly indicated as [redacted]. Printout first draft ([redacted] Originator signs calc. cover sheet. All pages will have the [redacted] number, including the correct Rev. number. Page numbering will comply with QAP [redacted].
6. Perform internal review of report. This can be informal, or as a NEPO review implementing QAP [redacted] Make revisions as required (a revised copy will have the next draft number, i.e. Rev. [redacted] etc.)
7. Printout checking draft (increment draft number using Rev. [redacted], Rev. [redacted], etc.). All pages will be marked "Checking Draft" in addition to the DI number, etc.
8. Perform checking function, coordinating with the checking group ([redacted]). A technically qualified checker (as determined by the Responsible Manager), who has received the checking indoctrination training and knows how to use the checklists, needs to be identified from within NEPO.
9. Revise document, backcheck per QAP [redacted], and get Originator and Checker signoffs on calc. cover page. Get Lead Engineer's signoff [redacted]

[redacted]

[redacted]
10. Submit final document with cover sheet, all drafts, markups, and review paperwork, to your representative from Engineering Document Control. Request that they close out any TBVs on the original [redacted] Design Input Request, and prepare and submit the Record Package to RPC IAW [redacted]
I requested that steps 1-4 be completed by March 15th, and all steps by 4/15.
Steps 1-4 are not complete, so this activity is behind schedule.
Please help expedite this effort.
[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/26/1999 03:15:56 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Status of LADS phase 1 calc. report - USGS
Body:

[redacted]

I will admit that I have not been conducting a 100% LADS effort because of a [redacted] level 4 due April 30th. The bare-bones needed to meet the level 4 milestone is now complete, but putting the actual data package together and conducting the necessary reviews for a developed data package submittal will be delayed if I go into a 100% LADS effort (which is needed to meet the schedule I've described below (red text)), which will also require full attention and up to a 100% effort over the next 2 weeks from [redacted] Given the other data-packages, scientific notebooks, and general QA issues that [redacted] is working on, I am now very concerned that meeting both the LADS schedule and the level 4 milestones due in the next month or two will be stretching our QA support too thin.

I had originally anticipated that the LADS work would ultimately require less work than what would be needed for a developed data data-package under USGS QA procedures. However, since this is largely a learning process for all of us, and because I have not done a very good job of estimating the amount of work needed to follow this activity through to completion (although I didn't do too bad in estimating the amount of work needed to just do the modeling which is the actual engineering calculation..... its all the follow-up work that has been under-estimated), the effort has grown substantially.

[redacted]

---------- Forwarded by [redacted] on 03/26/99 11:58 AM ----------

[redacted]
03/26/99 11:52 AM
To: [redacted]
cc: [redacted]
Subject: Status of LADS phase 1 calc. report - USGS

[redacted],

I have appended your memo to indicate the status of this work (see red text below).

[redacted]

---------- Forwarded by [redacted] on 03/26/99 10:59 AM ----------

[redacted]
03/26/99 09:56 AM
To: [redacted]
cc: [redacted]
Subject: Status of LADS phase 1 calc. report - USGS

[redacted]

[redacted]

On Feb. 19 I requested the following steps from USGS staff, to complete the calculation report for LADS [redacted] and [redacted] (formerly designated DF [redacted] and [redacted]):

1. Train [redacted] and a checker to QAP [redacted]. Train [redacted] to YAP [redacted] Also, train [redacted] to AP[redacted] for classification of software as "software routines." Done

2. Assign a DTN, and prepare a TDIF with input/output files (i.e. implement [redacted]). Typically this means that all input/output files, and code listings, are put on a CD-ROM. The originating organization should be NEPO, to avoid complications from USGS policies. I have been working on this, but will need help from QA to expedite. QA is waiting for the CD-ROM, and this will be completed on 3/30/99. Remainder should be complete by 4/2/99, unless there are hidden requirements for large input and output files (for example, these files are approximately 21 MB each ([redacted] format), and do not include headers. The files are fully explained in report. Inclusion of header lines will cause further delay)

3. Designate all software used in this calculation as "software routines." This means the software does not have to be qualified. The calc. report should include source code listings, description of routines and how they fit together, exact specification of compiler and CPU (with S/N's), and a test case that exercises all the routines. There has been progress here modifying the report to contain all necessary information and developing the test cases. This task is 50% completed. The work has gone slower than anticipated because there are several steps involved in this engineering calculation and thus a set of tests is needed. Remainder should be complete by 4/2/99.

4. Revise [redacted] calc. report with DTN, and software routine documentation. Note that the report should state whether all input data are "Q." If not, then the calculation results should be clearly indicated as "TBV." Report being modified to contain needed information. All input data has been identified as either Q or TBV. This should be complete 4/2/99

5. Printout first draft (Rev. [redacted]). Originator signs calc. cover sheet. All pages will have the DI number, including the correct Rev. number. Page numbering will comply with QAP[redacted]. This task is complete

6. Perform internal review of report. This can be informal, or as a NEPO review implementing QAP [redacted]. Make revisions as required (a revised copy will have the next draft number, i.e. Rev. [redacted] etc.). An informal review has been conducted by [redacted], and all suggested modifications (including those listed above) are being incorporated. This task is 75% complete. Need help from QA to expedite

7. Printout checking draft (increment draft number using Rev. [redacted], Rev. [redacted], etc.). All pages will be marked "Checking Draft" in addition to the DI number, etc. 0% complete. Need help from QA to expedite

8. Perform checking function, coordinating with the checking group [redacted]. A technically qualified checker (as determined by the Responsible Manager), who has received the checking indoctrination training and knows how to use the checklists, needs to be identified from within NEPO. [redacted] has volunteered to be the checker, and is waiting for us to provide the official version of the finished draft (Rev [redacted]. Both [redacted] and [redacted] have been providing valuable assistance in terms of interpreting procedures and providing examples throughout this process.

9. Revise document, backcheck per QAP [redacted], and get Originator and Checker signoffs on calc. cover page. Get Lead Engineer's signoff [redacted] or [redacted]). 0% complete

10. Submit final document with cover sheet, all drafts, markups, and review paperwork, to your representative from Engineering Document Control. Request that they close out any TBVs on the original [redacted] Design Input Request, and prepare and submit the Record Package to RPC IAW AP[redacted]. 0% complete. Will need help from QA or administrative staff to expedite

I requested that steps 1-4 be completed by March 15th, and all steps by 4/15. Steps 1-4 are not complete, so this activity is behind schedule. Developing test cases, organizing all input/output and software codes onto CD-ROM, and

[redacted]

completing required modifications to original document is taking longer than anticipated. I am planning to have steps 1-4 complete by 4/2/99. Although this phase is approximately 2 weeks behind schedule, there is still hope of meeting the 4/15 deadline for all steps. I am estimating a potential worst-case delay of 4/22/99.

Please help expedite this effort.

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/22/1999 06:27:50 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: QA
Body:

The QA bullshit grows deeper. I may need to say that I did everything by hand for the data package I am submitting that You and [redacted] reviewed. The program I wrote is not in the system and QA will be all over it like flies on &%#$. All references to [redacted] are being deleted.

Here's my question: When we go to start QA'ing the site-scale modeling work, will I get taken to the cleaners because I am not referencing either a tech procedure or a scientific notebook? In other words, would it be cost-effective to create a SN for the site-scale work and back-date the whole thing??

Can't wait to be far-far away from here!

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/22/1999 06:43:32 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: QA
Body:
What if you just download the raw files from [redacted] and say you used those? Do they need to know any more than that? You don't really need to do an analysis just say this is the data I used. Maybe that would work.

[redacted]

04/22/99 03:27 PM
To: [redacted]
cc: [redacted]
Subject: QA
The QA bullshit grows deeper. I may need to say that I did everything by hand for the data package I am submitting that You and [redacted] reviewed. The program I wrote is not in the system and QA will be all over it like flies on &%#$.
All references to [redacted] are being deleted.
Here's my question: When we go to start QA'ing the site-scale modeling work, will I get taken to the cleaners because I am not referencing either a tech procedure or a scientific notebook? In other words, would it be cost-effective to create a SN for the site-scale work and back-date the whole thing??
Can't wait to be far-far away from here!

[redacted]

[redacted]N

[redacted]

From: [redacted]
PostedDate: 04/26/1999 02:40:15 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: Recharge Emergency
Body:
I have the [redacted] files here. Not sure I know about the power-point format.
Something will be sent within the next 15 minutes.
Did you get the overnight.
Also, much bullshit is getting generated by the developed data package you reviewed. The USGS has already far exceeded the cost benefit ratio for this product.
[redacted]

04/26/99 10:50 AM
To: [redacted]
cc: [redacted]
Subject: Re: Recharge Emergency
We're on it[redacted] I'll check the [redacted]t format before it gets sent.
[redacted]
I'm looking for [redacted] but haven't found him yet. Boy, you get around, the big wheels. Great.

[redacted] on 04/26/99 10:08:18 AM
To: [redacted]
cc:
Subject: Recharge Emergency

I need a digitial copy of your recharge map and your travel time to water table map in a format that can be dropped into [redacted], by 2 pm today. I have to present this to [redacted] and [redacted] tomorrow and I'm hitting them up for more cash for your stuff. If I don't have it I can't ask for $$$$$
Get My drift, COlleagues?
Luv ya
[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 11/12/1998 03:00:29 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Surface Temp Rise Events So Far
Body:
FYI: just some semi-interesting bullshit. [redacted] will likely spend 50K deciding what's important, than expect the actual work in the trenches to be done for free. Don't worry, I won't buy into that. I rather be spending the time on the [redacted] project anyway.
Oh yeah, you're not there! Hope everytning's going well with HDPs at SC pass.
---------- Forwarded by [redacted] on 11/12/98 11:56 AM ----------

[redacted]
11/10/98 04:59 PM
To: [redacted]
cc: [redacted]
Subject: Surface Temp Rise Events So Far
Hi,
I was going to try to hold another meeting next week in the interests of 'keeping the ball rolling', but the progress we have made to date doesn't seem to warrant dragging everyone out here, yet. However, I do want to keep you informed on what is going on.
On Monday [redacted] and myself met with [redacted] EIS Support to inform him of our position on the [redacted] issue. He was scheduled to meet with [redacted] DOE, for a weekly meeting Monday afternoon. He relayed our concerns about the traceability of the requirement and the fact that we may not actually be able to meet it with the current baseline AML of 83 (or 85) MTU/acre, based on the work done by [redacted] et al [redacted] in June 1997*. [redacted] response (to paraphrase): "If it is a problem for design, take it out." I think that we need to look hard at whether or not performance degrades due to temperature rise (through the complex phenomena of vegetation change, resulting infiltration change, and resulting temperature change), and possibly include a temperature requirement or something similar in the PDD, if appropriate. But the environmental concerns seem to go away at the top-level spec. We have to remember here that the public has been told that the temperature would not rise more than 2 deg C, through TRB meetings, and the sudden removal of the spec altogether may appear arbitrary to the casual observer. I don't know what to say to that...?
So the important work of determining the effect of temperature rise on vegetation [redacted], obtaining the LANL report [redacted], infiltration scenarios [redacted] and PA based on the infiltration spec [redacted] continues. At some point I need to figure out how to fold the surface uplift portion of the requirement into our analyses, i.e., how does the uplift contribute to changes in the underlying geological structure and perhaps increase the infiltration rate and/or the number of fast paths? I would appreciate it if you folks can tell me what the status of your action items are.
* - I have since verified these results: in a nutshell, an infiltration rate of 0.1 mm/year yields a temperature rise of 7 deg C at the top part of the [redacted] uff layer (Tcw), and an infiltration rate of 4.4 mm/yr yields an estimated temperature rise of 11 deg C.

[redacted]

P.S. I will be out of town starting Wednesday afternoon, and back on Monday, November 16th. you can contact me at [redacted] or [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/26/1999 03:03:46 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: finding a technical reviewer
Body:
Examples of bullshit:
---------- Forwarded by [redacted] on 04/26/99 12:03 PM ----------

[redacted]

04/24/99 09:37 AM
To: [redacted]
cc: [redacted], [redacted]
Subject: finding a technical reviewer
Is there some one like [redacted] that has been out of the Program long enough that we could justly say could give us an independent review? Any ideas? I understand from [redacted] that there is a simple [redacted] program and development of a climate model that is involved in this developed data. This will probably involve the new [redacted] and [redacted] AP which is not simple in itself. [redacted] needs some help here in getting a reviewer.
I'll be on [redacted] Monday. [redacted] was in on the discussion Friday and can provide additional details and follow-up. Thanks [redacted].

---------- Forwarded by [redacted] on 04/24/99 10:28 AM ----------

[redacted]

04/23/99 06:41 PM
To: [redacted]
cc: [redacted]
Subject: finding a technical reviewer

Contrary to what I previously thought, [redacted] and I are unable at this time to find a qualified non-YMPB technical reviewer for the developed data package [redacted] that was under discussion earlier today. Please let me know how best to proceed so that we can minimize delays. Also, please be aware that I have deliberately made this developed data package as simple and straight-forward as possible with the intention of generating a product that I fully believed could meet the original due date of 4/30/99. In other words, the level of "data development" is extremely simple and has been kept to a minimum.

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/23/1999 08:56:58 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: [redacted] help
Body:
I have to run this by you because I promised [redacted] and [redacted] that I would get back to them with a game plan next week:
[redacted] and [redacted] are pushing me to get the QA work in place for the products they need from me and are suggesting that they can help me out with software QA issues and all the grunt work required to just do the modeling runs so that needed products can be finished for the modelers to use. They realize that I am somewhat overloaded with this task so they are willing to provide us resources in terms of computing power and warm bodies doing QA and running the code. The catch for us is that the [redacted] code will be on [redacted] (they can dedicate [redacted] do the number crunching.... they will give us accounts so that we can [redacted] to these machines). I have been given a verbal promise that we will not lose control of the code, and the goal is to get the job done, not to take over our work. The [redacted] personnel would in essence be working for us, not the other way around.
I am thinking that If I want to remain viable team player on YMP (which may translate to continued funding), I need to show that we can get the job done and provide the modelers with the results they need. This is not going to happen if I rely solely on USGS YMP resources. For example, [redacted] can dedicate a person to do all of our software configuration management stuff and help us out with input parameter QA issues. This strategy sounds much more appealing to me now because I'm getting the impression that unlike USGS QA, the labs have the QA resources to actually get in there and do the work, instead of just creating more work for the [redacted] to do.
The other option would be to stall, and then when I'm in [redacted] I will just ignore all this, and we can let the site scale modeling go down the tubes. Dealing with this QA bullshit is really starting to make me sick.

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/22/1999 07:05:17 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: QA
Body:
Not a bad idea. I am now considering it. Ideally, one would assume that the more information you provide QA, the better the QA. In reality, it seems that the opposite is true. At any rate, its a damn shame to be wasting time with this sort of thing.

[redacted]

04/22/99 03:43 PM
To: [redacted]
cc: [redacted]
Subject: Re: QA
What if you just download the raw files from [redacted] and say you used those? Do they need to know any more than that? You don't really need to do an analysis just say this is the data I used. Maybe that would work.

[redacted]

[redacted]

04/22/99 03:27 PM
To: [redacted]
cc: [redacted]
Subject: QA
The QA bullshit grows deeper. I may need to say that I did everything by hand for the data package I am submitting that You and [redacted] reviewed. The program I wrote is not in the system and QA will be all over it like flies on &%#$.
All references to [redacted] are being deleted.
Here's my question: When we go to start QA'ing the site-scale modeling work, will I get taken to the cleaners because I am not referencing either a tech procedure or a scientific notebook? In other words, would it be cost-effective to create a [redacted] for the site-scale work and back-date the whole thing??
Can't wait to be far-far away from here!

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 11/15/1999 11:44:41 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Thanks for the cool refs
Body:
These references are pretty cool. Thanks for leaving them, it looks like usable stuff. Why can't I do this? What's my problem?
Well, maybe its that I'm just now getting the stupid data package off to the correct person. I re-sent it to [redacted] who responded from a laptop in [redacted] that I should just re-send it to [redacted], which I just did. Pretty soon the QA experts will want to know where the [redacted] and Area [redacted] precip files came from. Here they are: Don't look at the last 4 lines. Those lines are a mystery that I believe somehow relate to the work [redacted] was doing in entering the 1994 data. These lines are not used by [redacted] (we stop at 9/30/94). I've deleted the lines from the "official" QA version of the files (which do have headers). In the end I keep track of 2 sets of files, the ones that will keep QA happy and the ones that were actually used.
The files are the output from the [redacted] database that [redacted] and I had put together, which I still have but haven't looked at since 1996. So either the [redacted] data package has to look a lot like those files or I'm going to have start talking about the [redacted] database when the QA questions start. My guess is that we do not want to deal with the [redacted] database.
Here it is almost 2000, and I am still struggling with work done in 1995 and 1996.

[redacted]
P.S. Let's make QA read those references too. Better yet, let's set asside a day for watershed training.
---

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 01/06/2000 07:01:30 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: AMR [redacted]
Body:

[redacted] called. Yes, this is really happening. [redacted] and [redacted] will help but it seems I am stuck going to [redacted] on the 26th [redacted] and [redacted] will also go for moral support). Responses to the [redacted] comments are due on the 21st.

There is, of course, no scientific notebook for this work. All work is in the form of electronic files. I can show auditors input, output, and program files, but it is not clear to me how to show documentation of work in progress. They may be expecting to see something that at least looks like a scientific notebook documenting work in progress. I can start making something up but then the [redacted] projects will need to go on hold.

If I continue placing [redacted] tasks as 1st priority for January, I will be ill prepared for the audit, and will likely get hammered. That's fine by me. I am far more concerned about the [redacted] projects than I am about the [redacted]. But [redacted] will be rather unhappy, and I will need help trying to figure out a good excuse why 100% of my time did not go into the audit without revealing the [redacted] projects.

I am open for suggestions.

[redacted]
01/06/2000 11:21 AM
To: [redacted]
cc:

Subject: [redacted]

---------- Forwarded by [redacted] on 01/06/2000 11:21 AM ----------

[redacted]
01/06/2000 10:25 AM
To: [redacted], [redacted]
cc:

Subject: [redacted]

FYI.
---------- Forwarded by [redacted] on 01/06/2000 10:25 AM ----------

[redacted]
01/05/2000 09:52 AM
To: [redacted]
cc:

Subject: [redacted]

---------- Forwarded by [redacted] on 01/05/2000 09:57 AM ----------

[redacted]
01/05/2000 08:56 AM
To: [redacted]
cc: [redacted]

Subject: [redacted]

The audit team has selected [redacted] [redacted] [redacted]" which is being

[redacted]

developed by USGS, as the fourth AMR to be evaluated replacing the AMR Analysis of Geochemistry Data. We need a copy of the latest revision immediately. When is the earliest you can get me a copy?

We will schedule the interviews with the originator of this AMR for Wednesday, Jan. 26. Please make arrangements for the appropriate USGS personnel to be at [redacted] on that day. For records, they will need as a minimum their Scientific Notebooks and the check/review documents. If different colors were used for the check/review comments, we will need to see colored copies or the originals for this and all the AMRs. We will notify you of additional records will need to see for the [redacted] AMR that will need to be available. We will try to keep the number of documents that USGS will need to bring to a minimum.

[redacted]

[redacted]

From: [redacted]
PostedDate: 01/13/2000 02:16:17 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: test
Body:
[redacted]
I have been having major networking headaches. There are several reasons for this; 1. The USGS is converting over to LOTUS Notes in the [redacted] district and this seems to have impacted the routing of my email, even though I am connecting directly to YMP Lotus Notes [redacted]. 2. My computer doesn't even see my network card anymore (I am using [redacted] computer right now). So when I fix problem #2, I can start attacking problem #1.
I have identified 4 potential mean monsoon climate analog sites and have been running the test simulations but did not finalize my selection yet. This has all gone slower than I thought because I have been "ordered" to deal with software QA and other QA issues because of this upcoming AMR audit. Also, the LBNL technical reviews hammered the AMR (these deal with the physical processes being represented by the model), and I haven't finished responding to these yet. These are all top priorities which unfortunately have once again gotten in the way of work I was trying to do for the uncertainty analysis. On the other hand, providing a sound defense of the net infiltration AMR ultimately benefits the uncertainty analysis AMR as well.
Thanks again for the review you provided
I did get my [redacted] password for the [redacted] Alphas.
[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 02/17/2000 07:14:48 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: finally the darn coordinates
Body:
I finally took the time to process your request. This required the use of [redacted] to look at the corners of the [redacted], then a coordinate transformation using [redacted]. Here are the results:
my picks using [redacted]
results obtained from [redacted]
Please do not tell anyone how this was done because then we will need to get this whole thing through software QA!
[redacted]

---

Attachment: [redacted]
Attachment: [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 01/04/1999 02:27:49 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: I'm buried
Body:
I'm going to get hit real hard next few months by [redacted] schedule. I smelled some Fy00 funding so I let myself get pulled in, but this is going to be a real 3-ring circus. In some ways I feel like I've gotten myself into a corner by trying to champion the site-scale infiltration modeling. What I really want to do, (and I've known this for a few months now), is to wrap up the site-scale modeling and move on to a longer term plan.

---------- Forwarded by [redacted] on 01/04/99 11:12 AM
---

[redacted] on 12/31/98 09:13:37 AM
To: [redacted]
cc: [redacted]
Subject:

[redacted]
I would like to obtain an electronic output file from [redacted] soon so I can start writing a procedure to transfer to a file for sensitivity/uncertainty analyses.
--enjoy your holiday.
never mind the first attachment, these are the work plan document drafts.
[redacted]
- [redacted]
- [redacted]
- [redacted]
---
Attachment: [redacted]
Attachment: [redacted]
Attachment: [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/07/2000 11:09:00 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: developed daily precip record
Body:
believe it or not, this file is now 3.5 years old, but it is what was used. This developed record stops on day 274, 1995. The only real good thing about this file is we seem to be very close to getting it into the TDMS (the data was developed in a [redacted] turned to [redacted] worksheet that may now be required to go through qualification as a software routine, so things have yet again stalled). Someday I hope to have the time to update this to include an improved pre-1987 interpolation and all the new data after 1995, which includes some interesting events..... back to QA.
P.S. Hope this email doesn't trigger a [redacted] input request. I'll probably get fired.
---
Attachment: [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/09/2000 10:39:31 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: [redacted]
Body:

[redacted], [redacted] has a user option which when set to 0 the vegtypes in the file [redacted] (created by the damn routine [redacted]) are ignored and a veg-cover term of 30 is just assumed. The real stupid thing is that this value is never used because the veg cover stuff (root-zone parameters) all get defined in the control file. The veg-type and veg-cover columns are just dummy place holders that are not even used by [redacted] (remember all those great ideas about correlating something, anything, to vegetation....). But because [redacted] is where the bedrock ks is adjusted I have to drag the routine into the AMR. Damn it!

The main stupid thing is that as a 1st step I ran [redacted] with the user option set 2 to create [redacted] from [redacted], the output from [redacted]. This setting causes a veg cover estimate to be made based on [redacted], which are the vegtypes defined for the regional model (data from [redacted] and [redacted]). I was desperately trying to bring vegetation into the picture (still wasn't getting what I needed from the bugs and bunny crowd) but it didn't match up as well as I had hoped, I ran out of time, and it fizzled.

Now here is the majorly stupid part? To create [redacted], which is used as input to [redacted], I re-ran [redacted] using [redacted] as input and set the option to 0. So the regional vegtypes made it into all the watershed files that were used in the AMR. Now I can't just re-write the routine to leave out [redacted] because the output will never match what ended up becoming the watershed files. Had I re-run [redacted] using [redacted], I could now re-write the code in 5 minutes, get rid of [redacted] all together, and all would be cool.

So I would like to keep [redacted] as is, tell the story just as it happened, and than explain that we don't have to trace [redacted] because it was not used (we cannot bring [redacted] into the picture because then we have to deal with the input file which is the geospatial input file for the [redacted] region!). In fact we can just not even talk about the vegtype and vegcover stuff and just say those are dummy place holders that are never used so they don't need to be traced.

On second thought...do whatever you want. At this point I cannot re-produce the blocking ridge numbers using [redacted] and I have yet to re-visit the elevation stuff [redacted] was finding and who knows what will happen if we tried to run [redacted] on any of the source data going into the [redacted]. There is a bug in the top layer of the cascading bucket model, the soil ks conversion is off by a factor of 10, and even if I can re-produce the blocking ridges they're still wrong. Then there are those strange non-integer values that I saw for the 1st time in the Day and others input file during my testing of [redacted]. What is rock-type 1.33??? Oh yeah, the NTS data..... Jesus! I'm going nuts again! I'm going home now!

[redacted]

[redacted]

From: [redacted]
PostedDate: 03/30/2000 06:48:01 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Installations
Body:
[redacted],
The programs, of course, are all already installed otherwise the AMR would not exist. I don't have a clue when these programs were installed. So I've made up the dates and names (see red edits below). This is as good as its going to get. If they need more proof I will be happy to make up more stuff, as long as its not a video recording of the software being installed.
[redacted]
---------- Forwarded by [redacted] on 03/30/2000 03:39 PM ----------
[redacted]
03/29/2000 03:13 PM
To: [redacted]
cc: [redacted]
bcc:
Subject: Installations
I'm trying to follow-up on this request, but I need your help. Please respond back to me, asap, with the appropriate answers to the questions [redacted] is seeking.....thanks.
.
---------- Forwarded by [redacted] on 03/29/2000 03:08 [redacted] ----------
[redacted]
03/29/2000 01:52 PM
To: [redacted]
cc: [redacted]
Subject: Installations
Good Afternoon [redacted]:
I am following up on our conversation today about the installations I have pending.
The installations are for Unqualified Software Codes under section [redacted] of AP[redacted]
[redacted] (1/1/1998)
[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/04/1999 12:03:31 AM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Precipitation estimates [redacted]
Body:

Here's my perspective:

Have you looked at the latest EOS? The article on nuke waste and Yucca Mt. states that the amount of water that will be contacting waste canisters is still the key issue for repository performance. The primary factor controlling flux thru the [redacted] is the infiltration rate. Some nights I have a hard time going to sleep because I realize the importance of trying to get the right answer, and I know how many serious unknowns are still out there, and how many quick fixes are still holding things together. I'm just trying the best I can with 3 equations and 15 unknowns. It seems so odd that we've had to push so hard just to get even a little support for this work, and at the same time we end up being the ones most responsible for whether the [redacted] predictions are right or wrong. I'm looking forward to putting the YMP nonsense far behind me.

I ran you're sublimation model and the entire snowpack sublimated. I have a 3rd model now which just uses a lower percentage of [redacted]. Sublimation using this model comes to about 20% of the total annual snow fall, but the term includes sublimation above freezing, which thus includes evaporation from the snow pack, in addition to melting. I found out our [redacted] calculation goes negative when air temp drops below about -20 deg C, which happens once in while using the [redacted] climate, so this just gets set to zero for now. It causes [redacted] to go from about 805 mm/year to 805.5 mm/year, so this was not a significant problem.

I'm driving out to [redacted] I'm bringing the lap-top and lots of [redacted] disks. I need to start a number of models running on the [redacted] Alpha. I plan to work Tues - Thurs at the [redacted] office, then take Friday off [redacted] and drive back Saturday. [redacted]. The LADS stuff will fall a little further behind but that's too bad because the [redacted] has now become my highest priority.

We've contacted [redacted] and everything is already in full swing at this end. [redacted]

Happy Easter! I'll see everyone 1st thing Tuesday morning.

[redacted]
04/02/99 10:19 PM
To: [redacted]
cc:

Subject: Re: Precipitation estimates [redacted]

Here is a clue. [redacted] has clued in [redacted] as to why he thinks [redacted] is wrong. [redacted] knows [redacted] is smart. [redacted] doesn't want to be wrong (who does?). [redacted] is covering his ass. You might be the cover. You and I both know the estimates were too high. We talk about it at length. [redacted] is coming around. Science by peer pressure is dangerous but sometime it is necessary.

[redacted]

God, I love working on [redacted] and the [redacted].
[redacted]
04/02/99 03:19 PM
To: [redacted]

[redacted]

cc:

Subject: Precipitation estimates in VA

FYI:
I'm a little confused by the memo below. The table in VA indicating the MAP (mean annual precip) and MAT (mean annual temp) values for the predicted future climates were in place before the simulations that I was running at the time were even finished. By coincidence, the MAP values for the [redacted] and [redacted] simulations approximately matched (they turned out to be about 10 % higher) the super pluvial and long-term average MAP values (450 and 300 mm/year) listed by [redacted] and crowd, so we provided these results to PA because nothing else was available at the time, and everyone figured it would be better than nothing. Of course, everyone was warned that the results were preliminary, the MAT values were probably off, and changes in vegetation were not being accounted for, among other things.

To date, you, [redacted] (although he may have forgotten), probably [redacted], and me, are the only ones that know that the effective MAT value for both the [redacted] and the [redacted] simulations was about 5 deg. C.

Anyway, the memo below really bothers me because I believe that [redacted] had set the MAP and MAT values in VA before he even knew about the simulations we were doing, and now he's suggesting that his estimates were high because he knew that we wouldn't be handling temperature changes.

Now [redacted] has selected analog sites having MAP values in the 420 mm/year range for representing the upper bound climates (wettest potential climates) for both the "Monsoon" and "glacial transition" climate predictions. So should I now assume that later on [redacted] will suggest that these estimates are too high and that he was really just trying to compensate for the way we were modeling things? If this is the case then I would rather just be defining the future climate scenarios myself. My gut feeling is that these climates are a little too wet (although the lower bound climates seem much more reasonable), and I'm questioning the validity of a Monsoon climate kicking in at 600 years from now. It seems to me that the geography of moisture sources and blocking Mt. ranges would not allow for a [redacted] climate to occur at Yucca Mt.

[redacted]

---------- Forwarded by [redacted] on 04/02/99 02:47 PM ----------

[redacted] on 04/02/99 09:36:11 AM
To: [redacted]
cc: [redacted]

Subject: Precipitation estimates in VA

[redacted], for the record, [redacted] and I have discussed a number of issues relating to climate estimates used in the VA and in general. I am in agreement with [redacted] that the mean annual precipitation estimates used in VA are too high. They were set high to compensate for VA not being able to deal with gains in effective moisture, due to the lower mean annual temperatures during the glacials. If [redacted] (as [redacted] and I discussed) ran the VA model with realistic average MAPs for the "superpluvial" and the "long term average" without accounting for lower MATs, the VA output, in my view, would have been seriously flawed, because both temperature and precipitation are key drivers of infiltration.

[redacted]

234

[redacted]

[redacted]

From: [redacted]
PostedDate: 11/05/1999 01:23:16 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: PMR/AMR Issues
Body:
sounds great. I'm moving a computer up to 5th floor so my email isn't at one place while my phone is at another. I may have found a worksheet where you did the fracture density estimates. I keep finding bits and pieces of work we've done scattered around in boxes and across [redacted] disks. I'm going to make damn sure I stay organized from here on out.

[redacted]
11/05/99 08:52 AM
To: [redacted]
cc:
Subject: Re: PMR/AMR Issues
You know, we sat in that meeting on Wed. in [redacted] office and [redacted] repeatedly said that "we" made mistakes and "management" didn't figure things out in time. I lay this responsibility completely in his lap. I (we) have not been made aware of the scope of this AMR mess and my (our) TPO should've done so quite some time ago. Then it wouldn't have been shit on time (almost) because his people in the trenches would've understood the scope and schedule in enough time to focus resources properly. How can we deal with a problem when we don't know what it is? All we can do now is clean up the mess as well as we can and save his butt. Can we meet sometime today? How about lunch?

[redacted]

[redacted]

From: [redacted]
PostedDate: 01/26/1999 03:49:22 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Work plans
Body:
I'll talk to you about this more after I get back from SN training. I've re-scheduled my trip for Monday & Tuesday next week (arrive Sunday night).

[redacted]

01/26/99 12:25 PM
To: [redacted]
cc:
Subject: Re: Work plans
Just a caution. [redacted] doesn't know about [redacted] worksheet, at least not the one we're using. She disapproves of our methods and if she finds out she'll give us shit about it. What we do is take the money and balance out the hours to match. What she wants if for us to tell her how many hours it will take to do the work and only ask for that amount of money. If we have to much money for the FTE she want's us to give back the money. We don't agree but can't tell her that so we do an end run with the worksheet. She is a stickler for the rules (her rules) but I'm a stickler for the science. I need the leeway for bringing on additional FTE, when I need them. As things heat up so will demand for our time, especially with the [redacted]. You sound like you already have a plan on how to deal with it. That's good. I know you believe that we should only do what we're paid to do and you're right, we're not paid to write journal articles, give professional talks, or write proposals for future funding, I'm sure our managers will take care of us in the future, so I'll leave that decision and that belief to you. I have other things I need to do in life.

[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 05/01/1998 06:03:01 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: qa shit
Body:
---
Attachment: [redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 02/23/1998 01:28:26 AM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: stuff
Body:
[redacted], you are just starting to wake up to what the hell is going on in the Yucca Mountain project. I can't teach it to you. I've learned, and that's why I'm in [redacted]. I would have liked to bring more people with me but nobody ever figured it out as much as I tried to tell you. I couldn't do it directly because you have to learn by experience. Once you learn, you learn. There is more to it than you think, that's why I'm still on the project. They won't get rid of me. You are on the verge of figuring this shit out. Good luck.
[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 08/23/1999 03:17:00 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: FW: infiltration maps
Body:

Just an example of the Hub-bub I was talking about. I spent the whole weekend working on the AMR. Probably I will need to cut way back on my original visions of what the final product should look like (of course in my mind the infiltration modeling should be its own PMR). Its too bad because I wanted to truly document how the infiltration modeling is done ([redacted] is actually counting on this so he can cut and paste into the new [redacted]). Its still shit on time isn't it.

[redacted]

08/23/99 09:05 AM
To: [redacted]

Subject: Re: FW: infiltration maps

[redacted]

Both the climate and infiltration AMRs are now late for checking by 10 days. As you know the PMR lead is held responsible for all such "bad" activities. Please provide me with a reasonable estimate of when I can expect to recieve these AMRs for LBNL checking.
Thanks

[redacted]

[redacted]

08/23/99 07:23 AM
To: [redacted]
cc: [redacted]

Subject: Re: FW: infiltration maps

I have an input request that I received last week - we'll work it this week. The requests need to go to the responsible manager for action.

[redacted]

08/20/99 01:55 AM
[redacted]
cc: [redacted]

Subject: Re: FW: infiltration maps

[redacted]

The catch-22 is that I've been busy trying to finish up the AMR and thus haven't up-dated myself on the status of the [redacted]. I recall discussions between myself and LBNL regarding a formal data transmittal, but I'm not sure if an [redacted] was called out (I'll need to double check my records) because the official data release date was 5/21/99 (check the file dates) and transpired as an official memorandum from [redacted] to [redacted]. If we need to retrofit this transmittal with [redacted] then we'll do it, but I've assumed the completion of the AMR has highest priority. I'm also assuming that until the AMR is complete the [redacted] can only be submitted as TBV.
Along these lines... there's been discussion of whether it is best to have a single encompassing DTN for all the FY99 net infiltration modeling results or separate DTNs for each of the 9 files distributed. We may need to just go with whatever is most efficient with QA resources, although there are advantages to having the separate DTNs for end users (this was my original intent), especially in terms of distinguishing between the modern climate and potential

[redacted]

future climate results.

[redacted] on 08/19/99 12:26:32 PM
To: [redacted]
cc: [redacted]

Subject: FW: infiltration maps

[redacted]

Haven't talked to you in a while. What's the status of your AMR? Will it provide a DTN for the infiltration maps that were given to LBNL? As [redacted] indicates below, it may be prudent for you to issue an [redacted] (Input Transmittal) to formally transmit the 9 maps (3 climates x 3 infiltration ranges) to LBNL. Otherwise, there is no formal traceability for the maps that they created and gave to us.

Let me know what you think.

--[redacted]

> -----Original Message-----
> From: [redacted]
> Sent: Thursday, August 19, 1999 12:33 PM
> To: [redacted]
> Subject: infiltration maps
>
>
>
> [redacted]
>
> Did you [redacted] submit an [redacted] to [redacted] to get the infiltration
> rate boundary conditions (3X3 cases)? If you did, I would like to just
> piggyback on that request to explain how I have the files, not from the
> TDMS. If you or [redacted] have not done this, maybe you should. The reason I
> ask, [redacted] was not happy with the way [redacted] and I got the infiltration
> data. He suggested that we submit a [redacted] to [redacted]. Let me know what you
> think.
>
>
> --[redacted]
>
>

[redacted]

[redacted]

From: [redacted]
PostedDate: 11/05/1999 01:33:32 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: PMR/AMR Issues
Body:

another reply to this: I've shunned the whole PVAR process so I can be blamed for that. All I want to do is get a report out that documents what we've done and what we've learned. I just wish that [redacted] was a little closer to the work we do because I think then he would have a better feel of what resources will be required for a given set of [redacted] procedures. Probably this just isn't possible at his level. But at Wednesday's afternoon meeting I sure had a sense that upper management, [redacted] and the [redacted] were on one planet, while the USGS folks in the trenches were on another.

[redacted]

11/05/99 08:52 AM
To: [redacted]
cc:

Subject: Re: PMR/AMR Issues

You know, we sat in that meeting on Wed. in [redacted] office and [redacted] repeatedly said that "we" made mistakes and "management" didn't figure things out in time. I lay this responsibility completely in his lap. I (we) have not been made aware of the scope of this AMR mess and my (our) TPO should've done so quite some time ago. Then it wouldn't have been shit on time (almost) because his people in the trenches would've understood the scope and schedule in enough time to focus resources properly. How can we deal with a problem when we don't know what it is? All we can do now is clean up the mess as well as we can and save his butt. Can we meet sometime today? How about lunch?

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 01/27/1998 05:03:46 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Question About [redacted] for [redacted]: synoptic-scal
weather patterns
Body: Do the management review as scheduled then spend whatever it takes to address [redacted] question. You have to suck it in on this one and think about sunny [redacted] where the shit does not run deep.
[redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 02/23/1998 01:28:26 AM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: stuff
Body: [redacted] you are just starting to wake up to what the hell is going on in the Yucca Mountain project. I can't teach it to you. I've learned, and that's why I'm in [redacted]. I would have liked to bring more people with me but nobody ever figured it out as much as I tried to tell you. I couldn't do it directly because you have to learn by experience. Once you learn, you learn. There is more to it than you think, that's why I'm still on the project. They won't get rid of me. You are on the verge of figuring this shit out. Good luck.

[redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 02/23/1998 12:03:56 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: stuff
Body: My response.
---------- Forwarded by [redacted] on 02/23/98 09:10 AM
---

[redacted]
02/22/98 10:28 PM
To: [redacted]
cc:
Subject: Re: stuff

[redacted], you are just starting to wake up to what the hell is going on in the Yucca Mountain project. I can't teach it to you. I've learned, and that's why I'm in California. I would have liked to bring more people with me but nobody ever figured it out as much as I tried to tell you. I couldn't do it directly because you have to learn by experience. Once you learn, you learn. There is more to it than you think, that's why I'm still on the project. They won't get rid of me. You are on the verge of figuring this shit out. Good luck.

[redacted]

[redacted]

[redacted]

SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: Notes from April 4 Denver staff meeting
Body:
We have to kick his ass. He pisses me off some times. He took over the conceptual model report ([redacted]), then took of [redacted] and made the report [redacted] and [redacted] was also pissed). He's wrong and we have to show that. Even the old tritium data shows that. I wonder who will be the reviewer.

[redacted]

04/05/2000 03:47 PM
To: [redacted]
cc:
Subject: Notes from April 4 Denver staff meeting
Please read very last line of meeting notes. I have stopped working on the AMR and I am now just working on reports: 1. the unfinished [redacted] report, 2. regional [redacted] model for [redacted], 3. re-calibration of watershed model in [redacted] using both streamflow and neutron logging data (and a fixed model), [redacted] and I have been working on the precip-input problem today. Eventually this will lead to another report. Add all the [redacted] tree stuff and there is no time to do AMR work anymore. If [redacted] can do this sort of thing why can't we?
Oh yeah, and I refuse to take any further training until I take the training course "How to publish reports in the USGS". After all, isn't that the bottom line. What good is QA if there is no data or analysis to QA? Do we just QA the QA?
Ok I'll shut up now.
---------- Forwarded by [redacted]
[redacted]

04/05/2000 01:14 PM
To: [redacted]
cc:
Subject: Notes from [redacted] staff meeting
Some of you have already received this, but I wanted all of [redacted] team members to have this meeting summary provided by [redacted]. Thanks [redacted]
---------- Forwarded by [redacted]
PM ----------

[redacted] opened the meeting and discussed the following items:

1) [redacted] Office Safety - please follow the suggestions after the office safety review/inspection. Fix things up, get GSA to take care of their responsibilities.

2) [redacted] (DOE) visited [redacted] during the 'USGS talk to the customer meeting' and made three major comments:
a) DOE thanks the USGS for their YM work especially the multidiscipline work
b) DOE wants to see the report approval process speeded up
c) The SR will need USGS support at both the YMP level and bureau level, especially through the review process

3) Organizational Chart - Being developed and will be distributed

[redacted]

electronically. Two versions - official one with just USGS personnel and an unofficial one with contractors on it. [redacted] went through all the units in YMP. The [redacted] Operations will be under [redacted]. [redacted] will still have technical interaction and direction through [redacted] and [redacted] teams. [redacted] folks will be tied through [redacted] operations because of their HRF ties.

4) Funding
a) There is more uncertainty this week than last week. Still working on being funded as a line item. [redacted] has had recent meetings with [redacted] and staff.
b) DOE is having some sticker shock for the price of the program.
c) USGS interpretative studies need Director's approval prior to publication. Yucca Mt internal reports without Director's approval will not receive Bureau support. To be successful in the LA arena approved interpretative reports will be needed. Funding will be needed to accomplish this.
d) Latest version of the draft RFP for the [redacted] contract includes the USGS with the National Labs under the contractor. [redacted] is checking into this.

5) QA
a) [redacted] group is coming out with a summary of changes to technical procedures. Please review.
b) While doing your work use the development plan, procedures, classroom/workshops. Ask for help if needed.
c) Questions/answers/comment period generated a lot of concern about the QA system which seems to be a moving target and have different answers depending on who you ask. [redacted] understands the concerns, let's work together to accomplish things, the USGS is paid to work under a QA program - let's get it done.

Other folks giving presentations at the meeting:

[redacted] - A USGS/YMP web site is being planned. It may be designed similar to a USGS District site with public and internal pages. Possible things to be included: technical procedures, approved and published reports and abstracts, photos, and whatever else. Get with [redacted] if you have input. He was reminded about the difficulties of LV staff and [redacted] visitors having access to USGS internal pages from LV.

[redacted] - Demonstrated the GIS based database for hydrochemistry and isotope data. Overheads and maps can be made. The data can be queried and only selected subsets looked at. Need arcview or someother GIS product. They are trying to get a student to help finish data base. Contact [redacted] if you need more info.

[redacted] - Discussed the report he is lead author on about recharge in [redacted] during 1998. Thermal and pressure data from the UZ holes and modeling support the interpretation recharge occurred after streamflow in 1998. Report is in the review process. Contact [redacted] for more details.

[redacted]

[redacted]

From: [redacted]
PostedDate: 01/20/1999 03:05:40 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Level 4 milestones
Body:
I'm going to need serious QA help. My fear is that [redacted] about to be overloaded. We could actually use 2 [redacted]. I'm calling [redacted] now to let her know I will need her to do the software review.
Much of this is up to you.... I do not have a clear picture of where the holes are in our group. When I come to [redacted] I will show [redacted] how to run the models, but I'm not sure how much time he has. He could be a tremendous help running combined streamflow-neutron log calibrations.
For 178k, I'd like to try to get the 1:24000 Day et al geology and the [redacted] veg map into the model. This will require GIS support. I'm starting to realize ARCVIEW limitations, so we may need [redacted] help.
I also need a checker for the NLP [redacted] document. [redacted] volunteered before but we may want someone else (someone in our group) to do this.
I need to make sure I have the time to write the coupled [redacted] flow model reports (both site and regional scales), and finalize a recharge map for [redacted].
The problem now, as you warned, is that if our group is already maxed out, which it may well be, where do we go within the USGS for resources?. The resources we need are about 1 FTE worth according to the following (I would be covering the rest of the work, about .6 FTE):
0.2 FTE Hydrologist to define snow cover module, refine cascading bucket, and help re-incorporate the [redacted] eq. option.
0.3 FTE Hydro tech to run models, pre- and post-processing programs
0.3 FTE Qa specialist
0.2 FTE some cobination of the following :
Fortran programmers
GIS specialists
computer modelers
This is where you called.....
OK, so let me try to clarify how I feel:
1. Yes, I should take advantage of the resources [redacted] has to offer in terms of keeping on top of budgets, accounts, and dealings with [redacted]. [redacted] and [redacted] do a great job with this, and it frees me up to concentrate on doing the modeling and writing. I will make sure everyone is in the loop, and I will keep [redacted] and [redacted] and you fully informed.
2. This has to work both ways. I need to be informed of [redacted] interactions with [redacted] and [redacted]. I've let myself fall out of the budget and planning loops before, and I'm trying not to let that happen again. This is mostly my own fault (for example, I should have helped you and [redacted] out with FY2000 planning last week, but I had failed to realize that that's what you were doing).
3. My concern stems from the perspective that those in charge of funds and accounts ultimately have control of the projects and the work. I am trying to increase my level of responsibility, not decrease it. This is something I feel I need to do as part of my career development. I may be way off base here, but I have this perspective that if I'm not carefull, eventually people may start thinking by default that [redacted] is in charge of [redacted] modeling, and I will be getting bypassed. So I guess this really boils down to a matter of power, control, and advancing from point A to point B. I'm not trying to be a pain in the ass here, but from what I've seen, everyone has to cover their own asses, while at the same time work hard at being team players and making sure the job gets done.

4. I don't see any problems here at this point or in the near future. Please feel free to openly critisize (or completely ignore my perspective.... its not as serious as it sounds). I know this is all stuff you don't really need to hear, but I wanted to provide some insight to our phone conversation.

[redacted]
01/20/99 08:57 AM
To: [redacted]
cc:
Subject: Re: Level 4 milestones

[redacted]

Ok [redacted], now you've got the money. Now what do you do?

[redacted]
---------- Forwarded by [redacted]
---

[redacted]
01/20/99 06:35 AM
To: [redacted]
cc:
Subject: Re: Level 4 milestones

Not only do we have money, but we have money in two places!!!!! [redacted] and [redacted] - the correct place is the [redacted] "close out" money. The [redacted] will be used for the various PA workshops etc. [redacted] Ho was prepared for us to use the [redacted] money if necessary - I made the commitment last fall to use close out money for the [redacted] work as it is indeed, a final effort, or close out. The plans absolutely need to be in the system now before the project puts in place a new CR - the existing one only baselined what the [redacted] had in place at the end of last Sept. and that was only a stop-gap.

The money is there- (will be there) - and [redacted] should proceed without any hesitation. Any worries about whether or not the money shows up etc. are what I get paid for - To be clear, [redacted] also needs to finish the LADS exercise by completing the checking per the MEO procedure.

[redacted]
01/19/99 05:59 PM
To: [redacted]
cc:
Subject: Re: Level 4 milestones

In reference to your response to [redacted], [redacted] said we do not have any money at this time and if we don't have a plan in place we won't have any money. Who do I believe (Okay, I'll believe you but what the heck is going on?). We have sent a plan for the [redacted] last week but we don't know what happened. This memo implies that there is not a CR or other method of making these funds available. That is why we are so darned confused about this budget, and thus [redacted] confusion.

[redacted]
---------- Forwarded by [redacted] on 01/19/99 05:55 PM
---

[redacted]

[redacted]

From: [redacted]
PostedDate: 04/28/1999 04:12:53 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: USGS Participation in [redacted]
Body:
I feel bad that you had to spend time responding to this sort of thing, but thanks for sharing it with me. I'm sure the public would love to see how YMP spends resources trying to figure out whether or not the mountain is safe. Did you get the overnight? I'm still making new slides. I'll have to bring these with me. I'm arriving at 10:15 pm tomorrow at the LA airport. I can get you the slides as soon as I arrive at the hotel (I'm staying at the place suggested in the [redacted] emails) or at say, 6:30 am before continental breakfast. Let me know if you need me to explain any of the slides. I've found the ENSO stuff but these were 1996 black and white images so I'm redoing these in color. Also, I still need to get the title slides developed, so this is happening tomorrow. The 4-hour turn-around at [redacted] Photographic is saving my ass.

[redacted]

[redacted]

04/28/99 11:09 AM
To: [redacted]
cc: [redacted]

Subject: Re: USGS Participation in [redacted]
I'm confused. I seem to have three different deadlines for the same thing. I guess I'm out of date. What is a "[redacted]", what is a "[redacted]", what is "draft form", what (who) is in charge and why do I get requests for different things from different people that all seem to be related, if not the same thing? When do the "[redacted]" go into effect? When is the FY99 planning and reallocation of money to fund the "[redacted]" going to be finished? Are any milestones going to be delayed to meet new [redacted] requirements? Will the ICD's vanish, will the [redacted] originator vanish? Who is a PAO? What's going on? What's the April 20th deadline? I thought I was only late for the April 23rd deadline. I guess I just don't have the PMR concept embedded properly. Did I get anything right?
Just curious,

[redacted]

[redacted]

04/28/99 10:28 AM
To: [redacted]
cc: [redacted]
Subject: USGS Participation in AP3.10Qs
The schedule for [redacted] is being revised to place additional constraints on information handoffs. The completion dates and links by the climate model and infiltration model to the UZ model may need to be revised.
In the frenzy of reorganizing the FY99 replan I am concerned that the [redacted] model and [redacted] model PIs have not beem kept up to date. The current plan (with dates supplied by ??) calls for the Climate [redacted] to be in draft form by April 20. The final report is scheduled to through checking review on

[redacted]

[redacted]

Author: [redacted]
Organization: [redacted]
From: [redacted]
PostedDate: 10/07/1999 12:35:09 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Late AMRs
Body: In our meeting yesterday, [redacted] and [redacted] indicated the following dates for arrival of the AMRs at [redacted] These are all rev 0A:
[redacted] Climate: [redacted] Oct. 12
[redacted] Infiltration [redacted]: Oct. 8
[redacted] Geochemistry: Oct. 7 (today)
[redacted] UZ/SZ Transport Prop. Oct 8
I KNOW YOU ARE WORKING HARD, BUT I MUST HAVE THEM ASAP. My ass is being hammered. I hope I quoted the right dates and that everyone one will finally deliver.

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 06/02/1997 02:52:02 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: Charging Time
Body: I have the account as [redacted] Check with [redacted] to make sure that his number ([redacted] is the correct one then go ahead and Charge. Charge your time to PISA for the [redacted] trip.

To: [redacted]
cc:
From: [redacted]
Date: 06/02/97 11:43:40 AM PDT
Subject: Charging Time

I did not know if you were aware of the following. If not, here is some extra money. Unless you tell me otherwise, I will charge my entire next pay-period (due this Wed.) to this account ([redacted].

To: [redacted]
cc:
From: [redacted]
Date: 05/29/97 11:20:30 AM
Subject: Charging Time

[redacted]

The mixup in account numbers that [redacted] and/or [redacted] talked with you about today reminded me that I've got 2 payperiods of your time budgeted for the work that you did for regional modeling this year. It doesn't look like you've charged any time for that work yet. Sometime this year, you can charge 160 hrs to account # [redacted] (which isn't a [redacted] acount but I've had to juggle people's time to buy some expensive software. It is one of the [redacted] modeling accounts.). Thanks.

[redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 04/03/1998 11:09:18 AM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: 20K in [redacted]
Body: [redacted]
We need some additional computers in [redacted] and [redacted] and are adjusting the budget to cover them by charging some of [redacted] time to [redacted] I'll let you know what changes we have to make to work this all out. The work [redacted] is doing is a spin off from the work in [redacted] and [redacted].
[redacted]

04/03/98 07:11 AM
To: [redacted]
cc: [redacted]
Subject: Re: 20K in 11017
[redacted] - I already have [redacted] budgeted full time under other accounts [redacted]; and [redacted]. Has this been negotiated with [redacted]? I can only budget him for 2088 hours so I will need to reduce one of these other accounts by 440 hours. Thanks - [redacted]

[redacted]

04/02/98 03:31 PM
To: [redacted]
cc:
Subject: 20K in [redacted]
[redacted] had mentioned that you thought there was an underrun in [redacted]. There is not. We are going to cover 440 hours of [redacted] for work on that activity. At 34.33 per hour that comes to about 15000 bucks.
Call if you have any questions.
[redacted]

[redacted]

[redacted]

From: [redacted]
PostedDate: 11/18/1998 06:10:09 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: funding woes
Body:
FYI: another example of an apparent disconnect between [redacted] and [redacted]. What is your source in regards to the IM provided to the USGS? If this is true then the funds seem to be getting funneled in the wrong direction.
---------- Forwarded by [redacted] on 11/18/98 03:06 PM
---

[redacted]

11/18/98 01:19 PM
To: [redacted]
cc: [redacted]
Subject: Re: Discussion with [redacted]
As far as I know there is no funded milestone for December. The milestone we tried to get was not a milestone but an attempted to get the FY96 map in the TDMS. There is no funding. Perhap DOE should be honest with the NRC and tell them they are not funding an infiltration map this year.
[redacted]

[redacted]

11/18/98 11:39 AM
To: [redacted]
cc:
Subject: Discussion with [redacted]
FYI..... [redacted]
---------- Forwarded by [redacted]
---

[redacted]

11/18/98 11:10 AM
To: [redacted]
cc: [redacted]
Subject: Discussion with [redacted]
---------- Forwarded by [redacted] on 11/18/98 11:14 AM
---

[redacted] on 11/18/98 10:51:09 AM
To: [redacted]
cc: [redacted]
Subject: Discussion with [redacted]

[redacted] --
[redacted] called me with some follow-up questions/comments to the telecon we had last week. Items of discussion were:

1. Some additional clarification about how we included effects of percolation variability on seepage, and why the adjustments applied at low fluxes were not also applied at high fluxes. (Answer is that it made no difference at higher fluxes, and I think that is stated in the TBD.)

2. He has some concerns about how the probabilistic sampling for seepage was done and effects of variability vs. uncertainty. I frankly did not really understand the point he was making and so was not able to make a very satisfactory reply. As best I could understand, I thought he was misunderstanding what we did, but as I think about it now, maybe he would prefer sampling our repository subregions independently rather than having them tied together. (It seems like he was concerned that we didn't have enough spatial variability in seepage.)

[redacted]

3. Lastly, he had some questions/concerns about the probability distribution for surface infiltration (the weighting factors for the three infiltration cases). I agreed with him that we need a better basis for the distribution. He mentioned that he thinks the probability distribution is probably more of an exponential shape. He brought up the issue of bromus (sp?) grass, and said that he is getting more and more concerned about it. He said that it probably would not have much effect over the repository because the soil is mostly shallow there, but it might have more effect on the SZ flow -- a distributed rechrge over the area, possibly even a rise in the water table. And finally, he mentioned that the VA said something about new YMP infiltration work for 1998 and was curious about it. I told him that there is an infiltration deliverable due in December.

-- [redacted]

[redacted]

[redacted]

From: CN[redacted]
PostedDate: 11/19/1998 10:14:39 PM
SendTo: [redacted]
CopyTo: [redacted]
ReplyTo:
BlindCopyTo:
Subject: RE: QA'd models
Body:
[redacted]
The 96 model report has been re-submitted for USGS Director's approval. [redacted] has been the main force behind dealing with the latest round of editorial reviews and pushing the report forward. When Director's approval is granted, I am assuming the FY96 model will be in the TDMS, although we may be required to submit additional supporting information (we are still in the process of finding this out). There is also a chance that the report will not be approved, and will require additional work and/or modifications. Unfortunately , the process of Director's approval is largely beyond our control. Past experience has shown that it is always best to assume additional work and/or modifications will be needed. At any rate we are still hoping for end of December on this, but cannot make any guarantees. If additional QA work is needed, it may become a problem because at present we are not in a good position to do this. I'd say a 50% probability of completion.
The 96 model includes only the current climate base-case net infiltration map, and a wet and dry year current climate simulation. We still need until April to get the 97 future climate 100-year simulations into the TDMS. Again, no guarantees, especially in light of major uncertainties that continue to exist, and thus I can only give a 50% probability of completion.
Bottom line is, our position for making any FY99 commitments at all is still poor to nonexistent.
[redacted]
To: [redacted]
cc:
Subject: RE: funding woes

[redacted]
What is the status of the FY96 model being submitted to the TDMS? I thought you said that the FY96 infiltration maps could probably be submitted to the TDMS by December.
--[redacted]
-----Original Message-----
From: [redacted]
Sent: Wednesday, November 18, 1998 4:10 PM
To: [redacted]
Subject: Re: funding woes
FYI: another example of an apparent disconnect between 1.2.5 and 1.2.3. What is your source in regards to the 1M provided to the USGS? If this is true then the funds seem to be getting funneled in the wrong direction.
---------- Forwarded by [redacted] on 11/18/98 03:06 PM ----------
[redacted]
11/18/98 01:19 PM
To: [redacted]
cc: [redacted]
Subject: Re: Discussion with [redacted] (Document link not converted)

As far as I know there is no funded milestone for December. The milestone we tried to get was not a milestone but an attempted to get the FY96 map in the TDMS. There is no funding. Perhap DOE should be honest with the NRC and tell them they are not funding an infiltration map this year.

[redacted]

[redacted]
11/18/98 11:39 AM

[redacted]

To: [redacted]S
cc:
Subject: Discussion with [redacted]

FYI.....[redacted].

---------- Forwarded by [redacted]
11:38 AM ----------

[redacted]
11/18/98 11:10 AM

To: [redacted]S
cc: [redacted]
Subject: Discussion with [redacted]

---------- Forwarded by [redacted]
AM ----------

[redacted]on 11/18/98 10:51:09 AM

To: [redacted]
cc: [redacted]
Subject: Discussion with [redacted]

[redacted]--

[redacted] called me with some follow-up questions/comments to the telecon
we had last week. Items of discussion were:

1. Some additional clarification about how we included effects of percolation
variability on seepage, and why the adjustments applied at low fluxes were
not also applied at high fluxes. (Answer is that it made no difference at
higher fluxes, and I think that is stated in the TBD.)

2. He has some concerns about how the probabilistic sampling for seepage was
done and effects of variability vs. uncertainty. I frankly did not really
understand the point he was making and so was not able to make a very
satisfactory reply. As best I could understand, I thought he was
misunderstanding what we did, but as I think about it now, maybe he would
prefer sampling our repository subregions independently rather than having
them tied together. (It seems like he was concerned that we didn't have
enough spatial variability in seepage.)

3. Lastly, he had some questions/concerns about the probability distribution
for surface infiltration (the weighting factors for the three infiltration
cases). I agreed with him that we need a better basis for the distribution.
He mentioned that he thinks the probability distribution is probably more of
an exponential shape. He brought up the issue of bromus (sp?) grass,and
said that he is getting more and more concerned about it. He said that

[redacted]

it
probably would not have much effect over the repository because the soil is
mostly shallow there, but it might have more effect on the SZ flow -- a
distributed rechrge over the area, possibly even a rise in the water table.
And finally, he mentioned that the VA said something about new YMP
infiltration work for 1998 and was curious about it. I told him that there
is an infiltration deliverable due in December.

--[redacted]

[redacted]

[redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 06/17/1998 04:20:27 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: mod to [redacted]
Body: I wasn't suggesting you ask for less money. I am suggesting we do the best work we can, get all the money we can, and commit to the least amount of product we can. The money is not taking money from another source. That money is extra. There may be an overriding goal by management to cut our staff. If that's the case then the modeling money will help lower the expectations for underground work. It may be in somebody's mind that there is not enough money for the GS people in all project but enough for all our (my) GS and the PWT people. If that happens then "they" will make us get rid of PWT people, take our money and give it to other GS people (how do [redacted] and [redacted] get there money anyway?). I'm actually more paranoid than you. When you talk about not being over committed I'm not sure you are accounting for perhaps 0.5 FTE here in [redacted] next year. Also don't forget [redacted] has you funded (if his money comes through) for 0.5 FTE next years. So right now you and I, if all the money comes through, have about 4 FTE for modeling. What modeling do you really thing [redacted] and [redacted] could do? [redacted] has been responsible for the 40 Mile Wash study for years and hasn't modeled anything. What modeling has [redacted] (either [redacted]) ever done? I've worked with everybody in the group and as far as getting a good model you and I are it. I've work with [redacted] and his perspective is more difficult to deal with for me. Ground truth, that's what we'll need next year, especially when we do the entire Mojave (654,000,000 grid cells). On getting papers out you only made 16 pages in over a week, that was just review. You're tract record on getting out papers has me more nervous. I know you're trying to cover the 3 basics but promising then is another question. Check your track record on papers and then try to reassure me you can do the modeling, turn in data, finish the QA, finish two USGS WRIR's that you've started, help write the Invited paper, finish the Conceptual model paper (16 pages out of 59! so far) and then promise a Journal article. I know it's stressful (I know stress). You can also do more than is promised but you can never do less. We can talk more later.
[redacted]

[redacted]
06/17/98 11:52 AM
To: [redacted]
cc:
Subject: Re: mod to [redacted]
Thats OK. I was waiting for input on this. Basically, I only have 2 goals:
1. To keep our modeling efforts going full swing so that we come out with a final product that we will be proud of and one that will be an important contribution to the project 2. Continue developing expertise and knowledge in this area (watershed scale unsaturated zone modeling) which will enable us to grow well beyond Yucca Mountain.
As for as committing FTEs, I guess my position these days is to get as much money as possible and then once that's close to being finalized (which I don't think is the case yet) we'll have the luxury of deciding whether we're getting too much money. As you know, I don't have all the information in front of me at the moment; whether this money cuts into underground work (I am assuming it doesn't), who in the Survey is lacking funding at the moment (we could have [redacted] help us with GIS, I could have [redacted] and/or [redacted] help out with the modeling, ..... I'm not sure about [redacted] at the moment)
I know what you're saying but I'm just trying to cover the 3 basics; funding, doing the work, publishing. In addition, I have a genuine concern that if we don't get funding for modeling, my funding will come from the undeground work, and then [redacted] will be trying to tell me what to do. I know he's been working hard with the budgets and he's doing a good job but I don't want him to have control over what I do.

[redacted]

Finally, I don't think we're as overcommitted in this as it may seem. We have a lot of irons in the fire and I've convinced myself that we are on the verge of putting out a series of slick, high profile products. Yeah I'm asking for more money than what might be needed given how all the modeling efforts are inter-related but I've had some bad experiences where it seems like I wasn't asking for enough money (the 50% cut last year comes to mind).

Did you get both overnights I sent (you should be getting a JAZ disk today). How are your meetings going this week? I just had the huge [redacted] report land in my lap for technical review. I could use the extra money to pay someone else to do the modeling while I do the technical review.

[redacted]

[redacted]

From: CN=[redacted]
PostedDate: 12/24/1998 06:32:09 PM
SendTo: CN=[redacted]
CopyTo: CN=[redacted]
ReplyTo:
BlindCopyTo:
Subject: Re: account [redacted]
Body:

[redacted]

I don't understand this either. Here's what I know thus far:

1. The 176K [redacted] is for "close-out" of the infiltration modeling work. This work is still following the original work package that I put into the system more than 6 months ago (in response to a PA-USGS-DOE meeting in April or May 1998 on climate and infiltration issues), but which never received funding. I've charged 1 pay-period to this account, following my response to [redacted] request of work-plans for FY99 close-out funds. Currently I have no information as to the exact status of the [redacted] work package and its funding, although [redacted] has indicated to me to plan on doing as much infiltration modeling work as possible in FY99.

2. We notified PA about 5 months ago that 1. The FY99 infiltration modeling work package was not getting funded, 2. additional work was needed to get the new model results into the TDB, 3. the new requirements for data used by models required the data to be in the TDB (and the USGS requirement for placing model output into the TDB is that an interpretive report is needed to support the results.... I am supporting this requirement, but also support the use of the TBV status to allow PA modelers access to results under the imposed schedule), 4. Additional work was needed to incorporate the Day and others 1:24,000 scale geologic map (only the 1:6000 scale map was available in time for the FY98 model), a snow cover module, and a quantitative evaluation of model uncertainty to ensure that a fully defensible model was in place for LA & SR. A meeting was held in October to discuss these issues. Upper management was made aware of the issues, but from my perspective nothing had been resolved (I did not have an account to charge the work to).

3. The [redacted] account materialized, with 6-weeks worth of funding for infiltration modeling. This is allowing the work to limp along, but will not be adequate to provide PA with what it needs. Scheduling of FY99 work has already been seriously affected, and we are falling critically short of the original work plan I tried to put in place during the summer.

4. Following a recent TSPA workshop (12/14-16) which [redacted] and myself attended, critical issues regarding needed climate and infiltration modeling work to support SR & LA were discussed, with emphasis on the need to have modeling results in the TDB. The latest (FY98) version of the model addresses many (but not all) of the issues identified as critical during the workshop, and which largely reflect technical reviews of the TSPA-VA by NRC, NWTRB, and others. I again indicated that this was largely a resource problem (climate has the funding to do the work, infiltration modeling does not), and that from my perspective nothing had really been resolved following the October meeting. PA indicated to me during the workshop that: 1. the 110k provided to the [redacted] account was intended for the infiltration modeling work, 2. there is still a critical need to complete the work in FY99, 3. the work needs to be supported in FY99 (continued evaluation of model uncertainty), and 4. that the funds to do the needed work should be available in [redacted]

Thus, as of the 12/14-16 workshop, I have been going ahead with a modified version of the original FY99 work plan, although now it will be even more difficult to meet PA's FY99 modeling schedules (I'm basically following the [redacted] "close-out" package, which now reflects a tighter 9-month schedule). I have received no information on the status of the [redacted] account, so at this point in time I am planning to do the needed work under [redacted] and I will continue to do so until I receive further direction from you or [redacted]

[redacted]

12/24/98 07:25 AM

[redacted]

To: [redacted]
cc: [redacted]
Subject: Re: account [redacted]

[redacted] I have had no recent communications from anyone for the PA work. The hours I am carrying are still the ones which reflect 240 hours for you and 80 hours for [redacted] as well as some hours for other staff for the $110K. I believe that [redacted] thinks all of the money is for infiltration but there are other needs for PA other than the area that [redacted] is heading up. Is the $176K for infiltration that we set up in [redacted] totally different than what you are doing for PA? I will have to defer to [redacted] on how you should charge. It's true you should charge where you are working but I'm not sure I understand the separation between [redacted] and [redacted].

[redacted]
12/22/98 05:32 PM
Sent by: [redacted]
To: [redacted]
cc:
Subject: account [redacted]

Hello [redacted]

1st, Have a Merry Christmas and a Happy New Year,

2nd,
Recently I attended a TSPA meeting at [redacted] and was instructed to charge all site scale infilration modeling work which PA needs performed in FY99 to [redacted] On indicating that it was my impression that there was only 6 weeks worth of funding for me in that account ([redacted] folks still insist the 110k for [redacted] was intended for infiltration modeling), I was further instructed to keep charging to the account beyond the 6 weeks (bottom line is to just do the work that needs to be done). [redacted] and I are already heavily involved in this work in an effort to meet FY99 schedules. Please provide me with an update of the funding status for this account, and any information you may have recieved from the 1.2.5 folks recently.

Thanks,

[redacted]

[redacted]

ALG: [redacted]

Author: [redacted]
Organization:
From: [redacted]
PostedDate: 04/02/1998 05:37:52 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Charging to [redacted]
Body: ---------- Forwarded by [redacted] on 04/02/98 02:46 PM
---

[redacted]
04/02/98 02:34 PM
To: [redacted]
cc:
Subject: Charging to [redacted]
HAS [redacted] CHARGED ANYTIME TO [redacted] YET?
PLEASE LET ME KNOW
[redacted]

[redacted]

ALC.[redacted]

From: [redacted]
PostedDate: 10/30/1998 05:50:06 PM
SendTo: [redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: LADS support
Body:

I will commit to week after next.
Did you get the overnight package?

[redacted]
10/30/98 08:45 AM
To: [redacted]
cc: [redacted]
Subject: Re: LADS support

We are trying to get together to work out the details for this. It's a struggle to get the results and do the paperwork at the same time. We are stuck on the same problem with the code that we discussed in the telecon with [redacted] and [redacted], we just can't get it QA'd for a while, but we're trying. Oh, by the way, we don't have an account to do this work yet, or anything with the infiltration model. We're charging our time to [redacted] and PA. I'm trying to get [redacted] and [redacted] into a meeting but they have tight schedules and haven't been able to get it together. We plan on week after next to put this all together.

[redacted]

[redacted]

ALD [redacted]

From: CN=[redacted]
PostedDate: 10/30/1998 05:48:48 PM
SendTo: CN=[redacted]
CopyTo:
ReplyTo:
BlindCopyTo:
Subject: Re: LADS support
Body:
I will commit to week after next. Didn't quite know how to respond to [redacted] because I had assumed he was fully aware of the support we were providing to the engineers, and where this would put us in terms of QA
[redacted]

10/30/98 08:45 AM
To: [redacted]
cc: [redacted]
Subject: Re: LADS support
We are trying to get together to work out the details for this. It's a struggle to get the results and do the paperwork at the same time. We are stuck on the same problem with the code that we discussed in the telecon with [redacted] and [redacted], we just can't get it QA'd for a while, but we're trying. Oh, by the way, we don't have an account to do this work yet, or anything with the infiltration model. We're charging our time to [redacted] and PA. I'm trying to get [redacted] and [redacted] into a meeting but they have tight schedules and haven't been able to get it together. We plan on week after next to put this all together.
[redacted]

[redacted]

10/30/98 08:10 AM
To: [redacted]
cc:
Subject: LADS support
What's up?
---------- Forwarded by [redacted] on 10/30/98 08:10 AM ----------

[redacted]

10/29/98 04:24 PM
To: [redacted]
cc: [redacted], [redacted]
Subject: LADS support
Looks like your guys have been generating some interesting results. From Talking With [redacted] today, though, I am doubtful whether the results can be used at all in the LADS study. It seems to me that my stipulations on QA in the message below, are being ignored.
I need for [redacted] and whoever else is working on LADS calculations, to use [redacted] and generate a "checked" calculation in the form of a memo that will eventually go to controlled distribution. Also, I need to somehow capture the software that was used (perhaps by attaching a printout of the code), and the input/output need to be submitted to the TDMS.
---------- Forwarded by [redacted] on 10/29/98 04:17 PM ----------

[redacted]

5

[redacted]

Memorandum For: [redacted]
Radioactive Waste Management

From: [redacted]
Radioactive Waste Management for Repository Development

Subject: Status Report on Potential Falsification of Data

On Friday, March 11, 2005, I sent you a memorandum from [redacted] regulatory counsel describing potential program vulnerabilities resulting from what appear to be deliberate failures to follow quality assurance procedures and possible falsification of data committed by a USGS employee. This information is contained in a series of e-mails to and from this USGS employee during the period May 18, 1998 to March 20, 2000, and involves the work the USGS employee did for the project on infiltration of water into the repository. The [redacted] regulatory counsel's memo reported that these e-mails are available on the LSN.

We immediately undertook an investigation into this matter. What we have at this point is:

- the subject e-mails are not on the LSN or any other currently publicly available database.
- the e-mails are located on the CACI server to be included in the LSN scheduled to be certified this summer.
- the e-mails were found by [redacted] employees during routine review of e-mails for relevancy for the LSN.
- enclosed is a June 2002 report on risk information regarding mean annual dose using both USGS and non-USGS data. The results concluded that even when precipitation is used as maximum infiltration, dose results are not significantly affected for site recommendation.
- I will have more definitive information on the impacts associated with LA by COB Tuesday.

**Key points for your discussion with the Secretary:**

- the e-mails are not on the LSN or any other currently publicly available database.
- the implication of the information contained in the e-mails does not impact the site recommendation and we do not believe that the questionable data has any meaningful effect on the results supporting the site recommendation.
- we are investigating both the technical impacts on the safety analysis associated with the LA as well as data origin, validation, including QA and LA process checks.
- we will know more by COB Tuesday regarding schedule impacts.

6

senior level management within the USGS as well as the Southwest Region of the investigations office of the Department's IG is being requested to investigate this matter.

Path Forward:

1) determine results of RW-1 meeting with the Secretary—Monday
2) follow-up with IG regarding investigation—Monday
3) notification to NRC—Monday
4) preliminary report on potential LA impacts—Tuesday COB
5) determination of other internal/external communication—Wednesday AM

MOL.20020603.0291

[redacted]

[redacted] QA:N/A

June 2002

# RISK INFORMATION TO SUPPORT PRIORITIZATION OF PERFORMANCE ASSESSMENT MODELS

Prepared for:

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[redacted]

For the purpose of these studies, the potential significance of a TSPA model component is assessed in terms of whether changes in the component result in a change in the estimate of mean annual dose in the first 10,000 years of 0.1 mrem or more. The individual protection limit is 15 mrem and a change smaller than 0.1 mrem is insignificant in comparison with this limit. In fact, changes smaller than 1 mrem are not, in themselves, very important in comparison with the limit; however, a threshold of 0.1 mrem is considered here to address the possibility that a change in one TSPA model component of this magnitude in combination with changes in other components could be important. Explicit consideration of combined effects of changes in several components at once is provided in Section 3.4.

### 3.3.1 Climate and Net Infiltration Sensitivity Study

The first study examines the role of the climate and net infiltration component of the TSPA model. It is important to include this component in the TSPA model because it helps determine the amount of water that could contact waste, mobilize radionuclides, and carry those radionuclides away from the repository to the water table.

Figure 6 examines the sensitivity of the estimate of mean annual dose to the climate and net infiltration model component. This figure compares the results of the base-case model with a model that is unrealistic but which provides extreme values to allow exploration of the role of the model. The extreme model provides an unsaturated zone flow field that is consistent with an infiltration flux of the same order of magnitude as the precipitation flux. Precipitation onto Yucca Mountain averages about 190 mm/year under current conditions and is expected to average more than 300 mm/year over the next 10,000 years ([redacted], Table 3.3.1-1, p. 3T-1). The corresponding percolation flux in the base-case infiltration model averages about 4.6 mm/year under present day conditions and about 12 mm/year over the next 10,000 years ([redacted], Table 3.3.2-1, p. 3T-5). The extreme model assumes a flow field associated with the highest infiltration rate for the glacial maximum climate. The infiltration flux in this case averages about 150 mm/year ([redacted], Table 3.3.2-3, p 3T-7), approximately an order of magnitude greater than the infiltration flux for the base-case model and of the same order of magnitude as the present-day precipitation on Yucca Mountain. This extreme infiltration is considered to ensure that the role of the infiltration model is adequately evaluated.[3]

The results for the nominal scenario in Figure 6 show little change to the estimate of mean annual dose. The drip shields remain intact for more than 60,000 years; therefore, the increase in infiltration does not translate into an increase in the amount of water contacting waste in the first 10,000 years. The effect of increased infiltration in this case is increased wetting of the drift invert and associated changes to its transport properties and in the flow below the repository that can transport radionuclides to the water table. The results for igneous activity groundwater release scenario show somewhat greater increase because drip shields are disrupted, permitting advective flow to contact the waste. The estimate of mean annual dose is dominated by the solubility-limited plutonium-239 (see Figure 5b) so that this increase does result in an increase in

[3] Infiltration models intermediate between the base-case model and the extreme model considered here are expected to provide results between those shown here. That is, the increased flux of the analysis conducted here is so high that it addresses considerations of flow focusing or episodicity effects on the flow system. The effect on seepage of intermediate values for these factors is considered in Section 3.3.2.

the mean annual dose estimate. However, even in this case the increase is less than 0.01 mrem and is not considered to be significant.

These results indicate that the details of the climate and net infiltration models do not play a significant role in the estimate of mean annual dose. This result is consistent with the results using the TSPA-SR model. Analyses of the nominal scenario using that model also show no significant impact of magnitude of the net infiltration or the details of the unsaturated zone flow field on the estimate of mean annual dose ([redacted] Section 5.2.1.1, P. 5-9; [redacted] Section 3.2.1, p. 3-3).

### 3.3.2 Seepage Sensitivity Study

The seepage component of the TSPA model represents the flow of water into the emplacement drift that is a primary determinant of the moisture conditions within the emplacement drift. The seepage flux determines the advective flow contacting the drip shield and the flow through breaches in the drip shield in the TSPA model. This model component is therefore a factor in determining the amount of water contacting the waste packages, the amount of water entering breached waste packages, and the moisture conditions in the drift invert.

Seepage is not the only source of water affecting these elements. The moisture in the drift invert is evaluated in thermal-hydrologic analyses that take into account temperature and moisture content of the air, as well as the seepage. In addition, the TSPA model assumes a volume of water present within the waste package even when no seepage occurs to account for equilibrium between the moisture in the rock, in the air, and in the waste. These factors affect the sensitivity of the estimate of mean annual dose to the TSPA model component for seepage.

Figure 7 compares the base-case results with the results for different seepage models. In the base-case model, the seepage associated with a specified percolation flux varies over a range appropriate to that flux. In addition, the base-case model accounts for focusing of the flow due to heterogeneity in the rock and episodicity in the flow system. The first alternative model uses the 95$^{th}$ percentile of the base-case seepage distribution for the calculated percolation flux, the 95$^{th}$ percentile of the base-case flow-focusing factor, and the 95$^{th}$ percentile of the base-case episodicity factor. The comparison between the base-case model and this alternative model are shown (only for the igneous activity groundwater release scenario) in Figure 7. The results do not show a significant difference between these models. As in the case of the study of the effects of increased infiltration, the changes for the nominal scenario are negligible because the drip shield diverts water away from the waste and the only effect of the seepage is to change the moisture conditions in the drift invert. The changes are somewhat larger for the igneous activity groundwater release scenario because drip shields and waste packages are breached and the waste is directly exposed to the water. The increase in seepage results in an increase in the release of the solubility-limited radionuclides. However, even in this case, the increase is not significant.

One possibility for the small impact of the change in the model is that the variation considered is not sufficient to explore the full range of possibilities. There could be intermediate values for flow focusing or episodicity that could result in larger effects. This possibility is addressed by considering a more extreme case. The base-case model provides zero seepage over

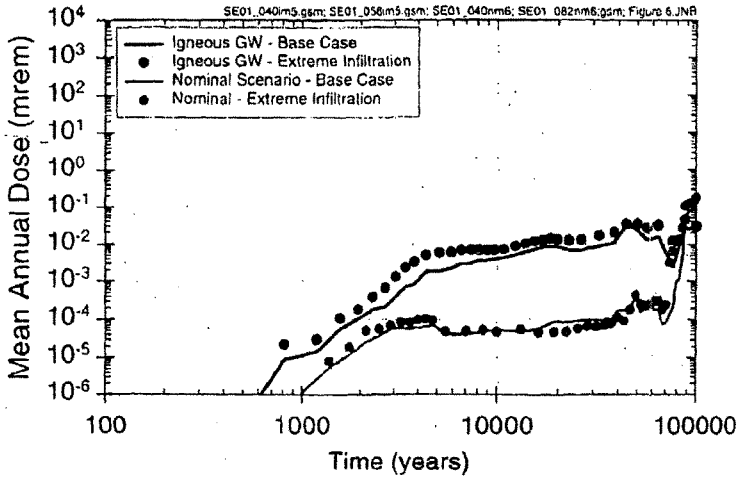


Figure 6. Sensitivity of Mean Annual Dose to the Climate and Net Infiltration TSPA Model Component

Note: Each mean annual dose curve is a probability-weighted average. However, the results of the sensitivity studies do not correspond to expected risk (see introduction to Section 3).

The results in solid line use the USGS data. The results in dots do not use the USGS data, but instead uses a conservative, worst case estimate of precipitation as the net infiltration. The fact that the dots almost plot on the lines shows that the dose is insensitive to infiltration, the data in question.

Employee Concerns Regarding emails on the LSN

The concerns that have been identified in the enclosed series of emails are being summarized and referred to the appropriate offices for investigation and resolution. These emails were found by [redacted] in reviewing LSN materials and shared with DOE.

The information and how to address it was discussed by [redacted]

1. Those matters that relate to employee falsification of time or other professional responsibility matters are being referred to USGS.

2. Those matters relating to material misrepresentations or falsification of information presented to DOE are being referred to the DOE IG. The DOE IG will be copied on the summary of all the issues.

3. The technical implications of these emails are being investigated by [redacted] and [redacted], including identifying and addressing any potential effects on our technical work beyond the AMR identified in the emails.

Further information on the attached will be forwarded next week.

[redacted]

U @ 9:30 am

This recommends a course of action for dealing with potential program vulnerabilities created by a series of relevant, not privileged e-mails from and to a USGS employee who worked on climate aspects of the project.

[redacted]

[redacted] Depending on the current status of the work to which he contributed, these e-mails may create a substantial vulnerability for the program. (We note that because AMR U0010 has been so substantially modified from its original version that [redacted] work may not longer be of concern, but we need to know that.)

[redacted]

- [redacted]
- [redacted]
- [redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]

[redacted]

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MAR-11-2005 02:48PM [redacted] DIRECTOR [redacted]

Period covered: May 18, 1998 to March 20, 2000

Contacts (number): [redacted]

Technical issues: UZ Flow-infiltration report/future climate results (no DTNs)

Forty Mile Wash simulations

Work provided not QA but not revealed

Work package submitted to [redacted] for review
Program not in the system
Reply by [redacted] recommends subterfuge
(Timeframe April 22, 1999)

climate input files not QA

[redacted] and [redacted] Mesa precipitation files/[redacted]

[redacted] (Nov 2004)
Simulation of Net Infiltration for Present-Day
and Potential Future Climates
Contributors include [redacted]
Entire document revised from earlier version

[redacted] and [redacted] software not QA

[redacted] blocking ridge numbers
[redacted]

Installation of unqualified codes
[redacted]

Non-technical [redacted]

| | |
|---|---|
| Issues | Jury duty |
| | Work on projects not approved |
| | Awareness of wrongful acts |

[redacted]

[redacted]

Path Forward

| Contact | Issue | Date | Statements |
|---|---|---|---|
| [redacted] | Future air temperature for climate and infiltration | 05/11/98 | Kept mum to keep from looking bad<br>Hoped to let it pass without a [redacted]<br>Forwarded first draft of UZ Flow section from [redacted] at Sandia<br>It included climate and infiltration |
| [redacted] | Funding for work on regional scale | 06/18/98 | Intent to do a few extra simulations in Forty Mile Wash<br>Like getting paid twice for same work<br>Don't feel bad considering how little paid for the year |
| [redacted] | Summoned for jury duty | 10/27/98 | [redacted] suggests indirectly that [redacted] ignore summons by pretending it was never received. [redacted] appears to agree |
| [redacted] | Engineering perspective on desert paving | 10/29/98 | What till the figure out nothing I've provided them is QA<br>If they want the real stuff they'll have to pay to do it right |
| [redacted] | QA and credibility | 12/18/98 | This will be like the OJ trial<br>Results will be completely thrown out because of minor procedural flaws or personal attacks on credibility |
| [redacted] | Response to note from [redacted] to [redacted], cc [redacted] that [redacted] to be sucked into Tiger team effort | 03/15/99 | Will continue regional modeling and reports even if ignore direct orders from YMP management<br>[redacted] and I know what needs to be done in long haul to stay alive<br>Screwing around with tiger teams doesn't help<br>That's the insider scoop. The position we take with the [redacted] planners may be very different.<br>Delete this memo after you read it. |
| [redacted] | Career development Comment to [redacted] on [redacted] work directions | 03/26/99 | I've not devoted full time to [redacted]<br>I'll be damned if I drop everything else and do nothing but [redacted]<br>The skills I'm interested in developing will benefit the [redacted] district and our careers.<br>This is another memo that needs to be destroyed. |

[redacted]

| Contact | Issue | Date | Statements |
|---|---|---|---|
| [redacted] | Getting around QA requirements | 04/22/99 | QA bullshit grows deeper<br>The program I wrote is not in the system<br>QA will be all over us like flies on ***<br>I may need to say I did everything by hand for the data package<br>All references to [redacted] deleted<br>Am not referencing tech procedure or scientific notebook<br>Would it be cost-effective to create a scientific notebook and back date it? |
| [redacted] | Response to [redacted] suggestion about previous message | 04/22/99 | Responds positively to suggestion that [redacted] should download raw files from [redacted] and say he used them<br>No need to do an analysis, just say this is data used |
| [redacted] (Denver) | New climate net-infiltration model<br>Continuing follow-up on previous notes | 04/22/99 | Small error found 3 weeks ago in model input generated using [redacted] data<br>Error fixed and simulations being redone<br>Sending developed data package used by net-infiltration model<br>Inputs reformatted [redacted] export files with some parameter estimation to fill in small gaps<br>To get this through QA, I must state that I arbitrarily selected analog sites<br>Wanted to use your e-mail as support but QA said can't use those results<br>So, for the record, the seven analog sites have been selected randomly<br>I hope these sites will match yours by coincidence<br>Please destroy this memo |
| [redacted] | Comment on QA | 08/05/99 | Piss on QA |
| [redacted] | Multiple books | 11/15/99 | Deleted last four lines from official QA version of files.<br>Lines not used.<br>I keep track of two sets of files, the ones that QA happy and the ones actually used. |

[redacted]

| Contact | Issue | Date | Statements |
|---|---|---|---|
| [redacted] | [redacted] | 01/06/00 | There is, of course, no scientific notebook for this work. All work is in the form of electronic files.<br>I am more concerned about the [redacted] projects than about the [redacted].<br>I need help to figure out a good excuse why 100% of my time did not go into the audit without revealing the [redacted] projects |
| [redacted] | Calculations | 02/17/00 | Please do no tell anyone how this was done because the we will need to get this whole thing through software QA |
| [redacted] | [redacted] | 03/06/00 | I assume topographic ID produced by [redacted] by using [redacted]. Only a placeholder not actually used by model so doesn't matter.<br>Not yet able to reproduce blocking ridge values. I have no direct trace to the actual calculation.<br>I can fudge the attachment for [redacted] for now. If it is run, there may be problems but I believe that an impact analysis would show differences are not critical to end result. |
| [redacted] | [redacted] and [redacted] | 03/09/00 | To create [redacted] from [redacted], fan [redacted] with option set [redacted] causing veg cover estimate based on [redacted], the regional vegtypes.<br>To create [redacted], used as input to [redacted], re-ran [redacted] using [redacted] as input so regional vegtypes made it into all watershed files.<br>Cannot reproduce blocking ridge numbers using [redacted]<br>Strange non-integer values |

[redacted]

| Contact | Issue | Date | Statements |
|---|---|---|---|
| [redacted] Denver) | [redacted] | 03/20/00 | I don't have a clue when these programs were installed. So I've made up the dates and names.<br>This is as good as its going to get.<br>If they need more proof, I will be happy to make up more stuff, as long as its not a video recording of the software being installed. |
| | | | |
| | | | |
| | | | |
| | | | |

[redacted]

3-14-05 - PM —

[redacted] to [redacted]

will report who knew what when within 48 hours.

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What happened?

- Review of internal project documentation identified e-mails during 1998 to 2000 of a U.S. Geologic Survey (USGS) employee, and possibly others, working on the DOE Yucca Mountain project which describe falsification of documentation required to accompany computer models related to water infiltration for Yucca Mountain.

- An investigation of the actions of the individuals and their impacts was initiated when DOE was informed on March 11, 2005.

What does it mean?

- It potentially calls into question the accuracy of documentation of certain models.

- Work that has been adversely affected might have to be redone using the correct QA procedures.

- There is no indication that underlying data or analysis is invalid.

- The QA program and our continuing analysis to examine records is working.

What are we doing about it?

- Notifying appropriate authorities and key interested parties.

- Making all of the information available to the investigators and to the State of Nevada.

- Carefully assessing the quality and pedigree of the documentation.

- Initiating an audit to determine if the systematic QA improvements undertaken over the last four years are sufficient to prevent reccurrence of such situations.

- The actions of the individual involved and others who might have been associated with those actions will be thoroughly investigated and appropriate action will be taken as necessary.

- Additional training, as necessary, of project personnel in QA procedures and the importance of strict adherence to them will be undertaken.

[redacted]

# FACTS
**3-15-05**

Evidence indicates that at least one U.S. Geologic Survey (USGS) employee's emails describe falsification of Quality Assurance (QA) records associated with water infiltration models for Yucca Mountain.

The USGS serves as a subcontractor to the Department's Office of Civilian Radioactive Waste Management (RW) with primary responsibility for many geotechnical studies at Yucca Mountain.

The records in question were over a period from 1998 to 2000 and the employee appears to have deliberately violated procedures to meet demands placed on him by the QA program. He was part of the USGS group assigned to Yucca Mountain from _____ to _____.

The evidence of his activities were discovered during a review of electronic records (email) being prepared for submission to the Licensing Support Network (LSN). The records are not publicly available but will be part of the LSN recertification expected to be made in June 2005.

The RW Office of Repository Development (RW-ORD) in Las Vegas was notified on Friday, March 11, 2005 by BSC and took immediate action to notify headquarters, the USGS, and DOE Inspector General (IG). RW headquarters advised the Secretary on Friday evening. RW has also notified the Nuclear Regulatory Commission (NRC) to advise them of a pending investigation into this situation.

Ongoing investigation will likely take several weeks. An evaluation is proceeding on the potential impact to the preparation of the License Application (LA) and will be better understood once the extent of the falsification is understood.

**Actions Taken**

1. Those matters that relate to employee falsification of time or other professional responsibility matters are being referred to USGS. The Director of USGS was notified on 3-11-05.

2. Those matters relating to material misrepresentations or falsification of information presented to DOE are being referred to the DOE IG.

3. The technical implications of these emails are being investigated by BSC and DOE, including identifying and addressing any potential effects on our technical work beyond the data identified in the emails.

**Actions to be taken**

Produce a common "one-pager" to capture facts and discussions.

White House to notify the Secretary's Office of the U.S. Department of the Interior.

DOE/HQ will notify of the State of Nevada and Congressional delegation and committees. Possible notification of Technical Review Board

Conduct a comprehensive audit of quality assurance program implementation to assess occurrence of similar situations.

[redacted]

DOE NEWS
U.S. DEPARTMENT OF ENERGY • OFFICE OF PUBLIC AFFAIRS • WASHINGTON, DC 20585

**NEWS MEDIA CONTACT:** [redacted]

**FOR IMMEDIATE RELEASE**
**Wednesday, March 16, 2005**

**STATEMENT FROM SECRETARY OF ENERGY, SAMUEL BODMAN**

**WASHINGTON, DC** -- The Department of Energy has learned that certain employees of the US Geological Survey (USGS) at the Department of the Interior working on the Yucca Mountain project may have falsified documentation of their work. This documentation is required as part of the Department of Energy and Nuclear Regulatory Commission's quality assurance programs that verify the accuracy and credibility of work that has been completed. This documentation in question relates to computer modeling involving water infiltration and climate.

"During the document review process associated with the Licensing Support Network preparation for the Yucca Mountain project, DOE contractors discovered multiple emails written between May 1998 and March 2000, in which a USGS employee indicated that he had fabricated documentation of his work.

"The Department of Energy has initiated a scientific investigation of the data and documentation that was part of this modeling activity. If in the course of that review any work is found to be deficient, it will be replaced or supplemented with analysis and documentation that meets appropriate quality assurance standards to ensure that the scientific basis of the project is sound. We are conducting a thorough review of all work completed by the identified individuals to ensure that other work was not affected.

"Additionally, we have informed the US Geological Survey and the State of Nevada. We have initiated an evaluation to determine if the systematic quality assurance improvements undertaken over the last four years are sufficient to prevent the reoccurrence of a similar situation. And we plan to reemphasize to project personnel the importance of strict adherence to quality assurance procedures.

"I am greatly disturbed by the possibility that any of the work related to the Yucca Mountain Project may have been falsified. This behavior indicated in the emails is completely unacceptable, and I have referred this matter to the Department of Energy's Office of Inspector General for full investigation.

**R-05-054** **-MORE-**

Department of the Interior

# NEWS

## U.S. Department of the Interior

Office of the Secretary
For Immediate Release: March 16, 2005 [redacted]

## Statement by US Geological Survey Director Chip Groat

WASHINGTON, D.C.-The Department of Energy has notified the Department of the Interior that e-mails by United States Geological Survey employees have raised serious questions about the review process of scientific studies done six years ago on the proposed Yucca Mountain Nuclear Waste Repository located in Nevada.

The employees studying water infiltration at the Repository, during the 1998-2000 period, are alleged to have committed improprieties after moving into the quality assurance phase imposed by the Department of Energy to begin the Nuclear Regulatory Commission's licensing process. The e-mails indicated that employees involved in studies of water infiltration and climate may have falsified documentation of their work.

USGS Director Chip Groat has issued the following statement:

"Serious questions have been raised about quality assurance practices performed in 1998-2000 by USGS scientists on the Yucca Mountain Nuclear Waste Repository project for the Department of Energy. Two actions are underway to investigate these issues. First, I have referred the matter to the Inspector General for action. Second, I have initiated an internal review of the allegations. Once the facts are known, appropriate actions will be taken. USGS remains committed to maintaining scientific excellence."

-DOI-

Selected News Releases

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**Investigation of Technical Impacts and Planned Corrective Actions Associated with Alleged Falsification of Records Associated with the Yucca Mountain Project**

Background

Emails exchanged among technical staff working for the U.S. Geological Survey (USGS) are the subject of this investigation. The first knowledge of the issues contained in the e-mails occurred during the first week of December, 2004. One of the managers reviewing emails brought the emails in question to the [redacted] Company, [redacted] attorney working on the Licensing Support System (LSN) effort. There were meetings during that week, including the [redacted] Lead Counsel, the [redacted] Business Systems Manager responsible for the email review process, and a conference call involving both the Office of General Counsel and a [redacted] attorney. The issues were discussed at a high level during each of those meetings. No specific action plan resulted from the meetings. Follow-up occurred March 9, 2005, when action was prompted by a conversation about other email issues. At that time, these issues were brought to the Employee Concerns Program (ECP).

Approach and Scope of Investigation to Assess Technical Impacts

The Analysis and Model Reports (AMRs) directly impacted by potential data, model and/or software issues raised in the emails will be reviewed by both technical and quality assurance experts. In addition, all other product outputs used to support the Site Recommendation and License Application that were generated by the USGS may be reviewed.

Areas to be Evaluated

1) *Individuals Involved in the Emails*: The technical staff named in the emails worked on the Project in the mid to late 1990s. They were involved in planning and fielding an extensive shallow drilling program (over 75 boreholes) that produced the data used to estimate how much of the precipitation that falls at Yucca Mountain has a potential to infiltrate and potentially reach repository depths.

2) *Reports/Data Sets Created by the Individuals*: Two current AMRs supporting the License Application are most directly impacted by potential issues raised in the emails. The total number of reports and/or data sets created by the individuals named in the email is large (>150) although many of the data sets are not directly used in current AMRs. Three earlier reports authored by the individuals are referenced in the Science and Engineering Report, the Technical Information Supporting the Site Recommendation Consideration.

3) *Quality and Technical Reviews*: Current quality procedures for scientific analyses and modeling have been in place since June 1999. Prior to that time, the quality assurance program covering scientific investigations was not fully integrated under a single set of Project-wide procedures. There were requirements for Scientific Notebooks and

[redacted] 16

transmittal of Data Packages to the Technical Data Management System prior to 1999 and the individual organizations had their own implementing procedures for preparation of technical documents in many cases.

4) *Results of Reviews*: For the items identified to date in the emails, about 30% were previously identified during the Regulatory Integration Review or as part of corrective actions related to legacy software. The remainder were items that would be unlikely to be found in the typical technical and quality assurance reviews. One of the most important items relates to a missing input file that is needed to reproduce results of a current Model Report that supports the License Application. This item had been identified in a Condition Report filed in February 2005 prior to review of the emails. Potential problems not previously found were identified in the emails, which may relate to compliance with software quality assurance procedures.

*5) Resulting Impacts to Site Recommendation or License Application*: Preliminary evaluations suggest that the issues identified in the emails are not likely to discredit or bring into question the validity of conclusions related to precipitation and infiltration collected during site characterization. The issues appear to be related to incomplete records for manipulation and processing of the data during model development and analysis, which may reflect violation of quality assurance procedures. Because the uncertainty bounds that are used for infiltration estimates in the Total System Performance Assessment are large, it is unlikely that issues related to the emails would impact the dose results of the current TSPA or previous TSPA that supported the Site Recommendation.

Results

The emails appear to reflect a lack of management and staff respect for and adherence to quality assurance procedures. The potential for significant technical impacts is believed to be low. However, the credibility and defensibility of the USGS technical work supporting the project is brought into question. The recommended preliminary corrective actions that follow are planned to address both aspects of the issues.

Summary of Recommended Investigations

- Technical and Process Review
  a. Two Analysis and Model Reports (AMRs) supporting the License Application are directly impacted by potential data, models, and software issues raised in the emails ([redacted]: Simulation of Net Infiltration for Present-Day and Potential Future Climates; and [redacted], Analysis of Infiltration Uncertainty). All input files (46), output files (12), software documentation, and model validation basis will be reviewed to identify any impacts related to the issues raised in the emails. This review will also cover the records of technical and compliance checking and review of these AMRs and results of quality assurance audits and surveillances.

[redacted]

b. Other technical product output produced by the USGS that is used as direct input to AMRs supporting the License Application (~15) may be reviewed. Input files, software usage and model validation documentation may be evaluated with regard to impacts related to the issues raised in the emails.
c. By reviewing the inputs, software utilized, and outputs as described in (a) and (b), the potential for impacts on the technical basis used for the Site Recommendation and the License Application will be established.

The reviews described in a-c will take on the order of 4-8 weeks depending on the findings.

Path Forward

- Depending on outcome of technical/process reviews, further corrective actions may need to be defined.
- If missing computer input file is located and Model Results can be reproduced, then additional new model development/analysis may not be required. However, if computer file is not found, then actions may include
  - Technical evaluation to qualify Model Report outputs
  - Develop and validate alternative model

[redacted]

**Crucial Calibrations E-Mail Issue**
**Talking Points**

**Summary:**
[redacted]'s e-mail is the result of a preliminary work product review conducted in 2000. Comments in the e-mail are typical of those found at early stages of review for a Data Tracking Number (DTN) records roadmap development.

A complete, formal review of the DTN records roadmap in question was completed subsequent to [redacted]'s review, per procedure. The current record roadmap for this DTN demonstrates that issues and comments raised by [redacted] and subsequent reviewers have been addressed. The data was fully confirmed and verified under our existing data confirmation processes in January of 2004.

[redacted]'s e-mail is proof that the Yucca Mountain Project review process works. A rigorous review process that subjects data to scrutiny ensures the validity of Project scientific data and its supporting documentation. [redacted] scrutinized the DTN and identified issues for review and resolution.

Supporting documentation for the DTN in question includes a 22-page roadmap that traces records needed to ensure the validity of data; and 25 pages containing comments and resolutions, e-mails, and a preliminary roadmap that was reviewed and checked.

More than 570 DTN roadmaps exist for the Yucca Mountain Project, all with comments from informal and formal reviews such as those noted by [redacted] – and with similar volumes of supporting documentation.

There are likely thousands of e-mails with similar content in the LSN, as Project employees responsible for reviewing data and documents noted questions and other issues in e-mails as part of their day-to-day responsibilities. Each of these e-mails is proof of the rigor and scrutiny applied to Yucca Mountain Project data.

The rigor of review and the volume of documentation provides confidence in the scientific data gathered at the Yucca Mountain Project.

**Background on the e-mail:**
When he wrote the e-mail in May 2000, [redacted] was an [redacted] employee, working on the Yucca Mountain Project as a data verification engineer.

In 2000, the process DTN record roadmap reviews was as follows (in summary):

- The national laboratories conduct testing and gather data.
- The national laboratories prepared the DTN records roadmap that details the data gathered, along with documentation of all aspects of the data gathering – including traceability of data collection, existence of calibration services (and procurement records, if applicable), and

documentation that software was handled correctly. The DTN is then sent to the [redacted] contractor for "consistency review."

- An [redacted] data verification engineer conducts a consistency review – an informal, early work product review to make sure DTN is in proper format, and that documentation is complete. [Note: the procedure calls for the informal consistency review as part of the review process.]
- A set of informal comments, generally via e-mail or a marked-up copy of the DTN package, is returned to the national laboratory.
- The national laboratory examines the comments, makes corrections on comments deemed valid, and prepares a record package for formal review.
- The [redacted] performs a formal review, per procedure, that ensures the roadmap lists documentation needed to ensure the validity of data are in place and fully traceable.

[redacted] e-mail is the product of a consistency review of a DTN records roadmap created by [redacted]

Status of issues identified in [redacted]'s e-mail:

- All issues have been reviewed and determined to be valid or invalid.
- Approximately 2/3 of the issues were deemed invalid (i.e. no corrective actions were necessary).
- In every instance that [redacted] cites missing calibration records, the calibration records were located and are listed on the final records roadmap that is a result of multiple reviews conducted on this DTN, and typical of the reviews conducted on DTN's in the Yucca Mountain baseline supporting the license application.

**Background on [redacted].**

[redacted] was an employee of [redacted] for five months in 2000 ([redacted] was a teaming partner with the [redacted] contractor, [redacted]). He worked as a data verification engineer, using his NRC background and strong knowledge of NRC auditing procedures. As part of the data verification group, he was responsible for conducting reviews of DTN records roadmaps received from the national laboratories. In his reviews, [redacted] was responsible for identifying inconsistencies, and his results were returned to the Labs for resolution. [redacted] left [redacted] and the Project in August 2000. He returned to the Project in July 2003 as a senior licensing engineer with [redacted] Research Associates, a teaming partner with current [redacted] contractor [redacted]

**BULLETS**

- Process issues associated with timing of documents being prepared and signed/dated
  - Self-identified by proactive processes
  - U.S. Geological Survey (USGS) employees no longer working on the program
  - Process violations were apparently willful by two individuals → therefore, work outputs are in question
- Technical subject of suspect work is in publicly available project reports
- Technical investigation ongoing – preliminary results show that the suitability of the Yucca Mountain site is not in question
  - Risk sensitivity studies (done in post) indicate repository performance is not very sensitive to this parameter
  - Infiltration information used in repository performance assessments is reasonable based on known infiltration
- Independent investigations by Inspector(s) General of the USGS and U.S. Department of Energy
- Huge improvements in safety culture and QA program implementation in last five years
- Great efforts have been made to encourage project staff to raise issues and mechanisms to anonymously do so, if desired
- Past QA re-verification of software quality, scientific model validation, and data qualification
- The evaluation will be exhaustive, we will do whatever is necessary to ensure quality and safety of the repository
- When will investigation be complete? We will complete as expeditiously as is reasonably possible – but our first priority is ensuring safety and quality, not speed
- How can we have confidence that other scientific work is sound?
  - Scientists working on YMP are among the best and brightest in the world from Berkeley, Livermore, Los Alamos, three other National Laboratories and the USGS → credentials as a whole are unsurpassed
  - Nevertheless, we will determine the full extent of any adverse conditions and take corrective action to ensure safety and environmental protection



[redacted]

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[redacted]

**BACKGROUND ON THE SUSPECT DATASET**

The data in questions are infiltration data, which is the net amount of water that actually gets into Yucca Mountain, after most of the precipitation is lost to evaporation in the desert heat or is used by plants.

**BOTTOM LINE**

A TSPA sensitivity study replaced the suspect data and used the much larger precipitation values instead. The result of that study showed that repository performance was not significantly affected.

3-15-05 Draft to be revised as 1

**Investigation of Technical Impacts and Planned Corrective Actions Associated with Alleged Falsification of Records Associated with the Yucca Mountain Project**

Background result of discussion

Emails exchanged among technical staff working for the U.S. Geological Survey (USGS) are the subject of this investigation. The first knowledge of the issues contained in the e-mails occurred during the first week of December, 2004. One of the managers reviewing emails brought the emails in question to the [redacted] attorney working on the Licensing Support System (LSN) effort. There were meetings during that week, including the [redacted] Counsel, the [redacted] responsible for the email review process, and a conference call involving both the Office of General Counsel and a [redacted] attorney. The issues were discussed at a high level during each of those meetings. No specific action plan resulted from the meetings. Follow-up occurred March 9, 2005, when action was prompted by a conversation about other email issues. At that time, these issues were brought to the Employee Concerns Program (ECP).

What do the mean? Bad faith?

Approach and Scope of Investigation to Assess Technical Impacts

The Analysis and Model Reports (AMRs) directly impacted by potential data, model and/or software issues raised in the emails will be reviewed by both technical and quality assurance experts. In addition, all other product outputs used to support the Site Recommendation and License Application that were generated by the USGS may be reviewed if the extent of correction requires it.

> At what level? will be fixed. Not correct!

Areas to be Evaluated

1) *Individuals Involved in the Emails*: The technical staff named in the emails worked on the Project in the mid to late 1990s. They were involved in planning and fielding an extensive shallow drilling program (over 75 boreholes) that produced the data used to estimate how much of the precipitation that falls at Yucca Mountain has a potential to infiltrate and potentially reach repository depths.

2) *Reports/Data Sets Created by the Individuals*: Two current AMRs supporting the License Application are most directly impacted by potential issues raised in the emails. The total number of reports and/or data sets created by the individuals named in the email is large (>150) although many of the data sets are not directly used in current AMRs. Three earlier reports authored by the individuals are referenced in the Science and Engineering Report, the Technical Information Supporting the Site Recommendation Consideration.

3) *Quality and Technical Reviews*: Current quality procedures for scientific analyses and modeling have been in place since June 1999. Prior to that time, the quality assurance program covering scientific investigations was not fully integrated under a single set of Project-wide procedures. There were requirements for Scientific Notebooks and

[redacted] 20

transmittal of Data Packages to the Technical Data Management System prior to 1999 and the individual organizations had their own implementing procedures for preparation of technical documents in many cases.

4) *Results of Reviews*: For the items identified to date in the emails, about 30% were previously identified during the Regulatory Integration Review or as part of corrective actions related to legacy software. The remainder were items that would be unlikely to be found in the typical technical and quality assurance reviews. One of the most important items relates to a missing input file that is needed to reproduce results of a current Model Report that supports the License Application. This item had been identified in a Condition Report filed in February 2005 prior to review of the emails. Potential problems not previously found were identified in the emails, which may relate to compliance with software quality assurance procedures.

[redacted] has been opened to look for files

*5) Resulting Impacts to Site Recommendation or License Application*: Preliminary evaluations suggest that the issues identified in the emails are not likely to discredit or bring into question the validity of conclusions related to precipitation and infiltration collected during site characterization. The issues appear to be related to incomplete records for manipulation and processing of the data during model development and analysis, which may reflect violation of quality assurance procedures. Because the uncertainty bounds that are used for infiltration estimates in the Total System Performance Assessment are large, it is unlikely that issues related to the emails would impact the dose results of the current TSPA or previous TSPA that supported the Site Recommendation.

Results

The emails appear to reflect a lack of management and staff respect for and adherence to quality assurance procedures. The potential for significant technical impacts is believed to be low. However, the credibility and defensibility of the USGS technical work supporting the project is brought into question. The recommended preliminary corrective actions that follow are planned to address both aspects of the issues.

Summary of Recommended Investigations

- Technical and Process Review
  a. Two Analysis and Model Reports (AMRs) supporting the License Application are directly impacted by potential data, models, and software issues raised in the emails ([redacted]: Simulation of Net Infiltration for Present-Day and Potential Future Climates; and, [redacted], Analysis of Infiltration Uncertainty). All input files (46), output files (12), software documentation, and model validation basis will be reviewed to identify any impacts related to the issues raised in the emails. This review will also cover the records of technical and compliance checking and review of these AMRs and results of quality assurance audits and surveillances.

[redacted]

b. Other technical product output produced by the USGS that is used as direct input to AMRs supporting the License Application (~15) may be reviewed. Input files, software usage and model validation documentation may be evaluated with regard to impacts related to the issues raised in the emails.
c. By reviewing the inputs, software utilized, and outputs as described in (a) and (b), the potential for impacts on the technical basis used for the Site Recommendation and the License Application will be established.

The reviews described in a-c will take on the order of 4-8 weeks depending on the findings.

Path Forward

- Depending on outcome of technical/process reviews, further corrective actions may need to be defined.
- If missing computer input file is located and Model Results can be reproduced, then additional new model development/analysis may not be required. However, if computer file is not found, then actions may include
  - Technical evaluation to qualify Model Report outputs
  - Develop and validate alternative model

March 16, 2004 11:00am

What happened?

- Review of internal project documentation during Licensing Support Network preparation identified e-mails between 1998 and 2000 of certain U.S. Geologic Survey (USGS) employees, working on the DOE Yucca Mountain project which describe falsification of documentation required to accompany computer models related to water infiltration and climate for Yucca Mountain.

- A scientific investigation of the effects of the actions of the individuals on the repository safety analysis was initiated when DOE management was informed on March 11, 2005.

- The matter has also been referred to the DOE's Office of the Inspector General.

What does it mean?

- The problem appears to be related to documentation rather than the underlying science, but DOE is committed to investigating thoroughly.

- DOE's review process and continuing commitment to quality is working.

What are we doing about it?

- Carefully assessing the quality and pedigree of affected documentation.

- Evaluating work that is the subject of the apparent falsified records, and if found to be deficient, replacing or supplementing, as necessary.

- Evaluating other work supporting the repository program by the implicated individuals and taking appropriate actions, as necessary, to ensure a sound scientific basis for the repository safety analysis.

- Notifying appropriate authorities and key interested parties.

- Providing additional emphasis to project personnel in QA procedures and the importance of strict adherence to them.

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Earl Devaney – IG/DOI

- Your testimony indicates that you are working with the FBI, therefore, can you confirm that you have, in fact, referred the case to the U.S. Attorney's Office for a criminal prosecution?

- How many witness interviews have you conducted thus far?

- Have you made a determination as to how long the employees in question were employed with the USGS? If so, how long?

- Have you made a determination as to whether there have been any prior disciplinary problems or incidences of employee misconduct associated with these employees?

- Are you continuing to obtain evidentiary documents in addition to the e-mails in question which range from 1998 through 2000?

- Other than an investigation of the actions of the individuals, what, if anything, further does your investigation entail?

- Based upon your investigation thus far, what is your estimated time period for completion?

- What is the federal penalty for Federal employee falsification of documents?

- The scope of the investigation is unclear. Please explain the scope in detail.

- Also, please clarify whether the investigation will only identify who falsified the data (or who acted in a complicit manner) and the extent of the wrongdoing or whether the investigation will also aim to determine which data needs to be re-collected and which documents and records need to be reassessed that relied upon the falsified data?

United States Department of the Interior
Office of Inspector General
Washington, D.C. 20240

April 29, 2005

The Honorable Jon Porter
Chairman
Subcommittee on the Federal Workforce
And Agency Organization
2157 Rayburn House Office Building
Washington, D.C. 20515-6143

Dear Congressman Porter:

This is in response to your letter of April 14, 2005 posing follow up questions to the hearing held on Tuesday, April 5, 2005 concerning allegations of falsified documents related to the Yucca Mountain Project.

Enclosed, please find the answers by the Office of Inspector General for the Department of the Interior to the ten questions posed.

If you have additional questions, please contact me directly, rather than through the Department's Office of Congressional and Legislative Affairs.

Sincerely,

Earl E. Devaney
Inspector General

Enclosure

Answers of Earl E. Devaney, Inspector General for the Department of the Interior
"Yucca Mountain Project: Have Federal Employees Falsified Documents?"
Subcommittee on the Federal Workforce and Agency Organization
Chairman Jon C. Porter
Questions Submitted for the Record

Q: Your testimony indicates that you are working with the FBI, therefore, can you confirm that you have, in fact, referred the case to the U.S. Attorney's Office for a criminal prosecution?

A: The Office of Inspector General (OIG) for the Department of the Interior (DOI) is conducting its investigation with the OIG for the Department of Energy and the FBI, in conjunction with the U.S. Attorney's Office for the District of Nevada. Although the U.S. Attorney's Office is actively involved, an actual criminal referral is a formality that typically occurs at the end of an investigation.

Q: How many witnesses interviews have you conducted thus far?

A: To date, we have conducted 24 witness interviews.

Q: Have you made a determination as to how long the employees in question were employed with USGS? If so, how long?

A: The employees we have interviewed have been employed with USGS for varying periods of time, ranging from the early 1970s, the mid-1980s, to the 1990s.

Q: Have you made a determination as to whether there have been any prior disciplinary problems or incidences of employee misconduct associated with these employees?

A: We have not yet discovered any prior disciplinary problems or incidences of employee misconduct associated with the USGS employees we have interviewed to date.

Q: Are you continuing to obtain evidentiary documents in addition to the e-mails in question which range from 1998 through 2000?

A: During the course of our investigation, we attempt to ensure that we have amassed and reviewed all the relevant documentary information, in addition to the e-mails we already have.

Q: Other than an investigation of the actions of the individuals, what, if anything further does your investigation entail?

A: The jurisdictional parameters for the OIG for the Department of the Interior are limited to the conduct of employees and officers of the Department of the Interior. The scope of the joint investigation extends beyond these parameters, however, into the jurisdictional parameters for the OIG for Energy and the FBI. The OIG for Interior must defer to its investigative partners to define those parameters.

Q: Based upon your investigation thus far, what is your estimated time period for completion?

A: We cannot, at this time, estimate a completion date.

Q: What is the federal penalty for Federal employee falsification of documents?

A: The potential criminal provision most applicable to the allegations in this investigation is 18 U.S.C. §1001, commonly known as the "False Statements" provision. The maximum potential penalty for violation of this criminal provision is a $250,000 fine and up to 5 years of imprisonment.

In addition, the Department of the Interior Table of Penalties provides for disciplinary actions for falsification in connection with work ranging from a written reprimand to removal from government service.

Q: The scope of the investigation is unclear. Please explain the scope in detail.

A: The OIG for DOI, in conjunction with the OIG for Energy and the FBI are exploring every lead and reviewing all potential evidence. The investigators intend to follow the leads and evidence wherever they go. The scope of the investigation is always evolving, determined entirely by the evidence uncovered.

Q: Also, please clarify whether the investigation will only identify who falsified the data (or who acted in a complicit manner) and the extent of the wrongdoing or whether the investigation will also aim to determine which data needs to be recollected and which documents and records need to be reassessed that relied upon the falsified data?

A: The OIG for DOI does not have the technical or scientific expertise to make these determinations. At some point, the results of the investigation will need to be reviewed by independent technical/scientific experts to determine which data needs to be recollected and which documents and records need to be reassessed.

Answers of Earl E. Devaney, Inspector General for the Department of the Interior

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

**Joe Egan, Esq.**

- What is your view regarding a possible recommendation that DOE go back and redo the tests with the proper data? Will the geological aspects of the mountain still flunk the test for a suitable repository site even if the tests are redone?

- With DOE's poor record of quality assurance, if we ask them to redo the science do we have any assurance that there will a reliable result? Or, will the DOE culture of "make it work" and "make it fit" that you suggest going to prevail again?

- Mr. Egan, you attached exhibits to your written statement, which include additional incriminating e-mails that you found on DOE's electronic database. Could you comment on the particular e-mails that you found and discuss their potential impact on the "sound science" of the project?

- Total disregard of safety and the falsification of data is, clearly, not the type of culture that the NRC tolerates. Further, it is not the type of culture that would make anyone confident that a safe repository can be built. What are the NRC's quality assurance rules designed to do?

- Specifically, what geological aspects of the mountain make the mountain an unfit repository to hold the Nation's nuclear waste?

- Have any of the precipitation models considered the effects of global warming?

- How difficult has it been for you to obtain emails and other documents relating to the science at Yucca Mountain from the Department of Energy?

- Based on your review of the e-mails the Subcommittee released in redacted form to the public, in addition to the attachments to your testimony, are the scientists who are studying Yucca Mountain able to freely express their views and voice their concerns or are they being forced to reach a conclusion by management officials?

- Are the frustrations of the scientists expressed in the e-mails an isolated concern, or are they an indication of a much more serious problem in the science?

- Is it your belief that scientists working on the project are under so much pressure to meet deadlines that they may be tempted to take shortcuts in their work, or to falsify reports?

- Please comment on the culture of the Yucca Mountain Project, which appears to tolerate sloppy and inadequate work simply to achieve an end result?

- At the hearing DOE indicated a commitment to address and improve its quality assurance program at Yucca Mountain. What is your view of DOE's quality assurance program and please discuss its ability to take the appropriate corrective measures?

- Based on your review of the documents released by the Subcommittee, does it appear that project members are actively seeking to circumvent quality control requirements? Please comment.

- In your attachments there is an e-mail with the subject "*water, water, everywhere.*" Apparently, this e-mail is about a heater test which produced a large amount of water in the tunnel system. I understand that the storage of nuclear waste in the tunnel complex will produce a large amount of waste heat. If heat produces water in the tunnel system, how is this going to affect the storage of the waste in the casks?

**Responses by Joe Egan, Esq., to Questions Submitted For the Record**
**By Chairman Jon C. Porter**
**Subcommittee on the Federal Workforce and Agency Organization**
**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**

April 15, 2005

1. *What is your view regarding a possible recommendation that DOE go back and redo the tests with the proper data? Will the geological aspects of the mountain still flunk the test for a suitable repository site even if the tests are redone?*

   - It remains to be seen whether it is even possible to redo the Yucca infiltration tests. Tests in which data is falsified, or for which data are not quality assured, are not always reproducible. For example, geologists took chlorine-36 samples in the exploratory studies facility at Yucca promptly after drilling. If those readings had been taken with uncalibrated instruments, it may no longer be possible to re-take the readings with calibrated instruments because chlorine-36 would likely have evaporated since the time of the original tests, and the original source of the chlorine-36 (atmospheric nuclear weapons tests) is gone.

     On a more fundamental level, the infiltration tests showed that Yucca flunked as a geologic site. DOE therefore rewrote its "site" suitability rules to place almost total reliance on the man-made waste packages. That might have been theoretically possible for the 10,000-year compliance period that DOE was then using, but with the longer period now mandated by the D.C. Circuit court, it will very likely be impossible for DOE even to jury-rig a "suitable" site. If the infiltration tests are done again, they will again show that the mountain flunks the test of science because it cannot suitably isolate radioactive waste. Water moves from the surface through the mountain to the Yucca tunnel at speeds much faster that DOE had originally predicted.

2. *With DOE's poor record of quality assurance, if we ask them to redo the science do we have any assurance that there will be a reliable result? Or, will the DOE culture of "make it work" and "make it fit" that you suggest prevail again?*

   - DOE has demonstrated that as an institution it is unfamiliar with and seemingly cannot master the requirements of a proper quality assurance program, nor does it have the safety culture necessary to implement such a program. I have no faith in DOE's science, whether original or "redone." Time and again DOE has been told by NRC and GAO that its QA was inadequate, and time and again DOE tried and failed to meet QA licensing requirements. Why should be think DOE's latest efforts to comply will succeed? DOE has not shown itself capable of being a licensee held to the quality assurance standards of the NRC or in the commercial nuclear industry. In his testimony, Mr. Garrish suggested that sound science can be separated from sound QA, since QA, he said, was simply a requirement of the NRC. But DOE's Yucca project will be *before* the NRC, where sound science

cannot legally or technically be separated from sound QA. Moreover, QA is also a core requirement for many, many industries, not just an arcane requirement of the NRC applicable to nuclear projects. The essential elements of QA, such as traceability of data, are also formal parts of the scientific method.

DOE's culture of "make it fit" will undoubtedly prevail, since the mountain has demonstrated that it flunks the tests of science. Therefore, a procrustean effort is all DOE can present to the NRC.

3. *Mr. Egan, you attached exhibits to your written statement, which include additional incriminating e-mails that you found on DOE's electronic database. Could you comment on the particular e-mails that you found and discuss their potential impact on the "sound science" of the project?*

- The emails collectively cast a dark cloud over the supposed "sound science" at Yucca Mountain.

**Exhibit No. 1** shows a 2004 email demonstrating that Bechtel-SAIC ("BSC") management at Yucca instructed quality assurance staff that, in auditing project work, they were not to use the word "violated" when a requirement was in fact violated, but were to use the euphemistic term "noncompliant." Staff was obviously puzzled by this. "Violate" is a verb and implies an active intervention by a human being. "Noncompliant" is simply a state of being out of compliance with regulations or requirements, which could happen without human intervention, as, for example, an instrument drifting out of calibration. This appears to be an attempt by management to sanitize an otherwise poor state of human conduct at the project.

**Exhibit No. 2** shows a 2002 email demonstrating an apparent attempt by Yucca management to obstruct NRC's review of so-called Key Technical Issues ("KTIs") by providing that agency with only the minimum amount of available information. It also suggests that although the KTI resolutions were not quality assured ("Q'd"), submittals to NRC may have been intentionally designed to cause NRC to think they had been quality assured. Additionally, it establishes that unqualified reviewers were the ones reducing the amount of technical information to be supplied to NRC, which caused technical discrepancies, according to this email, "from what we can justify technically." Apparently it was more important for the managers to provide NRC limited information to meet an artificial schedule than it was to provide technically correct information. Finally, the bottom of the email demonstrates friction between technical staff and management over the treatment in this manner of the specific KTI dealing with Unsaturated Zone ("UZ") flow, or infiltration through the mountain in the zone leading to the repository.

**Exhibit No. 3** is a 1999 email that appears to represent the view of one or more DOE quality assurance auditors that they may need to write "a deficiency on the

entire records program" because the data "is not traceable." However, since this would cost DOE a lot of money, the email advises that the M&O (then TRW) should first make sure that reporting such a broad deficiency was "100% supported by DOE before it goes forward." This appears to reflect very poor records quality and represents a breach of the core philosophy of quality assurance, to audit records independent of management's cost and policy objectives, letting the chips fall where they may.

**Exhibit No. 4** is a 2002 email discussing how one manager had informed DOE that "prioritization based on any kind of TSPA [Total System Performance Assessment] results is not to be trusted." But it was this very TSPA that formed the basis for DOE's request to NRC to essentially ignore some KTIs, as presenting little or no risk. This suggests NRC's whole prioritization effort is based on a DOE material false statement. The TSPA was also the core performance model underlying the Secretary's site recommendation to President Bush and to the Congress. In discussing water infiltration, the email points to a May 1996 discussion with one manager in which it is recognized that infiltration modeling is "not sufficiently definitive for a 'reasonable assurance' safety case before the NRC. That apparently did not bother this particular manager, who justified that troubling fact with the contention that it is "better to put waste underground than to leave it on the surface." The technical staffer authoring the email appears to express his frustration that his infiltration concerns are going unrecognized by a management bent on simply putting waste in the ground, saying, "I did not realize how lame my arguments have been."

Exhibit No. 4 also contains a second troubling email in 1996 from the same author, an infiltration modeler, who is exchanging views with a colleague on DOE's then-upcoming Viability Assessment ("VA") of the Yucca site to the Congress. It is clear from the email that the infiltration experts in the field knew by this time that the Yucca site did not have "the capability … to contain and isolate waste," but yet DOE's goal with the VA was to convince Congress that the site was viable enough to move forward with the project. The modelers were struggling with how to reconcile DOE's goal for their VA with the contradicting facts of their infiltration data and models. "The stuff you need to show the dose rates are small is unobtainable," one says. "[T]he data simply do not allow the current approach to show low dose rates. I say that and [manager] Hanauer whines that it kills the site." "I think if we could convince ourselves that the site actually works, we would more readily accept the notion of showing that it works in the VA." In the end, they choose nevertheless to add a definitive statement to the VA on the suitability of the site, justifying this misrepresentation to Congress because they believed they could someday conjure up ways to route the infiltrating water around the waste packages. "It is the only way to go," is the conclusion. "We don't want to let the world in on the secret of what it is we are going to do…."

**Exhibit No. 5.** In 1998 the same infiltration modeler that authored Exhibit No. 4 refers to "our spin to keep some people in blissful ignorance – as we have consistently done in natural analogue studies for 10 years – creates a problem for LA [License Application] planning. Allowing that this work may have been of some use is not only possibly dishonest, it might provide leverage to continue this so-far useless work."

**Exhibit No. 6.** This series of emails comments on the utter lack of measurements in DOE's performance models, complaining that "somehow we have drifted into a mode where we believe the world is going to be convinced by our TSPAs. In part our delusion is nourished by managers who misunderstand performance assessment…."

In an exchange entitled "Real Trouble Ahead," this same modeler notes that, with respect to the suitability of the mountain, "[t]he answer is clearer than ever. Engineering has to do the job." He notes that his models were showing doses in the tens to thousands of rem/year. A rem is 1000 millirem. The current EPA standard for Yucca is 15 millirem/year. This means his models were showing doses up to many thousands of times higher than the EPA rule allows. "I'm scared," he says. "I think a lot of people will be scared." He then opines how a GAO report may one day look if the truth of what they are doing gets out – that DOE deliberately left plutonium out of its performance models, misrepresenting that it was not significant when they knew it was, and that DOE "simply chose parameters that made plutonium effects at the accessible environment negligible." Yet, "there is no basis for the calculation of the parameters." "The fact is the site alone is insufficient to meet the performance objective. It is that simple."

**Exhibit No. 7.** In commenting on DOE's so-called "expert elicitation" process for key technical areas of repository performance assessment, this email states: "Who's kidding who? These guys are going to assign probability distributions that keep the expected values in the right place." In short, staff recognizes that the expert elicitation process is essentially rigged.

**Exhibit No. 8.** This represents a quality assurance audit, apparently of USGS data, by DOE's auditor James Raleigh in May 2000. It shows innumerable QA defects, omissions, and contradictions in the data, software, and procedures (including contradictions that "would lead an auditor to believe the record had been falsified"). The audit notes that project scientists had purported to have calibrated instruments that they had not yet received. This suggests that DOE's QA auditors may possibly have been aware of falsifications as early as the year 2000.

**Exhibit No. 9.** Here, one of the project's infiltration modelers made the following observation in 1998. "But I learned from those [water diversion] examples something that should have been obvious without them: the system works only as long as the barriers last – then it fails." He was responding to an

email from another modeler who called his DOE superiors "jerk advisors," a "swindler," "deeply paranoid," "manipulative," "scientifically out of it," and the M&O management at TRW "craven and ignorant." With apparent prescience, he concluded: "And those foolish E-mails can be real trouble if the State of Nevada gets them."

**Exhibit No. 10**, a 1998 email entitled "Water Water Everywhere," Ed Taylor of DOE states that "[p]eople did not expect the pubbling on the floors or the sporadic nature so they clearly were not in the calculated results. ... You always get water rushing into things and the flows are always sporadic." "The first response to these situations is shock and surprise because our previous intuition was based on overly simple modeling." In relation to tests by USGS scientist Alan Flint, modeler Larry Rickertsen states, "If the DOE's stomachs were churning about the VA were churning before [sic], this has got to really cause ulcers."

**Exhibit No. 11**. This is another email in the year 2000 from DOE quality assurance auditor James Raleigh, showing extensive additional quality assurance deficiencies associated with infiltration data, including the observations that a series of flunked QA results had been made to "pass," and that "deficiencies of this nature would result in [the contractor] being declared unacceptable in the Commercial Nuclear Power Industry."

**Exhibit No. 12**. In a 1998 email entitled "fruits, vegetables, and other growing things," an infiltration modeler states, "I don't know how to fight lies and misinformation, and no one seems to care about the truth, or even making sure the right people are doing the right stuff."

4. *Total disregard of safety and the falsification of data is, clearly, not the type of culture that the NRC tolerates. Further, it is not the type of culture that would make anyone confident that a safe repository can be built. What are the NRC's quality assurance rules designed to do?*

- NRC's quality assurance rules for Yucca Mountain licensing are found at 10 C.F.R. Part 63, Subpart G. According to that subpart, "*quality assurance* comprises all those planned and systematic actions necessary to provide adequate confidence that the geologic repository and its structures, systems, or components will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system that provide a means to control the quality of the material, structure, component, or system to predetermined requirements." § 63.141.

  The quality assurance program that DOE must apply to the Yucca repository must ensure that activities important to waste isolation and important to safety functions have been correctly performed by checking, auditing, and inspection of structures, systems, and components. § 63.142(b)(1)(ii). Persons and

organizations performing quality assurance functions shall have sufficient authority and organization freedom to identify quality problems. § 63.142(b)(2). DOE must have and implement appropriate quality assurance procedures "at the earliest practicable time" and "throughout facility life," § 63.142(c), and all such activities must be carried out under "controlled conditions." § 62.142(c)(2) and (c)(3).

In short, DOE's quality assurance rules for Yucca, like those for power reactors at 10 C.F.R. Part 50, Appendix B, are designed to ensure that data and information important to safety are reliable and accurate. Without accurate quality assurance conducted pursuant to viable QA procedures by qualified, independent personnel, NRC will not issue a construction license. Indeed, QA has been considered one of the most important, if not *the* most important, prerequisites for obtaining and sustaining an NRC license.

5. *Specifically, what geological aspects of the mountain make the mountain an unfit repository to hold the Nation's nuclear waste?*

- There are at least six principal geological aspects of the site that make it unfit. First is the fact that Yucca is the only repository in the world being considered for construction *above*, instead of below, the water table. Common sense suggests that water and any contaminants contained in such water flow *down*, and thus any breach of Yucca's waste containers, coupled with water, poses a risk to the underlying water supply and the regional aquifer of which that water is a part.

  Second is the fact that water flow through part of Yucca's so-called "unsaturated zone," the area of rock between the surface and the repository cavity, is dominated in certain regions by *fracture flow* instead of the far slower *matrix flow* that had originally been expected. That is, DOE now believes that there are over a billion fractures in that region, permitting fast flow paths of water from the surface into the repository cavity – on the order of 50 years instead of the thousands of years that had been predicted.

  Third is the fact that the "unsaturated" zone really contains up to 80- to 90-percent relative humidity in places, and unexpectedly large quantities of "perched" water in cavities of varying sizes. What this means is that heat and pressure from repository operation can cause water to seep out of the rock and drip onto waste containers even in the absence of rainfall.

  Fourth is the extremely poor geochemistry of the Yucca rock in the repository horizon area, as was recognized last year by the Nuclear Waste Technical Review Board. The combination of heat from the spent fuel in the repository and water from infiltration and trapped water, coupled with the unique geochemistry of surrounding volcanic rock, forms a kind of super-acid that can drip onto and corrode waste containers. Nevada's corrosion experts estimate that corrosion may begin in the waste containers now planned for Yucca in as little as two years.

Fifth is the relatively high seismic risk in the repository area, as evidenced by several earthquakes that have occurred there in the past 20 years (including one that caused hundreds of thousands of dollars of damage to DOE facilities at Yucca), as well as the numerous faults that can readily be observed on the ground near the repository.

Sixth is the relatively high volcanic risk in the repository area, as evidenced by several large volcanic cones that can be seen across the horizon from the top of Yucca Mountain. Yucca's volcanism experts believe that this risk alone disqualifies the repository.

6. *Have any of the precipitation models considered the effects of global warming?*

- To the best of our knowledge, DOE's precipitation models do not consider any anticipated effects from global warming, notwithstanding that accepted regional climate models show increased precipitation at Yucca resulting from global warming. Moreover, DOE's infiltration models also ignore the predominant mode of rainfall at Yucca – flash flooding. DOE's current models assume that annual precipitation at Yucca can be gently averaged out over 365 days. The reality is that flash flooding often washes out roads near Yucca and leads to sudden large influxes of water into existing fault areas.

7. *How difficult has it been for you to obtain emails and other documents relating to the science at Yucca Mountain from the Department of Energy?*

- In responding to Nevada's Freedom of Information Act requests pertaining to the Yucca project, DOE has recently begun to take an unreasonably expansive view of the "deliberative process" and "attorney work product" privileges to deny Nevada information. Accordingly, Nevada has been appealing such requests, and may be forced to challenge the withholding of documents in court. Under Section 117 of the Nuclear Waste Policy Act, Nevada was to have been given full and timely access to all Yucca project documents. DOE recently turned down two requests by the Governor of Nevada for documents pursuant to this provision, and the Governor has now submitted a follow-up request to the President. With respect to DOE's archival emails, Nevada was forced to challenge DOE's non-production of over 4 million such emails in a proceeding before NRC's pre-application licensing review board last summer. That three-judge panel struck DOE's certification of compliance with document production and ordered DOE to produce to Nevada the 4 million emails in any follow-up certification. Nevada has seen only a handful of such emails to date.

8. *Based on your review of the e-mails the Subcommittee released in redacted form to the public, in addition to the attachments to your testimony, are the scientists who are studying Yucca Mountain able to freely express their views and voice*

*their concerns or are they being forced to reach a conclusion by management officials?*

- The emails collectively appear to illustrate a culture of intimidation and fear among the working scientific staff, one in which management is exerting budgetary pressure as well as managerial pressure to "get the job done." This is the type of culture that, in my experience, has shut down entire operating nuclear facilities for years at a time, for example, the South Texas Nuclear Project, Millstone, Cooper, Davis Besse, and others. NRC insists on a safety culture that is conducive to putting safety first, not last, and, though invoking no specific regulatory authority, has occasionally taken draconian measures against licensees that persistently fail to understand this.

9. *Are the frustrations of the scientists expressed in the emails an isolated concern, or are they an indication of a much more serious problem in the science?*

- It is my view that the emails reflect a much more fundamental problem, indeed a rebellion, that commenced in the time frame of 1996 and proceeded through to the site recommendation in 2002. The cause of the rebellion was the discovery that Yucca could not qualify under the original site suitability rules, and the abandonment of further site characterization in the face of a wholesale rule change that would place total reliance on the waste packages. The cynical attitude reflected in the emails appears to have permeated the DOE staff and is evident in briefings to the Technical Review Board and the Advisory Committee on Nuclear Waste, as well as elsewhere in the administrative record of DOE's site suitability determination. *See* Nevada's brief in support of its "Guidelines Case" against DOE, available at http://www.state.nv.us/nucwaste/news2002/nv021203.pdf, pp. 27-39.

10. *Is it your belief that scientists working on the project are under so much pressure to meet deadlines that they may be tempted to take shortcuts in their work, or to falsify reports?*

- I believe that scientists on the project are not only under so much pressure that they may be tempted to take shortcuts, but that they are in many instances *instructed* to take shortcuts by senior management, sometimes apparently against their will. We have seen this in the record of the silicosis class-action case at Yucca, in the administrative record of our two National Environmental Policy Act cases involving DOE and Yucca, and in our site suitability guidelines case against DOE. Everywhere you look, the game is cutting corners at a minimum, or fabricating evidence at a maximum. In my experience, scientists are generally among society's most honest and admirable people. To get them to cut corners unscientifically, or to get them to falsify records, requires extraordinary intervening action by program management, in my view.

11. *Please comment on the culture of the Yucca Mountain Project, which appears to tolerate sloppy and inadequate work simply to achieve an end result.*

- The culture of the Yucca Mountain Project appears to be one in which the end justifies the means, and in which safety takes a back seat to expediency. I have litigated so-called "problem plant" nuclear cases involving nuclear plants with poor management culture that were shut down by NRC for long periods of time, generally on behalf of minority owners of such plants against the plant operator. I have never witnessed a nuclear safety culture as bad as that pervading the Yucca project.

12. *At the hearing, DOE indicated a commitment to address and improve its quality assurance program at Yucca Mountain. What is your view of DOE's quality assurance program and please discuss its ability to take the appropriate corrective measures?*

- DOE has been plagued by quality assurance problems at Yucca since the inception of the project. This is likely an outgrowth of the fact that DOE has been regulating itself since it was formed in 1976, and has never been subjected to NRC regulation. Thus, although the nuclear industry generally has become accustomed to quality assurance and the very high level of care and attention it demands, DOE has treated it more as an afterthought, as witnessed by numerous GAO and NRC audits pointing to DOE's unacceptable QA and to its lack of ability to adapt to a QA culture. I have little or no faith in DOE's ability to fix its own QA problems, particularly in advance of actual NRC regulation and enforcement action.

13. *Based on your review of the documents released by the Subcommittee, does it appear that project members are actively seeking to circumvent quality control requirements? Please comment.*

- It appears that DOE participants at Yucca may indeed have been actively attempting to circumvent QA requirements in the 1997-2000 time frame. Whether this remains the case is subject to investigation. For the most part, it appears to me that DOE's senior management undervalues the importance of QA. Whether this has arisen to actual malfeasance is a question Nevada will pursue in discovery in the licensing proceeding.

14. *In your attachments there is an e-mail with the subject, "water, water everywhere." Apparently, this e-mail is about a heater test which produced a large amount of water in the tunnel system. I understand that the storage of nuclear waste in the tunnel complex will produce a large amount of waste heat. If heat produces water in the tunnel system, how is this going to affect the storage of the waste in the casks?*

- DOE and its peer reviewers have long recognized that waste heat will compound the risk of water infiltrating into the Yucca repository system by releasing it from the Yucca rock or by causing it to boil and vaporize on the ceiling of the repository, causing dripping. It is for this reason that most independent reviewers such as the Technical Review Board have encouraged DOE to shift to a so-called "cold" repository design where the temperature from waste heat is below the boiling point of water. DOE has refused to go to a cold repository for reasons of expediency, cost, and politics. In my view it will be much harder for DOE to license a hot repository.

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Gregory Friedman – IG/DOE

- Pursuant to internal documents supplied by DOE, there appears to be a huge gap of time between the first week of December 2004 when knowledge of the e-mails was first known and March 9, 2005, when action was prompted by a conversation about other e-mails, which led to the ultimate DOE public notification regarding the allegations.
    - When did DOE first have knowledge of the issues contained in the e-mails?
    - What action was taken at that time?

- How many hydrologists and/or other employees were involved in preparing the water infiltration studies at Yucca Mountain during the period from 1998-2000? Were they all USGS employees?

- What role did Bechtel SAIC play in the discovery of the e-mails in question?

- Why did it take so long to find out that these e-mails existed?

- What determinations have you made with regard to oversight, or lack thereof, with regard to discovery of these e-mails dating back to 1998?

- How long have DOE's Yucca managers known about these and/or other falsifications?

- If other falsifications were discovered prior to the discovery of the e-mails in question, was there any investigation into the matter?

- What are the possible repercussions and/or federal penalties of this with regard to the employees? Legal repercussions? Will the employees be dismissed?

- What other agencies are involved in the investigation?

- Your testimony indicates that you are working with the FBI, therefore, can you confirm that you have, in fact, referred the case to the U.S. Attorney's Office for a criminal prosecution?

- Is this a situation of an isolated instance involving minor quality assurance or paperwork irregularities or does it appear to be more than that?

- Pursuant to questions raised in Attorney General Sandoval's testimony, please respond to the following:
    - How pervasive is the falsification of data and the manipulation of information? Are the recent disclosures merely, as many suspect, only the tip of the iceberg?
    - What was DOE's role in fudging data? Is it reasonable – or even believable – to think that the USGS scientists blithely did this on their own, or were they acting on instructions from DOE managers?
    - Is it reasonable to assume that this is an isolated instance implicating only one DOE contractor, USGS, or is there evidence of a broader, program-wide effort to coerce contract scientists to manipulate information to fit predetermined conclusions?

- Has the entire Yucca Mountain database been secured to freeze data and information sources in an effort to protect against manipulation and, if so, when?

- To date, have you made any preliminary determination on the validity of the material misrepresentations or falsification of information alleged?

- Have all e-mails from the employees in question been obtained and/or reviewed to determine the scope of their activities and impact on project products?

- Have you identified any others who might have been associated with employees in question?

- Have all e-mails been obtained and/or reviewed from and to all individuals who corresponded with the employees in question to determine whether they engaged in unacceptable activities and, if so, the extent of those impacts on project products?

- Have the individuals who are technical leads responsible for the products potentially affected by either the employees in question, or any other individuals whose work may be revealed as suspect, been contacted to determine the extent of impacts on the quality and acceptability of the affected products?

- Thus far, has there been any attempt to fix any products?

- My reading of the e-mails indicates to me that the water infiltration study was a complete fabrication. Do you agree that the water infiltration study is totally unreliable or, at the very least, in serious doubt?

- What is the federal penalty for Federal employee falsification of documents?

- The scope of the investigation is unclear. Please explain the scope in detail.

- Also, please clarify whether the investigation will only identify who falsified the data (or who acted in a complicit manner) and the extent of the wrongdoing or whether the investigation will also aim to determine which data needs to be re-collected and which documents and records need to be reassessed that relied upon the falsified data?

The Honorable Jon Porter
Chairman
Subcommittee on Federal Workforce
and Agency Organization
Committee on Government Reform
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman :

This is in response to your letter dated April 14, 2005, regarding follow-up questions to the April 5, 2005, hearing titled, "Yucca Mountain Project: Have Federal Employees Falsified Documents?" In preparing our responses, we numbered the questions sequentially, as shown in the enclosure.

This office is committed to responding to your questions and concerns. However, as you know, a joint criminal investigation is ongoing, and we are actively interviewing witnesses and analyzing relevant documentation. Consequently, we have not as yet drawn conclusions regarding the case. Thus, we must defer responses to questions 5, 11, 12a-d, 14, and 20.

Additionally, at this time, we are not able to answer questions 1a-b, 2a-b, 3, 4, 6, and 19. The Department of Energy's Office of Civilian Radioactive Waste Management, the office with programmatic responsibility and oversight of the Yucca Mountain Project, may be best suited to initially answer these questions. The Office of Inspector General may be able to provide supplemental information as the investigation progresses.

Our responses to the questions are provided in the enclosed document. Please do not hesitate to contact me if I may be of further assistance.

Sincerely,

Gregory H. Friedman
Inspector General

Enclosures

**U.S. Department of Energy**
**Office of Inspector General**
**Gregory H. Friedman**

**Responses to "Questions Submitted for The Record" by the Subcommittee on Federal Workforce and Agency Organization—**
**Yucca Mountain Project: Have Federal Employees Falsified Documents?**

Question 7

*If other falsifications were discovered prior to the discovery of the e-mails in question, was there any investigation into this matter?*

The Office of Inspector General (OIG) has not previously investigated allegations similar to the issues raised by the e-mails in question.

Questions 8

*What are the possible repercussions and/or federal penalties of this with regard to the employees? Legal repercussions? Will the employees be dismissed?*

Administrative penalties may range from a minor administrative action such as an oral reprimand to removal from Federal service. The appropriate administrative penalty against an employee is determined by the supervisor, who relies on agency guidelines in consultation with human resources personnel.

Possible legal repercussions include criminal prosecution. With respect to criminal statutes, the primary applicable statute in this case is Title 18, U.S.C., Section 1001 (False Statements). The U.S. Attorney's Office will be responsible for rendering a prosecutive decision on this matter.

Question 9

*What other agencies are involved in the investigation?*

With regard to criminal matters, the OIG is conducting a joint criminal investigation with the Department of Interior's OIG and the Federal Bureau of Investigation (FBI).

Question 10

*Your testimony indicates that you are working with the FBI, therefore, can you confirm that you have, in fact, referred the case to the U.S. Attorney's Office for a criminal prosecution?*

We have consulted with the U.S. Attorney's Office and are providing periodic briefings on the progress of the criminal investigation.

Question 13

*Has the entire Yucca Mountain database been secured to freeze data and information sources in an effort to protect against manipulation and, if so, when?*

At the onset of the investigation, the OIG requested and received assorted documentation from the Department. When asked about the protection and retention of records, the Department has advised us that an independent subcontractor — through a contract with the Department of Justice (DOJ)—maintains and archives Yucca Mountain documentation, including e-mail messages. The DOJ subcontractor has told us the archived e-mail data would not be deleted. Additionally, the OIG has sent a letter to the subcontractor advising it to take appropriate steps to ensure backup tapes are not altered or destroyed.

Question 15

*Have all e-mails from the employees in question been obtained and/or reviewed to determine the scope of their activities and impact on project products?*

The OIG has obtained thousands of e-mails associated with employees involved in the communications in question. They are being analyzed at this time.

Question 16

*Have you identified any others who might have been associated with employees in question?*

As noted, a review of e-mails is underway. Further, we have a large number of personal interviews and other document reviews in process. These activities may result in the identification of additional persons of interest.

Question 17

*Have all e-mails been obtained and/or reviewed from and to all individuals who corresponded with the employees in question to determine whether they engaged in unacceptable activities and, if so, the extent of those impacts on project products?*

The OIG has obtained thousands of e-mails associated with employees directly involved in the communications in question. Our review will, as well, include e-mail traffic and related documents from other personnel who may have engaged in unacceptable activities. The OIG will follow the facts wherever they may lead.

Question 18

*Have all the individuals who are technical leads responsible for the products potentially affected by either the employees in question, or any other individuals whose work may be revealed as suspect, been contacted to determine the extent of impacts on the quality and acceptability of the affected products?*

The OIG will interview individuals necessary to resolve related questions.

Question 21

*What is the Federal penalty for Federal employee falsification of documents?*

As noted in our response to Question 8, with respect to criminal statutes, the primary applicable statute is Title 18, U.S.C., Section 1001 (False Statements). The U.S. Attorney's Office will be responsible for rendering a prosecutive decision on this matter. Administrative penalties may range from a minor administrative action such as an oral reprimand to removal from Federal service. It is too early in the current OIG case, however, to comment more fully on this matter.

Question 22

*The scope of the investigation is unclear. Please explain the scope in detail.*

The primary focus of the criminal investigation is the alleged falsification of documents relating to aspects of water infiltration studies. Included in our investigation are any and all possible false statements referred to in the range of e-mails that have been under scrutiny. The investigation will endeavor to determine (1) if falsification occurred, (2) if so, what was falsified (e.g., scientific data, quality assurance documents, or other records), and (3) if any falsifications meet the standards of relevant criminal statutes, such as Title 18, U.S.C. Section 1001 (False Statements). This, however, is the starting point. New information pertinent to this matter that comes to the attention of the OIG—whether it relates to water infiltration or any other aspect of the Yucca Mountain Project—will be evaluated to determine if further criminal investigation is warranted. During the course of this and all criminal investigations, the OIG is specifically mindful

of internal control problems that may have led to an environment in which the alleged criminal act took place.

Question 23

*Also, please clarify whether the investigation will only identify who falsified the data (or who acted in a complicit manner) and the extent of the wrongdoing or whether the investigation will also aim to determine which data needs to be re-collected and which documents and records need to be reassessed that relied upon the falsified data?*

The primary focus of the investigation is the alleged criminal falsification of documents and data. The materiality of any false statements, however, is an important consideration for determining prosecutive merit. The outcomes of the various ongoing technical assessments—both internal and external—will provide critical information for the investigators and the U.S. Attorney's Office. These studies may provide insight into what aspects of the studies in question require recollection and reassessment of data by the Department. Additionally, our work may impact the Department's determinations.

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## John Garrick, U.S. Nuclear Waste Technical Review Board

- If the allegations are proven true, what is the impact the "sound science" of the project?

- We know for certain that the e-mails in question were written during the time that DOE was rushing to prepare and submit a license application to the NRC. How many times has DOE asked for an extension in filing the license application and what reasons were given in support of an extension of time?

- Based upon DOE's persistent quality assurance failures and in light of the recent controversy documenting employee falsification of scientific studies, what is the Board's position regarding the current state of the scientific credibility of the project?

- Should the allegations be proven true, what is the board's recommendation regarding the continuation of the project?

- It is my understanding that this past February (February 8, 2005) the Board called for hearings in March to review concerns over the corrosion of the titanium drip shields that are intended to keep water from leaking into casks inside Yucca Mountain. Have you held those hearings and, if so, what were your findings?

- Given the fact that DOE is self-regulated and can chose not to implement the recommendations of the Board, has there ever been a feeling among the Board that DOE uses its privilege to hide information?

- Based upon your review, has DOE come up with a plan for safely transporting nuclear waste to the proposed repository?

- To your knowledge, what has DOE done to study the transportation issues?

- If scientific studies concerning the hydrology and geology of Yucca Mountain were falsified, and if falsified reports were used as the basis for other work, how would that affect the overall reliability of the scientific studies at Yucca Mountain?

- Based on the quality of the science seen in the e-mails we have released, can we be certain that the waste stored at the site can be safely contained for even several hundred years?

- Does the NWTRB plan any particular action in response to these charges? (Such as revisit previous conclusions or more aggressive review of DOE)

UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD
2300 Clarendon Boulevard, Suite 1300
Arlington, VA 22201

April 29, 2005

The Honorable Jon Porter
Chairman
Subcommittee on the Federal Workforce
and Agency Organization
Committee on Government Reform
U.S. House of Representatives
B-373A Rayburn House Office Building
Washington, DC 20515

Dear Chairman Porter:

Thank you very much for the opportunity to present the views of the Nuclear Waste Technical Review Board at a hearing before the Subcommittee on the Federal Workforce and Agency Organization on April 5, 2005. Enclosed are responses to follow-up questions from that hearing that were transmitted in your letter of April 14, 2005.

As you know, the Board is charged by Congress with conducting an ongoing and independent review of the technical and scientific validity of activities undertaken by the Secretary of Energy associated with implementing the Nuclear Waste Policy Act. The Board provides its technical views to help inform the consideration of issues related to the management and disposal of spent nuclear fuel and high-level radioactive waste.

Please do not hesitate to contact me or have your staff contact Bill Barnard, Board Executive Director, if you have questions related to the Board's responses or any other issue related to the Board's technical and scientific review.

Sincerely,

B. John Garrick
Chairman

Enclosure

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**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For the Record**
**Submitted April 8, 2005**
*Answers Submitted April 29, 2005*

## John Garrick, U.S. Nuclear Waste Technical Review Board

- **If the allegations are proven true, what is the impact the "sound science" of the project?**

  Answer: It is not possible to reach conclusions about what effect, if any, there may be on the scientific program until investigations currently under way at the Department of Energy (DOE) and the Department of the Interior (DOI) are concluded. At that point, the Board will evaluate the results of the investigations to determine if they have implications for the validity of the DOE's technical and scientific work. In the meantime, the Board will continue reviewing the technical and scientific validity of ongoing DOE activities. In accordance with its mandate established in the Nuclear Waste Policy Amendments Act, the Board will report its findings and recommendations from those evaluations to Congress and the Secretary of Energy.

- **We know for certain that the e-mails in question were written during the time that DOE was rushing to prepare and submit a license application to the NRC. How many times has DOE asked for an extension in filing the license application and what reasons were given in support of an extension of time?**

  Answer: The Board's understanding is that the DOE decides when to submit a license application (LA). Consequently, any deadline that the DOE might have had for submitting an LA would have been self-imposed.

- **Based upon DOE's persistent quality assurance failures and in light of the recent controversy documenting employee falsification of scientific studies, what is the Board's position regarding the current state of the scientific credibility of the project?**

  Answer: The Board believes that a rigorous quality assurance program is important for this scientific program. However, deficiencies in complying with quality assurance requirements, which are monitored by the Nuclear Regulatory Commission (NRC), may or may not significantly affect the DOE's technical and scientific findings. The Board will review this matter when investigations currently under way at the DOE and the DOI are concluded. In the meantime, the Board will continue evaluating the technical and scientific validity of the DOE's ongoing activities and providing its straightforward assessment to Congress and the Secretary.

- **Should the allegations be proven true, what is the board's recommendation regarding the continuation of the project?**

  Answer: At this time, the Board does not know how the allegations, if proven true, would affect the DOE's technical and scientific program. In any case, a decision related to continuing the Yucca Mountain program is a matter of policy that is well beyond the Board's technical and scientific purview. Through its regular and special reports, the Board provides technical and scientific information to policy-makers, who can then use the Board's assessment when making policy decisions. As has always been the case, if at some point the Board were to determine that a condition or conditions existed that clearly made the site unsuitable, the Board would make its opinion known to Congress and the Secretary immediately.

- **It is my understanding that this past February (February 8, 2005) the Board called for hearings in March to review concerns over the corrosion of the titanium drip shields that are intended to keep water from leaking into casks inside Yucca Mountain. Have you held those hearings and, if so, what were your findings?**

  Answer: No "hearings" were requested, but the Board did ask the DOE to discuss the drip shields at our next meeting. That meeting is currently planned for November 8, 2005, in Las Vegas, Nevada.

- **Given the fact that DOE is self-regulated and can choose not to implement the recommendations of the Board, has there ever been a feeling among the Board that DOE uses its privilege to hide information?**

  Answer: Congress clearly intended that the Board function as a peer reviewer – not as a regulator or a program manager. While it is true that the Board was not granted authority to implement its recommendations, Congress provided the Board access to all information necessary for conducting its ongoing review, including draft documents produced by the DOE. Over the years, all the documents that have been requested from the DOE, including drafts, have been provided within a reasonable time frame. However, the Board can only request and evaluate information that it knows about.

- **Based upon your review, has DOE come up with a plan for safely transporting nuclear waste to the proposed repository?**

  Answer: The DOE is developing a plan and is working on the integration of waste management activities. Although at this point the Board has no reason to believe that a safe transportation system cannot be developed, the DOE has a great deal of work to do before it can claim credibly that it has a workable plan in place for safely transporting spent nuclear fuel or high-level radioactive waste.

- **To your knowledge, what has DOE done to study the transportation issues?**

  Answer: The DOE reported on its efforts to develop a transportation system at four Board meetings held in the last year and a half. Examples of DOE activities that were discussed at those meetings include developing a systematic approach to transportation planning; identifying critical transportation planning components and their interdependencies; developing tools and analyzing issues associated with ensuring safe, secure, and efficient transportation; and working on the integration of transportation activities with activities related to the transfer of spent nuclear fuel and high-level radioactive waste at generation sites and with the receipt and handling of the wastes at the proposed repository site. For much more detailed information on the DOE presentations, transcripts of Board meetings and Board letters to and from the DOE are available on the Board's Web site at, www.nwtrb.gov.

- **If scientific studies concerning the hydrology and geology of Yucca Mountain were falsified, and if falsified reports were used as the basis for other work, how would that affect the overall reliability of the scientific studies at Yucca Mountain?**

  Answer: If data or analyses were falsified and if those data or analyses significantly affected repository performance estimates, the consequences could be serious. However, the Board has no evidence at this point to indicate that that is the case. It is not clear how a change in a single parameter would affect the DOE's estimates of repository performance, which are based on a range of values. The Board will look very carefully at this issue.

- **Based on the quality of the science seen in the e-mails we have released, can we be certain that the waste stored at the site can be safely contained for even several hundred years?**

  Answer: Drawing conclusions about the quality of the science is not possible until the results of investigations currently under way at the DOE and the DOI are known. To date, the Board has seen no evidence suggesting that the containment capability of the repository would be limited to a few hundred years.

- **Does the NWTRB plan any particular action in response to these charges? (Such as revisit previous conclusions or more aggressive review of DOE)**

  Answer: The Board's technical and scientific evaluation of the DOE's work is ongoing and vigorous. Consequently, the Board reviews its findings and analyses whenever necessary or appropriate. As stated previously, the Board will evaluate the results of the DOE and DOI investigations when they are available and will determine their implications for the validity of the DOE's technical and scientific work. In the meantime, the Board will continue reviewing the DOE's ongoing activities. In accordance with its congressional mandate, the Board will regularly and candidly report its findings and recommendations to Congress and the Secretary of Energy.

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Ted Garrish – OCRWM, DOE

- Please outline to the Subcommittee in explicit detail when and how DOE first discovered the e-mail correspondence discussing the falsification of documents and every step DOE took in response to that discovery.

- Please provide the Subcommittee copies of all documents and/or case files of every whistle blower case involving employees who have at one time worked on the Yucca Mountain project

- At the hearing you stated the following three steps that DOE is taking to address this matter. Please explain how and when you intend to accomplish these steps and describe each step in further detail:
  - (1) IG non-technical investigation;
  - (2) Review of impact on the science involved and how it affects the technical work; and
  - (3) conducting a review of overall quality assurances measures.

  Moreover, please provide any internal documents that relate to each of the above three steps in unredacted form.

- Could you state for the record the significance of water infiltration and climate studies to the Yucca Mountain project?

- With regard to the e-mails in question dated 1998 – 2000, did DOE freely disclose on its own initiative the fact that the e-mails evidenced falsified data or was the information disclosed pursuant to the NRC's Licensing Board Order last August requiring DOE to produce all of its "archival" emails and other withheld records given problems with DOE's document certification? In essence, I am asking if this was a forced disclosure?

- In April 2004 of last year, GAO issued a report on the quality assurance problems with the project. GAO found that DOE "*has not solved the quality assurance problems or corrected management weaknesses, and that future actions are needed...and the quality assurance problems could delay the licensing process.*" Here we are a year later and it is obvious that quality assurance problems still persist. Why has DOE persisted in its repeated failures to take effective corrective measures to meet quality assurance standards?

- As the project falls further and further behind schedule and deadlines are extended, the project is hemorrhaging money. How much money has been spent on the project to date? What is the estimated total cost of completion?

- Why has DOE not made the evidence available to the State of Nevada and other entities charged by the Nuclear Waste Policy Act with overseeing DOE Yucca Mountain activities?

- What is DOE's response to the Nevada Attorney General's request to freeze the database to protect against manipulation of further incriminating information?

- There has been testimony offered today suggesting that DOE has been practicing "advocacy science" at Yucca Mountain since its inception as the proposed repository site, adopting a "whatever it takes, make the site work – or at least make it appear to work."

    - What, if any, are the funding problems and/or management problems associated with the project?
    - What type of training does DOE provide to project personnel?
    - In the past, what had DOE done to mandate strict adherence to quality assurance standards?

- Why were the e-mails referring to the falsification of documents, which date back to 1998, not discovered earlier? Why has it taken 7 years to discover?

- DOE has previously claimed that pursuant to privilege grounds it can withhold key documents from public review. What does DOE consider "privileged" documents?

- What is the current status of the work to which the employees in question contributed, *i.e.*, is there a technical review of the work underway?

- Have you identified any work that has been adversely affected that will have to be redone using the correct QA procedures?

- What course of action are you taking to deal with potential program vulnerabilities at this time?

- How does the implication of the information contained in the e-mails impact the site recommendation? Further, do you believe that the questionable data has any meaningful effect on the results supporting the site recommendation?

- Have you taken any actions thus far to address and improve systemic quality assurance problems to prevent recurrence of such situations in the future?

- In addition to employee falsification of documents, there are also indications that several instruments were not calibrated correctly before they were used to take measurements. What kind of measurements and/or tests are at issue here, and how significantly does improper calibration of instrumentation and equipment affect the results of those tests?

- Quality assurance is meant to demonstrate that scientific data and conclusions are accurate by illustrating the processes by which data was collected and conclusions made. It is standard that respected scientists leave a detailed description of their sources to verify their conclusions; otherwise, their work is considered incomplete and unproven. Why does DOE refuse to document its evidence and verify its conclusions from research at Yucca Mountain like any other scientific entity?

- In its comments to the April, 2004,GAO report, DOE notes that the number of quality problems identified by managers themselves have increased 100 percent. DOE claims that this is one improvement in quality assurance that GAO did not acknowledge. While I agree that identifying mistakes early is important to verifying scientific work, I do not agree that finding twice as many mistakes should be considered an improvement. Why had DOE focused on finding more mistakes rather than preventing them? Isn't DOE wasting money by having to re-do its work instead of taking time to do it right?

- Several times, my office has been contacted by current or former employees of the Yucca Mountain project who were disciplined for pointing out safety problems or refusing to falsify documents. GAO notes that the work environment at Yucca Mountain precludes employees from voicing concerns to their managers. However, DOE continues to claim that it creates an environment where "employees feel free to raise concerns about quality or safety without fear or reprisal," which is in direct contradiction to what I hear from former employees who were demoted or fired. It appears that DOE is imagining a fictional work environment where scientific integrity and safety come first. Is this the kind of approach we should continue to expect from DOE, one that makes good scientists hide the scientific knowledge and experience for which they were hired?

- The GAO has noted several times that the Yucca Mountain project has experienced serious problems with its data management and its computer software. In response to this, DOE notes its closure of corrective actions cases on these issues as proof that it took effective corrective actions. GAO notes in its report that DOE did not take the time to find out if its actions were effective before closing these cases. How do we know these problems have been fixed, or even if they will be fixed?

- GAO repeatedly notes that although DOE has set end goals to fix quality assurance problems, it lacks objective measurements of success and timelines for achieving those goals. It seems that DOE is not concerned about whether these problems are resolved, only whether it took some administrative action to skim

the problem to appease auditors. How will DOE know if its actions actually corrected the problems they claim to correct?

- Over and over again, GAO has noted that the Department of Energy does not take quality assurance seriously even though a well-structured and enforced quality assurance program is critical to its operating license application for the Nuclear Regulatory Commission. An audit in 1988, 17 years ago, found that the DOE had a "negative attitude" toward quality assurance. Since then, several GAO reports have noted quality assurance problems at Yucca Mountain, quick-and-dirty fixes to these problems, and continuation of the same problems when the GAO investigates them again. Now, there is evidence that workers were pressured to invent data that supported DOE's desired conclusion. After 17 years of documented disregard for the accuracy of its scientific work, how can DOE be trusted to provide sound science supporting this project?

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Charles Groat – USGS, DOI

- Please outline to the Subcommittee in explicit detail when and how U.S.G.S. first discovered the e-mail correspondence discussing the falsification of documents and every step U.S.G.S. took in response to that discovery.

- How long have the employees in question been employed with the USGS?

- Have there been any prior disciplinary problems or incidence of employee misconduct associated with these employees?

- You testified that the USGS employees in question are still employed with USGS pending completion of the Inspector General investigations. Where are the employees in question working at this time? What type of work are they conducting, *i.e.*, the same type of hydrology studies they performed at Yucca Mountain?

- How many USGS employees in total are currently employed at the Yucca site?

- Some of the e-mails in question contain statements suggesting mismanagement by USGS. For example, one employee states, "*In all honesty I've never felt well managed or helped by the USGS YMP folks, in fact, as you know, I've often felt abandoned.*"

    - What USGS management procedures and policies were in place with regard to USGS scientists working on the Yucca Mountain project?
    - How did USGS and DOE officials coordinate the management of USGS employees working on the project?

- What internal sanctions does USGS have in place for violations of professional responsibility?

- Is it still your position that there exists an adequate scientific basis for finding the site suitable?

- Is it still your position that the Secretary of Energy should proceed to recommend the site?

- In light of the recent controversy, do you have any further comments to make on any relevant aspect of the Yucca Mountain site for use as a repository?

In Reply Refer To:
Mail Stop 119

May 17, 2005

Honorable Jon C. Porter
Chairman, Subcommittee on the Federal Workforce
and Agency Organization
Committee on Government Reform
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed please find the U.S. Geological Survey response to each of the questions provided to us in your letter of April 14, 2005. These questions are follow up to the April 5, 2005, hearing titled, "Yucca Mountain Project: Have Federal Employees Falsified Documents?" An email response also has been sent to Reid Voss (reid.voss@mail.house.gov), per the Subcommittee's request.

Sincerely,

// signed //

Charles G. Groat
Director

Enclosure

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted for the Record**
**Submitted April 8, 2005**

**U.S. Geological Survey Response**
**May 2005**

- **Please outline to the Subcommittee in explicit detail when and how U.S.G.S. first discovered the e-mail correspondence discussing the falsification of documents and every step U.S.G.S. took in response to that discovery.**

  On March 14, 2005, I learned from the Department of the Interior (DOI) that the Department of Energy was investigating whether U.S. Geological Survey (USGS) scientists working on the Yucca Mountain Waste Repository Project six years ago committed improprieties in the quality assurance process. After I received copies of the e-mail correspondence among the scientists then working on the Yucca Mountain Project, I contacted DOI's Inspector General (IG). The IG began an investigation and asked the USGS to refrain from its own review of these charges while the IG investigation continues. I have begun discussions with the IG and others to determine how the USGS can best undertake a review of the science referenced in the e-mails without compromising the investigation into the allegations of impropriety in the quality assurance process.

- **How long have the employees in question been employed with the USGS?**

Alan L. Flint
USGS Employee, 1986-present

Lorraine E. Flint
Contractor, 1986-1993
USGS Employee, 1994-present

Joseph A. Hevesi
Contractor, 1988-1992
USGS Employee, 1992-present



Charles G. Groat
Director, U.S. Geological Survey

- **Have there been any prior disciplinary problems or incidence of employee misconduct associated with these employees?**

  There are no records reflecting disciplinary action taken for the above listed employees.

- **You testified that the USGS employees in question are still employed with USGS pending completion of the Inspector General investigations.**
  - **Where are the employees in question working at this time?**
  - **What type of work are they conducting, i.e., the same type of hydrology studies they performed at Yucca Mountain?**

Alan L. Flint
1997—Sacramento, CA (USGS California Water Science Center)
Research Hydrologist

Lorraine E. Flint
1997—Sacramento, CA (USGS California Water Science Center)
Research Hydrologist

Joseph A. Hevesi
1999—Sacramento, CA (USGS California Water Science Center)
Research Hydrologist

All three employees are engaged in a variety of studies related to the hydrology of arid lands. These include studies of water infiltration, evapotranspiration, and water and contaminant movement in streams and in the unsaturated zone.



Charles G. Groat
Director, U.S. Geological Survey

- **How many USGS employees in total are currently employed at the Yucca site?**

  There are a total of 40 USGS employees working in the Yucca Mountain Project Branch (YMPB). One is employed at the Nevada Test Site, Area 25 (Yucca Mountain); five are employed in Las Vegas, Nevada; and 34 are employed in Denver, Colorado. These YMPB employees are supplemented from time-to-time with other USGS employees based on project needs.



Charles G. Groat
Director, U.S. Geological Survey

- **Some of the e-mails in question contain statements suggesting mismanagement by USGS. For example, one employee states, *"In all honesty I've never felt well managed or helped by USGS YMP folks, in fact, as you know, I've often felt abandoned."***

  - **What USGS management procedures and policies were in place with regard to USGS scientists working on the Yucca Mountain project?**

    Standard Department of the Interior and USGS management procedures and policies, consistent with the USGS role as a Federal agency (as identified in the Departmental and Survey Manuals, which lay out the core policies and procedures of the Department and the bureau) were/are in place with regard to USGS scientists working on the Yucca Mountain Project.

    These procedures and policies were/are supplemented by procedures and policies developed by the DOE specific to the Yucca Mountain program. The Interagency Agreement between the USGS and the DOE, as well as a three-party Memorandum of Understanding between the DOE, the USGS, and the DOE's Management and Operating Contractor, provide the framework for application of these additional procedures and policies. [Subcommittee staff has been provided a copy of the aforementioned Interagency Agreement and the Memorandum of Understanding.]

  - **How did USGS and DOE officials coordinate the management of USGS employees working on the project?**

    Management of USGS employees working on the project was retained by the USGS through the line-management structure of the YMPB.

- **What internal sanctions does USGS have in place for violations of professional responsibility?**

  The USGS is bound by the provisions of the Department of the Interior Table of Penalties and the requirements contained in 5 CFR 752. The Water Resources Program has the following policy in place (see attached Water Resources Division Memorandum No. 98.10: Water Resources Division Policy on Data Integrity).



Charles G. Groat
Director, U.S. Geological Survey

- **Is it still your position that there exists an adequate scientific basis for finding the site suitable?**

  The USGS stands by its letter of October 4, 2001, to the Under Secretary of Energy, Science, and Environment, in which we commented about the Yucca Mountain Site within the scope of our earth science expertise and remained neutral regarding other information the Secretary of Energy may consider. In the letter, we state USGS believes that the scientific work performed to date supports a decision to recommend Yucca Mountain for development as a nuclear waste repository. Since that time, we have made no findings that would change our support for the decision. For your full information, attached is a copy of the October 4, 2001, letter, including a more detailed discussion of the topics in the letter.



Charles G. Groat
Director, U.S. Geological Survey

- **Is it still your position that the Secretary of Energy should proceed to recommend the site?**

  The USGS, within the scope of its earth science expertise, and remaining neutral regarding other information the Secretary of Energy may consider, still supports the decision to recommend Yucca Mountain for development as a nuclear waste repository.



Charles G. Groat
Director, U.S. Geological Survey

- **In light of the recent controversy, do you have any further comments to make on any relevant aspect of the Yucca Mountain site for use as a repository?**

  We, as do you, look forward to the completion of the ongoing investigations to fully determine the impacts and appropriate responses.



Charles G. Groat
Director, U.S. Geological Survey

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Governor Guinn

- Your written statement indicates that you co-authored a letter to the Secretary of Energy when you became Governor, referencing evidence of rapid groundwater movement. Did you ever receive a response of any kind from the Secretary addressing that concern?

- In your testimony you indicated that a nuclear repository at Yucca Mountain is not only bad for the people of Nevada, but also bad for people across the Nation as well. For the record, could you please explain the potential impact it has nationwide?

- It is my understanding that you recently sought to invoke Nevada's prerogative under Section 117 of the Nuclear Waste Policy Act (NWPA) to demand full and complete information from the Secretary of Energy on the Yucca project. To date, have you received full and complete information as requested from the Secretary? Please explain.

- Given the close proximity to Las Vegas (Yucca Mountain being 90 miles northwest of Las Vegas), Las Vegas has passed a law making it illegal to haul nuclear waste through the city. Could you comment on this and other measures the State has undertaken to protect its citizens from nuclear waste spills and/or accidents at such time the waste is actually transported to the site?

April 21, 2005

The Honorable Jon Porter, Chairman
Subcommittee on the Federal Workforce
And Agency Organization
Committee on Government Reform
U.S. House of Representatives
2157 Rayburn House Office Building
Washington, DC 20515-6143

Dear Chairman Porter:

As requested in your April 14, 2005 letter, I am providing you with the following responses to follow-up questions to the April 5th hearing on disclosures of falsified documents in the Yucca Mountain project.

***Question: Your written statement indicates that you co-authored a letter to the Secretary of Energy when you became governor, referencing evidence of rapid groundwater movement [at the Yucca Mountain site]. Did you ever receive a response of any kind from the Secretary addressing that concern?***

Response:

On December 4, 1998, as governor-elect I joined with then-governor Bob Miller in writing to Secretary of Energy Bill Richardson asking that Yucca Mountain "be immediately removed from consideration for a repository because it meets the conditions of the Department's guidelines for disqualification with respect to the rapid flow of groundwater from the proposed repository to the accessible environment." In that same letter, we also noted numerous other factors that, taken together, presented a picture of the Yucca Mountain site as one unsuitable for development as a repository. On December 18, 1998, Secretary Richardson responded to our letter by writing:

> At this time ... the Department disagrees with the conclusion that the site should be disqualified as a potential site for the disposal of high-level nuclear wastes. The Department believes that its work to date finds nothing to preclude continued scientific and technical evaluation of Yucca Mountain.

> While restating DOE's position that groundwater travel time at Yucca Mountain was "greater than 1,000 years" (the minimum time for water to travel through the repository to the accessible environment permitted under DOE's guidelines), Secretary Richardson indicated that "additional study is warranted to gain a better understanding of the groundwater flow processes and the models utilized to access those processes." He further stated that "it is premature to make any finding [on site disqualification] on the basis of groundwater travel time" and promised that the issue "will receive significant attention as scientific and technical work at Yucca Mountain continues."

Given what has been revealed over the past few weeks in emails about data falsification and the manipulation of computer models, it would seem that the groundwater issue did, in fact, receive significant attention, although likely not the sort of attention Secretary Richardson envisioned.

Copies of Governor Miller's and my December 4, 1998 letter and Secretary Richardson's December 18, 1998 reply are attached for your information.

***Question: In your testimony you indicated that a Yucca Mountain repository is not only bad for the people of Nevada, but also for people across the Nation as well. For the record, could you please explain the potential impact it has nationwide?***

Response:

In 2002, the State of Nevada submitted to the Secretary of Energy a comprehensive report titled, "A Mountain of Trouble: A Nation at Risk – Report on Impact of the Propose Yucca Mountain High-Level Nuclear Waste Program." That report carefully examined the likely consequences of the federal repository program, as it is being implemented by the DOE, on the State of Nevada and the nation as a whole. What the report found was both revealing and alarming:

> The proposed Yucca Mountain high- level nuclear waste repository program has the potential to wreak economic, social, and environmental devastation on at least 44 states, including Nevada, hundreds of major cities, and thousands of communities across the country through which spent nuclear fuel (SNF) and high- level radioactive waste (HLW) must travel. This inescapable conclusion results from over 15 years of intensive research and oversight conducted by the State of Nevada and independent scientists studying the impacts of this major, first-of-a-kind federal program. ...

> The enormous and pervasive potential impacts to the State of Nevada are only part of the problem. There will be massive additional impacts inflicted on at least 43 states, hundreds of major cities, and thousands of communities nationwide as a result of the tens of thousands of shipments of highly radioactive waste that are an inseparable and dominant component of the federal government's repository program. The fact that the Secretary of Energy recommends that Yucca Mountain be developed as a repository without full disclosure of these transportation impacts and without having assessed the implications of the program for the nation as a whole is unacceptable and a reason, of itself, for the President to reject outright the Secretary's recommendation.
>
> What began in 1983 as a noble experiment that promised to place science ahead of politics, and fairness, equity, and openness above parochialism has degenerated into a technical and ethical quagmire, where facts are routinely twisted to serve predetermined ends and where "might makes right" has replaced "consultation, concurrence, and cooperation" as the guiding principle for the program. The shoddy and politically driven science, the heavy-handed federal approach, the constant changing of the rules to negate disqualifying conditions and "inconvenient" findings, and the deliberate avoidance of responsibility for considering socioeconomic impacts have created an atmosphere of severe distrust, where the already significant impacts associated with the nuclear nature of the program are further exacerbated and amplified. The result is a massive suite of negative impacts, national in scope, inextricably linked to the Yucca Mountain program, and unprecedented in the history of federal government domestic projects.

The Nevada report examined a suite of potential nationwide impacts of the proposed Yucca Mountain project and concluded:

> Of all the impacts associated with the Yucca Mountain program, none are as far-reaching and pervasive as those related to the transportation of SNF and HLW. Tens of thousands of shipments of extremely dangerous radioactive waste would impact 44 states, hundreds of cities, and thousands of communities, day after day, week after week, month after month for 38 years or more. Transportation would be the principal cause of impacts ranging from losses in property values to depressed economic activity to escalating and unfunded preparedness and response costs to social disruption and even civil unrest. The risk of a public health and

> economic catastrophe following a severe accident or terrorist incident would persist daily for the life of the shipping campaign for hundreds of vulnerable metropolitan areas nationwide.
>
> In addition to the tremendous national transportation implications, the cost impacts of the Yucca Mountain program will be considerable, even for a budget the size of the federal government's. Costs of the program have escalated in just three years from approximately $28 billion to over $59 billion (and may eventually be as high as $75 billion), while the funding mechanism established to pay for it - the fees levied on nuclear-generated electricity - continues to face major uncertainties due to an ever-diminishing revenue base. With an unfounded taxpayer liability of between $17 and $34 billion, the DOE HLW program represents a fiscal time bomb for future federal budgets.
>
> Finally, the damage Yucca Mountain could inflict on future state-federal relations would be considerable. A decision ... to forge ahead with this transparently flawed project in the face of Nevada's strong, long-standing, consistent, legitimate, and scientifically-based opposition would have damaging consequences for the nature and shape of American federalism now and in the future, as the nation pursues solutions to other difficult problems involving hazardous facilities and controversial technologies.

The recent disclosures about the falsification of data in the Yucca Mountain scientific program also have the potential for serious impacts on the national level. If fraudulent science is tolerated or covered up in the Yucca Mountain program, how much confidence will the people and public officials in states and communities affected by waste transportation have in DOE's, the Administration's, and even Congress' assurances about the safety of such shipments?

Notwithstanding the issue of fraud and data manipulation in the Yucca Mountain program, the Nevada report noted that, not only are the risks from the project potentially great, but they are also unnecessary. Spent fuel has long been - and is currently being - stored in safe, secure fixed locations where risks are minimized. With currently available dry storage technology, spent fuel can continue to be safely and economically stored on site for the next 100 years or more, providing ample time for the development of new technologies such as transmutation and reprocessing. Exposing millions of people in 44 states and thousands of communities to needless risks from the transportation of these materials is entirely unwarranted.

A complete version of the Nevada impact report is on the Internet at http://www.state.nv.us/nucwaste/yucca/impactreport.pdf .

***Question: It is my understanding that you recently sought to invoke Nevada's prerogative under Section 117 of the Nuclear Waste Policy Act (NWPA) to demand full and complete information from the Secretary of Energy on the Yucca project. To date, have you received full and complete information as requested from the Secretary?***

Response:

Section 117(a) of the Nuclear Waste Policy Act of 1982, as amended requires the Secretary of Energy to provide "timely and complete information" to the state regarding "determinations or plans made with respect to the site characterization, siting, development, design, licensing, construction, operation, or decommissioning of a [Yucca Mountain] repository." The Act sets forth a specific process for the state and DOE to follow in making and responding to Section 117 requests.

On January 28, 2005, after the state's oversight agency had been repeatedly rebuffed by DOE in efforts to obtain important licensing and performance assessment materials, I wrote to Secretary Bodman and invoked the provisions of Section 117(a) to obtain the required information. A copy of that letter is attached.

Under the provisions of Section 117, the Energy Secretary had 30 days to either provide the requested information or explain "the reasons why the information cannot be so provided." If the Secretary failed to respond within 30 days, I (as governor) could transmit a written objection to the President regarding the Secretary's failure to respond. If the President or the Secretary failed to respond to that objection within another 30 days, the Act requires the Secretary to immediately suspend all Yucca Mountain activities in Nevada until such time as a written response to the information request is received.

On March 1, 2005, Secretary Bodman responded to my letter and rejected my request for specific information, saying he was advised that Section 117 does not establish a statutory mechanism for the production of specific documents, but rather is a vehicle for sharing information pursuant to a written cooperative agreement that is provided for under Section 117 (c) of the Act – a section that we believe is clearly distinct from and unrelated to Section 117(a). A copy of Secretary Bodman's March 1st letter is also attached.

On March 14th, I responded to Secretary Bodman, informing him of Nevada's disagreement with the interpretation of Section 117 requirements and advising him that I would be forced to take the next step and write directly to the President if he had not complied with my initial information request by April 15th. On April 14th, Secretary

Bodman replied to my letter and, again, asserted that Section 117 "does not afford the state and tribal governmental bodies covered by that section a right to particular documents." Copies of this correspondence are attached.

I am currently in the process of exercising my prerogative under Section 117(a) to seek the information we are requesting from President Bush. I am hopeful that the President will see the importance of assuring that Nevada has access to the information it needs to oversee the Yucca Mountain program as Congress intended when it crafted the Nuclear Waste Policy Act.

It is difficult to understand why DOE and the Secretary are so resistant to providing Nevada with the information we are requesting. The materials we are seeking include (1) a copy of the most current version of DOE's draft license application; (2) the most current version of the Performance Assessment and associated models and calculations; documents supporting the structure and quality assurance for software used in preparing the license application and performance assessment; and (4) a copy of a report on "Extreme Wind/Tornado/Missile Hazardous Analysis" for Yucca Mountain. All of these are materials related to strictly to scientific and technical issues essential for the State of Nevada's oversight and pre-licensing work.

One can only speculate as to DOE's motives in withholding the information. However, with the recent revelations about data falsification and computer model manipulation, the refusal to make the materials available certainly raises new question and suspicions.

***Question: Given the close proximity to Las Vegas (Yucca Mountain being 90 miles northwest of Las Vegas), Las Vegas has passed a law making it illegal to haul nuclear waste though the city. Could you comment on this and other measures the State has undertaken to protect its citizens from nuclear waste spills and/or accidents at such time [as] the waste is actually transported to the site?***

Response:

The recent ruling by a U.S. District Court Judge in Washington, DC upholding the District of Columbia's ban on hazardous materials shipment through downtown Washington is an encouraging development with respect to the Las Vegas city ordinance prohibiting radioactive materials from being transported though metro Las Vegas. However, additional legal challenges to such ordinances can be expected, and it will be some time yet before it can be definitively known whether attempts to ban radioactive materials from urban areas are constitutional.

The single most important thing Nevada can do – and is doing – to protect its citizens from the dangers and risks posed by shipments of deadly nuclear waste is to assure that the proposed Yucca Mountain repository is never built. The disclosures about data falsification and other potential fraud within the Yucca Mountain project are, we believe, just the tip of a very large iceberg. Combined with all of the other major and fundamental problems with the program, it is becoming increasing clear to anyone – even project supporters – that Yucca Mountain is fatally and irreversibly flawed and must be terminated. I am confident that Yucca Mountain cannot and will not become a nuclear waste dump site.

Should DOE attempt to move ahead with a license application to the U.S. Nuclear Regulatory Commission (NRC) in spite of the fraud and other fatal program flaws, Nevada is prepared to vigorously and successfully contest such an application. And we are confident, given the multitude of serious problems already apparent in the Yucca program and the many more that will undoubtedly be brought to light as DOE is forced, by NRC regulations, to make more and more information available, that the State's superb legal and licensing team, supported by extraordinarily high-quality research and data supporting contentions that Yucca Mountain is a patently unsuitable site for a geologic repository, will ultimately prevail.

As an aside, I should point out that Nevada has been very successful in keeping low-level radioactive waste (LLW) shipments out of the Las Vegas metropolitan area. Today, despite several thousand of annual LLW shipments being made to the Nevada Test Site from clean-up activities at DOE sites around the nation, no LLW shipments are being made through Las Vegas. All have been routed on alternative routes through sparsely populated areas of the state.

Thank you again for the important role you and the subcommittee are playing in addressing this extremely important matter.

Sincerely,

KENNY C. GUINN
Governor

KCG/lf

Enclosures (7)

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Bob Loux

- At the hearing, you expressed concern regarding the investigation by DOE, stating that "DOE frequently investigates itself with no results." Is your opinion that DOE is incapable of discovering the truth in this matter? If, so, are you in support of an independent investigation outside of DOE and DOI?

- In Mr. Egan's testimony, there is an e-mail attached as an exhibit with the subject "*water, water, everywhere.*" Apparently, this e-mail is about a heater test which produced a large amount of water in the tunnel system. I understand that the storage of nuclear waste in the tunnel complex will produce a large amount of waste heat. If heat produces water in the tunnel system, how is this going to affect the storage of the waste in the casks?

- Mr. Loux, I would like you to help us understand the e-mails which may concern falsified reports that we have received from the DOE and DOI. **[Please refer to the documents released by the Subcommittee; page 13 of the e-mails. E-mail subject: Status of new climate net-infiltration modeling. E-mail on "milestone consisting of climate input files…"]**
    - Quote: *"Here is the weird news; to get this milestone through QA, I must state that I have arbitrarily selected the analog sites. At first, I was going to include your email as supporting information in the data package, and discuss the work we did using the worksheets consisting of candidate sites, but since there is no [deleted] for your results the message I am getting from QA is that I can't use or refer to those results. In other words, I was trying to give you credit for your part in all this, as well as provide all info possible for the traceability of the analog climate, but this seems to create problems rather than solving them.*
      *So for the record, the seven analog sites have been arbitrarily (randomly) selected. Hopefully, these sites will by coincidence match the sites you have identified.*
      *[Name deleted]*
      *P.S. please destroy this memo."*

- It appears that the person who wrote this e-mail is trying to make it appear that he is using randomly selected analog sites, when he isn't.
    - What are "analog sites?"

- Why would quality assurance want to have randomly selected of analog sites?
- Why would someone want to mislead quality assurance about analog sites?

- **[Refer to page 55. E-mail subject: Installations]** *The programs, of course, are all already installed otherwise the AMR would not exist. I don't have a clue when these programs were installed. So I've made up the dates and names (see red edits below). This is as good as it's going to get. If they need more proof, I will be happy to make up more stuff, as long as its not a video recording of the software being installed."*
  - In this e-mail it appears that the dates of software files are being created out of thin air. What impact does this have on the work being discussed?

- **[Refer to page 47 of e-mails. E-mail subject: Thanks for the cool refs.]** *"These references are pretty cool. Thanks for leaving them, it looks like useable stuff. Why can't I do this? What's my problem?*
  *Well, maybe it's that I'm just now getting the stupid data package off to the correct person. I re-sent it to [deleted], who responded from a laptop in [deleted] that I should just re-send it to [deleted], which I just did. Pretty soon the QA experts will want to know where the [deleted] and Area [deleted] precip files came from. Here they are: Don't look at the last 4 lines. Those lines are a mystery that I believe somehow relate to the work [deleted] was doing in entering the 1994 data. These lines are not used by [deleted] (we stop at 9/30/94). I've deleted the lines from the "official" QA version of the files (which do not have headers). In the end, I keep track of 2 sets of files, the ones that keep QA happy and the ones that were actually used. The files are output from the [deleted] data base that [deleted] and I had put together, which I still have but haven't looked at since 1996. So either the [deleted] data package has to look a lot like those files or I'm going to have to start talking about the [deleted] database when QA questions start. My guess is that we do not want to deal with the [deleted] database. Here it is almost 2000, and I am still struggling with work done in 1995 and 1996."*
  - Can we rely on the computer models if someone is keeping two sets of files?
  - Can we really expect quality assurance at Yucca Mountain to catch this type of behavior?
  - What can we do to stop something like this?

- **[Refer to page 43 of the e-mails. E-mail subject: Surface Temp Rise Events So Far]** In this e-mail there is a discussion of the effect of temperature rise on the infiltration study. At one point in the e-mail there is a comment to the effect: *"If [temperature] is a problem for design, take it out."*
  - If the temperature variable is taken out of the water infiltration model, what use is the model?

- Is this an example of someone eliminating data that is inconvenient or troubling?

- **[Refer to page 46 of the e-mails. E-mail subject: QA]**
  *"The QA bullshit grows deeper. I may need to say that I did everything by hand for the data package I am submitting that you and [name deleted] reviewed. The program I wrote is not in the system and QA will be all over it like flies on &%#$. All references to [redacted] are being deleted.*
  *Here's my question: When we go to start QA'ing the site-scale modeling work, will I get taken to the cleaners because I am not referencing either a tech procedure or a scientific notebook? In other words, would it be cost-effective to create an SN for the site-scale work and back-date the whole thing??*
  *Can't wait to be far-far away from here!"*
  - What is the site-scale modeling work and why would someone need to delete information and backdate scientific notebooks?

- **[Refer to page 51. E-mail subject: Finally the darn coordinates.]**
  *"I finally took the time to process your request. This required the use of TRANSFORM to look at the corners of the DEM, then a coordinate transformation using CORPSCON. Here are the results:*
  *My picks using TRANSFORM*
  *Results obtained from CORPSCON*
  *Please do not tell anyone how this was done because then we will need to get this whole thing through software QA!"*
  - It seems that that someone is trying to slip something past QA.
  - Can you tell what this e-mail is referring to?
  - How does this reflect on the quality assurance program?

- **[Refer to page 53. E-mail Subject: Developed daily precip record.]**
  *"Believe it or not, this file is now 3.5 years old, but it is what was used. This developed record stops on day 274, 1995. The only real good thing about this file is we seem to be very close to getting it into the TDMS (the data was developed in a LOTUS turned to EXCEL worksheet that may now be required to go through qualification as a software routine, so things have yet again stalled). Someday I hope to have time to update this to include an improved pre-1987 interpolation and all the new data after 1995, which includes some interesting events.....back to QA.*
  *P.S. Hope this email doesn't trigger a 3.15 input request. I'll probably get fired."*
  - It appears that old, out of date files are being used for a precipitation model.
  - How would the use of out of date files affect the computer models of precipitation?
  - Would the model be of any uses with the old, out of date files?

- **[Refer to page 28—E-mail on " Design Features 23/24]**

*"Enjoyed the ranting and raving. We're trying to work with the engineers because that's where the funding is going. Leveling the top of the mountain seemed humorous, but that gave me the chance to make some more cool figures. This little task is history now. Wait till they figure out that nothing I've provided them is QA. If they really want the stuff they'll have to pay to do it right."*

- What does this show about the employee's attitude toward quality assurance?
- Why would the Project want to level the top of the Mountain?

**Responses by Robert R. Loux to Questions Submitted For the Record**
**By Chairman Jon C. Porter**
**Subcommittee on Federal Workforce and Agency Organization**
**Committee on Government Reform**
**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**

**April 25, 2005**

1. *At the hearing, you expressed concern regarding the investigation by DOE, stating that "DOE frequently investigates itself with no results." Is your opinion that DOE is incapable of discovering the truth in this matter? If so, are you in support of an independent investigation outside of DOE and DOI?*

   The Inspectors General of DOE and DOI should continue their investigations of the e-mail incidents. As to the investigation of the importance of the incidents to the overall credibility and integrity of the federal high-level nuclear waste repository program, I believe that DOE is incapable of establishing an appropriate scope of investigation and executing such an investigation in an objective manner. Given that the materials referenced in the e-mails may have been central to decisions made at the highest level of government, a broad investigation, independent of DOE and its contractors, is warranted to evaluate the impact of the e-mails' contents and implications on past, and potential future nuclear waste policy decisions.

2. *In Mr. Egan's testimony, there is an e-mail attached as an exhibit with the subject "water, water, everywhere." Apparently, this e-mail is about a heater test which produced a large amount of water in the tunnel system. I understand that the storage of nuclear waste in the tunnel complex will produce a large amount of waste heat. If heat produces water in the tunnel system, how is this going to affect the storage of the waste in the casks?*

   As designed by DOE, the purported safety of the Yucca Mountain repository system relies on the metal alloy casks and titanium drip shields not failing for tens of thousands of years after repository closure. The primary failure mode for the drip shields and casks is corrosion, which is enabled by water in liquid and vapor form.

   The waste emits large amounts of heat during the first approximately 100 years after removal from the reactor as a result of the radioactive decay of fission products in the irradiated fuel. The heat causes water contained in microscopic pores in the rock to vaporize. The natural pores in the rock matrix surrounding the tunnels are about 80 to 90 percent filled by water, which is mobilized when vaporized. When the vapor contacts cooler rock, farther from the heat source, it condenses, returning to liquid form, which is then free to flow, driven primarily by gravity, through natural fractures in the rock, some of which intersect the tunnel. As the heat declines, water dripping into the tunnel, and the

high humidity of the air in the tunnel contribute to initiating corrosion of the drip shields and casks, eventually exposing the radioactive waste to incoming water.

The observed "*water, water, everywhere*" appeared to result from the condensation process as the rock near the heated tunnel was being heated and a condensation front was forming. The significance of the observation was that water, in liquid form, can flow through the natural interconnected fractures in the rock and enter the repository tunnels to enable corrosion, and ultimately the transport of radionuclides to the accessible environment. Other than the transient waste-induced condensation process, the enduring source of water flowing through the mountain is precipitation on the mountain surface infiltrating down through the fractured rock, some of which will intersect the repository tunnels.

3. *Mr. Loux, I would like you to help us understand the e-mails which may concern falsified reports that we have received from the DOE and DOI.* ***[Please refer to the documents released by the Subcommittee; page 13 of the e-mails. E-mail subject: Status of new climate net-infiltration modeling. E-mail on "milestone consisting of climate input files..."]***
   - *Quote: "Here is the weird news; to get this milestone through QA, I must state that I have arbitrarily selected the analog sites. At first, I was going to include your e-mail as supporting information in the data package, and discuss the work we did using the worksheets consisting of candidate sites, but since there is no [deleted] for your results the message I am getting from QA is that I can't use or refer to those results. In other words, I was trying to give you credit for your part in all this, as well as provide all info possible for the traceability of the analog climate, but this seems to create problems rather than solving them.*
     *So for the record, the seven analog sites have been arbitrarily (randomly) selected. Hopefully, these sites will by coincidence match the sites you have identified.*
     [Name deleted]
     *P.S. please destroy this memo."*

4. *It appears that the person who wrote this e-mail is trying to make it appear that he is using randomly selected analog sites, when he isn't.*
   - *What are "analog sites?"*
   - *Why would quality assurance want to have randomly selected analog sites?*
   - *Why would someone want to mislead quality assurance about analog sites?*

Analog sites, in this context, are real geographic locations for which a weather and climate data-base exist to support a climate representation that could apply to future climate states at Yucca Mountain, e.g. monsoon and glacial transition. Here, the purpose of looking to analogs is to have a defensible data-base for modeling water infiltration through Yucca Mountain during projected future climate states other than present day climate. Infiltration, to some extent, is related to the amount, rate, and temporal distribution of precipitation.

Quality assurance does not want any particular method of analog site selection. What it wants is traceability: a procedure for site selection, a documented description of the methodology of site selection, how it was applied, who applied it, what the results were, and who reviewed the work. It appears from the e-mail discussion that the process used to pick the seven analog sites had no formal documentation of the type required under the DOE QA program, but the result of the selection was intended to be used in the license application. From the standpoint of the QA reviewers, there were only three possible solutions: a) don't use the result in the milestone report (not an option for the scientist who wrote the report); b) re-do the site selection according to all required QA procedures, or; c) have the scientist say that the procedure was to arbitrarily (randomly) select sites. Re-doing the work, following the proper QA procedures is what the scientific method would demand in the context of the DOE's program. But, the final option satisfies the QA record review process, in that it assumes the scientist is responsible for the scientific merit of his/her work. The QA reviewer is only responsible for assuring that the approved QA process was followed properly, not whether the "scientifically" proper process was followed by the scientist. QA does not assure the scientific correctness of the work, although it helps in this through requiring a technical review sign-off. QA is intended to assure traceability, so if a problem arises, or the work is challenged, the source documentation is transparent to a qualified analyst.

The e-mail indicates that the writer was bemused by the QA review, and professionally uncomfortable with the outcome (which surely would not withstand peer review). But, given the tenor of many of the e-mails reviewed by the Subcommittee, the writer who authored the milestone was under schedule and cost pressures, and saw the QA organization as an impediment to getting the "real" work done at the level and rate management expected. Under these pressures, in the writer's view re-doing the work just for QA was not an option. The intent does not appear to have been to mislead QA about analogs. QA does not care about analogs. The intent was to get the milestone through the QA review process in any way that was acceptable to the QA organization, and get on with more pressing work.

5. ***[Refer to page 55. E-mail subject: Installations]*** *The programs of course, are all ready installed otherwise the AMR would not exist. I don't have a clue when these programs were installed. So I've made up the dates and names (see red edits below). This is as good as it's going to get. If they need more proof, I will be happy to make up more stuff, as long as its not a video recording of the software being installed."*

- *In this e-mail it appears that the dates of software files are being created out of thin air. What impact does this have on the work being discussed?*

This is again a traceability issue. If the dates of installation of the software files are unknown, and the names are unknown, questions arise as to where the software came from, under what controls was it developed, what revision of the software was installed, when were results of use of the software first propagated into other work products, and what products in use today are traceable back to this suspect software. The AMRs

(Analysis Model Reports) are the foundation of the Total System Performance Assessment (TSPA), which is the tool mandated by regulations to measure compliance with safety standards.

6. ***[Refer to page 47 of e-mails. E-mail subject: Thanks for the cool refs.]***
*These references are pretty cool. Thanks for leaving them, it looks like useable stuff. Why can't I do this? What's my problem?*
*Well, maybe it's that I'm just now getting the stupid data package off to the correct person. I re-sent it to [deleted], who responded from a laptop in [deleted] that I should just re-send it to [deleted], which I just did. Pretty soon the QA experts will want to know where the [deleted] and Area [deleted] precip files came from. Here they are: Don't look at the last 4 lines. Those lines are a mystery that I believe somehow relate to the work [deleted] was doing in entering the 1994 data. These lines are not used by [deleted] (we stop at 9/30/94). I've deleted the lines from the "official" QA version of the files, the ones that keep QA happy and the ones that were actually used. The files are output from the [deleted] data base that [deleted] and I had put together, which I still have but haven't looked at since 1996. So either the [deleted] data package has to look a lot like those files or I'm going to have to start talking about the [deleted] database when QA questions start. My guess is that we do not want to deal with the [deleted] database. Here it is almost 2000 and I am still struggling with work done in 1995 and 1996."*
   - *Can we rely on the computer models if someone is keeping two sets of files?*
   - *Can we really expect quality assurance at Yucca Mountain to catch this type of behavior?*
   - *What can we do to stop something like this?*

The problem that emerges from keeping two sets of data files, one for the "official" QA version and one that was actually used, is that the model outputs (the actual calculations) are not reproducible. In the TSPA, the output of one model becomes the input to another model, so an independent reviewer of the safety compliance calculation would eventually arrive at a position where an internal result in the trail of linked models could not be reproduced because the data used by the reviewer did not match the data actually used. The difference is carried through the string of calculations to the final compliance conclusion. Depending on the sensitivity of the TSPA to the particular model that was fed by the data set in question, the difference in the final compliance determination could be small or large.

A QA checker can not be expected to catch this type of manipulation of the data set. The checker would be expected to follow the documentation trail of the data, but not the data points themselves.

This episode is a manifestation of a culture that claims scientific integrity, but in the end is compromised by the perceived need to "make it look right for QA." Proper QA implementation is part of the ongoing work process, not an end point separate from the work process itself.

7. ***[Refer to page 43 of the e-mails. E-mail subject: Surface Temp Rise Events So Far]*** *In this e-mail there is a discussion of the effect of temperature rise on the infiltration study. At one point in the e-mail there is a comment to the effect: "If [temperature] is a problem for design, take it out."*
   - *If the temperature variable is taken out of the water infiltration model, what use is the model?*
   - *Is this an example of someone eliminating data that is inconvenient or troubling?*

The issue being discussed in this e-mail is the predicted rise in ground surface temperature over the repository in Yucca Mountain due to the emission of heat by the waste. The repository designers can control the heat output that affects the ground surface temperature in three ways. The first is by selecting the combination of irradiated fuel assemblies that are placed in an individual cask based on their age out-of-reactor, the original enrichment of the fuel, and the period of burn-up in the reactor. The heat is the result of radioactive decay of relatively short-lived fission products in the fuel. The second is by varying the space between casks in the emplacement tunnel. And the third is by varying the distance between waste emplacement drifts.

For a number of reasons, with which we and the Nuclear Waste Technical Review Board disagree, the DOE has decided to employ a "hot repository" design, in which the casks are closely spaced, and the tunnel wall temperature will rise to above the boiling point of water. One consideration is that the closer the casks are spaced, the less the length of tunnel to construct, and thus the less the construction cost. The "hot repository" design will result in a greater increase in the ground surface temperature above the repository than DOE had previously told the public would take place, and had set as a design limit. The discussion in the e-mail is about "taking out" the ground surface "temperature" design limit if it is a "problem" for the designers, meaning the "hot repository" design would exceed the design limit.

The concern over ground surface temperature rise is that it would likely affect the ecology of the ground surface by changing the biological soil processes and the type and distribution of vegetation. These changes would cause an unquantified effect on the infiltration of precipitation into the mountain, adding further uncertainty to the output of the infiltration model, which is key to the safety compliance determination for the repository. As seen in the e-mail, an increase in infiltration also has the effect of further increasing the ground surface temperature calculated for the top of the Tiva Canyon (Tcw) tuff, which is the rock that forms the surface over the repository

8. ***[Refer to page 46 of the e-mails. E-mail subject: QA]***
*"The QA bullshit grows deeper. I may need to say that I did everything by hand for the data package I am submitting that you and [name deleted] reviewed. The program I wrote is not in the system and QA will be all over it like flies on &%#$. All references to [redacted] are being deleted.*
*Here's my question: When we go to start QA 'ing the site-scale modeling work, will I get taken to the cleaners because I am not referencing either a tech procedure or a scientific*

*notebook? In other words, would it be cost-effective to create an SN for the site-scale work and back-date the whole thing??*
*Can't wait to be far-far away from here!"*

- *What is the site-scale modeling work and why would someone need to delete information and backdate scientific notebooks?*

In this context, the site-scale model refers to the model that integrates the concept of water movement through the unsaturated zone, above the water table, at the Yucca Mountain site. The e-mail author apparently wrote a program to carry out a set of needed calculations, but did not go through the QA process to have the program become part of the project collection of software. Rather than spending the time and effort to properly qualify the program, the writer elected to simply say (for QA satisfaction purposes) that the results were generated by a hand calculation. This creates a situation where there is no way to verify that the calculations were done correctly, and that the result is valid.

It appears that there was no technical procedure written nor a scientific notebook kept on the work being discussed. Both are needed for a QA check of the traceability of the site-sale model results. The writer's dilemma is over how to get the work through the QA review. Should a scientific notebook be back-fit (and back-dated for the work, and would the cost associated with that option be justified?

This is yet another case of work having been done without integrating the required QA process into the planning and execution of the work, and then facing its possible rejection because it did not meet the QA procedural requirements.

9. ***[Refer to page 51. E-mail subject: Finally the darn coordinates.]***
*"I finally took the time to process your request. This required the use of TRANSFORM to look at the corners of the DEM, then a coordinate transformation using CORPSCON.*
*Here are the results:*
*My picks using TRANSFORM*
*Results obtained from CORPSCON*
*Please do not tell anyone how this was done because then we will need to get this whole thing through software QA"*

- *It seems that someone is trying to slip something past QA.*
- *Can you tell what this e-mail is referring to?*
- *How does this reflect on the quality assurance program?*

It appears that the writer needed to make some calculations associated with a model that overlays a grid on the site. And it further appears that the codes needed to do the calculations were not in the project's software collection, but were available to the writer. So, they were used without going through the QA software qualification process. The resulting calculations, therefore, are not traceable and there is no way to verify that they are correct, or to reproduce them using qualified software from the project collection.

The writer apparently assumes that if no one knows that unqualified codes were used, the

QA checkers would not know to question the origin of the calculations that provided the needed coordinates. If the codes were shown to have been used, the QA checkers would have discovered that they were not qualified, and then the writer would have had to spend (waste, in the writer's view) the time and effort needed to qualify the codes. Once again, this illustrates that QA does not guarantee the technical merit of the work, but it should assure that the work is traceable, notwithstanding the e-mail writers assumption.

10. ***[Refer to page 53. E-mail Subject: Developed daily precip record.]***
*"Believe it or not, this file is now 3.5 years old, but it is what was used. This developed record stops on day 274, 1995. The only real good thing about this file is we seem to be very close to getting it into the TDMS (the data was developed in a LOTUS turned to EXCEL worksheet that may now be required to go through qualification as a software routine, so things have yet again stalled). Someday I hope to have time to update this to include an improved pre-1987 interpolation and all the new data after 1995, which includes some interesting events.....back to QA.*
*P.S. hope this email doesn't trigger a 3.15 input request. I'll probably get fired."*

- *It appears that old, out of date files are being used for a precipitation model.*
- *How would the use of out of date files affect the computer models of precipitation?*
- *Would the model be of any use with the old, out of date files?*

The use of the old files, in itself, is not a problem. The problem is that even older and newer "interesting" data were not included. It is especially important in the arid climate at Yucca Mountain to have the longest rainfall record possible to feed the site infiltration model. Rainfall events in the area are sporadic in time, duration, and intensity, and the characteristics of events are important to understanding the infiltration process, which ultimately is key to the validity of any Yucca Mountain safety compliance determination.

The writer's complaint seems to be that valuable time is being consumed in meeting QA requirements to qualify the code used to convert a LOTUS format data base to an EXCEL spreadsheet so the data can be entered into the project data base, the TDMS (Technical Data Management System). This represents a significant management problem for the program, in that, because of resource and time constraints, available and very important data were not included in a critical analysis because the scientist had to make a choice between spending time on QA qualification of a computer code or doing critical data analysis. In this case, unlike a number associated with previous questions, the scientist felt pressured to spend the time on meeting QA requirements. The pressure-driven conclusion seems to have been that a qualified partial data set is better than having the work rejected for faulty QA, despite the fact that a more robust data set was available and important to a safety determination.

11. ***[Refer to page 28 – e-mail on "Design Features 23/24]***
*"Enjoyed the ranting and raving. We're trying to work with the engineers because that's where the funding is going. Leveling the top of the mountain seemed humorous but that gave me the chance to make some more cool figures. This little task is history now. Wait*

*till they figure out that nothing I've provided them is QA. If they really want the stuff they'll have to pay to do it right."*

- *What does this show about the employee's attitude toward quality assurance?*
- *Why would the Project want to level the top of the Mountain?*

It appears from the e-mail discussion that there was a thought by the engineers designing the repository that a rip-rap covering on the mountain, effectively flattening the steeper slopes, would reduce the (currently low) rate of erosion on parts of the mountain. The engineers apparently asked the geologists to analyze the effectiveness of this approach over a long period of time, and whether such a design feature would impact repository performance.

The geologists performed the requested analysis and reported the work, but according to the e-mail did not apply any QA procedures to their work, apparently because either they were not compensated for the work, or the compensation was not sufficient to do the analysis and the necessary QA. The implication is that the writer is somewhat bitter about the engineers being well funded and geologists being under funded. The conclusion suggests that if the engineers need the analysis for inclusion in the license application as a design option considered and rejected, the engineers should have to pay for the analysis, including the required QA. As it stands, without the proper QA, the analysis is of no use to the engineers in the licensing process. The writer seemed willing to do the analysis for little or no compensation (because it gave the "chance to make some more cool figures"), but not willing to do (the dreaded) QA for no compensation.

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## John T. Mitchell, Yucca Mountain Project Manager, Bechtel SAIC Co., LLC

- It is my understanding that Bechtel/SAIC Company is responsible for implementing DOE's quality assurance requirements related to ongoing Yucca Mountain project activities and for conducting audits of line activities. Is that correct?

- How would you evaluate the quality assurance program at Yucca Mountain?

- According to a recent GAO report entitled *Yucca Mountain, Persistent Quality Assurance Problems Could Delay Repository Licensing and Operation* (GAO-04-460, April 2004), the Yucca Mountain Project has a long history of persistent quality assurance problems.
    - Why is the quality assurance program at Yucca Mountain broken?
    - Can you explain why the activity in the e-mails, which indicate possible falsification of records, went undiscovered for years?
    - If Mr. Egan, through his efforts to obtain the e-mails, hadn't discovered the possibility of fraud, you wouldn't have discovered this, would you?
    - What other e-mail and documents are still being withheld?
    - We request that you provide copies of all correspondence between your company and DoE regarding the Yucca Mountain Project.

- If, as the GAO report indicates, the quality assurance program at Yucca Mountain is not working, how can we trust any of the science about the repository?

April 27, 2005

Jon C. Porter, Chairman
Subcommittee on the Federal Workforce
and Agency Organization
B-373 Rayburn House Office Building
Washington, DC 20515

RESPONSE TO FOLLOW UP QUESTIONS TO THE HEARING TITLED "YUCCA MOUNTAIN PROJECT: HAVE FEDERAL EMPLOYEES FALSIFIED DOCUMENTS?"

Dear Mr. Porter:

In response to your letter of April 14, 2005, containing follow up questions to the subject hearing, the information you requested is attached.

If you require any additional information or have questions, please contact me at 702-295-0506.

Sincerely,

John T. Mitchell, Jr.
President and General Manager

JTM:sjt

Enclosure:
Response to Letter of April 14, 2005

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For the Record**
**Submitted April 8, 2005**

**Response by John T. Mitchell, Jr.**
**President and General Manager**
**Bechtel SAIC Company, LLC**
**April 27, 2005**

- *It is my understanding that Bechtel/SAIC Company is responsible for implementing DOE's quality assurance requirements related to ongoing Yucca Mountain project activities and for conducting audits of line activities. Is that correct?*

  Bechtel SAIC Company, LLC (BSC) holds the Management and Operating contract for the Department of Energy related to the Yucca Mountain Project. We have held this contract since April 1, 2001. The scope of this contract includes four primary elements: (1) management and operation of the Yucca Mountain site; (2) preparation of and support for the License Application to be submitted to the Nuclear Regulatory Commission for construction and operation of a geologic repository at the Yucca Mountain site; (3) planning and execution of design and construction of the geologic repository; (4) other tasks assigned annually in support of the Office of Civilian Radioactive Waste Management. The contract contains numerous requirements including explicit quality assurance requirements governing the work performed under the contract. These requirements are met through establishment of policies, procedures, and practices to assure compliance and a system of audits, surveillances, and assessments conducted by both the line organizations and our Quality Assurance organization. Additionally, we are responsive to oversight of our contractual activities conducted by the DOE and other external organizations. These requirements apply to all work performed under the contract by Bechtel SAIC employees and its subcontractors and, as directed in the contract, other agencies supplying support to preparation of the License Application as directed in the contract.

- *How would you evaluate the quality assurance program at Yucca Mountain?*

  The execution of our quality assurance responsibilities is fully compliant with the terms, conditions, and requirements provided in the contract. Our efforts, and those of the Yucca Mountain Project as a whole, have been continually improving as the project has gone through those steps required to support submission of the License Application for the Nuclear Regulatory Commission.

- *According to a recent GAO report entitled Yucca Mountain, Persistent Quality Assurance Problems Could Delay Repository Licensing and Operation (GAO-04460, April 2004), the Yucca Mountain Project has a long history of persistent quality assurance problems.*

- *Why is the quality assurance program at Yucca Mountain broken?*

  The quality assurance program executed by BSC is not now nor has it been "broken". The work performed has been, is, and will be in conformance with the Yucca Mountain program quality assurance requirements as expressed in the contract.

- *Can you explain why the activity in the e-mails, which indicate possible falsification of records, went undiscovered for years?*

  We do not routinely monitor communication, including email, between our employees and employees of other agencies, or communication between employees of other agencies conducted in day-to-day execution of their actions. If there is sufficient suspicion that activities being conducted by individuals may violate the company standards that could lead to disciplinary actions, we may choose to review selected records of communications.

  While the activities discussed by the USGS employees in the specific e-mails clearly do not conform to our standards or processes, the actual work products provided under their responsibility did not provide a basis for conducting a specific review of the e-mails containing communication between these employees of another agency.

- *If Mr. Egan, through his efforts to obtain the e-mails, hadn't discovered the possibility of fraud, you wouldn't have discovered this, would you?*

  In fact, the suspect e-mails were initially identified during a review of several million e-mails being conducted to assure their compliance with requirements related to the Licensing Support Network. This work was being performed by BSC personnel under specific contractual tasking. I have no direct knowledge of Mr. Egan's role in this process.

- *What other e-mail and documents are still being withheld?*

  All e-mails and documents required by the contract to be submitted for release to external organizations have been submitted.

- *We request that you provide copies of all correspondence between your company and DOE regarding the Yucca Mountain Project.*

  All correspondence responsive to your request as identified in your letter of April 14, 2005, is being provided, as of May 4, 2005.

- *If, as the GAO report indicates, the quality assurance program at Yucca Mountain is not working, how can we trust any of the science about the repository?*

  The quality assurance program conducted by BSC as part of the Yucca Mountain program is, and has been, "working". A healthy quality assurance program sets standards for work performed, trains and supports its personnel in meeting these standards, conducts oversight of the success achieved in meeting these standards, and continually identifies areas of noncompliance that may occur in the process of delivering final products, evaluates the significance of these noncompliances against program objectives, and puts in place effective and systematic corrective actions assuring that final products adhere to the quality standards. All of these elements of a healthy quality assurance program are in place and functioning at the Yucca Mountain Project. The scientific basis for the safety of a geologic repository at the Yucca Mountain site will be specifically stated in the License Application submitted to the Nuclear Regulatory Commission for its review in accordance with its stated procedures and processes. The basis for their acceptance and authorization of construction and operation of the geologic repository will be thorough and professional independent review of this science. Their review will include not only substantiation that the License Application and its supporting information meet all applicable standards, but that the management practices of the Yucca Mountain Project provide evidence that the licensee can and will continue to meet these standards. This established and proven regulatory process is intended to confirm the protection of public safety.

  While a few individuals may have willfully chosen to violate the intent of the quality assurance program in a selected area under their cognizance, the validity of the scientific basis for the safety of Yucca Mountain rests on the intelligence, dedication, and integrity of the thousands of personnel who have contributed to that scientific basis over the past twenty years and the systematic application of proven processes by the individuals and agencies involved. As has been stated publicly by many senior program officials, the submission of a License Application will occur when the quality of the data submitted supports its submission, and not before.

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Attorney General Sandoval

- To date, has the U.S. Attorney General, Alberto Gonzales, responded to your letter requesting that he direct DOE to make all relevant matter available to your office?

- It is also my understanding that you specifically requested Attorney General Gonzales to secure the entire Yucca Mountain database to freeze data, secure information sources and protect it against manipulations. To date, have you received a response in this regard?

- Why do you think the Department of Energy is resisting your efforts to obtain the information?
- At the hearing you expressed your willingness to stand ready to pursue available remedies under state law. Specifically, what are those remedies that exist under Nevada state law with regard to this matter, and, if any, with regard to an independent investigation of the matter as well?

**ATTORNEY GENERAL**
**NEVADA DEPARTMENT OF JUSTICE**
100 North Carson Street
Carson City, Nevada 89701-4717

BRIAN SANDOVAL
*Attorney General*

April 25, 2005

Representative Jon Porter, Chairman
Subcommittee on the Federal Workforce and
Agency Organization
2157 Rayburn House Office Building
Washington, DC 20515-6143

Re: Responses to questions for the record (Yucca Mountain Project)

Dear Chairman Porter:

Thank you for this opportunity to respond to questions following your subcommittee's hearing to consider falsification of documents supporting federal decisions to develop the proposed high-level nuclear waste repository at Yucca Mountain.

On March 17, 2005, my office sent a letter to U.S. Attorney General Alberto Gonzales expressing serious concern over recent disclosures that e-mails among U.S. Geological Survey scientists referred to falsified scientific data and records used to support Yucca Mountain decisions. My letter specifically asked Attorney General Gonzales to direct that the U.S. Department of Energy (DOE) make all e-mails germane to this matter available to my office. To date, in response to your first question, I have received no response to my letter from the U.S. Attorney General. My office appreciates that your subcommittee has made redacted copies of the e-mails available to us.

In my letter, I recommended that the U.S. Attorney General move immediately to secure the entire Yucca Mountain data base to protect it from further manipulation. In response to question two, I have not been advised that the U.S. Attorney General's office has followed this recommendation.

Thirdly, I believe that DOE and other proponents of the Yucca Mountain project would resist full disclosure of information which supports Nevada's arguments that Yucca Mountain is not a safe and scientifically sound site for nuclear waste disposal. Because DOE is the lead agency for this ill-conceived project, I do not believe that DOE

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can capably pursue an unbiased investigation. I asked, therefore, that the U.S. Attorney General undertake an independent investigation of this matter.

Finally, I have asked my staff to research criminal remedies potentially available under state law. Without more information to inform my decision, I cannot responsibly enumerate what state law remedies may exist and whether it would be prudent for my office to embark upon a course that may, in the end, actually prove to be an impediment to Nevada's overall objective of defeating this project. As we receive information in this regard, we can better evaluate this issue.

Thank you again for this opportunity and your subcommittee's efforts to assure that the public is adequately informed and protected.

Sincere regards,

BRIAN SANDOVAL
Attorney General

By United States Mail and E-Mail to reid.voss@mail.house.gov

**"Yucca Mountain Project: Have Federal Employees Falsified Documents?"**
**Subcommittee on the Federal Workforce and Agency Organization**
**Chairman Jon C. Porter**
**Questions Submitted For The Record**

**Submitted April 8, 2005**

## Judy Treichel, NV Nuclear Waste Task Force

- What is significant about the time period in which the e-mails falsifying data were written (1998-2000)? What was going on in terms of progression of the project at that time?

- In your testimony at hearing, you indicated that the Yucca Mountain project is not a case of "NIMBY" (not in my backyard). Please elaborate and discuss the significance of the project nationwide?

- Why was Yucca Mountain singled out as the only site to be considered for a national nuclear waste repository?

- What effect has this recent controversy had on the public's confidence regarding the integrity of the Yucca Mountain project?

- What are your views regarding the continuation of the project and what should be the next step?

- In your testimony you referred to a 2001 GAO report where it is argued that "the department has suffered a 'loss of management control' of studies into the safety and suitability of Yucca Mountain to hold thousands of tons of radioactive waste." GAO issued a follow-up report in April 2004 (mentioned by Senators Reid and Ensign) where GAO states that "despite DOE's development of a corrective plan in 2002, recent audits and assessments show that these actions have not solved the quality assurance problems or corrected management weaknesses, and that further actions are needed." Do these findings coincide with your statement and belief that this is a program drive to meet deadlines where ethics and accountability are compromised?

"Yucca Mountain Project: Have Federal Employees Falsified Documents?"
Subcommittee on the Federal Workforce and Agency Organization
Chairman Jon C. Porter
Responses by Judy Treichel to
Questions submitted for the Record

April 20, 2005

*1. What is significant about the time period in which the e-mails falsifying data were written (1998-2000)? What was going on in terms of progression of the project at that time?*

At the end of 1998 over 200 public interest organizations, representing hundreds of thousands of citizen members, called for the disqualification of Yucca Mountain due to its inability to meet the Department of Energy (DOE) repository siting guidelines. Likewise both the incoming and outgoing Nevada governors wrote Secretary of Energy Bill Richardson demanding that the site be abandoned for similar reasons. The response from the Secretary was that it was premature to disqualify Yucca Mountain because studies and analyses of the site were not yet complete.

During this same time frame the Environmental Protection Agency (EPA) was finalizing a radiation standard, specific to Yucca Mountain. The Nuclear Regulatory Commission (NRC) was also writing a site specific regulation, and the DOE was accepting public comment on significant changes to the repository siting guidelines, including the elimination of "disqualifying conditions."

The DOE released its "Viability Assessment of a Repository at Yucca Mountain" in December 1998. This document, comprised of five volumes plus an overview, was considered an important milestone in the project. It was initiated by the project director, Dan Dreyfus, because he believed that the policy decisions about Yucca Mountain should not be made by the Secretary of Energy alone and this large and comprehensive report was prepared to inform the Congress, who would then decide whether or not to continue to fund the project. This report considered the work and studies that had occurred at the site during site characterization up to that point and in the conclusion it stated: "While considerable uncertainties remain today, DOE believes that reasonable assurance should be achievable in the licensing process after the planned work is completed. The DOE believes, therefore, that ongoing work at Yucca Mountain should proceed as planned."

The Viability Assessment in 1998 set the stage for the Yucca Mountain project to either be able to make a convincing argument for a site suitability recommendation or for the project to end. We have now seen e-mails sent during completion of the scientific work that was included in the Viability Assessment that show that Yucca Mountain was not as good as was reported. Congress, believing the DOE's optimism, decided to allow the project to continue.

*2. In your testimony at hearing, you indicated that the Yucca Mountain project is not a case of "NIMBY" (not in my backyard). Please elaborate and discuss the significance of the project nationwide.*

Unlike many places in the US, in the mid-1970s the Nevada Legislature was actually in favor of the consideration of a national high-level nuclear waste repository being located at the Nevada Test Site (NTS). There was some public opposition and, eventually, the DOE decided against siting such a facility within the boundary of the NTS. The Nuclear Waste Policy Act of 1982 established a policy for nationwide site screening to select a site but that plan created extreme animosity and was aborted in 1987 and Nevada was singled out as the sole site to be investigated. The public in Nevada was generally opposed but was interested and willing to participate in the process, but the DOE never established any formal public participation plan so there was no reliable or meaningful way for people to be included. Additionally, as it became clear that Yucca Mt. could not comply with the established rules and standards, rather than the site being abandoned as DOE had promised, the regulations were eliminated or changed.

Opposition to the project is most certainly **not** limited to Nevada. To reach Yucca Mountain, the waste would have to travel thousands of miles, through 43 states and within ½ mile of well over 50 million citizens. During hearings associated with the preparation of an Environmental Impact Statement (EIS), thousands of people expressed their views opposing the project for many reasons, primarily transportation. For instance, in and around St. Louis, MO there were letters of protest or opposition from the city, several counties, civic organizations, the St. Louis Diocese of the Catholic Church and numerous others. Big crowds turned out for EIS meetings in other cities as well and most were opposed to the project. Many non-governmental organizations with hundreds of thousands of members (such as the national Sierra Club and the American Public Health Association) have resolutions and policies in opposition to Yucca Mountain for a variety of reasons. National taxpayer organizations oppose it because of the expense and likely eventual failure.

Very often when there are large highway or rail accidents anywhere in the US, comments like "what if this had involved nuclear waste" are made. Many individuals and organizations nationwide believe that the risks are unacceptable for long-distance transport of the waste in light of possible terrorist threats. Yucca Mt. is definitely not only a Nevada issue or a case of NIMBY.

*3. Why was Yucca Mountain singled out as the only site to be considered for a national nuclear waste repository?*

During the 1960s the Atomic Energy Commission (AEC) secretly began studying a salt formation in Michigan and surrounding areas as a possible location for a repository. When they were discovered doing this, the State of Michigan forced the government to leave. A short time later the AEC announced that it had selected a salt site in Lyons, Kansas for a national repository site. Very quickly, the AEC declared the project to be a success but scientists working for the State of Kansas found that the salt was full of drill holes and had other fatal flaws forcing the

AEC to back away in 1971. It became clear that a national policy for the disposal of high-level nuclear waste would have to include fairness, equity, and unquestionably objective and credible scientific investigation. To do that, the Nuclear Waste Policy Act of 1982 established a nationwide screening process to find suitable sites and it set up geographic equity by locating a second repository in a different part of the country. However, political pressure began to be felt by representatives of candidate states as their re-elections neared and this resulted in the Nuclear Waste Policy Amendments Act of 1987 that singled out Yucca Mountain, Nevada as the only site to be studied. Now, as was the case in Lyons, Kansas, the federal government has put the seal of approval on the site while independent, as well as Nevada's own scientific experts have found that the selected site is incapable of isolating the highly radioactive and dangerous wastes. Had the DOE retained its original guidelines, the Yucca Mountain site would have been disqualified.

Yucca Mt. was perhaps chosen based on the belief that Nevadans would not raise much opposition to the project because they had co-existed with and supported nuclear weapons testing. This assumption is wrong for several reasons. First, in the 50's when testing started, people believed the government promises that "there was no danger" and later found the assurances to be untrue. Also, testing occurred at a time of fears surrounding the Cold War and it was a defense program not a program primarily to benefit the commercial nuclear industry.

*4. What effect has this recent controversy had on the public's confidence regarding the integrity of the Yucca Mountain project?*

Rather than harming or destroying public confidence, the discovery of the e-mails has provided further justification for the existing lack of public trust and confidence in the DOE. Nevada residents, workers, and members of the military who were seriously harmed by atomic testing at the Nevada Test Site lost trust in the AEC because they had been told that "there was no danger." They became angry when either they were not compensated for personal and property losses or, if they were, it took at least forty years. And the government never apologized for what happened.

In addition to the historical experience with risk from AEC/DOE activities, there is currently court action regarding intentional exposure of workers and visitors at the Yucca Mountain project to dangerous levels of silica dust. This occurred in the 1990s and was caused by DOE contractors not following established rules and directives while tunnels were drilled at Yucca Mountain for site characterization.

There has been no basis for public trust in the repository project. Throughout its history, there was never an approved policy for public participation and when people involved themselves in the process, decisions did not reflect their comments.

It has been obvious from the e-mails regarding falsification of data that the workers themselves had very little confidence in or respect for the integrity of the project. And for years there have been internal personnel problems at the Yucca Mountain project. Worker

mistreatment came to have its own acronym: HIRD (harassment, intimidation, retaliation, and discrimination). DOE takes survey after survey of the workforce and each time the results show large numbers of employees who are not confident that they are listened to or that management respects their opinions. When the surveys show worker distrust and failed efforts at acceptable quality assurance (QA) on the project, the DOE "investigates." They announce an "independent investigation" to determine "root causes" and recommend "steps forward." There is every reason to believe that a DOE investigation of the current scandal would be as ineffective as those in the past. Throughout this problem-plagued program, DOE's internal investigations have simply provided intervals between crises.

*5. What are your views regarding the continuation of the project and what should be the next step?*

The project should **not** continue because the first and most important step in beginning to create public trust and confidence in the DOE and/or a national high-level nuclear waste repository project would be for the department to follow the provisions of the law and report to Congress that the site cannot safely isolate waste. It is unacceptable for a federal agency to tell a community or a State that decisions will be made on a course of action, according to established rules, dependent upon scientific findings, and then as the science is collected, change the rules. Likewise, it is apparent in the e-mails that the scientists performing the studies were hired for their technical skills but told or encouraged to make the scientific findings "fit" the predetermined decisions. It is clear that neither the public nor the workers on the project trust those in charge. The e-mails show the worker's frustration when, for instance, one message states: "They (project officials) don't even pay attention to their own experts."

Since the work referred to in the e-mails was done to support the recommendation of the Yucca Mountain site, it is foolhardy to just continue on and submit a license application. It is possible that the site could be licensed and, at the same time, be unsuitable if falsified data is included or negative data is excluded from a license application that grew out of the site recommendation.

Ending a nuclear waste disposal project is not unprecedented. It has happened in several countries. The next steps have been to involve the public or publicly trusted individuals and organizations in all decisions from the beginning of the process. In some cases it began with asking public opinion about their receptiveness to nuclear power. If people believe that nuclear power has advantages over other sources of electricity, then they accept that waste is created and go on to considering how it should be managed and disposed. In any case, it is not advantageous to try and continue a project the magnitude of the Yucca Mt. repository with such widespread and justified opposition. Once ended, the government, nuclear industry and the public should determine what it takes to find waste management and/or disposal options that can provide adequate public protection.

Certainly the next step is not to proceed to a licensing hearing where the NRC would be

expected to resolve all of the issues raised by these e-mails while processing a license application. Any license application would be built on a false foundation. The program must stop.

*6. In your testimony you referred to a 2001 GAO report where it is argued that "the department has suffered a 'loss of management control' of studies into the safety and suitability of Yucca Mountain to hold thousands of tons of radioactive waste." GAO issued a follow-up report in April 2004 (mentioned by Senators Reid and Ensign) where GAO states that "despite DOE's development of a corrective plan in 2002, recent audits and assessments show that these actions have not solved the quality assurance problems or corrected management weaknesses, and that further actions are needed." Do these findings coincide with your statement and belief that this is a program drive to meet deadlines where ethics and accountability are compromised?*

The program has sacrificed ethics and accountability in order to meet or try to meet deadlines. But in addition to that it has also disregarded evidence or scientific opinion that would challenge the continuation of the program. DOE employees interviewed by the Department's Inspector General reported that their concerns could be addressed by management only if they did not threaten the project. Whether this is true or not, if the workers believe it, it leads to the sort of circumstances described in the e-mails. It is clear that scientific work was sometimes rushed or not done if it could not be completed in time. In the case of studies to determine water infiltration, the e-mails show that there was great uncertainty. Rather than say that there was a huge range of possible infiltration rates, someone chose to just say that the rate was very small and that made the site look far more capable of waste containment than was most likely the case.

The Yucca Mountain project has been the subject of many GAO reports and other investigations. Most resulted in serious criticisms but the DOE continually decides to proceed ahead and assume that the problems will be solved. There have been countless reorganizations and new management plans but the lack of QA continues and worker dissatisfaction remains. At the end of 2000 Bechtel/SAIC took over the Management and Operations (M & O) contract from TRW. During the transition all employees were required to do "exit interviews" and those that were selected to stay on were essentially rehired. There were a huge number of criticisms raised by the workforce during the exit interviews. These would have reflected the time period of the e-mails and it surely seems as though many of the problems that we now are discovering could have been satisfactorily addressed by both DOE and the M & O at that time. After monitoring this program for so long it is impossible for me to believe that the information in the e-mails was a surprise. The surprise for all of us is that it was written down and still exists.

I have seven additional GAO reports (and there may be more) specifically dealing with the Yucca Mt. project. A May, 1993 report: "Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties" points out that less than 1/4 of the budget is being spent on scientific investigation and says that "in order to maintain the project's schedule, DOE recently compressed the time permitted for various scientific studies and, to reduce costs, is considering similar reductions in the project's scope. This initiative could increase the risk that

the site investigation will be inadequate and comes at a time when unanticipated technical issues have emerged that could lengthen the investigation."

In September, 1994 the GAO strongly urged that, rather than DOE conducting its own review of the program, a totally independent review be done, at a very high level, such as a presidential commission, and that reviewers should have "clear access to DOE's records of their program's performance and a mechanism to provide public access to the review body's findings and recommendations." And finally, in December of 2001, the GAO advised DOE that, with all of the scientific work yet to be done to satisfy agreements that they had made with the NRC, issuing a site recommendation would be premature. DOE ignored this advice and just two months later submitted the site recommendation to the President.

The falsified data and the situation that the Department of Energy now finds itself in are not due to a few rogue scientists intending to sabotage the Yucca Mt. project. This is the predictable outcome of a scientific investigation, touted as being objective and quality assured, but in fact bent on reaching a predetermined conclusion. Since 1985, when the head of DOE's Civilian Nuclear Waste Office told the NRC to declare Yucca Mt. to be "preliminarily suitable" as a repository site, the DOE has set out to prove that some how, some way, Yucca Mt. can be shown to work. That message was passed to the investigators either directly or by implication and their sole incentive was to find that Yucca Mt. was suitable and licensable, no matter what it took. And we now know that it took falsified data.



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