

TWO INDEPENDENT FEDERAL INVESTIGATIONS BLAST DOE

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Two separate independent federal investigations, both reported on April 25, paint a devastating picture of the untrustworthiness of the Department of Energy's scientific case for putting a nuclear waste repository in Yucca Mountain. The results confirm much of what Nevada has been saying for years. DOE is now in a deep morass from which, as a practical matter, it's not likely ever to extricate itself.

The first report was of the DOE Inspector General's criminal investigation into whether US Geologic Survey scientists working on the Yucca Mountain Project had falsified research data, as indicated in a series of their emails that came to light in March 2005. The scientists' results on how much water would get to the waste packages were central to DOE's scientific case for an NRC license. Water facilitates corrosion and then transports leaking radioactive material to the human environment. The IG characterized the actions as ones "which have been described by observers as irresponsible and reckless." When the US Attorney declined to prosecute the DOE IG took the highly unusual step of writing a public memorandum to Energy Secretary Samuel Bodman, outlining the Project's severe failings "that were pertinent to the core allegations . . ."

The second report, which overlaps in content with the first, was the General Accounting Office's April 25 congressional testimony on DOE's chronic and continuing quality assurance failures. Quality assurance is checking that work has been done properly and that the results are correct. As GAO put it, "DOE has had a long history of quality assurance problems at the Yucca Mountain project." It is a history of repeated failures and one new managerial fix after another, without getting to the underlying problems. Despite public protestations and promises by DOE top brass, the repeated failures indicate a deep-seated organizational unwillingness to conform to the discipline of quality assurance. DOE and its contractors apparently haven't thought doing things right was very important because they expect to bully their way through as they have in the past. GAO questions whether DOE has the managerial capacity to overcome this state of affairs and to cope with the enormous effort it would involve. Among other things, DOE has yet to review *14 million* emails to check the extent to which the quality assurance failures that allowed the USGS falsifications to fester have infected other parts of the Yucca Mountain Project.

That the email affair was not an isolated problem seems to have been accepted even by Energy Secretary Bodman, who said on April 12 that the culture of the Yucca Mountain organization was "reflected in" the USGS e-mail affair. To say this is to admit as clearly as can be that one cannot have confidence in the scientific underpinnings of the entire Project.

The following are highlights of the two investigative reports:

I. Memorandum for Secretary Bodman from the DOE IG, April 25, 2006

“1 . The nearly six-year delay in surfacing and appropriately dealing with the controversial e-mails was inconsistent with sound quality assurance protocols.”

“We could not find a satisfactory explanation as to why the e-mails [written in 1998-2000] had not been recognized as problematic years earlier.” The IG investigation revealed that some of the notorious e-mails were read *at the time* by at least one USGS supervisor and one Quality Assurance official yet they did nothing.

Even after the e-mails had been flagged for follow-up by DOE’s contractor Bechtel SAIC in November 2004, they were not shown to responsible DOE officials until March 2005. An internal DOE report passed this delay off as due to “competing work load priorities, and the disruption of work during Bechtel's holiday season shutdown.”

“2. Compromise of scientific notebook requirements.”

DOE collects the information in a specific area in what is called an Analysis and Model Report, or AMR. In January 2000, DOE conducted a QA audit of the AMR covering the work being done by the USGS scientists. The audit found that the required scientific notebook for this work had not been maintained. Instead of making sure that it was properly maintained, USGS, with DOE approval, *waived* the requirement.

“3. Critical control files relating to the ‘Simulation of Net Infiltration for Modern and Potential Future Climates’ AMR were not maintained in accordance with data management system requirements.”

This relates to the AMR covering the work done by the USGS scientists. In a 2004 comprehensive evaluation, Bechtel was unable to reproduce the AMR’s computer model results because key files were missing. After a search, they were eventually located in 2005 in various places, some in an employee’s residence. The files had obviously not been maintained properly.

II. GAO Testimony before the Subcommittee on the Federal Workforce and Agency Organization, Committee on Government Reform, House of Representatives, April 25, 2006

1. “DOE has had a long history of quality assurance problems at the Yucca Mountain project.”

“For example, in 1998, a team of project personnel determined that *87 percent* of the models used to simulate the site’s natural and environmental conditions, and to demonstrate the future repository’s performance over time, did not comply with requirements for demonstrating their accuracy in predicting geologic events.”

2. “DOE cannot be certain that its efforts to improve quality assurance have been effective because the management tools it adopted did not target existing management concerns and did not track progress in addressing significant and recurring problems.”

“Specifically, its one-page summary, or ‘panel,’ of selected performance indicators that project managers used in monthly management meetings was not an effective tool for assessing progress . . .”

“Since DOE is still formulating its plans, it is too early to determine whether its new path forward effort will resolve these challenges.”

“Although the department had known for years about quality assurance problems with the traceability and transparency of technical work products called Analysis and Model Reports (AMR)—a key component of the license application—DOE did not initiate a major review to address these problems until 2004.”

“The RIT [Regulatory Integration Team that carried out this review] decided that 89 of the approximately 110 AMRs needed rework. According to DOE officials, the RIT addressed or corrected over 3,700 problems, and was completed approximately 8 months later at a cost of about \$20 million.” (This appears to be the real reason DOE did not submit a license application to the Nuclear Regulatory Commission by December 2004, as it had promised Congress in 2002 that it would do.)

“Subsequently, however, DOE identified additional problems with traceability and transparency that required further inspections and rework.”

“. . . in addition to problems with AMRs, similar traceability and transparency problems existed in the *design and engineering* documents that constitute the Safety Analysis Report—the report necessary to demonstrate to NRC that the repository site will meet the project’s health, safety, and environmental goals and objectives.”

The GAO testimony also described a February 2006 stop-work order on Yucca Mountain work at the Livermore Laboratory:

“We believe this incident is an example of how the project’s management tools have not been effective in bringing quality assurance problems to top management’s attention. After observing a DOE quality assurance audit at the Lawrence Livermore National Laboratory in August 2005, NRC expressed concern that humidity gauges used in scientific experiments at the project were not properly calibrated—an apparent violation of quality assurance requirements. According to an NRC official, NRC communicated these findings to BSC and DOE project officials on six occasions between August and December 2005, and issued a formal report and letter to DOE on January 9, 2006. However, despite

these communications and the potentially serious quality assurance problems involved, the project's acting director did not become aware of the issue until January 2006, *after reading about it in a news article.*" (emphasis added)

3. *"In pursuing its new path forward, DOE faces significant quality assurance and other challenges."*

DOE still has to determine the "the extent of problems and restoring confidence in the documents supporting the license application after the discovery of e-mails raising the potential of falsified records." It also has yet to settle "the design issues and the associated problems with requirements management." According to a 2005 DOE analysis of the root causes of these problems, the agency was properly updating all its design documents up to about 1995, but failed to do so afterwards. Interestingly, this was the point when DOE discovered there was lots more water than expected—and it switched strategies. DOE decided to rely overwhelmingly on the spent fuel container to overcome the deficiencies of the site for retaining the radioactive waste. All the while, the agency pretended otherwise in its public statements.

GAO concluded its April 25 testimony with:

"Even as DOE faces new quality assurance challenges, it cannot be certain that it has resolved past problems. It is clear that DOE has not been well served by management tools that have not effectively identified and tracked progress on significant and recurring problems. As a result, DOE has not had a strong basis to assess progress in addressing management weaknesses or to direct management attention to significant and recurrent problems as needed. Unless these quality assurance problems are addressed, further delays on the project are likely."