Department of Energy

Washington, DC 20585
April 25, 2006

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Investigation of Allegations Involving False Statements and False Claims at the Yucca Mountain Project (OIG Case No. I05LV002)

INTRODUCTION

In March 2005, senior Department of Energy officials were alerted to the discovery of a series of electronic mail (e-mail) messages that discussed the potential falsification of work and compromise of quality assurance requirements related to the Yucca Mountain Project. The e-mails primarily involved work done by the United States Geological Survey (Geological Survey) in the 1998 to 2000 timeframe under an Interagency Agreement with the Department. The Yucca Mountain Project, which is located in the State of Nevada and managed by the Department's Office of Civilian Radioactive Waste Management (OCRWM), is a multi-billion dollar effort to establish a national repository for high-level commercial and defense nuclear waste. You requested an Office of Inspector General investigation of the circumstances surrounding the e-mails.

The purpose of this memorandum is to provide a summary of the results of the Office of Inspector General criminal investigation. In short, the extensive factual record developed during the investigation was provided to the United States Attorney's Office for the District of Nevada in December 2005 at the conclusion of the field work. The United States Attorney's Office declined to pursue criminal prosecution in this matter on April 24, 2006.

Criminal investigations do not normally result in a public report of this nature. However, the intense public interest in this matter, in our judgment, made this memorandum appropriate. Further, during the course of our investigation, certain internal control deficiencies were identified which were pertinent to the core allegations we were pursuing. This memorandum includes a summary of these matters.

INVESTIGATION SUMMARY

The Office of Inspector General initiated a criminal investigation focusing on potential falsification of research data pertaining to computer modeling of "net water infiltration" of the Yucca Mountain repository and false representation of compliance with Yucca Mountain's Quality Assurance requirements. Net water infiltration is a significant element in the *Total System Performance Assessment*, which serves as an important reference to the Nuclear

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Regulatory Commission license application for the Yucca Mountain Project. Because of the role of the Geological Survey personnel in this matter, the criminal investigation became a joint effort with the Department of Interior Inspector General. At the outset, the case was coordinated with the Federal Bureau of Investigation. We regularly consulted with the Office of the United States Attorney for the District of Nevada.

As noted previously, the United States Attorney's Office declined to pursue prosecution. Nonetheless, the actions of those involved—which have been described by observers as irresponsible and reckless—have had the effect of undermining public confidence in the quality of the science associated with the Yucca Mountain Project. Department of Energy program officials informed us that the Department had initiated steps to remediate or replace certain work of the Geological Survey. This will be a costly, time-consuming process with significant impact on the Yucca Mountain Project. Yet, we believe that it is an unavoidable step if quality assurance concerns emanating from the e-mail episode are to be satisfactorily addressed.

Based on the declination from the Department of Justice and absent additional information of criminal behavior, we intend to close this case. The Department of Interior's Office of Inspector General is planning to issue a separate report to Geological Survey management regarding issues specific to that agency.

METHODOLOGY

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

Our criminal investigation did not assess the validity of the conclusions in, or the technical issues covered by, OCRWM's recently issued *Evaluation of Technical Impact on the Yucca Mountain Project Technical Basis Resulting from Issues Raised by Emails of Former Project Participants*, DOE/RW-0583.

Additionally, on November 9, 2005, the Office of Inspector General issued an Inspection Report that addressed internal control deficiencies related to the review of e-mails for public dissemination on the Licensing Support Network (*Quality Assurance Weaknesses in the Review of Yucca Mountain Electronic Mail for Relevancy to the Licensing Process*, DOE/IG-0708).

INTERNAL CONTROL OBSERVATIONS

Although this was a criminal investigation, we observed related internal control deficiencies that warrant the attention of Department of Energy program managers:

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

   The original e-mails, which were first disclosed to senior Department officials in March 2005, had been written in the 1998-2000 timeframe. The contents of the e-mails dealt with issues surrounding the critically important area of computer modeling of net water infiltration. We could not find a satisfactory explanation as to why the e-mails had not been recognized as problematic years earlier. This would have allowed the Department to address the concerns raised by the contents of the e-mails in a timely manner.

   The Office of Inspector General investigation revealed that a number of the controversial e-mails were read by at least one Geological Survey supervisor and one Quality Assurance official at the time they were written. Despite this, the comments in the e-mails appear to have gone unchallenged. Additionally, internal quality assurance reviews over the years failed to identify the questionable e-mails and the issues they raised. The extended delay in surfacing the e-mails may have prevented responsible officials from addressing questions about the quality of the model and analysis results. Early detection could have allowed for prompt remedial action regarding the possible misconduct of the offending employees and for validation of the reliability of this work. All of this would have been accomplished while personnel and contemporaneous records were readily available and memories were fresh.

   The overall delay was compounded by an additional four month period after the e-mails had been flagged for follow-up by contractor Bechtel SAIC, LLC (Bechtel) in November 2004. Bechtel, as the management and operating contractor at the Yucca Mountain Project, had been tasked to review archived e-mails for relevancy and posting on the Nuclear Regulatory Commission's publicly accessible Licensing Support Network. In early November 2004, Bechtel's *Archival Email Review Team* identified the referenced e-mails that suggested the possible falsification of Yucca Mountain Project records and other wrongdoing. However, the e-mails were not elevated to responsible Yucca Mountain Project officials until March 2005. An internal Department report issued in April 2005 attributed the delays to "unintentional oversight and unintentional noncompliance with Administrative Procedure 16.1Q, Condition Reporting and Resolution, due to competing work load priorities, and the disruption of work during Bechtel's holiday season shutdown."

2. *Compromise of scientific notebook requirements.*

   In January 2000, OCRWM conducted a Quality Assurance Audit of, among other reports, the Analysis and Model Report (AMR) on "Simulation of Net Infiltration for Modern and Potential Future Climates." The controversial e-mails disclosed in March 2005 were related to this AMR. A number of deficiencies were noted during the audit, including a finding that a scientific notebook had not been maintained for the AMR, though it had been required in accordance with the AMR's Development Plan. The audit directed corrective action.

The Office of Inspector General learned that the Geological Survey's corrective action consisted of waiving the Development Plan's requirement for maintaining a scientific notebook and, instead, permitting the expansion and updating of the AMR itself to document development of the model. This remedial action was approved by OCRWM.

We question the effectiveness and appropriateness of the corrective action. We noted that the requirement for a stand-alone scientific notebook was waived only after the discovery that Geological Survey had not properly maintained one from the outset. Thus, the decision to waive the notebook requirement did not address the core issue of why an appropriate notebook had not been maintained from project initiation through completion. Scientific notebooks, a standard protocol in the science community, document research approaches and outcomes and, in so doing, they aid an individual other than the original author in reproducing and tracing the effort.

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.*

The investigation determined that in 2004, Bechtel began a one-time comprehensive evaluation of the set of AMRs that support the *Total System Performance Assessment* for the license application. One of the AMRs evaluated was the "Simulation of Net Infiltration for Modern and Potential Future Climates," again the topic of many of the controversial e-mails. A Regulatory Integration Team was formed to conduct a comprehensive evaluation of this and other AMRs. The objective of the team was to evaluate and subsequently refine the AMRs that support the *Total System Performance Assessment* and license application to improve integration, consistency, transparency, and traceability.

During the evaluation of the AMR for "Simulation of Net Infiltration for Modern and Potential Future Climates," the team was unable to reproduce the model due to the absence of certain control files. It was determined by the team that the control files were not in the Yucca Mountain Project *Technical Data Management System*, as required. The team worked informally with the Geological Survey to locate the missing information; however, not all of the data could be located. A Condition Report was initiated in February 2005, and Bechtel management contacted the Geological Survey in early March 2005 to officially request the Geological Survey locate the files. Many of the missing control files were subsequently located and provided to the team. In June 2005, the remaining files were found at an employee's residence and forwarded to OCWRM.

Based on this information, we concluded that the Yucca Mountain Project should strengthen its policies and practices to ensure that data critical to the validation of scientific work is maintained in accordance with sound information control procedures, in this case in the Yucca Mountain Project's *Technical Data Management System*.

PATH FORWARD

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

The discovery of the e-mails that prompted the Office of Inspector General criminal investigation understandably raised concerns over the Yucca Mountain Project's quality assurance process. The Department has announced that, in order to address these concerns, it has initiated steps to remediate or replace certain work of the Geological Survey and that the quality of the results of this effort will be reviewed by a body of scientists independent of the Yucca Mountain Project. We concluded that these steps are essential if the Yucca Mountain Project is to overcome historical and current quality assurance concerns.