DOE/IG-0535

AUDIT REPORT

MANAGEMENT OF THE STOCKPILE SURVEILLANCE PROGRAM'S SIGNIFICANT FINDING INVESTIGATIONS

DECEMBER 2001

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES

U.S. DEPARTMENT OF ENERGY
Washington, DC 20585

December 18, 2001

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman (Signed)
Inspector General

SUBJECT: INFORMATION: Audit Report on "Management of the Stockpile Surveillance Program's Significant Finding Investigations"

BACKGROUND

A prime purpose of the Department of Energy's (Department) Stockpile Stewardship Program is to maintain a "high confidence" in the nuclear weapons stockpile so that the Department can certify to the President that there is no need to resume underground testing. To fulfill the responsibility for the annual reporting and certification requirement, the Directors of the three Department nuclear weapons laboratories annually assess and report the condition of the weapon systems for which their laboratories are responsible. The laboratory Directors rely on a robust alternative program for "science-based" weapons evaluation. The overall performance of the Department's Stockpile Stewardship Program is one of its highest national security priorities.

A critical event in this process is the identification of a weapon defect or malfunction during surveillance testing. This is especially important when dealing with an aging weapons stockpile. Departmental procedures require preliminary tests or evaluations to establish whether a Significant Finding Investigation (SFI) should be initiated. Such investigations are then conducted to determine the identified problem's cause and impact, and to recommend corrective actions. The Department asserts that timely resolution of every investigation is significant since each test finding could reduce the reliability of the weapon system it represents. With this in mind, the objective of this audit was to determine whether the processing of SFIs was being carried out in a timely manner.

RESULTS OF AUDIT

We found that the Department has not been meeting internally established timeframes for initiating and conducting investigations of defects and malfunctions in nuclear weapons. In some instances, confirming the need for an investigation took over 300 working days, despite the Department's 45-day criteria. Once initiated, the majority of investigations examined were open more than one year even though a one-year benchmark had been established for such investigations. Although technical uncertainties inherently associated with some defects and malfunctions led to increased resolution time, we found an overall lack of accountability for ensuring that SFIs were promptly identified and completed. As a result of investigation delays, test data and findings relating to weapon reliability were not readily available to the Departments of Energy and Defense. If these delays continue, the Department may not be in a position to unconditionally certify the aging nuclear weapons stockpile.

In October 2001, the Office of Inspector General issued a report on *Stockpile Surveillance Testing* (DOE/IG-0528), which disclosed that the Department had not met many of its flight, laboratory, and component testing milestones. Since the Department depends on a rigorous testing methodology for the initial detection of weapon system defects and malfunctions, testing backlogs have the potential to further complicate and delay the observation, analysis, and resolution of such significant problems.

In our judgment, taken together, this report and the October 2001 report on surveillance testing raise serious concerns about the process the Department has employed to maintain a satisfactory confidence level in the nuclear weapons stockpile. We are concerned that the Stockpile Surveillance Program's intended performance outcomes may be in jeopardy and that immediate action is required to ensure that milestones are met and that identified defects are promptly addressed. Accordingly, we recommended that the Deputy Administrator for Defense Programs develop and implement a laboratory-wide database to track the notification and resolution phases of the SFI process to establish a basis for monitoring laboratory progress and accountability. Such information will help in determining what resources are needed to meet Department benchmarks.

MANAGEMENT REACTION

Management generally agreed with the report conclusions and recommendations and advised that corrective actions would be implemented in the near future. Management's comments are provided verbatim at Appendix 3 of the audit report**.**

Attachment

cc: Deputy Secretary
Administrator, National Nuclear Security Administration
Deputy Administrator for Defense Programs
Director, Policy and Internal Controls Management, NA-65

MANAGEMENT OF THE STOCKPILE SURVEILLANCE PROGRAM'S SIGNIFICANT FINDING INVESTIGATIONS

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Overview

INTRODUCTION AND OBJECTIVE

The Department of Energy (Department) is responsible for providing the nation with nuclear weapons and ensuring these weapons remain safe, reliable, and available to meet national security requirements. Prior to the 1992 moratorium on nuclear testing, confidence in the stockpile was based on underground testing and the continuous development of new nuclear weapons. Since the moratorium, certification of the reliability and safety of the weapons stockpile has been based primarily on surveillance and assurance tests conducted as part of the Stockpile Surveillance Program. Under this program, weapons are randomly selected, disassembled, inspected, and tested to identify possible defects or malfunctions.

Overall responsibility for the direction of the Stockpile Surveillance Program is vested in the National Nuclear Security Administration (NNSA). Lawrence Livermore, Los Alamos, and Sandia National Laboratories are responsible for design of the weapon systems or components in the stockpile and provide the technical and scientific expertise to investigate defects and malfunctions.

When a weapon defect or malfunction is identified during surveillance testing, Departmental procedures require that the appropriate laboratory, depending on weapon type, be promptly notified. Within 5 days of notification, the laboratory is required to determine the significance of the problem and, if warranted, request that a Significant Finding Notification (SFN) be issued. If an SFN is issued, the laboratory has 45 days to perform preliminary tests or evaluations sufficient to determine whether a Significant Finding Investigation (hereafter referred to as SFI or investigation) should be initiated. The specific criteria developed by the Department for this purpose are found in Departmental production and weapons manuals. This is more fully discussed on pages 8 and 9 of this report.

SFIs are conducted to determine the cause and impact of the problem and to recommend corrective actions. Although not a formal NNSA policy, a generally accepted benchmark used by Albuquerque Operations Office managers to encourage timely resolution provided that SFIs be resolved within one year. A final determination on how the defect affects the safety, reliability, and performance of the weapons in the stockpile cannot be made until the investigation is completed. Assessments on the weapon systems reliability are reported in the formal concurrence letters sent to the Secretaries of Energy and Defense by the three weapons laboratory Directors and are conditioned

in part on the successful resolution of SFIs. These letters serve as the basis for certifying to the President the safety and reliability of the nuclear stockpile.

Concerns about the nation's aging nuclear weapons stockpile, testing delays, and resolution of SFIs have been increasing in recent years. These concerns were most recently discussed in the Department's *Strategic Review of the Surveillance Program 150-Day Report (150 Day Report),* which disclosed that the average length of time to complete SFIs had increased from 5 to 19 months. Additionally, the review disclosed that the Department of Defense and some within the Department of Energy, were concerned about receiving prompt notification of potentially serious deficiencies. In responding to the draft report, Department officials advised that NNSA was implementing recommendations from the 150-Day Report into its surveillance planning.

Since 1958, more than 1200 significant findings have been identified. About 120 findings have resulted in retrofits or major design changes to the nuclear weapons stockpile. The objective of our audit was to determine whether the processing of SFIs was being carried out in a timely manner.

CONCLUSIONS AND OBSERVATIONS

In many cases, the Department was not meeting internally established timeframes for establishing and resolving SFIs. We identified some instances where the Department took over 300 working days to determine whether an observed defect or malfunction required an SFI. Once SFI designations were made, over two-thirds of the 64 active investigations remained unresolved beyond the Department's one-year benchmark for completion. Although technical uncertainties associated with some defects or malfunctions led to increased resolution time, we found an overall lack of accountability for ensuring that investigations were promptly identified and expeditiously completed. Specifically, the Department did not have complete, readily accessible information on the status of SFIs or action plans detailing how investigations that had been delayed would be completed. In addition, sufficient human capital and budgetary resources, in some cases, were not readily available to conduct needed investigations. As a result of delays in resolving SFIs, test data and findings relating to weapons reliability were not timely, which could affect the ability of the Departments of Energy and Defense to certify the nuclear weapons stockpile.

To improve the investigative process, we recommended that the Office of Defense Programs develop and implement an integrated laboratory-wide database to track the notification, determination, and resolution phases of SFIs; and, to determine what resources are needed to meet Department benchmarks.

The Office of Inspector General (OIG) issued a related audit report on the *Management of the Nuclear Weapons Production Infrastructure* (DOE/IG-0484, September 22, 2000). The audit disclosed that a deteriorating infrastructure had contributed to delays in weapons modification, remanufacture and dismantlement, and surveillance testing of weapon components. The OIG subsequently noted in an October 2001 report on *Stockpile Surveillance Testing* (DOE/IG-0528, October 5, 2001) that the Department had not met many of its internally-generated milestones for flight, laboratory, and component tests, which resulted in a lack of critical information on the reliability of nuclear weapon systems. In our judgment, the state of the weapons production infrastructure, uncompleted weapon systems testing, and delays in SFI resolution placed current and future goals of the Stockpile Stewardship Program at risk.

The audit identified issues that management should consider when preparing its year-end assurance memorandum on internal controls.

(Signed)
Office of Inspector General

Significant Finding Investigation Processing Delays

Based on the Department's standards, weapons laboratories were not processing SFIs at a satisfactory level. In a number of cases, the Department's benchmark for determining whether observed defects or malfunctions warranted SFIs were not met. Additional delays occurred once SFIs were opened. For example, more than two-thirds of the investigations active as of March 2001 had been open for a period greater than 12 months. In a number of these cases, long resolution times were related to administrative delays rather than to resolving technical issues.

Notification Period Delays

Within 5 working days of being notified of a defect or malfunction, the appropriate laboratory is required to determine the significance of the reported problem and whether an SFN should then be issued. For purposes of this report, we refer to this 5-day timeframe as the SFN Determination period. If, after preliminary testing, it is determined the problem may represent an impact on the safety or reliability of stockpiled weapons, an SFI should be opened within 45 working days[1]. We refer to this 45-day timeframe as the SFI Determination period.

Most defects are identified when nuclear components are removed at the Pantex plant in Amarillo, TX (Pantex), a special handling plant for nuclear weapons, or during nonnuclear systems tests at the weapons laboratories. In some instances, defects are determined based on analyses of data collected on the stockpile over a long period of time. In such cases, SFIs would be opened without an SFN being generated.

Our examination of laboratory investigation files disclosed many instances where the timeframe between the observance of a defect or malfunction and its establishment as an SFI greatly exceeded the Department goal. Although complete information for each instance was not readily available, we tracked the notification of four defects or malfunctions that experienced long processing delays.

Table 1 on the next page illustrates the amount of time expended on SFN processing for the four cited examples.

[1] During the audit, the SFI determination period was increased from 15 to 45 working days.

Table 1 SFN and SFI Determination Periods (In Working Days)			
Example	5-Day Determination Period	45-Day Determination Period	Total Determination Period
1	260	49	309
2	320	123	443
3	unknown	429	unknown
4	unknown	unknown	481

Because the four cases were still open at the time of our review, it was not possible to assess the overall importance of these problems. As of March 2001, the total resolution time for these four cases ranged from 32 to 47 months.

We also concluded that the Department was not tracking the SFN period in a systematic fashion. Of the 64 investigations examined, we determined that:

- The Department had met both benchmarks only 3 times and had met either its 5-day or 45-day determination benchmarks 13 times, and had not met either benchmark 5 times; and

- Information was unavailable to determine whether the prescribed timeframes were missed in 43 cases.

We asked the Department for more information in the 43 instances, but none became available by the time our review concluded.

We were also told of cases illustrating the Department's problem in managing the notification process. Department officials advised that, in some cases, SFN periods were extended so that additional assessments could be conducted prior to a formal investigation. Such additional work can, from time to time, obviate the need for an SFI altogether. We also determined that cases could be misplaced. For example, a responsible engineer at Sandia told us that during a site visit to Pantex,

he "found" a malfunctioning component that had apparently been sidelined and forgotten, and initiated the prescribed SFI processing. In this case, the investigation opened 30 months after the malfunction was initially observed and was completed 51 months later.

Investigation Period Delays

Of the 64 investigations open at the time of our review, 46 were open longer than one year, the Department's internal benchmark for SFI resolution. Over half were more than 18-months old. As illustrated in Table 2, each laboratory had a large number of investigations that exceeded the one-year benchmark.

Table 2
Open SFIs by Laboratory
(As of March 2001)

Laboratory	Less Than 12 Months	12 to 18 Months	More Than 18 Months	Total
Sandia	10	5	11	26
Livermore	5	5	4	14
Los Alamos	3	3	18	24
Total	18	13	33	64

At each laboratory we examined, where available, investigation files to better understand why timeframes were exceeded. The following examples briefly summarize information contained in the files for selected cases:

- In May 1999, Los Alamos opened an investigation based on a problem observed in December 1998. Laboratory officials realized in September 2000 (almost 2 years later) that Pantex had not provided all materials necessary to conduct required testing associated with the investigation. Pantex subsequently provided the materials. As a consequence, this problem had been unresolved for more than two years, and its impact on the reliability and performance of the weapon had not yet been determined.

- Lawrence Livermore opened an investigation in December 1999 and shortly thereafter requested measurement data from another facility in the weapons complex. When making a follow-up request six months later, laboratory officials learned that the initial message had never been received because of a computer virus. Expiration of a safety study at the site from which information had been requested further delayed the completion of the investigation. At the time of the audit, this investigation was projected to close in September 2001.

- Los Alamos opened an investigation in February 1997 and requested calculation data from elsewhere in the laboratory. After 50 months, the SFI remained open because the facility did not have the computer model needed to provide calculations.

- An investigation opened in June 1999 at Lawrence Livermore was delayed a year and a half for test parts to be shipped from another laboratory.

Department officials we spoke to were concerned about these and other delays in SFI resolution. They were especially concerned with those that appeared to relate to administrative issues – such as shipping parts from one facility to another. Moreover, the Department's Fiscal Year 2000 performance appraisals for two of the three nuclear laboratories underscored deficiencies related to the SFI closure process. For one laboratory, the Department's assessment expressed concern about the length of the resolution process and advised that more management attention would expedite closure. An assessment of another laboratory indicated that the length of time to close out investigations was longer than necessary. The appraisal for the third laboratory was not performed by the same Department element and did not specifically address SFI processing.

Similarly, on a quarterly basis the Department assesses its own performance on a number of aspects of the Stockpile Surveillance Program. In its April 2001 assessment, the Department's self-applied rating for SFI closure was unacceptable. It received a rating of "zero" for all nine major weapon systems, indicating that performance metrics were not being consistently met.

Finally, we noted that according to the Department's 150-Day Report, the average length of time to complete SFIs increased from 5 to 19 months over a nine-year period ending in 2000. Consistent with that finding, we determined that the 64 SFIs examined during the audit had been open an average of 22 months as of March 2001. In our discussions with responsible officials, however, we were advised that in the recent past, progress had been made in bringing many older investigations to closure.

Significant Finding Investigation Requirements

The NNSA has overall responsibility for the development, production, and maintenance of the nation's nuclear weapons. Policies and procedures related to these responsibilities have been delineated in the Albuquerque Operations Office Development and Production Manual (Manual) and are applicable to all Department and contractor organizations with responsibility for executing any phase of the nuclear weapons program. Additionally, the August 1998 Weapons Evaluation Program Handbook (Handbook) provides implementing policies, practices, and work processes for carrying out these responsibilities, including the resolution of SFIs. The Handbook serves as a means of communicating to both internal and external organizations the responsibilities of the Weapons Evaluation Program.

With regard to the SFI resolution process, the Manual requires that Design Agencies (weapons laboratories) determine the significance of a defect or malfunction observed during weapons testing, dismantlement, inspection, and routine maintenance within five days. Once determined to be significant, within 45 days the laboratory should make a preliminary assessment of the defect or malfunction's impact on the safety and reliability of the stockpile, conduct preliminary studies, and finalize its determination on whether an SFI should be opened. The Handbook provides a range of performance levels for assessing timely SFI resolution. According to the Handbook, investigations resolved within 12 months receive a higher performance score. The Handbook further provides that for any investigation remaining open more than 18 months, performance on that element is to be graded at zero. These metrics were developed consistent with the Government Performance and Results Act of 1993. However, NNSA had not adopted this as a formal measurement but rather used "a reasonable period of time" for SFI resolution.

During the course of the audit, both Department and contractor officials affirmed that the goal was to close SFIs within a year. However, an Albuquerque official told us this was not always possible because of the

complex nature of some SFIs. He further asserted that the one-year goal was established in 1995 based on the average time required to complete investigations of electrical and mechanical problems. In his view, this benchmark is unreasonable for some investigations of a more complex nature. The OIG recognizes that the one-year benchmark is based on average processing times and may not be reasonable in all cases. Nevertheless, the focus of this report is on ensuring the timely processing, to the extent possible, of all SFIs.

Need for Increased Accountability and Resource Planning

Opportunities existed for the Department to significantly improve accountability for prompt notification and resolution of noted weapon system defects or malfunctions. Specifically, responsible Department officials did not have complete, readily accessible information on the status of SFIs complex-wide. Furthermore, once delays were noted, the Department did not require laboratories to provide action plans detailing how such investigations would be expeditiously completed. In some cases, resource limitations and technical uncertainties contributed to these delays.

Accountability

The Department could not effectively hold its laboratories accountable for prompt investigation resolution because it did not have sufficient information and did not coordinate follow-up activities. Specifically:

- Although Department policy included the 45-day metric for preliminary assessment, prior to our review, statistics on the notification period had not been collected or analyzed. In fact, the Department's SFI database, maintained by Sandia National Laboratories, did not contain fields for the date a problem was first observed or for the date the notification period began. Without this information, determining whether the laboratories are meeting pre-investigation metrics is extremely difficult. Investigation resolution times tracked by the Department did not include the time between initial observance of a defect or malfunction and the date an investigation was opened. As noted earlier in this report, we found a number of cases where that time period seemed excessive.

- Frequently, monthly reports generated by Sandia and submitted to Albuquerque did not contain sufficient information as to what

actions were needed to complete individual SFIs. We observed that these reports tended to focus on actions completed to date and planned future tests. However, they generally did not address causes for delays and planned actions to overcome those obstacles.

- Although Department officials required quarterly reviews of investigations that were open 12 months or more, we determined laboratories were not required to formally develop action plans to resolve delays. Records of those meetings generally included a list of attendees and an agenda of SFIs to be discussed but did not include follow-up actions. Furthermore, a Department official indicated that follow-up of the quarterly meetings tended to be informal.

Resources

At each Department and laboratory facility we visited, responsible officials told us that the speed with which defects or malfunctions were investigated and resolved was, in many cases, directly related to available resources. Further, officials told us technical uncertainties arose that had to be resolved and the one-year benchmark was simply unrealistic. In other cases, however, resource availability – including facilities in which to conduct tests and qualified personnel to administer tests – had played a major part in delays. For example, several SFIs we examined were delayed while a test facility at Los Alamos was restarted. In one such case, an investigation was delayed 44 months because necessary tests apparently could not be conducted elsewhere. At Lawrence Livermore, an investigation was delayed several months, in part, because the individual responsible for the design of a relevant component no longer worked at the laboratory. No one else at that laboratory had sufficient background information to immediately address the problem.

Resource limitations were exacerbated, in our judgment, because the Department did not specifically budget for SFIs. Instead, such investigations were part of the overall Stockpile Surveillance Program budget and, as such, competed for funds with other surveillance activities. Many Department and laboratory officials told us that budgeting for SFIs was difficult because of the wide range of technical uncertainties involved and the significant fluctuation from year to year in the number of active SFIs. They acknowledged, however, that SFIs generally tended to be assigned a relatively low priority within the surveillance program. In responding to a draft of this report,

the Assistant Deputy Administrator for Military Application and Stockpile Operations said that despite what we were told in the field, completion of SFIs is one of the highest budget priorities given by NNSA to the plants and laboratories.

Stockpile Reliability

The Stockpile Stewardship Program's success depends on the Department's ability to find, assess, and fix potential problems in the stockpile, and to do so in a timely manner. Unreasonably long delays – especially those caused by seemingly controllable administrative issues – mean that the Department may lack essential information on the significance of noted defects or malfunctions. Decisions on whether to redesign a component, engineer a retrofit, or take other action may likewise be postponed. As the stockpile continues to age, making these decisions as soon as possible becomes increasingly important.

Ultimately, delays in resolving SFIs have the potential to affect the Department's confidence in the reliability of weapon systems and its ability to certify the nuclear weapons stockpile. There have been many instances where a defect or malfunction originally thought to have been relatively minor turned out to be quite serious. As an example, a problem observed in November 1998 was opened as an SFI and its potential impact was initially determined not to be significant. Based on this determination, the investigation was not, at first, given priority attention. Subsequently, the investigation disclosed that the problem could have a major impact on the reliability and performance of a key weapon system component and that the component needed to be redesigned. As of March 2001, the total time expended on this investigation was about 28 months.

Management advised that important changes during the 1990s affected the number of SFIs being opened and the length of time they remained open. These include increased concerns about age-related problems in the enduring stockpile and the increased participation of the defense laboratories in the SFI process. These changes resulted in more thorough investigations and a corresponding increase in the use of assets to conduct required tests. Management further pointed out that the technical complexity of some SFIs might cause the established benchmarks to be exceeded. The OIG recognizes this point. Nevertheless, given the national security implications associated with stockpile reliability, we concluded that the Department needs to implement and execute an effective system to track and manage this critically important activity.

The significance of these issues is further compounded by other problems in the Stockpile Surveillance Program. Specifically, in October 2001, the OIG issued a report on *Stockpile Surveillance Testing* (DOE/IG-0528), which disclosed that the Department had not met many of its flight, laboratory, and component testing milestones. Since the Department depends on a rigorous testing methodology for the initial detection of weapon system defects or malfunctions, testing backlogs have the potential to further complicate and delay the observation, analysis, and resolution of such problems.

RECOMMENDATIONS

To hold its laboratories accountable for prompt notification and resolution of noted weapon system defects and malfunctions, we recommend that the Deputy Administrator for Defense Programs enhance the Department's SFI process by requiring:

1. Albuquerque to develop and implement a comprehensive SFI database, or modify the system maintained by Sandia National Laboratories, to include:

    a. Defect and malfunction discovery date, SFN and SFI determination dates, expected closure date, report date, expected impact and any other information deemed necessary to manage the process; and

    b. Narrative explanations of unexpected delays and steps planned to resolve those delays on open investigations. (This information should also be included in the monthly reports.)

2. Laboratories to provide detailed 6-month action plans and estimated closure dates for the resolution of all investigations open more than one year.

3. Laboratories to estimate resource requirements for completing investigations open more than one year and to include such estimates as part of their overall surveillance program budget request.

4. Albuquerque to provide a periodic management report that will inform top management of significant ongoing SFI problems.

MANAGEMENT COMMENTS

Management generally concurred with the audit report conclusions and recommendations and advised that corrective actions would be implemented by January 2002. Management agreed with tracking all recommended information in the Sandia database except that related to recommendations 1b. and 2. Officials believed this information would be more readily usable to NNSA management in the monthly reports. Management's comments are included in their entirety as Appendix 3.

AUDITOR COMMENTS

Management's comments were generally responsive to the recommendations; however, in order for the Sandia database to serve as an effective tool for managing SFIs and holding responsible officials accountable, it must be complete and transparent. This requires, in our judgment, narrative explanations for unexpected delays, planned actions to resolve delays, and detailed action plans to resolve SFIs open more than one year. If NNSA decides not to include all narrative explanations in the Sandia database, it should, at a minimum, develop a process by which managers have complete, readily accessible information on all SFIs.

Appendix 1

SCOPE

The audit was performed from February 2001 through October 2001 at the Department of Energy Headquarters in Washington, DC and Germantown, MD; Albuquerque Operations Office and Sandia National Laboratory in Albuquerque, NM; Los Alamos National Laboratory, in Los Alamos, NM; and, Lawrence Livermore National Laboratory, in Livermore, CA.

METHODOLOGY

To satisfy the audit objective we:

- Reviewed policies and procedures regarding SFIs;
- Reviewed strategic plans and performance measures established in accordance with Government Performance and Results Act;
- Interviewed cognizant Departmental and contractor officials at Headquarters, Albuquerque Operations Office, Sandia National Laboratory, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory about open SFIs and responsibilities;
- Reviewed contractor performance plans and appraisals for SFI information;
- Reviewed open and closed SFI information to assess whether work progressed, causes for delays in closure, and any impact determinations; and
- Met with Department of Defense officials regarding the SFI process and their responsibilities.

The audit was conducted in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not rely extensively on computer processed data.

We held an exit conference with NNSA officials on December 6, 2001.

Appendix 2

RELATED REPORTS

Office of Inspector General

- *Stockpile Surveillance Testing,* (DOE/IG-0528, October 5, 2001). The Department had not met many of its flight, laboratory, and component testing milestones. This resulted in a significant testing backlog that is projected to continue for several years. When tests are delayed or are not completed, the Department lacks critical information on the reliability of the specific weapons involved. Without needed test data, the Department's ability to assign valid reliability levels to some weapon systems is at risk.

- *Recruitment and Retention of Scientific and Technical Personnel,* (DOE/IG-0512, July 10, 2001). The Department has been unable to recruit and retain critical scientific and technical staff in a manner sufficient to meet identified mission requirements, and therefore, cannot ensure that necessary resources will be available.

- *Management of the Nuclear Weapons Production Infrastructure,* (DOE/IG-0484, September 22, 2000). The audit found that the nuclear weapons production infrastructure has not been adequately maintained and current and future goals of the Stockpile Stewardship Plan are at risk.

- *The U.S. Department of Energy's Efforts to Preserve the Knowledge Base Needed to Operate a Downsized Nuclear Weapons Complex,* (DOE/IG-0428, October 2, 1998). The Department had not developed a coordinated, integrated program to preserve the knowledge base of the downsized nuclear weapons complex. Without such a program, the Department risks not identifying and using all information that would provide continued high confidence in the nuclear stockpile.

Other Reports

- *FY 2000 Report to Congress of the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile,* (February 1, 2001). This Congressionally established panel found a disturbing gap between the nation's declaratory policy that maintenance of a safe and reliable nuclear stockpile is a supreme national interest and the actions taken to support this policy.

- *FY 1999 Report of the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile,* (November 8, 1999). The Congressionally appointed panel reported that effective execution of both the Stockpile Stewardship Program and the Annual Certification Process offered the best hope for sustaining confidence in the nuclear stockpile, and its deterrent capabilities, into the future. The panel recommended strengthening and broadening the Annual Certification Process to provide assurance that potential problems are being sought out and reported.

- *Strategic Review of the Surveillance Program 150-Day Report,* (January 1, 2001). This strategic review was initiated by NNSA to define the surveillance approach that would be most appropriate to assure the continued safety and reliability of the nation's nuclear stockpile. The team identified possible changes and improvements needed in the program to meet the needs of an aging stockpile with limitations on testing and an increasing need to preserve stockpile assets.

General Accounting Office

- *Nuclear Weapons: Improved Management Needed to Implement the Stockpile Stewardship Program Effectively,* (GAO-0l-48, December 2000). Although the Office of Defense Programs had taken steps to address principal challenges facing the Stockpile Stewardship Program, additional improvements were needed. Specifically, improvements were needed in order to: (1) remedy weaknesses in the program's planning process; (2) ensure that required budget information for effective cost management is available; (3) correct organizational and leadership deficiencies; and, (4) develop an effective management process for overseeing the life extension process for nuclear weapons.

- *Nuclear Weapons: Improvements Needed to DOE's Nuclear Weapons Stockpile Surveillance Program,* (GAO/RCED-96-216, July 1996). The Department was behind schedule in conducting many of the stockpile surveillance tests. As a result, the Department's confidence in the reliability levels assigned to some nuclear weapons had been diminished because some needed tests had not been carried out.

DOE F 1325.8
(08-93)

United States Government **Department of Energy**
National Nuclear Security Administration

memorandum

DATE: November 30, 2001

REPLY TO
ATTN OF: NA-122 (R. Kumar, 3-2865)

SUBJECT: DRAFT REPORT ON "MANAGEMENT OF SIGNIFICANT FINDING INVESTIGATIONS"

TO: Philip L. Holbrook, Deputy Inspector General for Audit Services, Office of Inspector General, IG-30

This memorandum responds to your October 29, 2001, request for comments on the subject Draft Report on the Management of Significant Finding Investigations (SFI). We generally agree with the recommendations covered in the draft report on the subject audit. The attachment provides the actions the National Nuclear Security Administration (NNSA) has planned on these recommendations and provides a proposed change to Recommendation 1b and Recommendation 2.

Throughout the draft report, the Inspector General (IG) states that NNSA has a "benchmark" or performance indicator that SFIs should be closed within one year. This is not an official NNSA position. There is an internal metric used by the Program Manager of the Weapons Evaluation Program to encourage timely resolution. It is an extremely conservative metric, and as stated in the report, this time frame represents a stretch goal for most SFIs. Due to the nature of stockpile issues, time is important, but all actions taken must be deliberate. The NNSA goal continues to be the closure of SFIs in a reasonable period of time. Implementation of Recommendation 1 should aid in this respect.

Also, the report does not consider all the sources for generating SFIs. When a weapon is being designed and produced, the laboratories develop an understanding of the critical production parameters. Monitoring of these parameters is incorporated into the surveillance disassembly and inspection process. The processes are not static, however. As information is collected on the as-built and aging stockpile, all data is analyzed and, occasionally, an issue arises that requires further investigation. That investigation may lead to review and reanalysis of data that had been collected and stored many months or years before and may result in the determination that a condition, originally accepted, is now of concern. In this case, a Significant Finding Notice (SFN) may be reevaluated and converted to an SFI, or an SFI can be opened based on the analysis without an SFN being generated. While the time can be quite substantial from original observation of a condition to the opening of an SFI, it should be noted the time from recognition of a condition of potential concern to opening of the SFI is short.

The Strategic Review of the Surveillance Program (150-Day Report issued January 2001) considered, among other topics, the SFI process and the timely closure of investigations. The NNSA is implementing the recommendations from the 150-Day Report into its surveillance planning.

The SFI process has served the nuclear weapons complex well over the years. However, a number of important changes during the 1990s affected the number of SFIs and the length of time they remain open. For example, there is increased concern about age-related problems in the enduring stockpile (due to extended lifetimes). This has resulted in more thorough investigations using more sophisticated tests which require the development and use of new test techniques and equipment. Some of these new tests have been incorporated into core testing and have resulted in the discovery of anomalies not previously detected. Prior to 1994, participation in the investigations by nuclear laboratories was limited. With a subsequent increase in nuclear laboratory participation in the SFI process, there has been a corresponding increase in the use of assets that are extremely difficult to schedule (hydro tests, complex computer codes, etc.). These changes have not only resulted in more SFIs being opened, but also in SFIs being open longer. Your report should acknowledge these changes to provide a complete account of the context in which SFIs are conducted.

In addition, we recommend the following changes to the text of the report:

1. Paragraph 3 on Page 1, replace "opened" with "issued" (in two places). SFNs are issued and SFIs are opened.

2. The first sentence of Paragraph 4 on Page 1 states that SFIs "are generally to be completed within one year." Again, this is not an NNSA position and we recommend deleting this part of the sentence.

3. The last paragraph on Page 7 states "Albuquerque Operations Office has overall responsibility . . . ." Replace "Albuquerque Operations Office" with "NNSA."

4. The first sentence in the first full bullet on Page 9, starting with the word "Frequently..." should be replaced with "Frequently, monthly reports generated by Sandia and submitted to Albuquerque did not contain sufficient information on what action(s) were needed to properly conduct the SFI on a timely basis."

5. The last paragraph on Page 9 states "Responsible officials told us. . . SFIs generally tended to be assigned a relatively low priority within the surveillance program." This comment is unsubstantiated and is not the position of the NNSA, the laboratories, or the plants. We recommend deleting this statement and replacing it with "The closure of SFIs is one of the highest budget priorities given by NNSA to the plants and laboratories."

I hope that the above and attached comments will allow you to finalize the report. If you have any questions or need further information, please call me or have your staff contact Ramendra Kumar on 3-2865.

David E. Beck
Assistant Deputy Administrator
for Military Application and
Stockpile Operations
Defense Programs

Attachment

NATIONAL NUCLEAR SECURITY ADMINISTRATION DECISION
ON INSPECTOR GENERAL DRAFT REPORT ON
MANAGEMENT OF SIGNIFICANT FINDING INVESTIGATIONS

Recommendation 1:

Albuquerque to develop and implement a comprehensive SFI database, or modify the system maintained by Sandia National Laboratories, to include:

a. Defect and malfunction discovery date, SFN and SFI determination dates, expected closure date, report date, expected impact, and any other information deemed necessary to manage the process.

b. Narrative explanations of unexpected delays and steps planned to resolve those delays on open investigations. (This information should also be included in the monthly reports.)

Management Decision:

Partially concur.

We concur with adding the new fields as described in Part a., above, into the Sandia SFI database. However, it should be understood there is not necessarily an SFN for every SFI. Direction will be issued to testing agencies to provide this information on future SFIs to Sandia by the end of January 2002. We also expect that Sandia's database will be modified by January 2002 to include the new data fields.

With regards to Part b., we agree the tracking of this information is appropriate. However, we feel this narrative information would be more readily usable to NNSA management in the monthly reports vice this kind of database. We recommend changing Part b. to "Narrative explanations of unexpected delays and steps planned to resolve those delays on open investigations should be included in the monthly report."

This direction will be issued to the design agencies by January 2002.

Recommendation 2:

Laboratories to provide detailed action plans for the resolution of all investigations open more than one year.

Management Decision:

Partially concur.

This issue was addressed in the "Strategic Review of the Surveillance Program-150 Day Report." The study confirmed that SFI committees attempt to do a thorough investigation and conduct the

investigations in the most expeditious manner possible, considering other factors, such as limitations in experienced staff, testing capabilities, and availability of facilities. SFIs are forensic-type work, with many possible outcomes. The time it takes to plan all of the possible major tasks in such complex investigations is not an effective use of resources. The SFI process is, as the name implies, an investigative one instead of a production process. Insight into more than the next few steps in the investigation is usually limited. This is because results of the next few steps may reorient the rest of the investigation into an area that was not expected. Therefore, devoting much time to detailed planning to the "anticipated" end will result in further delays to the investigation.

The SFI committees have been in the practice of planning the necessary steps leading to the next major decision points, but we acknowledge they have not always been documented for management and have not included a closure goal. Therefore, we agree it would be worthwhile to have a documented plan for accomplishing the next few steps.

We recommend this recommendation be changed to "Laboratories to provide 6-month action plans and estimated closure dates towards resolution of all investigations open more than one year in the monthly report."

This information, along with the information from Recommendation 1, part b., will serve as a valuable management tool for assessing the progression of SFIs. This direction will be issued to the design agencies by January 2002.

Recommendation 3:

Laboratories to estimate resource requirements for completing investigations open more than one year and to include such estimates as part of their overall surveillance program budget request.

Management Decision:

Concur.

Direction will be issued to the design agencies by January 2002.

Recommendation 4:

Albuquerque to provide a periodic management report that will inform top management of significant, ongoing SFI problems.

Management Decision:

Concur.

The Program Manager for the Weapons Evaluation Program will continue to inform management at the quarterly Defense Programs briefing of significant, ongoing SFI problems. This information will also be added to the quarterly "Surveillance Program Issues and Status Report," as appropriate.

IG Report No. DOE/IG-0535

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