



Department of Energy
Washington, DC 20585

July 27, 2022

John Greenwald, Jr.



Subject: Mandatory Declassification Review (MDR) Request 2017-0005

Dear Mr. Greenwald:

This is in final response to your request for MDR under Section 3.5 of Executive Order (E.O.) 13526, Classified National Security Information. In your request, dated and received in the Office of Environment, Health, Safety and Security January 4, 2017, you requested the review and release of:

1. "Independent Oversight Inspection of Safeguards and Security of the Los Alamos Site Office and Los Alamos National Laboratory, February 2003".

Pursuant to Title 10, Code of Federal Regulations (CFR), Part 1045, Subpart D, the Office of Classification, EHSS-1, has completed its review of the document you requested and has determined that portions of the document may be released.

However, E.O. 13526, Section 6.2. (a) states that "Nothing in this order shall supersede any requirement made by or under the Atomic Energy Act of 1954..." Sections 141-146 of this Act (42 U.S.C. 2161-2166) and/or section 148 of this Act (42 U.S.C. 2168) prohibit(s) the disclosure of information concerning atomic energy defense programs that is classified as either Restricted Data or Formerly Restricted Data and/or determined to be Unclassified Controlled Nuclear Information (UCNI) pursuant to the Atomic Energy Act, as amended. Our review has determined that this document contains UCNI information which must be withheld under the provisions of the Atomic Energy Act of 1954.

E.O. 13526, Section 6.2 (d) states that "Nothing in this order limits the protection afforded any information by other provision of law, including the Constitution, Freedom of Information Act exemptions, the Privacy Act of 1974, and the National Security Act of 1947, as amended. This order is not intended to and does not create any right or benefit substantive or procedural, enforceable at law by a part against the United States, its departments, agencies, or entities, its officers, employees, or any, or any other person."



E.O. 13526, Section 1.4 states that "Information shall not be considered for classification unless its unauthorized disclosure could reasonably be expected to cause identifiable or describable damage to the national security in accordance with Section 1.2 of this order, and it pertains to one or more of the following:

(f) United States Government programs for safeguarding nuclear materials or facilities. Our review has determined that this document contains National Security Information (NSI) which must be withheld.

Pursuant to 32 CFR 2001.33, the determination may be appealed in writing within 60 days of receipt of a letter denying any portion of the request. Regarding the information withheld by the Department of Energy (DOE), the appeal should be made to the Director for Environment, Health, Safety and Security, 1000 Independence Avenue Southwest, Washington, DC 20585-1615. The written appeal, including the envelope, must clearly indicate that a Mandatory Review Appeal is being made. The appeal must contain all other elements required by 10 CFR 1045.53. Further review will, thereafter, be available to you, limited to areas involving NSI, from the Interagency Security Classification Appeals Panel. I am the denying official for DOE classified information.

A redacted copy of the document is enclosed. I appreciate the opportunity to assist you with this matter. If you have any questions about the request or this correspondence, please contact Mr. Scott McFadden, of my staff, at (301) 903-3865.

Sincerely,



Edith A. Chalk
Director
Office of Classification
Office of Environment, Health,
Safety and Security

Enclosure

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Volume I

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Independent Oversight
Safeguards and Security Inspection
of the

Los Alamos Site Office and Los Alamos National Laboratory (U)

January 29, 2003



~~NATIONAL SECURITY INFORMATION
Unauthorized disclosure subject to criminal
and administrative sanctions
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ASC
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Classified By: CG-SS-4 9/2000
Declassify On: X-4~~

Office of Independent Oversight and Performance Assurance
Office of the Secretary of Energy

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Department of Energy Declassification Review	
1 st Review Date: <u>5-22-17</u>	Determination: [Circle Number(s)]
Authority: <input checked="" type="checkbox"/> DC <input checked="" type="checkbox"/> DD	1. Classification Retained
Name: <u>Ray Lee mvs</u>	2. Classification Changed To:
2 nd Review Date: <u>4/23/17</u>	3. Contains No DOE Classified Info
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Name: <u>WJ Farmer, 0163</u>	5. Classification Cancelled
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	<u>(STEVE ROBINSON, CR)</u>

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**INDEPENDENT OVERSIGHT SAFEGUARDS AND SECURITY
INSPECTION OF THE
LOS ALAMOS SITE OFFICE AND THE
LOS ALAMOS NATIONAL LABORATORY (U)**

VOLUME I (U)

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ACRONYMS (U)

Acronym	Definition
ADAPT	Advanced Development and Professional Training
AL	Albuquerque Operations Office
ARIES	Advanced Recovery and Integrated Extraction System
ARO	Alarm Response Office
ASC	Albuquerque Service Center (formerly Albuquerque Operations Office)
ASSESS	Analytical System and Software for Evaluating Safeguards and Security
BRASS	Basic Rapid Alarm Security System
CARDS	Counterintelligence Analytical Research Data System
CAS	Central Alarm Station
CCTV	Closed Circuit Television
CMPC	Classified Matter Protection and Control
CMR	Chemical and Metallurgical Research
CMRR	Chemical and Metallurgical Research Replacement
CSIL	Critical Sensitive Information List
DAC	Daily Administrative Check
DBT	Design Basis Threat
DCID	Director of Central Intelligence Directive
DOE	U.S. Department of Energy
DP	Deputy Administrator for Defense Programs
DSIP	Denial Strategy Implementation Plan
ESS	Engagement Simulation System
ESTHER	Enhanced Security Through Human Error Reduction
FACTS	Foreign Access Central Tracking System
FAR	False Alarm Rate
FBI	Federal Bureau of Investigation
FOCI	Foreign Ownership, Control, or Influence
FRAM	Fixed Energy Response Function Analysis with Multiple Efficiencies
FV&A	Foreign Visits and Assignments
FY	Fiscal Year
GSA	General Services Administration
HEDP	High Explosive Dual Purpose
HMMWV	High-Mobility Multi-Wheeled Vehicle
IA	Inventory Adjustment
ID	Inventory Difference
IDP	Individual Development Plan
IG	DOE Office of the Inspector General
IN	DOE Office of Intelligence
IRA	Internal Review and Assessment
ISA	Iterative Site Analysis
ISEC	Internal Security Program Division
ISSAV	Integrated Safeguards and Security Assessment Visit
ISSM	Integrated Safeguards and Security Management

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ACRONYMS (U)

Acronym	Definition
I-TRACK	LANL Self Assessment Tracking Database
JTA	Job Task Analysis
JTS	Joint Tactical Simulation
LA	Limited Area
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
LEID	Limit of Error of Inventory Difference
LFR	Live Fire Range
LIR	Laboratory Implementation Requirement
MAA	Material Access Area
MASS	Materials Accounting and Safeguards System
MBA	Material Balance Area
MBA/OP	Material Balance Area/Operating Procedures
MC&A	Material Control and Accountability
NAR	Nuisance Alarm Rate
NIS	Nonproliferation and International Security Division
NMMSS	Nuclear Materials Management Safeguards System
NMSSUP	Nuclear Materials Safeguards and Security Upgrade Project
NMT	Nuclear Materials Technology Division
NMT-4	Nuclear Materials Control and Accountability Group
NNSA	National Nuclear Security Administration
NNSI	Nonproliferation and National Security Institute
NPPL	Non-Physical Parent Lot
OA	Office of Independent Oversight and Performance Assurance
OA-10	Office of Safeguards and Security Evaluation
OMB	Office of Management and Budget
OPSEC	Operations Security
OSI	Office of Security Inquiries
OUO	Official Use Only
PA	Protected Area
PAFD	Process Accountability Flow Diagram
PAP	Personnel Assurance Program
PC	Portable Computer
PF-4	Plutonium Facility
PIQC	Physical Inventory Quality Committee
PIDAS	Perimeter Intrusion Detection and Assessment System
PIN	Personal Identification Number
PIR	Passive Infrared
PPA	Property Protection Area
PPM	Protection Program Management
PSAB	Personnel Security Administration Branch

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ACRONYMS (U)

Acronym	Definition
PSAP	Personnel Security Assurance Program
PSD	Personnel Security Division
PSS	Physical Security System
PTLA	Protection Technologies Los Alamos
S-2	Security Integration
S-4	Material Control and Accountability Group
SAS	Secondary Alarm Station
SCI	Sensitive Compartmented Information
SCIF	Sensitive Compartmented Information Facility
SECON	Security Condition
SF	Standard Form
SFMAA	Special Facility Material Access Area
SGS	Segmented Gamma Scanner
SNL	Sandia National Laboratories
SNM	Special Nuclear Material
SO	DOE Office of Security
SOMD	Site Occupational Medical Director
SPO	Security Police Officer
S/RD	Secret/Restricted Data
SRT	Special Response Team
S&S	Safeguards and Security
SSAP	Safeguards and Security Awareness Program
SSEP	TA-18 Safeguards and Security Enhancement Program
SSG	LANL MC&A Senior Steering Group
SSIMS	Safeguards and Security Information Management System
SSO	Special Security Officer
SSSP	Site Safeguards and Security Plan
SST	Safe Secure Transport
SSWG	Safeguards and Security Working Group
TA	Technical Area
TAP	Training Approval Program
TID	Tamper Indicating Device
TMAA	Temporary Material Access Area
TNC	Thermal Neutron Counter
TSCM	Technical Surveillance Countermeasures
UC	University of California
UFN	Unclassified Foreign Nationals System
UCNI	Unclassified Controlled Nuclear Information
VA	Vulnerability Assessment
VTR	Vault-Type-Room
WOG	Working Group

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**INDEPENDENT OVERSIGHT SAFEGUARDS AND SECURITY
INSPECTION OF THE
LOS ALAMOS SITE OFFICE AND THE
LOS ALAMOS NATIONAL LABORATORY (U)**

VOLUME I (U)

1.0

Introduction (U)

(U) The Secretary of Energy's Office of Independent Oversight and Performance Assurance (OA) inspected safeguards and security programs at the National Nuclear Security Administration's (NNSA) Los Alamos Site Office (LASO) and Los Alamos National Laboratory (LANL) during November and December 2002. The inspection was planned and conducted by OA's Office of Safeguards and Security Evaluations (OA-10) and was integrated with a concurrent OA inspection of cyber security programs.



(U) Independent Oversight inspected safeguards and security programs at Los Alamos in November and December 2002.

(U) LANL is a multi-program weapons laboratory with major mission responsibilities in the areas of nuclear weapons research and development; nuclear weapons stockpile stewardship; environmental research, development, and cleanup; and nuclear non-proliferation. LANL is operated for the Department of Energy's NNSA by the University of California (UC). The NNSA's Deputy Administrator for Defense Programs (DP) has Headquarters responsibility for providing programmatic direction and funding for activities at LANL. LASO has assumed responsibility for providing operational direction to the LANL contractor and performing line management oversight of activities at LANL. However, NNSA's

Albuquerque Service Center (ASC) – formerly the Albuquerque Operations Office – continues, by formal agreement, to provide support in various safeguards and security areas. For example, in the personnel security area ASC will continue to support the security clearance program and the human reliability programs; ASC will also provide matrixed subject matter expert support for surveillance activities in various security disciplines and for the survey program.



(U) This performance-oriented inspection addressed six topical areas but did not address property control issues under investigation by other agencies.

(U) This inspection evaluated the management and performance of DP, ASC, LASO, and UC in the following protection-related topical areas: classified matter protection and control (including a limited review of two sensitive compartmented information facilities), personnel security, physical security systems, nuclear material control and accountability (MC&A), protective force, and protection program management. Inspection data collection activities were performance-oriented whenever possible and included extensive performance testing. For example, the inspection of physical security systems included performance tests to determine the effectiveness and reliability of detection and assessment equipment and barrier systems in place to protect vital assets. Inspection of the protective force included tabletop exercises and both limited-scope and major force-on-force performance tests to evaluate skills associated with routine duties and tactical response

capabilities associated with the protection of high-priority assets. The inspection of MC&A included performance testing of inventory procedures. Data collected during the review of each topical area was analyzed to determine its impact on that and other topics in order to determine the effectiveness of each protection program element's performance.

(U) ~~(U)~~ Concurrent with this inspection, the DOE Inspector General, the Federal Bureau of Investigation, UC, and Congress were conducting independent investigations into allegations of missing/unaccounted for government property and of improper use of laboratory credit cards by Laboratory employees. Because of those ongoing investigations and the lack of any indication that the alleged problems affected the protection of special nuclear material, classified information, or sensitive unclassified information, OA's inspection did not address these government property control issues. OA did, however, confirm with LANL management that no Laboratory computers containing classified information were missing or were the subject of these investigations. Additionally, OA reviewed Laboratory procedures for responding to the loss of computer equipment containing classified or sensitive unclassified information.

(U) ~~(U)~~ Subsequent to the OA safeguards and security and cyber security inspection of LANL, it was revealed that the Laboratory's October 2002 inventory of accountable classified matter, including 61,173 items of classified removable electronic media, had identified one item (a hard drive within a removable hard drive carrier) that was potentially unaccounted for. LANL made an initial report of the incident to both NNSA and the Office of Security on October 25, 2002. However, soon afterward, LANL followed up with a verbal report that the discrepancy had been resolved. During this inspection, OA's queries as to whether any unresolved inventory differences existed from the October 2002 inventory were directly answered by LANL personnel, who indicated that there were no missing items. As this report goes to press, LANL, LASO, and NNSA are further investigating the incident to determine the facts.


(U) OA's 1999 major inspection of LANL identified problems in several topic areas and issued numerous findings. A follow-up inspection in January 2000 found appropriate progress in corrective actions and rated all examined areas as Satisfactory. Albuquerque Operations Office surveys of LANL in 2001 and 2002 rated all safeguards and security topics as Satisfactory.

(U) Section 2 of this report provides an overall discussion of inspection results that characterizes the effectiveness of the LASO and LANL protection program elements that were inspected. Section 3 provides conclusions regarding the overall effectiveness of those programs. Section 4 presents the ratings assigned as a result of this inspection. Appendix A provides supplemental information regarding this inspection activity, including the inspection team composition and a general schedule of inspection activities. Appendix B identifies the findings that require formal corrective actions and follow-up. Appendices C through I provide detailed information on the results of the reviews of individual safeguards and security topics.

2.0

Results (U)

2.1 Positive Program Attributes (U)

 (U) **Management support and staff competence are strengths, and most program elements are implemented effectively.**

(U) LANL has made significant progress in improving elements of its protection program over the past two years by correcting many previously identified deficiencies, making reasonable progress in correcting other deficiencies, and instituting a number of initiatives aimed at strengthening the program in the future. The following paragraphs discuss significant positive attributes exhibited by the safeguards and security program.

- (U) **Line managers demonstrate support for an improved safeguards and security program.** This management support is tangibly demonstrated in various ways. For example, LANL has aggressively pursued implementation of integrated safeguards and security management (ISSM). They are one of the first facilities certified in ISSM and have implemented a number of related initiatives, including: placing security representatives on high-level laboratory planning groups and involving them in specific project planning activities; revising key laboratory directives to clearly establish safeguards and security responsibilities; and modifying the safeguards and security self-assessment program to place more responsibility on line organizations. Additionally, the laboratory has sustained a high level of security planning activity, including the completion of an iterative site analysis and steady progress on conducting some needed vulnerability assessments. LASO and LANL management have been willing to provide the resources necessary to implement these initiatives. Finally, LANL management has been effective in prioritizing and costing tasks in order to make efficient use of the limited funds available for safeguards and security programs in the current environment.

- (U) **LANL has made progress in addressing identified deficiencies while maintaining previously existing program strengths, and is effectively implementing most safeguards and security program elements.** Corrective actions for previously identified deficiencies have been completed or are progressing in accordance with approved milestones. Noticeable improvements have been achieved in the effectiveness and reliability of physical security systems, the protective force demonstrates improved tactical skills during performance testing, and ongoing vulnerability assessments and security planning efforts have resulted in the implementation of a number of security enhancements. Although a number of issues need to be addressed in the various safeguards and security program elements, six of the seven program elements examined during this inspection are performing effectively overall.

- (U) **The levels of safeguards and security-related skills and knowledge demonstrated by LANL personnel reflect effective training programs and a deliberate emphasis on security responsibilities.** Competencies demonstrated by personnel with specific safeguards and security-related job tasks were generally very high. These included classified matter custodians, personnel security assurance program/ personnel assurance program participants and supervisors, security systems technicians, protective force personnel, and, with some exceptions, MC&A personnel.

2.2 Program Weaknesses and Items Requiring Attention (U)

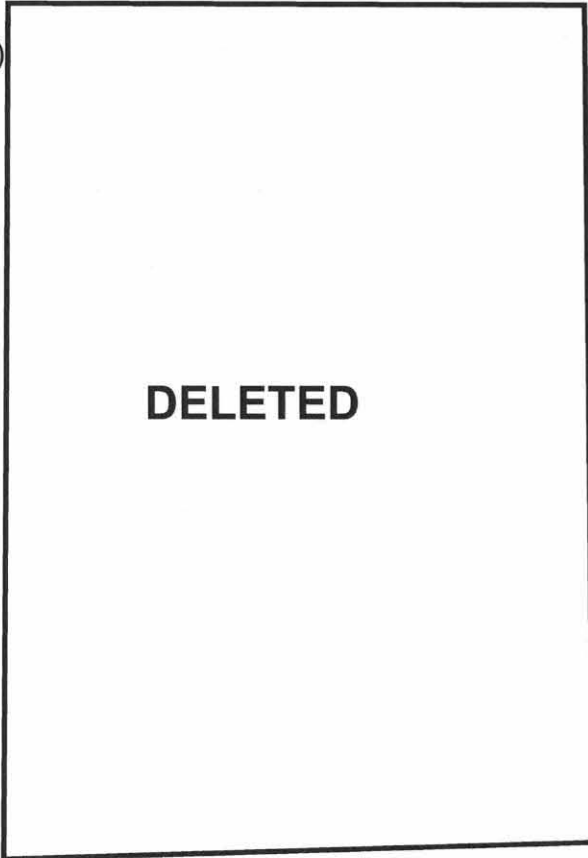
(U) ~~(S)~~ **Weaknesses in the nuclear material measurement and accounting processes need attention.**

(U) ~~(S)~~ Although most individual protection program elements reviewed are functioning effectively, increased management attention is needed to address existing problems that currently or potentially adversely impact protection effectiveness. The most significant areas in need of attention are discussed in the following paragraphs.

(U) ~~(S)~~ **Immediate management attention is required to address weaknesses in the MC&A program.** The results of previous OA inspections reflected a strong MC&A program. Although many elements of the program remain basically sound and effective, a number of deficiencies currently degrade overall program effectiveness. The most significant problems involve flaws in the physical inventory process, including some failures to conduct proper verification measurements, weaknesses in conducting confirmation measurements, and failure to detect some misplaced items during inventory. As a result of the accumulated inventory problems, LANL does not meet Departmental standards for assurance of inventory values. Other program deficiencies include an inadequately implemented performance testing program for material surveillance and access control, and a failure to properly document some material transactions necessary to maintain accurate accountability

records. Inadequate oversight by the LANL MC&A Group (S-4) is a significant contributing factor to these deficiencies. Sustained management attention will be required to ensure that once corrected, these or similar deficiencies are not allowed to recur.

(U) ~~(UC/N)~~



DOE
6.2 (a)

security, LANL should address issues associated with risks involving granting foreign nationals access to sensitive unclassified information on the unclassified computer network, and ASC should address delays in processing foreign ownership, control, or influence applications from LANL contractors. Finally, the protective force should address the need for counter-sniper capabilities/plans; defense measures against grenades in building interiors; and adequate responder familiarization with interior configurations of buildings in which tactical response may be required.

- ~~(UC/N)~~ **LASO and NNSA management should quickly address the staffing shortfalls in the LASO Security Management Team.** Currently six of the nine team positions are vacant, and the one MC&A specialist currently on the team is scheduled to depart. LASO has had no success in hiring personnel to fill these positions; its efforts to do so have been hampered by, among other things, NNSA restrictions against outside hiring. Although LASO will receive some subject matter expert support through a support agreement with ASC, ASC is itself losing safeguards and security personnel and is also committed to providing similar support to other site offices. Reliance on ASC support does not appear to be a viable long-term option for LASO, and developing an in-house capability will be essential to LASO's ability to provide necessary direction and oversight to LANL safeguards and security programs.

- ~~(UC/N)~~ **Some deficiencies were identified in otherwise effective programs.** While most safeguards and security program elements are functioning effectively and providing adequate levels of protection, some of those program elements contain weaknesses that warrant attention. For example, a vulnerability was identified associated with lack of physical security system coverage for a storm drain under TA-55 (a condition the site took immediate action to mitigate). In the area of classified matter protection and control, LANL should address isolated deficiencies associated with classified document accountability and should ensure that SCIFs update local procedures and conduct required self-assessments, and LASO should address problems associated with classified document markings. In personnel


3.0 Conclusions (U)

- **(U) The Security Management Team needs to be fully staffed to provide adequate direction and oversight.**

(U) The ongoing reengineering of NNSA has significantly relocated responsibility for Federal direction and oversight of safeguards and security programs. Many of the responsibilities that formerly resided with the Albuquerque Operations Office (now ASC) now reside with LASO. Even at full staffing, the

LASO Security Management Team would require assistance from ASC to meet all of its responsibilities. Competing demands for ASC's diminishing safeguards and security personnel place the viability of long-term dependence on ASC in question. Because six of the LASO Security Management Team's nine positions are currently vacant and LASO has had no success in filling the vacancies, even the short-term ability of ASC to provide adequate augmentation to LASO seems questionable. NNSA and LASO managers need to immediately and successfully address this safeguards and security staffing problem or NNSA may soon lack the capability to provide even minimally adequate Federal direction and oversight to LANL safeguards and security programs.

long-term corrective actions to address past problems are being pursued. Several management initiatives, including those aimed at firmly establishing ISSM within the laboratory culture, possess the potential for materially improving the protection environment of the future. Currently, most major protection program elements at LANL are being effectively implemented, and some subelements exhibit essentially defect-free performance. The security-related competencies of most personnel with safeguards and security responsibilities were found to be high. Most aspects of the protection program are demonstrably on an upward curve. However, increased management attention is needed to address several areas of concern. Immediate action is necessary in the MC&A program to correct existing process deficiencies and reestablish past performance levels. Management support for security planning processes need to be sustained to ensure that important vulnerability analyses are completed, and appropriate attention is required to correct current deficiencies in several program elements whose overall implementation is effective.

(U)  ~~(S)~~ Sustained management attention and support will be needed to address identified areas of concern.

(U) ~~(U)~~ LANL managers and protection program organizations have made steady progress in the past few years to correct program deficiencies and maintain a viable security environment. Planned upgrades and

4.0

Ratings (U)

(U) The ratings assigned to safeguards and security topical areas are:

- (U) Classified Matter Protection and ControlEFFECTIVE PERFORMANCE
- (U) Sensitive Compartmented Information FacilitiesEFFECTIVE PERFORMANCE
- (U) Personnel SecurityEFFECTIVE PERFORMANCE
- (U) Physical Security SystemsEFFECTIVE PERFORMANCE
- (U) ~~(U)~~ Material Control and Accountability NEEDS IMPROVEMENT
- (U) Protective ForceEFFECTIVE PERFORMANCE
- (U) Protection Program ManagementEFFECTIVE PERFORMANCE

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APPENDIX A (U)

SUPPLEMENTAL INFORMATION (U)

A.1 Dates of Inspection (U)

	Beginning	Ending
Planning Meeting	November 17, 2002	November 22, 2002
Onsite Inspection, Report Writing	December 9, 2002	December 19, 2002
Outbriefing	December 19, 2002	December 19, 2002

A.2 Inspection Team Composition (U)

A.2.1 Management (U)

Glenn S. Podonsky, Director, Office of Independent Oversight and Performance Assurance
Michael A. Kilpatrick, Deputy Director, Office of Independent Oversight and Performance Assurance
Bradley A. Peterson, Director, Office of Cyber Security and Special Reviews (Team Leader)
Arnold E. Guevara, Acting Director, Office of Safeguards and Security Evaluation (Deputy Team Leader)

A.2.2 Quality Review Board (U)

Michael A. Kilpatrick	Bradley A. Peterson	Robert M. Nelson
Arnold E. Guevara	Dean C. Hickman	

A.2.3 Inspection Team (U)

Jerry L. Bennett	Richard L. Donovan	Gary Kodman	Anthony Qualantone
Philip J. Brenner	Alan L. Frazier	Ralph C. Kurtzman	Jeffrey A. Rogers
David L. Caskey	Ronald Hawkins	Michael McCarthy	Robert Schultheiss
Daniel J. Charles	William J. Hayes	Jack McClure	Michael L. Stalcup
William E. Clark	Andrea J. Heintzelman	James H. McGee	James H. Taylor
Dennis J. Collins	Steven J. Henwood	Kevin McGhaw	Michael S. Warren
Barry D. Cooksey	Kenneth M. Jurjevich	Judy D. McGurn	D. L. Whaley
Vincent J. DeVito	Gary J. Koch	Stephen J. Primeau	

A.2.4 Composite Adversary Team (U)

Kenneth Baxter	Chris Duran	Roger Mullins	Greg Verner
Robert Dalhberg	Richard Kelso	Jeffrey Stroda	

A.2.5 Administrative Support (U)

Pamela C. Boals	Leisa D. Weidner
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APPENDIX B (U)

SITE-SPECIFIC FINDINGS (U)

Table B-1. Site-Specific Findings Requiring Corrective Action Plans

Information contained in this table is classified as Secret.

Identifier	Issue Statement	Page #	
LASO2002-LANL-CMPC-001	DELETED	21	DOE 6.2 (a)
(U) LASO2002-LANL-CMPC-002	(S) LANL's X-Division is not maintaining accurate records of its staff who have access to classified container combinations. [DOE Manual 471.2-1C, Ch. I, par. 8.d.]	21	
(U) LASO2002-LASO-CMPC-001	(S) A significant number of LASO's classified documents do not contain all of the requisite classification markings. [DOE Manual 471.2-1C, Ch. II, par. 3.]	21	
(U) IN2002-LANL-CMPC-001	(S) LANL's set of SCIF standard operating procedures do not always reflect actual, current practices in controlling classified matter, and the formal letter of appointment for the current Special Security Officer was not available. [Director of Central Intelligence Directive 1/21, par. 2.3]	26	
(U) IN2002-LANL-CMPC-002	(S) LANL had no documentation of its most recent annual CMPC self-assessment or any previous annual self-assessments for its SCIFs. [DOE Order 470.1, Ch. X]	26	
LASO2002-LANL-PS-001	(U) LANL is not recording and reporting all required information related to the sponsoring of unclassified foreign visits and assignments in FACTS. [DOE Notice 142.1, par. 4.b., and DOE memorandum dated November 2, 2001, subject, Departmental Use of the Foreign Access Central Tracking System]	35	
LASO2002-LANL-PSS-001	DELETED	41	DOE 1.4 (f)
(U) LASO2002-LANL-MCA-001	(S) LANL (S-4) is not adequately conducting its oversight responsibility in accordance with the LANL MC&A plan. [DOE Order 474.1A, par. 4.b.(2)]	52	
(U) LASO2002-LANL-MCA-002	(S) LANL did not meet the performance requirements for material surveillance and MASS access control testing. [DOE Manual 474.1-1A, par. 4.c.]	54	
(U) LASO2002-LANL-MCA-003	(S) LANL failed to properly document material transactions on the accounting system for some items and failed to detect data discrepancies in and ensure completeness of accounting records. [DOE Manual 474.1-1A, Ch. II, par. 2.]	56	

Table B-1. Site-Specific Findings Requiring Corrective Action Plans

Information contained in this table is classified as Secret.

Identifier	Issue Statement	Page #
(U) LASO2002-LANL-MCA-004	(S) The LANL bi-monthly inventory does not demonstrate that the physical inventory verifies the TA-55 facility's accountability records of nuclear material items not protected by a TID. [DOE Manual 474.1-1A, Ch.II, par.3.d.(1)]	58
(U) LASO2002-LANL-PF-001	(S) LANL has not conducted the necessary performance tests inside TA-55/PF-4 to provide sufficient training for response personnel or to validate implemented protection improvements. [DOE Manual 473.2-2, Ch. VII, par. 1.]	66
(U) LASO2002-LANL-PF-002	(S) Target folders designed to provide external response agencies the appropriate information for conducting tactical operations have not been fully developed for key LANL facilities. [DOE Manual 473.2-2, Ch. 1, par. 1.a.(1)(d)]	67
(U) (UCNF) LASO2002-LANL-PPM-001	DELETED	86

**DOE
6.2 (a)**

APPENDIX C (U)

CLASSIFIED MATTER PROTECTION AND CONTROL (U)

C.1 INTRODUCTION (U)

(U) This report appendix discusses the results of the U.S. Department of Energy (DOE) Office of Independent Oversight and Performance Assurance (OA) inspection activities in classified matter protection and control (CMPC) at the Los Alamos National Laboratory (LANL) and the Los Alamos Site Office (LASO). OA reviewed the subtopic areas of classified accountable and non-accountable document use, storage, receipt, transmittal, reproduction, destruction, and generation; classified parts use and storage; security incidents and infractions; technical surveillance countermeasures (TSCM); foreign ownership, control, or influence (FOCI); self-assessments; staff knowledge and training; operations security (OPSEC); and, at each processing or storage location visited, the access controls and intrusion detection in place.

(U) ~~(S)~~ Subsequent to the OA safeguards and security and cyber security inspection of LANL, it was revealed that the Laboratory's October 2002 inventory of accountable classified matter, including 61,173 items of classified removable electronic media, had identified one item (a hard drive within a removable hard drive carrier) that was potentially unaccounted for. LANL made an initial report of the incident to both NNSA and the Office of Security on October 25, 2002. However, soon afterward, LANL followed up with a verbal report that the discrepancy had been resolved. During this inspection, OA's queries as to whether any unresolved inventory differences existed from the October 2002 inventory were directly answered by LANL personnel, who indicated that there were no missing items. As this report goes to press, LANL, LASO, and NNSA are further investigating the incident to determine the facts.

(U) ~~(S)~~ The 1994, 1998, and 1999 OA inspections of LANL cited serious systemic findings predominantly involving the inadequate protection of classified parts in non-standard storage (i.e., open storage in unalarmed buildings). At the close of the 1999 inspection, LANL developed both compensatory interim-action and longer-term follow-on plans to address specific parts protection concerns. With LANL's immediate implementation of those interim plans (i.e., increased-frequency guard patrols at storage locations), the protection afforded to classified parts in non-standard storage was deemed to be sufficient. The July 2002 security survey of LANL by the Office of Los Alamos Site Operations identified findings involving a miscategorized security incident, improper destruction of classified matter, and media not being placed in accountability. However, the overall program was shown to adequately protect and control classified assets.

C.2 STATUS AND RESULTS (U)

(U) ~~(S)~~ Data collection activities involved interviews with management and staff, reviews of the latest LANL security survey and the most recent LANL self-assessments and performance tests, and observations of LANL's program to control and protect classified matter, and reviews of the status of corrective measures for any identified findings. The three survey findings mentioned above have since been closed. Regarding the parts issues, since OA's 1999 inspection, LANL has gone from its (interim) increased-frequency guard patrols of non-standard storage locations to completing longer-term plans for improving such storage, thereby attempting to fulfill its agreed upon commitments for correcting past parts storage deficiencies. However, as discussed below, appropriate guidance for conducting

vulnerability assessments relative to classified parts in non-standard storage has not been provided from the DOE Office of Security (SO).

Classified Parts Protection (U)

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Accountable and Non-accountable Document Control and Protection (U)

(U) ~~(U)~~ LANL maintains accountability systems for its United Kingdom accounts and its accountable Sigma weapons documents and media.

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Otherwise, spot checks of numerous other LANL accountable and non-accountable document accounts revealed only administrative marking errors, particularly with the omission of several authorized derivative classified stamps on classified drawings, conference notebooks, and working papers. Reviews of classified document local procedures, generation, receipt/transmittal, reproduction, and destruction (at the central destruction facility and at several shredder locations) revealed no systemic discrepancies. At the LANL mail facility, which LASO also uses, a site system that incorporates updated data from the DOE Safeguards and Security Information Management System (SSIMS) is routinely used to verify the latest, approved classified mailing addresses prior to transmitting classified matter off site.

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[DOE Manual 471.2-1C, Ch. II, par. 4.d.(1)]

(U) ~~(S/U)~~ All classified items in the total population of approximately seven million LANL documents, whether accountable or not, are required by LANL to be located, at a minimum, within Limited Areas. These areas feature an array of access controls, such as cipher locks, combination locks, card key systems, and/or guard portals. Document storage is in DOE-defined vaults, vault-type rooms, or General Services Administration (GSA)-approved repositories. Except for an isolated instance of an unsealed set of classified combinations found during repository spot checks, combinations were properly controlled and protected at the locations visited. However, at LANL's X-Division, requisite records of individuals granted authorized access to the Division's various classified container combinations were found to be inaccurate on a widespread basis, failing to list all the staff having such access to a given container(s).

(U) ~~(S/U)~~ **FINDING: LASO2002-LANL-CMPC-002: LANL's X-Division is not maintaining accurate records of its staff who have access to classified container combinations.** [DOE Manual 471.2-1C, Ch. I, par. 8.d.]

(U) ~~(S/U)~~ At the LASO office building, access controls include card readers and hand geometry stations. All of LASO's non-accountable classified documents (LASO has no accountable items) are housed in an approved vault-type room within a Limited Area. Reviews of classified document generation, receipt/transmittal, reproduction, and destruction revealed no systemic discrepancies, and a review of local CMPC procedures showed that, while comprehensive, they have just been developed (November/December 2002) and may be difficult to fully implement given the limited number of LASO security staff.

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Security Incidents and Infractions (U)

(U) ~~(S/U)~~ The LANL incidents and infractions program within the Office of Security Inquiries (OSI) group has all the requisite elements to provide for the reporting and investigation of incidents; an established protocol for remedial instruction and/or punishment; evidence of measures for preventing security incident recurrence; and documentation demonstrating a means for analyzing and determining incident root causes and for disseminating this information to LANL staff. Just prior to OA's field visit, LANL had a sufficient number of trained staff to investigate, follow up on, and close out those incidents and assign infractions as needed in a relatively timely manner. However, the recent loss of three OSI inquiry officials and two administrative staff, along with the existence of two previously posted OSI job openings, leaves a total of seven currently vacant OSI positions. This situation places in question OSI's ability to handle a recently increased caseload of security incidents. In regard to that increase, OSI staff attribute the rise to the significantly increased staff awareness/education and reporting of the types of security occurrences that should be reported (see Security Awareness section below). Nonetheless, each new incident must be investigated, along with the previously existing incident caseload, by an understaffed, overworked group.

(U) ~~(S/U)~~ At LASO, which also has all the elements of an adequate security inquiry program, there has been only one security incident in the past 24 months. Documentation on that incident showed that it was properly investigated and appropriately did not result in a security infraction.

Security Awareness, Training, and Self-Assessments (U)

(U) Interviews regarding staff training in CMPC and overall security awareness showed that most staff are clearly knowledgeable of their security responsibilities and their specific duties for controlling and protecting classified information. LANL's security home page, the online security training module, classroom CMPC custodian training, the security suggestion (awards) program, the security posters/newsletters, and the security help desk have all contributed toward elevating the site population's security awareness. As noted previously, this heightened awareness has resulted in a substantial rise in the number of reported security incidents on site.

(U) Conduct of CMPC self-assessments at both LANL and LASO is guided by comprehensive documented program plans. Assessments of CMPC attempt to cover all the requisite topic and subtopic elements. Self-assessment report narratives clearly describe problem areas, findings are issued as appropriate, and assessment results are communicated to management for resolution.

Operations Security (U)

(U) Both the LANL and LASO OPSEC programs have the required administrative elements in place, including formally appointed management; diversely representative working group members; quarterly working group meetings to address OPSEC-related concerns and to maintain a current Critical Sensitive Information List (CSIL); current, approved OPSEC plans/threat statements; and pertinent, timely, and informative OPSEC reviews and assessments, including (applicable at LANL only) the requisite assessments of Category I special nuclear material facilities and special access programs.

(U) The LANL OPSEC program is also adept at integrating with other security disciplines and Laboratory personnel. This integration is particularly apparent in the interaction among the OPSEC, counterintelligence, and foreign visits and assignments (FV&A) programs. In the FV&A program, the OPSEC Program Manager is active in reviewing all access requests and topics for discussion and, as necessary, conducts pre-visit walkthroughs of any facilities subject to a foreign national's visit/assignment to ensure that sensitive information is adequately protected. These walkthroughs, however, do not necessarily include reviews of a foreign visitor/assignee's computer accesses to potentially sensitive information (see *Independent Oversight Cyber Security Inspection of the Los Alamos Site Office and Los Alamos National Laboratory* (U)).

Technical Surveillance Countermeasures (U)

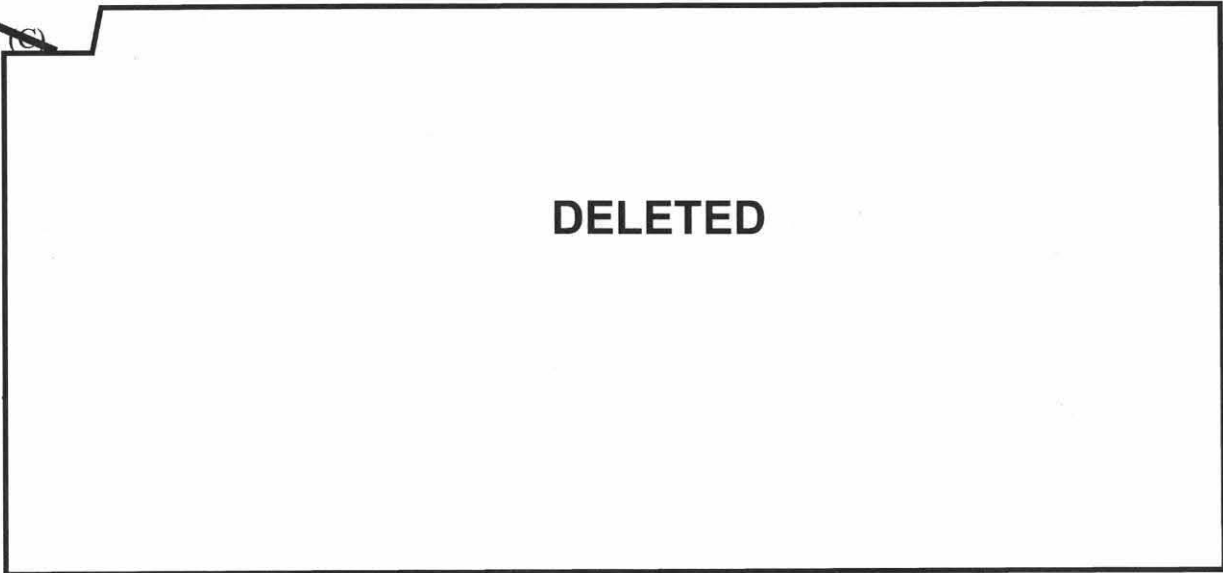
(U) ~~(S)~~ LANL has a memorandum of understanding, dated February 2000, with Sandia National Laboratories (SNL) New Mexico for TSCM services. The associated statement of work for these services outlines that SNL will provide all TSCM surveys and inspections in accordance with current DOE directives, and be responsible for identifying any deficiencies and proposing recommendations for corrective actions to LANL. LANL assumes responsibility for implementing any corrective actions. SNL's documentation for TSCM services shows that SNL is servicing the appropriate areas within the prescribed time frames and is generating reports describing any deficiencies or items of concern, along with corrective action recommendations.

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At all those locations, the deficiencies had been corrected by LANL.

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Foreign Ownership, Control, or Influence (U)

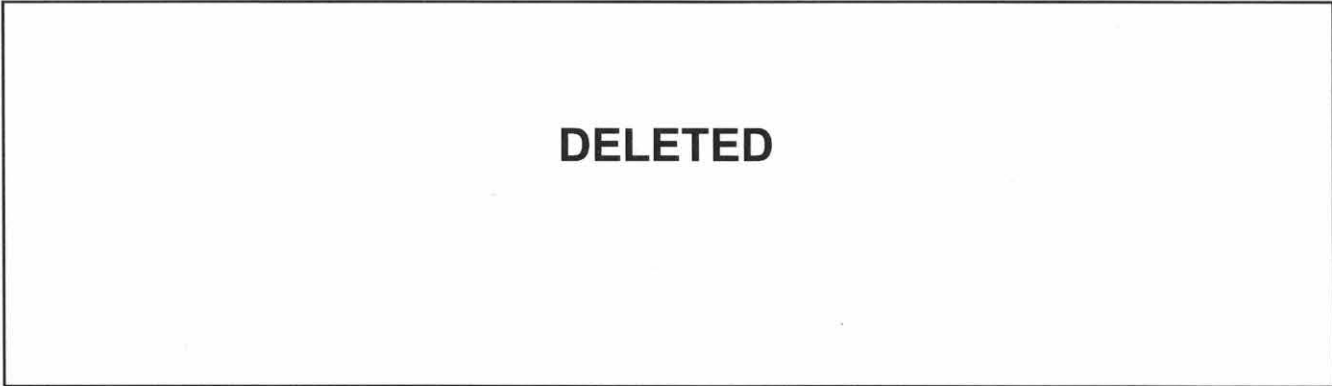
(U) All the files reviewed in LANL's FOCI program records were found to be well organized and to contain the appropriate supporting documentation packages. Program personnel are knowledgeable of the various FOCI processes and requirements. The LANL FOCI program is effective in integrating with the other security program elements (e.g., Personnel Security, Facility Approvals, and the Badge Office) in ensuring that only FOCI-approved companies/contractors possess DOE security clearances. Finally, there is an effective process of denying access (including automated access) to employees whose companies no longer maintain active contracts with LANL.

(U) ~~(OUO)~~ While LANL has the necessary program elements in place, its FOCI functions and responsibilities are, in some cases, seriously hampered by the Albuquerque Operations Office's (AL) slow response to FOCI determination approval requests. In this respect, LANL routinely forwards all FOCI packages to ASC for determination approval, and either ASC or DOE Headquarters assumes responsibility for granting those approvals. Presently, LANL has approximately 350 contractors for which FOCI determinations are required. Of these 350, there are 10 contractors who have FOCI determinations pending from the April 2001 to July 2002 time frame for which ASC has not yet granted approvals. This delay impedes LANL's ability to meet its programmatic responsibilities in a timely and cost-effective manner, particularly as it impacts costs associated with contractor escorting within Limited Areas. As examples, in one project (the LANL Fire Alarm Replacement Project), escorting for contractors during Phase II is estimated to cost between 1 and 1.6 million dollars, or 20 to 32 percent of the total funds associated with the fire alarm system upgrade. In another project, escorting for a communications contractor is expected to increase project costs by 40 percent. During OA's September 2002 inspection of AL/Office of Transportation Safeguards (OTS), ASC was given a finding for delays in approving contractor FOCI determinations. That finding presently remains open.

C.3 CONCLUSIONS (U)

(U) The LANL and LASO CMPC programs feature a number of noteworthy attributes. Classified documents on site are located, at a minimum, within Limited Areas under the protection of various administrative and physical access controls. Both LANL and LASO also have established frameworks to conduct and report on security inquiries, and to process and follow up on any security infractions issued.

Documents are stored inside vaults, vault-type rooms, and/or GSA-approved repositories. Further, in all but one case, performance testing of the accountability systems for some of the LANL documents was shown to be effective in accurately tracking classified documents on site. Finally, LANL has adequate programs to foster security awareness, train and annually retrain its document custodians, conduct self-assessments, and maintain OPSEC awareness.



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C.4 RATING (U)

(U) The overall programs to protect classified matter at LANL and LASO are providing adequate assurance that Departmental assets are properly controlled and protected. Therefore, the CMPC topic at these sites is considered to provide **EFFECTIVE PERFORMANCE**.

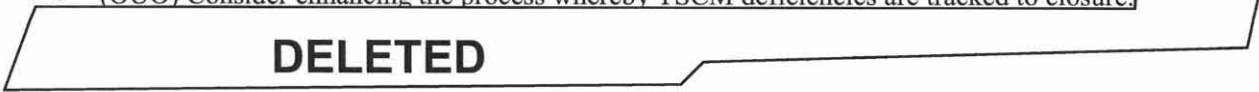
C.5 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) This Independent Oversight inspection identified some opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible DOE and contractor line management, and prioritized and modified as appropriate, in accordance with site-specific programmatic and safeguards and security objectives.

- (U) Consider cross-training other Office of Security and Safeguards Division employees as Inquiry Officials to support the OSI group. This can serve as a stop-gap measure to finding new hires, helping alleviate the immediate staffing problem and the growing case backlog of security incidents needing investigation.
- (U) Consider developing additional training materials for distribution to classified matter custodians via emails. These emails could be in the form of one-liners or training modules that focus attention on a specific problem area, such as working papers, marking disparities, etc. The custodians would then be attuned to these types of issues when they are accessing their repositories.

- (U) ~~(S)~~ Consider enhancing the process whereby TSCM deficiencies are tracked to closure.

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- (U) • ~~(S)~~ Investigate obtaining from sister national laboratories the programs/processes that they use to support the TSCM teams at those sites.

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APPENDIX D (U)

SENSITIVE COMPARTMENTED INFORMATION FACILITIES (U)

D.1 INTRODUCTION (U)

- (U) ~~(SUC)~~ This report appendix discusses the results of inspection activities in classified matter protection and control at the Los Alamos National Laboratory (LANL) sensitive compartmented information facilities (SCIFs). DELETED The Office of Independent Oversight and Performance Assurance (OA) reviewed the subtopic areas of non-accountable and accountable document use, storage, receipt, transmittal, reproduction, destruction, and generation; technical surveillance countermeasures (TSCM) and TEMPEST; sensitive compartmented information (SCI) staff foreign travel; self-assessments; and the alarms/physical security controls in place. DOE 6.2 (d)
- (U) ~~(SUC)~~ It is emphasized that the OA inspection of the LANL SCIFs, or any SCIF within the U.S. Department of Energy (DOE), is constrained by access limitations, not only to certain documents and nearly all cyber assets, but also to the storage containers and computers containing those assets. Therefore, data collection activities are sometimes limited to some rudimentary document reviews, walkthroughs, and interviews, without any hands-on examination of several of the SCIFs' assets, particularly cyber assets. These constraints result from the SCIFs' processing and storing certain classified assets that the Office of Intelligence (IN) considers to be foreign intelligence matter owned by other government (intelligence) agencies outside of DOE. IN contends that protection and oversight of these assets is the sole responsibility of the Director of Central Intelligence; therefore, IN directs that OA inspectors be denied access to the assets.

D.2 STATUS AND RESULTS (U)

(U) Data collection activities involved interviews with management and staff, reviews of the latest site security surveys and the most recent self-assessments and other pertinent records, and performance tests and observations of the site's program to control and protect classified matter.

Physical Security and Access Controls (U)

- (U) ~~(SUC)~~ The two LANL SCIFs reviewed are accredited as "closed-storage" facilities, with all assets residing within General Services Administration (GSA) approved repositories inside vault-type rooms. Repositories and vault-type rooms housing accountable (and non-accountable) matter inspected during the review had the required Standard Form (SF) 700 and SF 702 forms posted and were GSA approved, and combinations had been changed as required. The appropriate placement of physical security systems (alarm control panels and door alarm and interior sensors) was observed, as were sound administrative controls and physical access controls, consisting of badge-swipe and hand-geometry systems and/or cipher locks. Alarm testing frequencies meet those mandated by Director of Central Intelligence Directives (DCID) requirements, and testing results are documented and maintained within the facility. Protective force alarm response times are within those prescribed by applicable requirements according to the performance testing results that were reviewed.

Control of Accountable and Non-Accountable Matter (U)

(U) Limited-scope performance tests (front checks) of some classified matter (electronic media) appearing in the accountability system showed that all items could be located, all were properly marked, and all had accurate audit trails recorded. Accountable matter had been inventoried within the required time frames, and no discrepancies were noted. Generation, reproduction, and destruction of both accountable and non-accountable matter are accomplished in an approved manner, and the requisite records are generated and retained, as necessary. Similarly, records are retained on the receipt/transmittal of classified matter, and performance tests showed those records to be accurate in determining the current disposition of the matter.

Technical Surveillance Countermeasures and TEMPEST (U)

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Staff Knowledge and Training (U)

(U) The custodians who were interviewed were trained and knowledgeable of their specific responsibilities involving the administrative protection measures associated with both programmatic and collateral classified matter. Likewise, all SCI-cleared staff who were interviewed were cognizant of their responsibility to report both personal and official foreign travel to the Special Security Officer (SSO). The SSO has established a process whereby any reports of foreign travel by SCI-cleared personnel are forwarded to IN.

Local Procedures and Self-Assessments (U)

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D.3 CONCLUSIONS (U)

(U) ~~(SUC)~~ A number of positive protection program features were observed within the LANL SCIFs. The presence and appropriate placement of physical security systems (alarm control panels and interior

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D.4 RATING (U)

(U) The programs for classified matter protection and control at the Los Alamos National Laboratory SCIFs exhibited **EFFECTIVE PERFORMANCE** in assuring that protection needs are being met.

D.5 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) The program to protect and control classified matter at the LANL SCIFs exhibited generally positive program elements. Listed below are some improvements that might be considered by management as a relatively simple means of addressing the deficiencies cited above. These potential improvements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible DOE Headquarters elements, the operations office, and contractor line management and modified as appropriate, in accordance with site-specific programmatic and safeguards and security objectives.

- (U) • ~~(SUC)~~ Consider establishing a suspense system within the SCIF to ensure that mandated periodic security activities are accomplished. This, in concert with a rigorous self-assessment process, would preclude the types of discrepancies noted in this report involving local procedures and appointment letters.

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APPENDIX E (U)

PERSONNEL SECURITY (U)

E.1 INTRODUCTION (U)

(U) The Office of Independent Oversight and Performance Assurance (OA) inspection of the personnel security topic at the Los Alamos National Laboratory (LANL) included an evaluation of the personnel clearance program as administered by the Albuquerque Operations Office (AL), as well as an evaluation of the LANL personnel security assurance program (PSAP), personnel assurance program (PAP), safeguards and security awareness program (SSAP), and unclassified foreign visits and assignments program (FV&A). Results of recent Albuquerque Service Center (ASC) surveys and OA inspections noted that the overall personnel security program had been effectively implemented in the past and that there were no previously identified deficiencies. The DOE Office of the Inspector General (IG) conducted a review of the FV&A program at several selected DOE sites, including LANL during the summer of 2002. During the review at LANL, the IG noted that visa information for all foreign visitors and assignees was not being obtained and recorded, and that LANL was not entering all required information into the Foreign Activities Central Tracking System (FACTS).

(U) Data collection activities for this inspection were conducted at both ASC and LANL. Inspection activities at ASC consisted of: 1) interviews with the personnel security staff; 2) a review of 142 randomly selected personnel security files to determine the effective performance and timeliness of the ASC adjudicative decision-making process regarding the treatment of derogatory information; 3) a review of 62 PSAP cases to determine the effectiveness of the annual PSAP evaluation/approval processes; and 4) a review of the timeliness of PSAP removal actions.

(U) Inspection activities at LANL included: 1) a review of sub-topical area program management plans and implementing procedures; 2) interviews with the overall personnel security program manager, each program coordinator/administrator, and a selected number of PSAP and PAP supervisors; 3) a review of PSAP training modules, and PSAP and PAP drug testing selection systems; 4) a review of a number of randomly selected PSAP drug testing records; 5) reviews of SSAP briefing materials and a number of 2002 SSAP annual refresher briefing records; 6) administration of a security awareness questionnaire to the LANL cleared employee population; and 7) a review of FV&A host and escort training materials, and a number of foreign national visitor and assignee files and security plans.

E.2 STATUS AND RESULTS (U)

E.2.1 Albuquerque Operations Office Personnel Clearance Program (U)

Program Organization and Direction (U)

(U) Administration of the LANL personnel clearance program is the overall responsibility of the ASC Personnel Security Division (PSD). The PSD Personnel Security Administration Branch (PSAB) administers the LANL personnel clearance program. Currently there are 1,137 "L" and 10,233 "Q" active access authorizations at LANL.

(U) Results of interviews indicated that the PSAB staff is well trained and has extensive adjudicative experience. The average caseload of each analyst is 29 cases per month, which appears manageable. Overall direction of the ASC PSD supports the clearance process. The current budget is adequate to successfully support the implementation of all elements of the personnel clearance program.

(U) Inspection results also indicated that a positive working relationship exists between the ASC PSAB and LANL. LANL has been responsive to PSAB requests, and periodic meetings are held to discuss and resolve problems, initiate needed changes, etc. For example, PSAB and LANL have been coordinating efforts to expeditiously process access authorization requests for 138 applicant security police officers (SPOs) and to enroll these individuals in PSAP. Due to long delays (over a year in many cases) in receiving required background investigative reports from the Federal Bureau of Investigation (FBI), LANL has been placed in the position of utilizing the current cleared SPO workforce on more than one shift, which results in a significant amount of overtime. LANL has a number of initiatives and enhancements in the processing of clearance requests that reduces the clearance processing time. For instance, digital fingerprint equipment has been purchased, which reduces the need for fingerprint retakes.

(U) PSD, in its annual report to National Nuclear Security Administration (NNSA) senior management on the status of the NNSA security program, recommended that NNSA pursue Congressional support for a modification to the current law requiring FBI background investigation for all high-risk positions. The modification recommendation would allow the Secretary of Energy to determine specific high-risk positions (i.e., those positions that represent the most significant risk to national security) that would actually require investigations by the FBI, as opposed to other investigative agencies. The DOE Office of Security is pursuing this initiative, and if adopted, would reduce the number of required background investigations by the FBI and could result in a decrease in the overall time required to complete background investigations for DOE clearances.

Adjudication Program (U)

(U) To evaluate adjudicative and clear case processing performance of the ASC PSAB, 92 randomly selected personnel security files were initially reviewed. In a number of instances, many cases contained multiple adjudicative actions. The number of adjudicative actions, categorized by type of action, is identified in the following table.

ADJUCATIVE ACTION	NUMBER REVIEWED
Clear Cases	20
Letters of Interrogatory	14
Personnel Security Interviews	39
Psychiatric Referrals	4
Administrative Review	4
Total Adjudicative Actions	81

The contents of this table are UNCLASSIFIED.

(U) The reviews revealed a number of positive attributes. Clear cases contained no derogatory information. Letters of Interrogatory were used appropriately to resolve minor non-substantial derogatory information, and personnel security interviews were utilized to resolve more complex derogatory information. Psychiatric referrals were conducted in a timely manner, and administrative review cases were comprehensive and well documented. In addition, required second-level reviews for adjudicative action recommendations were conducted and appropriately documented.

(U) ~~(SUC)~~ While overall results of the reviews were favorable, one instance was identified involving the inappropriate granting of a "Q" access authorization and the subsequent inappropriate enrollment into the LANL PSAP. When the facts and circumstances in this case were brought to the PSD Director's attention, immediate action was taken to downgrade the individual's access authorization to an "L" (based on a favorable national agency check), to temporarily remove the individual from performing PSAP-related duties, and to issue security infractions to the ASC personnel security personnel involved in the handling of the case file. In addition, PSD immediately implemented a new procedure to ensure that inappropriate action is not taken on an access authorization until an appropriate background investigation is received. To determine whether this weakness was systemic or isolated, OA expanded its inspection activities to focus on new access authorizations granted for the past 12 months and reviewed another 50 personnel security files. Results indicated this was an isolated case and appropriate corrective action was taken.

E.2.2 The LANL Personnel Security Assurance Program (U)

Program Organization and Direction (U)

(U) Currently, the LANL PSAP consists of 1,882 active participants and 247 individuals pending approval. The day-to-day administration of the LANL PSAP is the responsibility of an Acting Human Reliability Team Leader, who also is designated as the PSAP Administrator. The PSAP Administrator reports directly to the Personnel Security Group (S-6) Leader. Interviews with the Group Leader, the PSAP Administrator, and other members of the Human Reliability Team indicated that they are highly organized and conscientious, and they possess a good overall understanding of programmatic requirements.

(U) Reviews of program plans, procedures, and protocols found that they are sufficiently complete and detailed to support program implementation and provide appropriate guidance to program participants and supervisors to support the overall success of the program.

(U) Effective working relationships between ASC and LANL PSAP officials were also evident and are characterized by open and candid communications. Contractor self-assessments and ASC oversight of the PSAP through surveys are identifying and correcting concerns. For example, during a self-assessment it was identified that individuals were entering the TA-55 material access area (MAA) in excess of the allowed ten visits before submission of the PSAP enrollment package to ASC (includes completion of the medical review, supervisor review, and management review indicating that a negative drug test was achieved). Increased coordination between the PSAP office and TA-55 access control element was initiated to address this issue. OA confirmed that individuals are no longer allowed access to the MAA before the enrollment package has been submitted.

(U) The Site Occupational Medical Director (SOMD) evaluates the required medical assessments of PSAP applicants and incumbents. The SOMD has been involved in the PSAP medical process since early 1990 and is knowledgeable of his roles and responsibilities. He provides training to five physicians and four physician aides at least on an annual basis and discusses PSAP-related information during the weekly medical staff meetings, if necessary. The clinical psychologist at LANL developed a checklist to be used by the physician during the conduct of PSAP physicals. This checklist enables the physician to determine if an individual should be referred to the psychologist for evaluation, and assures the SOMD that PSAP participants meet all of the requirements regarding physical and mental health for maintaining their PSAP status.

PSAP Training (U)

(U) Both initial and biannual training is provided to PSAP participants and supervisors. PSAP training involves the use of read-and-sign types of briefings, computer-based training, videotapes, and live presentations. PSAP training materials were adequately covering the necessary topics and information. A review of 30 randomly selected training records of PSAP participants and supervisors indicated that all were current in their PSAP training requirements.

Supervisor Understanding of Roles and Responsibilities (U)

(U) To ensure consistency, interview questionnaires were used to assess PSAP supervisors' understanding of programmatic requirements and roles and responsibilities, and their general attitudes toward their participation in the program. The interviews conducted with nine PSAP supervisors who are all in PSAP indicated a good overall understanding of programmatic requirements and their individual roles and responsibilities. Supervisors demonstrated a good understanding of the PSAP enrollment process, drug testing requirements, and the importance of ensuring that individuals report to the collection facility in a timely manner. All interviewees provided appropriate examples of the types of conditions and circumstances required to be reported, and properly identified individuals to whom they would report this information. All interviewees were able to provide examples of when it would be required to temporarily reassign a participant to non-PSAP duties and, in some cases, when they had actually reassigned individuals.

Annual Evaluation and Approval Process (U)

(U) Results indicated that internal procedures and practices are adequate to establish specific anniversary dates and document the completion of all required components for annual evaluations and approvals. A review of 62 randomly selected PSAP files, covering a time frame from 1999 to present, indicated that in all cases the required annual reviews and approvals were completed.

Drug Testing (U)

(U) LANL drug testing procedures and practices were determined to be appropriate in ensuring effective performance. The current drug testing selection system is a viable means of ensuring that all PSAP participants are selected once each 12 months for an unannounced drug test. The LANL drug testing program is supported by the 4th Dimension database. This database is capable of generating random lists of personnel for drug testing. A list is generated monthly by the drug testing coordinator. This list of randomly selected personnel also identifies those personnel within 90 days of their anniversary date. The number of individuals identified monthly as within the 90-day time frame varies from 50 to 200 plus. The coordinator attempts to test (directed tests) all of the individuals identified as being within the 90-day time frame. Reviews of drug testing records revealed no deficiencies to the 12-month requirement.

(U) There were five confirmed positive drug tests during the past 18-month period. Two were LANL employees and three were sub-contract employees. In all instances, immediate action was taken by the SOMD, who provided immediate verbal notification to the PSAP Administrator and followed up with written confirmation. OA confirmed through file reviews that the PSAP Administrator took appropriate action to either remove the individual from PSAP or discontinue the enrollment process. The ASC PSAP Approval Official was also notified of these actions. In two of the five cases, the individuals' employment was subsequently terminated.

Escorted Access to Material Access Area (U)

- (U) ~~(U)~~ After submission of the PSAP enrollment package to AL, recently hired material handlers, construction workers, maintenance personnel, and health physics personnel are allowed continued escorted access into an MAA while awaiting PSAP approval. In some cases, LANL records indicate this is for as few as 11 days, or could be up to 131 days. Although current DOE directives allow escorted access to MAAs by cleared individuals with a need to know, such frequent access by employees with near-hands-on access (and in some cases considerable technical knowledge) needs to be analyzed in terms of the insider threat posed. LANL has not completed such an analysis, and until this analysis has been completed, the impact of this practice on the mitigation of the insider threat will remain unknown. (Refer to Appendix I, Protection Program Management, for a further discussion.)

E.2.3 The LANL Personnel Assurance Program (U)

Program Organization and Direction (U)

(U) The PAP Certifying Official is the Manager, Los Alamos Site Office (LASO), who has formally been assigned this responsibility by the ASC Manager, and is appointed in accordance with ASC Supplemental Directive ASC 452.2A, which assigns responsibility in support of DOE Order 452. The LANL PAP Administrator is assigned primary responsibility for PAP implementation. The Administrator is well versed in all aspects of the PAP and is clearly recognized by LANL managers and supervisors as a source of program information and support. There are currently 44 PAP participants and 3 pending approval.

(U) LANL has an excellent process for reviewing all PAP activities. A committee meets on a monthly basis to review all PAP-related actions, i.e., requests for initial PAP, temporary removals, and re-certifications. The committee is comprised of the PAP Committee Chairman, the PAP physician, a personnel services (staffing) PAP generalist, and the DOE PAP Coordinator. The PAP training program was reviewed and determined to be implemented effectively.

PAP Supervisor Interviews (U)

(U) Ten randomly selected PAP supervisors were interviewed to assess their knowledge and understanding of the program and its reporting requirements. In all cases the interviewed supervisors demonstrated adequate levels of knowledge and understanding of program and reporting requirements. The supervisors also demonstrated the ability to identify behaviors and conditions that might indicate that an individual was unsuitable for PAP that he/she should report. Additionally, these PAP supervisors properly identified those individuals to whom they were required to report potentially disqualifying information. All PAP supervisors interviewed were cognizant of specific policies, procedures, and guidance relative to the PAP. They also have access to all guidance documents.

E.2.4 The LANL Safeguards and Security Awareness Program (U)

Program Organization and Structure (U)

(U) The administration of the LANL SSAP is the responsibility of the Safeguards and Security (S&S) Training Team Leader. The S&S Team Leader reports directly to the Program Integration Group (S-2) Group Leader. An S&S Awareness Coordinator and a training specialist support the Team Leader. The S&S team is also responsible for the LASO SSAP. Interviews disclosed that all these individuals possess a good overall understanding of programmatic requirements, and are appropriately trained.

Briefing Materials and Visual Aids (U)

(U) Reviews of initial, comprehensive, and annual refresher briefing packages indicated they were well developed and the required content was sufficiently covered. In addition, some of these briefings include information on integrated safeguards and security management. Briefings are periodically updated using a wide range of inputs, including new DOE requirements, surveys, self-assessments, management-directed material, and employee recommendations. The annual refresher briefing is presented on line and during monthly live presentations. Procedures are in place to ensure that all individuals complete the required training. A wider than usual range of supporting materials and activities is used to supplement presentations (e.g., topic-oriented newsletters, tips and fliers, an online website, articles in the LANL News Bulletin, desktop tools for line managers, annual seminars for subcontractor facility security officers, and additional surveys).

Clearance Holders' Program Knowledge (U)

(U) Over 1,000 cleared employees (approximately 10 percent of the total cleared population) responded to a voluntary security awareness questionnaire that was administered during this inspection. The questionnaire consisted of 20 questions covering all safeguards and security topics. The questionnaire composition included multiple choice and true-or-false questions. Results of the security awareness questionnaire conveyed an overall average score of 87 percent, which indicates a good overall understanding of individual security responsibilities. OA noted that an overwhelming majority of the organizations with holdings of classified and/or special nuclear material responded to this questionnaire. While these results are not scientific, OA believes that the fact that a relatively large number of the cleared population responded to this questionnaire and achieved good results suggests that laboratory employees are actively engaged in the overall LANL safeguards and security program.

E.2.5 The LANL Unclassified Foreign Visits and Assignments Program (U)

LANL Actions to Address DOE Office of the Inspector General Issues (U)

(U) OA collected data to determine what actions had been taken or are planned by LANL to address the shortcomings identified by the IG. OA observed that the FV&A office now obtains and records visa information for all foreign visitors. In support of this action, the FV&A office participated in DOE Office of Security-sponsored visa training presented in October 2002. In advance of this IG finding, LANL had identified the need for training on visas and had sent the FV&A office team leader and staff to receive Immigration and Naturalization Service training on visas in March 2002. As a further step to address this issue, on December 2, 2002, the LANL Immigration and Naturalization team was repositioned under the FV&A office.

(U) Though LANL has been entering most of the data required for sensitive visits in FACTS, delays in the full implementation of FACTS have been a known concern since 1998. A number of factors, including an abortive attempt to develop software at LANL to allow the automatic uploading of data into FACTS, and funding issues at LANL and the DOE Office of Security, have contributed to these delays. It appears that the software and funding issues have now been resolved with the planned launch in 2003 of an online system that will allow for the uploading of information into FACTS and increase the efficiency and effectiveness of the FV&A program at LANL. The online system is an upgrade of the current LANL Unclassified Foreign Nationals (UFN) system. Coincident to this action is the planned hiring of two support personnel for the FV&A office. However, it was identified that UFN does not include a feature for uploading closeout information into FACTS. The lack of this feature will require a considerable amount of various data to be directly entered into FACTS. At the present time, LANL is not sure whether

the current number of computer information system specialists in the Internal Security Program Division (ISEC) is sufficient to accomplish this task. Alternatives for addressing this shortfall were discussed with LANL FV&A program officials.

(U) FINDING: LASO2002-LANL-PS-001: LANL is not recording and reporting all required information related to the sponsoring of unclassified foreign visits and assignments in FACTS. [DOE Notice 142.1, par. 4.b, and DOE memorandum dated November 2, 2001, subject, Departmental Use of the Foreign Access Central Tracking System]

Organization and Structure of the Foreign Visits and Assignment Program (U)

(U) The FV&A office within ISEC is responsible for the implementation and administration of the LANL FV&A program, and for supporting any foreign visits at LASO. In addition to the responsibility for the FV&A program, ISEC is also responsible for counterintelligence activities and the operations security (OPSEC) program.

(U) Interviews with the FV&A office Team Leader and ISEC Director revealed that the overall objective of the LANL FV&A program is to have a process that achieves a balance between the potential risk represented by foreign national visitors, and the anticipated gain for DOE programs at LANL. In support of this objective the Team Leader has been accredited as a counterintelligence officer, and the FV&A staff have received counterintelligence training to increase their ability to identify potential counterintelligence concerns. Considering that the Team Leader has ten years' experience in the FV&A program and that all of the staff have received FV&A training, LANL has highly trained and skilled personnel to ensure successful program implementation.

LANL Procedures for Requesting Foreign Visits and Assignments (U)

(U) ~~(S/UC)~~ From May 1, 2001, to November 15, 2002, LANL hosted more than 4,000 foreign visitors and assignees, approximately 900 of whom were from sensitive countries. Over 500 foreign nationals from sensitive countries have been granted access to unclassified networks, some of which contain such sensitive information as unclassified controlled nuclear information, cooperative research and development information, and personal data. LANL direction and procedures for the FV&A request process is in two stages. The initial stage is completed by the host organization and includes the conduct of a limited assessment of risk by the applicable line managers for foreign nationals requiring access to LANL computing resources, including local area networks that hold up to and including unclassified controlled nuclear information. While required biographic information and justification for the visit is provided during this phase, the line manager assessment of risk does not meet the requirements of a cyber risk assessment. DOE Notice 205.2, *Foreign National Access to DOE Cyber Systems*, requires that cyber risk assessments include a documented assessment of risks. The LANL line manager assessment of risk does not include appropriate assessment of risk associated with the information to which the foreign national has access, and further, there is no cyber security participation in the current process.

(U) The second stage of the process is administered by the FV&A office. During this stage, the required export control evaluation, OPSEC review, and indices check are completed, and an additional counterintelligence risk assessment is performed by LANL counterintelligence professionals. While the FV&A office does evaluate the level of threat associated with foreign nationals during this stage of the process, this evaluation falls short of a risk assessment to evaluate the cyber security risk to determine the protection posture of the systems or networks to which the foreign national will have access. However, once the foreign visitor request is approved by the FV&A office, those granted access to the unclassified protected network are also granted dial-up access through the LANL firewall. Because LANL believes

that this evaluation mitigates the risk of any foreign national, including those from sensitive countries, to the extent that they are considered no more risk than any other uncleared employee, LANL is approving access to unclassified networks, some of which contain sensitive information, without the required analysis of cyber security risk. Until the required cyber risk assessments are conducted, LANL will continue to accept unanalyzed risks to sensitive unclassified information by foreign nationals. (See *Independent Oversight Cyber Security Inspection of the Los Alamos Site Office and Los Alamos National Laboratory* for more details.)

(U) A review of documentation indicates that all required reviews, indices checks, and approvals are being completed prior to the start of a visit or assignment. Placement of the FV&A program in ISEC has also ensured that OPSEC reviews (not currently required by DOE) are completed for every sensitive visit and that the LANL field intelligence element conducts an analysis of each sensitive country visitor. This analysis provides an enhanced understanding of the potential threat to targeted technologies by these foreign visitors.

(U) Generic and specific security plans are developed and submitted to the FV&A office as part of the request process. During this inspection, 30 of these security plans were reviewed and found to be sufficiently detailed to ensure that hosts and escorts were knowledgeable of sensitive areas, routine and special protection measures, and their responsibilities. Interviews of selected hosts revealed that some organizations developed more detailed security plans that augment those developed as part of the formal FV&A process. Hosts and escorts also receive instructions on their roles and responsibilities during counterintelligence briefings that are provided prior to each visit, periodic presentations given by the FV&A office, and online notification after the approval of a visit.

Closeout of LANL Foreign Visits and Assignments (U)

(U) At the conclusion of foreign national visits and assignments, the ISEC counterintelligence element conducts a detailed debriefing of the host and other applicable personnel. The results of this debriefing are entered into the Counterintelligence Analytical Research Data System (CARDS) by the ISEC computer information system specialists, but not into FACT. The FV&A office Team Leader has access to CARDS and periodically reviews the results of these de-briefings.

E.3 CONCLUSIONS (U)

(U) Overall, the personnel security program has been a viable program in the past and continues to be effective. Implementation of the various elements of the personnel security program as administered by ASC is effective. Current staffing is adequate, and there is strong evidence that working relationships are well established and characterized by open communications.

(U) ~~(TSO)~~ The LANL PSAP is a viable program and is well positioned to meet mission objectives and contribute to the overall insider mitigation strategy. The good working relationship that exists between ASC and LANL PSAP officials contributes significantly to the program's success. However, management attention is required to ensure that the potential threat represented by repeated escorted employee access to the MAA prior to PSAP approval is analyzed. Without such an analysis, an unidentified and uncorrected risk could be impacting overall program performance to mitigate the insider threat.

(U) Similarly, the PAP is also a viable program and is effectively meeting nuclear explosives safety and security requirements. An effective working relationship between the LASO PAP and LANL PAP officials is evident.

(U) The SSAP is a very active and comprehensive program. It is highly effective in communicating security awareness objectives to LANL employees. The thoroughness of program documentation and the diversity of mechanisms by which information is disseminated contribute to overall program effectiveness.

(U) ~~(UCC)~~ The unclassified FV&A program is meeting program objectives and is conducted in a manner consistent with U.S. and DOE national security policies, requirements, and objectives. While LANL is taking appropriate steps to address the shortcomings identified by the IG, sustained efforts will be needed to fully implement FACTS. Action is also required to ensure complete compliance and implementation of protection measures associated with foreign nationals who have access to LANL computing resources.

E.4 RATING (U)

(U) Although additional actions are required by LANL concerning the implementation of PSAP and FV&A programs, the overall personnel security program and its component elements are adequately contributing to the protection program at LANL. Therefore, a rating of **EFFECTIVE PERFORMANCE** is assigned.

E.5 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) OA identified an opportunity to further improve elements of the FV&A program. These potential enhancements are not intended to be prescriptive. Rather, they intended to be reviewed and evaluated by responsible line management, and prioritized and modified as appropriate, in accordance with site-specific programmatic safeguards and security objectives.

- (U) Consideration should be given to providing projected new-hire personnel and current staff of the FV&A office with FACTS training to expand the current capability within ISEC to enter data into FACTS.
- (U) Until additional staff can be hired and/or trained to enter additional data into FACTS, LANL should consider seeking DOE Office of Counterintelligence approval to temporarily use staff who are currently restricted to entering FACTS data for sensitive visits and performing counterintelligence duties.

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APPENDIX F (U)

PHYSICAL SECURITY SYSTEMS (U)

F.1 INTRODUCTION (U)

(U) The evaluation of physical security systems at the Los Alamos National Laboratory (LANL) focused on the protection of special nuclear material (SNM). LANL adheres to the U.S. Department of Energy (DOE)-mandated "defense-in-depth" approach for the protection of SNM. The site's approach to providing defense-in-depth is in the application of multiple layers of protection. Each layer is designed to include elements of access control, delay or channeling adversary pathways, and a combination of detection and assessment systems to provide timely warning of adversary actions to the protective force. The concentric layers start with the LANL Property Protection Areas (PPAs) and Limited Areas (LAs) and progress through Protected Areas (PAs), several material access areas (MAAs), and within the MAAs, a number of vaults and processing areas that may contain SNM.

(U) ~~(S)~~ The primary locations at which LANL handles, processes, or stores Category I quantities of SNM are Technical Area (TA)-55 and TA-18.

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In keeping with the layered protection concept, however, physical security systems are a major layer of the protection strategy at TA-18 and TA-55. The Basic Rapid Alarm Security System (BRASS) controls the physical security systems for the entire laboratory, including much of the access control and all of the intrusion detection, and performs other non-security functions. Many of the BRASS subsystems and components and many of the security systems that BRASS supports were installed in the mid 1980s and have begun to reach the end of their design life. BRASS is used at the laboratory to protect classified matter, sensitive unclassified matter, and government property, as well as SNM.

(U) LANL is currently very close to completing Phase I of the Nuclear Materials Safeguards and Security Upgrade Program (NMSSUP). This upgrade, begun in 1999, is intended to provide a long-term solution to TA-55 protection and provide a replacement for the BRASS system. NMSSUP Phase I involves the installation of much of the communications and hardware infrastructure that will be required to install ARGUS at the conclusion of this first phase and support the remaining phases of the project. Although LANL has stated that it appears ARGUS system delivery will be slightly delayed, all indications are that ARGUS installation will be completed in time to begin Phase II in calendar year 2003. The second phase of NMSSUP involves an ambitious project to completely redesign and construct a new perimeter intrusion detection and assessment system (PIDAS) around TA-55 and to perform other security upgrades at the laboratory.

(U) ~~(S)~~ The August 1999 OA inspection report rated PSS as Satisfactory, but it concluded that "Until all currently planned upgrades are completed, and less reliance is placed on compensatory measures, a continued management commitment will be required to assure this [satisfactory] level of protection for material is maintained." Also in 1999, the 23rd Annual Report to the President on the Status of Safeguards and Security at Domestic Nuclear Weapons Facilities (Annual Report to the President) identified a number of additional deficiencies in physical security systems at LANL. The Annual Report to the President also identified the NMSSUP as the corrective action for these shortcomings.

(U) ~~(S)~~ The December 1999 OA follow-up inspection of LANL focused largely on the corrective actions associated with deficiencies identified during the August 1999 and previous inspections. The physical security systems topic team concluded that "LANL has made significant strides to correct the deficiencies identified by the physical security systems findings." However, with one exception, all findings remained open at the time of the follow-up inspection and could not be closed without the completion of the upgrades. Finally, in October 2000 OA conducted a special review of security measures at TA-18. This special review did not rate the physical security systems topic separately but did note improvements in intrusion detection and progress regarding the necessary upgrades. Most of the upgrades are now complete, and the results of the current inspection indicate that the Los Alamos Site Office (LASO) has appropriately closed all of the past physical security systems findings except LANL1999-LANL-PSS-2, which involves the auxiliary annunciation of PIDAS alarms and assessment video for TA-18 and TA-55. LANL has an approved variance that addresses this issue. However, the finding cannot be fully resolved until the NMSSUP is completed. The variance expires in October 2005, when NMSSUP Phase II is expected to be completed.

(U) This appendix describes the strengths and weaknesses of the site's physical security systems for each of the LANL protection layers. Much consideration was given to the design, application, and maintenance of aging physical security systems in the context of a site such as LANL that will continue to experience major building and infrastructure upgrades required to address the changing missions of the laboratory. These changes challenge the security organization by increasing the demands for security system maintenance and installation and stress the day-to-day operational portions of the program. However, the primary focus of this evaluation was to ensure that physical security systems contribute appropriately to the overall protection of the significant quantities of SNM that exist at LANL.

F.2 STATUS AND RESULTS (U)

(U) Until recently, the Albuquerque Operations Office provided the majority of the direction and oversight of LANL, with LASO providing a local presence. LASO has a very small staff and is not equipped to provide oversight to a large organization such as LANL. Now that LASO finds itself with responsibility for the majority of the oversight, it is seeking approval from the National Nuclear Security Administration (NNSA) to significantly increase staff levels and to complete a service agreement with the Albuquerque Service Center for assistance. This will be particularly important over the next several years with the expected initiation of the design phase of the new PIDAS for TA-55.

(U) ~~(S)~~ The LANL physical security systems have consistently shown improvement since the late 1990s in the implementation of existing intrusion detection systems. The recent completion of closed circuit television (CCTV) upgrades positions LANL to continue this improvement. The current status of LANL physical security systems observed during this inspection is reported below under five subheadings: intrusion detection and assessment; access and search controls; barriers; testing and maintenance; and alarm processing and communications.

F.2.1 Intrusion Detection and Assessment (U)

(U) The review of intrusion detection and assessment capabilities and effectiveness focused upon testing of interior and exterior alarm and assessment systems, and included functional and operability testing. The performance tests also provided an opportunity to observe the LANL process for assessing and resolving alarms, review alarm station procedures and practices, and interview physical security systems management and technical personnel.

TA-55 Protected Area (U)

(U) ~~(S)~~ The TA-55 PIDAS has most aspects of the DOE standard PIDAS. The PIDAS consists of an isolation zone bordered by dual fences that are 8 feet in height or greater. The isolation zone contains a mix of complementary sensors, including monostatic and bistatic microwaves, buried fiber optic cables, e-field sensors, hy-line ported co-ax, and passive infrared sensors. However, many of the sensors have been added in specific locations to provide detection of pathways identified by past OA performance testing. The result is not a consistent set of complementary sensors in every zone but a patchwork application of several different technologies. Nevertheless, the results of PIDAS testing at TA-55 during this inspection resulted in exceptional detection performance.

(U) ~~(S)~~ Testing of the TA-55 PIDAS sensors consisted of crawls, walks, climbs, and jumping techniques. The OA inspection team did not identify any opportunities for utilizing bridging at TA-55. The results of OA performance testing of the TA-55 PIDAS showed remarkable improvement when compared to past results of OA performance testing. No pathways through the PIDAS zones were found. Minor individual sensor weaknesses were identified but were always compensated for by the strengths of other sensors.

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This example highlights the need for continued management emphasis on the principles of integrated safeguards and security management (ISSM), as discussed in Appendix I, Protection Program Management. All project efforts should fully consider security implications in the design phase so that all aspects of security will be integrated into construction. Without an integrated design, vulnerabilities may be unintentionally introduced and built before security is considered.

TA-18 Protected Areas (U)

(U) (e) ~~(UCNF)~~ The facilities at TA-18 are situated at the base of two steep-sided canyons. The administrative area and one of the remote control laboratories, CASA III, are located at the juncture of these canyons, while CASA I is located several hundred yards up one of the canyons and CASA II is located a similar distance up the other. CASAs II and III are Category I facilities; however, CASA I now only operates as a Category I facility on a temporary basis. Given the dispersed location of these facilities, physical security systems at TA-18 cannot be concentrated around a single target location but instead are distributed at the individual target locations. Each CASA is designated as an MAA and is surrounded by a small PA. A fourth MAA, the Hillside Vault, is located within the administrative area but no longer contains Category I quantities of SNM.

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(U) ~~(C)~~ The PIDAS around each CASA is composed of a combination of complementary sensors located outside a single 12-foot double chain link fence, topped by concertina wire. A three-foot-high fence, intended to deter small animals, marks the outer boundary of the PIDAS. Bistatic and monostatic microwaves are located inside the CASA PAs and provide intrusion detection that supplements the intrusion detection provided by the PIDAS. The isolation zone sensors include new active infrared sensors (beam-break type) that provide coverage up to a height of approximately 10 feet. Other isolation zone sensors include bistatic and monostatic microwave, passive infrared, and dual-technology microwave/infrared. All sensors are arrayed in a complementary fashion to assure that adversaries must defeat multiple sensor types in each zone. In general, the TA-18 PIDAS performance has not degraded since OA performance tests in 2000. While performance testing during this inspection revealed one potential pathway through the PIDAS, no predictable pathways were identified. However, a few weaknesses were identified.

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(U) ~~(S)~~ Although performance testing revealed a weakness in sensor coverage in this area, OA was not able to demonstrate a full adversary pathway. Delivering a tactical ladder to the PIDAS fence over the canyon cliffs and placing the ladder in position without observation could only have a chance of success at night when completely unexpected by the protective force. Additionally, once over the CASA II fence, an adversary would still have to drop down to the ground and contend with the microwave sensors installed within the CASA II yard. Due to safety concerns, OA did not perform a limited-scope performance test to demonstrate the full adversary pathway. Immediately upon demonstration of the sensor weakness, LANL physical security systems personnel began installing additional sensors to cover this potential pathway. However, the flood control construction project failed to fully consider the security implications of the modifications it designed and installed. This situation again highlights the need for continued management emphasis on the principles of ISSM, as discussed in Appendix I, Protection Program Management.

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(U) ~~(S)~~ In general, testing of the detection capabilities of the TA-18 and TA-55 PIDAS installations revealed that the overall detection system performed effectively and provides a high probability of detection of adversaries using both standard and advanced techniques.

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Immediate corrective actions notwithstanding, LANL management should ensure that the circumstances that allowed construction activities to jeopardize security are examined and should consider whether existing processes should be modified to prevent future vulnerabilities.

Assessment (U)

(U) ~~(S)~~ The evaluation of LANL assessment capabilities was performed by observing the assessment during intrusion detection testing and by performing evaluations of lighting and backup power systems. Since the 2000 OA inspection, LANL has installed new digital CCTV systems that provide pre- and post-alarm video to assist in alarm assessment and to address previous findings. Evaluations of lighting and backup power systems revealed no weaknesses. In general, alarm assessment for the PIDAS zones is much improved over the systems tested by OA in past inspections.

(U) ~~(S)~~ All LANL PIDASs are segregated into distinct zones, each covered by two or more CCTV cameras. Alarms are reported to the Alarm Response Office (ARO) located within each area (TA-18 and TA-55). The CCTV image for the zone in which the alarm occurs and the images of adjacent zones are immediately called up and displayed. Pre- and post-alarm images are captured and repeatedly replayed in the ARO. The recent upgrade to digital video recording systems was in direct response to past OA findings and has greatly improved assessment capabilities and effectively eliminates the assessment vulnerabilities described in past findings.

(U) The overall assessment capabilities of the AROs, including the newly installed digital recording video assessment systems, are much improved over past inspections. The new systems enable operators to fully assess all alarms and accurately differentiate between false and nuisance alarms. Additionally, support systems, such as lighting and backup power systems, performed adequately.

F.2.2 Access and Search Controls (U)

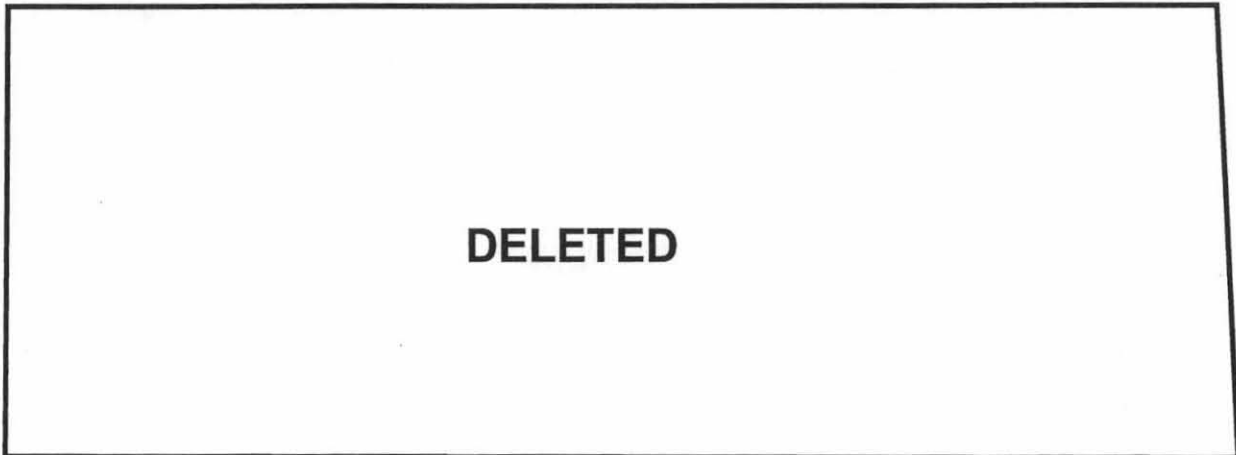
(U) The OA team reviewed the systems and procedures in place to control access at LANL security areas. Performance tests and observations of search controls and electronic access requests at the PPAs, PAs, MAAs, and vaults were conducted. Additionally, the OA team conducted interviews with physical security systems personnel responsible for installing and maintaining the access control systems and the personnel search equipment.

(U) ~~(S)~~ Since the last OA inspection, LANL has instituted a protective force check of DOE badges at many new places throughout the laboratory. Many of these security posts were instituted as part of the post-9/11 security measures upgrade. This has, in effect, created new PPAs and increased the standoff

distance around the most sensitive facilities. The results of this inspection indicate that for the most part sufficient barriers and controls are in place to ensure that access to the PPA, PA, and MAAs is only given to appropriately credentialed and authorized personnel. However, a weakness identified during this inspection may compromise one portion of the multiple controls in place to control access.

- (U) ~~(S)~~ OA performed an evaluation of the process and programs at the LANL Badge Office. A recent DOE Inspector General report indicated that LANL has the lowest incidence of clearance and badge discrepancies in the DOE complex. The primary function of the LANL Badge Office is to create and issue new or replacement DOE badges that allow access to LANL PPAs and some security areas. The DOE badge alone provides access into some security areas through verification by a protective force member. The badge, along with other access control measures, provides access electronically through the BRASS into other security areas. The LANL badging process requires proper approval for access, verification of access authorization, and positive personal identification before a badge is issued and at the time of entry into security areas. Additionally, the LANL badging process may involve enrollment of hand geometry data, depending on the individual's level of access. All indications are that the Badge Office performs these functions well. However, one weakness in the Badge Office processes was identified.

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- (U) ~~(S)~~ Upon identification of this weakness, LANL Badge Office personnel and vulnerability analysis experts acted quickly to develop a classified risk assessment that concluded that there were sufficient layers of protection in place to prevent any loss of information. However, to eliminate this weakness the Badge Office immediately wrote and implemented procedures based on the risk assessment that prevent anyone other than a "Q" cleared employee from performing any badging function. Additionally, the Badge Office removed the badge system access privileges of the uncleared employees and instituted a random quality check of a percentage of all badging activities performed by the "Q" cleared Badge Office personnel. It should be noted that all uncleared personnel working in the Badge Office were in the process of obtaining "Q" clearances and it was never LANL's intention to permanently use uncleared personnel during the badging process. The Badge Office is also considering entering its personnel into the personnel security assurance program (PSAP) program.

- (U) ~~(S)~~ In addition to the DOE badge, LANL has multiple methods for controlling access. Performance tests and observations of search controls and electronic access requests were conducted at the PA and MAA in TA-55 and at the PA, MAA, and vaults in TA-18. A combination of administrative and electronic access control systems control access at the PA and the MAA in TA-55. Sufficient barriers and controls are in place to ensure that the access control systems allow only appropriately authorized personnel into each subsequent layer of protection. Controls are also in place at the TA-55 PA and the MAA to ensure that uncleared or otherwise unauthorized individuals are allowed to enter only under

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escort of approved site personnel. Unescorted access to the MAA is also restricted administratively and by the training system to only "Q" cleared individuals who are in PSAP. In general, the electronic access control systems and procedures function appropriately.

- (U) ~~(S)~~ LANL utilizes a badge exchange access control program at the LA boundary in TA-18 and physical badge touch at the PA and the MAA in TA-18. To enter the LA at TA-18, employees must have a picture exchange badge or be on an access list to be issued a visitor exchange badge. At the entry point into the three CASA PAs, personnel are hand searched by a protective force member, who then unlocks the gate and escorts personnel into the PA. Personnel are also searched for metal and contraband upon entry and exit at the MAA. Sufficient barriers and controls are in place to ensure that the access control procedures allow only appropriately credentialed personnel into each subsequent layer of protection. In general, the manual access control procedures and search equipment at TA-18 functioned appropriately.
- (U) ~~(S)~~ Performance testing of x-ray machines, metal detectors, and SNM detectors did not identify any weaknesses. However, a minor weakness was observed at the entry/exit portals at the TA-55 PA boundary, which are used for both entry and exit of personnel. The personnel entering and exiting were allowed in close proximity to each other. This co-mingling allowed for the possibility of contraband being introduced into the PA. The protective force personnel immediately corrected this condition by directing in- and out-bound personnel to remain at the entry/exit door until directed to proceed.
- (U) ~~(S)~~ With a few exceptions, the access control and personnel search systems and procedures were effective. The weaknesses that were identified were immediately corrected and were mitigated by other layers of protection. However, continued vigilance on the part of LANL is required to ensure that appropriate access and search controls are implemented at every layer of protection.

F.2.3 Barriers (U)

- (U) ~~(S)~~ Clearly defined physical barriers, such as fences, walls, and doors, are required to define the boundary of all security areas. Similarly DOE sites ensure that various types of barriers of increasing resistance to attack are found at each layer of protection. Section F.2.1, Intrusion Detection and Assessment, above, describes the CASA facilities at TA-18 and explains that the CASAs are located at the juncture of two canyons and are dispersed within these canyons. Barriers at these CASAs consist of PIDAS fences, CASA walls, and vault walls. In response to past concerns LANL has added delay features, especially to CASA III, that have substantially increased delay times. Recently, in CASA II LANL has moved some material into two Safe Secure Transports (SSTs), which are on loan from the NNSA's Office of Transportation Safeguards.
- (U) ~~(S)~~ The SSTs at TA-18 contain systems designed to provide adversarial delay beyond the protection that would be provided by a vault. These particular SSTs, refurbished to eliminate certain vulnerabilities associated with earlier models, have been placed in the CASA II PA within the protection of the CASA II PIDAS. Consolidation of material from some of the other storage locations at TA-18 into these trailers has allowed LANL to downgrade CASA I and the Hillside Vault and concentrate protection of TA-18 Category I material in CASAs II and III. However, as LANL vulnerability assessments have shown, the SSTs utilized in this configuration are most vulnerable when opened to add or remove material. This condition is again mitigated by additional protective force presence in the area. The SSTs are not the long-term solution to protection issues at TA-18.
- (U) ~~(S)~~ Unlike TA-18, TA-55 is configured with a single set of layered barriers more like typical DOE facilities housing significant quantities of SNM. A single, large PA surrounds the facilities within TA-55. The Plutonium Facility (PF-4) is the only building within the TA-55 PA that contains Category I items of

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SNM, both in storage and in process throughout the MAA. PF-4 has been constructed as a true vault with steel-reinforced walls 18 or more inches thick. These vault walls make up the boundary of the MAA. The MAA is accessed through a hardened entry control facility equipped with turnstiles, electronic access control, metal detection, x-ray, and SNM detection. Recent additions of Mandel vault doors at all entrances to the MAA have increased the protection afforded SNM.

(U) ~~(S)~~ The most fundamental concern at TA-18 and TA-55 has been, and continues to be, the manner in which physical security systems are applied. Although the nominal security boundary at TA-18 is a fence that traces the outline of the entire Technical Area, the first line of positive intrusion detection and assessment is located immediately around the CASAs, less than 25 yards from the CASA structures themselves. Similarly, at TA-55, several sections of the PIDAS are within approximately 30 yards of the MAA boundary. Even if the intrusion detection and assessment systems functioned effectively, high probabilities of detection are achieved only a short distance from the various SNM target locations.

(U) ~~(S)~~ [REDACTED]

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and LANL should proceed with the NMSSUP Phase II security upgrade at TA-55 to ensure that this critical plutonium research and processing facility can maintain adequate protection levels to continue to support the LANL missions in the long term.

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F.2.4 Testing and Maintenance (U)

(U) An effective testing and maintenance program assures the integrity of the intrusion detection, assessment, alarm processing, and access control systems. Numerous interviews with LANL personnel were conducted concerning maintenance, false alarm rate/nuisance alarm rate (FAR/NAR) data analysis, and performance-testing programs at the site. Interviews and documentation reviews revealed extensive and robust programs in all of these areas.

(U) LANL has a technician dedicated to FAR/NAR analysis. His efforts reduce FAR/NAR through root-cause analysis of specific alarm points having high alarm rates. The effectiveness of this program, initiated in 1998, is demonstrated by FAR/NAR rates that have been reduced by factors of 4 to 5. Personnel performing the maintenance are thorough in determining root causes of failures and anomalies. LANL has emphasized that all alarms should be carefully assessed by the alarm system operator in order to determine the cause of each alarm. Use of the new pre-alarm video assessment system has helped the operators to correctly assess each alarm, allowing the great majority of alarms at LANL PIDASs to be logged with properly identified causes. Thus, the residual FAR is low, generally running about an order of magnitude *below* the allowed DOE FAR of 1 alarm per sensor per week.

(U) ~~(S)~~ Security system maintenance personnel are provided by Protection Technologies of Los Alamos and other contract companies. This team has been able to maintain an aging and complicated system

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effectively. Extensive procedures exist and are current for all testing and maintenance activities. Formal work request forms are employed to initiate, describe, approve, close out, and otherwise track work activities. Maintenance appeared to be initiated in a timely manner, much of it within one to two hours. LANL does not separate work items into "critical" and "non-critical" categories, but instead treats each work request as it comes in as a high priority, requiring immediate action. Priority decisions, when required, are made by the operations supervisor, with protection of SNM and sensitive compartmented information facilities as the highest priority. While the corrective maintenance program appears to be effective, preventive maintenance tends to be subordinated to the higher-priority needs of immediate problems. In time, this could lead to higher FAR and sensor outage problems, which in turn could result in further delays in preventive maintenance.

(U) While LANL does not currently have an automated maintenance counterpart to the extensive FAR/NAR analysis for determining maintenance performance, one is being developed. The increased number of work orders resulting from aging systems and increased mission has made this system essential. The development of this system should facilitate LANL's tracking of work requests to closure and to measure maintenance work in terms of effectiveness, timeliness, speed, and cost. This system is even more critical when considering the expanded workload the physical security systems staff will have as new facilities continue to come on line and as expected mission increases are implemented. Although the current method of identifying and tracking maintenance requests meets DOE requirements, the new system will provide much more flexibility and capability and will be more efficient.

(U) ~~(CS)~~ In summary, LANL is operating an effective security system testing and maintenance program. However, as the systems at LANL age and expand, they will become harder to maintain. Until LANL develops and implements its proposed maintenance and tracking software, it will be very hard to get a quantitative handle on the aging and higher maintenance cost problem and determine its significance.

F.2.5 Alarm Processing and Communications (U)

(U) LANL utilizes the BRASS alarm monitoring system to monitor interior and exterior alarms, control and monitor assessment systems, and to perform various other security functions. BRASS, as a system, monitors and displays interior and exterior security alarms, provides access control throughout LANL, and monitors and annunciates fire and smoke alarms for LANL facilities. At the time of this assessment, all elements of the alarm processing and communications systems performed well. However, potential weaknesses were noted regarding some data and radio communication methods.

(U) ~~(C)~~ Communication paths for alarm signals vary based on the Technical Area that is being monitored. In the two areas of most concern, TA-18 and TA-55, the alarm signals leave the respective PAs over dedicated phone lines to TANDEM mainframes located in TA-3. LANL uses triple Digital Encryption Standard (DES) encryption to transfer data to and from these areas. The DES encryption keys have not been changed since they were placed in service over a year ago. There is no clear-cut guidance in the current DOE orders and directives that mandates how often encryption keys should be changed. The draft DOE Manual 473.1-1 does indicate that the key should be changed at least annually. Upon identification of this weakness, LANL changed all encryption keys and started to develop procedures to establish a key change frequency. With the continued improvement in computers, even triple DES has become relatively easy to defeat by a sophisticated adversary, so scheduling key changes at least annually is prudent.

(U) ~~(S)~~ All security stations are provided with multiple forms of communication for assessing alarms, dispatching response, and resolving alarms. The primary form of communication for these functions is the LANL trunked radio system. The system consists of ten frequency pairs at both the primary and secondary transceiver sites.

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F.3 CONCLUSIONS (U)

(U) ~~(S)~~ With the one notable exception, the overall effectiveness of the physical security systems at LANL continues to improve. The PIDAS intrusion detection and video assessment systems performed exceptionally. Success in resolving the issues related to detection and assessment has come about as a result of the hard work and professionalism of the LANL physical security systems technical staff, supported in recent years by a strong management commitment. The FAR/NAR program and the alarm system maintenance program are comprehensive, well documented, and fully supported by management. A very strong feature of LANL's physical security systems operation continues to be the technical cadre that develops, installs, tests, and maintains the systems.

(U) ~~(S)~~ The deficiencies identified in this appendix were quickly addressed by LANL, and only the culvert finding will require long-term corrective action to completely resolve the issue. Other weaknesses were effectively corrected with the adjustment of existing sensors, installation of new sensors, development of procedures, or changes to computer systems.

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(U) ~~(S)~~ Weaknesses identified during this inspection indicate that LANL personnel occasionally fail to fully consider the security implications of their actions. Laboratory management should continue to emphasize the principles of ISSM so that superior security system performance is fully integrated into site operation at all areas.

F.4 RATING (U)

(U) ~~(S)~~ Overall, LANL physical security systems provide adequate assurance that Departmental assets are properly controlled and protected. Weaknesses identified in this section did not put material at risk and should not detract from what is otherwise an effective program. Therefore, the physical security systems topic is rated as **EFFECTIVE PERFORMANCE**.

F.5 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) This safeguards and security inspection identified several opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible DOE and contractor line managers and prioritized and modified as appropriate, in accordance with site-specific programmatic and safeguards and security objectives.

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- ~~(S)~~ LANL should consider purchasing a smaller testing ball to simulate crawl tests in PIDAS zones. Although the large ball may accurately test against the DOE standard, it may not always provide conservative results. A smaller drag-ball would challenge the sensor configurations and leave little doubt that crawling attempts will be detected.
- (U)

APPENDIX G (U)

MATERIAL CONTROL AND ACCOUNTABILITY (U)

G.1 INTRODUCTION (U)

(U) The Independent Oversight and Performance Assurance (OA) inspection of the Los Alamos National Laboratory (LANL) material control and accountability (MC&A) program focused on the three core elements of an MC&A program: program administration, materials accountability, and materials control. Previous OA inspections and a Los Alamos Site Office (LASO) survey were reviewed prior to this OA inspection of the LANL MC&A program to determine areas of interest for the inspection. The OA inspection conducted in September 1999 had three MC&A findings and two policy issues. The three findings included not using current limit of error data, inconsistencies in the bi-monthly physical inventory, and inconsistencies in the categorization of nuclear material as not amenable to measurement. The policy issues included nuclear materials management issues and intrasite waste transfer reconciliation. All findings were considered closed, with the exception of the policy issue regarding waste transfers, which will be closed when DOE Manual 474.1-1 is reissued. The LASO survey of June 2002 identified one deficiency regarding portal monitors, and this finding was closed.

(U) The inspection activities consisted of interviews, document reviews, data evaluations, and performance tests. Performance tests included observation of physical inventory at Technical Area (TA)-18 and TA-55, confirmation measurements of material, material surveillance, and comparisons of tamper indicating device (TID) serial numbers collected during inspection activities to the MC&A database.

(U) There are numerous ongoing activities at LANL. The activities involving nuclear material are primarily focused in the following areas: Advanced Nuclear Technology (TA-18), Building PF-4 (TA-55), and Chemical and Metallurgical Research (CMR). Ongoing activities include pit rebuilding/manufacturing, nuclear material consolidation, criticality experiments, support for the stockpile stewardship and certification programs through the Pit Surveillance project, stabilization/repackaging of highly enriched uranium for offsite shipments, hot cell operations, and analytical chemistry.

G.2 STATUS AND RESULTS (U)

G.2.1 MC&A Program (U)

G.2.1.1 LASO (U)

(U) The reorganization of the National Nuclear Security Administration (NNSA) will transfer all oversight responsibility for MC&A from the Albuquerque Operations Office to LASO on December 16, 2002. Currently, LASO has one individual providing oversight for the LANL MC&A program. This individual has several years of MC&A experience but has taken another position in the LASO organization. The individual is scheduled to transfer from the current MC&A position to a Pit Manufacturing Engineer position in the Office of Program Liaison when LANL completes a corrective action plan for this OA inspection. This would leave LASO with no MC&A oversight. The problem is compounded by the current NNSA hiring freeze and the condition that only current NNSA employees can be considered for the position. These limitations could prevent LASO from hiring the most qualified

individuals available for the job. LASO should obtain an experienced MC&A professional, even if it is outside NNSA, to provide oversight for the resolution of the MC&A issues identified in this report.

G.2.1.2 LANL (U)

(U) The MC&A program is divided into three separate areas: MC&A operations, support/oversight, and technology development. Operational responsibilities are assigned to the line organizations that own and utilize nuclear materials at LANL. The Nuclear Materials Technology Division (NMT) has the primary responsibility for MC&A at TA-55 and the CMR operation. The Nonproliferation and International Security Division (NIS) operates TA-18 and provides a resource of expertise in the MC&A discipline. The Safeguards and Security Division MC&A Group (S-4) is responsible for MC&A safeguards support and oversight. S-4 supports the planning and oversight of proper protection and handling of nuclear material, with emphasis on special nuclear material. The S-4 Group Leader reports to the Security and Safeguards Division Leader, who reports to the Laboratory Associate Director for Operations.

(U) The S-4 Group has an authorized staffing level of 20. There are currently two openings. Since the 1999 OA inspection, the S-4 Group has had five individuals take other positions at LANL. Three of the five positions have been filled, but two of the three individuals are limited in their contribution to the Group, since their job responsibilities require enrollment in the Personnel Security Assurance Program (PSAP) that has not yet been completed. Two of the key individuals who transferred out of the S-4 Group were responsible for the inventory and measurement oversight functions, which currently are not adequately performed.

(UCNI) FINDING: LASO2002-LANL-MCA-001: LANL (S-4) is not adequately conducting its oversight responsibility in accordance with the LANL MC&A plan. [DOE Order 474.1A, par. 4.b.(2)]

(U) The joint LANL and DOE MC&A Working Group (WOG) promotes partnering and provides institutional guidance aimed at ensuring technically defensible, operationally efficient, and cost-effective MC&A in support of nuclear materials programs. The WOG promotes and monitors MC&A progress and informs senior management of LANL's MC&A status.

(U) (S) LANL has 71 material balance areas (MBAs) that include 20 Category I MBAs, one Category II MBA, 13 Category III MBAs, and 37 Category IV MBAs. Since the 1999 OA inspection, CMR has downgraded the Category I MBA to Category III.

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G.2.2 MC&A Plan and Documentation (U)

(U) All LANL documentation derives from Laboratory Implementation Requirements. The Laboratory Implementation Requirements for the MC&A program are prepared and concurred with by a committee of line, program, and safeguards and security personnel that is chaired by Security Integration (S-2). The MC&A Laboratory Implementation Requirements specify the requirements for the MC&A plan and other MC&A requirements consistent with DOE orders. The current MC&A plan was approved in August 2001 and was revised and submitted to LASO on November 2002. The MC&A plan is prepared by S-4 and is the derivative document for the S-4 departmental procedures and the Nuclear Material

Custodian Handbook. The handbook prepared by S-4 becomes the guide for the line organizations to prepare material balance area operational procedures. The S-4 departmental procedures and Nuclear Material Custodian Handbook have been recently updated and address applicable MC&A requirements. MC&A responsibilities for the line organizations that utilize nuclear materials are defined in specific area material balance area operational procedures. These procedures, prepared by the line organizations, address applicable MC&A requirements and require approval by S-4. Documentation for procedures and standards, applicable to the measurement groups, are reviewed by S-4. Under this program, S-4 oversight becomes a key component to effective MC&A at LANL.

G.2.3 Internal Review and Assessment (U)

(U) The LANL internal review and assessment (IRA) program is in a transitional state. Consistent with implementation of integrated safeguards and security management, line organizations utilizing nuclear materials assume ownership of certain MC&A functions. LANL IRAs are performed on an MBA and an MC&A topical basis. The MC&A IRA program will be conducted by the line organizations on an MBA basis, and topical IRAs by MBA will continue to be conducted by S-4. The annual independent assessment required by DOE order will be conducted by S-4 in its oversight role.

(U) Prior to July 2001, S-2 administered the LANL Security self-assessment program with the use of an S-4 subject matter expert for the MC&A IRAs. Subsequently, the IRA program for MC&A was transferred to S-4 to administer the transition of MC&A functions to line organizations and assume oversight responsibilities. This transition is still ongoing. A joint IRA was conducted in 2001 for the Category I MBAs in TA-55. S-4 is currently preparing TA-18 MC&A personnel for the IRAs of their MBAs in 2003. Under this program, assessments are conducted for MBAs as follows: Category I and II MBAs every two years; Category III MBAs every three years; and Category IV MBAs every four years.

(U) There was an interruption in the IRA schedule in October 2001 due to the loss of the IRA MC&A subject matter expert and the transition of the MC&A IRA function from S-2 to S-4. A replacement was not available until April 2002. As a result, IRAs for some Category III and IV MBAs in the 2001 schedule were not conducted. Additionally, the IRA schedule for 2002 was delayed. However, as a result of adjusting the schedule of some IRAs and expediting others, S-4 has completed the schedule for all but two Category III MBAs, for which these assessments are currently ongoing. The IRA for the TA-55 Category I MBAs conducted by the line organization was reviewed and found to be consistent with the IRA program OA observed on previous inspections. However, the verification measurement deficiency identified by this OA inspection was overlooked by the IRA (see Finding LASO2002-LANL-MCA-004). IRAs of the other MBAs that were reviewed by OA were acceptable. During 2002, S-4 also conducted 14 special IRAs that were associated with creating, upgrading, or discontinuing MBAs. The transfer of MC&A functions to such line organizations as NMT-4 to affect integrated safeguards and security management is counter to the longstanding DOE requirement for the separation of duties for some MC&A functions, such as IRAs, accounting, and inventory adjustments. LANL controls were in place in the line organizations to maintain this separation of duties. This increases the importance of the S-4 oversight function.

(U) ~~(UCNI)~~ Performance testing is an important tool in assuring that the MC&A program is maintained at an adequate confidence level. LANL performance testing procedures require that 20 random tests be conducted annually to assess access controls and material surveillance. At LANL, the PSAP requirement for unescorted entrance to MAAs and computer logon to Materials Accounting and Safeguards System (MASS) computer terminals are the access control components that are tested. For 2002, two performance tests were conducted for material surveillance (two-person rule), three performance tests were conducted for PSAP unescorted access control, and two tests were conducted for MASS access



control. The elements of material surveillance and access controls had not been sufficiently tested to state that the elements were effective at least 95 percent of the time. The performance testing of the other MC&A elements was conducted as scheduled.

- (U) ~~(C)~~ **FINDING: LASO2002-LANL-MCA-002: LANL did not meet the performance requirements for material surveillance and MASS access control testing. [DOE Manual 474.1-1A, par. 4.c.]**

G.2.4 Training (U)

(U) LANL training for personnel performing MC&A activities is administered by S-2 through the use of the established Safeguards and Security Training, Awareness and Communication Plan. The Plan is currently awaiting training approval program (TAP) recertification. It was updated and resubmitted in May 2002, but at the time of this inspection, TAP recertification had not been received. Training needs are identified through job task analyses and developed into training plans for personnel performing MC&A functions. MC&A training plans have been developed for nuclear material handlers, nuclear material custodians, TID users/custodians, and MASS users. Initial training is generally provided in the classroom, with computer web-based refresher training. On-the-job training occurs primarily for S-4 personnel and those performing MC&A measurements. Additional training can occur by procedural review or job instructions, especially when additional or special needs arise out of new job requirements. A special video that provides for MC&A familiarization is used for the protective force.

(U) The evaluation of the LANL training program included a review of program content, training techniques, interviews, and observation of personnel performing MC&A functions. Additionally, the training records for 12 employees (MBA custodians, TID users/custodians, and S-4 personnel) were reviewed and compared to the training records database. All training requirements were up to date; however, the training records for several TID users/custodians had not been entered into the LANL training records database in a timely manner. A review of the TID administrator's logs indicated that the individuals' records had been appropriately updated.

(U) To determine the effectiveness of the LANL MC&A training program, the OA inspection team interviewed MBA custodians, TID custodians, and members of supervision. Personnel were knowledgeable of their job functions. Additionally, observations and discussions with line operations personnel indicated they were knowledgeable and competent of their responsibilities pertinent to access controls, surveillance, and containment measures.

G.2.5 Accounting (U)

(U) MASS provides nuclear materials information relating to safeguards, materials management, production, inventory quantities/valuations, and other programs required by DOE. MASS maintains inventory records by MBA, and the records are categorized by material type, composition, process status, and assigned locations. MASS has been in use at LANL since the 1980's. Separation of duties for accounting activities ensures that MASS entries are reviewed. The Nuclear Materials Management Safeguards System (NMMSS) error rates for the inventory data are approximately 0.05 percent, one of the lowest error rates in the DOE complex.

(U) Process status is the smallest accounting increment for closing material balances in MASS. Each process status has an approved process accountability flow diagram (PAFD) that depicts the flow, acceptable measurement methods, and status of material within a process. Examples of process status

within TA-55 include pit manufacture, casting, scrap recovery, and the Advanced Recovery and Integrated Extraction System (ARIES).

(U) ~~(UCND)~~ Nuclear material batch traceability within TA-55 was reviewed. Each input batch is transferred into an MBA and assigned to a status. As the input batch is processed, nuclear material quantities are removed from the batch and assigned to a different inventory item within the process status. The Nuclear Materials Control and Accountability Group (NMT-4) monitors the closure of each batch and makes an inventory adjustment (IA) based on a material balance for that batch. During the processing activity, it is possible for an input batch to become negative (indicating more material was removed than was assigned at input). An input batch may have a positive value even though there is no material left in the input batch. In both cases, the MBA custodian is required to adjust the location for the item to a "Non-Physical Parent Lot" (NPPL). An NPPL designation identifies to NMT-4 that expeditious closure of the input batch is required. The NPPL tracks the cumulative sum of differences between the inputs and outputs. S-4 reviews all NPPL values on a monthly basis, providing oversight for the NPPL batches. NPPLs were reviewed, and some were found to exist for as long as six months, until they were accounted for by an inventory adjustment. When resolution is timely, this methodology appears to be operating effectively.

(U) ~~(U)(C)~~ The inventory difference (ID) program relies on batch traceability to identify and explain IAs. IAs are reviewed daily, weekly, and monthly. LANL regards these adjustments as continuous reconciliation of the inventory. Daily reviews of the IAs approximate the limit of error of inventory difference (LEID) calculation.

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On a monthly basis, IAs are summed, classified as an ID, entered into MASS, and reported to NMMSS. An LEID calculation is applied on a monthly basis to active processes (those with a high throughput and number of IDs).

(U) ~~(UCND)~~ The LEID program was also reviewed. The underlying model assumptions are clearly stated. However, uncertainty estimates are based on 1999 data. Revised values are currently being evaluated prior to being updated. LEID information is not calculated in a timely manner. For example, first and second quarter 2002 LEID data was not reported until July. July and August 2002 data was not reported until October, and September data was not reported until November. Thus, LEID, as implemented at LANL, is not a timely ID evaluation mechanism given that other LANL material control indicators are more timely.

(U) During the inspection, OA reviewed the documentation of control limits for the inventory difference. The control limits used by LANL assume that the items in the ID equation with a positive sign (beginning inventory and receipts) have no systematic uncertainty contribution to the control limits. This assumption is not conservative and could result in limits that may be larger than the true limits. In reviewing the documentation of the ID control limits, the statistician stated that the methodology was statistically valid, but further stated that "the model and its inputs need further refinement before it will adequately model the ID process."

(S) ~~(UCND)~~ The LANL MBA activities associated with potential rollup of nuclear material quantities to a Category I quantity in non-Category I MBAs outside MAAs was reviewed. S-4 has a procedure and maintains a daily system of checks and balances that identify transfers that would exceed Category I limits. CMR personnel have a separate procedure that monitors all building MBA categories and quantities of nuclear material inventory and transfer activities. Both systems were effectively implemented.

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G.2.6 Physical Inventory (U)

(U) OA inspection activities included a review of the physical inventory program at LANL. The LANL inventory program provides a performance test that validates the accuracy of the book values and is not intended to establish values to determine book closure. The LANL inventory includes validation of item identity, location, TID application, and TID integrity. LANL performs an annual shutdown/cleanout inventory in December, and conducts dynamic inventories for Category I/II processing MBAs bi-monthly and semiannually for Category I/II storage vaults. During the dynamic inventory, processing activity or material movements within the MBA may continue throughout the scheduled inventory period. Allowing process movements during an inventory is very cost effective but requires rigorous controls for material movement and accounting. The LANL inventory of process areas is conducted using a statistical sampling program and includes both confirmation and verification measurements. The current statistical sampling program has been in use since October 1998. The statistical sampling weights items by attractiveness level and whether or not the containers have TIDs.

G.2.6.1 TA-18 Inventory (U)

(U) OA observed the annual December inventory for TA-18. During the pre-inventory meeting, safety concerns were reviewed, but no MC&A issues or concerns were discussed by LANL personnel. OA observed the validation of item identity, location, and TID integrity, and the performance of confirmation measurements. The inventory at TA-18 verified the location of all items selected for inventory.

(U) ~~(S)~~ A TA-18 custodian identified a problem with MASS locations. During inventory preparation the previous week, a type-95 container (the code used to identify an outer container with several inner containers) had a different location listed in MASS for some of its inner containers. This information was not provided to S-4 until the inventory had already begun. Thus, during the physical inventory some inner containers had an incorrect location specified on MASS.

(U) ~~(S)~~ **FINDING: LASO2002-LANL-MCA-003: LANL failed to properly document material transactions on the accounting system for some items and failed to detect data discrepancies in and ensure completeness of accounting records. [DOE Manual 474.1-1A, Ch. II, par. 2.]**

(U) ~~(S)~~ Subsequent to the inventory, S-4 personnel reviewed the entire MASS database for TA-18 and identified that for 11 type-95 containers, 23 inner containers had the incorrect location. LANL opened the 11 type-95 containers. Twenty-two of the 23 inner containers were verified as being in the correct type-95 container. One 39-gram item containing highly enriched uranium was not in its identified container or location. LANL conducted a records search and found that this item had been removed from the type-95 container and placed in a different location, where it was found. OA validated on the "test MASS database" that it takes two MASS transactions to transfer inner containers to a type-95 container. Discussions with the TA-18 custodian indicated he was not aware of the two transactions required to containerize items and had incorrectly performed similar computer transactions for an extended period of time.

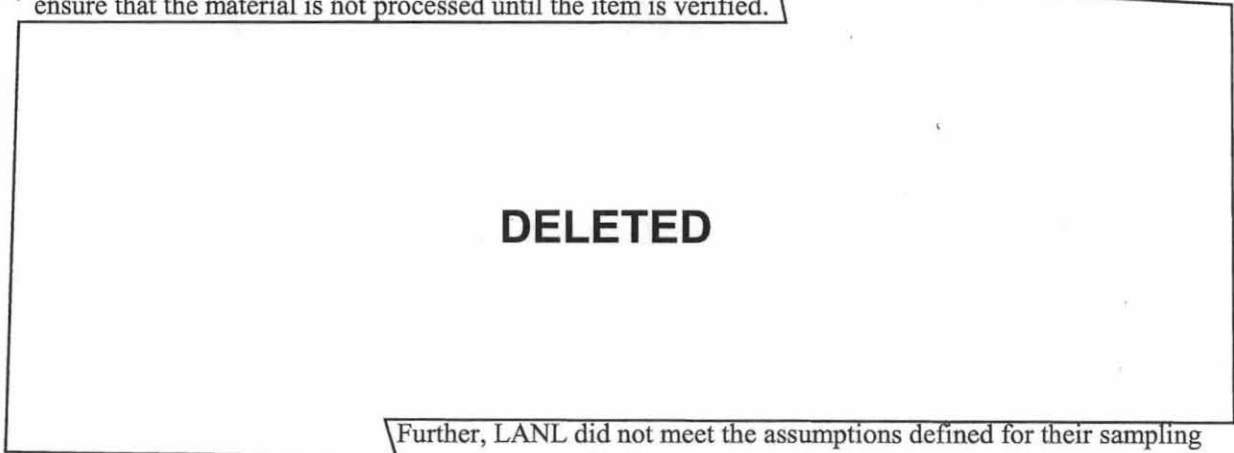
(U) LANL uses a non-destructive assay instrument, GN-4, for confirmatory measurements for items containing nuclear material that are safeguarded by a TID. The instrument is programmed to identify the type of nuclear material in an item by quantifying the energy of radiation unique to a particular type of nuclear material. This identification of nuclear material may require the addition or removal of shielding and the repeated use of the instrument at different locations on the item in order to obtain a confirmatory result. This difficulty was observed for items containing kilogram quantities of nuclear material and decreases the credibility of confirmation measurements. In all cases observed during the inventory, the identification of the type of nuclear material was confirmed.

G.2.6.2 TA-55 Inventory (U)

(U) ~~(S)~~ During the inspection, OA observed the TA-55 annual cleanout process inventory and conducted field interviews of MBA custodians and alternates, functional process custodians, and operational process custodians. The custodians were fully aware of their duties and responsibilities. The facility preparedness for the physical inventory was also evaluated. In general, the gloveboxes were clean, and material was in a form suitable for physical inventory. One area (MBA 711) had several cans of plutonium oxide that did not have a TID and would therefore be subject to verification (quantitative) measurements during the physical inventory. This prompted a review of previous physical inventory verification records for all TA-55 MBAs that identified numerous problems with the verification and confirmation program as implemented at LANL. Identified deficiencies included:

- (U) • ~~(S)~~ Items (primarily oxide) were identified for verification measurements that were not completed. The measurement of plutonium oxide was a concern in the 1999 OA report.
- (U) • ~~(UCNI)~~ One item selected for confirmation measurements had no record of being confirmed.
- (U) • ~~(S)~~ Some type-95 containers with multiple items, without a TID, were not verified; one item had an incorrect location in the MASS system.
- (U) • ~~(UCNI)~~ Samples of items that were verified with a neutron counter were accepted based on the sample results without extrapolation to the item.
- (U) • ~~(UCNI)~~ The evaluation of measurement results was delegated to NMT-4 by S-4, inappropriately transferring their oversight responsibility.

(U) ~~(OU)~~ ~~(S)~~ When an item is selected for verification measurement, a "measurement ticket" is written to ensure that the material is not processed until the item is verified.



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plan and did not evaluate the impact of these failed assumptions. Consequently, LANL has not met the DOE required standard for assurance of inventory values, and without further evaluation, does not know the level of defects in their inventory. Therefore, LANL cannot assure that they can quantify an inventory difference of nuclear material items not protected by a TID.

- (U) ~~(S)~~ **FINDING: LASO2002-LANL-MCA-004: The LANL bi-monthly inventory does not demonstrate that the physical inventory verifies the TA-55 facility's accountability records of nuclear material items not protected by a TID. [DOE Manual 474.1-1A, Ch. II, par. 3.d.(1)]**

(U) During the inspection, LANL personnel determined that these deficiencies have existed for at least one year and initiated corrective actions prior to the actual conduct of the December 2002 physical inventory. The significance of this deficiency is partially mitigated by other LANL MC&A program elements, including the establishment of item accountability values and determination of process balances. These elements localize losses to an individual process. LANL item accountability values are evaluated continuously as a component of nuclear material batch processing that includes closing material balances in near-real time.

- (U) ~~(S)~~ OA observed the conduct of part of the physical inventory. Enhancements for the inventory at TA-55 included a more detailed pre-job briefing prior to the beginning of the inventory. The discussion of the conduct of the inventory specifically addressed some of the weaknesses identified by OA during this inspection. In addition to the items selected by the S-4 statistical sample, NMT-4 elected to select all remaining non-TID items greater than 50 grams, with attractiveness level B or C for verification measurement. This increased the total items selected for verification measurement from approximately 69 to 218 items. An additional enhancement included a color-coded marking on the inventory lists to designate those items that needed verification measurements. LANL's initial actions have begun to address the identified deficiencies. However, it will take some time for corrective actions to be implemented and for S-4 to demonstrate effective oversight.

G.2.7 Measurements (U)

(U) LANL maintains a variety of methods for the measurement of nuclear material. The methods include accountability, verification, and confirmation measurements. Accountability measurement methods provide a quantitative determination of nuclear material content and are the basis for establishing or changing the accountability book value. Verification and confirmation measurements are employed to ensure that the book accountability values are correct.

(U) For the measurement of nuclear materials, LANL has developed a guide to assist in the selection of measurement techniques. The guide is based on a graded safeguards approach and has the goal of minimizing the uncertainty of the accountability values.

- (U) ~~(S)~~ LANL uses destructive and/or non-destructive assay methods for the measurement of nuclear material in a process, and for discrete items. An accountability measurement method is maintained for all accountable nuclear material except for those nuclear materials that have been classified as not-amenable-to-measurement. Those nuclear materials for which LANL does not have a qualified non-destructive assay methodology are considered to be not-amenable-to measurement, and are listed and approved as not-amenable-to-measurement by LASO.

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(U) At the time of the 1999 OA inspection, LANL had items containing nuclear material that did not have a measured value, or were not able to defend the value in the accountability records. During this inspection, it was observed that LANL had completed their review, analysis, and measurement of these items.

(U) For non-destructive assay, LANL uses the following methods to determine accountability values:

- (U) Weight (scales and balances)
- (U) Gamma measurement with a segmented gamma scanner (SGS)
- (U) Fixed Energy Response Function Analysis with Multiple Effeciencies (FRAM) Plutonium Isotopic Analysis System
- (U) Solution assay
- (U) Calorimetry (in conjunction with isotopic analysis)
- (U) Passive neutron—neutron coincidence counter, both thermal neutron (TNC) and high-level neutron
- (U) Passive/active neutron well counters
- (U) Cf-252 shuffler.

(U) Recently, LANL has purchased a tomographic segmented gamma scanner and is in the process of qualifying this measurement method for accountability use. The measurement method is an improved methodology that should reduce the measurement uncertainty for nuclear materials routinely measured on the segmented gamma scanner.

(U) Destructive analysis measurement methods require obtaining a sample of bulk materials and the subsequent analysis of the nuclear material content of the sample. LANL maintains multiple analytical techniques for the analysis of samples. The techniques employed for an individual sample depends on the information requested by the submitter. Destructive assays are performed at the CMR and TA-55. For destructive assay, LANL uses the following methods to determine accountability values:

- (U) Davies/Gray potentiometric titrations for uranium
- (U) Coulometric, spectrophotometric, titrimetric, and potentiometric assays for plutonium.

G.2.8 Measurement Control (U)

(U) LANL's measurement control program has two primary purposes: the development of random and systematic uncertainties for the evaluation of the significance of IDs, and the development of uncertainties to ensure the quality of measurements and stability of the instruments.

(U) For evaluating the significance of IDs, LANL maintains a remeasurement database for items containing nuclear material. The database contains repeated measurement results for items. By analyzing

the difference in repeated measurements of the same item by the same measurement technique, LANL estimates the random uncertainty of the measurement method.

(U) LANL estimates the systematic uncertainty by analyzing the difference in measured values for an item measured by different measurement techniques. This methodology assumes that the best measurement method provides the "true value" and estimates the systematic uncertainty and the bias for measurement method with the greater uncertainty. While LANL has estimates of bias for some of the measurement methods, they are not currently correcting for biases that may be of safeguards significance.

(U) To control instrument stability and the quality of measurements, LANL uses statistically developed estimates of uncertainty and administrative estimates of uncertainty. The administrative estimates are based on experience and expert opinion. The combination of these uncertainties minimizes expected alarms, i.e., the one in 20 measurements that is statistically expected to exceed two standard deviations. The use of the administrative estimates of uncertainty reduces or eliminates the cost and effort of identifying false positive alarms. To support the use of administrative limits, LANL performs a monthly evaluation of instrument performance to identify trends and problems that do not alarm but indicate degraded measurement system performance. This methodology of using two distinct measurement control approaches meets the intent of DOE requirements while minimizing the impact of false positive alarms.

G.2.9 Tamper Indicating Devices (U)

(U) LANL's TID program is effectively administered by S-4. The evaluation of the program included interviews with the TID administrator and TID custodians and an examination of their TID holdings and records. The TID administrator is responsible for ordering, storing, accounting for, and issuing TIDs to designated custodians. TID custodians issue TIDs to designated users. The custodians conduct annual audits of their holdings and the TID administrator conducts semi-annual audits of TID custodians and the S-4 holdings. A comprehensive review of the program did not reveal any administrative or control discrepancies except for some discrepancies noted in the LANL TID training records database. Examination of applied TIDs did not indicate any evidence of misapplication, and a cross check of several applied TID serial numbers obtained in the field correlated correctly with those in the accounting records. The TID training program is comprehensive and includes an annual refresher. The TID administrator maintains effective supervision of the TID program. TID discrepancies by users/custodians are evaluated by the TID administrator to determine if TID refresher training is required.

(U) LANL is evaluating the new TID (NIC Quick Seal). This TID has been tested and found to be equivalent or superior to the E-cup. A tenfold cost savings can be realized in the purchase of the TID and a fourfold reduction in application time. The TID administrator is pursuing changes with the TID manufacturer to supply TIDs more amenable to LANL requirements.

G.2.10 Materials Surveillance (U)

(U) ~~(UCND)~~ A safeguards two-person rule at TA-55 requires two trained, knowledgeable, and authorized persons within eyesight of each other and the nuclear material that they are required to control. This rule is applicable in the nuclear materials storage vaults, for TID application/removal, manual movements of nuclear material outside the glovebox line, and for activities associated with shipments and waste packaging. TA-55 personnel interviewed were knowledgeable of this requirement.

G.2.11 Access Controls and Containment (U)

- (U) ~~(UCND)~~ For unescorted access to Category I MBAs or Category II MBAs with credible rollup to a Category I quantity, individuals must be "Q"-cleared, PSAP-approved, trained in safeguards procedures and security regulations, and have a need to know to access the material. Security police officers and badge readers control access to Category I MBAs. Visitors and other personnel must enter and exit by defined paths that have special nuclear material detectors and metal detectors.
- (U) ~~(C)~~ OA observed the access controls for TA-18. For access to vaults contained inside CASAs, the identity of two PSAP individuals is verified at the perimeter intrusion detection and assessment system (PIDAS) boundary, and then the individuals are allowed to access the vaults inside the CASA. Only one lock is utilized on the vaults inside the CASAs. To access the Hillside vault at TA-18, two keys from individuals on separate teams are needed. OA also observed the daily administrative checks (DACs) for TA-18. The checks for the vaults consist of a walkthrough at the vault opening to detect any wall penetrations, and ensure that no obvious breach of containers has occurred. Proper access control procedures and DACs for the TA-18 vaults were followed and no discrepancies were identified.
- (U) ~~(UCND)~~ The DAC and access controls for the TA-55 vault (MBA 700) were observed. These controls consist of a two person A-B combination lock system, a walkthrough of the area to detect any gross anomalies, notification to the central alarm station (CAS), and an exterior walkaround to detect any obvious penetrations. Personnel were knowledgeable of their responsibilities and effectively executed access controls and the DAC.

G.3 CONCLUSIONS (U)

- (U) ~~(UCND)~~ An effective MC&A program must demonstrate that the elements of basic requirements, nuclear materials accounting, and material control are effective. LANL has several elements that provide for an effective and solid MC&A program. These elements include: a current MC&A plan implemented through the Laboratory Implementation Requirements and MBA operating procedures; knowledgeable MBA custodians, functional process custodians, and operational process custodians; monitoring of nuclear material status to assure that rollup to a Category I quantity is not credible; a training program that addresses all the duties and responsibilities pertinent to safeguards and line personnel; a mature accounting system and accounting methodology; and an MC&A familiarization program for the protective force. The LANL material control program is basically sound and effective. Redundant access controls, material containment, DACs, and material surveillance, using the safeguards two-person rule at TA-55, is effectively implemented. A well-administered TID program is in place to aid in the effectiveness of material control.
- (U) ~~(C)~~ However, deficiencies were identified that diminish overall MC&A program effectiveness. The MC&A assessment program is in transition from S-4 to line organizations, and the effectiveness of this transition has not been fully demonstrated. The performance testing program does not allow for an adequate and complete evaluation of the materials surveillance and data access control program elements. S-4 has failed to adequately enforce the requirement for verification and confirmation measurements, has not detected items in the incorrect location, and has not reviewed and evaluated items for which a measurement ticket was written during physical inventory. A common cause for these deficiencies is a lack of effective oversight by S-4.
- (U) ~~(C)~~ LANL is evaluating LEID data to accurately reflect current operating conditions. Values currently used are estimates and may reflect existing conditions; however, they may understate or overstate the actual LEID. This could result in either false alarms or a failure to alarm for a particular ID. These deficiencies are partially mitigated by an accounting methodology employed by NMT-4 that, when

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timely, is sensitive to inventory adjustments, and by measurement systems that provide assurance that nuclear material values are accurately calculated.

- (U) ~~(C)~~ The greatest deficiencies are in the area of physical inventory. Problems were observed in both the TA-18 and TA-55 inventories that would have been detected by an effective oversight system that has all MC&A elements developed using defense-in-depth concepts. Failure to conduct proper verification measurements for at least one year, weakness in conducting the confirmation measurements, and the failure to detect the mislocated items during the inventory process indicate that the bi-monthly inventory program is flawed. During resolution of the TA-18 containerization problems, a further problem was identified in that one item was not in the container specified on the physical inventory. In TA-55, an inner container was not in the correct MASS location. Subsequently, the operator corrected this deficiency. Given these inventory failures, LANL did not meet the assumptions defined for their sampling plan and did not evaluate the impact of the failed assumptions. Therefore, LANL has not met the DOE standard for assurance of inventory values, and without further evaluation does not know the level of defects in their inventory. Until LANL can effectively conduct a bi-monthly physical inventory, this MC&A element remains questionable.
- (U) ~~(C)~~ A common cause for these deficiencies is a lack of effective oversight by S-4. S-4 has failed to enforce the requirement for verification and confirmation measurements, has not detected items in the incorrect location, and has not reviewed and evaluated items for which a measurement ticket was written during physical inventory.
- (U) ~~(C)~~ LANL has taken aggressive action to resolve the concerns identified during the OA inspection. For the December 2002 inventory, these actions have increased the number of sample measurements by a factor of three over bi-monthly inventories. Analyses of these measurement results will establish a baseline from which LANL can proceed. Reconciliation is anticipated in February. Ongoing success depends on an effective S-4 oversight program and LANL's ability to verify the physical inventory.

G.4 RATING (U)

- (U) LANL has not demonstrated effective S-4 oversight and the physical inventory fails to provide the level of assurance required by DOE; therefore, the MC&A program is evaluated as **NEEDS IMPROVEMENT**.

G.5 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) The safeguards and security inspection conducted by OA identified several opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible DOE and contractor line managers, and prioritized and modified as appropriate, in accordance with site-specific programmatic and safeguards and security objectives.

(U) LASO should obtain an experienced MC&A professional, even if it is outside NNSA, to provide oversight for the resolution of the MC&A issues identified in this report.

(U) LASO oversight is an essential component of an effective MC&A program. The LANL MC&A program has many innovative approaches to implementing DOE requirements. Additionally, elements of the program are in transition from LANL S-4 to line organizations. These complexities require that LASO staff include an individual who is knowledgeable of the intent of DOE requirements and who has the experience to evaluate performance of the LANL MC&A program.

(U) In view of some job responsibilities omissions observed by OA, LANL should consider developing the training technique identified as the "Read and Sign" brochure that has been successfully employed at other DOE facilities. The brochure is very useful where there are rapidly changing job responsibilities and more so at LANL, where MC&A transitional activities are ongoing. The brochure stresses new or revised MC&A requirements. After the employee reads the brochure, the "sign" portion is completed, removed, and submitted to central facility training for updating the employee's training profile. The "read" portion is retained by the individual as a handy reference.

(U) LANL should consider conducting IRAs annually for the next three years in Category I and II MBAs.

(U) In view of the IRA responsibilities being transitioned to line organizations who generally have had little experience in auditing, IRAs of Categories I and II should be conducted annually instead of bi-annually for the next three years or until oversight is assured that complete and accurate assessments are being conducted.

(U) LANL should consider conducting a vulnerability assessment for Category III and IV MBAs where the throughput (processing activities) could be a Category I quantity and where there are credible scenarios for protracted diversion.

(U) LANL is minimizing the number of material access areas, while increasing the missions for Category III and IV MBAs to process nuclear material. If an MBA can process a Category I quantity of nuclear material over an extended time period, the risk of protracted theft increases. Monitoring these activities should remain proactive within LANL, and completion of vulnerability assessments is one method of ensuring that these operations do not place special nuclear material at risk for protracted theft. MBA 518, uranium operations, is one area where a documented assessment would demonstrate the non-feasibility of a protracted theft.

(U) Continue the study on the use of the NIC Quick Seal due to the potential for cost savings, ease of application, and tamper assessment. Use of this seal could reduce initial procurement cost and may also provide additional cost savings due to reduction in application time. This TID provides the opportunity for implementing the bar code application for inventory purposes and is more difficult to defeat.

(U) LANL should consider applying recent advances in nuclear radiation detection to the MC&A confirmation measurement systems.

(U) Recent developments in instrumentation and radiation detectors have improved the quality of detection of nuclear material. These developments include improved electronics and improved energy resolution for detectors. LANL should investigate these developments to ascertain if they would enhance the LANL confirmation program by facilitating the identification of the type of nuclear material in an item and improve the credibility of the confirmation measurements.

(U) LANL should review their nuclear materials to identify those for which no measurement methodology is known.

(U) LANL has developed a list of items containing nuclear material that are considered to be not-amenable-to-measurement by non-destructive assay. This list has been approved by LASO. The intent of DOE policy is the identification of nuclear materials for which no measurement methodology is known. LANL agrees that items on the approved list of nuclear materials not-amenable-to-measurement could be

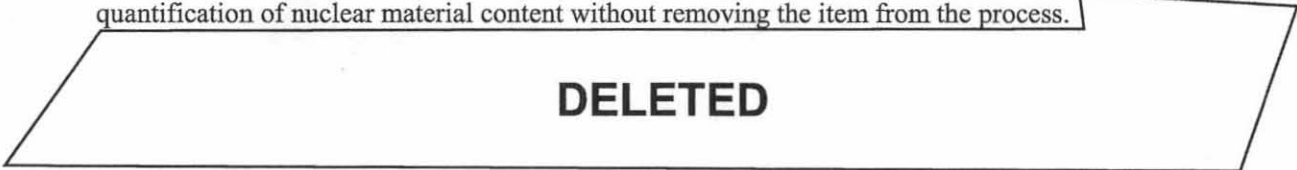
measured at LANL by currently existing destructive analytical techniques. This review would bring the LANL list of nuclear materials not-amenable-to-measurement in accordance with DOE intent.

(U) LANL should reevaluate their methodology to ensure that the LEID more accurately reflects processing activities.

(U) ~~(UCNI)~~ The LANL methodology for the development of control limits for IDs assumes that items on beginning inventory and receipts have no systematic impact on the difference. This assumption has the potential to increase the limits beyond defensible values and allow significant IDs to go undetected. Additionally, LANL methodology does not evaluate IDs for the impact of significant, known biases.

(U) LANL should review their methodology for verification measurements in which a sample of the inventory item is used to verify the accountability value of the item.

(U) ~~(UCNI)~~ LANL uses a measurement methodology commonly known as the TNC to verify the nuclear material content of items on inventory. The methodology uses an inline neutron counter and allows the quantification of nuclear material content without removing the item from the process.



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APPENDIX H (U)

PROTECTIVE FORCE (U)

H.1 INTRODUCTION (U)

(U) The protective force at Los Alamos National Laboratory (LANL) is provided by Protection Technology Los Alamos (PTLA) under contract to the University of California, the management and operations contractor for the Laboratory. The protective force support contract was awarded during October 2002 and runs through October 2007. Protective force membership is unionized under the auspices of the Los Alamos Protective Force Local # 69 of the International Guards Union of America. The current agreement with the protective force bargaining unit extends until April 2004.

(U) There have been two Albuquerque Operations Office (AL)/Los Alamos Site Office (LASO) safeguards and security surveys of the protective force since July 2001. In reports of each of those surveys, the protective force topic was rated satisfactory and no deficiencies were identified.

(U) ~~(S)~~ The last U.S. Department of Energy (DOE) Office of Independent Oversight and Performance Assurance (OA) inspection of protective force operations took place in October 2000 and concentrated on performance testing of security measures implemented at Technical Area (TA)-18. While the report of that OA inspection did not assign a separate protective force rating, it did identify notable weaknesses in protective force command and control, communications, tactical training, and other aspects of protective force response. Corrective actions to address these deficiencies have been incorporated into a LANL corrective action plan, and progress toward their resolution is being made/tracked (as evidenced by the closure of two of the five findings by LASO).

(U) ~~(S)~~ Since the last OA inspection and in response to the aftermath of the terrorist attacks on the World Trade Center and the Pentagon on September 11, 2001, LANL has implemented a number of security measures that remain in place. These measures are designed to reduce the introduction of unauthorized personnel and contraband into security areas, mitigate the effects of potential vehicle bombs, and enhance overall protection effectiveness. These measures include:

(U) • ~~(S)~~ Establishment of additional strategically located posts to screen all vehicles prior to ingress into designated areas.

(U) • ~~(S)~~ Establishment of a new remotely located vehicle screening station for large delivery vehicles.

(U) The primary focus of this inspection's activities centered on the protective force's ability to perform its duties associated with the protection of special nuclear material (SNM) and, to a lesser degree, those duties associated with the protection of classified matter. The closely related and supporting areas of training, equipment, and facilities were also examined, as well as specific aspects of protective force management. While data collection activities included necessary interviews and document reviews, they concentrated on observations of routine duty performance, training activities, and performance tests of emergency response procedures.

H.2 STATUS AND RESULTS (U)

H.2.1 Management (U)

- (U) ~~(U)~~ Interviews and discussions with selected protective force managers, as well as general observations during inspection activities, revealed that the protective force management team has an adequate grasp of and routinely monitors issues that directly or indirectly impact mission performance. Issues such as protection strategies and tactics, equipment status and needs, labor relations, overtime requirements, anticipated manpower requirements, contingency planning, and the effects of security clearance and personnel security assurance program (PSAP) backlogs, to name a few, were discussed knowledgeably and thoughtfully. There was also ample indication that managers routinely attempt to anticipate future needs and to identify viable avenues to improve operations, conditions, and performance.
- (U) Interviews with supervisory personnel, supplemented by observations of supervisors on duty, indicated that sufficient numbers of supervisors are assigned to provide adequate supervision, that they are capable of properly performing their routine and emergency supervisory duties, and that they continually reinforce performance objectives through shift-related training and performance testing.
- (U) A review of the protective force organization's directives management system—the orders and procedures that govern all aspects of the organization's operations—indicated that directives are mostly current and provide adequate guidance for functions and operations. A formal review/approval process and well-documented tracking system have been established to ensure that timely reviews are conducted, that appropriate approvals are received, and that up-to-date directives are available for personnel on post.
- (U) ~~(S)~~ A similar review of the performance test and self-assessment programs disclosed them to be reasonably effective and mutually complementary. The manner in which these programs are applied fosters extensive communication between protective force management, operations, and training, and therefore provides an effective framework for appropriate direction, control, and performance. However, despite the performance test program's positive attributes, one deficiency was identified. In this case, operational and safety considerations associated with the Plutonium Facility (Building PF-4) have precluded performance testing of protective force's interior response capabilities to determine their effectiveness. Although efforts are under way to overcome these obstacles, performance testing inside PF-4 is not scheduled to commence until May 2003.
- (U) ~~(S)~~ **FINDING: LASO2002-LANL-PF-001: LANL has not conducted the necessary performance tests inside TA-55/PF-4 to provide sufficient training for response personnel or to validate implemented protection improvements. [DOE Manual 473.2-2, Ch. VII, par. 1.]**
- (U) ~~(S)~~ An additional review of protective force planning documents was also conducted. Included in that review was an examination of site target folders. These target folders are intended to contain site descriptions, facility-specific information, and response planning documentation. They are required for each material access area (MAA) where Category I/II quantities of SNM are stored or processed, in order to provide external response agencies the appropriate information for conducting tactical operations. Discussions with LANL management indicated that while such information probably exists in various forms, the compilation of data and subsequent development of target folders has been curtailed as a result of LANL budget priorities and the subsequent lack of approved funding by the National Nuclear Security Administration.

(U) ~~(S)~~ **FINDING: LASO2002-LANL-PF-002: Target folders designed to provide external response agencies the appropriate information for conducting tactical operations have not been fully developed for key LANL facilities. [DOE Manual 473.2-2, Ch. I, par. 1.a.(1)(d)]**

(U) ~~(S/OU)~~ Senior managers, union officials, and protective force members on post were consistent in the view that management communications and labor-management relations have historically been very good. Neither management nor union officials identified any significant union-management conflicts that could adversely impact the protective force's mission performance. In fact, discussions with union representation indicated that management was quick to respond to legitimate concerns. This is evidenced by the extremely low grievance to arbitration rate that PTLA has experienced over the last several years.

H.2.2 Training (U)

(U) Protective force training was examined by interviewing PTLA supervisors and training personnel and reviewing the annual training plan, lesson plans, and related documentation. Additionally, the methodology for the development of the training program plan was assessed to ascertain whether an appropriate needs analysis was performed to assure that all mission-essential skills were identified and utilized as the basis for development. This review also included the following: instructor's qualifications and certifications; training resources; and training equipment and facilities.

(U) The PTLA Training Department provides training support for protective forces located at LANL. As a result, the Training Department is responsible for developing and providing all prescriptive protective force training mandated by the Site Safeguards and Security Plan, Departmental orders, and the Nonproliferation and National Security Institute (NNSI), and/or as directed by protective force management. Those responsibilities include job task analysis (JTA) development, needs identification, curriculum development, plan development, scheduling, training delivery, training facility operation, instructor development, and record keeping. The Training Division was found to be adequately organized and staffed to support those responsibilities.¹ Sufficient mechanisms are used routinely to ensure that new training needs are identified in a timely manner; these include occurrence reports, performance test results, order changes, and daily operations reports.

(U) An approved annual training plan defines program structure and content. The overall training program was approved by the Albuquerque Service Center and recertified by NNSI under the training approval program process in June 2001, with certification extending until June 2006. Program documentation, including the annual training plan, JTA, curriculum guides, lesson plans, and training records, was found to be comprehensive, current, and adequate to support training needs.

(U) An automated training and administration records management system is utilized and enhances the ability to track required training (both formal and on-the-job training) while providing a capability to rapidly retrieve training data by both individual and topical area. This system significantly reduces the cost of training record maintenance.

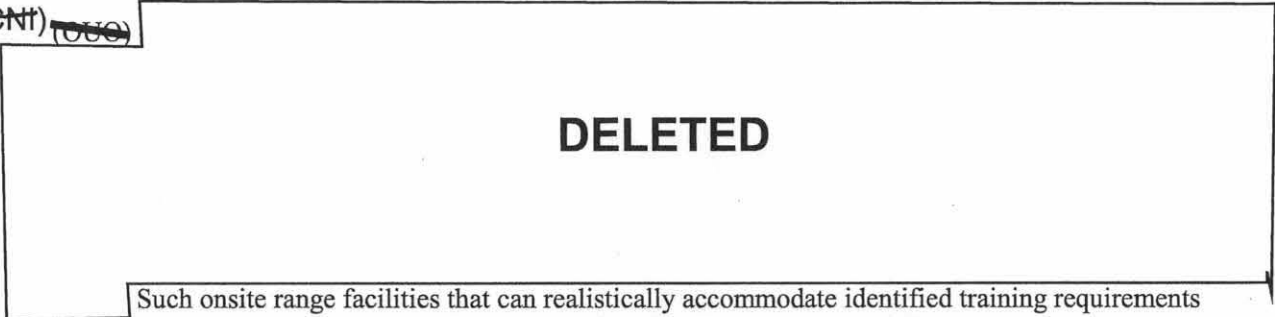
(U) ~~(S/OU)~~ Portions of the Security Police Officer (SPO) III annual refresher training were observed during the inspection process. The training was conducted by Training Department staff and included target acquisition with area weapons, employment of the Avon protective mask, handcuffing and personnel search techniques, and tactical firing and maneuvering. The training was delivered competently and

¹(U) Special Response Team (SRT)-specific tactical and firearms training is delivered by an SRT Training Captain and a staff of SRT training instructors who functionally report to the Training Manager, although they are assigned to the Special Operations Department.

professionally; the instructors demonstrated mastery of the skills being taught and flexibility in adjusting to student training needs. Live-fire activities, including the use of live fire while negotiating tactical obstacle course barriers, were conducted safely. The students were well disciplined and serious about the training, and they demonstrated appropriate skill levels in the activities observed.

(U) ~~(S)~~ Training facilities and equipment were also examined. PTLA training facilities consist of training administration buildings (Buildings 548 and 549) located in the city of Los Alamos, a special response team (SRT) training building (Building 128) located in TA-46, and a live fire range (LFR) complex located in TA-72. The training administration buildings house primary classrooms, computer-based training areas, a video editing room, and office space for the Training Department staff. The LFR complex includes four separate ranges that are used for handgun, shotgun, rifle, and machine gun live-fire training and qualification. The complex also includes space for non-explosive grenade launcher training/qualification, decisional shooting training, and off-road vehicle training. Additionally, efforts are under way to complete construction of a Live Fire Shoot House. Completion of the Shoot House will help alleviate longstanding concerns (e.g., expense, time, limits to types of training that can be conducted) associated with having each SRT member travel to the NNSI live-fire range in Albuquerque twice a year for a week of SRT semiannual requalification.

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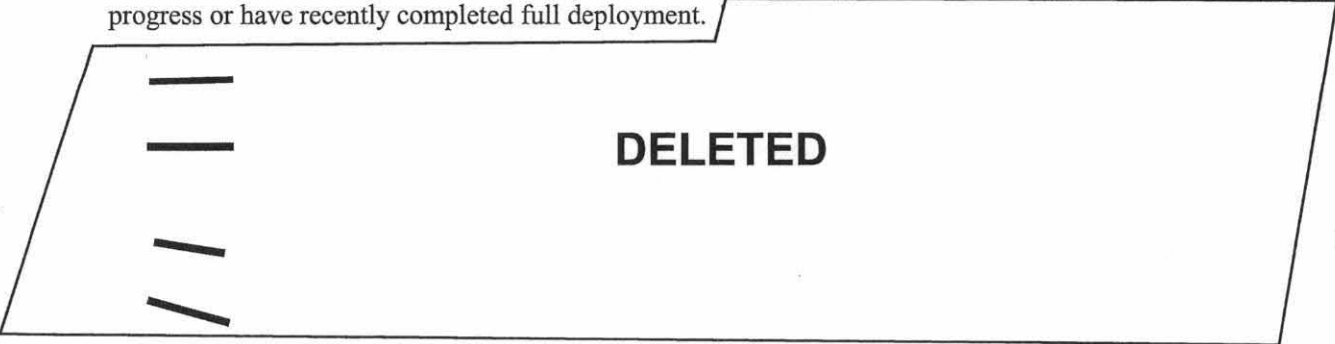
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Such onsite range facilities that can realistically accommodate identified training requirements with weapons currently on hand would significantly increase the protective force's ability to improve tactical and firearms-related skills throughout the force, and particularly the SRT's skills in the use of their special weapons and advanced tactics.

H.2.3 Facilities and Equipment (U)

(U) ~~(S)~~ ~~(U)~~

~~(S)~~ Review of facilities and equipment involved examination of mission-essential equipment as well as facilities necessary for mission-related operations and storage. Much of this activity involved observation and operability testing of individual, post, or patrol equipment, and facilities involved in routine duties in and around protected areas. The use of special purpose equipment and facilities was observed during the conduct of SRT refresher training and major performance test activities. No mission impacting deficiencies were identified. Generally, individual and post/special purpose equipment was found to be appropriate, adequately maintained, and functional. Several equipment upgrades are in progress or have recently completed full deployment.



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(U) ~~(SUC)~~ Weapons, communications equipment, and vehicle maintenance was also reviewed and involved examinations of preventive/corrective maintenance procedures and records. PTLA maintains responsibility for maintenance of all weapons, while LANL retains the responsibility for maintenance of communications equipment. Vehicles, with the exception of High-Mobility Multi-Wheeled Vehicles (HMMWVs), are maintained by local dealers, in accordance with General Services Administration leasing agreements.² Review of the storage, maintenance, and accountability of weapons and communications equipment indicated that they are properly maintained in operational condition, properly inventoried at required intervals, and properly and securely stored when not in use.

H.2.4.Duties (U)

(U) Performance of selected routine and emergency duties was evaluated through a series of post visits, observations of routine duty performance, interviews with protective force personnel, administration of a written general knowledge examination, performance tests of various routine duties, and performance tests of various emergency response capabilities. Some of the performance tests concerning emergency response involved engagement simulation system (ESS) equipment and a simulated adversary force.

Routine Duties (U)

(U) ~~(SUC)~~ Evaluation of routine duties involving the protection of permanent security areas/interests concentrated on access/egress control, patrol, and alarm monitoring operations. Limited-scope performance tests were conducted to evaluate individual officer knowledge and to test officer performance in the use of individual protective force equipment and the application of visual observation techniques. In general, personnel who were interviewed demonstrated adequate knowledge regarding their general responsibilities as well as the specific duties associated with the post or patrol to which they were assigned. While no major discrepancies were identified that would indicate inadequate knowledge of general or post-specific duties across the protective force, one area was identified where protective force knowledge requires additional attention.

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Emergency Duties (U)

(U) Emergency duties were evaluated through the conduct of a general knowledge test and a series of performance tests designed to examine specific components of the protective force's tactical response capability and protection strategy. The performance tests included force-on-force exercises involving ESS equipment and an adversary team, limited-scope recapture exercises involving ESS equipment and a three-person adversary team, and a series of tabletop command and control exercises.

(U) ~~(SUC)~~ To evaluate the protective force's understanding of PTLA recovery/fresh pursuit procedures and operations, two separate but related inspection activities were conducted. The first activity was the

²(U) HMMWVs are maintained by LANL (through a contract with Johnson Controls).

some doors, walls, stairwells, and hallways) of Building PF-4 and the location of target quantities of material within that area. (See the discussion in Section H.2.1, Management, where operational and safety considerations have hampered protective force access.) While such lapses would not detract from the capability of responders to affect timely exterior containment, if not corrected they could very well impact the effectiveness of interior personnel attempting to deny adversary access.

- (U) ~~(S)~~ To further evaluate protective force emergency duties, one ESS-enhanced limited-scope performance test was conducted to assess the protective force's recapture capabilities. DOE 1.4 (f)

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The protective force was tasked to effect a dynamic entry and retake the subject facility while the adversaries inside defended their position.

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Further, the difficulty in mission accomplishment and in anticipated protective force losses will increase dramatically if the DOE design basis threat (DBT) is escalated as expected. Accordingly, DOE needs to initiate complex-wide efforts to explore other approaches to recapture operations that would increase protective force survivability by reducing unnecessary protective force exposure. Methods or systems (such as remotely activated incapacitating devices) that would enhance protective force tactical response and survivability should be explored, but all associated risks/benefits (both safety and security) must be considered.

- (U) ~~(S)~~ Major tactical response performance tests involved two ESS-enhanced exercises conducted to evaluate the adequacy of protective force response plans, procedures, individual and team tactics, equipment, and skills in an environment that simulated violent attacks by an adversary representing the DBT. OA developed the scenarios and provided the adversary for each test, identified various test conditions and parameters that were to be met, and evaluated protective force performance⁷ during the tests. LANL, PTLA, and LASO provided Trusted Agents to assist in scenario and adversary planning. In addition to the coordination of detailed administrative/logistical planning, LANL was also responsible for the conduct of all tests.

- (U) ~~(S)~~ Scenarios were specifically designed to create simulated but realistic emergency conditions under which certain important protective procedures and tactical skills could be tested. The scenarios, therefore, were not necessarily designed to employ the full range of tactical options and adversary capabilities embodied in the DBT but rather to emphasize specific test objectives. For example, in each scenario, one or more specific stress events were introduced to measure response and implementation of established procedures. DOE 1.4 (f)

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The tests were designed to yield data regarding

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- (U) ~~(S)~~ Examples of actions that could be considered include the procurement of (and training with) breaching equipment that can provide non-conventional points of entry and the protective force employment of force multipliers (e.g., hand grenades).

⁷ (U) Protective force performance evaluations are based on OA evaluator experience in DOE, Nuclear Regulatory Commission, and military environments (including Army Special Operations and Navy SEALs during active-duty conventional and covert operations).

protective force performance and response capabilities at TA-18 only and were not designed to yield valid "win-lose" results associated with the specific scenarios.⁸

(U) During the conduct of the performance tests, OA evaluators collected performance data about command and control, communications, team and individual tactical skills, employment of deadly force, and other aspects of the protective force's performance in executing its tactical response. In analyzing the data, OA concentrated on identifying trends or significant occurrences that were useful in characterizing the overall performance of the tactical response and in identifying areas in which performance improvements were indicated.

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~~(S)~~ The following section summarizes the two adversary scenarios and scenario results.

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Administrative procedures, such as message injects and pre-positioning of adversary players, were minimized to maintain realism and continuity of events. Both performance tests were conducted during the hours of darkness against targets inside TA-18.

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~~(S)~~ Force-on-force performance tests were not conducted at TA-55, as the site was not prepared to conduct tactical exercises inside some of those critical areas. (See discussion of safety issues associated with PF-4 in TA-55 in Section H.2.1, Management.)

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Scenario 2 (U)

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Results (U)

- (U) ~~(C)~~ Protective force performance was evaluated in a number of essential skill areas, including command and control, communications, planning, tactics, response, application of force, equipment, and discipline. Observed performance in these skill areas was adequate and vastly improved over that previously observed by OA in 2000 and yielded mostly positive results:
 - ~~(UUC)~~ Tactical response plans were well thought out, straightforward, and effective. Protective force elements properly responded to their designated response positions according to established plans, demonstrating a thorough knowledge of their mission and individual responsibilities. During deployment, protective force personnel demonstrated the use of appropriate tactical movement, cover/concealment, noise discipline, and sensitivity to response timeliness.
 - ~~(UUC)~~ Tactical command and control of the responding protective force was successfully executed. Appropriate control and coordination among all elements resulted in a prompt and competent deployment of forces.
 - ~~(UUC)~~ Protective force communication was effective. Timely alert notifications, effective use of alternate means of communication, and accurate adversary intelligence reports (particularly on the part of the Central Alarm Station and the Alarm Response Office) were efficiently disseminated during each exercise.
 - ~~(UUC)~~ With one exception⁹, weapons and equipment available to responders were appropriate for the task. Protective force personnel demonstrated proficiency in the use of their weapons and equipment.
- (U) ~~(UCND)~~ While the performance tests revealed a number of positive aspects of the protective force's capabilities, some deficiencies were also identified. Specifically, they included:
 - ~~(UCND)~~ Bolt cutters, keys for gate locks, and chains to pull open doors were not universally available during the force-on-force activity.

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(C) • ~~(S)~~ [REDACTED] **DELETED**

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- ~~(S)~~ Transmission of uncoded response information via the public address system. This resulted in the unnecessary divulgence of tactical intelligence to the adversary.

(C) • ~~(S)~~ [REDACTED] **DELETED**

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(U) ~~(S)~~ OA also used these performance tests to observe LANL's exercise conduct and control process. Overall, LANL's exercise conduct, performance test planning, coordination, and briefing activities were conducted in a thorough and highly professional manner. Of particular note was the safe and meticulous manner in which equipment issue activities ensured that weapons complied with exercise standards and that no live rounds were introduced into exercise play. Also of note were the competence and objectivity of a number of exercise controllers. However, this competence was not universal¹⁰ and, as a result, two problems were identified that degraded the testing process:

- (U) • ~~(S)~~ Instances of inappropriate controller positioning and noise discipline (radios with volumes turned up and without earpieces) disclosed the location of players being controlled and/or blocked potential opportunities for effective engagement by other players.
- (U) • ~~(S)~~ Activities on the part of a few controllers gave players premature indications of performance test details or intended test locations.

(U) While these problems did not prevent the collection of valuable data, they affected the degree of realism and the desired level of stress in the test environment.

H.3 CONCLUSIONS (U)

(U) ~~(S)~~ Inspection results indicate that PTLA protective force management is active in its efforts to ensure that manning, morale, training, equipment, facilities, procedures, and tactics are appropriate for mission requirements. A sound and comprehensive training program is reflected in appropriate skill and knowledge levels associated with duty performance. Weapons and equipment available to the protective force are functional, well maintained, and appropriate to mission requirements. Although operational and safety issues still need to be resolved to permit performance testing in TA-55, no significant systemic deficiencies were identified that would preclude mission success. Overall, the protective force has adequate equipment, training, and supervision, and possesses the necessary skills and knowledge to reasonably allow it to accomplish its assigned missions against the current DBT. This assessment is given with caution, however, because concerted management attention will be required to ensure that the protective force can continue to accomplish its mission effectively in light of the anticipated escalation in the DBT.

¹⁰(U) Particularly as it pertains to the level of exercise control.

H.4 RATING (U)

(U) Inspection results provide adequate assurance that the LANL protective force meets identified protection needs. Therefore, a rating of **EFFECTIVE PERFORMANCE** is assigned.

H.5 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) Even though inspection results indicate that the protective force can effectively accomplish its assigned mission, some further opportunities for improvement were noted. These potential improvements are not intended to be prescriptive. Rather they are intended to be reviewed and evaluated by responsible Headquarters, site office, and contractor line management and modified as appropriate, in accordance with site-specific programmatic and safeguards and security objectives.

H.5.1 Headquarters-Level Improvements (U)

- (U) • ~~(S)~~ Consider initiating a complex-wide effort to explore methods or systems to enhance protective force recapture capabilities and survivability. Particular consideration should be given to methods/systems that minimize protective force exposure (such as remotely activated incapacitating devices).

H.5.2. Site-Level Improvements (U)

- (U) • ~~(S)~~ Consider procuring (and training with) breaching equipment that can provide additional points of entry and employing force multipliers (e.g., hand grenades) to enhance individual protective force survivability during recapture operations.

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 Also consider reconfiguring/evaluating the use of remotely controlled/directed lighting on the ridgelines above TA-18.

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- (U) • ~~(S)~~ Consider encoding response information that is transmitted via the public address system to preclude inadvertent divulgence of tactical intelligence to the adversary.

- (U) • ~~(UCND)~~ Consider increasing the exposure of response personnel to the interior configuration of Building PF-4 and CASA II to better acquaint them with potential defensive positions and tactical avenues of approach. Also consider developing a formal training module that provides appropriate guidance to response personnel on interior delay/denial responsibilities.

- (U) • ~~(UCC)~~ Consider developing performance-based activities (and supporting guidance) to assess/exercise protective force supervisory and response personnel in performing recovery/fresh pursuit operations. These activities could include tabletop exercises, simulations using Joint Combat and Tactical Simulation, and post-initiated limited-scope performance tests.

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APPENDIX I (U)

PROTECTION PROGRAM MANAGEMENT (U)

I.1 INTRODUCTION (U)

(U) As of December 20, 2002, the National Nuclear Security Administration (NNSA) reorganized to convert the Albuquerque Operations Office (AL) to the NNSA Albuquerque Service Center (ASC), disestablish the Oakland Operations Office, and convert the Nevada Operations Office to the Nevada Site Office. In particular, the responsibilities of the Albuquerque Operations Office Manager with respect to LANL have been transferred to the Manager, Los Alamos Site Office (LASO). LASO has negotiated a Service Level Agreement with ASC to ensure that LASO continues to have access to key Service Center personnel, both to provide specific technical expertise and to ensure that sufficient staff are available to allow LASO to discharge its new responsibilities. The significant responsibilities that have been delegated to the LASO Manager include that of Contracting Officer for LANL and assumption of the duties as principle risk accepting official for operations at LANL.

(U) This review of the protection program management (PPM) topic at LASO and LANL addressed all elements of PPM—planning, direction, resources, and feedback and improvement. Inspection activities included interviews with senior managers at all levels. Other activities included document reviews, personnel interviews, analysis of vulnerability analyses, observation of protective force performance tests, and analysis of results from other topics for insights into LASO and LANL program management performance.

(U) Program management performance at all levels was considered within the context of DOE protection requirements, but also with a view toward overall protection effectiveness. Where either LANL or LASO is not fully implementing U.S. Department of Energy (DOE) policy, the shortcomings will be attributed to LANL or LASO management. Where protection weaknesses are caused by a lack of policy or a lack of clarity in policy, those weaknesses will be attributed to the responsible DOE Headquarters element.

I.2 STATUS AND RESULTS AT LASO (U)

I.2.1 Status of Corrective Actions for Past Deficiencies (U)

(U) There were no PPM findings made against LASO (formerly Los Alamos Area Office) in either the 1999 Comprehensive Inspection or in subsequent follow-up inspections and special reviews.

I.2.2 Current Status of Protection Program Management (U)

(U) Final agreements concerning the roles of ASC and LASO are expected to be signed during this inspection. A mature draft of the Service Level Agreement was reviewed and disclosed that LASO is in the process of assuming most of the responsibilities of a DOE operations office. ASC continues to bear primary technical responsibility in cyber security, personnel security, and technical surveillance countermeasures (TSCM), but the LASO Manager will become the primary risk accepting official for LANL operations, the LANL Contracting Officer, and will assume most of the responsibilities of the former Albuquerque Operations Office Manager concerning LANL.

I.2.2.1 Protection Program Planning (U)

(U) LASO participates on the Safeguards and Security Configuration Control Board that provides executive oversight of significant safeguards and security actions at LANL. Other organizations represented on this board are LANL, ASC, and representatives from NNSA at DOE Headquarters. As such, they provide review and input to decisions such as site schedules, site projects, and the site safeguards and security plan (SSSP) process.

I.2.2.2 Resources to Support the Safeguards and Security Program (U)

Staffing of the Security Management Team at LASO (U)

(U) The approved staffing level of the LASO Security Management Team is nine, including the Team Lead. Six of these slots are currently vacant, including the Team Lead. One advertisement yielded no acceptable candidates for the Team Lead position, and the review of applicants identified under a second advertisement are currently being reviewed. LASO management has stated that the various restrictions and freezes imposed NNSA-wide have greatly hampered their attempts to fill vacancies. There is no indication of the duration of these hiring restrictions; however, filling the remaining vacancies in the Security Management Team is vital to LASO's long-term effectiveness in providing DOE oversight of LANL.

(U) At present, LASO places strong reliance on ASC to provide personnel for both ongoing site surveillances as well as surveys of LANL. ASC staff members have asserted that they are prepared to provide any support that LASO needs under the Service Level Agreement; therefore, the short-term effects of these unfilled vacancies may be at least partially mitigated. However, ASC staff assistance is unlikely to fill the gap in day-to-day requirements in the long term, unless personnel with expertise to complement the current LASO Security Management Team are actually detailed to LASO.

LASO Staff Qualifications and Training (U)

(U) LASO employs position descriptions to define the duties of its staff and to identify the skills needed to perform assigned duties. Training needs are addressed through individual development plans (IDPs), which are prepared by the employee and detail short-range and long-range training and professional development goals with target completion dates. IDPs for the Security Management Team are submitted to the Team Lead for approval. Depending on the availability of training funds, the employee is notified when the highest-priority training courses are approved.

(U) Interviews and document reviews reveal that the position descriptions and IDPs are complete and up to date. However, there is no formal analysis of gaps between an employee's training and experience and the skill requirements of the position. In lieu of a gap analysis, LASO safeguards and security staff are pursuing certification as general security specialists under the Advanced Development and Professional Training (ADAPT) program administered by the DOE Nonproliferation and National Security Institute (NNSI). The Security Management Team Lead and the senior of the two Security Specialists are certified under ADAPT as meeting the general requirements for a security specialist. The other Security Specialist, a recent hire, is scheduled to complete ADAPT certification in fiscal year (FY) 2003.

I.2.2.3 Providing Program Direction (U)

(U) AL retains the primary responsibility for determining which directives apply to LANL until the responsibilities of Contracting Officer are transferred to LASO (expected in mid-December 2002). Therefore, even though LASO staff had input into the decision process, the primary DOE responsibility for determining which directives were included in the October 2002 revision of Appendix G to the LANL contract resided at AL. As noted in the discussion of program direction at LANL, DOE Notice 205.1, *Unclassified Cyber Security Program*, dated July 26, 1999, and DOE Policy 205.2, *Departmental Cyber Security Management*, were not included in the most recent update of Appendix G, even though they form the basis for the current DOE unclassified cyber security program. Since ASC retains responsibility for cyber security under the draft Service Level Agreement, it is possible that the referenced notice and policy will continue to be omitted from the directives base upon which the LANL unclassified cyber security program is founded. The impact of this omission is fully discussed in the companion document to this inspection report, *Independent Oversight Cyber Security Inspection of the Los Alamos Site Office and Los Alamos National Laboratory*.

I.2.2.4 Feedback and Improvement (U)

(U) Prior to 2002, AL had the responsibility for safeguards and security surveys of LANL. With the conversion of NNSA operations offices to service centers, responsibility for surveys of LANL was transferred this year to LASO. The procedures LASO follows for surveys are contained in the Los Alamos Site Office Security Management Team Safeguards and Security Surveillance Program Plan, dated November 2002. The procedures specify that LASO will perform a comprehensive review and evaluation of safeguards and security topics and subtopics at LANL facilities through surveillance activities conducted on a recurring basis. An ongoing series of pre-scheduled surveillance activities are conducted, and individual surveillance reports are issued throughout the calendar year. These reports are provided to LANL's S Division at the conclusion of each surveillance activity for information and appropriate follow-up action. At the end of each calendar year, this information is consolidated into a comprehensive report to fulfill the requirements of DOE Order 470.1 for an annual safeguards and security survey.

(U) The survey reports for 2000, 2001, and 2002 were reviewed. AL conducted the 2000 and 2001 surveys under the traditional "snapshot in time" procedures, and the 2002 survey was conducted by LASO with assistance from AL and other NNSA site personnel using the new LASO procedure. The 2000 survey was a special survey of a reduced number of topical areas, due to the OA inspection activity that year; however, the 2001 and 2002 surveys were comprehensive.

(U) The survey reports describe in sufficient detail the topical and sub-topical areas inspected and also provide brief descriptions of the activities of the survey teams in inspecting the areas. There were 17 findings from the 2000 survey, 10 from the 2001 survey, and 5 from the 2002 survey. The corrective action files for survey findings are not kept at LASO but are maintained at the LANL S-2 Program Integration Group. Review of these files at LANL revealed that all corrective actions for the survey findings included milestones with projected and actual completion dates. A significant majority (over 85 percent) of the corrective actions appeared likely to be effective in correcting the original deficiency and in preventing recurrence of the same or similar deficiencies. Root cause analyses were provided for each survey finding. The most frequently occurring root causes were related to procedures (14 of 37).

(U) Interviews with LASO Security Management Team personnel revealed that LASO relies on LANL for any trending efforts on survey findings or root causes. Further, a review of all 37 corrective action files revealed that, although AL/LASO personnel review and validate the closure of survey

findings, there is no documentary evidence of any DOE review or approval of proposed corrective action plans. As LASO moves toward the full responsibility for oversight of LANL, there will be an increased expectation that LASO maintain formal records of the oversight process, including a formal record of LASO approval at all critical junctures in the corrective action process and independent analysis of root causes and potential trends in the data.

I.3 STATUS AND RESULTS AT LANL (U)

I.3.1 Status of Corrective Actions for Past Deficiencies (U)

(U) There were two PPM findings in the previous comprehensive inspection. The January 2000 follow-up review found that progress toward closing these findings (expected to occur when the 2000 update of the SSSP was published) was in accordance with the corrective action plan. At that time, a number of the issues remained to be analyzed, but each was included on the SSSP schedule.

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Nevertheless, the finding will not be closed (according to LANL corrective action plans) until publication of the revised SSSP, currently scheduled for 2004.

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~~(U)~~ The second finding dealt with a set of potentially stressful scenarios that had not been included in the LANL SSSP at the time of the inspection. Five scenarios were specifically required to be examined. Two involved the use of the roof of the Chemical and Metallurgical Research (CMR) facility as an escape route during theft of special nuclear material (SNM). These have been largely addressed by the removal of Category I material from storage in CMR and the greatly reduced use of special facility material access areas (SFMAAs) in CMR. **DELETED** The issues in this scenario have not yet been addressed, and closure of this finding is awaiting completion of the revised insider analyses and publication of the SSSP in 2004, five years after issuance of this finding.

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Closing these findings will only be possible after these issues are fully addressed. Increased management attention is required to ensure timely response to these issues.

I.3.2 Current Status of Protection Program Management (U)

I.3.2.1 Protection Program Planning (U)

(U) One of the essential building blocks of effective management is planning. The SSSP is the central planning instrument for DOE protection programs. The SSSP catalogs the essential features of each site's safeguards and security operation, delineates near- and long-term program expectations, and characterizes levels of risk associated with the site's major security interests, especially its SNM holdings.

(U) The most important feature of each SSSP is the characterization of risk, which is customarily supported by an extensive series of vulnerability assessments. In turn, the risk calculations contained in the vulnerability assessments rely upon estimated probabilities that an adversary will be detected, interrupted, and neutralized before completing his or her task. DOE policies and practices specify the employment of a combination of tools, including the identification and performance testing of critical system elements, the use of computer simulations, and the employment of tabletop analyses and other similar techniques to organize the insights derived from expert professional judgment.

(U) Pending changes in SSSP format, the effort required to respond to the events of September 11, 2001, and uncertainty over the past year concerning the revision of the DOE Design Basis Threat (DBT) have caused numerous revisions to the LANL schedule for publishing a revised SSSP. However, LANL has continued the planning process by conducting a number of vulnerability analyses and other studies to ensure that appropriate levels of security are maintained while the SSSP itself is delayed.

(U) ~~(UCNF)~~ In August, 2001, LANL initiated the TA-18 Safeguards and Security Enhancement Program (SSEP) to identify, develop, and implement a set of technical/operational security enhancements at TA-18. As a result of this program, three sets of enhancements were identified—30 to 90 day enhancements, Tier 1 enhancements that were to be implemented during the period March 2002 through September 2003, and Tier 2 activities that would require cost/benefit analysis before implementation. As the time of this inspection, all 30 to 90 day enhancements were in place, all Tier 1 items were in place or were being implemented, and no Tier 2 activities (e.g., modular vaults to replace safe secure trailers deployed under the 30 to 90 day enhancements, vehicle barrier construction, and additional protective force enhancements) were shown to be cost effective in light of the June 2002 NNSA decision to relocate TA-18 activities.

(U) In early 2002, LANL commissioned the Security Strategy Working Group to consider safeguards and security with a Laboratory-wide perspective. A number of opportunities for improvement were identified, and implementation was initiated under the Security Strategy Working Group Strategic Implementation Plan, dated June 2002. Substantial progress has been made in implementing these enhancements, but completion is not anticipated until FY 2005.

(U) ~~(UCNF)~~ LANL, with the substantial assistance of and under the leadership of NNSA, has completed an iterative site analysis (ISA) that provided a limited assessment of TA-18 and a fuller assessment of the proposed denial strategy to be implemented in TA-55. The ISA did not address the current configuration of TA-55. This process identified a number of opportunities for strengthening protection at TA-55, and the site has developed a project plan, the Denial Strategy Implementation Plan (DSIP), to ensure an integrated approach to implementing these enhancements.

Formal Vulnerability Assessments and the SSSP (U)

(U) ~~(U) (S)~~ During the time since the December 2000 follow-up review, a number of higher-priority vulnerability assessment needs have been met, delaying the SSSP, and more recently LANL has been directed by NNSA to delay the publication of a revised SSSP until a new DOE DBT has been published. The revised DBT has not yet been published; nevertheless, LANL has conducted a number of vulnerability analyses in the interim, although not all have been formally documented. Vulnerability assessments were conducted for a variety of SFMAAs, and much effort has been expended in confirming the adequacy of the security posture at TA-18.

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addition, a number of new programs were assessed to determine their initial security requirements.

(U) ~~(U) (S)~~ Work has begun to update the ASSESS facility characterization files for both TA-55 and TA-18. During this inspection, the latest available ASSESS files and Joint Tactical Simulation (JTS) files were reviewed. In general, these files are well structured, but this review generated a number of questions. These were presented to S-1 staff in writing, and their response provided the needed clarification for many of their settings. However, there were some settings they acknowledged would require further study during the updating of the facility models.

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(U) ~~(U) (S)~~ In addition to the vulnerability analyses conducted to support the SSSP, DOE sites should conduct vulnerability analyses for each operational revision, new operation, facility modification, etc., that has the potential to affect the security envelope within which the facility operates. The formality of these vulnerability assessments may vary according to the potential impact associated with the revised facility or operations. Since 1999, two large construction projects (Fire-Loop and NMSSUP) have begun in TA-55 (associated activities have occurred in other areas as well, but generally these are not Category I areas.) LANL subject matter experts, in consultation with DOE, concluded that the modifications to TA-55 security occasioned by operations conducted under the construction security plan do not create the potential for scenarios that are not bounded by the 1999 worst-case scenario. As a result of this conclusion, LANL did not conduct formal vulnerability analyses. However, a comparison of the 1999 worst-case analysis and the provisions of the construction security plan reveals some revised procedures that could considerably change the assumptions under which the 1999 analysis was conducted.

(U) ~~(U) (S)~~ For example, the construction security plan impacts the normal PA access requirements. Prior to the implementation of the construction security plan, routine access to the PA required a badge issued by the badge office, coupled with a personal identification number (PIN) issued by the facility. Only occasional visitors were allowed inside the PA without these personal identifiers, and then only under escort. The construction security plan provided for routine access to the PA based on the individual being listed on a preprinted form provided by the construction contractor under relatively loose escort requirements as long as the individual remained within a "construction bubble" established by a fence inside the PA. More recently, the integrity of this fence has been breached in a number of locations.

(U) ~~(U) (S)~~ Vehicle access controls were similarly impacted. Prior to the construction security plan, vehicle access to the PA was primarily limited to site vehicles of limited capacity and a small number of long-term contractor vehicles (e.g., telephone service vans). Most material brought into the PA was trans-shipped after inspection at the central warehouse. This trans-shipment process was intended to address weaknesses identified in earlier vulnerability assessments. The construction security plan allows large,

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loaded construction vehicles into the PA based on prior contractor identification of the vehicle by color, type, license number, and contractor name.

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(U) ~~(S)~~ These two considerations alone argue that the security posture changes resulting from implementation of the Fire-Loop/NMSSUP construction security plan have the potential to substantially reduce the effectiveness of both the vehicle gate and personnel access control functions. It would have been prudent to conduct a more formal vulnerability analysis to ensure that the overall risk continued to be bounded by the 1999 worst-case scenario.

(U) ~~(S)~~ Another example involves provisions surrounding a significant increase in programmatic work in the material access area (MAA). Associated with this increase in workload, a number of additional staff were assigned to work inside the MAA. These personnel are required to be included in the Personnel Security Assurance Program (PSAP), since their duties involve hands-on access to SNM or other duties in close proximity to SNM. In addition, their routine duties would allow them to have access to information that could substantially assist an outside attacker. In order to expedite the process of allowing the newly assigned staff to assume their duties, familiarization and training activities are conducted inside the MAA (under escort and without hands-on access to SNM) for these personnel even though they are not fully PSAP-approved. Even though these individuals are administratively prevented from directly accessing SNM, they are privy to information that would substantially aid an adversary planner. Further, if they decided to violently assault their escort, they are often in the immediate proximity of SNM and sometimes would be able to identify attractive targets. The DOE-approved 1999 worst-case analysis assumes that all MAA personnel with sufficient information or sufficient SNM access to materially assist an adversary attack are PSAP- or personnel assurance program (PAP)-approved, thus (under DOE vulnerability assessment guidelines) mitigating them to a passive insider. The presence of these individuals undergoing training and familiarization contradicts this assumption, since they have the potential to have such information and to commit overt acts to aid an adversary attack.

(U) ~~(S)~~ In a related area, LANL requested and AL approved (in January 2002) a variance from NNSA requirements limiting the number of times an individual may access an MAA without being enrolled in PSAP. The variance allows up to ten visits to the MAA before enrollment in PSAP is required. LANL justified the variance primarily by operational need and did not support the assertion of equivalent risk by a vulnerability assessment. In February, LANL began an insider analysis of TA-55 that was intended to formally address this issue. The analysis involved a very detailed study of the number of times individuals access the MAA over time, coupled with an analysis of the type of information they may gather. In addition, one experiment and one limited-scope exercise was conducted to determine the effectiveness of various mitigation measures in place at the plutonium facility (PF-4), with the following results:

- (U) • ~~(UCNF)~~ The escort is critical to the amount of information and access an individual can obtain.
- (U) • ~~(UCNF)~~ After five visits the individual was treated like a properly enrolled member of the PF-4 work group.
- (U) • ~~(UCNF)~~ All personnel within PF-4 are assumed to have the same need to know, regardless of Sigmas.
- (U) • ~~(UCNF)~~ Unclassified information concerning gloveboxes, material types, room layouts, and process flows are available in open source information.

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(U) • ~~(UCNI)~~ The MAA access control system was ineffective for visitor control. As a result, some immediate changes were made to the MAA visitor access control system.

(U) (S) ~~(UCNI)~~ In August 2002, a July 2001 material control and accountability vulnerability assessment of PSAP-approved individuals was validated. **DELETED**
/However, this assessment specifically did not address non-PSAP approved (potentially active and violent) insiders. The current schedule for completion of the insider vulnerability assessment at TA-55 is January 2003. The insider portion of the outsider analysis (insider/outsider collusion) is scheduled for completion by August 2003. Of particular concern are the underlying assumptions about the value of active, violent insiders either in the PA or MAA.

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(U) (S) The results of these insider studies suggest that the current number of visits allowed in the variance is too high to prevent the presence of a potentially knowledgeable, active insider. Again, this violates the assumptions of the 1999 vulnerability analysis used as a baseline by LANL. It is pertinent to this discussion to note that previous LANL vulnerability assessments that did consider an active insider inside the MAA identified a number of risks associated with their presence.

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(U) **FINDING: LASO2002-LANL-PPM-001: LANL line management has not ensured that appropriate vulnerability assessments are performed prior to authorizing work. [DOE Policy 470.1, Component 2 "Guiding Principles," second guiding principle, and DOE Order 470.1, par. 4.b.]**

Conclusions Regarding Planning (U)

(U) (S) ~~(UCNI)~~ LANL has sustained a high level of activity in its planning program since the previous inspection in 1999. They have conducted a number of studies and activities that are not a routine part of the DOE planning environment, such as the Security Strategy Working Group, the TA-18 Safeguards and Security Evaluation Plan, and the ISA. While progress has been slow in addressing deficiencies identified in 1999, LANL has a realistic schedule for completing the vulnerability assessments required to support the publication of a revised SSSP and are aggressively pursuing many high-priority vulnerability assessment tasks, in addition to those required to support the publication of the revised SSSP. Of highest priority at this time is further modeling to support and refine the ISA results regarding implementing a denial strategy at TA-55. However, in addressing all these high priorities, LANL has not fully addressed some potentially significant aspects of its current operating environment at TA-55.

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The resulting uncertainties diminish the overall effectiveness of the protection program planning element of protection program management.

1.3.2.2 Resources to Support the Safeguards and Security Program (U)

Safeguards and Security Budget for LANL (U)

(U) **Operating Funds.** The FY 2002 and FY 2003 safeguards and security budget targets for NNSA were established with the Office of Management and Budget (OMB) and Congress prior to the events of September 11, 2001. As such, they did not include the costs for the enhanced security measures necessary

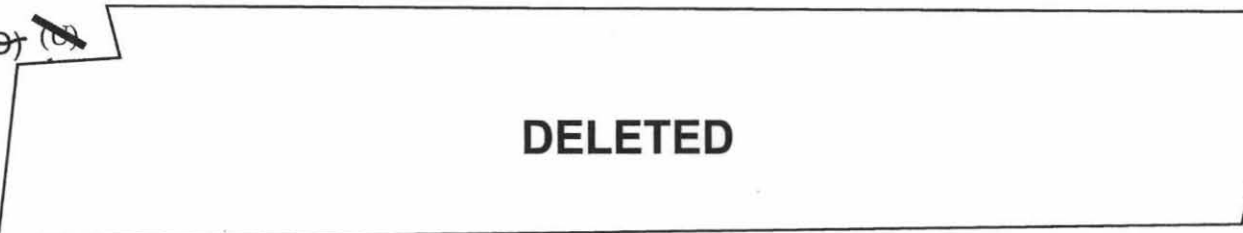
in response to those attacks, the increase in protective force sizes that has since occurred, or the upgrades to physical barriers and intrusion alarm systems necessary to meet the enhanced threat that has been generally understood since that time. These unexpected expenses were met with supplemental appropriations during FY 2002, but there has been no resolution to date for FY 2003. The OMB request for FY 2003 was \$510 million for NNSA safeguards and security, although requirements of \$585 million for FY 2003 were established by the NNSA-wide submission of the FY 2004 budget. LANL's requirements at the target level had been identified by the end of FY 2002. The Senate version of the appropriation allotted \$575 million, while the House of Representatives allotted \$510 million. This discrepancy has yet to be resolved in conference committee, and DOE is operating on a continuing resolution with authorization to spend at the FY 2002 level (including supplemental funding).

(U) LANL's initial response to the FY 2004 budget call reflected a "minimum" funding level of \$104.7 million for physical security and \$14.5 million for cyber security. They also submitted an "essential" funding level of \$176.1 million for physical security and \$18.9 million for cyber security. Subsequent communications between LANL and DOE have resulted in a more complex request structure consisting of four levels, as specified in the table below.

Table 1. LANL Estimates of FY 2003 Operating Requirements (U)

Category	Definition	Amount (millions of dollars)	
		Physical Security	Cyber Security
Bare Minimum	FY03 Continuing Resolution (FY02 + FY02 supplementals + interim denial strategy)	100.5	14.0
Minimum	Necessary to secure the site	108.6	14.5
Essential	Covers DOE mandates and critical issues	128.5	19.7
Over Target	Provides a fully compliant program	182.1	23.7

Information contained in this table is UNCLASSIFIED.

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(U) **Construction Line Items.** LANL has a major line item upgrade under way for safeguards and security called the Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP). Phase I of this project—primarily involving the purchase and installation of a communications backbone to support later phases of the project—is nearing completion. At present, it appears that the continuation of NMSSUP phase 1 will be funded. Phase II, which includes a number of upgrades to barriers and physical security systems at LANL, has not yet been funded, although it is on the NNSA list of candidate projects. In addition, the FY 2004 budget submission included line item construction requirements of \$1 million in FY 2003, \$16.5 million in FY 2004, \$38.3 million in FY 2005, and \$1 million in FY 2006 for road relocations needed to enhance the protection of security interests at LANL. This project is not funded at this time.

(U) ~~(S)~~ During this inspection, NNSA informed LANL that they should plan their expenditures for the remainder of the fiscal year based on the spending rate authorized under the present continuing resolution

(an annualized amount of approximately \$96.6 million).

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Staffing and Training at LANL (U)

(U) As noted in the topical appendices of this report, the staffing levels and expertise available at LANL generally are sufficient to meet protection needs. Since mid-FY 2002, the LANL Security Division has greatly increased in size (for example, S-1 staffing has increased from 6 to 39) and in expertise as experienced staff have been added from other areas at LANL and from other organizations. Further augmentation is available from a number of knowledgeable support contractor personnel.

Conclusions Regarding Safeguards and Security Resources (U)

(U) ~~(S)~~ Resources at LANL are presently insufficient to accomplish all the protection enhancements identified in the various studies and analyses cited under Protection Program Planning within a time consistent with their

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LANL has been effective in prioritizing and costing tasks, so they are able to make effective use of the resources available and respond quickly if other resources are identified. LANL's ability to effectively manage available resources is sufficient to support protection needs, even during funding shortfalls.

1.3.2.3 Providing Programmatic Direction (U)

Incorporating Revised Directives into the LANL Contract (U)

(U) As the Contracting Officer, the Albuquerque Operations Office (AL) Manager has been responsible for incorporating new or revised directives into the LANL contract. AL receives notification of new directives from the DOE Explorer directives system. Upon notification, the Contracting Officer transmits the final directive to the appropriate AL subject matter expert to determine whether the new directive or portions of it are applicable to LANL. If the determination is positive, the Contracting Officer issues the directive to the University of California (UC) Contracts Manager. Within 30 days, UC notifies the Contracting Officer of their acceptance or of any concerns they may have.

(U) If there are no concerns, the UC automatically updates Appendix G of the LANL contract. If concerns exist, the Contracting Officer and AL subject matter experts resolve the UC concerns, and the directive is then accepted. In the event that the Contracting Officer cannot reach an agreement with UC, the Contracting Officer may direct the University to comply with the directive. As of December 16, 2002, the Contracting Officer for the LANL contract will be the LASO Manager, but the process for incorporating directives should remain substantially unchanged.

(U) As part of its Appendix O contractual obligation for the implementation of integrated safeguards and security management (ISSM), UC updated Appendix G of the LANL contract on October 7, 2002. However, DOE Notice 205.1, *Unclassified Cyber Security Program*, dated July 26, 1999, is absent from the list of implemented directives. As noted in *Independent Oversight Cyber Security Inspection of the*

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Los Alamos Site Office and Los Alamos National Laboratory, the LANL unclassified computer security program would be enhanced by implementation of this notice.

Deviations to DOE Order Requirements (U)

(U) DOE Order 470.1 provides for deviations from safeguards and security directives under certain circumstances. Requests for deviations are reviewed and processed at LASO in accordance with *LASO Deviations Procedure*, LASO-SMT-1, Revision 1.0, dated November 14, 2002. The procedure ensures that deviations requested by LANL are properly evaluated, tracked, and periodically reviewed. There are 26 currently approved deviations (25 variances and one waiver) and five requests for variance that are pending approval; these files are kept in the office of the LASO deviations point of contact on the Security Management Team.

(U) Requests for deviations at LANL are processed through the deviations point of contact in the Security Support Group, (S-5), within the Safeguards and Security Division. Deviation requests are prepared by the requesting LANL organization according to the LANL Directives Deviation Management Procedure, dated September 1998, which contains a sample format for deviation justifications. A review of the files for several current deviations showed that technical justifications were prepared as part of the original requests, though there was little evidence of any significant risk analysis effort in the documentation.

(U) S-5 sends a quarterly report of all current deviations to the S Division group leaders to ensure that group assignments are correct and the deviations are still applicable to current security operations.

Conclusions Regarding Safeguards and Security Programmatic Direction (U)

(U) LANL procedures for responding to DOE requests for impact assessment and for implementing new or revised directives upon incorporation into the LANL contract are effective. However, the overall effectiveness of programmatic direction at LANL is undermined by the decision to exclude DOE Policy 205.1, *Departmental Cyber Security Management*, and DOE Notice 205.1, *Unclassified Cyber Security Program*, from the list of requirements in Appendix G of the LANL contract.

I.3.2.4 Feedback and Improvement (U)

(U) While feedback and improvement occur on many different levels within the safeguards and security program, the two most formal mechanisms are the safeguards and security surveys (formerly conducted by AL and recently transferred to LASO) and self-assessments conducted by LANL. It is expected that these two programs will act synergistically to identify weaknesses in the program, provide feedback to line management regarding these weaknesses, and set in motion a process to correct significant shortcomings. The LANL self-assessment program, especially the identification of weaknesses and LANL's effectiveness in correcting them form the prime focus of this section.

(U) The safeguards and security self-assessment program at LANL has undergone a transition over the past several years, due largely to the implementation of ISSM at the Laboratory. The old methodology consisted of the LANL S Division conducting oversight assessments of safeguards and security performance in a more or less "stovepiped" manner. This process has evolved to one where the line organizations have more self-assessment responsibility. The current program is a multi-tiered system where line organizations conduct management walk-arounds and activity self-assessments, and S Division performs topical self-assessments in their areas of expertise, conducts select numbers of integrated safeguards and security assessment visits (ISSAVs) of prioritized Laboratory divisions, and produces

annual "state of security" reports. The LANL Audits and Assessments Division may also conduct special safeguards and security assessments from time to time.

(U) Unclassified deficiencies identified in line management self-assessments are tracked in the LANL I-TRACK database. Classified deficiencies, as well as deficiencies arising from S Division self-assessments and external audits, are tracked in the Deficiency Management Program database maintained by the S-2 Program Integration Division. The LANL self-assessment process is described in Security and Safeguards Assurance Manual, dated August 25, 2000, and FY02 Security and Safeguards Self-Assessment Program (undated).

(U) Documents reviewed include the 1999 and 2001 end-of-year self-assessment reports, and 2000 ISSAV reports for the Nuclear Materials Technology Division, Nonproliferation and International Security Division, and Protection Technology Los Alamos. The 2002 end-of-year report had not yet been written at the time of this inspection, but the individual topical area self-assessment plans, as well as several of the topical area reports completed to date, were reviewed.

(U) The 1999 and 2000 reports described in sufficient detail the topical and subtopical areas inspected and the activities of the self-assessment teams. In the 2001 self-assessment, credit was taken for an NNSA-sponsored Directives Implementation Review that was conducted that year. As a result, the 2001 report lacked the level of detail in a number of subtopical areas that was found in the previous years' reports. However, the 2002 topical area self-assessment plans and reports—the "raw data" that will be rolled into the end-of-year report—provided enough detail and activity description to indicate that the 2001 report was most likely a one-time anomaly.

(U) The corrective action files for identified self-assessment deficiencies are maintained at the S-2 Program Integration Division. The files for the 27 issues from the 2000 self-assessment and the four issues from the 2001 self-assessment were reviewed. As with the survey findings, the corrective action plans for self-assessment issues contain milestones with projected and actual completion dates. In over 90 percent of the cases, the corrective actions appeared likely to be effective in correcting the original deficiency and in preventing recurrence of the same or similar deficiencies. Root causes were provided for all but three of the issues; those three were closed before corrective action plans were required to be submitted. The most frequently occurring root causes (19 of the remaining 28) were related to procedures (lack of procedure, inadequate procedure, or violation of procedure). Evidence of tracking and trending efforts includes a deficiency root cause trending report produced by S-2 in 2001, and the LANL "Redbook," a tracking tool for assessing the status of open corrective actions.

(U) The LANL self-assessment program appears generally effective in identifying safeguards and security deficiencies and in preparing reports that provide details of the review process, the types of investigations conducted, and the logic behind topical and subtopical ratings. Periodic, formal trending analyses of self-assessment deficiencies and root causes would prove a valuable feedback and improvement tool for LANL management.

1.3.2.5 Progress Toward Implementation of ISSM (U)

(U) DOE Policy 470.1, *Integrated Safeguards and Security Management (ISSM) Policy*, describes a hierarchy of six components that compose the ISSM framework. These are:

- (U) Component 1 – Objectives of ISSM
- (U) Component 2 – Guiding Principles for ISSM
- (U) Component 3 – Core Functions for ISSM

- (U) Component 4 – Mechanisms for ISSM
- (U) Component 5 – Responsibilities for ISSM
- (U) Component 6 – Implementation of ISSM.

(U) The first three components describe attributes of ISSM that apply DOE-wide and that should be evident in every ISSM implementation. The second set of three components represent specific site implementation of ISSM objectives, guiding principles, and core functions. This report will present the specifics of components four through six identified at LANL and will then provide conclusions regarding their effectiveness in supporting the DOE-wide aspects of ISSM.

(U) The DOE and UC have agreed upon a basic set of requirements that, when completed, will constitute “implementation” of ISSM. These are embodied in Appendix O of the UC contract. On November 2, 2002, DOE determined that LANL had met all requirements of Appendix O and therefore had implemented ISSM. DOE, UC, and LANL understand that implementation of ISSM does not signal an end to their collective effort, but simply marks an early, though significant, milestone.

(U) The implemented Appendix O requirements included the following:

- (U) UC accepted an agreed upon set of applicable safeguards and security requirements into its contracts and has demonstrated they have in place a defined functional, change control infrastructure to maintain the applicable safeguards and security requirements (discussed under Program Direction in this appendix).
- (U) The laboratories have self-assessed their ISSM system, using ISSM expectations and attributes to determine the status of implementation with gaps identified and addressed.
- (U) The laboratories have deployed ISSM awareness and feedback mechanisms at all worker levels.

(U) A further expectation expressed in Appendix O is that the laboratories will ensure that the ISSM systems they put in place follow the guiding principles of ISSM. LANL has demonstrated and DOE/NSA has validated that the three specific requirements have been met. LANL has instituted a number of measures to address the final expectation. The most significant of these will be addressed by ISSM component below.

Component 4 – Mechanisms for ISSM (U)

(U) Several instances in which ISSM principles were not followed have been identified during this inspection (see Appendix E--Personnel Security; Appendix F--Physical Security Systems; and Appendix G--Material Control and Accountability, as well as the earlier vulnerability analysis discussion in this appendix). To address these and similar issues, LANL has chosen two complementary mechanisms for ensuring that ISSM principles will become an integral part of LANL activities--ensuring that safeguards and security staff are included in overall LANL strategic planning and intimately involved from the beginning of each major project.

(U) The first step in integrating safeguards and security into sitewide strategic planning was to commission the Safeguards and Security Working Group (SSWG), consisting of senior Laboratory managers to identify significant opportunities for LANL to improve its safeguards and security program. This group published a report in June 2002 that identified four major areas of emphasis and proposed a number of specific solutions within those areas. The results of this study have been included in the

Director's Ten Year Comprehensive Strategic Plan—the principal strategic planning document for the Laboratory. Many of the opportunities identified by the SSWG have been translated into specific projects and are being implemented.

(U) LANL has also taken steps to ensure that safeguards and security is included in most specific project planning. LANL safeguards and security staff are currently supporting over 200 individual projects ranging from relocations to large-scale construction projects. Safeguards and security representatives regularly attend a number of the significant coordinating group meetings at LANL, including:

- (U) The Site Planning and Construction Committee that has most major construction and planning projects under its purview
- (U) The Internal Siting Committee that has the siting of all LANL activities under its purview, ranging from relocation of an activity through the location of a new facility.

(U) Attendance at these committee meetings, attendance at LANL monthly project review meetings, and the participation of senior S Division staff in other management meetings provide a wide insight into activities occurring or planned at LANL, allowing safeguards and security to provide input early in project planning and expert consultation throughout. To improve the quality of its support to these projects, S Division has implemented a strategy of managing its support activities, both large and small, as Division projects. This approach enforces a degree of formalism on each activity sufficient to allow S Division managers to appropriately allocate resources and monitor progress toward task completion.

(U) LANL has initiated an effort known as Enhanced Security Through Human Error Reduction (ESTHER). This is an effort to apply tools and techniques proven effective in safety applications to identify and reduce the influence of conditions that increase the likelihood of employee errors and other actions that lead to security incidents. While in its infancy, the project appears to offer great potential for identifying and removing environmental factors that lead well-intentioned personnel to commit actions that result in security incidents.

Component 5 – Responsibilities for ISSM (U)

(U) LANL is approaching the clear designation of responsibilities for safeguards and security through a revision of several key Laboratory Implementation Requirements (LIRs). LIR 220-01-01.5, Construction Project Management, was revised in February 2002 to specify that the Project Team Leader is responsible for meeting ISSM requirements; to require that integrated project teams include a representative from S Division; to specifically state the responsibility of the S Division Leader to provide support; and to require a safeguards and security sign-off to certify that all safeguards and security requirements applicable to the project have been identified. Other additions to make responsibilities even more clear are being proposed for the FY 2003 change cycle.

(U) LANL has begun to change the specific security LIRs as well to clarify the responsibilities of both S Division and other Laboratory elements in ensuring that safeguards and security requirements are met. Changes are being submitted for the LIRs addressing general security, nuclear security, and classified information for the FY 2003 change cycle. In addition, LANL has begun to revise its Laboratory Engineering Standards Manual to include safeguards and security requirements and is preparing, under the LANL Permits and Requirements Project, a guide for use by project leaders to identify required reviews and approvals by LANL organizations for facility and infrastructure capital improvement and

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modifications projects. Examination of the current draft guide indicates that safeguards and security review and approval will be key to completion of such projects.

Component 6 – Implementation of ISSM (U)

(U) As discussed above, S Division is currently involved in over 200 projects, most of which are not primarily safeguards and security projects. The S Division activity and participation in some of these projects were reviewed. Examples include construction of the Bio-safety Level 3 laboratory at LANL, the Chemical and Metallurgical Research Replacement (CMRR), and construction of the Center for Integrated Nanotechnologies. The need for safeguards and security input into the Bio-Safety Level 3 laboratory was recognized rather late in the design process. However, LANL security experts were able to devise security measures that were appropriate for the risks identified without requiring facility modifications that would threaten facility funding. In the other two cases, documents indicate that S Division was involved very early, and a profitable collaboration appears to be progressing between security and the project team. These examples illustrate the promise of effective ISSM implementation and present a marked contrast to the issues identified during this inspection caused by the less than fully effective interactions between security and operations.

Conclusions About the Implementation of ISSM at LANL (U)

(U) LANL has achieved early NNSA certification for completion of Appendix O requirements. This is a significant achievement in itself. LANL has gone far beyond these first milestones, however, establishing a number of new structures that seem well designed to ensure the goals of ISSM for future projects at LANL. Indeed, even though these management structures are new, several solid achievements can already be identified. While implementation of ISSM at LANL is too recent to draw final conclusions concerning its effectiveness, all discernable indications are positive.

I.4 CONCLUSIONS (U)

(U) LANL has recently become one of the first DOE facilities to be certified by NNSA as completing the implementation of ISSM. To achieve this certification, they were required to complete a number of milestones that are similar to those being addressed by the remainder of DOE. However, LANL has gone far beyond these beginning steps to identify programs that will greatly increase the probability that safeguards and security will be involved early in LANL projects.

(U) LANL S Division staff now sit on a number of high-level planning groups at the Laboratory, allowing them to identify planned projects that might benefit from security input during the early stages, and has a group of project-oriented staff who are designated to coordinate such support. These staff are currently monitoring over 200 projects and have already been successful in providing meaningful support in a number of them.

(U) LANL S Division has begun to place a strong emphasis on project management techniques in their internal activities. This allows them to better monitor progress, to identify potential delays and resource shortages, to efficiently allocate resources among projects, and to be better prepared to present and defend budget requests to DOE. In addition to these management initiatives, LANL has begun a program to assist in identifying environmental and behavioral factors that are likely to lead to security incidents before the incident occurs, providing management the prospect for intervention before an incident occurs.

(U) Both LANL and LASO management has demonstrated strong support for the LANL safeguards and security program. Most importantly, they have been willing to provide resources to support the

management initiatives discussed above that, while having obvious programmatic benefits, are also costly to support.

(U) ~~(UCND)~~ However, there remain some important issues that need to be addressed. The number of unfilled positions on the LASO Security Management Team is a concern, even though ASC stands ready to offer assistance under the Service Level Agreement. Over the long term, it will be important for the LASO Manager to have sufficient in-house staff to support his oversight role as Contracting Officer and as the chief risk acceptance official.

(U) ~~(UCND)~~ Also, LANL has some important vulnerability analyses that need to be completed. The number of demands on the vulnerability analysis staff has greatly increased over the past two years as they have been called upon to address new terrorist threats, to address the increased tempo of operations at TA-55 and elsewhere, and to rebuild the analysis team following the departure of many of the key analysts and managers. While these increased demands and stress factors allow one to understand the current situation, it is important that the critical vulnerability analyses now scheduled for the first six months of calendar year 2003 be performed on schedule.

(U) Overall, LANL has demonstrated a strong management commitment to safeguards and security and has implemented an effective project management environment to monitor work and ensure quality. They have aggressively pursued implementation of ISSM, not simply resting on their laurels as one of the first programs to be certified. The issues identified in protection program planning are serious and need to be addressed, but all evidence suggests that these issues are not indicative of the future, but holdovers from the recent turbulent past. The structures being institutionalized under ISSM should greatly assist LANL in preventing a recurrence. Protection program management at LANL is generally effective today and shows promise of increased effectiveness in the future.

I.5 RATING (U)

(U) Protection program management at LASO and LANL provides assurance that protection needs will be met. Therefore, a rating of **EFFECTIVE PERFORMANCE** is assigned.

I.6 OPPORTUNITIES FOR IMPROVEMENT (U)

(U) This Independent Oversight inspection identified opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible DOE and contractor line management, and prioritized and modified as appropriate, in accordance with site-specific programmatic safeguards and security objectives.

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~~(U)~~ LANL should consider preparing more extensive documentation supporting the rationale for excluding adversary strategies and pathways on the basis of credibility. LANL staff often argue that particular adversary strategies and pathways are incredible, but the analysis that led to the conclusion is often not fully documented. **DELETED**

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documentation would allow LANL staff to revisit these decisions periodically to validate that all the underlying assumptions are still valid.

(U) LASO should consider maintaining more extensive corrective action files. As the LASO Manager assumes the role of Contracting Officer for LANL, there is a need for a complete documentation of his oversight of LANL performance. In particular, LASO should not depend on LANL to maintain files for LASO or to conduct root cause and other analysis on behalf of LASO, since this might be perceived as a conflict of interest. Further, LASO should be especially careful to maintain files of all critical approvals and decisions, such as approval of a LANL corrective plan, since the corrective action plan effectively authorizes LANL to conduct activities and incur expenses.

(U) LANL should consider additional analyses of findings. While LANL performs trend analysis for findings, they were able to locate only one report describing such activity within the past three years. LANL might consider including the efforts of the ESTHER project in their causal analysis efforts and working with the ESTHER project to perform more extensive and frequent trend analysis.

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