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Description of document: Department of Energy (DOE) Historical Records
Declassification Guide, 2012

Requested date: April 2020

Release date: 30-September-2020

Posted date: 25-January-2021

Source of document: FOIA Requester Service Center
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Washington, DC 20585
Fax: (202) 586-0575
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[DOE Headquarters Online FOIA Request Form](#)

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Department of Energy
Washington, DC 20585

September 30, 2020

Via email

Re: HQ-2020-00654-F

This is a final response to the request for information that you sent to the Department of Energy (DOE) under the Freedom of Information Act (FOIA), 5 U.S.C. § 552. You requested:

A copy of the DOE Declassification Guide (the DOE Declassification Guide Approved by ISCAP dated 9/6/2018)

Your request was assigned to the DOE's Office of Environment, Health, Safety & Security (AU) to conduct a search of its files for responsive documents. AU started its search on April 7, 2020, which is the cut-off date for responsive documents. AU has completed its search and identified one (1) document responsive to your request. The document is being provided to you as described in the accompanying index.

Upon review, DOE has determined that certain information contained within the documents should be withheld pursuant to Exemption 7(E) of the FOIA, 5 U.S.C. § 552 (b)(7)(E).

Exemption 7 protects from disclosure "records or information compiled for law enforcement purposes" that fall within the purview of one or more of six enumerated categories. To qualify under Exemption 7, the information must have been compiled, either originally or at some later date, for a law enforcement purpose, which includes crime prevention and security measures, even if that is only one of the many purposes for compilation.

Exemption 7(E) provides that, "records or information compiled for law enforcement purposes" may be withheld from disclosure, but only to the extent that the production of such documents "would disclose techniques and procedures for law enforcement investigations or prosecutions, or would disclose guidelines for law enforcement investigations or prosecutions if such disclosure could reasonably be expected to risk circumvention of the law."



Exemption 7(E) provides that an agency may exempt from disclosure records compiled or recompiled for law enforcement (including national security) purposes if they could reasonably be expected to (e) disclose techniques and procedures for law enforcement investigations or prosecutions, or would disclose guidelines for law enforcement investigations or prosecutions if such disclosure could reasonably be expected to risk circumvention of the law. The portions deleted from the subject document(s) pursuant to Exemption 7(e) contain information that would provide insight into the relative sensitivity of still-classified information or would materially assist efforts to compile sensitive information through the association of declassified information and/or publicly released information. The release of this information could impair the Department's ability to enforce the laws regarding classification and has been safeguarded as Official Use Only under the FOIA and is therefore exempt from disclosure.

This satisfies the standard set forth at 5 U.S.C. § 552(a)(8)(A) that agencies shall withhold information under FOIA “only if (I) the agency reasonably foresees that disclosure would harm an interest protected by an exemption...; or (II) disclosure is prohibited by law...” 5 U.S.C. § 552(a)(8)(A) also provides that whenever full disclosure of a record is not possible, agencies shall “consider whether partial disclosure of information is possible...and (II) take reasonable steps necessary to segregate and release nonexempt information.” Therefore, we have determined that, in certain instances, a partial disclosure is proper.

Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the determination to withhold the information described above. The FOIA requires that “any reasonably segregable portion of a record shall be provided to any person requesting such record after deletion of the portions which are exempt.” 5 U.S.C. § 552(b). As a result, a redacted version of the documents is being released to you in accordance with 10 C.F.R. §1004.7(b)(3).

This decision, as well as the adequacy of the search, may be appealed within 90 calendar days from your receipt of this letter pursuant to 10 C.F.R. § 1004.8. Appeals should be addressed to Director, Office of Hearings and Appeals, HG-1, L’Enfant Plaza, U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, D.C. 20585-1615. The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to OHA.filings@hq.doe.gov, including the phrase “Freedom of Information Appeal” in the subject line (this is the preferred method by the Office of Hearings and Appeals). The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE’s records are situated, or (4) in the District of Columbia.

You may contact DOE’s FOIA Public Liaison, Alexander Morris, FOIA Officer, Office of Public Information, at 202-586-5955, or by mail at MA-46/Forrestal Building 1000

Independence Avenue, S.W., Washington, D.C., 20585, for any further assistance and to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001, e-mail at ogis@nara.gov; telephone at 202-741-5770; toll free at 1-877-684-6448; or facsimile at 202-741-5769.

The FOIA provides for the assessment of fees for the processing of requests. *See* 5 U.S.C. § 552(a)(4)(A)(i); *see also* 10 C.F.R. § 1004.9(a). In our April 2, 2020, letter you were informed that your request was placed in the “other” category for fee purposes. Requesters in this category are provided with two free hours of search time and 100 free pages of duplication. DOE’s processing costs did not exceed \$15.00, the minimum amount at which DOE assesses fees. Thus, no fees will be charged for processing your request.

If you have any questions about this letter, you may contact me or Mr. Lars Hydle of my office at:

MA-46/Forrestal Building
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 287-6730

I appreciate the opportunity to assist you with this matter.

Sincerely,
Alexander C. Morris
Alexander C. Morris
FOIA Officer
Office of Public Information

Digitally signed by
Alexander C. Morris
Date: 2020.09.30
21:17:21 -04'00'

Enclosures

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Request #: HQ-2020-00645-F

Final response to request for:

A copy of the DOE Declassification Guide (the DOE Declassification Guide Approved by ISCAP dated 9/6/2018)

DOE identified one (1) document responsive to your request.

- One (1) document *is being released in part pursuant to Exemption 7(E)*.



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Historical Records Declassification Guide

September 2012

**U.S. DEPARTMENT OF ENERGY
Office of Classification
Washington, DC 20585**

Change 2 was approved by ISCAP on September 28, 2018.

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May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and category: 7, Law Enforcement. Department of Energy review required prior to public release.

Name/Org: Edith A. Chalk, Director
Technical Guidance Division
Date: September 1, 2012

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CLASSIFICATION/CONTROL GUIDANCE REQUEST

NAME: _____ DATE: ____ / ____ / ____

ORGANIZATION: _____ PHONE NUMBER: _____

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CHECK THE APPLICABLE AREA AND ENTER THE REQUIRED INFORMATION

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INSTRUCTIONS:

You may FAX this to the Classification Guidance Administrator, AU-62, at (301) 903-7444.

Headquarters Elements: Send this request to the Office of Technical Guidance, Office of Classification, AU-62.

Field Elements: Send this request to your local classification officer.

NOTE: THIS SAMPLE MAY BE REPRODUCED AS NEEDED; OTHER FORMATS ARE ACCEPTABLE AS LONG AS THE REQUIRED INFORMATION IS PROVIDED.

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Historical Records Declassification Guide

U.S. DEPARTMENT OF ENERGY
Office of Classification
Washington, DC 20585

Approved by:



Andrew P. Weston-Dawkes,
Director
Office of Classification

Sept 10, 2012
Date

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RECORD OF PAGE CHANGES

Change Number:	Date of Change:	Entered by (Initial/Date):
Change 1	12/31/2012	HS-62
Change 2	10/11/2018	AU-62

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CG-HR-4 Historical Records Declassification Guide

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CG-HR-4

Historical Records Declassification Guide

INTRODUCTION**A. Use of the Guide**

This guide is approved for use by Derivative Declassifiers who are authorized to review historical records containing DOE National Security Information (NSI) subject to Section 3.3 of Executive Order (E.O.) 13526. The topics contain guidance for determining whether such historical records are declassified, retain their classification, or are re-marked as Transclassified Foreign Nuclear Information (TFNI). This guide also serves as the basis for topics in classification guides that exempt DOE NSI from declassification at 25 years or 50 years. For DOE subject areas, if there is not a "Retain" classification topic, then the information is subject to automatic declassification. Other agency classified equities must be referred to the appropriate agency for review. "Refer" topics have been included to assist reviewers. However, CG-HR-4 does not attempt to provide comprehensive identification of all potentially sensitive other agency equities. All referrals to other agencies are to be made in accordance with section 3.3(d)(3) of E.O. 13526. Each of the following conditions must be met: the information must originate with another agency (or affect the interests or activities of that agency with respect to classified information); the information must reasonably be expected to fall into an exemption category; and the agency must be eligible to receive referrals as identified in an ISOO Notice, available on www.archives.gov/isoo/notices. **(NOTE: Documents containing Restricted Data and Formerly Restricted Data are classified under the Atomic Energy Act and, therefore, not subject to the provisions of E.O. 13526 or this guide. Topics describing information likely to contain or closely related to RD or FRD have "(potential for RD)" or "(potential for RD/FRD)" in the declassification instructions. These topics are intended to aid the reviewer in detecting the possible presence of RD or FRD in documents, which may be either unmarked or improperly marked. Some information that was once**

RD or FRD has been declassified over the years. All such documents shall be referred to a DOE, or DOE contractor, authorized derivative classifier (DC) who will use the appropriate classification guide(s) for the RD/FRD information and procedures to make a classification determination. Pending such review, the documents will be held and protected as classified. The decision on classification will be made by an authorized DC. See Appendix A for more information.)

Users of this Guide should use their professional experience when reviewing classified national security information for declassification and conduct the appropriate research to prevent the continued withholding of information that should be released. This research should take into account information previously officially released by the U.S. Government, including information previously declassified by the Interagency Security Classification Appeals Panel (ISCAP): <https://www.archives.gov/declassification/iscap/decision-table>.

Only information detailed in the specific exemption elements in this Guide are authorized to be exempted from declassification at 25 years or later. All other information should be declassified unless the information may be exempted by another agency, or is Restricted Data or Formerly Restricted Data.

If the information falls into those categories it must be referred for review by those with the authority to make that determination in accordance with section 3.3(d)(3) of Executive Order (E.O.) 13526. Instructions on what information may be referred are contained in this Guide.

Before referring information to another government agency, confirm the agency has not waived their equity and is eligible to exempt information as identified in the most recent Information Security Oversight Office (ISOO) Notice that provides guidance on Agencies eligible to receive referrals, available on www.archives.gov/isoo/notices.

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If information is not the equity of another agency, and its release does not cause damage to national security, it should be declassified. Other statutes or restrictions may apply before the information may be publicly released.

In accordance with section 3.7(c)(1) of E.O. 13526, this Guide, or detailed declassification guidance, will be provided to the Director of the National Declassification Center at the National Archives and Records Administration.

B. Scope

This guide describes specific DOE information classified as NSI that must remain classified for longer than 25 or 50 years, explains why the information is exempt, and provides a specific date, event, or duration for declassification of the information, unless the information identifies a confidential human source or a human intelligence source, reveals key design concepts of weapons of mass destruction, or reveals TFNI.

C. Cancellation/Supersession

Change 2 supersedes Change 1. This guide supersedes CG-HR-3, *Historical Records Declassification Guide (U)*, October 26, 2005. This revision incorporates the recommendations from the National Security Information Fundamental Classification Guidance Review including the exemption of information from automatic declassification at 50 years.

D. Background

On December 29, 2010, the President signed Executive Order 13526, *Classified National Security Information*. This Order requires the automatic declassification of all classified NSI records that (a) are more than 25 years old, and (b) have been determined to have permanent historical value under Title 44, United States Code. The Order also provides a limited set of exemptions to this general rule, allowing for continued protection of documents falling within specific categories. All classified records shall be automatically declassified December 31st of the year that is 25 years from the date of origin unless they have been reviewed and exempted from automatic declassification under this guide.

In certain cases, some information revealing the identity of a confidential human source, human intelligence source, or key design concepts of weapons of mass destruction, are

further exempted due to the harm such information might cause to national security. In these cases, 50X1–HUM or 50X2–WMD are cited as reasons to extend classification beyond 50 years, but no longer than 75 years, pending review by the cognizant agency.

The requirements for automatic declassification do not apply to classification determinations made under the Atomic Energy Act (AEA) of 1954. E.O. 13526, Section 6.2(a), states: "Nothing in this Order shall supersede any requirement made by or under the Atomic Energy Act of 1954, or the National Security Act of 1947, as amended. "Restricted Data" and "Formerly Restricted Data" shall be handled, protected, classified, downgraded, and declassified in conformity with the provisions of the Atomic Energy Act of 1954, and regulations issued under that Act."

Since documents containing Restricted Data (RD) or Formerly Restricted Data (FRD) are not subject to the provisions of E.O. 13526, this automatic declassification provision does not apply to a number of permanent historical documents that contain DOE information. This fact is further emphasized in Section 3155(b) of Public Law 104-106, the National Defense Authorization Act for Fiscal Year 1996, which prohibits the automatic declassification of DOE documents containing RD or FRD. Furthermore, Congress passed additional legislation (Section 3161 of Public Law 105-261, the National Defense Authorization Act for Fiscal Year 1999, and Section 3149 of Public Law 106-65, the National Defense Authorization Act for Fiscal Year 2000) that require specific procedures to ensure that RD and FRD are not inadvertently released during the automatic declassification of records under E.O. 13526. These procedures are contained in the Special Historical Records Review Plan (Supplement), dated March 1, 2000.

Regardless of any RD or FRD markings, documents that are requested under the Mandatory Declassification Review provisions of E.O. 13526 that contain information governed by the Order must be reviewed to determine if such information is exempt under the Order or if it can be released to the requester.

Mandatory Declassification Reviews (MDR) on records 25 years or older must also be in accordance with this Guide. Freedom of Information Act (FOIA) reviews of records 25 year old or older may apply the FOIA (b)(1) to only information that meets the exemption

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provisions of this Guide (FOIA exemptions (b)(2) through (b)(9) are in no way governed or addressed by this Guide).

E. Authority

1. Statutory/Regulatory/Executive Order Authorities

The Atomic Energy Act (AEA) of 1954 as amended is the authority to classify certain information related to the design, manufacture, or utilization of atomic weapons; the production of special nuclear material; and the derivation of energy from special nuclear material to assure the common defense and security.

Government-wide regulations for classifying and declassifying RD and FRD are contained in 10 Code of Federal Regulations (CFR) Part 1045, *Nuclear Classification and Declassification*.

Executive Order (E.O.) 13526, *Classified National Security Information*, is the authority to classify certain information that requires protection from unauthorized disclosure because it could cause damage to the national security. Government-wide requirements for classifying, safeguarding, and declassifying National Security Information (NSI) are contained in 32 CFR Part 2001, *Classified National Security Information*.

2. Agency Directives

DOE O 475.2B, *Identifying Classified Information*, establishes the program to identify information classified under the Atomic Energy Act (Restricted Data, Formerly Restricted Data, and Transclassified Foreign Nuclear Information) or Executive Order 13526, *Classified National Security Information*, so that it can be protected against unauthorized dissemination.

NOTE: This order states that classification guidance must be identified or the use of source documents must be approved for all DOE or Non-DOE-funded work performed in a classified subject area that may generate derivatively classified documents or materials.

F. Automatic Declassification Provisions of E.O. 13526

As previously stated, E.O. 13526, signed by the President on December 29, 2010, requires the automatic declassification no later than December 31st of the year that is 25 years

from the date of origin, of all NSI records that have been determined to have permanent historical value under Title 44, United States Code, whether or not such records have been reviewed. Subsequent to that date, a permanent historical NSI record is automatically declassified on December 31st of the year that is 25 years from the date of origin. However, information contained in such records may be determined to be exempt from automatic declassification by meeting at least one of the following nine criteria (defined in Section 3.3(b) of E.O. 13526):

Twenty-five year exemption categories in E.O. 13526, are:

25X1: reveal the identity of a confidential human source, human intelligence source, a relationship with an intelligence or security service of a foreign government or international organization, or a nonhuman intelligence source; or impair the effectiveness of an intelligence method currently in use, available for use, or under development;

25X2: reveal information that would assist in the development, production, or use of weapons of mass destruction;

25X3: reveal information that would impair U.S. cryptologic systems or activities;

25X4: reveal information that would impair the application of state-of-the-art technology within a U.S. weapon system;

25X5: reveal formally named or numbered U.S. military war plans that remain in effect, or reveal operational or tactical elements of prior plans that are contained in such active plans;

25X6: reveal information, including foreign government information, that would cause serious harm to relations between the United States and a foreign government, or to ongoing diplomatic activities of the United States;

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25X7: reveal information that would impair the current ability of United States Government officials to protect the President, Vice President, and other protectees for whom protection services, in the interest of the national security, are authorized;

25X8: reveal information that would seriously impair current national security emergency preparedness plans or reveal current vulnerabilities of systems, installations, or infrastructures relating to the national security;

25X9: violate a statute, treaty, or international agreement that does not permit the automatic or unilateral declassification of information at 25 years.

NOTE: When exempting information under this category, the reviewer must identify the specific section(s) of the statute, treaty, or international agreement that does not permit the automatic or unilateral declassification of information at 25 years.

As noted earlier there is some information that must remain classified for longer than 50 years.

Specifically:

50X1-HUM indicates information that can clearly and demonstrably be expected to reveal the identity of a confidential human source or a human intelligence source, and is, therefore, not subject to automatic declassification for up to 75 years.

NOTE: 25X1-human is an obsolete declassification instruction. For instructions on the use of documents with 25X1-human declassification instructions, see Policy Bulletin 5, Declassification Instruction "25X1-human."

50X2-WMD indicates information that can clearly and demonstrably be expected to reveal key design concepts of weapons of mass destruction and is, therefore, not subject to automatic declassification for up to 75 years.

50X9 indicates information which is exempt from automatic or unilateral declassification under the terms of a statute, treaty (which are approved by the Senate as specified by the Constitution), or international agreement (e.g., 1958 U.S.-UK Mutual Defense Agreement). When 50X9 is used, the statute, treaty or international agreement will be identified in a topic **NOTE** from the appropriate classification guide. When exempting information under this category, the reviewer must identify the specific section(s) of the statute, treaty, or international agreement that does not permit the automatic or unilateral declassification of information at 50 years.

This guide identifies DOE NSI that falls under these exemptions and is, therefore, exempt from automatic declassification as approved by the Interagency Security Classification Appeals Panel.

Only 25X exemptions may be applied to records reviewed in anticipation of automatic declassification at 25 years (e.g., in reviews conducted in 2018, for records dating from 1993 to 1998). Other than 50X1-HUM and 50X2-WMD, other 50X exemptions may only be applied to records approaching automatic declassification at 50 years (e.g., in reviews conducted in 2018, for records dating from 1968 to 1973). Records exempted under 25X shall be automatically declassified on December 31st of a year that is no more than 50 years from the date of origin of the record, unless an approved 50X exemption is later applied within five years of that automatic declassification date. Records exempted under 50X shall be automatically declassified on December 31st of a year that is no more than 75 years from the date of origin of the record, unless an approved 75X exemption is later applied within five years of that automatic declassification date.

DOE does not have any approved File Series Exemptions (FSEs). The process for FSE approval is in section 3.3(c) of E.O. 13526.

This Guide allows for DOE to incorporate select 25X exemptions into its classification guidance under section 2.2(e) of E.O. 13526 for the following exemption elements for the specified exemption period:

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Any information cited as exempt from automatic declassification at 25 years in a DOE classification guide must have a topical basis in this Guide.

G. Transclassified Foreign Nuclear Information (TFNI)

Transclassified Foreign Nuclear Information is intelligence-related information concerning foreign nuclear programs (e.g., foreign nations, organizations, and may include non-state actors) for which comparable U.S. information would be RD or design-related FRD. Examples of U.S. design-related FRD for which comparable foreign nuclear information has the potential to be TFNI are weapon and device yields and design of nonnuclear components (e.g., safing, arming, fuzing, and firing components). While U.S. nuclear stockpile numbers and storage locations are FRD, they are not design-related; therefore, comparable foreign information is not TFNI. Intelligence information on foreign stockpile numbers and storage locations does, however, have the potential to be NSI. TFNI does not include (a) information concerning the nuclear programs for the United Kingdom or Canada, (b) information generated under the Tripartite Agreement concerning the development of gas centrifuges, and (c) information exchanged pursuant to an agreement for cooperation. Such information does not fall under the transclassification agreements and may still be RD.

Topics in this guide indicate potential TFNI, but appropriate weapons guides must be consulted to determine if comparable U.S. information is RD or design-related FRD. Any technical evaluation of foreign nuclear program information by a U.S./UK/Canadian government asset that confirms or impugns its credibility, uses RD or design-related FRD in evaluating the foreign nuclear program information, gives insight to the U.S. nuclear weapons program, or reveals U.S. RD information is RD. This will occur when foreign nuclear program information is compared to U.S. RD technology or if U.S. RD technology is used as a basis for analysis of the foreign information.

H. Marking of Documents

Marking standards for documents containing NSI have varied over the years. Historical documents may be marked National Security Information, Security Information, Defense Information, or simply be marked with a classification level [Confidential (C), Secret (S), or Top Secret (TS)]. In addition, documents dated prior to December 15, 1953, marked as "Restricted" or dated from July 18, 1949 through October 22, 1951, and marked as "Official Use Only", were classified and now are handled and protected as Confidential NSI pending review for classification. Documents with these markings should be included in reviews of NSI historical records.

Documents determined to contain TFNI may need to be re-marked. If the document contains TFNI only (i.e., no RD or FRD), the top and bottom of each page shall be marked with classification level plus TFNI (e.g., SECRET-TFNI). The classifier marking should read: "Declassify on: N/A to TFNI." Previous classifier information and retained stamps should be lined through.

I. Review of Historical Records

A Derivative Declassifier (DD) reviews each NSI record that is subject to Section 3.3 of E.O. 13526, to determine if the information contained in the record is declassified or retains its classification. A record may retain its classification only if it contains information that is covered in this guide. Information that has been subject to automatic declassification may only be reclassified in accordance with the provisions of Section 1.7(c) of E.O. 13526 and 32 CFR Part 2001.13.

During the review of historical records, a DD may encounter a record that is unmarked but potentially contains RD or FRD, or a record that is marked NSI but potentially contains RD or FRD. In these cases, the DDs, who are also Derivative Classifiers (DC) with authorities in the appropriate areas, should make a classification determination and classify or upgrade the documents as appropriate. If the DD does not have the appropriate derivative classification authority, he or she should forward the record to a DC or Classification Officer for the necessary classification determination.

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NOTE: If a record marked as RD or FRD is downgraded to NSI, the document must be reviewed to determine if the NSI in the document is exempt from automatic declassification under E.O. 13526.

Appendix A to this guide contains additional information and key words and phrases that could indicate the presence of RD or FRD information. Topics in this guide that describe information likely to contain or are closely related to RD, FRD, or TFNI information are marked "(potential for RD/FRD/TFNI)." Topics that identify TFNI specify upgrade to TFNI.

J. Declassification Date or Event (DDE)

A specific Declassification Date or Event (DDE) is included for each topic that retains the classification of the information. If all such topics in a chapter or section have the same DDE, the DDE may be shown as a *NOTE* at the beginning of the chapter or section. When the information is exempt from automatic declassification after 25 years, the following notation is used:

101 Guidance topic

Retain
Classification
[25Xn; sched]

where

25X indicates the information is exempt from automatic declassification at 25 years.

n indicates the number of the exemption that applies.

sched indicates the schedule for declassification. The schedule will be a date, event, or duration beyond 25 years, but not to exceed 50 years.

Examples:

102 Information reveals...

Retain
Classification
[25X2,
8; 6/30/35]

Explanation: The information in topic 102 is exempt from automatic declassification based on exemptions 25X2 and 25X8 and is declassified on June 30, 2035. Per 32 CFR 2001.22, para (e)(5), the "Declassify On:" should be written as 20350630.

103 Information reveals...

Retain
Classification
[25X2; EV]

NOTE: Declassify when the facility is closed and when no identical or similar facilities exist or no later than December 31, year of document plus 50 years, whichever occurs first; unless the information qualifies for a 50X exemption.

Explanation: The information in topic 103 is exempt from automatic declassification based on exemption 25X2. The *NOTE* will describe a specific event that must occur to declassify the information. A paraphrase of the note must be included on the "Declassify On" line on the document. If the specified event occurs before 50 years, the information will be declassified at that time, otherwise automatic declassification occurs at 50 years, unless exempted by a 50X topic in this guide.

104 The fact that...

Retain
Classification
[25X3; 40]

Explanation: The information in topic 104 is exempt from automatic declassification based on exemption 25X3 and should remain classified for 40 years. A document containing such information must bear the notation 25X3 followed by a date (yyyy/mm/dd) for declassification 40 years from the date of the document.

When the information is exempt from automatic declassification at 50 years and it may remain classified for up to 75 years, the following notation is used:

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105 Guidance topic

**Retain
Classification**
[50X1-HUM; 75],
[50X2-WMD; 75],
[50Xn; sched]

where

50X1-HUM indicates information that can clearly and demonstrably be expected to reveal the identity of a confidential human source or a human intelligence source, and is, therefore, not subject to automatic declassification for up to 75 years. No date, event, or duration is required on the classification stamp.

NOTE: 25X1-human is an obsolete declassification instruction. For instructions on the use of documents with 25X1-human declassification instructions, see Policy Bulletin 5, Declassification Instruction "25X1-human."

50X2-WMD indicates information that can clearly and demonstrably be expected to reveal key design concepts of weapons of mass destruction and is, therefore, not subject to automatic declassification for up to 75 years. No date, event, or duration is required on the classification stamp.

50Xn indicates the information is exempt from automatic declassification at 50 years.

n indicates the number of the exemption that applies.

sched indicates the schedule for declassification. The schedule will be a date, event, or duration beyond 50 years, but not to exceed 75 years.

Only 25X, 50X1-HUM, and 50X2-WMD exemptions may be applied to records reviewed in anticipation of automatic declassification at 25 years (i.e., in reviews conducted in 2018, for records dating between 1974 and 1998). Other than 50X1-HUM and 50X2-WMD, 50X exemptions may only be applied to records approaching automatic declassification at 50 years (i.e., in reviews conducted in 2018, for records dating between 1949 and 1973).

Records exempted under 25X shall be automatically declassified on December 31 of a year that is no more than 50 years from the date of origin of the record, unless an approved 50X exemption is applied within 5 years of the automatic declassification date. Records exempted under 50X shall be automatically declassified on December 31 of a year that is no more than 75 years from the date of origin of the record, unless an approved 75X exemption is later applied within 5 years of the automatic declassification date.

106 Information reveals... Do Not Retain

Explanation: The national security information in topic 106 is not exempt from automatic declassification at 25 years. The information may have statutory controls that prohibit its release. If the topic describes information likely to contain RD, FRD, or TFNI, it is marked "(potential for RD/FRD/TFNI)".

K. Obtaining Copies of a Guide

Unless otherwise indicated on the guide or by the DOE HQ classification office, local copying of a guide is permitted. However, to ensure that each person with a copy of a guide receives change notices and revisions, the person's name must be on a distribution list for that guide maintained by Headquarters or the local Classification Officer.

Inside the front cover of this guide is a Classification/Control Guidance Request form that may be used to obtain additional copies of a guide or to report distribution changes.

L. Basis of Exemption

Based on the exemption criteria contained in Section 3.3 of E.O. 13526, specific areas of DOE NSI have been identified that are unclassified or exempt from automatic declassification.

Information in the following areas is exempt from automatic declassification at 25 years. The basis for the exemption is shown in square brackets (e.g., [3.3(b) (2)]) meaning that the information is exempt based on Section 3.3(b), exemption criterion (2):

1. Safeguards and security information related to current security measures at DOE sites or security programs that could:

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- a. provide meaningful assistance to a malefactor contemplating theft of special nuclear material (SNM), a nuclear weapon, or weapon component;
- b. provide meaningful assistance to a malefactor contemplating sabotage of DOE nuclear facilities or assets;
- c. meaningfully assist a malefactor in composing a credible nuclear threat message;
- d. be exploited by foreign intelligence service to either enhance its intelligence collection efforts or thwart U.S. counterintelligence efforts; or
- e. provide meaningful assistance in gaining unauthorized access to currently classified information including that in secure communications or in automated information system (AIS) equipment and AISs.

[3.3(b)(1), (2), and (8)]

- 2. Transportation safeguards systems used for transporting nuclear weapons, components, and SNM relating to systems still in operation. Examples of these systems include, but are not limited to, details of the safe secure trailers, safe secure railcars, operational procedures, threats, and vulnerabilities. [3.3(b)(2)]

- 3. Compromise of exempt NSI. Such compromise information typically points to where the information can be found in the public domain. [3.3(b)(2)]

NOTE: The exemption for the information compromised also applies.

- 4. Unrecovered nuclear weapons and classified components which may provide information that might assist in unauthorized recovery of nuclear weapons or components with resultant compromise of nuclear weapons design information. [3.3(b)(2)]
- 5. Nuclear Emergency Support Team (NEST) assets, capabilities, equipment, procedures, or operations still being used to:

- a. search for and aid in the recovery of lost nuclear weapons or materials; and
- b. aid the Federal Bureau of Investigation in the event of a crime involving the theft or alleged theft of a nuclear weapon, an improvised nuclear device or a radiological dispersal device, or to commit any other crime involving nuclear weapons, explosives, devices, or nuclear materials.

Note that for most of our history, NEST stood for Nuclear Emergency Search Team. [3.3(b)(2) and (8)]

- 6. Proliferation of nuclear weapons information, particularly proliferation detection components or systems and methods for spoofing (giving false indications) and tampering, that could assist potential proliferators, hostile nations, and potential adversaries to develop, improve, or use nuclear weapons. [3.3(b)(2)]
- 7. DOE counterintelligence information or analyses which reveal sensitive information related to counterintelligence incidents, foreign intelligence services activities, sources, or counterintelligence equipment. [3.3(b)(1)]
- 8. Foreign government(s) or international organization(s) information which was provided to DOE, or DOE information provided to foreign government(s) or international organization(s), with the understanding that such information be kept in confidence. Such information includes, but is not limited to, information generated pursuant to agreements for cooperation or sensitive high-level energy discussions between DOE (or predecessor agency) officials and foreign government representatives. [3.3(b)(6) and (9)]
- 9. Naval Nuclear Propulsion Information that could assist a foreign adversary's ability to advance or develop their military capability or further their understanding of U.S. military capabilities and recurring operations including:

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|---|---|
| <ul style="list-style-type: none"> a. information pertaining to U.S. Navy nuclear propulsion plants (other than the reactor) and resulting vessel performance data; b. militarily significant information of nuclear support facilities; or c. nuclear fleet design and operating information with potential impact on foreign affairs of the Federal Government.
[3.3(b)(4), (6), and (9)] | <ul style="list-style-type: none"> 2. Design details and operating features that, if known, would aid in the defeat or bypass of fixed site security features. 3. Classified chemical/biological agents or simulants or significant improvements in them. 4. Exploitable information about agent dispersal. 5. Identification, design, or optimization of unique technologies for radiological dispersal (RDD) or radiation exposure. 6. Non-explosive RDD techniques. |
| <p>10. Chemical and biological defense information pertaining to C/B agents that would assist a Weapons of Mass Destruction (WMD) proliferator or terrorist organization. [3.3(b)(2)]</p> <p>11. Critical Energy Infrastructure information that could:</p> <ul style="list-style-type: none"> a. significantly assist a malevolent interest in the sabotage, destruction, or denial of critical energy infrastructure facilities, systems and resources; b. reasonably be expected to cause serious harm to foreign relations or foreign activities of the U.S.; or c. compromise intelligence activities, sources, or methods. <p>[3.3(b)(8)]</p> <p>12. Directed Nuclear Energy Systems and Nuclear Directed Energy Systems.
[3.3(b)(4)]</p> <p>The areas listed below have been determined to require exemption from automatic declassification at 50 years. Most identified areas of information pertain to the development, production, or use of weapons of mass destruction (WMD), as cited in E.O. 13526, Section 1.4 (h).</p> <ul style="list-style-type: none"> 1. Design details and operating features that, if known, would aid in the defeat or bypass of the Safe Secure Trailer. | <ul style="list-style-type: none"> 7. Information that would assist an adversary in using a radiological dispersal device or radiation exposure device. 8. Concepts, designs, and theories to convert a nuclear weapon into a power source for another type of weapon (i.e., Advanced Energy Conversion). 9. Theoretical or experimental studies that could be used in unique weaponizable ways, such as identification of lasing mediums or gases or solids (i.e., Advanced Materials Applications). 10. Necessary characteristics of a weapon to achieve a specific military goal or application of the technology to achieve a specific military goal or application of the technology for a military purpose (i.e., Military Requirements). 11. Location of an unrecovered nuclear weapon, classified component, or special nuclear material. 12. Information under the terms of a statute, treaty, or international agreement that cannot be declassified unilaterally, if the foreign government has requested protection beyond 50 years. 13. Naval Nuclear Propulsion design features which have been in use for over 50 years and are the basis for current equipment and systems |

OFFICIAL USE ONLY**M. Questions/Suggestions**

Any comments or suggestions may be forwarded through the local classification office to the Office of Technical Guidance Director using the Classification Issue/Comment Sheet inside the back cover of this guide. The completed comment sheet can be sent, as appropriate, to the following classified or unclassified addresses:

Classified Address

Office of Classification
ATTN: Office of Technical Guidance
| AU-62, (*Intended Recipient*)
U.S. Department of Energy
P.O. Box A
Germantown, MD 20875-0963

Unclassified Address

Office of Classification
ATTN: Office of Technical Guidance
| AU-62/Germantown Building
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1290

For questions concerning administrative aspects or distribution of the guide, please contact the Technical Guidance Administrator at (301) 903-3688.

CHAPTER 1

SAFEGUARDS AND SECURITY INFORMATION

A. General Information

This chapter provides guidance for determining if historical records containing DOE/National Nuclear Security Administration (NNSA) NSI pertaining to safeguards and security are to be declassified, have their classification retained beyond 25 or 50 years, or referred to another agency in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

Safeguards and security refers to the physical protection, control, and accountability of nuclear materials and the security of facilities and assets.

The best designed and most conscientiously operated protection system can be defeated by an adversary with sufficient time, information, and resources. Information concerning the protection of department facilities would be of great value to an adversary. The reason for continued protection of safeguards and security information is to deny an adversary information that would aid an adversary in: (1) planning an attack; (2) circumventing, bypassing, or disabling security system components; or (3) defeating protective force efforts to neutralize an attack.

Topical areas of DOE/NNSA safeguards and security interests in this chapter include: (1) physical protection of DOE assets; (2) protection of classified information including protection of automated information systems, communications security (COMSEC), and compromise of classified information; (3) vulnerabilities information; (4) control and accountability of nuclear materials; (5) malevolent dispersal of radioactive material; (6) nuclear threat message; and (7) technical surveillance countermeasures (TSCM).

The term automated information system (AIS) refers to "any equipment or interconnected system or subsystem or equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data, to include computer software, firmware, and hardware." Included in this definition are controllers, microprocessors, word processors, personal computers, automated office support systems (AOSS), memory typewriters, and other stand alone or special computer systems.

COMSEC refers to measures taken to deny unauthorized persons information derived from telecommunications of the United States (U.S.) Government related to national security and to ensure the authenticity of such communications. Communications security results from the application of security measures (including cryptosecurity, transmission security, and emission security) to systems generating, handling, processing, or using national security or national security-related information. It also includes the application of physical security measures to communications security information or materials. The classification of all COMSEC equipment and related documentation is determined by the Director, National Security Agency (NSA). Large amounts of classified information are channeled into communication centers and distributed via secure communications systems. COMSEC is vitally important to ensuring the integrity of these communications.

The purpose of the TSCM program is to detect and deter modern intelligence collection which uses equipment and devices incorporating state-of-the-art technology to penetrate targeted areas. Such intelligence gathering devices have been discovered in U.S. facilities throughout the world. The detection of a clandestinely installed device is extremely difficult.

OFFICIAL USE ONLY**B. Broad Guidance**

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Much information concerning safeguards and security, particularly general information regarding this subject area, is unclassified. However, certain information that would be beneficial to a malefactor in targeting, planning, or executing an attack against DOE/NNSA nuclear facilities, nuclear materials, or nuclear weapons, has properly been classified for national security reasons. Some of this classified safeguards and security information has lost its sensitivity with the passage of time and can be declassified.

However in certain cases, information 25 or more years old, concerning a specific vulnerability may still be of use to a malefactor and should retain classification.

Other safeguards and security information requires continued protection because it is indicative of methods, plans, systems, and operations in use today or evolved from earlier ones. Such information provides insight into current measures and warrants continued protection.

(b) (7)(E)

Certain information concerning Material Control and Accountability (MC&A) has lost its sensitivity with time. Historical information regarding Special Nuclear Material (SNM) inventory differences (IDs) for most DOE/NNSA sites would not be useful today to a malefactor in diverting or stealing SNM, or making a credible nuclear threat, and is, therefore, declassified. (b) (7)(E)

Information that can be protected and that would be useful to a malefactor in effecting a highly significant dispersal of radioactive material should remain classified.

In coordination with Department of Homeland Security, another responsibility of DOE/NNSA is the assessment of, and response to, nuclear threat messages. Threat messages received in the past have demonstrated the need to be prepared for this situation in the future. An important consideration in evaluating a threat message is the message's credibility. Techniques have been developed that attempt to establish this credibility. With regard to nuclear threat messages in general, the fact that a nuclear threat message was received by DOE/NNSA or other cleared agencies is no longer sensitive if revealed in historical documents over 25 years old.

Descriptions of TSCM capabilities and specific TSCM threat information are classified to prevent potential adversaries from acquiring information that will assist them in exploiting security program weaknesses or vulnerabilities. Procedures and standards are protected to restrict information that would aid an adversary's intelligence collection effort or make discovery of those collection efforts more difficult. Investigative methods, equipment, techniques, or indicators of techniques

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employed in TSCM are based upon information received through sensitive intelligence sources. To protect these sources, the methods, equipment, and techniques or indicators of techniques are classified. Facts uncovered by TSCM activities are classified to preclude adversaries from knowing that they have been detected and to avoid revealing DOE/NNSA capabilities or providing indicator of techniques.

Classification of DOE/NNSA safeguards and security NSI information found in historical records cannot be retained beyond 25 years or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, and potential RD or FRD. Documents containing information

classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked "(potential for RD/FRD)".

OFFICIAL USE ONLY**C. Topics****100 SAFEGUARDS AND SECURITY INFORMATION**

NOTE: Any 50X exemptions cited in topics below may be applied only to a record which is within 5 years of automatic declassification at 50 years. For example, in a review conducted in 2018, only records originated from 1968 to 1973 are potentially eligible for a 50X exemption. A record with a 50X exemption shall be automatically declassified on December 31st of a year no more than 75 years from the year the record was originated, unless an approved 75X exemption is applied no earlier than 70 years from its year of origin.

101 Threat description or Design Basis Threat (DBT) information in documents dated prior to January 1, 1980 **Do Not Retain**

102 Threat description, Graded Security Protection (GSP) or Design Basis Threat (DBT) information in documents dated after December 31, 1979

102.1 If it has not been superseded or can still be used to determine current information **Retain Classification [25X2; EV]**

NOTE: Declassify when the threat description, GSP/DBT, or GSP/DBT element has been superseded and can not be used to determine a current classified element or 50 years from the year of origin for the document, whichever occurs first; unless the information qualifies for a 50X exemption.

102.2 If it has been superseded and cannot be used to determine current information **Do Not Retain**

NOTE: Any information meeting this condition (such as a specified adversary capability) will be addressed specifically in current classification guidance for the DBT.

103 Selection criteria for assets that require protection because of national security concerns **Do Not Retain (potential for RD)**

NOTE: Currently, this applies to assets like nuclear weapons, Special Nuclear Material (SNM), and classified information. Information concerning SNM that can be used in an Improvised Nuclear Device (IND) is likely to be RD.

104 Policy information, such as unclassified DOE orders, safeguards and security guides, security and classification policy, requirements, and procedures information **Do Not Retain**

105 Security plan or security system design for a facility or site of national security interest

105.1 Facility and site description not revealing classified information **Do Not Retain**

105.2 System design, operation, site specifics, etc., if the specific plan or system is known to be obsolete and the information is not transferable to another site **Do Not Retain**

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105.3 Information about operational security system(s)

NOTE: This includes intrusion detection systems, sensors, barriers, protective force vehicles, etc.

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(b) (7)(E)

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105.4 Protective personnel requirements, armaments, response times, planned responses for protecting critical assets, contingency plans, etc.

(b) (7)(E)

(b) (7)(E)

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(b) (7)(E)

105.5 Vulnerability information

NOTE: Vulnerability information pertains to deficiencies of security equipment or operations/procedures at DOE/NNSA sites or facilities, as well as methods and techniques to defeat or lower the expected performance of security system components or elements and the assessed performance of any security system component or element still in use.

105.5.1 In documents dated prior to January 1, 1980

Do Not Retain

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106 Automated Information Systems (AIS)

106.1 Obsolete systems no longer in use by DOE/NNSA

Do Not Retain

106.2 Security measures

Do Not Retain**OFFICIAL USE ONLY**

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106.3 Government or Government-supported contractor analyses of automated information system security **Do Not Retain**

NOTE: This includes risk analyses.

107 Communications security (COMSEC) **Refer**

NOTE: Documents with classification markings containing COMSEC information should be forwarded to the National Security Agency (NSA) for declassification review.

108 Cryptoprinciples **Refer**

NOTE: Refer to NSA for declassification review.

109 Decryption or cryptanalysis information **Refer**

NOTE: Refer to NSA for declassification review.

110 TEMPEST Information **Refer**

NOTE: Refer to NSA for declassification review.

111 Control and accountability of DOE nuclear materials (SNM and other nuclear materials)

NOTE: Also see Chapter 4 – Unrecovered Nuclear Weapons, Classified Components, and SNM.

111.1 Inventory difference information **Do Not Retain
(potential for
RD/FRD)**

NOTE 1: Actual item masses, or information from which actual item masses may be derived, may be RD. Refer to Appendix A.

NOTE 2: Information for the Y-12 and Rocky Flats sites prior to 1994 may be RD.

111.2 Total site inventory of nuclear materials **Do Not Retain**

NOTE: Applies only to inventory of nuclear materials at the total site level that is classified as NSI. Inventories at less than a site level, for unclassified programs such as research reactors, critical assemblies, etc., are unclassified.

111.3 Inventory difference of source material **Do Not Retain**

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112 Operations security (OPSEC)

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113 Malevolent dispersal of radioactive material**113.1 Highly significant malevolent dispersal (see Definitions) scenarios and vulnerability analyses**

113.1.1 Information that is easily found in the open literature or is basic science **Do Not Retain**

113.1.2 Information not found in the open literature AND is not basic science AND can still be exploited by an adversary to cause a highly significant malevolent dispersal **Retain Classification [25X2; EV]**

NOTE: Declassify when the facilities and/or transportation systems involved in the scenario are no longer in use or no later than December 31, year of document plus 50 years from the year of origin for the document, whichever occurs first; unless the information qualifies for a 50X exemption.

113.2 Results of tests and dispersal experiments that could be applied to malevolent dispersals from a DOE facility **Retain Classification [25X2; EV]**

NOTE: Declassify when the material subject to dispersal has been removed from the specific DOE facility and is not located at any similar facility or no later than December 31, year of document plus 50 years from the year of origin for the document, whichever occurs first; unless the information qualifies for a 50X exemption..

113.3 Details of methods that could be applied to initiate a highly significant malevolent dispersal

113.3.1 Generic description of methods that could be used to disperse radioactive material **Do Not Retain**

NOTE: For example, fire, explosives.

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113.3.2 Detailed description of a method that could be used to disperse radioactive material

**Retain
Classification
[25X2; EV]**

NOTE: Declassify when the facilities and/or transportation systems involved in the scenario are no longer in use, or no later than December 31, year of document plus 50 years from the year of origin for the document, whichever occurs first; unless the information qualifies for a 50X exemption..

114 Nuclear threats

114.1 Fact that a nuclear threat message was received by a facility or organization including the text of the message, if no other classified information (RD, FRD, or NSI) is revealed

**Do Not Retain
(potential for
RD/FRD)**

114.2 General contents of a threat message, case histories or general studies without exploitable details

Do Not Retain

114.3 Questions chosen to extract information from malefactors

Do Not Retain

NOTE: This topic applies to the standard set of questions provided to employees for response to a directly received threat message.

115 Technical Surveillance Countermeasures (TSCM)

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(b) (7)(E)

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CHAPTER 2

TRANSPORTATION SAFEGUARDS SYSTEMS

A. General Information

This chapter provides guidance for determining if historical records containing DOE/NNSA NSI, pertaining to the transportation safeguards system (TSS) are to be declassified, have their classification retained beyond 25 or 50 years, or referred to another agency in accordance with the provisions of E.O. 13526.

The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.

Transportation safeguards system(s) refers to the equipment, personnel and procedures used to ship nuclear weapons, weapons components and special nuclear material between DOE/NNSA, Department of Defense (DoD), and contractor facilities. Guidance in this chapter applies to all such transport whether by the current Office of Secure Transportation (OST) or precursor methods, organizations, or contractors [e.g., U.S. Air Force Special Airlift Mission (SAM) flights, DOE/NNSA Albuquerque Shipment Security Section, Transportation Safeguards Division, etc.].

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

The DOE recognizes the importance of declassifying as much information about its historic activities as possible. However, declassifying significant additional information about transportation safeguards systems could directly impact national security.

Nuclear materials are never more vulnerable to attempted acts of theft or sabotage than when they are being transported. Personnel and resources to protect shipments are inherently limited to those accompanying them. Therefore, information concerning

contents, protective equipment, and procedures, which would be useful to an adversary planning an attempt to steal or otherwise disrupt a shipment, requires strict control. Some of the equipment and procedural protection currently used by the OST is based on systems which have been in use for over 25 years. Therefore, historical records of transportation safeguards systems that are 25 years or older would have value to an adversary.

Information about shipment contents for nuclear weapon(s), device(s), weapon component(s), or military first destinations (MFD) is usually RD or FRD. Shipping documents are classified according to the information they reveal. For example, classification of shipping requests range from CNSI (for models, mock-ups, and SNM shipments not related to the weapon program) to SRD (for nuclear weapon shipments and shipments of SNM which would reveal classified production rates).

NOTE: The reporting identification symbol (RIS) used as identification does not provide protection of information.

Methods used to gather information about perceived threat(s) to particular shipment(s) or the transportation safeguards system in general; specific techniques used to collect information concerning threats to TSS trips; sources of information, not officially released, used to assess the credibility and level of threat(s) to TSS trips; and technical criteria, methodology and techniques used to assess threat(s) to TSS trips need to remain classified to protect ongoing operations.

Information is sensitive if it is uniquely related to transportation safeguards system operations as compared to those of commercial carriers. Release of such information could reasonably be expected to assist individuals in disrupting or otherwise interfering with these operations. Information which would assist an adversary in planning or executing an attack, such as current design information and

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protective features of Safe Secure Trailer (SST), Safe Secure Railcar (SSR), and Safeguards Transporter (SGT) vehicles must remain classified to protect future operations.
(b) (7)(E)

The notation 50X2; 75 next to a topic indicates that the information is exempt from automatic declassification after 50 years, as it reveals key design and operating features of the defenses used to prevent the theft of a nuclear weapon.

Information revealing tactics and responses of the courier force to defend a shipment must also continue to be protected, as are threat scenarios and official evaluations of planned response effectiveness.

Most operational information concerning weapons shipments is classified as FRD because of its relationship to weapons production and stockpile information. Estimates of plutonium masses in nuclear weapons, or

nuclear weapons components, which can be derived from special loading rules for plutonium shipments, are RD.

Classification of DOE/NNSA transportation safeguards and security NSI information found in historical records cannot be retained beyond 25 or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, and potential RD or FRD. Documents containing information classified by statute, such as RD and FRD (Atomic Energy Act of 1954), must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked "(potential for RD/FRD)."

OFFICIAL USE ONLY**C. Topics****200 TRANSPORTATION SAFEGUARDS SYSTEMS**

CAUTION: Information about shipment contents for nuclear weapon(s), device(s), weapon component(s), or military first destinations (MFD) is usually RD or FRD.

(b) (7)(E)

201 Information concerning shipments of nuclear weapons and/or nuclear components of nuclear weapons

**Do Not Retain
(potential for
RD/FRD)**

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(7)
(E)

(b) (7)(E)

(b) (7)(E)

205 Design or operational features of trailer components including the access denial features that if known would aid in defeating or bypassing a trailer security system in current use

(b) (7)(E)

(b) (7)(E)

(b) (7)(E)

207 Information that would assist an adversary in defeating a trailer component including the access denial features

(b) (7)(E)

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CHAPTER 3

COMPROMISE OF CLASSIFIED INFORMATION

A. General Information

This section provides guidance for determining if historical records pertaining to the compromise of classified information should be declassified.

Compromised information results from the unauthorized disclosure or release of classified information. Compromised information is not automatically declassified because of its unauthorized disclosure (see section 1.1(c) of Executive Order (E.O.) 13526). In addition, as described below, information about compromises and follow-on investigations may be classified if an Original Classification Authority determines it is necessary to limit damage, conceal security system vulnerabilities, and preclude further compromise. In some cases, no attempt is made to retrieve compromised information as such attempts would call attention to the compromise, resulting in greater damage to the national security than if no such efforts were made.

Information released pursuant to an authorized official U.S. Government release is not compromised information. When a U.S. Government release occurs, including through any of the following means, a reclassification action following the provisions of section 1.7(c) of E.O. 13526 must be conducted to exempt information.

Official U.S. Government releases include information released in:

- U.S. Government publications;
- U.S. Government websites;
- Testimony before the Congress by U.S. Government officials;
- Testimony in judicial proceedings by U.S. Government officials;
- U.S. Government filings in judicial proceedings;

- Prior authorized declassification actions that have been released to the public; and/or
- Statements by the President, the Vice President, or in official White House releases.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

(b) (7)(E)

Information about compromises and follow-on investigations are classified to limit damage, conceal security system vulnerabilities, and preclude further compromise. If revealed, such information assists adversaries by: (a) alerting them to the fact of a compromise; (b) providing details that would confirm the value of the compromised information; (c) providing information on vulnerabilities leading to or resulting from the compromise; (d) providing insight into investigative and countermeasure procedures; and/or (e) confirming information that would otherwise remain unclear.

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When reviewing information regarding compromises, the information remains classified if (1) the information contained in the documents describing the compromise is sufficient to materially assist an adversary in locating the compromised information, and (2) the additional criteria, described below, is satisfied. Regarding the first requirement, the statement " <i>The New York Times</i> in 1965 published classified information" does not provide such material assistance, as the volume of material is too great to reasonably search without additional "keys." (b) (7)(E)	(b) (7)(E)
	(b) (7)(E)
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	(b) (7)(E)
	(b) (7)(E)
(b) (7)(E)	If information falls into one of the categories of section 1.7(a), then the information cannot be classified.
(b) (7)(E)	In addition, the information must meet the damage criteria established in section 1.1(a)(4) of E.O. 13526, which provides that information may only be classified if its unauthorized disclosure "reasonably could be expected to result in damage to the national security, which includes defense against transnational terrorism, and the original classification authority is able to identify or describe the damage." Accordingly, if this damage standard is not met, the information must be declassified. See also section 3.1(a) of E.O. 13526 ("information shall be declassified as soon as it no longer meets the standards for classification under this order.").
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(b) (7)(E)	

OFFICIAL USE ONLY**C. Topics****300 COMPROMISE OF CLASSIFIED INFORMATION**

(b) (7)(E)

(b) (7)(E)

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(b) (7)(E)

301 Fact of compromise without sufficient information to assist an adversary in locating the compromised information

Do Not Retain

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CHAPTER 4

UNRECOVERED NUCLEAR WEAPONS, CLASSIFIED COMPONENTS, AND SNM

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to U.S. unrecovered nuclear weapons and classified components are to be declassified or have their classification retained beyond 25 or 50 years in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

Nuclear weapons and their classified components, in the custody of the DOE and DoD in many locations, are subjected to environments and/or activities which can result in a lost or missing weapon, classified component, or SNM. Most such incidents have occurred during an aircraft crash or other mishap. Loss of weapons or components can also occur during logistical movement by aircraft, railcar, seagoing vessel, or highway vehicle as a result of accident, or theft. Losses can also occur in a laboratory or a manufacturing facility. (Chapter 5 provides classification guidance on equipment and techniques used to search for, locate, identify, evaluate, and recover lost weapons or components. Documents regarding DoD capabilities to perform the same mission, or DOE support to the DoD, shall be coordinated with the DoD.)

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Information which could assist in the unauthorized locating or recovery of a nuclear weapon, classified component, or SNM must be protected until the item is recovered. An item which was considered unrecoverable at time of loss, may, at a later date, become

recoverable due to advances in technology. Therefore, information concerning the lost item and the circumstances of the loss must be protected to prevent the unauthorized recovery of the item, compromise of classified design information, and access to special nuclear material.

Much of the information about nuclear weapons accidents/incidents involves RD or FRD. This includes: weapon design characteristics, safety measures, activation systems, components configuration and composition, and design and operational considerations. Of particular concern are storage locations and the weapon materials that may have been dispersed into the external environment (along with measurements of radioactivity directly following the accident).

Classification of DOE/NNSA NSI information on unrecovered nuclear weapons and classified components found in historical records cannot be retained beyond 25 years or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, TFNI, and potential RD or FRD. Documents containing information classified by statute, such as RD and FRD (Atomic Energy Act of 1954), must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Documents containing TFNI must received special markings showing that they are not subject to automatic declassification as specified in E.O. 13526. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD/TFNI. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

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Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).”

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C. Topics

400 UNRECOVERED NUCLEAR WEAPONS, CLASSIFIED COMPONENTS, AND SNM

NOTE: Any 50X exemptions cited in topics below may be applied only to a record which is within 5 years of automatic declassification at 50 years. For example, in a review conducted in 2018, only records originated from 1968 to 1973 are potentially eligible for a 50X exemption. A record with a 50X exemption shall be automatically declassified on December 31st of a year no more than 75 years from the year the record was originated, unless an approved 75X exemption is applied no earlier than 70 years from its year of origin.

401 Information about the location of an unrecovered nuclear weapon, classified component, or SNM

401.1 Officially released

Do Not Retain

NOTE: Examples of "officially released" information are identified in Appendix B. Refer to DOE HQ classification office for any future updated definition.

401.2 That could assist an adversary to locate and/or recover the nuclear weapon, classified component, or SNM

NOTE: Refer to topic 111 and weapons and safeguards and security guidance. Submit to DOE HQ classification office for resolution if referenced guidance is inadequate.

401.2.1 In a document at its 25-year review

**Retain
Classification
[25X2; 50]
(potential for
RD/FRD)**

401.2.2 In a document at its 50-year review

**Retain
Classification
[50X2; 75]
(potential for
RD/FRD)**

401.3 That could not assist an adversary to locate and/or recover the nuclear weapon, classified component, or SNM

**Do Not Retain
(potential for
RD/FRD)**

402 Information about the existence or details of a particular weapon accident or an unrecovered nuclear weapon, component, or SNM

402.1 Officially released

Do Not Retain

NOTE: Examples of "officially released" information are identified in Appendix B. Refer to DOE HQ classification office for any future updated definition.

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	402.2 That could assist an adversary to locate and/or recover the nuclear weapon, classified component, or SNM	<i>NOTE:</i> Refer to topic 111 and weapons and safeguards and security guidance. Submit to DOE HQ classification office for resolution if referenced guidance is inadequate.
	402.2.1 In a document at its 25-year review	Retain Classification [25X2; 50] (potential for RD/FRD)
	402.2.2 In a document at its 50-year review	Retain Classification [50X2; 75] (potential for RD/FRD)
	402.3 That could not assist an adversary to locate and/or recover the nuclear weapon, classified component, or SNM	Do Not Retain (potential for RD/FRD)
	<i>NOTE:</i> Documents dealing with an accident or incident that occurred while a weapon or component was in DoD custody may warrant referral to DoD.	

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CHAPTER 5

NUCLEAR EMERGENCY SUPPORT TEAM

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to radiological emergency response capabilities, [e.g., Nuclear Emergency Support Team (NEST),] are to be declassified, have their classification retained beyond 25 or 50 years, or referred to another agency, in accordance with the provisions of E.O. 13526. For the purpose of this guide, the term NEST includes Nuclear Emergency Support Team, Nuclear Emergency Search Team, and all similar or predecessor systems, organizations or capabilities within DOE. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

The NEST is managed and directed by the NNSA Office of Emergency Response and the Nevada Site Office under authority delegated by the Director of the Office of Emergency Operations. NEST has special expertise and equipment to:

- a. locate lost, stolen, or diverted SNM;
- b. locate, identify, and provide assistance in rendering safe Improvised Nuclear Devices (INDs), nuclear weapons, Radiological Dispersal Devices (RDDs), or Radiation Exposure Devices (REDs); and
- c. aid the Federal Bureau of Investigation (FBI) in the event of a crime involving the theft or alleged theft of special nuclear material, nuclear weapons, INDs, RDDs, or REDs.

NEST typically operates in an interagency environment under the direction of a Lead Federal Agency (LFA) – usually the FBI for operations within the U.S. and the Department of State (DOS) for operations outside the U.S. The FBI also has primary responsibility for

rendering safe (disabling) nuclear threat devices, but relies heavily on DOE/NNSA expertise in this historic NEST mission area.

Specialized equipment available to NEST includes the Surveillance Accident Nuclear Detection System which has evolved over time. NEST equipment includes radiation detection systems developed for surveying an area for lost, stolen, or diverted nuclear weapons and special nuclear material. It is also used in delineating the dispersal of radioactive material following a nuclear accident.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

While the general ability, in either ground or air search modes, to locate radiation sources is unclassified, it is important to protect details of NEST capability to detect lost, stolen or diverted nuclear weapons or special nuclear material. This is especially important when there are lower limits in the ability of NEST equipment to locate the target materials which, if known by an adversary, could be used to defeat NEST equipment and/or procedures. Operational procedures must also be protected to deny a potential adversary the ability to develop measures to counter the rapid execution of the NEST emergency response plan. This is particularly important in view of increased terrorist activities.

(b) (7)(E)

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Information concerning NEST equipment and system capabilities, its limitations, and its current operational procedures, are the foundation of national security emergency preparedness plans relating to a radiological emergency that are anticipated to remain in effect for the foreseeable future. It is expected that improvements in NEST capabilities will be evolutionary, not revolutionary, in nature and, therefore, continued protection is required.^{(b) (7)(E)}

Information describing the location of overseas missions, exercises, or drills could reveal weapon storage locations and thus has the potential to be FRD. Similarly, information associated with these NEST activities could contain classified weapon design information and could, therefore, be RD.

^{(b) (7)(E)}

^{(b) (7)(E)}

Classification of DOE/NNSA NEST NSI information found in historical records cannot be retained beyond 25 or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, and potential RD or FRD. Documents containing information classified by statute, such as RD and FRD (Atomic Energy Act of 1954), must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked "(potential for RD/FRD)."

OFFICIAL USE ONLY**C. Topics****500 NUCLEAR EMERGENCY SUPPORT TEAM**

501 Details of a NEST mission, exercise, drill, or training

501.1 Identity of personnel involved

(b) (7)(E)

501.2 Dates

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(b) (7)(E)

501.3 Location

(b) (7)(E)

501.4 Indications of foreign involvement

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(b) (7)(E)

501.5 Scenario details

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502 General NEST capabilities

502.1 (b) (7)(E)
(b) (7)

(b) (7)(E)

502.2 Equipment capabilities

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503 Search activities and procedures

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504 Activities and procedures to gain access to nuclear threat devices

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(b) (7)(E)

505 Activities and procedures to diagnose nuclear threat devices

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506 Activities and procedures to neutralize or "render safe" nuclear threat devices

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507 Information obtained by DOE or DOE contractor personnel on threats, thefts or diversions of nuclear material, etc., used by NEST

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CHAPTER 6

VULNERABILITY AND HARDENING

A. General Information

This chapter provides guidance for determining if historical records containing NSI, pertaining to vulnerability, hardness, and hardening of nuclear weapon delivery vehicles (e.g., aircraft, missile) to nuclear weapons effects are to be referred to another agency in accordance with the provisions of E.O. 13526.

The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.

The susceptibility of a weapon system or its parts to damage or destruction as a result of a defensive effort, such as a nuclear burst, or to the effect of a nearby explosion of a U.S. nuclear weapon (fratricide) is its vulnerability. Vulnerability and hardening information pertaining to nuclear warheads, warhead components, and reentry bodies/reentry vehicles is RD or FRD and not a subject of this guide. Vulnerability and hardening information pertaining to delivery systems (e.g., missiles or aircraft) is NSI and is a subject of this guide.

It is important to separate the concepts of hardening and hardness. Hardness refers to resistance to damage from radiation or other effects; hardening refers to steps taken to increase hardness. Many factors, including materials of construction, space, and weight limitations affect hardness. Hardness of a weapon or component may result from intrinsic hardness, hardening measures, or both.

Vulnerability to an enemy's defenses or fratricide effects is a vital concern. Hardening is more often required in long-range strategic weapons than in tactical missiles, aircraft delivered bombs, or battlefield weapons.

When a system or component is to be hardened, the maximum severity of the environment in which it is to operate is specified. Hardness specification cannot be arbitrarily high, as cost, space, weight, and technology limit what can be achieved. The objective of hardening is to improve a weapon's

resistance to fratricide and to substantially increase the effort an adversary would have to make to defeat it, and, therefore, to increase the weapon's deterrent value.

Delivery vehicles may be hardened against nuclear outputs and effects including: neutrons, x-rays, gamma rays, nuclear electromagnetic pulse (EMP), blast, and thermal effects. The maximum severity of each effect to which a nuclear weapon system is to be hardened, also referred to as system level, is specified in the stockpile-to-target sequence document.

Various forms of radiation shielding are used to accomplish hardening with materials and techniques selected for each specified effect. Due to the high energy of gamma rays and the weight and thickness of shielding required to stop them, shielding a weapon system against gamma rays is impractical. Hardening against gamma rays is primarily concerned with protection against the effects of gamma rays interacting with the media surrounding the burst. This interaction is responsible for EMP, which in turn causes electrical currents and voltages to be generated within the system and may result in either transient or permanent damage. Blast protection is often provided by paying special attention to the mechanical ruggedness of weapon structures present for other purposes. Hardening of electronic systems and discrete semiconductor devices to x-ray effects is a major technical discipline in its own right. Hardness is generally achieved by special design techniques and carefully controlled processing or fabrication measures.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

OFFICIAL USE ONLY

Vulnerability, hardness and hardening information is classified to deny an adversary information that might help defeat that weapon or to develop similar hardening capabilities. These concerns apply equally to information regarding current and past systems.

Although most generic information about the nature and physics of weapon x-ray output and effects has been declassified, nearly all information about x-ray hardening materials and shielding techniques remains classified.

When not applied to a particular weapon's hardening measures, 25-year old information about most materials and methods used to harden against effects other than x-rays is not classified. This is true for two main reasons: (1) materials and general shielding methods of practical use against each nuclear burst effect can be deduced from the unclassified physics of that effect; and (2) many hardening techniques come from, or are the same as, unclassified techniques used in nuclear energy production. Other applications of this technology are: radiation and neutron shielding for reactor and space-borne systems, electromagnetic radiation and radio frequency shielding and avoidance methodology, and shielding for radiation effects in semiconductors and electronics. Nearly all generic hardening information has been declassified, or never was classified. New developments in hardening technology were often classified until their importance was evaluated and need for continued classification was determined.

Classified information about a delivery vehicle and its components is NSI and is under the purview of the DoD. The same is true for design information, hardware, and test analyses that reveal a specific delivery vehicle's overall vulnerability or hardness level for any effect. Information describing adverse conditions related to delivery vehicles that seriously jeopardize a strategic or other major weapon capability may be TSNSI and should be referred to the DoD for a classification determination. Whereas, information describing adverse conditions related to nuclear warheads, warhead components, and reentry bodies/reentry vehicles is FRD. Hardening information that does not reveal hardness levels for a given nuclear weapon delivery vehicle is nearly all unclassified, except in the area of x-ray hardening. In dealing with any effect,

weapon output (neutrons, gamma rays and x-rays) information is presumed to be RD. See *Joint DOE/DoD Topical Classification Guide for Weapon Output (U)*.

NOTE: Vulnerability and hardening information concerning nuclear warheads and reentry bodies/reentry vehicles is FRD. Some vulnerability and hardening technology is RD. Because nuclear weapon delivery systems are usually designed to balance the performance of the delivery vehicle with that of the warhead, documents that reveal delivery vehicle information may also reveal RD or FRD warhead information that is not appropriately marked. Similarly, threat levels may be based on outputs of U.S. weapons which are RD or FRD. Reviewers must be particularly alert to this possibility and refer all questions to the DOE HQ classification office.

NSI information pertaining to vulnerability, hardness, and hardening of nuclear weapon delivery vehicles to nuclear weapons effects found in historical records, 25 years or older must be referred to the Department of Defense. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, TFNI, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Documents containing TFNI must receive special markings showing that they are not subject to automatic declassification as specified in E.O. 13526. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD/TFNI. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked "(potential for RD/FRD)."

OFFICIAL USE ONLY**C. Topics****600 VULNERABILITY AND HARDENING**

601	Raw intelligence information concerning the output of nuclear weapons other than United States or United Kingdom nuclear weapons	Refer (potential for RD/FRD/TFNI)
	<i>NOTE:</i> Refer to the Director, National Intelligence, or the agency with purview over the specific intelligence information.	
602	Vulnerability, hardness, or hardening of a specified delivery vehicle	Refer (potential for RD/FRD)
	<i>NOTE 1:</i> This includes threat levels, minimum sure kill level, maximum sure-safe level and full-scale test levels.	
	<i>NOTE 2:</i> Refer to appropriate DoD component for review.	
603	Delivery vehicle component hardness that reveals overall delivery vehicle hardness level	Refer (potential for RD/FRD)
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
604	Delivery vehicle component hardness to	
	604.1 X-ray effects	Refer (potential for RD/FRD)
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
	604.2 Other effects	Refer
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
605	Information that can be used for an evaluation of a delivery vehicle's susceptibility to weapon effects	Refer (potential for RD/FRD)
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
606	Test levels for simulation testing	
	606.1 Corresponding to a delivery vehicle hardness level	Refer (potential for RD/FRD)
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
	606.2 Otherwise	Refer
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
607	Information revealing the effects on the performance of delivery vehicles and their individual components resulting from x-ray exposure at any level	Refer (potential for RD/FRD)
	<i>NOTE:</i> Refer to appropriate DoD component for review.	
608	Identification of material(s) or constructs used for x-ray hardening, delivery vehicle specified or unspecified	Refer (potential for RD/FRD)
	<i>NOTE:</i> Refer to appropriate DoD component for review.	

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	<p>609 Selection of a material for a particular delivery vehicle use because it is less vulnerable to hot or cold x-ray effects</p> <p><i>NOTE:</i> Refer to appropriate DoD component for review.</p>	<p>Refer (potential for RD/FRD)</p>
	<p>610 Design information for countering x-ray effects which reveals hardening or vulnerability levels of delivery vehicles</p> <p><i>NOTE:</i> (b) (7)(E) Refer to appropriate DoD component for review.</p>	<p>Refer (potential for RD/FRD)</p>
	<p>611 Packaging and arrangement techniques that are designed to reduce x-ray vulnerability of delivery vehicles which reveal hardening or vulnerability levels of the delivery vehicle or their components</p> <p><i>NOTE:</i> Refer to appropriate DoD component for review.</p>	<p>Refer (potential for RD/FRD)</p>
	<p>612 Test specifications, results, or analyses pertaining to x-ray vulnerability or hardening of delivery vehicles which reveal materials or constructs used for hardening, vulnerability or hardness levels, or significant degradation of a delivery vehicle or its performance</p> <p><i>NOTE:</i> Refer to appropriate DoD component for review.</p>	<p>Refer (potential for RD/FRD)</p>
	<p>613 Packaging and arrangement techniques that are designed to reduce neutron vulnerability of delivery vehicles which reveal overall hardening or vulnerability levels of the delivery vehicle (especially neutron shielding materials and techniques)</p> <p><i>NOTE:</i> Refer to appropriate DoD component for review.</p>	<p>Refer (potential for RD/FRD)</p>
	<p>614 Information revealing overall delivery vehicle hardness levels to blast or thermal effects</p> <p><i>NOTE:</i> Refer to appropriate DoD component for review.</p>	<p>Refer (potential for RD/FRD)</p>

OFFICIAL USE ONLY

CHAPTER 7

HIGH-ALTITUDE NUCLEAR WEAPONS EFFECTS INFORMATION

A. General Information

This chapter provides guidance for determining if historical records containing NSI, pertaining to high-altitude nuclear weapons effects are to be referred to another agency in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

In the early years of nuclear testing, little effort was devoted to determining the effect of air density at high altitudes upon the partitioning of primary weapon energy output into blast, and thermal and nuclear (i.e., neutron and gamma) radiation. The first test addressing this area was the HA (High Altitude) shot in the Teapot Series on April 6, 1955. The weapon was airdropped and detonated at 40,000 feet with a yield of 3 kt. The test was intended to study the energy partition phenomena as a function of air density in the region from 4,000 to 40,000 feet. On April 28, 1958, the balloon launched Yucca shot in the Hardtack Phase I series was detonated at 86,000 feet. During test series in the remainder of 1958 and in 1962, a total of 10 rocket-launched "high altitude" shots were conducted. Based on these tests, it was determined that the interaction of the weapon energy with the surroundings (i.e., energy partition) at high-altitude is markedly different from that at lower altitudes. A "high altitude burst" as defined in *The Effects of Nuclear Weapons*, (Glasstone, 1962; Glasstone and Dolan, 1977), is one in which the explosion takes place at an altitude in excess of 100,000 feet. In the context of the Limited Test Ban Treaty, a high-altitude detonation is defined as one above 250,000 feet. For the purposes of this guide, the weapon effect phenomena definition from *The Effects of Nuclear Weapons* is used to identify high-altitude tests. However, the HA and Yucca shots, although conducted below this altitude, are also included.

When a nuclear weapon is detonated at high altitude, there is little or no air present in which to deposit the radiative output of the weapon. Therefore, a radiation opaque fireball does not form, other attenuation effects are minimized, and the radiation can travel great distances while remaining at significant energy levels. One result of such detonations can be widespread radio and radar blackout.

The United States has performed a limited number of high-altitude nuclear weapon effects tests to gather data about these phenomena. These tests are identified in Section D of this chapter.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Theoretical or generic information about high-altitude phenomenology, including radio frequency blackout phenomena, is unclassified. Most generic nuclear weapon effects information has already been released for civil defense or scientific purposes. For example, the DTRA [formerly Defense Special Weapons Agency (DSWA), Defense Nuclear Agency (DNA), Defense Atomic Support Agency (DASA), and Armed Forces Special Weapons Project (AFSWP)], have published a series of unclassified reports that discusses the operations and purposes of DoD tests, including high-altitude tests. In the relatively infrequent instances where effects information remains classified, the overriding reason is the protection of classified nuclear weapon design (RD), outputs (RD and FRD), yield (FRD), or vulnerability and hardness information about a specific weapon. Some information about high-altitude phenomenology and radio frequency blackout is classified as NSI. The availability of data on high-altitude tests is extremely limited. There is no opportunity to obtain additional data without a high-altitude nuclear test, which is prohibited by the 1963 Limited Test Ban Treaty. Therefore,

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retaining classification of data and analyses of data from U.S. high-altitude tests effectively denies such data to all potential adversaries. For an unclassified treatment of the results of these tests, see *The Effects of Nuclear Weapons*, an unclassified publication, by Glasstone and Dolan (1977).

High altitude effects NSI information found in historical records must be referred to the Defense Threat Reduction Agency for review. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, TFNI, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy

Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).”

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C. Topics

700 HIGH-ALTITUDE NUCLEAR WEAPONS EFFECTS INFORMATION

- | | |
|---|--|
| 701 Empirical data from nuclear tests conducted at high altitudes as defined herein

<i>NOTE:</i> Refer to DTRA for review. | Retain
Classification
[50X2-WMD]
(potential for
RD/FRD) |
| 702 Theory and generic descriptions of high-altitude phenomenology and radio frequency blackout | Do Not Retain |
| 703 Results of tests conducted at high altitudes as defined herein

<i>NOTE:</i> Refer to DTRA for review. | Retain
Classification
[50X2-WMD]
(potential for
RD/FRD) |
| 704 Previously declassified high-altitude test information

<i>NOTE:</i> See Section D, below. | Do Not Retain |

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D. Previously Declassified High-Altitude Test Information

1. A total of 12 (10 rocket, 1 airdrop, 1 balloon) nuclear weapons effects tests were conducted to study the effect of air density (altitude) on weapon output (i.e., thermal/blast energy partition). Although the HA and Yucca shots (see list below) do not meet the 100,000 ft minimum burst height for onset of high-altitude effects, it is appropriate they be included herein as they were instrumental in determining this lower altitude limit. Officially announced unclassified information about these tests is provided in DOE/NV 209 (Rev. 16), *United States Nuclear Tests, July 1945 through September 1992*, September 2015. Unclassified information about high-altitude test results can also be found in *The Effects of Nuclear Weapons* by Glasstone and Dolan (1977).

Test	Operation (DOE/DOD)	Type	Date	Yield Range	Altitude ^a
HA	Teapot	Airdrop	04/06/55	3 kt	40,000 ft
Yucca	Hardtack I/Newsreel	Balloon	04/28/58	1.7 kt	86,000 ft
Teak	Hardtack I/Newsreel	Rocket	08/01/58	3.8 Mt	252,000 ft
Orange	Hardtack I/Newsreel	Rocket	08/12/58	3.8 Mt	141,000 ft
Argus I	Argus	Rocket	08/27/58	1.7 kt	~300 miles
Argus II	Argus	Rocket	08/30/58	1.7 kt	~300 miles
Argus III	Argus	Rocket	09/06/58	1.7 kt	~300 miles
Starfish Prime	Storax/Dominic I (Fishbowl)	Rocket	07/09/62	1.4 Mt	250 miles
Checkmate	Storax/Dominic I (Fishbowl)	Rocket	10/20/62	low	10s of miles
Bluegill 3 Prime	Storax/Dominic I (Fishbowl)	Rocket	10/26/62	sub-megaton	10s of miles
Kingfish	Storax/Dominic I (Fishbowl)	Rocket	11/01/62	sub-megaton	10s of miles
Tightrope	Storax/Dominic I (Fishbowl)	Rocket	11/04/62	low	10s of miles

^a Altitude is expressed in feet/miles. Historical documents would most likely contain measurements expressed in these units.

2. For all NSI documents discussing high-altitude tests (at an altitude in excess of 100,000 feet), initially consult DOE/NV 209 or consult *The Effects of Nuclear Weapons*. If the only information in the document(s) is also in those publications, then the information is unclassified. Any elaboration beyond the information in those publications should be referred to DTRA under topics 701 and 703 above (for weapons effects) or will generally be RD if device design is revealed.
3. [Deleted]
4. High-altitude tests Checkmate, Bluegill 3 Prime, Kingfish, and Tightrope have not had their yields announced. Their yields are FRD and are not subject to E.O. 13526.
5. The heights of burst of Checkmate, Bluegill 3 Prime, Kingfish, and Tightrope are expressed only as 10s of miles (kilometers). Any descriptions other than those in DOE/NV 209 or *The Effects of Nuclear Weapons* must be referred to DTRA under topics 701 and 703 above.

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6. High-altitude tests conducted as Operation Newsreel (Yucca, Teak, and Orange), and Operation Fishbowl (Starfish Prime, Checkmate, Bluegill 3 Prime, Kingfish, and Tightrope) were DoD tests. All documents not revealing RD/FRD information (i.e., design, output, yield) must be coordinated with DTRA and OSD prior to declassification.
7. Frigate Bird, the May 6, 1962, operational test of a Polaris missile (Operation Nougat/Dominic I), is often confused with the high-altitude test program because it was rocket launched. It is properly characterized as an atmospheric test and per the topical classification guide on weapon testing, its height of burst is unclassified. Its yield is FRD and, therefore, not subject to E.O. 13526.

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CHAPTER 8

NUCLEAR PROLIFERATION

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to nuclear proliferation are to be declassified, have their classification retained beyond 25 or 50 years, upgrade to TFNI, or referred to another agency in accordance with the provisions of E.O. 13526.

The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.

Detection of proliferation involves detection of activities related to: the acquisition of plutonium or highly enriched uranium; nuclear weapons research and development; or nuclear weapons manufacturing. Information regarding detection technologies selected for use, as well as the vulnerabilities of such technologies, could be exploited by a proliferator to more effectively conceal its nuclear weapons related activities and, therefore, requires protection.

Proliferation studies, analyses, or evaluations may contain information about or evaluations of the potential operability of a particular weapon design (including references to articles in the open literature) by persons who have or have had access to classified weapon design information. Such information could lend credibility to otherwise speculative information and could provide assistance to proliferators in their development of nuclear weapons.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Some details of proliferation detection technologies, systems, and components are based on weapon designs and are, therefore, protected as RD or FRD.

Basic research and development in proliferation detection technologies, systems, or components, is unclassified. Information about proliferation detection systems or components such as weaknesses, shortcomings, detection limits or deficiencies, which would be of assistance to a proliferator attempting to establish a clandestine nuclear weapon capability shall be referred to the using agency. Similarly, methods that could successfully disguise or conceal proliferation activities shall have their classification retained.

DOE proliferation studies, analyses, or evaluations that reveal nuclear weapon design information or which confirm or deny the viability of weapon design concepts found in the open literature would provide significant assistance to a proliferator and is RD. Similarly, information on techniques for producing special nuclear materials which might be easily concealed by a proliferator shall have its classification retained.

Classification of DOE/NNSA nuclear proliferation NSI information found in historical records cannot be retained beyond 25 years or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, TFNI, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Documents containing TFNI must receive special markings showing that they are not subject to automatic declassification as specified in E.O. 13526. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD/TFNI. In all cases where there is a question

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concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).” If the topic identifies information that could be TFNI, it will specify “Upgrade to TFNI.”

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- | | | |
|--|---|---|
| 801 | Chemical separation technology specifically directed toward clandestine reprocessing efforts or bypassing sound engineering practice to enhance such efforts | Retain
Classification
[25X2; 50]
(potential for
RD/FRD) |
| 802 Nuclear weapons proliferation detection technologies | | |
| 802.1 | Names, descriptive titles, or designs of proliferation detection technologies, components, or systems, if not revelatory of an ongoing classified U.S. nonproliferation objective, classified capability, or employment | Do Not Retain |
| 802.2 | Above identified as part of a specific U.S. Government nonproliferation negotiation with elaboration of a negotiation strategy or position

<i>NOTE:</i> Refer to DOS for review. | Refer |
| 802.3 | System capabilities, limitations, exploitable weaknesses, shortcomings, or deficiencies of specific proliferation detection components or systems components

<i>NOTE 1:</i> Specific systems include seismic, satellite, and hydrophonic.

<i>NOTE 2:</i> Upon declassification of DOE equities, a referral to other agencies may be required. Consult with the DOE Office of Document Reviews, Office of Classification. | Retain
Classification
[25X2; 50] |
| 803 Proliferation studies, analyses or evaluations | | |
| 803.1 | Statements or evaluations by a person who has (or has had) access to classified weapon information, or by Government supported contractor, regarding weapon design technology or the potential operability of a nuclear explosive

<i>NOTE:</i> TFNI if intelligence-related information and concerns foreign nuclear programs (e.g., foreign nations, organizations, and may include non-state actors) for which comparable U.S. information would be RD or design-related FRD. See Chapter 9. | Retain
Classification
[25X2; 50]
(potential for
RD/FRD/TFNI) |
| 803.2 | Information which provides useful insights for successful pursuit of a program for the separation of practical quantities of SNM, or a program for fabricating a nuclear weapon

<i>NOTE:</i> TFNI if intelligence-related information and concerns foreign nuclear programs (e.g., foreign nations, organizations, and may include non-state actors) for which comparable U.S. information would be RD or design-related FRD. See Chapter 9. | Retain
Classification
[25X2; 50]
(potential for
RD/FRD/TFNI) |

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803.3 Concealment of proliferation preparations/activities

CAUTION: If intelligence sources and/or methods are revealed refer to the appropriate intelligence agency

803.3.1 Government evaluation of methods of concealing the telltale signs of proliferation activities whenever such evaluations reveal methods which could successfully disguise such signs

**Retain
Classification
[25X2; 50]**

NOTE: Refer to the appropriate IC agency if intelligence sources and methods are revealed.

803.3.2 Theoretical discussions of concealment of proliferation activities

Do Not Retain

803.3.3 Description of technology used to reduce the effects of nuclear activities on the environment

Do Not Retain

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CHAPTER 9

INTELLIGENCE

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to intelligence and counterintelligence, are to be declassified, have their classification retained beyond 25 or 50 years, upgraded to TFNI, or referred to another agency in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Most intelligence information regarding foreign and terrorist activities is collected, analyzed, and reviewed for classification by agencies other than DOE. Information that would reveal intelligence sources, methods, procedures, or equipment shall have its classification retained until declassified by the appropriate intelligence agency. Similarly, actual data which has been collected is usually classified to prevent adversaries from knowing how much we know of their activities and to protect intelligence community information sources and methods. Classification of collected and analyzed data also reduces the likelihood that an adversary will correct the vulnerabilities in its practices that allowed the information to be collected.

Under Section 142e of the Atomic Energy Act of 1954, certain RD information concerning foreign atomic energy programs, including nuclear weapon design, was transclassified from RD to NSI. With the issuance of E.O. 13526, this raw foreign nuclear information for which comparable U.S. information is RD or design-related FRD is now identified as Transclassified Foreign Nuclear Information

(TFNI). Documents containing TFNI are not subject to automatic declassification under the provisions of E.O. 13526 and must be given special markings in accordance with departmental directives. Any comment or evaluation by the United States, the United Kingdom, or Canada on the merit of such information is RD or FRD and is not subject to automatic declassification under the provisions of E.O. 13526. Examples of U.S. design-related FRD information for which comparable foreign nuclear information has the potential to be TFNI are weapon and device yields and nonnuclear component design information (e.g., safing, arming, fuzing and firing components). Examples of nondesign-related U.S. FRD for which comparable foreign informations would not be TFNI are stockpile numbers and storage locations. Such information could still be NSI.

The mere appearance of intelligence information in a DOE document can lend credibility to the information and thereby constitutes comment. Once raw intelligence (photographs of foreign nuclear facilities or weapons, or Human Intelligence reports, etc., without analysis) has been subjected to analysis or commented on by DOE, **the result will most likely be RD or FRD** because DOE analysis is based on U.S. technology and experience. Often documents containing such information are only marked as NSI; such documents should have their classification category markings upgraded in the course of the declassification review by a qualified reviewer. (Refer to Appendix A for additional instructions on how to deal with potential RD, FRD, or TFNI.)

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OFFICIAL USE ONLY**C. Topics****900 INTELLIGENCE**

901 Information obtained by DOE from a public forum

Do Not Retain

NOTE: Examples include meeting presentations, news media, and speeches.

902 Foreign atomic energy program or technology information obtained by U.S. intelligence services

NOTE 1: Including from human intelligence sources.

NOTE 2: Examples include weapons, production of materials, and military utilization.

902.1 When comparable U.S. information is RD or design-related FRD information

**Upgrade to
TFNI
(potential for
RD)**

NOTE: Update NSI markings to TFNI. Examples of design-related FRD information are weapon and device yields and nonnuclear component design information.

902.2 When comparable U.S. FRD information is not design-related

Refer

NOTE: Intelligence information must be referred to the appropriate intelligence agencies for declassification review. Foreign nation stockpile numbers and storage locations are not TFNI, but still get referred for NSI.

902.3 Otherwise

Refer

NOTE: Intelligence information must be referred to the appropriate intelligence agencies for declassification review. Care must be taken when tabbing, marking, or coordinating documents containing intelligence information, since the mere identification of certain agencies as having intelligence-related classification equities is classified.

903 Information revealing the source of intelligence, methods or procedures of intelligence collection and handling, intelligence requirements or targets of interest, intelligence mission or objectives, intelligence organization/structure/personnel, intelligence funding, or the extent of knowledge of a particular subject of intelligence interest

**Refer
(potential for
RD/FRD)**

NOTE: Refer to the appropriate IC agency through the DOE Office of Intelligence for declassification review.

904 Any finished intelligence product on subjects within DOE purview, including intelligence summaries, intelligence estimates, or reports that incorporate intelligence information as part of the body of the document

904.1 When comparable U.S. information is RD or design-related FRD information

**Upgrade to
TFNI
(potential for
RD)**

NOTE: Update NSI markings to TFNI. Examples of design-related FRD information are weapon and device yields and nonnuclear component design information.

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904.2 When comparable U.S. FRD information is not design-related

Refer

NOTE: Intelligence information must be referred to the appropriate intelligence agencies for declassification review. Foreign nation stockpile numbers and storage locations are not TFNI, but still get referred for NSI.

904.3 Otherwise

Refer

NOTE: Intelligence information must be referred to the appropriate intelligence agencies for declassification review. Care must be taken when tabbing, marking, or coordinating documents containing intelligence information, since the mere identification of certain agencies as having intelligence-related classification equities is classified.

| 905 Total annual intelligence or counterintelligence budget for DOE (or its predecessor agencies) or by site prior to January 1, 2004

Do Not Retain

| 906 Total annual intelligence counterintelligence budget for DOE or by site on or after January 1, 2004

Refer

NOTE: Refer to DNI for declassification review.

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CHAPTER 10

INFORMATION REGARDING FOREIGN RELATIONS

A. General Information

This chapter provides guidance for determining if historical records, containing DOE NSI, pertaining to foreign government information, are to be declassified or have their classification retained beyond 25 or 50 years in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

Foreign government information is defined as:

1. information provided by a foreign government(s), an international organization of governments, or any element thereof with the expectation, expressed or implied, that the information, the source of the information, or both, are to be held in confidence; or
2. information produced by the United States pursuant to or as a result of a joint arrangement with a foreign government(s) or an international organization of governments, or any element thereof, requiring that the information, the arrangement, or both, are to be held in confidence.

This chapter also concerns information produced within the DOE complex that is related to the formulation of official U.S. positions or strategies for international negotiations or agreements, whether or not such information was actually exchanged with a foreign government or international organization of governments.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Classification plays an important role in U.S. relations with foreign countries. It is particularly critical that information shared among governments under an implied or explicit statement of confidentiality be controlled until such time as all parties agree to its release. This applies whether the U.S. was the provider or the recipient of the information. Similarly, the fact that information was exchanged may be sensitive. Therefore, if the historical records indicate that information was provided in confidence, the classification shall be retained beyond 25 or 50 years unless other information is available to indicate that all parties have agreed to its release.

Examples of historical records that could contain foreign government information or information affecting foreign relations exempted beyond 25 or 50 years include (but are not limited to) documents containing information relating to:

1. Formulation of U.S. positions and strategies related to official interchanges with a foreign government;
2. U.S. policy discussions and decisions related to negotiations;
3. Arms control negotiations;
4. Negotiation instructions to U.S. delegations;
5. Treaty implementation provisions;
6. Treaty verification and/or compliance determinations (e.g., yield thresholds, deception or spoofing) regarding nuclear weapons and nuclear testing;

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7. Exchange or transfer of nuclear materials with a foreign country;
8. Specific details of negotiated mutual agreements regarding safeguarding of nuclear weapons and nuclear materials;
9. Negotiations for storing nuclear weapons in a foreign country;
10. Joint programs with foreign governments or entities;
11. Negotiations or details of discussions or agreements between DOE, or predecessor agency, officials and foreign government representatives that have an expectation of confidence either expressed or implied.

In the absence of information that the parties mutually agreed to their public release, documents within DOE purview containing information that falls in any of the above areas would have their classification retained. In this context, DOE purview refers to information relating to: energy policy; SNM production; nuclear weapons; nuclear reactors; arms control; or related matters. Documents

containing other foreign government information should be coordinated with the Department of State (DOS) or other appropriate agency.

Classification of DOE/NNSA foreign government information NSI information found in historical records cannot be retained beyond 25 or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, TFNI, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).”

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C. Topics

1000 INFORMATION REGARDING FOREIGN RELATIONS

NOTE: Any 50X exemptions cited in topics below may be applied only to a record which is within 5 years of automatic declassification at 50 years. For example, in a review conducted in 2018, only records originated from 1968 to 1973 are potentially eligible for a 50X exemption. A record with a 50X exemption shall be automatically declassified on December 31st of a year no more than 75 years from the year the record was originated, unless an approved 75X exemption is applied no earlier than 70 years from its year of origin.

1001 Foreign government information obtained by DOE from a foreign national in a public forum **Do Not Retain**

NOTE: Examples of public forums include meeting presentations, news media, speeches.

1002 Foreign government information obtained by DOE from a foreign government in confidence **Retain Classification [25X6; EV] (potential for RD/FRD)**

NOTE: Declassify when the foreign government approves declassification of the information, or no later than December 31, year of document plus 50 years, whichever occurs first; unless the information qualifies for a 50X exemption. Consultation with DOS is required.

1003 Foreign government information declassified and officially released by a U.S. Government organization **Do Not Retain**

NOTE: For example a department or agency.

1004 DOE information provided to a foreign government in confidence **Retain Classification [25X6; EV] (potential for RD/FRD)**

NOTE: Declassify when the information would no longer seriously and demonstrably impair relations between the U.S. and the foreign government or would no longer seriously and demonstrably undermine ongoing diplomatic activities of the U.S. or no later than December 31, year of document plus 50 years, whichever occurs first; unless the information qualifies for a 50X exemption. Consultation with DOS is required.

1005 Substantive DOE information concerning the formulation of official U.S. positions or strategies related to confidential international negotiations, or concerning any of the enumerated subject areas outlined in Broad Guidance, whether or not such information was actually exchanged with a foreign government or international organization of governments **Retain Classification [25X6; EV]**

NOTE: Declassify when the information would no longer seriously and demonstrably impair relations between the U.S. and the foreign government or would no longer seriously and demonstrably undermine ongoing diplomatic activities of the U.S. or no later than December 31, year of document plus 50 years, whichever occurs first; unless the information qualifies for a 50X exemption. Consultation with DOS is required.

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1006 Information provided to a foreign government in confidence per a treaty or international agreement

1006.1 In a document at its 25-year review

**Retain
Classification
[25X9; EV]**

NOTE: The 25X9 Exemption will only be used when continued classification is required by the treaty or agreement; to determine this, contact the Office of Classification. Declassify in accordance with the terms of the treaty or agreement. Consultation with DOS is required. If declassification has not occurred by 50 years, a 50X exemption may apply. See topic 1006.2

1006.2 In a document at its 50-year review

**Retain
Classification
[50X9; EV]**

NOTE: The 50X9 Exemption will only be used when continued classification is required by the treaty or agreement; to determine this, contact the Office of Classification. Declassify in accordance with the terms of the treaty or agreement. Consultation with DOS is required. If declassification has not occurred by 75 years, a 75X exemption may be requested from ISCAP.

1007 Information provided to DOE in confidence by a foreign government per a treaty or international agreement

1007.1 In a document at its 25-year review

**Retain
Classification
[25X9; EV]**

NOTE: The 25X9 Exemption will only be used when continued classification is required by the treaty or agreement; to determine this, contact the Office of Classification. Declassify in accordance with the terms of the treaty or agreement. Consultation with DOS is required. If declassification has not occurred by 50 years, a 50X exemption may apply. See topic 1007.2

1007.2 In a document at its 50-year review

**Retain
Classification
[50X9; EV]**

NOTE: The 50X9 Exemption will only be used when continued classification is required by the treaty or agreement; to determine this, contact the Office of Classification. Declassify in accordance with the terms of the treaty or agreement. Consultation with DOS is required. If declassification has not occurred by 75 years, a 75X exemption may be requested from ISCAP.

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CHAPTER 11

NAVAL NUCLEAR PROPULSION INFORMATION

A. General Information

This chapter provides guidance for determining if historical records, containing NSI, pertaining to Naval Nuclear Propulsion Information (NNPI), are to be declassified or have their classification retained beyond 25 or 50 years in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI. Additionally, such documents may contain controlled unclassified NNPI (U-NNPI) which must remain properly controlled even after a declassification action.***

NNPI is all information, classified or unclassified, concerning the design, arrangement, development, manufacture, testing, operation, administration, training, maintenance and repair of the propulsion plants of naval nuclear-powered ships and prototypes, including the associated shipboard and shore-based nuclear support facilities.

Classified NNPI falls into one of two categories: RD or NSI, as follows:

NNPI is RD if it relates to the use of special nuclear material in the production of energy in the reactor plant of nuclear powered ships and prototypes. Documents containing RD are not subject to automatic declassification under provisions of the AEA. (Refer to Appendix A.)

NNPI is NSI if it pertains primarily to the remainder of a nuclear propulsion plant other than the reactor, as well as to militarily significant information regarding support facilities and information relating to the conduct of foreign affairs of the Federal Government.

Unclassified Naval Nuclear Propulsion Information (U-NNPI), although unclassified, is subject to special handling, access, marking requirements, and distribution controls (i.e., export control) pursuant to 10 U.S.C. 130 and 22 U.S.C. 2751 et seq. Appendix C contains a listing of information considered to

be U-NNPI. All documents containing or believed to contain U-NNPI shall be referred to the Naval Reactors Office for its consideration.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

The DOE recognizes the importance of declassifying as much information about its historic activities as possible. However, declassifying significant additional NNPI could directly impact national security.

Naval nuclear propulsion revolutionized submarine operations and provides surface ships with nearly unlimited endurance and operational flexibility. Despite these advantages, naval nuclear propulsion has only been developed by relatively few countries. NNPI is controlled to prevent unauthorized access to information which could assist other nations in the development of nuclear powered naval vessels. This consideration is key to determining what information must be protected.

The equipment and systems currently used by the NNPP are based on systems which have been in use for over 50 years. While improvements are continuously made to implement technological advances, many 1950's propulsion plant design features are still in operation today. Even the earliest U.S. designs are more advanced than those attained by countries just developing nuclear propulsion programs, as well as all other nation states except the limited few with advanced naval nuclear propulsion programs.

Therefore, historical records of NNPP systems that are 50 years or older would have value to an adversary. (50X4)

Recent submarine class lifetimes are 65 to 75 years (design through decommissioning of last ship in the class). Aircraft carriers are anticipated to have class lifetimes approaching 100 years.

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It is also the intent to prevent unauthorized access to significant information related to the tactical characteristics and capabilities of a naval ship or naval reactor design information which would be of value to other nations. NNPI is classified to enable the U.S. Navy to operate in foreign waters without compromising sovereignty or fleet operational information. Nuclear powered warships are present in foreign waters and ports of over fifty nations and U.S. dependencies.

Naval nuclear propulsion plant design information has been exchanged pursuant to the 1958 "Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the United States of America for Co-operation on the Uses of Atomic Energy for Mutual Defense Purposes" (58MDA). The 58MDA states "Agreed classification policies shall be maintained with respect to all classified information, materials or equipment communicated, exchanged or transferred under this Agreement." (50X9)

The classification guidance topics provided below identify classified NNPI that is exempt from automatic declassification. For more specific topics and further detailed classification guidance, reviewers shall refer to the current version of *DOE/DoD Classification Guide for the Naval Nuclear Propulsion Program (U)*.

Historical records containing NNPI classified by statute, such as RD and FRD (Atomic Energy Act of 1954), shall be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD are marked "(potential for RD)."

OFFICIAL USE ONLY**C. Topics****| 1100 NAVAL NUCLEAR PROPULSION INFORMATION**

1101 General

| 1101.1 Specific technical objectives of a nuclear propulsion project

1101.1.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1101.1.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)****| 1101.2 Identification of the core design features**

1101.2.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1101.2.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)****| 1101.3 Identification of specific alternate technologies being studied now or in the past****Do Not Retain****| 1101.4 Details of results of alternate technology studies when real or potential naval plant capability is revealed**

1101.4.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1101.4.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)****| 1101.5 Fact that the Naval Nuclear Propulsion Program is studying or has studied methods to predict or control gaseous hydrogen buildup under accident conditions in order to understand the use of those methods in the commercial nuclear power industry****Do Not Retain****OFFICIAL USE ONLY**

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	1101.6 Information on personnel health and safety matters not involving specific naval nuclear propulsion plant components, equipment, systems, or operations	Do Not Retain
	1101.7 Information on regulatory or environmental matters not involving specific naval nuclear propulsion plant components, equipment, systems, or operations	Do Not Retain
	1101.8 Information on release of hazardous materials that requires reporting under Federal or State statutes or regulations	Do Not Retain
	1101.9 Information about onsite environmental conditions not involving specific naval nuclear propulsion plant components, equipment, systems, or operations	Do Not Retain
	1101.10 Information or reports which identify a problem with, or in, specific naval nuclear propulsion plant components, equipment, or systems, or the corrective actions for that problem	
	1101.10.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1101.10.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1101.11 Compilations of information or reports which reveal military sensitive types of problems involving a naval nuclear propulsion plant components, equipment, systems, operations, or materials	
	1101.11.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1101.11.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1101.12 Overall description of and procedures for refueling, initial core installation, or reactor maintenance	
	1101.12.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)

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1101.12.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
1101.13	Fact that steel, lead, tungsten alloys, and depleted uranium are or will be used to provide shielding in reactor servicing equipment	Do Not Retain
1101.14	Fact that borated stainless steel or borated aluminum has been or may be used in irradiated fuel transfer containers or irradiated fuel shipping containers	Do Not Retain
1101.15	Fact that borated materials may have been used in water pit holding racks or in cell disassembly stands	Do Not Retain
1101.16	Fact that continuously operating criticality monitors are required during new or irradiated fuel handling operations	Do Not Retain
1102	Ship design and performance	
1102.1	Phrase "greater than 25 knots" (or any lesser speed such as "greater than 20 knots") when applied to speed of submarines	Do Not Retain
1102.2	Reference to maximum surface ship speed (or any lesser speed)	Do Not Retain
1102.3	Reference to speeds greater than those in topic 1102.1 above	
1102.3.1	In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50]
1102.3.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75]
1102.4	Maximum, design or actual shaft horsepower or any shaft horsepower associated with a particular shaft revolutions per minute (rpm), for submarines	
1102.4.1	In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50]
1102.4.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75]
1102.5	Maximum, design or actual shaft horsepower or any shaft horsepower associated with a particular shaft rpm for surface ships	Do Not Retain

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1102.6 Ship tactical characteristics

NOTE: Examples include depths greater than 800 ft., times for ship turning, time for zero to maximum speed, time for maximum to zero speed, diving time, surface time.

1102.6.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]**

1102.6.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]**

1102.7 Reference to depths less than 800 ft, including phrase "greater than 400 ft" for submarines

Do Not Retain

1102.8 Length, beam, draft, and displacement of ships

Do Not Retain

1102.9 Propulsion plant design, layout

1102.9.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1102.9.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1103 Ship/propulsion plant shock/vibration

1103.1 Propulsion plant noise and ship silencing data and results

1103.1.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1103.1.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1103.2 Fact that the Naval Nuclear Propulsion Program is investigating high damping materials not involving specific naval nuclear propulsion plant components, equipment, or systems

Do Not Retain

1103.3 General or fundamental theory or experiments on noise sources, transmission, reduction procedure and underwater sound radiation with no specific reference to any application, or shipboard system

Do Not Retain

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1103.4	Propulsion plant shock data (including data acquisition) and analysis revealing performance characteristics	
1103.4.1	In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
1103.4.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
1104	Naval reactor core	
1104.1	General statement to the effect that a naval reactor is a pressurized water reactor	Do Not Retain
1104.2	Fact that pressurized water is used as a moderator and coolant	Do Not Retain
1104.3	Core design and operating features	
1104.3.1	Core designs and operating features that have been officially released by the Naval Reactors Office	Do Not Retain
1104.3.2	Unirradiated physical, mechanical, thermal, metallurgical and chemical properties, corrosion kinetics or corrosion properties, phase diagrams, heat treatment effects, or composition of Zircaloy-2 (Zr-2), Zircaloy-3 (Zr-3), or Zircaloy-4 (Zr-4) cladding materials and hafnium	Do Not Retain
1104.3.3	Fundamental metallurgy or corrosion studies for broad composition ranges of Zircaloy or hafnium material	Do Not Retain
1104.3.4	For in-pile test specimens and test assemblies, the use of the phrases "test specimen" and "test assembly" and identification by specimen number, test number, and/or assembly number	Do Not Retain
1104.3.5	General studies of brittle fracture phenomena	Do Not Retain
1104.3.6	Term "poison element" without a specific reference to the element content or function	Do Not Retain
1104.3.7	Terms: element or module, fuel element or module, poison element or module, test element or module, and test coupon or specimen	Do Not Retain
1104.3.8	Term "Modified Hydraulic Core" (MHC)	Do Not Retain
1104.4	Core power/lifetime	
1104.4.1	General identification of the life of core in years <i>NOTE: This includes "life of ship."</i>	Do Not Retain
1104.4.2	Fact that a long-lived core is being studied	Do Not Retain

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	1104.4.3 Fact that a long-lived core is being investigated or planned for a specific ship	Do Not Retain
	1104.4.4 Fact that the long-lived core will last for the planned life of the ship and the statement that the number of refuelings for a life-of-the-ship core equals zero	Do Not Retain
	1104.5 Terms "evasion mode," "battle mode," "stretch capability," or "special operating mode" and the fact that those modes are being or have been implemented on any project in the Naval Nuclear Propulsion Program	Do Not Retain
	1104.6 Details of core design/operation	
	1104.6.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1104.6.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1104.7 Core temperatures, pressures, fluxes, other parameters	
	1104.7.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1104.7.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1104.8 Fact that uranium, boron (including boron stainless steel or B ₄ C), zirconium, Zircaloy, aluminum, tin, chromium, stainless steel, hafnium, nickel, or combination thereof are used in cores	Do Not Retain
	1104.9 Identification of specific materials used as fuel, poison, or control element materials	
	1104.9.1 Fuel enrichment (percentage of U-235)	Do Not Retain
	1104.9.2 Fact that hafnium is used as a control rod material	Do Not Retain
	1104.9.3 Fact that Zircaloy-2 (Zr-2), Zircaloy-3 (Zr-3), and Zircaloy-4 (Zr-4) has been used in naval reactors (specific use or core not identified)	Do Not Retain
	1104.9.4 Fact that advanced cladding material is being investigated provided the material is not identified	Do Not Retain

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1104.10 Naval fuel manufacturing process technology and product characteristic

1104.10.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1104.10.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1104.11 Reactor core manufacture information

1104.11.1 Fact that the techniques used to manufacture or form a naval nuclear fuel element are unlike those used for commercial nuclear fuel rods

Do Not Retain1104.11.2 Cost of special nuclear material provided the quantities of enriched uranium allocated to entire naval cores or its subunits can not be directly or indirectly determined**Do Not Retain**

1104.11.3 Linkage of core type, contract number or contractor

Do Not Retain

1104.11.4 Fact that cores are stored at a core manufacturing facility

Do Not Retain

1104.11.5 Throughput at Nuclear Fuel Services, including total quantity of receipts and shipments of uranium-235 (U-235), provided the quantity of U-235 in a reactor core is not revealed

Do Not Retain

1104.12 Core structural parts such as shear locks, pins, bolts, nuts, locking devices, and other small parts that do not reveal core design features

Do Not Retain

1104.13 Shipping dates of Category I quantities of SNM

Do Not Retain

1105 Materials and metallurgy

1105.1 Description of experimental techniques and identification of equipment used in metallurgical studies where there is no direct association with the Naval Nuclear Propulsion Program

Do Not Retain

1105.2 Details of results of tests associated with naval applications

1105.2.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1105.2.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

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1105.3 List of acceptable materials for specific applications

1105.3.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1105.3.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1105.4 Techniques and equipment used to determine properties and behavior when there is no direct association with the Naval Nuclear Propulsion Program

Do Not Retain

1105.5 General or fundamental theory or experiments on welding

Do Not Retain

1106 Neutron energy class (thermal, etc.)

Do Not Retain

1107 Radiological control and shielding

1107.1 Details of radiological control and shielding design, fabrication, and installation associated with naval nuclear propulsion plants

1107.1.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1107.1.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1107.2 Fact that borated stainless steel or borated aluminum has or may be used in irradiated fuel shipping containers

Do Not Retain

1107.3 Fact that steel, lead, water, oil, or plastic are used for shielding on naval nuclear powered ships

Do Not Retain

1107.4 Radiation survey results associated with naval nuclear propulsion plants

1107.4.1 Radiation warning signs and barriers

Do Not Retain

1107.4.2 Radiation survey results and radioactivity levels of shipping containers containing a packaged reactor plant component including expended cores

Do Not Retain

NOTE: For example, results given in curies.

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1107.4.3 Results of radiation surveys performed outside nuclear-powered ships	
1107.4.3.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
1107.4.3.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
1107.5 General area radiation levels not associated with a specific plant location, but which are required for incorporation into personnel medical records	Do Not Retain
1107.6 Radiation exposure data of an individual	Do Not Retain
1107.7 Overall shield design and shielding fabrication standard	
<i>NOTE:</i> Including radiation criteria, design parameters and selection basis.	
1107.7.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
1107.7.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
1108 Chemistry and radiochemistry, including chemical cleaning and decontamination	
<i>NOTE:</i> Examples include results of tests, limits, specific chemicals used	
1108.1 Fact that a particular plant/ship is being considered for or will be "chemically decontaminated"	Do Not Retain
1108.2 Secondary system water chemistry control methods and limits, and chemical cleaning methods and results, and purification methods	
1108.2.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)

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	1108.2.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1108.3 Methods for decontamination of installed system or components in place	
	1108.3.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1108.3.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1108.4 Chemistry control methods used in test facilities	
	1108.4.1 In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1108.4.2 In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1109 Primary plant	
	1109.1 Fact that pressurized water is used for reactor coolant	Do Not Retain
	1109.2 Generic components and drawings (generic components are those which are not associated with a specific reactor plant, reactor plant parameter, or reactor function) <i>NOTE:</i> Examples are electrical piece parts, motors, circuit breakers, relays, power supply circuits, amplifiers, and bistables.	Do Not Retain
	1109.3 Use of letter-number-letter designator to identify a reactor plant project <i>NOTE:</i> Examples are S5W and A1G.	Do Not Retain
	1109.4 Fact that a Knolls Atomic Power Laboratory (KAPL)-designed core will be or is installed in a Bettis Atomic Power Laboratory-designed reactor plant or vice versa	Do Not Retain
	1109.5 Fact that a reactor core designed for a surface ship is being considered for, or is installed in a submarine or vice versa	Do Not Retain

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1109.6	Reactor core designator when associated with a reactor plant design	Do Not Retain
	<i>NOTE:</i> Examples of a core designator are D2W and AFR (Advanced Fleet Reactor). Examples of a plant design are S6G and S6W.	
1109.7	Association of ion exchangers with the purification system of the reactor plant	Do Not Retain
1109.8	Association of the primary plant with tanks that normally only receive small volumes of coolant, such as valve leakage, drainage, or samples	Do Not Retain
1109.9	Generic statements regarding contractors' or subcontractors' capabilities or capacities for manufacturing nuclear propulsion plant components	Do Not Retain
1109.10	Shop drawings for fabricating vessels, vessels closure heads, and other major components associated with the vessel which do not reveal reactor information or final assembly information	Do Not Retain
1109.11	Term "Engineered Safety Features"	Do Not Retain
1109.12	Primary plan design, instrumentation, diagrams, controls, components, problems, description, limits, operation, details, performance history, and equipment specifications	
1109.12.1	In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
1109.12.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
1110	Secondary plant, including steam and electrical systems	
1110.1	General mechanical, physical, metallurgical, corrosion, and weldability properties of materials	Do Not Retain
1110.2	Carrier electrical distribution	
1110.2.1	CVN68 (USS NIMITZ) class carriers' high voltage electrical equipment: the voltage rating is 4160 volts; the output power ratings of the ship service turbine generator, the coolant pump power turbine generator, and the 15 cps motor generator; the power transformer ratings; and the electrical nameplate ratings and the connecting cables	Do Not Retain
1110.2.2	CVN 78 class carriers' electrical equipment: the voltage rating of 13,800 volts; the output power ratings of the main turbine generator and the emergency diesel generator; the power transformer ratings; the electrical nameplate ratings; and the number and ratings of the connecting cables	Do Not Retain

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	1110.3	The fact that chemical cleaning or high pressure water jet cleaning is Do Not Retain used for steam generators in the Naval Nuclear Propulsion Program or is planned or being performed in a specific ship	Do Not Retain
	1110.4	The term "water brake"	Do Not Retain
	1110.5	Development of turbine electric drive for nuclear propulsion	Do Not Retain
	1110.6	Secondary plant; design, description, diagrams, drawings, manuals, instrumentation, equipment specifications, limits, operation, and details including noise performance history	
	1110.6.1	In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1110.6.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1111	Propulsion plant operation and test including test procedures, instructions, specifications, and analyses or evaluations of primary, secondary, or overall plant	
	1111.1	In a document at its 25-year review	Retain Classification [25X4, 6, 9; 50] (potential for RD)
	1111.2	In a document at its 50-year review	Retain Classification [50X4, 9; 75] (potential for RD)
	1112	Analysis of naval reactors	
	1112.1	General mathematics theory, equations, and general analytical techniques	Do Not Retain
	1112.2	Reactor Safeguards (Safety) Examinations (RSE), Operational Reactor Safeguards (Safety) Examinations (ORSE), Post-Overhaul Reactor Safeguards (Safety) Examinations (PORSE), and Radiological Control Practices Evaluations (RCPE)	
	1112.2.1	Existence of systems of periodic examinations without specific reference to a particular ship and/or dates or periodicity	Do Not Retain

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1112.2.2 Dates, location, frequency, and results of ORSE, RCPE, RSE,
OR PORSE

1112.2.2.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1112.2.2.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1112.3 Design and analysis procedures specifically developed for naval
reactors plants

1112.3.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1112.3.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

1112.4 Information revealing details of reactor or plant safety studies

1112.4.1 In a document at its 25-year review

**Retain
Classification
[25X4, 6, 9;
50]
(potential for
RD)**

1112.4.2 In a document at its 50-year review

**Retain
Classification
[50X4, 9; 75]
(potential for
RD)**

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CHAPTER 12

RADIOISOTOPE POWER SYSTEMS

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to radioisotope power systems (RPS), are to be declassified, have their classification retained beyond 25 years, or referred to another agency in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

RPS consist of radioactive power sources that convert decay heat to electric power. The RPS are useful for terrestrial and space missions with relatively low power requirements, or in remote regions such as the ocean floor, where conventional power generation methods are infeasible. There are two main components involved in the production of heat or power for these systems: (1) type of fuel, and (2) thermoelectric converter. Missions with a lifetime requirement of 8 to 12 years are effectively restricted to a fuel selection of plutonium-238 (Pu^{238}) because of the need for a long lifetime heat source. Thermoelectric converters are used to convert the heat to electrical power. The benefit from the lack of moving parts outweighs the low conversion efficiency.

In the early 1970s, small radioisotope thermoelectric generators (RTGs) were fueled by metallic Pu^{238} . Subsequently, plutonium-238 dioxide ($\text{Pu}^{238}\text{O}_2$) heat sources were developed and optimized over time. The fuel form consisted of oxide microspheres contained in triple encapsulated high-temperature metals.

Previous space missions that have used RPS include the Apollo lunar surface scientific packages and Pioneer, Viking, Voyager, Galileo, and Ulysses spacecrafts. The Pioneer and Viking missions were fueled with molybdenum/plutonium-238 ($\text{Mo/Pu}^{238}\text{O}_2$) cermet in puck form. Hot pressed, plutonium pellets were used as the heat source for the

multihundred watt (MHW) and general purpose heat source (GPHS) RTGs. Other isotopes that have been used are polonium-210 (Po^{210}) and curium (Cm^{242}), which have half-lives of less than 6 months. These isotopes can provide higher electric power output for a limited lifetime but are not useful for longer missions. As of May 2012, DOE has provided 46 RTGs for use on a total of 27 missions to provide some or all of the onboard electric power.

The first RTGs produced about 2.7 watts of electric power. The most recently designed system, the General Purpose Heat Source RTG (GPHS-RTG), generates about 290 watts of electric power. The first system launched, a Space Nuclear Auxiliary Power (SNAP) unit, designated SNAP-3B provided only partial power for the Navy Transit 4 satellite. DOE provided three RTGs for the National Aeronautics and Space Administration's (NASA) Cassini mission to Saturn. The Cassini spacecraft, launched to Saturn on October 15, 1997, required three GPHS-RTGs (approximately 870 watts electric). The RTGs are the only source of onboard electric power.

Newer designs of solid-state RTGs include stacked heat source modules for increased power output. Future developments in heat transfer and insulation are expected to enhance thermal efficiency.

Radioisotope power generators convert the heat (thermal energy) generated from the decay of radioisotopes into electricity. Converters are composed of thermopiles that consist of thermoelectric material [e.g., silicon-germanium (SiGe) unicouples]. The efficiencies of the converters are functions of the thermoelectric characteristics of the couples and the thermal economy achieved by the insulation system.

Thermoelectric converter designs can be separated into three general types: (1) the SNAP series used lead telluride materials (PbTe) as their thermoelectric elements and operated at moderate hot junction temperatures of 780 to 890 Kelvin (K); (2) the Transit-RTG also used PbTe thermoelectric elements, but operated at a lower hot junction temperature

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of 673 K to control sublimation; and (3) SiGe uncouples with negative (doped with phosphorus) and positive (doped with boron) couple legs powered the MHW and GPHS RTGs at a higher hot junction temperature of about 1270 K.

The fuel form and heat source technology has steadily improved over the years to operate at higher temperatures and to meet the stringent aerospace nuclear safety requirements for increasingly larger heat sources. As power levels of RPS have increased, improved heat sources, thermoelectric materials, and thermal insulation have been developed to increase performance. Other converters that offer higher conversion efficiency, such as the Alkali Metal Thermal to Electric Converter (AMTEC), thermophotovoltaic, and Small Stirling Dynamic Isotope Power System are being investigated. The dynamic converters have moving parts and may use redundancy for reliability. As mission planners require more power, longer mission duration, and/or more resistance to hostile natural or man-made environments, improved RPS will be required.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Generally, information about RPS is unclassified unless the system is for military use and the release of the information would reveal classified information about other programs. Information relating to the use of RPS is unclassified unless classified by topics of this guide.

Energy conversion technologies, including the thermoelectric materials and couples, are unclassified unless they are specifically cited in a classified program. The composition, capabilities, and properties of shielding materials that provide vulnerability protection may be FRD if vulnerability to nuclear weapon effects is involved, or NSI if related to vulnerability or capabilities of systems, installations, projects, or plans related to national security. Safety information is unclassified unless it reveals other classified information.

Classification of RPS NSI information found in historical records cannot be retained beyond 25 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD/TFNI. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).”

OFFICIAL USE ONLY**C. Topics****1200 RADIOISOTOPE POWER SYSTEMS**

1201 General

1201.1 Meaning nicknames, acronyms, or other designators

Do Not Retain**CAUTION:** Provided no information classified by other guidance is revealed.*NOTE 1:* For example, SNAP (Systems for Nuclear Auxiliary Power), GPHS (General Purpose Heat Source).*NOTE 2:* If there is a reasonable expectation that the information is still exempt, reviewers may need to refer to NASA or OSD..

1201.2 Identification of offices, contractors, subcontractors, vendors, or individuals with the program or with the description of work

Do Not Retain

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NOTE 2: If there is a reasonable expectation that the information is still exempt, reviewers may need to refer to NASA or OSD.

1201.3 Programmatic Information

1201.3.1 Schedules for the production of RPS for DoD

Refer*NOTE 1:* Including number produced and delivery dates.*NOTE 2:* Refer to OSD for declassification review.

1201.3.2 Mission-related information

Refer*NOTE 1:* Including orbits and trajectories.*NOTE 2:* Refer to NASA or OSD as applicable for declassification review.

1201.4 Hardening

1201.4.1 Fact of interest in hardening RPS against nuclear weapons effects

Do Not Retain

1201.4.2 Fact that RPS, their components, or support systems are or are not hardened against nuclear weapons effects

Do Not Retain

1201.4.3 Program design goals and protective measures against nuclear weapons radiation

**Refer
(potential for
RD/FRD)***NOTE:* Refer to DoD and/or NASA for declassification review.

1201.4.4 Results of environmental testing, provided no information classified by other guidance is revealed

Do Not Retain*NOTE:* May need to be referred to the agency or office responsible for the mission.**OFFICIAL USE ONLY**

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	1201.4.5 Protective measures against natural radiation environment	Do Not Retain
	1201.5 Association of Multihundred Watt (MHW) Heat Source RTG with	
	1201.5.1 Officially released information	Do Not Retain
	1201.5.2 NASA or other unclassified applications	Do Not Retain
	1201.5.3 All other applications	Refer (potential for RD/FRD)
	<i>NOTE: Program classification requirements depend on the relationship to the user agency mission. As certain agency relationships may be classified, refer to the using agency for declassification review.</i>	
	1202 Heat Sources	
	1202.1 Quantities of reactor products other than deuterium, tritium, Pu-238, Pu-239, and U-235 allocated for military use	Refer (potential for RD/FRD)
	<i>NOTE: Refer to OSD for declassification review.</i>	
	1202.2 Pu-238	
	1202.2.1 Allocations of Office of Space and Defense Power Systems inventory to National Security users	Retain Classification [25X1; 50]
	(b) (7) (b) (7)(E)	(b)
	(b) (7)(E)	(b) (7)(E)
	1202.2.3 Otherwise	Do Not Retain
	1202.3 Heat source fuel (procedures, processes, and characteristics)	Do Not Retain
	1202.4 Capsule design and technology	Do Not Retain
	1203 Energy Conversion	
	1203.1 Thermoelectric materials	Do Not Retain
	1203.2 Thermoelectric couples	Do Not Retain
	1203.3 Thermoelectric converters	
	1203.3.1 Information concerning integration of thermoelectric conversion materials with nuclear reactor fuels or using the reactor as a heat source	Refer (b) (7)(E)
	<i>NOTE: Refer to OSD and/or NASA for declassification review.</i>	
	1203.3.2 Thermoelectric converters as end items of hardware	
	1203.3.2.1 If no classified information is revealed by the converter, regardless of operational use	Do Not Retain

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	1203.3.2.2 Association of a specific converter with a specific unclassified operation	Do Not Retain
	1203.3.2.3 Association of a specific converter with a specific classified operation	Refer
	<i>NOTE:</i> Refer to the program that owns the operation.	
	1204 Thermoelectric converter ancillary equipment	
	1204.1 Composition, capabilities, and properties of shielding materials that provide improved vulnerability protection	Refer (potential for FRD)
	<i>NOTE:</i> Refer to using agency.	
	1204.2 Otherwise	Do Not Retain
	1205 Safety systems	
	1205.1 Prelaunch estimates of probabilities of exposure to ionizing radiation or concentrations of radioactive material from fallen debris following the deliberate or accidental destruction of the launch vehicle during abort or post-operational disposal, including any casualty estimates	Do Not Retain
	1205.2 Predicted impact locations, including probabilities of debris impact following abort	Refer
	<i>NOTE:</i> Refer to the agency with responsibility for the mission for declassification review.	

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CHAPTER 13

CHEMICAL AND BIOLOGICAL DEFENSE INFORMATION

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI pertaining to chemical and biological defense information, are to be declassified, have their classification retained beyond 25 or 50 years, or referred to another agency in accordance with the provisions of E.O. 13526.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Chemical and biological materials used as weapons of mass destruction (WMD) (also called C/B agents) pose a serious threat to the U.S. national security. These two generic types of weapons are often referred to as "the poor man's atomic bomb." They are much easier to produce than nuclear devices and are capable of inflicting massive casualties over large areas.

DOE's work related to C/B agents is part of the work for others program where other Federal agencies and non-Federal organizations can take advantage of DOE's expertise. The work in this area consists of focused technology development for facility protection and a broad-based research and development program, purely defensive in nature, with the goal of reducing the threat of C/B weapons of mass destruction. This program encompasses information, technologies, and systems that may be used to prevent, detect, mitigate, or otherwise defensively respond to the threatened or actual use of chemical or biological weapons.

Chemical formulas for traditional chemical warfare agents (H-series mustard agents, G- and V-series nerve agents) are widely available, as are traditional methods for manufacture of these agents. Nevertheless, the production methods, including exactly how to carry out the chemical reactions, frequently require specialized knowledge, materials, and equipment and thus some degree of security is achieved by avoiding unnecessary release

of such information. There have been essentially no advances in these technologies for several decades, though a few new chemical agents (so-called next-generation agents) have emerged from focused research programs in several nations. Information on these agents is not widely available.

Chemical/biological agents which have no known defense or clean-up solution for countering their threat, as well as any significant improvements in chemical/biological agents (and simulants, which are useful in understanding the critical characteristics of the agents), require extended protection as classified information to guard against use by a terrorist as a WMD. Declassification of this information should only take effect when the chemical or biological agent is no longer deemed a threat to the public. Because of the ongoing sensitive nature of this information, the cited exemption applies to the information, and the information is exempted from automatic declassification for 75 years.

Methods and techniques exist for the widespread dispersal of an agent that retain its viability. In addition, there are methods which can be employed that enhance the effectiveness of the agent by prolonging its survival in many environments and by time-phasing a release response when the agent would be most effective. Hence, information about the dispersal method of a chemical or biological agent that may assist an adversary in the weaponization of the agent, along with improving its effectiveness, requires extended protection as classified information to guard against use by a terrorist as a WMD. Declassification of this information should only take effect when the dispersal method is countered by defensive posturing or methods by the U.S. Government. Because of the ongoing sensitive nature of this information, the cited exemption applies to the information, and the information is exempted from automatic declassification for 75 years.

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Classification of DOE/NNSA C/B NSI information found in historical records cannot be retained beyond 25 years or 50 years unless covered by specific guidance. However, documents containing this information must also be reviewed for information exempted by

other chapters in this guide or other agency equities. If there is any question concerning the sensitivity of the information in a document, it should be referred to the DOE HQ classification office for a classification determination.

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C. Topics

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CHAPTER 14

RADIOLOGICAL DEFENSE INFORMATION

A. General Information

This chapter provides guidance for determining if historical records, containing DOE NSI, pertaining to radiological defense information, are to be declassified or have their classification retained beyond 25 or 50 years in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

The physical, chemical and radiological properties of radioactive materials are unclassified. It is also unclassified that a radiological dispersal device (RDD) can be constructed with any radioactive nuclide. The selection of a particular radioactive material, i.e., the physical form and chemical composition of the material containing a radioactive nuclide, involves trade-offs between competing properties such as difficulty of detection, ease of dispersal, biological uptake, lethality, half-life, and resistance to decontamination. U.S. Government studies of RDDs are classified if they identify a particularly effective radioactive material. With the exception of grinding a radioactive material to a fine powder or dissolving it into a solution, the identification of any modification of a radioactive material from its common medical, industrial or commercial form that improves its performance in an RDD is classified. Ranking or comparisons of radioactive materials for use in an RDD are classified. Similarly, with the exception of a few RDD designs approved for unclassified use, designs of dispersal devices are classified. Scenarios of RDD events that

predict economic costs of \$100 billion or more or that predict more than 100 immediate (30-day) deaths due to radiation have a demonstrated national security consequence and are therefore classified.

Radiation Exposure Devices (REDs) emit radiation but do not disperse radiological material. An RED design is a matter of packaging the radioactive material so it can be positioned in proximity to the target population while minimizing the probability of its detection. RED designs are usually unclassified. Incorporation of special features for selective targeting, increased lethality, or reduced detectability would cause an RED design to be classified.

Further information on radiological defense classification policy can be found in the *Joint DOE/DHS/NRC Classification Guide for Radiological Dispersal Devices and Radiation Exposure Devices (U)*.

Classification of DOE/NNSA radiological defense NSI information found in historical records cannot be retained beyond 25 years or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, TFNI, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD are marked “(potential for RD).”

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C. Topics

1400 Radiological Defense Information

CAUTION: Design details of improvised nuclear devices are invariably RD and may warrant protection by additional controls. See *DOE Classification Guide for Improvised Nuclear Devices (U)*.

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CHAPTER 15

CRITICAL INFRASTRUCTURE INFORMATION (CII)

A. General Information

Homeland Security Presidential Directive 7: *Critical Infrastructure Identification, Prioritization, and Protection*, identifies the Department of Energy as the sector lead for energy, including the production, refining, storage, and distribution of oil and gas, and electric power except for commercial nuclear power facilities. In this role, the Department performs vulnerability analyses of these facilities and makes recommendations on how to improve their security. The Department also manages the Strategic Petroleum Reserve (SPR) and the Power Marketing Administrations (PMAs).

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

For information to be classified there must be some national security consequence associated with its disclosure. For CII, these consequences are an economic impact in excess of \$100 billion dollars or an immediate loss of life in excess of 100 people. The Department does not classify any CII because either the information does not cause enough economic impact to warrant classification or public health and safety requires publication of the information.

Assuming an economic impact in excess of \$100 billion dollars as a national security consequence, the metropolitan area with the largest contribution to gross domestic product in the U.S., the New York Metropolitan Area, would need to lose power for a month in order to cross the \$100 billion threshold. In the event of an inability to recover power for this length of time, or more than likely a much shorter time, alternate power sources or work locations would be implemented.

A second component of the monetary value of a region is the value of the real estate contained in the region. While loss of electrical power would cause loss of refrigeration and

potentially the loss of water and sewage, these losses would not be permanent losses. Given that loss of electrical power would not cause a large-scale permanent loss of physical assets, the value of the real estate is a negligible component of the monetary threshold computation.

A loss of life in excess of 100 people seems achievable with a realistic attack plan. However, a large amount of information related to systems such as liquefied natural gas pipelines is made available to state and local governments, who in turn, make this information available to the public. Similar information is also made available to commercial entities, universities, and/or foreign partners. In some cases, domestic utilities will then share this with domestic and foreign partners with which they have agreements. Based on the amount and depth of the information available on the safety of these systems, how to damage their operation and cause a loss of life is not protectable as classified information.

Additionally, individuals without clearances perform much of the work related to these analyses, as an analysis itself is not treated as classified unless there is a clear impact on national security. By classifying CII, a requirement is introduced where the individuals who perform the work must have clearances and the work itself must be performed in facilities approved for classified information. This introduces additional costs on performing this work. As current individuals without clearances perform the work, CII cannot be protected as classified information.

Original classification determinations for new CII may occur when disclosure will cause definable damage to national security, such as defined monetary loss, defined loss of life, defined loss of property, or defined cost of recovery. In these cases, specific guidance for the information will be issued and any necessary exemption topics will be incorporated into this chapter.

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Because the Joint Staff have identified portions of the energy sector as critical based on their own criteria, CII marked as classified should be referred to these agencies prior to declassification. Additionally, the Department of Homeland Security and the Department of Defense have sensitive unclassified equities in civilian and defense critical infrastructure respectively and documents containing this information should be referred to them prior to release.

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CHAPTER 16

DIRECTED NUCLEAR ENERGY SYSTEMS AND NUCLEAR DIRECTED ENERGY WEAPONS

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to directed nuclear energy systems (DNES) and nuclear directed energy weapons (NDEW), are to be declassified, have their classification retained beyond 25 or 50 years, or referred to another agency in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

DNES and NDEW are two types of directed energy systems which were associated with the Strategic Defense Initiative, popularly referred to as the "Star Wars" program. While the information created in these two areas dates from the 1970s, there is still some sensitivity to information that may be of assistance to potential enemies of the U.S. Therefore, some historical records containing information concerning DNES and NDEW are to have their classification retained beyond 25 or 50 years. Classified information in these programs can be either NSI or RD.

The DNES relies on a nuclear reactor to provide the energy necessary to create various energy beams that could be directed for military use. Thus, DNES is a system capable of repeated use. It is an integral system designed to use controlled, nonexplosive, fission nuclear reactions to generate a directed energy beam. The "directed" portion of a DNES refers to the laser output of the system.

The NDEW program generally refers to a weapon system that is for one time use but produces a high-energy-density. An exploding nuclear device provides the energy to drive a military system such as an x-ray laser. An NDEW may use one or more forms of the prompt output of a nuclear explosion (e.g., x-rays, gamma rays, or neutrons) and convert it to another form of energy with

directional characteristics. The directed output energy from an NDEW could be in the form of x-rays, optical photons, microwaves, atomic particles, or macroscopic particles for kinetic energy systems.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Information on a DNES system that reveals classified design characteristics of the nuclear reactor power source is RD, whereas classified information related to other elements of the system is NSI. Information on a DNES system that reveals the status of the technical achievement in broad qualitative statements, the level of effort of the DNES program, program goals (qualitative statements only), or the lasing medium nickname is unclassified, however, information that goes beyond these areas remains classified.

Also unclassified are generic laser system information not revealing other classified information, general features of equipment, computer information not revealing design features, hypothetical studies, or nonnuclear energy schemes found unsuitable for scaling for practical DNES applications. All other DNES information should retain its classification.

In general, most information on NDEW is RD. Information pertaining to the driver (a nuclear weapon) of the NDEW is RD. However, some information on energy conversion schemes for in-laboratory operation may be NSI.

Information on in-laboratory energy conversion schemes unsuitable for directed energy weapons (DEW) or which cannot be scaled for application to DEW is unclassified. But if the information relates to in-laboratory energy conversion schemes which, though driven by a source other than a nuclear explosion, might still be scalable to directed energy weapons, it is NSI. In such cases, if the

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potential application is an NDEW, it should have its classification retained, whereas if the potential application is a nonnuclear DEW, the information should be referred to the DoD.

Classification of DOE/NNSA DNES and NDEW NSI information found in historical records cannot be retained beyond 25 or 50 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, and potential RD or FRD. Documents containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and

declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).”

OFFICIAL USE ONLY**C. Topics****1600 DIRECTED NUCLEAR ENERGY SYSTEMS AND NUCLEAR DIRECTED ENERGY WEAPONS**

1601 DNES

1601.1 Fact that specific DOE/NNSA laboratories conducted work on DNES programs, such as Centaurus and Falcon, which were SDI related **Do Not Retain**

1601.2 Fact that DNES is a high leverage system because it could have lethal ranges of thousands of kilometers and could serially engage multiple targets. **Do Not Retain**

1601.3 Information that reveals status of technical achievement

1601.3.1 Broad, general, qualitative statements **Do Not Retain**

1601.3.2 Specific and/or quantitative statements **Retain Classification [50X2-WMD; 75] (potential for RD/FRD)**

1601.4 Implicit programmatic information not revealing program goals or status of technical achievement **Do Not Retain**

NOTE: For example, people, dollars, meetings, travel, construction, equipment procurement.

1601.5 Levels of effort for a specific DNES program **Do Not Retain**

1601.6 Program goals or objectives directed toward a DNES weapon system

1601.6.1 Qualitative information on program goals or objectives which will not assist others in DNES development, contribute to feasibility assessment of DNES developments, or reveal programmatic directions **Do Not Retain**

1601.6.2 Qualitative information on program goals or objectives that will assist others in DNES development, contribute to feasibility assessment of DNES developments, or reveal programmatic directions **Retain Classification [50X2-WMD; 75] (potential for RD/FRD)**

1601.7 Basic physics of controlled fission and of lasers **Do Not Retain**

1601.8 Fact that there are many similarities between the DNES nuclear power source and reactors **Do Not Retain**

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1602 NDEW – energy conversion schemes for in-laboratory operation

NOTE: That is, driven by source other than a nuclear explosion.

1602.1 When such schemes are not suitable for DEWs (whether nuclear or nonnuclear driven), for example certain laser driven soft x-ray lasers whose design cannot be scaled for practical application in an NDEW and not classified by other guidance

Do Not Retain

1602.2 When such schemes are representative of potential DEWs

1602.2.1 NDEWs

**Retain
Classification
[50X2–WMD]
(potential for
RD/FRD)**

1602.2.2 Non-nuclear DEWs

Refer

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NOTE: Refer to DTRA for review.

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CHAPTER 17

SPACE NUCLEAR REACTOR INFORMATION

A. General Information

Space Nuclear Reactor Information (SNRI) is all information concerning the design, arrangement, development, manufacture, testing, operation, administration, training, maintenance and repair of Naval Reactor (NR) civilian space nuclear reactors, including the associated nuclear support facilities.

The Space System is the complete system traveling beyond the Earth's atmosphere, exclusive of the Launch System.

The Launch System is the system comprised of equipment, propellant support subsystems, and related launch facilities that are used in providing thrust to the Space System until it can be independently propelled in space. This includes initial propulsion off the Earth into orbit and/or achieving escape velocity.

The Space Reactor is the collection of hardware consisting of a space nuclear fission reactor, its instrumentation and control system, reactor shielding, and those components in direct contact with reactor coolant, for which NR possesses both legal ownership and technical responsibilities. Through the sustained and controlled fission of special nuclear material, the Space Reactor provides thermal energy for conversion into useful electrical energy.

The Space Nuclear Power Plant (SNPP) is that part of the Space System consisting of the Space Reactor and other elements of the Space System that affect reactor safety, design, operation, and reliability, for which NR possesses technical oversight responsibilities. Such elements will include additional components or subsystems affecting reactor safety, design, operation, and reliability that are added to the SNPP definition as the development effort matures.

Key enabling information is conceptual and/or specific information which makes it possible or practical to design, fabricate, or deploy a SNPP. The phrase "key enabling" implies that a substantial amount of effort and time could be saved through critical insight gained by a potential adversary. The

interpretation of enabling information is integral in the application of the classification guidance provided in this chapter.

SNRI is RD if it relates to key enabling information toward the design, fabrication, or deployment of SNPP components related to nuclear energy generation. Documents containing RD are not subject to automatic declassification under provisions of the AEA. (Refer to Appendix A.)

Unclassified Space Nuclear Reactor Information (U-SNRI) is subject to special handling, access, marking requirements, and distribution controls (i.e., export control) and are designated as "Refer" topics. All documents that contain or believed to contain U-SNRI that is not RD must be referred to the Naval Reactors Office.

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

Since Prometheus was a DOE/NASA/NR program that began in 2003 to design and build space nuclear reactors for use by NASA in long duration space exploration missions, no information about the program has been identified yet as exempt from automatic declassification at 25 years. No missions were conducted and program was cancelled in 2005. Certain key enabling technologies, engineering concepts, and significant technical developments or trends related to civilian space nuclear reactors supporting Project Prometheus are classified in accordance with CG-SNR-1, *Joint DOE - NASA Classification Guide for Civilian Space Nuclear Reactors to Support NASA Project Prometheus Missions (U)*, where necessary to protect national security. Certain key enabling information related to the characteristics and capabilities of civilian space nuclear reactors; their actual design, manufacturing and operation, as well as solutions to key technical challenges are also classified.

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At the present time, there is no NSI civilian space nuclear reactors information that requires exemption to automatic declassification. However, records containing RD shall be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

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CHAPTER 18

SPECIAL ACCESS PROGRAMS

A. General Information

This chapter provides guidance for determining if historical records containing DOE NSI, pertaining to special access programs, are to be declassified or have their classification retained beyond 25 years but not to exceed 50 years in accordance with the provisions of E.O. 13526. ***The classification of documents containing RD or FRD is not addressed by this document. Appropriate classification guidance must be consulted prior to declassification of documents that could contain RD/FRD, including those that may be incorrectly marked as NSI.***

Executive Order 13526 authorizes the Secretary or Deputy Secretary of Energy to create unique security cells called "special access programs" (SAP) within the Department, but only upon the specific finding that: "(1) a vulnerability of, or threat to, specific information is exceptional; and (2) normal criteria for determining eligibility for access to information classified at the same level as the SAP are not deemed sufficient to protect the information from unauthorized disclosure; or (3) the program is required by statute." Much of the information regarding U.S. Government programs for safeguarding nuclear materials or facilities and national security-related scientific, technical, or economic matters normally is classified National Security Information (NSI), which is consistent with Sections 1.4(e) and 1.4(f) of Executive Order 13526.

When information is determined to be of such extreme sensitivity that normal controls are deemed insufficient to provide adequate protection, a SAP may be established to provide the requisite protection. Section C of DOE M 470.4.4, *Information Security*, dated January 16, 2009, establishes general requirements for SAPs in DOE and NNSA. Detailed requirements regarding the SAPs and instructions for initiating them are contained in DOE Manual 471.2-3B, *Special Access Program Policies, Responsibilities, and Procedures Manual*, dated October 29, 2007,

and in the supplement to the National Industrial Security Program Operating Manual (NISPO) which addresses SAPs.

Line management within the DOE or NNSA is authorized to determine that application of the SAP/Proposed Special Access Program (PSAP) process is appropriate. Once such a determination is made, line management must confer with the DOE SAP Security Program Manager or NNSA SAP Security Coordinator, as appropriate, via secure means, to begin the PSAP process.

Many routine operational and security functions that would otherwise be unclassified usually are classified when structured for a SAP (b) (7)(E)

This is of particular concern for PSAPs, to ensure that the classification and security protections are not compromised during the approval process.

CAUTION: Program access authorization is required before making classification determinations for a specific SAP or PSAP.

If information or material found outside the special access control is identified as containing or is suspected of containing DOE or another agency's SAP information, immediately contact the DOE SAP Security Program Manager, Office of Security Operations, Office of Health, Safety and Security, or the on-site SAP Security Manager, via secure means. If the material is identified as or suspected of containing PSAP information, then classify and protect the information consistent with guidance in Sections B and C of this chapter and immediately contact the DOE SAP Security Program Manager or NNSA SAP Security Coordinator, via secure means.

SAPs, by definition, require security controls stricter than those normally associated with their level of classification. Access to information protected by a SAP is strictly controlled by the SAP Program Manager. Due to these security and access constraints,

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program classification guidance for specific SAPs is not posted on the Classification Guidance System or listed in the Index of DOE Classification Guidance (published semiannually).

B. Broad Guidance

This Broad Guidance section is for context purposes only and must not be used as exemption authority. Exemption authority is granted only for the detailed exemption information elements.

It is DOE policy to classify safeguards and security information that could (1) provide meaningful assistance to a malefactor for theft of SNM, sabotage of DOE facilities or assets, or composing a credible nuclear threat message; (2) be exploited by a malefactor or by a foreign intelligence service to either enhance its intelligence collection efforts or thwart U.S. counterintelligence efforts; or (3) provide assistance in gaining unauthorized access to classified information, including that in secure communications or in Information System (IS) equipment. This policy continues to be the cornerstone of the DOE safeguards and security classification policy.

A project, technology, application of a technology, or related information that meets the criteria for a SAP under Section 4.3 of Executive Order 13526, and whose release to the public could damage national security, shall be provided security measures consistent with those normally associated with an approved SAP prior to proposal and briefing to the Departmental Element, SAP Oversight Committee (SAPOC) Executive Secretary, and the Secretary of Energy or Deputy Secretary. The SAPOC is responsible for oversight of all DOE/NNSA SAPs and consists of: the Deputy Secretary (the SAPOC Chair); the Under Secretary for Energy; the Under Secretary for Science; the Under Secretary for NNSA (Acting Chair in the absence of the Deputy Secretary); Deputy Under Secretary for Counterterrorism; Deputy Administrator for Defense Programs; Chief, Defense Nuclear Security; DOE General Counsel; Director, Office of Intelligence and Counterintelligence; and Chief Health, Safety and Security Officer. This committee serves as the interface with Congress and other Federal agencies concerning DOE/NNSA SAPs, accepts or rejects work for others (WFO) SAPs,

and recommends to the Secretary the establishment, termination, or change in scope of a DOE/NNSA SAP.

The SAPOC approves the SAP as either acknowledged and reportable, unacknowledged and reportable, or unacknowledged and waived. All require the granting of special access and are protected within SAP channels. All SAPs are identified by an unclassified nickname. A SAP may also be identified with a classified codeword. Correlation of a nickname and its codeword or program specifics is classified. Although program specifics for acknowledged SAPs are protected within SAP channels, normally their existence (without elaboration) is unclassified.

More sensitive SAPs may be designated as unacknowledged. In those cases, any details beyond the mere fact that unacknowledged SAPs or PSAPs exist, in general within the Government or DOE/NNSA, are classified. Unacknowledged SAPs may also be of sufficient sensitivity to warrant waiver of the normal Congressional reporting requirements as authorized in Public Law 106-65, Section 3236 (and successors (b) (7)(E)

(b) (7)(E)

Each SAP will have a program classification guide jointly approved by the SAP Program Manager and DOE Office of Classification, with the advice of the DOE SAP Security Program Manager or NNSA SAP Security Coordinator as appropriate. The guide must contain sufficient detail to provide criteria for classification for all facets of the program. The SAP Classification Guide shall be classified (and contain distribution caveats) consistent with the level of program information revealed by it or deducible through compilation of it and unclassified information.

Each SAP should have a program security manual that addresses, at a minimum, its detailed security protection requirements.
(b) (7)(E)

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(b) (7)(E)

Each SAP utilizes program-specific briefing procedures for indoctrination into the program. Classification of the indoctrination briefing will vary depending on content. It shall be classified consistent with the level of programmatic information revealed and/or deducible through compilation.

Classification of DOE/NNSA special access program NSI information found in historical records cannot be retained beyond 25 years unless covered by specific topics in this guide. However, documents containing this information must also be reviewed for information exempted by other chapters in this guide, other agency equities, and potential RD or FRD. Documents

containing information classified by statute such as RD and FRD (Atomic Energy Act of 1954) must be handled, protected, classified, downgraded, and declassified in accordance with the provisions of the AEA and regulations issued under that Act. Reviewers who are not authorized by DOE/NNSA to classify or declassify such documents should not attempt final determinations. Refer to Appendix A for information on identifying and handling documents containing potential RD/FRD. In all cases where there is a question concerning the sensitivity of the information, it should be referred to the DOE HQ classification office for a classification determination.

Topics describing information likely to contain RD or FRD are marked “(potential for RD/FRD).”

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C. Topics

1800 Special Access Programs

(b) (7)(E)

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APPENDIX A

**RESTRICTED DATA, FORMERLY RESTRICTED DATA, AND
TRANSClassIFIED FOREIGN NUCLEAR INFORMATION**

Since their introduction at the end of World War II, nuclear weapons have been seen as so radically different from other weaponry, so uniquely destructive, that extraordinary measures are needed to slow their spread. To this end, Congress enacted the AEA to assure firm Government control over all aspects of nuclear technology relating to the creation, design, production, or use of nuclear weapons. An important element of this control is the RD system, established by the Act to secure nuclear weapons-related information by providing it with a unique system of classification. RD is defined by Section 11y of the Atomic Energy Act of 1954: **"The term 'Restricted Data' means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of nuclear energy; but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142."**

This statute-based system operates outside of the NSI system established by Executive order for all other Government classified information.

1. Restricted Data (RD) is specifically exempted from all provisions of E.O. 13526. In particular, Restricted Data is never subject to automatic declassification. It can only be declassified by the Secretary of Energy or delegated DOE authority. RD is generally technical. Much of it has enduring value. In the hands of an adversary, a nuclear weapon based on even an early design could be as great a threat as a modern weapon.
2. Formerly Restricted Data (FRD) concerns the military utilization and deployment of nuclear weapons. Although the name might be construed as implying otherwise, FRD is classified information and is also not subject to the automatic declassification provisions of E.O. 13526.
3. Transclassified Foreign Nuclear Information (TFNI) concerns foreign nuclear program information that has been removed from the Restricted Data category after DOE and Director of National Intelligence (DNI) have determined that it can be adequately protected in a manner similar to National Security Information in order to carry out the provisions of Section 102(b) of the National Security Act of 1947. Although TFNI is also subject to the provisions of E.O. 13526, it is not subject to automatic declassification provisions and can only be declassified by the Secretary of Energy when comparable RD or design-related FRD information is declassified.

This Appendix is intended to aid the reviewer in detecting the possible presence of RD, FRD, or TFNI in documents, which may be either unmarked or improperly marked. Some information that was once RD or FRD has been declassified over the years. Therefore, information fitting the descriptions or containing key words provided below is not necessarily classified as RD, FRD, or TFNI. All such documents shall be referred to a DOE, or DOE contractor, authorized derivative classifier who will use the appropriate topical classification guide(s) and procedures to make a classification determination. Pending such review, the documents will be held and protected as classified. The decision on classification will rest with the DC.

In general, information in the following areas is RD or FRD and possibly TFNI for foreign nuclear programs:

- a. Designs, shapes, specifications, internal physical conditions, functional descriptions, or arming, fuzing and firing of nuclear explosives;

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- b. Material properties under conditions achieved in nuclear explosions;
- c. Vulnerabilities of U.S. nuclear weapons to sabotage, countermeasures or unauthorized use;
- d. Logistical and operational performance information (specific weapon deployments, yields, capabilities);
- e. Details of the critical steps in nuclear material production processes; and
- f. Features of military nuclear reactors not common to, or required in, civilian power reactors.

RD, FRD and/or TFNI is likely to be found in documents dealing with any of the following areas:
Nuclear weapon design, fabrication, and utilization: Nuclear weapons apply the physical process of nuclear fission - the splitting of a heavy atomic nucleus (uranium and/or plutonium) by absorption of a neutron - to cause the release of energy ("yield") many orders of magnitude greater than would be possible from a similar amount of chemical high explosives. Some nuclear weapons also use the process of thermonuclear fusion - the joining together of light nuclei at very high temperatures - to produce additional yield by "boosting" the fission explosion with extra neutrons, or in a separate thermonuclear "stage" (e.g., the "hydrogen bomb"). Information revealing: weapon and component materials or configurations; design principles and details; mode of operation; tests; internal physical conditions (e.g., temperature, pressure); yields; methods for command/control; disablement; arming, fuzing and firing; vulnerabilities to sabotage or countermeasures; production quantities; and storage or deployment locations, may be and usually is classified. Improperly marked or unmarked RD and/or FRD are most likely to be found in historical documents dealing with weapon delivery systems (missiles or aircraft), or with defense(s) against such systems.

Inertial confinement fusion: This laboratory-scale research attempts to use certain directed power sources - typically very large lasers, but also accelerator-produced particle beams - to compress and heat a tiny target containing small quantities of fusion fuel (deuterium and tritium) to thermonuclear ignition conditions. The resulting "micro explosion" would resemble a miniature thermonuclear weapon. Therefore, target design and operation information judged to be revelatory of nuclear weapons technology is classified. (Alternative terms for related programs include: Controlled Thermonuclear Fusion, Magnetic Confinement Fusion, Stellarator, and Tokomak.)

Military nuclear reactors: Nuclear reactors use the fission reaction to generate electric power or for other applications. Information in this area includes: design; development; test and operation of reactor power systems for military purposes, especially for naval nuclear propulsion; and information concerning system capabilities and vulnerabilities. The emphasis here is on "military" or "naval," applications since all aspects of civilian nuclear power (e.g., commercial electric power generation) are not classified.

Nuclear material production: The most certain way to discourage the proliferation of nuclear weapons is to deny access to fissile materials such as plutonium or enriched uranium. Plutonium does not occur naturally in any significant quantity, but must be produced in nuclear reactors. The unstable hydrogen isotope tritium, used for boosting fission weapons, is also made in such reactors. Information describing detailed features of the production process may be RD. Fuel and target reprocessing, in which the irradiated material is put through a sequence of chemical operations to extract the product plutonium or tritium, is an important part of the production process.

Isotope separation: Unlike plutonium, uranium occurs naturally and is relatively plentiful. However, only the lighter isotope U^{235} (0.7 percent of the natural element) is capable of fission by low energy neutrons. Enriching the content of this isotope over that contained in natural uranium requires a process that can separate the U^{235} from the slightly heavier but much more common isotope U^{238} . This has been done by diffusion techniques, which exploit slight thermal speed differences between gas molecules containing the different isotopes; by electromagnetic and centrifuge techniques, which exploit the difference in mass; and by laser separation techniques,

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which exploit differences in atomic spectra. Potentially classified information includes process and design details of these isotope separation methods and the amounts and specifications of material prepared for the naval reactors or weapons program.

Key words and phrases that could indicate the presence of RD/FRD/TFNI

A	
abelia	anade
active protection	anti-tampering device
AGEX	arming
alondra	atomic vapor laser isotope separation (AVLIS)
alpha	

B	
Bx, where x is an integer number, e.g., B61	birdyard
baffle	blackbody
bag	blackout
bagpipe	blowzer
bamboo	boll weevil
banneret	boll
bark	bonnet
barley	boosted or boosting
barrier	boron (B)
barter	breaker
baseboard	bridge
beaker	broadsword
bengal	BTV
beret	bulrush
beryllium (Be)	burn
billboard	burrito
billiard	BUTEX

C	
cabin	chicken fat
cabot	chico
caiman	cholla
calamus	cicada
calutron	cider
camino	cinderella

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C	
canine	citron
canned subassembly (CSA)	cladding
canopus	cliffrose
capocollo	code X (where X is a name such as Big Mac or Coronet)
capris	COLEX
capsule	colleen
caribou	Comprehensive Test Ban Treaty (CTBT)
cascade	compromise
case	compton detector
catapult	condor
cauldron	Continuous Reflectometry for Radius vs. Time Experiment (CORRTEX)
celedon	Controlled Thermonuclear Reactor (CTR)
centrifuge	core
centurion	cork
chain reaction	cotton
chalk	coupling
channel	crosscheck
cherry	custard
chestnut	cutlass

D	
D-38	dill
daffodil	dinger
dandelion	direct drive
DAY	directed energy/output
Dayton	disablement
DEDO	disarmament
depleted uranium	dogwood
detonation points	dolphin
detonator	doorknob
deuterium (D or H ²)	dorado
device	dove
device stage	dover
diffuser	DT
diffusion	

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E	
early day	enhanced radiation/output
effects test	enriched
egret	enrichment
electric lighting system (ELS)	epee
electromagnetic pulse (EMP)	equation of state
electromagnetic separation	ER
ELEX	estrangere
elgin	eunuch
elmo	event
emergency destruction	explosive train
EMPTV	extended life
endcaps	

F	
410	flashback
fairwind	flicker
fallout	fluence
fat man	flux
fava	fogbank
fiesta	formula quantity
fir	frontyard
fireball	frostsmoke
fire safe	fuel reprocessing
firide	fusion
firing set	fratricide
fissile	freeform
fission	fuze

G	
gallium (Ga)	goblin
gamma output, radiation, flux, spectrum, fluence	gorro
gas centrifuge	grille
gifthorse	grinch
ginkgo	grip
girdle	gun assembled, type
goblet	guppy

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H	
hacha	high explosive (HE)
halite	high explosive assembled (HEA)
hamster	highly enriched uranium (HEU)
hardening	hightide
harness	hohlraum
HE	hot spot
headwind	hugoniot
heather	hydride
height of burst	hydrogen bomb
hercules	hydrodynamic
hexafluoride	hydronuclear
high altitude effects (or phenomenology)	hydro test (shot)
highcard	HYTV

I	
IA	interstage
iceblink	interval time
ICF	in-flight-insertion
ignition point	instability
implosion assembled weapon (IAW)	intermediate enriched uranium (IEU)
INCO	interstage
Indirect drive	intrinsic radiation (INRAD)
Inertial confinement fusion (ICF)	inventory
initiator	ivory
insensitive high explosive (IHE)	

J	
jailyard	jitney
java	joint test assembly (JTA)
jemima	jonah

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K	
"K"	knot
kappa	konastorm
keg	Krakatoa
kiloton (kt)	krypton-85

L	
lance (not the missile)	lighteride
landbreeze	limelight
lapwing	limited life component
lark	Limited Test Ban Treaty (LTBT)
laser isotope separation	line of sight pipe
laser fusion	lippizan
laser x-ray	lithium (Li)
lasso	Little Boy
leeward	lobito
leotard	lowcard
libi	lugbolt
lighter	

M	
mabium	mimas
macadamia	minerva
mandrake	minnow
mantis	mistrel
manx	mint, mint julep, or mint stick
marble	mix
mash	Mkx, where x is an integer number, e.g., Mk12
material X (X = a number)	molasses
maybium	molecular laser isotope separation (MLIS)
maypole	mongoose
megaton (Mt)	moratorium
mesquite	moscareta
microlark	muffler
microlock	muneca
mikado	mutton
millwright	myrnaloy

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N	
national technical means	night soil
naranja	noah
naval reactors, propulsion	norms
nemo	nova
NEST	nuclear assembly system (NAS)
neutron	nuclear directed energy weapon (NDEW)
neutron generator	nuclear material
Nevada Test Site (NTS)	nuclear weapon

O	
oak	one point (as an adjective)
ocarina	opacity
odin	oralloy
olive	oregano
OLEX	ostrich

P	
"P"	pimento
Pacific Proving Grounds (PPG)	pin experiment, dome
paddlewheel	pine
paint	pinto
palm	pirate
pancho	pit
particle beam weapon	pizza
paz	plaudit
peaceful nuclear explosion (PNE)	plaza
peach	plutonium (Pu)
pebbles	plyboard
pecan	poke
pegboard	poodle
pell	popcorn
pellet	poplar
permissive action link (PAL)	pork
pent	postcard
pepe	postum
pepper	prime August

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P	
peppermint	preheat
perseid	preinitiation
peyote	primary
phalanx	production reactor(s); Hanford reactors (B, C, D, DR, F, H, E, KW); Savannah River reactors (R, P, L, K, C)
phoebe	prometheus
picket	propagating
pickup	propellant
picnic	prune
picosun	pure fusion
pillow	PUREX
pilot	pyxis

Q	
quarterhorse	quill
quieting	quink

R	
rabenton	REDOX
RADEC	reduced metal
radiation channel, case, flow	release code
radiation	reservoir
radioactive	rhapsody
radiochemical/radchem detector or tracer	ricicle
radioisotope thermoelectric generator (RTG)	riesling
radish	rina
rancho	rink
rapier	rotor
ratchet	rodeo
rattan	roundup
reaction history	rumrunner

S	
"S"	snowflake
saco	solvent

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S	
safeguards	solvex
safing	sopwith
safety	sorghum
safflower	soro
sage	space nuclear power
saguaro	special nuclear material (SNM)
salt	spica
salthaze	spinach
salvage fuze	spinnaker
sambo	springboard
samovar	spruce
sanguine	squab
scaled depth of burial (SDOB)	squall
schilling	squash
scorpion	SSIA
scythe	stage, staged, staging
seaboard	staged weapon
seabreeze	starboard
secondary	stardust
security	stetson
serpens	stick
sesame	strategic quantity
shacklebolt	strategic weapon
shaft (project)	stripper
sherwood (project)	strong link
shield	styx
shiplap	succotash
significant quantity	sunflower
silo	super
simulator	super-X
sioux	Supplemental Test Site (STS)
sipapu	suppressed radiation
sombrero	surrey
skunk	syndrome
sleet	

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T	
T (H ³)	tile
tacos	timpani
tactical weapon	tire
taffeta	tom
tailored output	tony
tailwind	topsy
talus	Threshold Test Ban Treaty (TTBT)
tamper	TN
tangara	tradewind
tanglewood	trailmaster
tango	train
target quantity	trapeze
teaser	trinity
termite	trippa
terrazzo	tritium production
test, underground, atmospheric, underwater, nuclear, weapon, effects	trout
test vehicle	trunk
thermal diffusion	TSTV
thermonuclear weapon	tuballoy
thimble	tubes alloy
thin man	tule
thundersquall	turtle
tierod	tweezers

U	
U-233, U-235, U-238	urchin
ukelele	use control
umpire	UTV
uranium	

V	
vela	vineyard
venting	violet
vigor	vortex
vinegar	vulnerability

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W	
Wx, where x is an integer number, e.g., W79	whitehorn
walkinghorse	whitehorse
walnut shells	whiteout
watusi	willow
weak link	windrift
weapon	wine
weapon grade	witch hazel
weapon stage	WL/SL
weigela	wrecker
wendigo	

X	
xebec	x-unit
x-ray	

Y	
Y detector	yellowstone
yardarm	yield

Z	
"Z"	zorro
zinfandel	zorzal
zipper	

Sites/Organizations

U.S. nuclear weapons have been designed at the Los Alamos, Livermore, and Sandia Laboratories, and manufactured in a production complex that has changed with time but has always been spread over the United States. Key sites and organizations that may be found in conjunction with nuclear information and potential RD:

Albuquerque Operations Office (AL)
ACF Industries
Advanced Research Projects Agency (ARPA)
Air Force Cambridge Research Lab (AFCRL)
Air Force Office - Atomic Testing (AFOAT)
Air Force Special Weapons Center (AFSWC)
Air Force Systems Command (AFSC)

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Air Force Technical Applications Center (AFTAC)
Air Research and Development Command (ARDC)
Air Operations Center (AOC)
Amchitka
American Car and Foundry (ACF)
Armed Forces Special Weapons Project (AFSWP)
Assistant to the Secretary of Defense, Atomic Energy (ATSD-AE)
Atomic Energy Commission (AEC)
Atomic Weapons Establishment (AWE), U.K.
Atomic Weapons Research Establishment (AWRE), U.K.
Bendix Kansas City
Bethe Panel
Bettis Atomic Power Laboratory
Bikini, Bikini Atoll
Burlington
Christmas Island
Defense Atomic Support Agency (DASA)
Defense Nuclear Agency (DNA)
Division of Military Application (DMA)
Division of Peaceful Nuclear Explosives (DPNE)
Edgerton, Germeshausen, and Grier (EG&G)
Energy Research and Development Administration (ERDA)
Eniwetoc, Eniwetok, Eniwetak, Enewetak,
Fernald
General Advisory Committee (GAC)
GE Pinellas
Hanford
Hawaii Area Office (HAO)
Hiroshima
Holmes & Narver (H&N)
Iowa Army Ammunition Plant
Johnston Atoll/Johnston Island
Joint Working Group (JOWOG)
Joint Task Force (JTF) 7, 8, and 132.1
Joint Committee on Atomic Energy (JCAE)
Kingman Reef
Knolls Atomic Power Laboratory
Lawrence Radiation Laboratory (LRL), Livermore Laboratory (LLL), or Livermore National Laboratory (LLNL)
Los Alamos National Laboratory (LANL) or Scientific Laboratory (LASL)
Manhattan Project, Manhattan Engineer District

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Marshall Islands
Military Air Transport Service (MATS)
Military Sea Transport Service (MSTS)
Military Liaison Committee
Mound Laboratory
Nagasaki
National Bureau of Standards (NBS)
Navy Radiological Defense Laboratory (NRDL)
Naval Research Laboratory (NRL)
Nevada Operations Office (NV), (NVO), (NVOO)
Nevada Test Site (NTS)
Nuclear weapons complex
Oak Ridge, X-10, Y-12, or K-25 Sites
Pacific Proving Ground (PPG)
Pacific Test Range
Palmyra
Pantex
Paducah Site or Gaseous Diffusion Plant
Pinellas
Pittsburgh Naval Reactors Office (PNR)
Portsmouth Site or Gaseous Diffusion Plant
Reynolds Electric and Engineering Co. (REECO)
Richland Rocky Flats
Sandia Corporation, Laboratory, or National Laboratory(ies)
Savannah River
Schenectady Naval Reactors (SNR)
Space Technologies Laboratory, Inc. or Special Technology Laboratory (STL)
Special Weapons Center (SWC)
Stanford Research Institute (SRI)
Strategic Air Command (SAC)
Tactical Air Command (TAC)
Task Group (TG)
U.S. Geological Survey (USGS)
University of California Radiation Laboratory (UCRL)
Weather Reconnaissance Service (WRS)

Weapon Configurations

Schematic depictions of nuclear weapons may be found in historical documents that are lacking RD markings. Figures likely to be encountered will resemble either a single circle (have one center) for single stage weapons, or two adjacent circles (i.e., two centers of symmetry) for a staged or thermonuclear weapon. This is only a rough characterization. Weapons schematics would be considered RD.

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Possible Markings

The markings below would indicate that the document may contain RD or FRD, even if not otherwise marked:

Atomal (NATO)

ATOMIC (U.K.)

Cosmic (NATO)

Critical Nuclear Weapon Design Information (CNWDI)

Naval Nuclear Propulsion Information (NNPI)

Protect as Restricted Data (PARD)

Sigma or Σ [n], where n is an integer number, e.g., Sigma 15 or $\Sigma 15$

Weapon Data

If Potential RD/FRD is Encountered

If the reviewer, using the information provided above, suspects that a historical document, either marked as National Security Information, Security Information, or Defense Information, or unmarked, may contain RD or FRD, the document should be controlled and the tab marked:

**MAY CONTAIN RESTRICTED DATA
NOT SUBJECT TO AUTOMATIC
DECLASSIFICATION
Requires review by the
Department of Energy prior to
public release.**

and directions for further action requested from DOE HQ classification office.

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APPENDIX B

UNRECOVERED NUCLEAR WEAPONS AND CLASSIFIED COMPONENTS

The information which follows is excerpted from a Joint Department of Defense (DoD)/Department of Energy (DOE) Report on the Histories of Nuclear Weapon Accidents. Accident descriptions are reproduced verbatim from that report. Only minor editorial changes have been made to the introductory material.

Introduction

An "accident involving nuclear weapons" is defined as an unexpected event involving nuclear weapons or nuclear weapons components that results in any of the following:

- Accidental or unauthorized launching, firing, or use, by U.S. forces or supported allied forces, of a nuclear-capable weapons system which could create the risk of an outbreak of war;
- Nuclear detonation;
- Nonnuclear detonation or burning of a nuclear weapon or radioactive weapon component, including a fully assembled nuclear weapon, an unassembled nuclear weapon, or a radioactive nuclear weapon component;
- Radioactive contamination;
- Seizure, theft, or loss of a nuclear weapon or radioactive nuclear weapon component, including jettisoning; or
- Public hazard, actual or implied.

Following are **unclassified** summaries describing the circumstances surrounding accidents involving nuclear weapons. **Elaboration above and beyond information provided on any incident contained herein must be referred to the appropriate authorities for classification review. (See the NOTES following topics 401.1 and 401.2.)**

Twenty-six of these summaries were first released by the Air Force in 1977; another was prepared following the Titan II explosion in Arkansas in September 1980. The "Scorpion" incident (spring 1968) was added when it was declassified in 1993.

There never has been even a partial inadvertent U.S. nuclear detonation despite the very severe stresses imposed upon the weapons involved in these accidents. All "detonations" reported in the summaries involved conventional high explosives only. Only two accidents, those at Palomares, Spain, and Thule, Greenland, resulted in widespread dispersal of nuclear materials.

Nuclear weapons are never carried on training flights. Most of the aircraft accidents represented here occurred during logistic/ferry missions or airborne alert flights by Strategic Air Command (SAC) aircraft. Airborne alert was terminated in 1968 because of:

- a. Accidents, particularly those at Palomares and Thule;
- b. The rising cost of maintaining SAC bomber force constantly on airborne alert; and
- c. The advent of a responsive and survivable intercontinental ballistic missile force which relieved the manned bomber force of a part of its more time-sensitive responsibilities.

Most locations of nuclear weapons are classified. It is also DoD policy neither to confirm nor deny the presence of nuclear weapons at any specific place. In the case of an accident involving nuclear weapons, their presence may or may not be divulged at the time depending upon the possibility of public hazard or alarm. Therefore, in some of the events summarized here, the fact of the presence of nuclear weapons or materials may not have been confirmed at the time. Furthermore, due to diplomatic considerations,

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it is not possible to specify the location of the accidents that occurred overseas, except for Palomares and Thule.

Most of the weapons carriers involved in these accidents are no longer in the active inventory. Those include the B-29, B-36, B-47, B-50, B-58, C-124, F-100, and P-5M aircraft, and the Minuteman I and Titan II missiles.

With some early models of nuclear weapons, it was standard procedure during most operations to keep the capsule of nuclear material separate from the weapon for safety purposes. While a weapon with the capsule removed did contain a quantity of natural (not enriched) uranium with an extremely low level of radioactivity, accidental detonation of the high explosives element would not cause a nuclear detonation or contamination. More modern designs incorporate improved redundant safety features to insure that a nuclear explosion does not occur as the result of an accident.

This list of accidents was compiled by DoD and DOE researchers during December 1980-January 1981. The researchers reviewed all available records of the military services and DOE, applying current definitions to determine if an event warranted categorization as an accident. For example, one event not covered by these narratives was included in a "Chronology of Nuclear Accident Statements," released by DoD in 1968, "March 18, 1963, Titan I Missile Burned in Silo near Moses Lake, Washington." The researchers found that only a small retrorocket on the missile had accidentally fired. The missile and its warhead were not damaged. That event does not warrant inclusion in a list of accidents involving nuclear weapons.

Another event from the 1968 list involving a U.S. Navy Terrier missile (January 20, 1966; Naval Air Station, Mayport, Florida) was not considered to be an accident, but has been categorized as a significant incident. In that incident, a nuclear warhead separated from the missile and fell about eight feet. The warhead was dented; no other damage occurred.

The events outlined in the attached narratives involved operational weapons, nuclear materials, aircraft and/or missiles under control of the U.S. Air Force, U.S. Navy, or the Atomic Energy Commission (AEC). The U.S. Army has never experienced an event serious enough to warrant inclusion in a list of accidents involving nuclear weapons. The U.S.

Marine Corps does not have custody of nuclear weapons in peacetime and has experienced no accidents or significant incidents involving them.

To the best of our knowledge, this list is complete. Reporting requirements varied among the services, particularly in the earlier period covered by these narratives, so it is possible but not likely that an earlier accident has gone unreported here. All later events, however, have been evaluated and are included if they fall within the established definition of an accident.

Accidents Involving Nuclear Weapons

February 13, 1950/B-36/Pacific Ocean, off the Coast of British Columbia. The B-36 was en route from Eielson Air Force Base (AFB) to Carswell AFB on a simulated combat profile mission. The weapon aboard the aircraft had a dummy capsule installed. After six hours of flight, the aircraft developed serious mechanical difficulties, making it necessary to shut down three engines. The aircraft was at 12,000 feet altitude. Icing conditions complicated the emergency and level flight could not be maintained. The aircraft headed out over the Pacific Ocean and dropped the weapon from 8,000 feet. A brief flash occurred on impact, followed by a sound and shock wave. Only the weapon's high explosive material detonated. The aircraft was then flown over Princess Royal Island where the crew bailed out. The aircraft wreckage was later found on Vancouver Island.

April 11, 1950/B-29/Manzano Base, New Mexico. The aircraft departed Kirtland AFB at 9:38 p.m., and crashed into a mountain on Manzano Base approximately three minutes later, killing the crew. Detonators were installed in the bomb on board the aircraft. The bomb case was demolished and some high explosive material burned in the gasoline fire. Other pieces of unburned high explosive were scattered throughout the wreckage. Four spare detonators in their carrying case were recovered undamaged. There were no contamination or recovery problems. The recovered components of the weapon were returned to the Atomic Energy Commission. Both the weapon and the capsule of nuclear

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material were on board the aircraft but the capsule was not inserted for safety reasons. A nuclear detonation was not possible.

July 13, 1950/B-50/Lebanon, Ohio. The B-50 was on a training mission from Biggs AFB, Texas. The aircraft was flying at 7,000 feet on a clear day. The aircraft nosed down and flew into the ground killing four officers and twelve airman. The high explosive portion of the weapon detonated on impact. There was no nuclear capsule aboard this aircraft.

August 5, 1950/B-29/Fairfield-Suisun AFB, California. A B-29 carrying a weapon, but no capsule, experienced two runaway propellers and landing gear retraction difficulties on takeoff from Fairfield-Suisun AFB (now Travis AFB). The aircraft attempted emergency landing, crashed, and burned. The fire was fought for 12-15 minutes before the weapon's high explosive material detonated. Nineteen crew members and rescue personnel were killed in the crash and/or the resulting detonation, including General Travis.

November 10, 1950/B-50/Over Water, Outside United States. Because of an in-flight aircraft emergency, a weapon containing no capsule of nuclear material was jettisoned over water from an altitude of 10,500 feet. A high explosive detonation was observed.

March 10, 1956/B-47/Mediterranean Sea. The aircraft was one of a flight of four scheduled for nonstop deployment from MacDill AFB to an overseas air base. Take-off from MacDill and first refueling were normal. The second refueling point was over the Mediterranean Sea. In preparation for this, the flight penetrated a solid cloud formation to descend to the refueling level of 14,000 feet. Base of the clouds was 14,500 feet and visibility was poor. The aircraft, carrying two nuclear capsules in carrying cases, never made contact with the tanker. An extensive search failed to locate any traces of the missing aircraft or crew. No weapons were aboard the aircraft, only two capsules of nuclear weapons material in carrying cases. A nuclear detonation was not possible.

July 27, 1956/B-47/Overseas Base. A B-47 aircraft with no weapons aboard was on a routine training mission making a touch and go landing when the aircraft suddenly went out of

control and slid off the runway, crashing into a storage igloo containing several nuclear weapons. The bombs did not burn or detonate. There were no contamination or cleanup problems. The damaged weapons and components were returned to the AEC. The weapons that were involved were in storage configuration. No capsules of nuclear materials were in the weapons or present in the building.

May 22, 1957/B-36/Kirtland AFB, New Mexico. The aircraft was ferrying a weapon from Biggs AFB, Texas, to Kirtland AFB. At 11:50 a.m. Mountain Standard Time, while approaching Kirtland at an altitude of 1,700 feet, the weapon dropped from the bomb bay taking the bomb bay doors with it. Weapon parachutes were deployed but apparently did not fully retard the fall because of the low altitude. The impact point was approximately 4.5 miles south of the Kirtland control tower and 0.3 miles west of the Sandia Base reservation. The high explosive material detonated, completely destroying the weapon and making a crater approximately 25 feet in diameter and 12 feet deep. Fragments and debris were scattered as far as one mile from the impact point. The release mechanism locking pin was being removed at the time of release. (It was standard procedure at that time, that the locking pin be removed during takeoff and landing to allow for emergency jettison of the weapon, if necessary.) Recovery and cleanup operations were conducted by Field Command, Armed Forces Special Weapons Project. Radiological survey of the area disclosed no radioactivity beyond the lip of the crater at which point the level was 0.5 milliroentgens. There were no health or safety problems. Both the weapon and capsule were on board the aircraft but the capsule was not inserted for safety reasons. A nuclear detonation was not possible.

July 28, 1957/C-124/Atlantic Ocean. Two weapons were jettisoned from a C-124 aircraft on July 28 off the east coast of the United States. There were three weapons and one nuclear capsule aboard the aircraft at the time. Nuclear components were not installed in the weapons. The C-124 aircraft was en route from Dover AFB, Delaware, when a loss of power from number one and two engines was experienced. Maximum power was applied to the remaining engines; however, level flight could not be maintained. At this point, the

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decision was made to jettison cargo in the interest of safety of the aircraft and crew. The first weapon was jettisoned at 4,500 feet altitude. The second weapon was jettisoned at approximately 2,500 feet altitude. No detonation occurred from either weapon. Both weapons are presumed to have been damaged from impact with the ocean surface. Both weapons are presumed to have submerged almost instantly. The ocean varies in depth in the area of the jettisons. The C-124 landed at an airfield in the vicinity of Atlantic City, New Jersey, with the remaining weapon and the nuclear capsule aboard. A search for the weapons or debris had negative results.

October 11, 1957/B-47/Homestead AFB, Florida. The B-47 departed Homestead AFB shortly after midnight on a deployment mission. Shortly after liftoff, one of the aircraft's outrigger tires exploded. The aircraft crashed in an uninhabited area approximately 3,800 feet from the end of the runway. The aircraft was carrying one weapon in ferry configuration in the bomb bay and one nuclear capsule in a carrying case in the crew compartment. The weapon was enveloped in flames which burned and smoldered for approximately four hours after which time it was cooled with water. Two low-order high-explosive detonations occurred during the burning. The nuclear capsule and its carrying case were recovered intact and only slightly damaged by heat. Approximately one-half of the weapon remained. All major components were damaged but were identifiable and accounted for.

January 31, 1958/B-47/Overseas Base. A B-47 with one weapon in strike configuration was making a simulated takeoff during an exercise alert. When the aircraft reached approximately 30 knots on the runway, the left rear wheel casting failed. The tail struck the runway and a fuel tank ruptured. The aircraft caught fire and burned for seven hours. Firemen fought the fire for the allotted ten minute fire-fighting time for high explosive contents of that weapon, then evacuated the area. The high explosive did not detonate, but there was some contamination in the immediate area of the crash. After the wreckage and the asphalt beneath it were removed and the runway washed down, no contamination or waste was detected. One fire truck and one fireman's clothing showed slight alpha contamination until washed. Following

the accident, exercise alerts were temporarily suspended and B-47 wheels were checked for defects.

February 5, 1958/B-47/Savannah River, Georgia. The B-47 was on a simulated combat mission that originated at Homestead AFB, Florida. While near Savannah, Georgia, the B-47 had a mid-air collision at 3:30 a.m., with an F-86 aircraft. Following the collision, the B-47 attempted three times to land at Hunter AFB, Georgia, with a weapon aboard. Because of the condition of the aircraft, its airspeed could not be reduced enough to ensure a safe landing. Therefore, the decision was made to jettison the Mark 15, Mod 0 weapon rather than expose Hunter AFB to the possibility of a high explosive detonation. A nuclear detonation was not possible since the nuclear capsule was not aboard the aircraft. The weapon was jettisoned into the water several miles from the mouth of the Savannah River (Georgia) in Wassaw Sound off Tybee Beach. The precise weapon impact point is unknown. The weapon was dropped from an altitude of approximately 7,200 feet at an aircraft speed of 180-190 knots. No detonation occurred. After jettison, the B-47 landed safely. A three-square-mile area was searched using a ship with divers and underwater demolition team technicians using Galvanic drag and hand-held sonar devices. The weapon was not found. The search was terminated April 16, 1958. The weapon was considered to be irretrievably lost.

March 11, 1958/B-47/Florence, South Carolina. On March 11, 1958, at 3:53 p.m., Eastern Standard Time, a B-47E departed Hunter AFB, Georgia, as number three aircraft in a flight of four en route to an overseas base. After level off at 15,000 feet, the aircraft accidentally jettisoned an unarmed nuclear weapon which impacted on a sparsely populated area six-and-one-half miles east of Florence, South Carolina. The bomb's high explosive material exploded on impact. The detonation caused property damage and several injuries on the ground. The aircraft returned to base without further incident. No capsule of nuclear materials was aboard the B-47 or installed in the weapon.

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November 4, 1958/B-47/Dyess AFB, Texas. A B-47 caught fire on take-off. Three crew members successfully ejected; one was killed when the aircraft crashed from an altitude of 1,500 feet. One nuclear weapon was on board when the aircraft crashed. The resultant detonation of the high explosive made a crater 35 feet in diameter and six feet deep. Nuclear materials were recovered near the crash site.

November 26, 1958/B-47/Chennault AFB, Louisiana. A B-47 caught fire on the ground. The single nuclear weapon on board was destroyed by the fire. Contamination was limited to the immediate vicinity of the weapon residue within the aircraft wreckage.

January 18, 1959/F-100/ Pacific Base. The aircraft was parked on a revetted hardstand in ground alert configuration. The external load consisted of a weapon on the left intermediate station and three fuel tanks (both inboard stations and the right intermediate station). When the starter button was depressed during a practice alert, an explosion and fire occurred when the external fuel tanks inadvertently jettisoned. Fire trucks at the scene put out the fire in about seven minutes. The capsule was not in the vicinity of the aircraft and was not involved in the accident. There were no contamination or cleanup problems.

July 6, 1959/C-124/Barksdale AFB, Louisiana. A C-124 on a nuclear logistics movement mission crashed on take-off. The aircraft was destroyed by fire which also destroyed one weapon. No nuclear or high explosive detonation occurred - safety devices functioned as designed. Limited contamination was present over a very small area immediately below the destroyed weapon. This contamination did not hamper rescue or fire fighting operations.

September 25, 1959/P-5M/Pacific Ocean off Washington/Oregon Coast. A U.S. Navy P-5M aircraft assigned to Naval Air Station Whidbey Island, Washington, crashed in the Pacific Ocean about 100 miles west of the Washington/Oregon border. It was carrying an unarmed nuclear antisubmarine weapon which contained no nuclear material. The weapon was not recovered.

October 15, 1959/B-52/KC-135/Hardinsburg, Kentucky. The B-52 departed Columbus AFB, Mississippi, at 2:30 p.m., Central Standard Time, October 15, 1959. This aircraft assumed the number 2 position in a flight of two. The KC-135 departed Columbus AFB at 5:33 p.m. Central Standard Time as the number 2 tanker aircraft in a flight of two scheduled to refuel the B-52s. Rendezvous for refueling was accomplished in the vicinity of Hardinsburg, Kentucky, at 32,000 feet. It was night, weather was clear, and there was no turbulence. Shortly after the B-52 began refueling from the KC-135, the two aircraft collided. The instructor pilot and pilot of the B-52 ejected, followed by the electronic warfare officer and the radar navigator. The co-pilot, navigator, instructor navigator, and tail gunner failed to leave the B-52. All four crewmembers in the KC-135 were fatally injured. The B-52s two unarmed nuclear weapons were recovered intact. One had been partially burned, but this did not result in the dispersion of any nuclear material or other contamination.

June 7, 1960/BOMARC/McGuire AFB, New Jersey. A BOMARC air defense missile in ready-storage condition (permitting launch in two minutes) was destroyed by explosion and fire after a high-pressure helium tank exploded and ruptured in the missile's fuel tanks. The warhead was also destroyed by the fire, although the high explosive did not detonate. Nuclear safety devices acted as designed. Contamination was restricted to an area immediately beneath the weapon and an adjacent elongated area approximately 100 feet long, caused by drain-off of firefighting water.

January 24, 1961/B-52/Goldsboro, North Carolina. During a B-52 airborne alert mission, structural failure of the right wing resulted in two weapons separating from the aircraft during aircraft breakup at 2,000-10,000 feet altitude. One bomb's parachute deployed and the weapon received little impact damage. The other bomb fell free and broke apart upon impact. No explosion occurred. Five of the eight crew members survived. A portion of one weapon, containing uranium, could not be recovered despite excavation in the waterlogged farmland to a depth of 50 feet. The Air Force subsequently purchased an easement

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requiring permission for anyone to dig there. There is no detectable radiation and no hazard in the area.

March 14, 1961/B-52/Yuba City, California. A B-52 experienced failure of the crew compartment pressurization system, forcing descent to 10,000 feet altitude. Increased fuel consumption caused fuel exhaustion before rendezvous with a tanker aircraft. The crew bailed out at 10,000 feet, except for the aircraft commander who stayed with the aircraft to 4,000 feet, steering the plane from populated area. The two nuclear weapons on board were torn from the aircraft on ground impact. The high explosive did not detonate. Safety devices worked, as designed, and there was no nuclear contamination.

November 13, 1963/Atomic Energy Commission Storage Igloo/Medina Base, Texas. An explosion involving 123,000 pounds of high explosive components of nuclear weapons caused minor injuries to three AEC employees. There was little contamination from the nuclear components stored elsewhere in the building. The components were from obsolete weapons being disassembled.

January 13, 1964/B-52/Cumberland, Maryland. A B-52D was en route from Westover AFB, Massachusetts, to its home base at Turner AFB, Georgia. The crash occurred approximately 17 miles southwest of Cumberland, Maryland. The aircraft was carrying two weapons. Both weapons were in tactical ferry configuration (no mechanical or electrical connection had been made to the aircraft and the safing switches were in the "SAFE" position). Prior to the crash, the pilot had requested a change of altitude because of severe air turbulence at 29,500 feet. The aircraft was cleared to climb to 33,000 feet. During the climb, the aircraft encountered violent air turbulence and aircraft structural failure subsequently occurred. Of the five aircrew members, only the pilot and co-pilot survived. The gunner and navigator ejected but died of exposure to sub-zero temperatures after successfully reaching the ground. The radar navigator did not eject and died upon aircraft impact. The crash site was an isolated mountainous and wooded area. The site had 14 inches of new snow covering the aircraft wreckage which was scattered over an area of

approximately 100 square yards. The weather during this recovery and cleanup operation involved extreme cold and gusty winds. Both weapons remained in the aircraft until it crashed and were relatively intact in the approximate center of the wreckage area.

December 5, 1964/Land-Based Guided Missile (LGM) (Minuteman I Intercontinental Ballistic Missile)/Ellsworth AFB, South Dakota. The LGM 30B Minuteman I missile was on strategic alert at Launch Facility (LF) L-02, Ellsworth AFB, South Dakota. Two airmen were dispatched to the LF to repair inner zone (IZ) security system. In the midst of their checkout of the IZ system, one retrorocket in the spacer below the reentry vehicle (RV) fired, causing the RV to fall about 75 feet to the floor of the silo. When the RV struck the bottom of the silo, the arming and fuzing/altitude control subsystem containing the batteries was torn loose, thus removing all sources of power from the RV. The RV structure received considerable damage. All safety devices operated properly, in that they did not sense the proper sequence of events to allow arming the warhead. There was no detonation or radioactive contamination.

December 8, 1964/B-58/Bunker Hill (Now Grissom) AFB, Indiana. Strategic Air Command aircraft were taxiing during an exercise alert. As one B-58 reached a position directly behind the aircraft on the runway ahead of it, the aircraft ahead brought advanced power. As a result of the combination of the jet blast from the aircraft ahead, the icy runway surface conditions, and the power applied to the aircraft while attempting to turn onto the runway, control was lost and the aircraft slide off the left hand side of the taxiway. The left main landing gear passed over a flush mounted taxiway light fixture and 10 feet further along in its travel, grazed the left edge of a concrete light base. Ten feet further, the left main landing gear struck a concrete electrical manhole box, and the aircraft caught on fire. When the aircraft came to rest, all three crew members aboard began abandoning the aircraft. The aircraft commander and defensive systems operator egressed with only minor injuries. The navigator ejected in his escape capsule, which impacted 548 feet from the aircraft. He did not survive. Portions of the five nuclear weapons on board

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burned; contamination was limited to the immediate area of the crash and was subsequently removed.

October 11, 1965/C-124/Wright-Patterson AFB, Ohio. The aircraft was being refueled in preparation for a routine logistics mission when a fire occurred at the aft end of the refueling trailer. The fuselage of the aircraft, containing only components of nuclear weapons and a dummy training unit, was destroyed by the fire. There were no casualties. The resultant radiation hazard was minimal. Minor contamination was found on the aircraft, cargo and clothing of explosive ordnance disposal and firefighting personnel, and was removed by normal cleaning.

December 5, 1965/A-4/At Sea, Pacific. An A-4 aircraft loaded with one nuclear weapon rolled off the elevator of a U.S. aircraft carrier and fell into the sea. The pilot, aircraft and weapon were lost. The incident occurred more than 500 miles from land.

January 17, 1966/B-52/KC-135/Palomares, Spain. The B-52 and KC-135 collided during a routine high altitude air refueling operation. Both aircraft crashed near Palomares, Spain. Four of the eleven crew members survived. The B-52 carried four B-28 nuclear weapons. One was recovered on the ground; and one was recovered from the sea on April 7 after extensive search and recovery efforts. Two of the weapons' high explosive materials exploded on impact with the ground, releasing some radioactive materials. Approximately 1,400 tons of slightly contaminated soil and vegetation were removed to the United States for storage at an approved site. Representatives of the Spanish government monitored the cleanup operation.

January 21, 1968/B-52/Thule, Greenland. A B-52 from Plattsburgh AFB, New York, crashed and burned some seven miles southwest of the runway at Thule Air Force Base, Greenland, while approaching the base to land. Six of the seven crew members survived. The bomber carried four nuclear weapons, all of which were destroyed by fire. Some radioactive contamination occurred in the area of the crash, which was on the sea ice. Some 237,000 cubic feet of contaminated ice, snow and water, with crash debris, were removed to an approved

storage site in the United States over the course of a four-month operation. Although an unknown amount of contamination was dispersed by the crash, environmental sampling showed normal readings in the area after the cleanup was completed. Representatives of the Danish government monitored the cleanup operations.

Spring 1968/At Sea, Atlantic. When USS SCORPION (SSN 589) sank in 1968, there were two Mk 45 ASTOR torpedoes with nuclear warheads aboard. The warheads were low-yield tactical nuclear weapons. The special nuclear material (plutonium and highly enriched uranium) from the warheads has not been recovered. It can be assumed with certainty that the integrity of the weapons was compromised due to sea pressure and that the weapons were exposed to seawater immediately after the sinking. Periodic monitoring of sea water, marine life and sediment from the wreck site has not detected plutonium in excess of that expected from fallout from past atmospheric weapons testing nor uranium in excess of natural background concentrations. No significant environmental impact is expected.

September 19, 1980/Titan II ICBM/ Damascus, Arkansas. During routine maintenance in a Titan II silo, an Air Force repairman dropped a heavy wrench socket, which rolled off a work platform and fell toward the bottom of the silo. The socket bounced and struck the missile, causing a leak from a pressurized fuel tank. The missile complex and the surrounding area were evacuated and a team of specialists was called in from Little Rock AFB, the missile's main support base. About eight and one-half hours after the initial puncture, fuel vapors within the silo ignited and exploded. The explosion fatally injured one member of the team. Twenty-one other U.S. Air Force personnel were injured. The missile's reentry vehicle, which contained the nuclear warhead, was recovered intact. There was no radioactive contamination.

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APPENDIX C

UNCLASSIFIED NAVAL NUCLEAR PROPULSION INFORMATION

Technical objective of a nuclear propulsion project if objective is generalized

Compilation of schedules concerning procurement, manufacture, delivery or repair of primary and secondary plant components

Information regarding status of propulsion plant design, construction, overhaul, and refueling or defueling (e.g., schedules, priorities)

Capital cost of overall reactor plant excluding core costs

Core fabrication costs excluding the costs of the special nuclear material

The fact that a Reactor Safeguards Examination or Post-Overhaul Reactor Safeguards Examination occurred on a specific naval vessel on a specific date including the associated location and schedule

Weight summaries that do not reveal total plant or ship weight, or permit weight comparisons of propulsion plants or ships

Weights of individual reactor components or propulsion plant components

X-ray techniques used in radiographing fuel and poison elements

Corrosion test parameters (including pressure and temperatures) and tests performed on fuel elements when applied to test coupons not containing fuel or poison and not identified with a specific core

Testing methods for Zircaloy-to-Zircaloy bonds

Procurement and manufacture of hafnium and zirconium alloy shapes including inspection records and acceptance criteria

Design and fabrication of source rods, thermocouples and other core instrumentation components provided core design is not revealed

Equipment and tools for refueling, core installation and reactor maintenance, including drawings, specifications, and technical manuals

General description of reactor closure heads, and the methods for preloading the closure head

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Design of the reactor servicing system including refueling equipment used in the Naval Nuclear Propulsion Program

Radiation levels on contact with reactor servicing equipment

Procedures and parameters used for weld, welder, and welding machine qualification

Repair procedures for noncore components

In-pile properties and behavior of hafnium, Zircaloy-2 (Zr-2), Zircaloy-3 (Zr-3), and Zircaloy-4 (Zr-4), provided information is associated with general type testing, and not application to a ship or prototype

Techniques used for expended core examinations provided there is no association with a specific core

Dimensions (width, length, and thickness), general corrosion (weight gain), and mechanical metallurgy or general mechanical and physical properties (tensile, charpy, creep, growth, UT cracking, thermal characteristics, and compact tension) of preirradiation and postirradiation test specimens and test assemblies

Photomicrographs of Zircaloy-2 (Zr-2), Zircaloy-3 (Zr-3), and Zircaloy-4 (Zr-4) cladding, hafnium or structural material where the material is not associated to a specific project, operating prototype or specific reactor core

General corrosion and mechanical metallurgy and general mechanical, physical, fabrication, weldability, and unirradiated and postirradiated properties of specific materials

General wear properties of specific materials

Weldability of primary coolant system components

The fact the ultrasonic testing of a specific operating reactor vessel is being planned or conducted

Mechanical, physical, and metallurgical properties; and fabrication and weldability; of materials associated with the Naval Nuclear Propulsion Program

Neutron cross sections

Overall shielding design and shield design radiation criteria for land-based facilities

Individual shield panel thickness or inspection record

Radiological survey results of reactor plant components which are not installed in a ship

Radiation levels near the ship or prototype when the reactor is shut down

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Compilation of individual calculational programs to form a "Unified Shield Program manual or user's guide"

Reactor coolant chemistry and secondary system water chemistry analysis methods

Activity of waste products and composition of secondary coolant waste products

Methods for decontamination of components removed from the plant

Primary relief valve pressure setting

Flow through individual primary plant components that does not reveal reactor coolant system flow rate

Panel assembly and instrument drawings of reactor plant instrument and control systems not required for direct control of the primary system. Examples are steam generator water level control, reactor compartment isolation, pump noise monitor, and radiation monitoring

Outline drawing of primary system components when separated from assembly, design and operating data

The number of primary or secondary loops

The number of major reactor plant instrumentation and electrical equipment components per ship or plant

The number of reactor instrumentation or electrical components or cabinets operating, or required to be operating, at full power

The design of reactor servicing equipment intended for use with the rod control system

Design details of naval nuclear propulsion plant reactor containment systems

Steam system design temperature and pressure

Feed and condensate temperature

Technical manual description of a propulsion unit (turbine and gears or turbine generators)

Steam plant fluid system descriptions and diagrams except main steam, main feed, main condensate, and steam generating systems

Chemical cleaning hardware or water jet cleaning system hardware (including operating instructions), system design, system operation or test procedures

Methods of verifying or qualifying computer programs which reveal attributes specific to the Naval Nuclear Propulsion Program

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OFFICIAL USE ONLY**APPENDIX D****ABBREVIATIONS AND ACRONYMS**

AEA	Atomic Energy Act
AEC	Atomic Energy Commission
AFR	Advanced Fleet Reactor
AFSWP	Armed Forces Special Weapons Project
AIS	automated information system
AOSS	automated office support system
AMTEC	Alkali Metal Thermal to Electric Converter
BI	book inventory
C	Confidential
CEI	Critical Energy Infrastructure
CIA	Central Intelligence Agency
COMSEC	communications security
CRIB	Card Reader Insert Board
DASA	Defense Atomic Support Agency
DBT	Design Basis Threat
DC	derivative classifier
DDE	Declassification Date or Event
DEW	Directed Energy Weapon
DNA	Defense Nuclear Agency
DNES	Directed Nuclear Energy System
DNI	Director of National Intelligence
DoD/DOD	Department of Defense
DOE	Department of Energy
DOS	Department of State
DSWA	Defense Special Weapons Agency
DTRA	Defense Threat Reduction Agency
EMP	electromagnetic pulse
E.O.	Executive Order
ERDA	Energy Research&Development Administration
EV	escort vehicle or event
FBI	Federal Bureau of Investigation
FRD	Formerly Restricted Data
GPHS	General Purpose Heat Sensor
HRRD	Historical Record Restricted Data
ID	inventory difference

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IND	improvised nuclear device
IR	Information Ratio
ISOO	Information Security Oversight Office
KAPL	Knolls Atomic Power Laboratory
LANL	Los Alamos National Laboratory
LEID	limit of error of the inventory difference
LTNE	Low Technology Nuclear Explosive
MBA	Material Balance Area
MC&A	Material Control and Accountability
MFD	Military First Destination
MHC	Modified Hydraulic Core
MHW	Multihundred Watt
MSSA	Master Safeguard and Security Agreement
NASA	National Aeronautics and Space Administration
NDEW	Nuclear Directed Energy Weapon
NELA	Nuclear Explosive Like Assembly
NEST	Nuclear Emergency Support Team (formerly Nuclear Emergency Search Team)
NMC	Nuclear Materials Courier
NNPI	Naval Nuclear Propulsion Information
NNSA	National Nuclear Security Administration
NNWS	Nonnuclear Weapon State
NR	Naval Reactors
NSA	National Security Agency
NSA	National Security Asset
NSI	National Security Information
NV	Nevada Operations Office or Nevada Site Office
OA	OPSEC Assessment
O&M	Operations and Maintenance
OMA	Office of Military Application
OPSEC	operations security
ORSE	Operational Reactor Safeguards (Safety) Examination(s)
OST	Office of Secure Transportation
OUO	Official Use Only
PI	physical inventory
PORSE	Post-Overhaul Reactor Safeguards (Safety) Examinations
PSA	probabilistic safety (risk) analysis
PTS	Protected Transmission System
RCPE	Radiological Control Practices Evaluations
RD	Restricted Data
RDD	radiological dispersal device

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RDT&E	Research, Development, Technology and Evaluation
RED	radiation exposure device
RIS	reporting identification symbol
rpm	revolutions per minute
RPS	radioisotopic power system
RSE	Reactor Safeguards (Safety) Examinations
RTG	radioisotope thermoelectric generator
SAM	Special Airlift Mission
SECOM	security communications
SGT	Safeguards Transporter
SNAP	Space Nuclear Auxiliary Power
SNM	special nuclear material
SNPP	Space Nuclear Power Plant
SNRI	Space Nuclear Reactor Information
SOP	standard operating procedures
SPR	Strategic Petroleum Reserve
SSR	Safe Secure Railcar
SST	Safe Secure Trailer
TEMPEST	Transient Electromagnetic Pulse Standard
TSCM	technical surveillance countermeasures
TSD	Transportation Safeguards Division
TSS	transportation safeguards system
TSSX	Transportation Safeguards System Railcar
U-NNPI	Unclassified Naval Nuclear Propulsion Information
U-SNRI	Unclassified Space Nuclear Reactor Information
UCNI	Unclassified Controlled Nuclear Information
U.K.	United Kingdom
U.S.	United States
VA	vulnerability assessment

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APPENDIX E

NUCLEAR MATERIALS

Table 1. Nuclear Materials

Material Type	SNM	Source	Other Nuclear Material
Depleted Uranium		X	
Enriched Uranium ^a	X		
Normal Uranium		X	
Uranium-233	X		
Plutonium-242 ^b	X		
Plutonium 239-241	X		
Plutonium-238 ^c	X		
Americium-241			X
Americium-243			X
Berkelium			X
Californium-252			X
Curium			X
Deuterium			X
Lithium-6			X
Neptunium-237			X
Thorium		X	
Tritium ^d			X

a Uranium in cascades is treated as enriched uranium.

b Report as Pu²⁴² if the contained Pu²⁴² is 20 percent or greater of total Pu by weight; otherwise report as Pu²³⁹⁻²⁴¹

c Report as Pu²³⁸ if the contained Pu²³⁸ is 10 percent or greater of total Pu by weight; otherwise report as Pu²³⁹⁻²⁴¹

d Tritium contained in water (H₂O or D₂O) used as a moderator in a nuclear reactor is not an accountable material.

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APPENDIX F

DEFINITIONS

Access Denial - Refers to methods for preventing any of the following: the knowledge, use, or possession of classified or other sensitive information; the proximity to a nuclear weapon and/or special nuclear material in such a manner as to allow the opportunity to control, divert, steal, tamper with and/or damage the weapon or material; or ability and means to communicate with (i.e., input to or receive output from), or otherwise make use of any information, resource, or component in a Classified Automated Information System.

Atomal - A NATO marking applied to Restricted Data or Formerly Restricted Data provided by the United States to NATO, or to "U.K. Atomic Information" provided by the United Kingdom.

Attack - A covert or overt act directed against departmental assets or personnel that, if successful, would result in damage to Departmental property or the environment or injury to Departmental or contractor employees.

Automated Information System (AIS) -

- a. An assembly of computer hardware, software, or firmware configured to collect, create, communicate, compute, disseminate, process, store, or control data or information. (E.O. 13526)
- b. An assembly of computer hardware, software, and firmware configured for the purpose of automating the functions of calculating, computing, sequencing, storing, retrieving, displaying, communicating, or otherwise manipulating data, information and textual material. (NISPOM)

Automated Information System (AIS) Security - Compilation of the technological safeguards and managerial procedures established and applied to computer hardware, software, and data in order to ensure the protection of organizational assets and individual privacy. This includes: all hardware/software functions, characteristics, and features; operational procedures; accountability procedures; access controls at all computer facilities; management constraints; physical protection; control of compromising emanations (TEMPEST); personnel and communications security; and other security disciplines.

Automatic Declassification - The declassification of information based solely upon:

- a. the occurrence of a specific date or event as determined by the original classification authority; or
- b. the expiration of a maximum time frame for duration of classification established under E.O. 13526.

Book Inventory (BI) - The term for the quantity of nuclear material present at a given time as reflected by accounting records.

Category I Quantity of SNM Category (sometimes referred to as threshold quantity or trigger quantity or significant quantity of strategic SNM) - See DOE O 474.2.

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Communications Security (COMSEC) - Measures and controls taken to deny unauthorized persons information derived from telecommunications and ensure the authenticity of such telecommunications.

NOTE: Communications security includes cryptosecurity, transmission security, emission security, and physical security of COMSEC material.

COMSEC Equipment - Equipment designed to provide security to telecommunications by converting information to a form unintelligible to an unauthorized interceptor and by reconvertng such information to its original form for authorized recipients, as well as equipment designed specifically to aid in, or as an essential element of, the conversion process. COMSEC equipment is crypto-equipment, crypto ancillary equipment, crypto production equipment, and authentication equipment.

Compromise - Disclosure of classified information to an unauthorized person(s). See "Unauthorized Disclosure."

Component, Nuclear - Weapon components composed of fissionable or fusionable materials that contribute substantially to nuclear energy released during detonation. These include boosting materials but not initiator materials.

Convoy - One or more highway vehicles transporting material, equipment, matter and/or personnel organized under the same itinerary for the purpose of safeguarding highway trip(s).

Cosmic - A North Atlantic Treaty Organization marking applied to Top Secret documents prepared by or for circulation within the North Atlantic Treaty Organization.

Counterintelligence - Activity intended to detect, counteract, and/or prevent espionage and other clandestine intelligence activities, sabotage, and international terrorist activities by or on behalf of foreign powers, organizations, or persons.

Critical Nuclear Weapon Design Information (CNWDI) - CNWDI is NOT a classification; it is an access limiter used primarily within the DoD to control "need-to-know" access for design information on nuclear weapons. (N) is used to indicate CNWDI information. A CNWDI marking should be used on any document going to the DoD that contains information classified by topics marked with an (N). CNWDI is defined as Top Secret Restricted Data or Secret Restricted Data revealing the theory of operation or design of the components of a thermonuclear-type or implosion fission-type bomb, warhead, demolition munition, or test device. Specifically excluded is information concerning arming, fuzing or firing systems, limited life components, or total contained quantities of fissionable, fusionable, or high-explosive materials by type. Among these excluded items are the components that service personnel set, maintain, operate, test, or replace.

Cryptanalysis - The steps and operations performed in converting encrypted messages into plain text without initial knowledge of the key employed in the encryption.

Cryptoprinciple - A deterministic logic by which information may be converted to an intelligible form and reconverted to an intelligible form.

Cryptosystem - Associated COMMUNICATION SECURITY items interacting to provide a single means of encryption and decryption.

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Declassification -

- a. The authorized change in the status of information from classified information to unclassified information. (E.O. 13526)
- b. The determination that classified information no longer requires, in the interest of national security, any degree of protection against unauthorized disclosure, together with removal or cancellation of the classification designation.
 1. information - A determination by appropriate authority in accordance with approved classification policy that information is no longer classified; or
 2. documents or material - A determination by appropriate authority in accordance with approved classification guidance that a classified document or material no longer contains classified information.
 3. The determination that classified information no longer requires, in the interest of national security, any degree of protection against unauthorized disclosure, together with removal or cancellation of the classification designation. (NISPOM)

Decrypt - To convert encrypted text into its equivalent plain text by means of a cryptosystem. (This does not include solution by cryptanalysis.)

NOTE: The term decrypt covers the meanings of decipher and decode.

Delivery Vehicle - The portion of a weapon system that delivers a nuclear weapon to its target; usually a missile or aircraft.

Design Basis Threat - A policy statement that describes threats that are postulated for the purpose of establishing requirements for safeguards and security significant programs, systems, components, equipment, information or material.

Document - The physical medium on or in which information is recorded or a product or substance which contains or reveals information, regardless of its physical form or characteristics. Documents include written or printed information; removable ADP media (diskettes, tapes, cards, etc.); charts; maps; paintings; drawings; engravings; sketches; photographic prints; exposed or developed film; working notes and papers; reproductions of such things by any means or process; and sound and video recordings by magnetic, optical, or any other electronic means.

Downgrading -

- a. A determination by a declassification authority that information classified and safeguarded at a specified level shall be classified and safeguarded at a lower level. (E.O. 13526)
- b. A determination by appropriate authority that:
 1. Information may be handled or discussed at a level lower than the initial classification level, or
 2. Documents and/or material may be handled or stored at a level and/or category lower than the initial classification level and/or category.

In either case, the revised classification level shall not be lower than Confidential.

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Encrypt - To convert plain text into unintelligible form by means of a cryptosystem.

NOTE: The term encrypt covers the meanings of encipher and encode.

Escort Vehicle (EV) - Normally a van-type vehicle used to carry couriers and equipment for escorting TSS convoys and trains.

Exclusion Area - A type of DOE security area defined by physical barriers and subject to access control where mere presence in the area would normally result in access to classified information.

Exercise - Any scenario that simulates an actual incident requiring a response.

Exploitable Weakness - A weakness that can be used mainly for the adversary's advantage.

Facility - An educational institution, manufacturing plant, laboratory, office building, or complex of buildings located on the same site that is operated and protected as one unit by the Department or its contractor(s).

Foreign Government Information - Information that is:

- a. Provided to the U.S. Government by a foreign government or governments, an international organization of governments, or any element thereof, with the expectation that the information, the source of the information, or both, are to be held in confidence;
- b. Produced by the United States pursuant to or as a result of a joint arrangement with a foreign government or governments or an international organization of governments, or any elements thereof, requiring that the information, the arrangement, or both are to be held in confidence; or
- c. Received and treated as "foreign government information" under the terms of a predecessor order to E.O. 13526.

Foreign Intelligence -

- a. Information and product materials resulting from collection, evaluation, analysis, integration, and interpretation of intelligence information about a foreign power, which is significant to the national security, foreign relations, or economic interests of the United States and which is provided by a Government agency that is assigned an intelligence mission (i.e., an intelligence agency);
- b. Information relating to the capabilities, intentions, and activities of foreign powers, organizations, or persons (i.e., positive intelligence), but not including counterintelligence (with the exception of information on international terrorist activities; or
- c. Information relating to the ability of the United States to protect itself against actual or potential attack by, or other hostile acts of, a foreign power or its agents, or against the activities of foreign intelligence services.

Hardening - Measures taken in the design and fabrication of a weapon or its parts to reduce their vulnerability.

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Heavy Shipping Container - A thick-walled container (e.g., spent fuel shipping cask) which is used for shipping radioactive materials and which would require the use of high explosives or other such means for breaching in order to effect release and dispersion of its radioactive contents.

Highly Concentrated Easily Dispersible Form - A form, specific activity, and total activity that can be handled in such a way as to effect a highly significant malevolent dispersal.

Highly Irradiated Material - Material having a radiation level of at least 100 rem/hr at one meter.

Highly Significant Malevolent Dispersal - A malevolent dispersal in which greater than Title 10, Code of Federal Regulations, Part 100 criteria or similar levels of respirable, ingestible, or water soluble doses can be received. The profiles (including capabilities) of the perpetrators of such dispersals are defined by the DOE Design Basis Threat Policy or by site or program specific threats developed in Master Safeguards and Security Agreements.

Improvised Nuclear Device (IND) - A device incorporating radioactive materials which is made outside an official U.S. Government or other nuclear-weapon-state program and which has, appears to have, or is claimed to have the capability to produce a nuclear explosion.

NOTE: The DoD uses the term "Sophisticated Improvised Explosive Device (SIED)" to refer to an IND of comparatively advanced design.

Information -

- a. Any knowledge that can be communicated or documentary material, regardless of its physical form or characteristics, that is owned by, produced by or for, or is under the control of the U.S. Government. "Control" means the authority of the agency that originates information, or its successor in function, to regulate access to the information. (E.O. 13526)
- b. Any information or material, regardless of its physical form or characteristics. (NISPOM)
- c. Facts, data, or knowledge itself, rather than the medium of its conveyance. (Documents and material are deemed to convey or contain information and are not considered to be information per se.)

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Intelligence Community - The aggregate of those organizations and departments of the U.S. Executive Branch that conduct or support various intelligence activities comprising the total national intelligence effort. Pursuant to E.O. 12333, the IC is comprised the following:

- a. The Central Intelligence Agency (CIA);
- b. The National Security Agency (NSA);
- c. The Defense Intelligence Agency (DIA);
- d. Offices within the Department of Defense for the collection of specialized national foreign intelligence through reconnaissance programs;
- e. The Bureau of Intelligence and Research of the Department of State;
- f. The intelligence elements of the military services (Army, Navy, Air Force, and Marine Corps), the Federal Bureau of Investigation, the Department of the Treasury, the Department of Energy, and,
- g. Staff elements of the Director of National Intelligence.

Inventory Difference (ID) - The numerical difference between the nuclear materials book inventory (BI) and the corresponding physical inventory (PI). Expressed mathematically as: $BI - PI = ID$. The term "total inventory difference" is sometimes used for inventory difference. Formerly called MUF (Material Unaccounted For, an obsolete term).

Low Technology Nuclear Explosive (LTNE) - A simulated nuclear explosive device or design which is made by an official United States Government program for research or training purposes concerning the improvised nuclear device problem. LTNEs do not include U.S. nuclear weapons or nuclear weapon test devices.

Malevolent Dispersal - A dispersal of radioactive material, resulting from a malevolent act, in which greater than Title 10, Code of Federal Regulations, Part 100 criteria or similar levels of respirable, ingestible, or water soluble doses can be received.

Manifest - A list of material being transported from one location to another for a segment of a trip or for the entire trip.

Material - Any substance regardless of its physical or chemical form. It includes raw, in-process, or manufactured commodity, equipment, component, accessory, part, assembly, or product of any kind.

Material Balance Area (MBA) - An area that is both a subsidiary account of materials at a facility and a single geographical area that has defined boundaries and is an integral operation. It is used to identify the location and quantity of nuclear materials in the facility.

Material Control and Accountability (MC&A) - That part of safeguards that detects or deters theft or diversion of nuclear materials and provides assurance that all nuclear materials are accounted for appropriately.

Military First Destination (MFD) - Designated military locations in the U.S. which receive and accept into the Department of Defense (DoD) stockpile, direct shipments of nuclear ordnance material from DOE/NNSA contractor plants.

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National Security Assets - DOE and DOE contractor assets that require significant protection. These assets are nuclear weapons and their design, Category I and II quantities of special nuclear material, classified information, sensitive information, critical facilities, and valuable Government property.

Nuclear Device - A collective term for a nuclear explosive device, including a nuclear weapon, a weapon prototype, or a weapon test device. It may apply to a single stage design, to a primary or secondary, or to a complete staged design. Usually given a designator such as Mandolin, Kingbolt, Tsetse, Skua, Ruth, Rattler, etc.

Nuclear Explosive Like Assembly (NELA) - An assembly that is not a nuclear explosive but represents a nuclear explosive in its basic configuration (main charge high explosive and pit) and any subsequent level of assembly up to its final configuration or represents a weaponized nuclear explosive such as a warhead, bomb, reentry vehicle, or artillery shell. A NELA does not contain an arrangement of high explosives and fissile material capable of producing a nuclear detonation.

Nuclear Facility - A facility (e.g., Savannah River, Oak Ridge, etc.) for the production, utilization, storage or handling of Special Nuclear Material, including irradiated material that is of national security significance.

Nuclear Material - Defined in DOE O 474.1A. See Annex E.

Nuclear Materials Courier (NMC) - A TSD employee who is authorized by the AEA to carry firearms and make arrests without warrant during the performance of duties which include the safe, secure movement of nuclear material identified in DOE O 474.1A.

Nuclear Threat Message - A message that threatens (or refers to the committing of) a nuclear-related malevolent act. The threatened act could be a nuclear explosion, contamination of a large populated area by dispersal of radioactive material, or sabotage of a nuclear facility, site, or system.

Office of Secure Transport (OST) - The Division of NNSA responsible for management and safe secure movement of Government-owned or consigned matter transported in the TSS.

Official Use Only (OUO) - A designation identifying certain unclassified but sensitive information that may be exempt from public release under the Freedom of Information Act; or a security classification marking used during the period July 18, 1949, through October 22, 1951.

Physical Inventory (PI) - The quantity of nuclear material which is determined to be on hand by physically ascertaining its presence using techniques such as sampling, weighing, and analysis or the act of quantifying nuclear material that is on hand by physically ascertaining its presence using techniques such as electronic or visual verification, sampling, weighing, and analysis.

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Physical Protection (Physical Security) -

- a. The application of physical or technical methods designed to:
 1. Protect personnel;
 2. Prevent or detect unauthorized access to facilities, material, and documents;
 3. To protect against espionage, sabotage, damage, and theft; and
 4. Respond to any such acts should they occur.
- b. The use of locks, guards, badges, alarms, procedures, and similar measures (alone or in combination) to control access to the classified automated data processing system and related equipment.

Physical Security Plan - A facility-specific document (or group of documents) that gives a comprehensive description of the measures employed for the physical protection of property, information, equipment, nuclear materials, and other assets of national interest.

Primary - A fission device that is the initial source of nuclear energy, coupled to a secondary stage.

Primary Plant - The reactor in a naval nuclear propulsion system.

Protective Force or Protective Personnel (Pro Force) - Security officers, security police officers, Transportation Safeguards Division nuclear material couriers and transportation escorts, and other Federal personnel authorized to be armed under Section 161k of the Atomic Energy Act and assigned to protective duties involving safeguards and security interests of the DOE.

Radiological Dispersal Device (RDD) - A device, incorporating radioactive materials, designed or constructed outside of an official government agency and which has, appears to have, or is claimed to have, the capability to produce radioactive contamination over an area **without** a nuclear explosion.

Radiation Exposure Device (RED) - An object used to maliciously expose people, equipment, and/or the environment to ionizing radiation without dispersal of radioactive material. REDs may include fission products and/or fissile material but fission reactions do not occur in the RED.

Reentry Body (RB)/Reentry Vehicle (RV) - A component of a missile system which is designated to reenter the earth's atmosphere. It is designed to include a nuclear warhead, fuzing, arming, and triggering devices.

Reporting Identification Symbol (RIS) - A unique combination of three or four letters which is assigned to each reporting organization by the DOE or the Nuclear Regulatory Commission (NRC) for the purpose of identification in the nuclear materials management data base.

NOTE: The term is also used to refer to the reporting organization to which the RIS is assigned.

Restricted - A former U.S. security classification marking used prior to December 15, 1953; or an active security classification marking used by some foreign governments and international organizations.

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Risk Analysis - An analysis of safeguards and/or security system assets and vulnerabilities to establish an expected loss from certain events based on estimated probabilities of the occurrence of those events.

Safe Secure Railcar (SSR) - A TSSX car modified by the addition of protective and deterrent systems.

Safe Secure Trailer (SST)/Safeguards Transporter (SGT) - A modified standard closed van, dry freight type, semi-trailer which includes necessary cargo tiedown equipment, and temperature monitoring, fire alarm, and access denial systems. Upgraded versions of the SST are referred to as the Safeguards Transporter (SGT).

Safeguards - An integrated system of physical protection, material accounting, and material control measures designed to deter, prevent, detect, and respond to unauthorized possession, use, or sabotage of nuclear materials.

Schedule - Timetable of a TSS trip.

Secondary - A nuclear stage physically separate from the primary.

Secondary Plant - The drive component in a naval nuclear propulsion system.

Security - An integrated system of activities, systems, programs, facilities, and policies for the protection of RD and other classified information or matter, sensitive information, nuclear materials, nuclear weapons and nuclear weapon components, and/or Departmental and Departmental contractor facilities, property, and equipment.

Security Communications (SECOM) - A nationwide high frequency radio system which provides a means of communicating with and monitoring the progress of trips moving in the DOE TSS.

Security Plan - An official document that describes the utilization of resources by a facility to provide protection of the facility, its site(s), and its assets from attack.

Security System - An assemblage of people, equipment, hardware and software, structures, plans and procedures, etc., that is used to protect property, information, equipment, nuclear materials, and other assets of national interest and to respond to malevolent acts.

(b) (7)(E)

Segment - See trip.

Shipment - Nuclear explosives, SNM or other matter consigned from one location to another location.

Shipper/Receiver Difference - The difference between the measured quantity of nuclear material stated by the shipper as having been shipped and the measured quantity stated by the receiver as having been received.

Sigma Categories - A DOE term relating to RD and/or FRD concerning the theory, design, manufacture, storage, characteristics, performance, effects, or utilization of nuclear weapons, nuclear weapon components, or nuclear explosive devices or materials.

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Site -

- a. A geographical area where one or more facilities are located.
- b. A geographical area consisting of a DOE-controlled land area including DOE owned facilities (e.g., the Oak Ridge Reservation, the Nevada Test Site, the Hanford Site, Idaho National Engineering Laboratory, Rocky Flats Plant, Feed Materials Production Center).

Software Security Measures - Computer programs and/or routines that control, limit, or monitor access, or otherwise protect data or information processed or stored by an AIS.

Source Document - A classified document (regardless of medium), other than a classification guide, from which information is extracted for inclusion in another document. The classification of the information extracted is determined by the classification markings shown in/on the source document.

Source Material - Depleted uranium, normal uranium, thorium, or any other nuclear material determined, pursuant to Section 61 of the Atomic Energy Act of 1954, to be source material; or ores containing one or more of the foregoing materials in such concentration as may be determined by regulation.

Special Nuclear Material (SNM) - Plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which, pursuant to the provisions of Section 51 of the Atomic Energy Act, which DOE determines to be special nuclear material; or any material artificially enriched by any of the foregoing, but which does not include source material. See Table 1.

Spoofing - Deceiving a system so that the system does not perform its intended function (e.g., decoupling of a nuclear detonation by exploding it in a large cavity so that its seismic signal is much smaller than it otherwise would be).

Tactical Exercise - A planned event, the purpose of which is to evaluate the tactics to be used in response to the event. It may only involve the "Emergency Operations Center" or may involve a force-on-force event. It does not include tests of security hardware unless response tactics are involved.

Target - The objective of an attack. Examples of objectives are classified information, nuclear weapons, SNM, facilities, sites, buildings, and security systems.

Technical Surveillance Countermeasures (TSCM) - The techniques and measures to detect and nullify the technologies that are intended to obtain unauthorized access to classified and/or unclassified controlled information.

Technical Vulnerability (TSCM Context) - An unexploited electromechanical condition wherein information-bearing energy might be intercepted but does not contain actionable [exploitable] information. (Also referred to as a Technical Hazard)

Threat -

- a. A person, group or movement with intentions to use extant or attainable capabilities to undertake malevolent actions against DOE interests.
- b. The capability of an adversary coupled with his intentions to undertake any actions detrimental to the success of program activities or operation.

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Threat (Foreign Intelligence) - Specific intelligence collection systems or platforms known or suspected beyond reasonable doubt to be operating against DOE and DOE contractor facilities.

Title 10 CFR 100 Criteria - As of this writing, whole body dose of 25 rem at the site boundary, or 300 rem iodine dose to the thyroid. (See most current Title 10 of the Code of Federal Regulations for further details.)

Transportation Safeguards System (TSS) - The program managed and operated by NNSA under the programmatic direction of the Assistant Deputy Administrator for Secure Transportation. The system has administrative and courier personnel, special transport and escort vehicles, and the nationwide high-frequency communications system required to carry out the safe, secure, domestic transportation of all DOE-owned or controlled nuclear explosives, Category I or II quantities of special nuclear material (excluding naval reactor core shipments), and other cargos deemed appropriate and agreed to by NNSA and respective heads of departmental elements.

Transportation Safeguards System Railcar (TSSX) - The "X" designates to the railroad that it is an individually-owned car and not owned by the railroad.

Trip - An assigned movement of shipment(s), or equipment within the TSS. A "segment" is a separate part of a trip.

Unclassified Controlled Nuclear Information (UCNI) - Certain unclassified Government information whose unauthorized dissemination is prohibited under Section 148 of the AEA and DOE O 471.1A, *Identification and Protection of Unclassified Controlled Nuclear Information*.

Upgrade - A determination that certain classified information, in the interest of national security, requires a higher degree of protection against unauthorized disclosure than currently provided. Such a determination also includes raising the classification level and/or category of information, or documents or material, including correction of classification on such items erroneously issued as unclassified or at too low a classification level or category.

Vulnerability (Safeguards and Security Context) - The definition below is repeated from the Safeguards and Security Glossary of Terms. For information to be classified, damage to the national security must result from exploiting the information. A vulnerability that could be expected to result in damage to the national security is classified at a level of Confidential. A vulnerability that could be expected to result in serious damage to the national security is classified at a level of Secret. And, a vulnerability that could be expected to result in exceptionally grave damage to the national security is classified at a level of Top Secret. These definitions of Confidential, Secret and Top Secret are included in the Safeguards and Security Glossary of Terms. When the term vulnerability is used in this guide, use of associated information must be tied directly to damage to national security.

Vulnerability - A weakness or system susceptibility that, if exploited, would cause an undesired result or event leading to loss or damage.

Major Vulnerability - A vulnerability which, if detected and exploited, could reasonably be expected to result in a successful attack causing serious damage to the national security.

Unspecified Major Vulnerability - A major vulnerability, but specified in no greater detail than the specific security system (or one of its major components) when it occurs.

Vulnerability (Weapon Hardness Context) - The susceptibility of a weapon or its components to degradation from adverse environments, particularly the effects of a defensive burst.

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Weapon Data - RD or FRD concerning the design, manufacture, or utilization (including theory, development, storage, characteristics, performance, and effects) of nuclear weapons or nuclear weapon components, including information incorporated in or related to nuclear explosive devices.

APPENDIX G

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