

**U.S. Department of Energy**  
**Washington, D.C.**

**ORDER**

**DOE O 457.1A**

Approved: 8-26-2013

**SUBJECT: NUCLEAR COUNTERTERRORISM**

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1. PURPOSE.

- a. To support Department of Energy (DOE) activities for public health, safety, and common defense by reducing the threat of inadvertent or unauthorized disclosure of sensitive improvised nuclear device (IND) information.
- b. To support the implementation of high-level policy guidance for protecting the homeland against nuclear terrorism as outlined in the National Strategy for Combating Terrorism and the National Strategy for Homeland Security.
- c. To establish DOE responsibilities for identifying and protecting sensitive IND information.
- d. To establish controls on the dissemination of sensitive IND information.
- e. To define appropriate means for providing IND-related information at an appropriate level of classification to other Federal agencies to assist in meeting national security objectives.

2. CANCELLATIONS.

- a. DOE O 457.1, *Nuclear Counterterrorism*, dated 2-7-06.
- b. DOE M 457.1-1, *Control of Improvised Nuclear Device Information*, dated 8-10-06. Information previously contained in this Manual is now included in Appendices A and B (Official Use Only).
- c. Cancellation of a directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the directive. CRDs incorporated into a contract remain in effect throughout the term of the contract unless and until the contract or regulatory commitment is modified to either eliminate requirements no longer applicable or substitute a new set of requirements.

3. APPLICABILITY.

- a. All Departmental Elements. Except for the equivalencies/exemptions in paragraph 3c, this Order applies to all Departmental Elements. The National Nuclear Security Administration (NNSA) Administrator will assure NNSA employees and contractors comply with their respective responsibilities under this directive. Nothing in this directive will be construed to interfere with the NNSA Administrator's authority under section 3212(d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.

- b. DOE Contractors. Except for the equivalencies/exemptions in paragraph 3c, the Contractor Requirements Document (CRD), Attachment 1, sets forth requirements of this Order applying to contracts that include the CRD.
- c. Equivalencies/Exemptions for DOE O 457.1A.
  - (1) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order 12344, codified at 50 USC sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee requirements and practices pertaining to this Directive for activities under the Director's cognizance, as deemed appropriate.
  - (2) Exemptions.
    - (a) Organizations prohibited from accessing sensitive IND information.
    - (b) Requests for exemptions are jointly approved by Program Secretarial Officers and the Associate Administrator for Counterterrorism and Counterproliferation, with conflicts resolved by the Deputy Secretary or designated Departmental Chief Operating Officer. Requests for exemptions must be submitted from the Cognizant Field Element manager to the appropriate Program Secretarial Officer(s) and the Associate Administrator for Counterterrorism and Counterproliferation.

#### 4. REQUIREMENTS.

- a. Sensitive IND information must be identified and protected to preclude terrorists and other unauthorized persons from obtaining and exploiting it.
- b. Sigma 20, a nuclear weapon data (NWD) control category, must be used to restrict the dissemination of sensitive IND information in the interest of national security.
- c. This Order provides the basis for implementing procedures regulating strict control of and access to Sigma 20 NWD, and all holders of that information must comply with this Order.
- d. IND design-related work shall be conducted only at those locations in the DOE complex designated by the Director, Office of Nuclear Threat Science.

5. RESPONSIBILITIES.

- a. Deputy Under Secretary for Counterterrorism and Counterproliferation / Associate Administrator for Counterterrorism and Counterproliferation.
  - (1) Provides guidance on Department activities related to nuclear counterterrorism, including IND information control policy within DOE/NNSA and other Federal agencies.
  - (2) Authorizes and oversees all IND design-related work.
  - (3) Manages DOE/NNSA oversight of IND information.
  - (4) Directs nuclear design-related research and development activities so the full range of weapons physics knowledge, engineering, analysis, information, and nuclear weapons technologies are applied adequately, effectively, and correctly to provide the best possible technical solutions to IND- related issues.
- b. Director, Office of Nuclear Threat Science.
  - (1) Implements all aspects of IND information control as defined in this Order, including administration of the Sigma 20 category of nuclear weapon data.
  - (2) Designates locations within the DOE complex where IND design-related work may be performed.
  - (3) In coordination with the Heads of Field Elements, notifies contracting officers when DOE contractors are affected by this Order.
  - (4) Performs annual program reviews to evaluate ongoing activities; future plans and projects; resource requirements, including the resources necessary to implement and administer this Order; and major concerns and issues.
  - (5) Ensures all Work-for-Others (WFO) projects at the national laboratories that use IND design information are reviewed, approved, and comply with this directive.
  - (6) Recommends to the Associate Administrator for Counterterrorism and Counterproliferation revisions to Sigma 20 implementation, as necessary.
  - (7) Develops agreements with Federal agencies and implements security procedures as required for handling Sigma 20 NWD.

- c. Deputy Administrator for Defense Nuclear Nonproliferation. Coordinates any IND-related work with the Associate Administrator for Counterterrorism and Counterproliferation to fulfill the requirements for Sigma 20 NWD.
- d. Associate Administrator for Emergency Operations.
  - (1) Responsible, during a radiological asset response operation, for the security and control of Sigma 20 NWD of any form.
  - (2) Coordinates all IND-related work with the Associate Administrator for Counterterrorism and Counterproliferation to fulfill the requirements for Sigma 20 NWD.
- e. Director, Office of Intelligence and Counterintelligence.
  - (1) Serves as the lead proponent for IND information control within the Intelligence Community on behalf of DOE/NNSA.
  - (2) Provides intelligence-related information concerning nuclear terrorism to the Associate Administrator for Counterterrorism.
  - (3) Conducts counterintelligence (CI) activities, including CIEP (Counterintelligence Evaluation Program), to protect DOE/NNSA information, personnel, and assets from international terrorist activities and from intelligence collection by or on behalf of foreign powers or entities.
  - (4) Ensures all IND design-related Intelligence Work (IW) projects at the national laboratories comply with this directive and coordinates all IND design-related IW projects with the Office of Nuclear Threat Science.
- f. Deputy Administrator for Defense Programs.
  - (1) Supports the activities of the Nuclear Counterterrorism (NCT) program at the NNSA laboratories and plants, as necessary.
  - (2) Oversees Work-for-Others (WFO) projects at the national laboratories in accordance with DOE O 481.1C, Work for Others (non-Department of Energy Funded Work) dated 3-14-11, and DOE G 481.1-1, *Work for Others Guide*, dated 9-24-97, and
  - (3) Coordinates all potential IND-related projects with the Office of Nuclear Threat Science. These may include:
    - (a) *Use Control projects with IND implications.*

- (b) *US nuclear weapons that have been adversary-modified.*
  - (c) *Projects related to portions or components of US nuclear weapons that may be used in INDs.*
- g. Associate Administrator for Security Operations. Responsible for the overall direction and management of physical, personnel, technical, materials control and accounting, and classified and sensitive information security programs at NNSA facilities.
- h. Director, Office of Enforcement and Oversight. Through the Director, Office of Security Evaluations, provides independent inspections and evaluations to assess physical security, and classified matter protection and control effectiveness.
- i. Heads of Field Organizations.<sup>1</sup>
  - (1) Verify their field locations and facilities are operated in compliance with security procedures established for IND information control.
  - (2) In coordination with the Director, Office of Nuclear Threat Science, notify contracting officers when DOE contractors are affected by this Order.
  - (3) Notify the Director, Office of Nuclear Threat Science of any IND- related WFO project not processed through DOE-IN.
- j. Contracting Officers. After being notified, incorporate the DOE O 457.1A CRD (Attachment 1 and Appendix B) into affected contracts via the laws, regulations, and DOE directives clause of the contracts.

6. DEFINITIONS.

- a. Improvised Nuclear Device (IND) - a device, including adversary-modified U.S. or foreign nuclear weapons, incorporating nuclear (actinide) materials, that is designed, constructed, or modified outside of an official Government agency and which has, appears to have, or is claimed to have the capability to produce a nuclear explosion. (See CG-IND-1 or its successor for details.)
- b. Nuclear Weapon Data (NWD) - Restricted Data or Formerly Restricted Data concerning the design, manufacture, or utilization (including theory, development, storage, characteristics, performance, and effects) of nuclear explosives, nuclear weapons, or nuclear weapon components, including information incorporated in or related to nuclear explosive devices. NWD is

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<sup>1</sup> Operations offices, service centers, site offices, area offices, field offices, project management offices, and regional offices of Federally staffed laboratories

matter in any combination of documents or material, regardless of physical form or characteristics.

- c. Sigma 20 NWD - A specific category of NWD pertaining to “crude, simple, or innovative” improvised nuclear device designs, concepts, and related manufacturing or processing pathways. Not all INDs are covered under the Sigma 20 category (see *DOE Classification Guide for Improvised Nuclear Devices* for further details).

## 7. REFERENCES.

- a. Public Law (P.L.) 83-703, the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011), which governs civilian and military uses of nuclear materials and facilities.
- b. Title XXXII of P.L. 106-65, National Nuclear Security Administration Act, as amended, which established a separately organized agency within the Department of Energy.
- c. National Strategy to Combat Weapons of Mass Destruction, dated December 2002, which specified all needed capabilities to combat WMD be fully integrated.
- d. National Strategy for Counterterrorism, dated June 2011, which articulates the U.S. Government’s approach to countering terrorism and identifies the range of tools used.
- e. The National Strategy for Homeland Security, dated October 2007, Office of Homeland Security, which provides policy guidance for securing the U.S. homeland from terrorist attacks.
- f. National Security Presidential Directive 28, United States Nuclear Weapons Command and Control, Safety, and Security (U), dated 6-20-03 (Secret), which provides the basis for the maintenance of a nuclear command and control system under the authority and direction of the Commander in Chief, and establishes nuclear surety policy.
- g. 10 CFR 709, *Counterintelligence Evaluation Regulations*, dated 9-29-06, which outlines the DOE polygraph examination program.
- h. DOE O 153.1, *Departmental Radiological Emergency Response Assets*, dated 9-20-91, which establishes requirements and responsibilities for the DOE/NNSA national radiological emergency response assets and capabilities and Nuclear Emergency Support Team assets.
- i. DOE O 200.1A, *Information Technology Management Program*, dated 12-23-08, and National Archives and Record Administration-approved DOE records

schedules, which describe requirements for managing records related to this program.

- j. DOE O 241.1B, *Scientific and Technical Information Management*, dated 12-13-10, which ensures that this information is appropriately managed as part of the DOE mission to enable the advancement of scientific knowledge and technological innovation.
- k. DOE O 470.3B, *Graded Security Protection (GSP) Policy* (U), dated 8-12-08 (Secret//RD//NOFORN), which describes DOE security objectives, policies, and prescribes the "threat-based" security metrics for the protection of nuclear weapons, nuclear weapons components, special nuclear material, national laboratories, plants, and other critical Departmental assets.
- l. DOE O 470.4B, *Safeguards and Security Program*, dated 7-21-11, which establishes the roles and responsibilities for the U.S. Department of Energy Safeguards and Security Program.
- m. DOE O 471.6, *Information Security*, dated 6-20-11, which establishes security requirements for the protection and control of information and matter required to be classified or controlled by statutes, regulations, or Department of Energy directives.
- n. DOE O 472.2, *Personnel Security*, dated 7-27-11, which establishes the overall objectives and requirements for the Department of Energy Personnel Security Program.
- o. DOE O 473.3, *Protection Program Operations*, dated 6-29-11, which establishes the requirements for protection of facilities, buildings, and Government property, including classified information, special nuclear materials, and nuclear weapons.
- p. DOE O 475.1, *Counterintelligence Program*, dated 12-10-04, which establishes CI Program requirements and responsibilities for the Department of Energy, including the National Nuclear Security Administration.
- q. DOE O 481.1C, *Work for Others (Non-Department of Energy Funded Work)*, dated 1-31-2011, for work for non-DOE entities by DOE/NNSA and/or their respective contractor personnel or the use of DOE/NNSA facilities not funded by DOE appropriations.
- r. DOE O 484.1, "Reimbursable Work for the Department of Homeland Security" dated 3-14-11, which establishes DOE policies and procedures for reimbursable work funded by the Department of Homeland Security.
- s. CG-IND-1, *DOE Classification Guide for Improvised Nuclear Devices*, dated October 2006.

8. CONTACT. For assistance regarding this directive, contact the Director, Office of Nuclear Threat Science, 202-586-4582.

BY ORDER OF THE SECRETARY OF ENERGY:



DANIEL B. PONEMAN  
Deputy Secretary

## Appendix A

(Official Use Only)

The Appendix is for Official Use Only and will not be available with the Order. For information, contact Adam Boyd (NA-82) at 202-586-0010; [adam.boyd@nnsa.doe.gov](mailto:adam.boyd@nnsa.doe.gov).



**CONTRACTOR REQUIREMENTS DOCUMENT  
DOE O 457.1A, NUCLEAR COUNTERTERRORISM**

1. Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this CRD and Appendix B, and flowing down CRD requirements to subcontractors at any tier to the extent necessary to ensure contractor compliance. Appendices A and B are “Official Use Only” and may be obtained by contacting the Director, Office of Nuclear Threat Science.
2. This CRD establishes the requirements for DOE contractors whose contracts involve or could potentially involve accessing or generating nuclear weapon design information.
3. Contractors are required to protect IND information. To this end, contractors designated to conduct IND and Sigma 20 activities will implement a Sigma 20 NWD control category to control the dissemination of sensitive IND information in the interest of U.S. national security. Procedures will be implemented to provide for strict control of and access to Sigma 20 NWD. IND design-related work is not to be conducted at any DOE location unless authorized by the Associate Administrator for Nuclear Counterterrorism and Counterproliferation. In this context, IND design-related work includes generating:
  - a. any complete design of an IND, including speculative exploration of novel design concepts;
  - b. validation of comparative assessments of IND design alternatives;
  - c. descriptions of design and fabrication procedures likely to be employed by terrorists, including modeling or design methodologies, energetic or nuclear material specifications, component specifications (e.g., arming and firing system design), or other fabrication procedures; and
  - d. realistic IND designs to assess the performance of radiation detection systems, diagnostic equipment, security standards, and/or render-safe tools and procedures.
4. Contractors must support annual program reviews, when and as directed by the Director, Office of Nuclear Threat Science, to evaluate relevant ongoing activities; future plans and projects; resource requirements, including the resources necessary to implement and administer this Order; and major concerns and issues.
5. Contractors must maintain records according to National Archives and Records Administration-approved DOE or site-specific records retention schedules.



## Appendix B

(Official Use Only)

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