The Defense Nuclear Weapons School (DNWS), in existence since 1947, is located on Kirtland AFB, Albuquerque, New Mexico. This Defense Threat Reduction Agency school is a unique entity that provides training in nuclear weapons; chemical, biological, radiological and nuclear incident command, control and response, chemical, biological, radiological and nuclear (CBRN) modeling for the Department of Defense (DOD), other federal, state, and local agencies.

Mission: The Defense Nuclear Weapons School provides Nuclear Enterprise and Radiological education and training in support of joint service, interagency organizations, and our foreign partners worldwide.

Training Objectives: The school’s training objectives are to create, develop, and implement professional training through both traditional methods and innovative training technologies. DNWS training helps to ensure that our nation maintains a safe, reliable, and credible nuclear deterrent and a robust incident response capability.

Courses: The DNWS delivers instructor-led courses in-residence and via Mobile Training Teams (MTTs) and offers distance learning courses online. The DNWS catalog includes 36 courses and 24 partnership modules. While most courses are taught in-residence at the DNWS, an expanding array of courses are offered via distance learning or MTT. The DNWS also hosts courses presented by the U.S. Army Nuclear and CWMD Agency and the Air Force Nuclear Weapons Center, providing facilities, instructors, subject matter expertise, and administrative support. Additionally, the DNWS provides experts who teach modules within courses taught by other federal entities such as the Department of State and the Federal Bureau of Investigation.

History: The Manhattan Engineer District, which developed the world’s first atomic bomb, established the Nuclear Weapons Technical Training Group under the Armed Forces Special Weapons Project in January 1947. The Group’s mission was “to provide training, both resident and non-resident, in support of nuclear weapon training programs worldwide; to be responsive to requests for training services and support required to meet the needs of all DOD components and other cognizant agencies.” The Nuclear Weapons Technical Training Group later became the Special Weapons School located on the U.S. Army’s Sandia Base, today part of Kirtland Air Force Base.

In 1971, the Defense Nuclear Agency (DNA) was directed to transfer the Special Weapons School to the U.S. Air Force, which renamed it the Interservice Nuclear Weapons School. In 1993, the school was transferred back to DNA and was subsequently renamed the Defense Nuclear Weapons School in 1997. DNA is a DTRA legacy organization.

Throughout its history, DNWS has supported the Office of the Secretary of Defense, the Joint Chiefs of Staff, the military Services, and the Combatant Commands by providing training, advice, and services in the field of nuclear weapons.

The DNWS operates DOD’s only radiological training sites. These sites are thorium-seeded fields that DNWS instructors use as an integral part of field training for radiological emergency team members. DNWS conducts a variety of radiological accident exercises at these training sites, providing a realistic environment where students can apply their classroom knowledge. Students receive hands-on instruction and experience in the use of radioactivity monitoring instruments, the

Non-Attribution Policy

The Defense Nuclear Weapons School offers its assurances that presentations and discussions will be held in strict confidence. Without the expressed permission of the speaker, nothing will be attributed directly or indirectly in the presence of anyone who was not authorized to hear or view the presentation. Unclassified information gained during lectures, briefings, presentations, and discussions may be used freely. However, neither the speaker nor any element of the Defense Nuclear Weapons School may be identified as the originator of the information without consent.
proper donning of personal protective equipment, and the collection of airborne radioactivity samples; in procedures for cleaning, inspecting, and proper wear of respirator protection; and in the setup and operation of contamination control stations. Students must integrate various modules of classroom instruction into intricate scenarios and determine what steps and equipment are required.

In addition, this school manages and operates the only DOD classified nuclear weapons instructional museum (NWIM). The NWIM is an irreplaceable repository that traces the history and development of the U.S. nuclear weapons stockpile from its inception to the present and displays examples of all stockpiled U.S. nuclear weapons and their associated components and delivery systems, as well as related training aids. Tours are provided in conjunction with some courses conducted at the DNWS and vary in length from two to four hours depending on the audience. Arrangements can be made for groups and visitors to tour the NWIM on Tuesdays, Wednesdays, and Thursdays only. Classified tours require a DOD Secret security clearance with Restricted Data or Critical Nuclear Weapons Design Information access or a Department of Energy “Q” clearance to participate. An unclassified tour is also available upon request. To solicit a special tour of the NWIM, a written request must be submitted and received a minimum of 15 working days before the scheduled tour date. Download a sample NWIM tour request letter or locate the form in the DNWS print catalog.

Col Mark E. Bowen, USAF
Commandant,
Defense Nuclear Weapons School

Michael G. Conner
Chief Operations Officer,
Defense Nuclear Weapons School
Quick Lookup

DTRA Albuquerque Registrar Office
Email: dtra.kirtland.j10.mbx.dnws-registrar@mail.mil
Phone: 505-846-5666 / DSN: 246-5666
Fax: 505-846-9168 / DSN: 246-9168
JPAS SMO Code: GQDD614
ATTN: DNWS Registrar, TSgt Shijo Abraham

Website support
https://dnws.dtra.mil
(must connect via a .mil or .gov domain)
Email: dtra.kirtland.j10.list.dtra-dnws-it-support@mail.mil

Albuquerque Billeting Numbers
Kirtland AFB, Albuquerque, NM
AF INN: Phone 505-846-9653
DSN: 246-9653
http://af.dodlodging.net/property/Kirtland-AFB

FT Belvoir Billeting Numbers
Phone: 703-704-8600 or 1-800-295-9750

Computer Modeling
Mrs. Peggie Feaster
CBRNE M&S Training Coordinator
The Tauri Group LLC
DTRA CBRNE M&S Training Center
6361 Walker Lane, Suite C120
Alexandria, VA 22310
Email: peggie.feaster@taurigroup.com
peggie.feaster.ctr@mail.mil
Phone: 571-303-2171
Fax: 571-303-2182
WELCOME TO DNWS

Individually

Student

DNWS Listed Courses

Unit or Agency

DNWS Existing Courses

Custom Tailored

Specialized Training

Individual

Student

YOU

OR

GENERAL INFORMATION

Nuclear Enterprise Centric

Nuclear Enterprise Custom Tailored Courses

pages 28-29

Weapons Effects Weapons Design

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Nuclear Response Accident/Incident Operations

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CWMD Centric

Basic Intermediate Radiological Nuclear Training (BIRNT)

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Check DNWS Website for latest course schedule - https://dnws.dtra.mil/catalog/toc.cfm
## DNWS FY 2019 Hosted Course Calendar

### HOSTED TRAINING

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Location:  
- DTRA DNWS, Kirtland AFB, Albuquerque, NM  
- DTRA CBRNE M&S Training Center, Alexandria, VA  
- USSTRATCOM

*Restricted course - registration request must go through the controlling agency

## DNWS FY 2019 MTT Course Calendar

### NUCLEAR WEAPONS OPERATIONS AND POLICY TRAINING - MTT

<table>
<thead>
<tr>
<th>Course</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
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</thead>
<tbody>
<tr>
<td>NWOC</td>
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<td>10-13</td>
<td>21-24</td>
<td>6-9</td>
<td>24-27</td>
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<tr>
<td>NWTIC</td>
<td>5-8</td>
<td>Barksdale AFB, LA</td>
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<td>15-18 Ramstein AFB, Germany</td>
</tr>
</tbody>
</table>

** denotes overseas course  
(-) denotes class carried over one month to another

Check DNWS Website for latest course schedule - https://dnws.dtra.mil/catalog/toc.cfm
Defense Nuclear Weapons School Field Training Sites

The Defense Nuclear Weapons School (DNWS), part of the Defense Threat Reduction Agency (DTRA), is located on Kirtland Air Force Base, Albuquerque, New Mexico. The DNWS has access to Kirtland Air Force Base’s radiological field-training sites for realistic radiological training.

Description: The DNWS teaches at the Department of Defense’s (DOD) only radiological training sites. These sites are thorium-seeded fields used in DNWS courses as integral field training for radiological emergency team members. DNWS instructors conduct a variety of radiological accident exercises at these training sites, providing a realistic environment for students to apply their classroom knowledge.

The DNWS partnered with the DTRA Technical Evaluation Assessment Monitor Site (TEAMS) Test Facility in developing the three-acre radiological exercise park. The park has two major components, a shipping container farm with integrated capability to seed radioactive sources in the soil and a temporary office building. Additional structures located within the site can be added as necessary to facilitate expanded exercise needs. This valuable teaching asset provides a flexible, realistic environment for search and characterization exercises.

Kirtland AFB maintains three major parks: a shipping container farm with integrated capability to seed radioactive sources in the soil, railroad cars and a temporary office building.

Federal and State Accreditation

College Credits

College and University Partnerships
<table>
<thead>
<tr>
<th>DNWS Course</th>
<th>University Course</th>
<th>Number</th>
<th>Credit Amount and Level (Undergraduate)/Educational Department</th>
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<tbody>
<tr>
<td>ARRT 1 &amp; 2</td>
<td>STRAYER/CRJ420</td>
<td></td>
<td>5 Upper/Emergency Management</td>
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<tr>
<td></td>
<td>Henley Putnam/INT 410 Weapons Systems</td>
<td></td>
<td>4.5 Upper/Chem, Bio, Rad, and Nuc Weapons</td>
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<td></td>
<td>SUNY/CHS 264304, CHS 264014</td>
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<td>5 Upper/Physics, Rad Protection</td>
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<td>UMUC/ELECT 300TR</td>
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<td>IRNIR</td>
<td>STRAYER/ELC000</td>
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<td>Henley Putnam/Genereral Elective</td>
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<td>1 Remedial General Elective</td>
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<td>SUNY/Elective</td>
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<td>1 Lower Homeland Security</td>
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<td>UMUC/ELECT 100TR</td>
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<td>1 Lower/Elective</td>
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<tr>
<td>NUCPOL</td>
<td>STRAYER/POL350</td>
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<td>2 Upper/Public Policy Analysis</td>
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<td>Henley Putnam/ No Credit</td>
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<td></td>
<td>SUNY/Elective</td>
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<td>2 Upper/Accepted as National/International Policy, Political Science, History, or Strategic Intelligence</td>
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<td></td>
<td>UMUC/HMLS 316 AC</td>
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<td>2 Upper/Public Policy</td>
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<td>2 Upper/Elective</td>
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<td>NWOC</td>
<td>STRAYER/CRJ 420</td>
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<td>2 Lower/Emergency Management</td>
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<td>Henley Putnam/INT 415</td>
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<td>2 Lower/Chem, Bio, Rad, and Nuc Weapons</td>
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<td></td>
<td>SUNNY/CHS 262804</td>
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<td>2 lower/Intro to Emergency Management, Hazardous Materials or Military Science</td>
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<td>UMUC/ELECT 100TR</td>
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<td>NWOC MTT</td>
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<td>STRAYER/No credit</td>
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<td>Henley Putnam/INT 415</td>
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<td>6 Lower/Chem, Bio, Rad, and Nuc Weapons</td>
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<td>SUNY/CHS 264304</td>
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<td>6 Lower/Emergency Management Homeland Security or Public Health</td>
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<td>CTU/GENELE</td>
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<td>6 Lower/Elective</td>
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Nuclear Weapons Instructional Museum

The Defense Nuclear Weapons School (DNWS), part of the Defense Threat Reduction Agency (DTRA), is located on Kirtland Air Force Base, Albuquerque, New Mexico. This DTRA school manages and operates the only classified Nuclear Weapons Instructional Museum (NWIM) in the Department of Defense (DOD). The NWIM is a member of the American Alliance of Museums.

The NWIM is an irreplaceable repository that traces the history and development of the U.S. nuclear weapons stockpile from its inception to the present. The NWIM contains displays of all stockpiled U.S. nuclear weapons and their associated components and delivery systems, as well as related training aids.

In addition to preserving artifacts of unique historic significance, the DNWS NWIM serves as an important teaching aid. Tours are provided in conjunction with some courses conducted at the DNWS and vary in length from two to four hours, depending on the nature of the audience. Touring the NWIM display affords students and visitors a rare opportunity to view exhibits and to discuss stockpile issues with experienced instructors.

The NWIM has two major components:

1. An unclassified area where visitors may view a number of different weapon casings and a display of one-tenth scale foreign missile delivery systems.
2. A classified area displaying detailed nuclear weapon models. Arrangements can be made for groups and visitors to tour the NWIM on Tuesdays, Wednesdays, and Thursdays only; Mondays and Fridays the museum is closed to tours for maintenance and upkeep operations. Tours are available for anyone who meets security clearance requirements, has a need-to-know, and submits the required paperwork in accordance with school policy. A DOD Secret security clearance with Restricted Data or Critical Nuclear Weapons Design Information access or a Department of Energy “Q” clearance is required to participate in an NWIM tour. To solicit a special tour of the NWIM, a written request must be submitted to and received a minimum of 15 working days before the scheduled tour date. Download a sample NWIM tour request letter or locate the form in the DNWS print catalog. Completed forms may be mailed or faxed to 505-846-5560.

For all tours of the Nuclear Weapons Instructional Museum (NWIM), please contact the Nuclear Weapons Operations and Policy Training Section Coordinator at: (505) 853-7809 or FAX: (505) 846-5560
Nuclear Weapons Instructional Museum (NWIM)

Tour Request Letter

(Use your letterhead, if possible)

FROM: (Your Organization/Office Symbol)

SUBJECT: Request for Tour of the DTRA Nuclear Weapons Instructional Museum (NWIM)

TO: DTRA/DNWS
    Registrar’s Office
    Attn: NWIM Tours
    1680 Texas Street SE
    Kirtland AFB, NM 87117-5669

Request a tour of the DTRA NWIM be provided for (number) people on (date) from (time) to (time) AM/PM.

It is understood that approval of our initial request is based upon DNWS course/duty schedules and other requirements. Therefore, our alternative request date would be (date) from (time) to (time) AM/PM.

The purpose of this tour is to: (Provide the reason for the request, type of information desired, and need to know).

Clearance level of tour: Please enter UNCLASSIFIED or SECRET//RD or SECRET//RD-CNWDI. For example: SECRET//RD (S//RD) or S//RD-CNWDI; DOE Q.

I understand that my organization will be responsible for ensuring all personnel have a SECRET//RD clearance (CNWDI access for CNWDI tours). We will provide an official signed visit request for all tour attendees to the DNWS Registrar’s Office at Fax number 505-846-5560 no later than 15 working days before the scheduled tour date. This official visit list will include: full name, social security number, date of birth, security clearance/access, and date of clearance.

Our primary point of contact for this request is (Name/Duty Phone/e-mail address). Please coordinate any changes to this request with this individual.

(Requesting Official)
Telephone Numbers: Commercial/DSN/Mobile

Download this pdf form at: https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=28
How do we identify isotopes? Radioisotope Identification Device (RIID) schematic showing typical scintillation and semi-conductor (Band Gap) types of technology.
SPECIALIZED TRAINING

• Partnership Training and Education Program (PTEP)
PTEP is an integral part of DTRA’s mission to support the Nuclear Enterprise community providing specialized training to meet Combatant Commander, Interagency Partner, and academic requirements. PTEP has access to master instructors and SMEs who can custom tailor curricula, lessons learned, and best practices across the full spectrum of WMD/CBRN topics with an emphasis on Radiological and Nuclear subjects. Specialized training focuses on combat support missions, collaboration, empowering leadership, and facilitating innovation.

Here are a few examples of PTEP tailored venues:
• Interagency Stockpile Seminar
• Reactor & Reactor Accidents Seminar (Boston University School of Medicine/University of New Mexico)
• Joint Project Manager Guardian Detector Course & Workshop
• Train the Trainer Support (DTRA Technical Support Group & NORTHCOM/Mexico).

Please contact the PTEP team for further information:

Program Manager
Mr. Chris Pink

Lead Instructors
Mr. Matt Thompson
Mr. Chikiyo Jackson
Ms. Catherine Chandler

For more information on the Partnership Training and Education Program or to request training, please call the Partnership team at (505) 846-6254 / (505) 853-0195 / (505) 853-4509 / (505) 853-7390.
PTEP Modules for tailored seminars, electives, and training iterations include but are not limited to:

- Modern Terrorism
- WMD/CBRNE Terrorism
- Radiological & Nuclear Terrorism Threat
- Radiological Materials of Concern
- Nuclear Materials of Concern (SNM Focus)
- EMP/HEMP Comparison for Responders
- Reactor Overview
- Reactor Accidents Overview
- Radiological & Nuclear Cargo Hazards
- Survival on a Nuclear Battlefield
- Nuclear Weapons Design and Design Evolution (Classified Only)
- CWMD Interdiction & Offensive Operations
- Operation TOMODACHI Lessons Learned
- Tuwaitha – Iraq Survey Group Case Study
- Minot to Barksdale Overview and Lessons Learned
PTEP advocates Knowledge Preservation through interviews, research, and analysis in conjunction with the DTRIAC, nuclear veterans, and the National Labs.

The PTEP team also provides legacy, operational, and training site visits, connecting today’s DOD and Interagency personnel.

Site Visits Include: EMP Trestle/ARES, UGF, B-29 Crash Site, DNWS training areas, and Trinity.

PTEP led DNWS/FBI-Evidence Recovery Team survey the historic 1950 B-29 crash site in the Manzano foothills. Site of the first atomic weapons accident in the continental United States.
• Applied Radiological Response Techniques Level 1 (ARRT-1)
• Basics for Radiological – Nuclear Incident Response (BRNIR)
• Fundamentals for a Weapon of Mass Destruction Response (FWMD)
• Joint Nuclear Weapons Publications System (JNWPS)
• Nuclear Safety Studies and Review (NSSR)
• Nuclear Weapons Surety (NWS)
• Personnel Reliability Assurance Program (PRAP)
• Virtual Module Simulation
DISTANCE LEARNING TRAINING

**Applied Radiological Response Techniques**

**Level 1 (ARRT-1)**

**Course ID/Number:** DNWS-NR200DL  
**Course Pre-requisites:** Basic Scientific Calculator Skills  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** N/A,  
**Format:** Distance Learning, **MTT:** N/A, **Course Length:** 16 hours

A distance learning course exploring the basic theory of radiation sciences and concepts of radiological response field application. Course material covers radioactivity, detection principles, applied calculations, control measures, and survey planning. Completion is required to attend ARRT-2.

**Basics for Radiological – Nuclear Incident Response (BRNIR)**

**Course ID/Number:** CW100DL  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** N/A,  
**Format:** Distance Learning, **MTT:** N/A, **Course Length:** 24 hours, self-paced

**Synopsis:** BRNIR is an awareness-level certification course that provides instruction on basic radiation science; fundamentals of nuclear weapons and radiological dispersal devices; radiological terrorism; medical and psychological effects of radiation exposure; radiation hazards, detection equipment, personal protective equipment, and decontamination; and Federal incident response. This course may also be brought to your organization via a mobile training team.

**Fundamentals for a Weapon of Mass Destruction Response (FWMD)**

**Course ID/Number:** DNWS-NR150DL  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** N/A,  
**Format:** Distance Learning, **MTT:** N/A, **Course Length:** Self-paced

**Synopsis:** The Fundamentals for a Weapon of Mass Destruction (FWMD) Response course is a mid-level distance learning course for newly assigned operators and response team members wishing to obtain the basic knowledge behind chemical, biological, radiological, nuclear, explosive (CBRNE) response actions and decisions. This course will provide the basic concepts of WMD and CBRNE operations.
Synopsis: This course is designed to introduce basic concepts and principles related to nuclear safety studies and reviews to professionals supporting the nuclear weapons enterprise. The course goal is to facilitate a clear understanding of what nuclear safety studies and reviews are and why they are conducted.

Nuclear Safety Studies and Review (NSSR)

Course ID/Number: DNWS-SA103DL
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: N/A, Format: Distance Learning, MTT: N/A, Course Length: 4 hours

Synopsis: This course is designed to introduce basic concepts and principles related to nuclear safety studies and reviews to professionals supporting the nuclear weapons enterprise. The course goal is to facilitate a clear understanding of what nuclear safety studies and reviews are and why they are conducted.

Nuclear Weapons Surety (NWS)

Course ID/Number: DNWS-NI104DL
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: N/A, Format: Distance Learning, MTT: N/A, Course Length: 8 hours

Synopsis: This course is designed to introduce basic concepts and principles related to nuclear surety to professionals supporting the nuclear weapons enterprise. The goal is to explain these concepts to a level that enables clear understanding of what nuclear surety is and how nuclear surety is achieved.
Personnel Reliability Assurance Program (PRAP)

Course ID/Number: DNWS-NI101DL
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: N/A,
Format: Distance Learning, MTT: N/A, Course Length: 12 hours

Synopsis: The DOD Personnel Reliability Program (PRP) course is designed to introduce baseline DOD PRP fundamentals and concepts to personnel who are assigned duty involving nuclear weapons or nuclear command and control systems. The course addresses PRP concepts, roles, responsibilities, and processes in support of nuclear surety and further explains these concepts in relationship to real-world scenarios.

Virtual Module Simulation

Located at the Defense Nuclear Weapons School on Kirtland Air Force Base, New Mexico, the Nuclear Weapons Instructional Museum (NWIM) is an irreplaceable repository that traces the history and development of the U.S. nuclear weapons stockpile from its inception to the present. The NWIM contains displays of all stockpiled U.S. nuclear weapons and their associated components and delivery systems, as well as related training aids.

This virtual tour provides an extensive online look at an unclassified portion of the tour. The tour features a number of different weapons casings, foreign missile delivery systems, the U.S. missile hallway at DNWS, and the Mr. Leon D. Smith Room featuring a history and replicas of the Little Boy and Fat Man nuclear weapons.

• Nuclear Weapons Instruction Museum Tour
• Tomadochi After Action Lecture
• Trinity Virtual Tour
WMD Radiological and Nuclear Training

• Advanced Diagnostic Training 1 (ADT-1)
• Applied Radiological Response Techniques Level 2 (ARRT-2)
• Basic Intermediate Radiological Nuclear Training (BIRNT)
• WMD Site Recon and Hazard Awareness Course (WSRHAC)
Advanced Diagnostic Training 1 (ADT-1)

**Course ID/Number:** USAF-E J5AAD3E851 0A1A, USAF-O J50AD32E3G 0A1A, USA DNWS-NR-130, USMC F04PXV1  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A,  
**Uniform:** Service utility with support equipment (M-50 mask etc...),  
**Format:** In residence, **MTT:** Upon request, **Course Length:** 5 days

Unclassified five-day course of instruction that focuses on WMD threat awareness, interagency policy, national response architecture, nuclear science, radiation detector theory, and crisis communications. This course meets interagency training standards for national crisis response.

Applied Radiological Response Techniques Level 2 (ARRT-2)

**Course ID/Number:** DNWS-NR401, USN S-140-0013, USA DNWS-RO27, NM DPS NM15510  
**Course Pre-requisites:** ARRT-1  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A,  
**Uniform:** Service utility uniform with winter support for FTX portion,  
**Format:** In residence, **MTT:** N/A, **Course Length:** 5 days

ARRT-2 is an applications follow-on course to ARRT-1 theory focusing on applied radiological problem solving methods. Approximately 20 percent of the course is based in detector laboratories while the remaining course time is used to experience actual hands-on radiological experiences and interpretation of survey data. Attendees should bring appropriate dress for outdoor activities.

Basic Intermediate Radiological Nuclear Training (BIRNT)

**Course ID/Number:** N/A  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A,  
**Uniform:** Service Utility or civilian equivalent, **Format:** In residence,  
**MTT:** Upon Request, **Course Length:** 1-3 days

BIRNT is a tailorable 1-3 day course suitable for in-residence or MTT delivery. Topic focus is radiological and nuclear force protection, detector best practices, nuclear and radiological materials and infrastructure related to radiological and nuclear materials production. The course is scoped to the requesting unit or agencies needs but fits the following format as a minimum instruction agenda: Radiological fundamentals (1-2 hours), Exposure Guidance and Biological Effects of Radiation (1-2 hours), Radiation Detection Equipment Overview (1 Hour). Additional electives can be added: Detector Specific Overviews (Unit/Agency tailored), SNM Hazards, Reactor Overview, Nuclear Fuel Cycle, WMD Hazards on the Battlefield, HEMP/EMP, Risk Communication, Psychological Effects of Radiation for the First Responder and potentially other material upon further one-on-one discussion.
WMD Site Recon and Hazard Awareness Course (WSRHAC)

Course ID/Number: N/A
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: None,
Uniform: Service Utility or civilian equivalent, Format: In residence,
MTT: Upon request, Course Length: 3 days

WSRHAC emphasizes Force Protection requirements and awareness understanding for units assigned or having the potential to conduct reconnaissance of infrastructure that produces material for a nation states nuclear weapons program. The three days covers site specific hazards, how the material process works and key identification features associated with these production facilities. The course concludes with a table top exercise in which teams conduct a scaled WMD Site recon missions to determine the nation state’s production process.
EXPLOSIVE ORDNANCE DISPOSAL SPECIALTY TRAINING

• Advanced Diagnostic Training 2 (ADT-2)
• Joint Nuclear Explosive Ordnance Disposal Course (JNEODC)
Advanced Diagnostic Training 2 (ADT-2)

Course ID/Number: USAF-E J5AAD3E851 0A2A,
USAF-O J50AD3E3G 0A1A, USA DNWS-NR-201, USMC F04PXZ1

Course Pre-requisites: ADT-1

Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: Service utility with support equipment (M-50 mask etc…),
Format: In residence, MTT: N/A, Course Length: 5 days

Classified five-day course of instruction for EOD technicians which focuses on steady-state operations threat assessment of Nuclear Materials of Concern. This course also focuses on interagency policy, threat design concepts, nuclear science, tactics, techniques, procedures and crisis communications. This course meets interagency training standards for national crisis response.

Joint Nuclear Explosive Ordnance Disposal Course (JNEODC)

Course ID/Number: USAF J5AZ03E871 00DA, DNWS-NR-250
USA DNWS-R006, USN S-140-0011, USMC F04L2Y1

Course Pre-requisites: ADT-1 & ADT-2

Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: Service utility with support equipment (M-50 mask etc…),
Format: In residence, MTT: N/A, Course Length: 5 days

Classified five-day training evolution that provides a detailed sustainment training for EOD technicians when responding to nuclear weapons accidents as part of the initial response force. The program focuses on nuclear weapons hazards, stockpile safety features and safeguards, weapons development, and response to a nuclear weapon accident/incident.
NUCLEAR WEAPONS
OPERATIONS AND
POLICY TRAINING

• Advanced Weapons Operators Course (AWOC)
• Joint DOD-DOE Nuclear Surety Executive Course (JNSEC)
• Nuclear Policy Course (NUCPOL)
• Nuclear Weapons Orientation Course (NWOC)
• Nuclear Weapons Technical Inspections Course (NWTIC)
• Nuclear Weapons Certification Programs
Advanced Weapons Operators Course (AWOC)

Course ID/Number: DNWS NW 112, USN S-140-0002
Course Pre-requisites: N/A
Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: As directed by the individual service for military & business casual for civilians.,
Format: In residence, MTT: N/A, Course Length: 2 days

AWOC is a two-day course that covers basic nuclear weapons design and effects, the evolution of nuclear policy, and the nuclear enterprise. Students also get S//RD-CNWDI tour of the Nuclear Weapons Instructional Museum (NWIM). The purpose of the course is to assist the nuclear weapons community by educating the next generation of operators in their understanding of nuclear deterrence and the U.S. Nuclear Enterprise.

Joint DOD-DOE Nuclear Surety Executive Course (JNSEC)

Course ID/Number: DNWS NW 201 & 201M, USAF JOBD32E1DOODA, USN S-140-0003
Course Pre-requisites: N/A
Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: As directed by the individual service for military & business casual for civilians.,
Format: In residence, MTT: Upon request, Course Length: 2 days in Alb., NM, Two separate 1 day classes in D.C.

JNSEC is an executive-level program offering an overview of safety, security, and C3 aspects of the U.S. nuclear weapons program. JNSEC is a 1-day program conducted twice in the Washington D.C. area, and a second iteration is a 2-day version offered at the DNWS to accommodate a Nuclear Weapons Instructional Museum (NWIM) tour conducted at the S//RD-CNWDI level of classification.

Nuclear Policy Course (NUCPOL)

Course ID/Number: DNWS-NW 401, USN S-140-0005
Course Pre-requisites: N/A
Classification: SECRET//Restricted Data, Security Requirements: N/A,
Uniform: As directed by the individual service for military & business casual for civilians.,
Format: In residence, MTT: N/A, Course Length: 5 days

NucPol is an overview of U.S. nuclear weapons policy development including issues and challenges facing politicians today. It specifically covers the evolution of U.S. nuclear weapons policy, nuclear deterrence theory, applications of nuclear weapons within the instruments of national policy, factors influencing policy, foreign nation nuclear weapons drivers, and proliferation concerns. A policy-focused tour of the classified Nuclear Weapons Instructional Museum (NWIM) is conducted at the S//RD level of classification.
NUCLEAR WEAPONS OPERATIONS AND POLICY TRAINING

**NUCLEAR WEAPONS OPERATIONS AND POLICY TRAINING**

NWOC is a 4.5-day course that provides an overview of the history and development of nuclear weapons, management of the U.S. nuclear stockpile, and the issues and challenges facing the program. NWOC focuses on four functional areas: nuclear weapon fundamentals, nuclear weapon effects, nuclear weapons stockpile, and foreign nuclear weapon capabilities/proliferation. In addition to the course materials, students will enjoy a comprehensive tour of the Nuclear Weapons Instructional Museum (NWIM) at the S//RD level of classification.

**Nuclear Weapons Orientation Course (NWOC)**

**Course ID/Number:** DNWS-NW 110 & NW 110M, USA-ROO1, USAF-JBOZD21A100DA, USMC-FO4EGP1, USN S-140-0001

**Course Pre-requisites:** N/A

**Classification:** SECRET//Restricted Data, **Security Requirements:** N/A,

**Uniform:** As directed by the individual service for military & business casual for civilians.,

**Format:** In residence, **MTT:** Upon request, **Course Length:** 4.5 days

NWTIC is a 4-day in-residence course at DNWS in which students are taught common inspection methodology to better baseline and educate Service Inspectors for the nuclear enterprise. The course uses lectures, facilitated group discussions, and realistic inspection scenarios to ensure strict and consistent application of nuclear weapons technical inspection guidance.

- **Mandatory training for all Navy and Air Force Nuclear Surety Inspectors (SSP, AFIA, AFGSC, USAFE)**

**Nuclear Weapons Technical Inspections Course (NWTIC)**

**Course ID/Number:** DNWS-NM 120 & NM 120M

**Course Pre-requisites:** DL Course – Nuclear Weapons Surety (NWS);

**Course Number:** NW104DL

**Classification:** SECRET//Restricted Data-CNWDI, **Security Requirements:** N/A,

**Uniform:** As directed by the individual service for military & business casual for civilians.,

**Format:** In residence, **MTT:** Upon request, **Course Length:** 4 days

**Nuclear Weapons Certification Programs**

The Nuclear Weapons Certification Programs are designed for personnel with responsibilities dealing with nuclear weapons, nuclear weapons policy, nuclear weapons operations, and nuclear weapons surety. These certifications would be particularly valuable for combatant command staff members, joint staff members, and personnel working within the nuclear weapons enterprise such as: nuclear weapons intelligence, nuclear weapons maintenance, nuclear weapons operations, and nuclear weapons security.

- **Basic Nuclear Weapons Certificate**
- **Intermediate Nuclear Weapons Certificate**
- **Advanced Nuclear Weapons Certificate—Operations**
- **Advanced Nuclear Weapons Certificate—Surety**

*for further details see, https://dnws.dtra.mil/*
The Weapon Intern Program is a NSE-wide, 11-month residential educational program hosted at SNL that typically consists of about 24 interns from across the NNSA and DOD. Candidates for the WIP should have a Bachelor's degree (graduate degree is preferred) in an engineering or science discipline with 3-5 years' experience in the NW community. As of August 2016, WIP has graduated over 400 interns from multiple organizations within the Nuclear Security Enterprise: SNL, KCNSC, Pantex, LANL, Y-12, SRS, NNSA, DTRA, USAF, and USN. An integral part of the learning experience is a series of site visits to all of the NNSA (LANL, LLNL, Pantex, KCNSC, Y-12, SRS, Nevada Nuclear Security Site) and several representative DOD (USSTRATCOM, Whiteman AFB, Kings Bay Naval Base, Vandenberg AFB) sites to observe operations and receive briefings. The objectives for these site visits are to reinforce the classroom instruction; gain exposure to the DOD/NNSA nuclear enterprise; gain a greater appreciation of the contribution each site makes; appreciate each site's constraints, requirements, and capabilities; and gain others' perspectives.

Curriculum:
The WIP Curriculum includes the following subject areas: nuclear politics (policy, deterrence, strategy, arms control), nuclear history, customers/requirements, science & technology foundations, design/assessment, nuclear components, non-nuclear components, and systems. Interns also work on many projects, both during the six month structured phase of the program as well as the five month nuclear weapon project phase.

LARRY SCHOOF • WIP PROGRAM MANAGER
505-844-5156 • laschoo@sandia.gov

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia, LLC., a wholly owned subsidiary of Honeywell International, Inc., for the U.S. Department of Energy’s National Nuclear Security Administration under contract DE-NA0003525
NUCLEAR WEAPONS INCIDENT, ACCIDENT AND RESPONSE TRAINING

• Introduction to Radiological and Nuclear Incident Response (IRNIR)
• Executive Response to Nuclear and Radiological Incident Seminar (ERNRI)
• Nuclear Emergency Team Operations (NETOPS)
• Nuclear Weapons Incident Response Training, Domestic Basic (NWIRT-DB)
• Nuclear Weapons Incident Response Training, Domestic Executive (NWIRT-DE)
• Nuclear Weapons Incident Response Training, Overseas Basic (NWIRT-OB)
• Nuclear Response Certification Programs
Introduction to Radiological and Nuclear Incident Response (IRNIR)

Course ID/Number: USN S-140-0008, DHS DOD-001-COMM, DNWS-NR 100
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: In residence, MTT: Upon request,
Course Length: 2 days

IRNIR is a two-day awareness-level course that provides instruction on basic radiation science; fundamentals of nuclear weapons and radiological dispersal devices; radiological terrorism; medical and psychological effects of radiation exposure; crisis communication; radiation hazards, detection, personal protective equipment, and decontamination; and Federal incident response. Intended for DOD Active, Guard, and Reserve first and second responders; Federal, state, and local responders and emergency managers.

Executive Response to Nuclear and Radiological Incident Seminar (ERNRI)

Course ID/Number: USN S-140-0008, DHS DOD-001-COMM, DNWS-NR 100
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: MTT: Upon request,
Course Length: 1 days

The ERNRI Seminar is a one-day version of the IRNIR designed to provide senior leadership of both civilian and military response agencies who are limited in time with an abbreviated form of the IRNIR.
**Nuclear Emergency Team Operations (NETOPS)**

**Course ID/Number:** USMC F045781, USN S-140-0009, USA DNWS-NR 101, USAF J5OZD32E3G00DA, NM DPS NM155110B

**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** In residence, **MTT:** N/A **Course Length:** 10 days

A hands-on course for members of a nuclear emergency response team. Subject matter includes modules on basic nuclear physics, biological effects of radiation, response processes and capabilities, radiation detection equipment, contamination control stations, surveys, and command and control. The course culminates with three daily field training exercises during which students fully dress out in anti-contamination clothing, use RADIAC equipment, and perform realistic nuclear emergency team functions at DNWS live radioactive training sites. We welcome all military personnel and Federal employees occupying EOD, CBRN defense specialties and career fields, or other emergency response force positions.

**Nuclear Weapons Incident Response Training, Domestic Basic (NWIRT-DB)**

**Course ID/Number:** USMC F04B0Z1, USN S-140-0010, USA DNWS-R003, USAF J5OZD13B402DA

**Course Pre-requisites:** N/A

**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** In residence, **MTT:** Upon request, **Course Length:** 3 days

Nuclear Weapon Incident Response Training (NWIRT) Domestic Basic Course is an unclassified three-day course presented by inter-agency instructors in an academic format. The course reviews the following topics: the roles and responsibilities of the DoD during a nuclear weapon incident as mandated by national policy; response by other Federal departments or agencies, including DHS, FBI, and DOE; and legal and public affairs issues specific to a domestic nuclear weapon incident. Course can be taught in-residence or by mobile training team (MTT).
Nuclear Weapons Incident Response Training, Domestic Executive (NWIRT-DE)

**Course ID/Number:** DNWS-NR-150E  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** In residence, **MTT:** Upon request  
**Course Length:** 1 days

Nuclear Weapon Incident Response Training (NWIRT) Domestic Executive Course is an unclassified one-day executive-level course presented by interagency instructors in an academic format. The course reviews the following topics: the roles and responsibilities of the DoD during a nuclear weapon incident as mandated by national policy; response by other Federal departments or agencies, including DHS, FBI, and DOE; and legal and public affairs issues specific to a domestic U.S. nuclear weapon incident. Course is taught by mobile training team (MTT).

Nuclear Weapons Incident Response Training, Overseas Basic (NWIRT-OB)

**Course ID/Number:** N/A  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **MTT:** Upon request  
**Course Length:** 2 days

Nuclear Weapon Incident Response Training (NWIRT) Overseas Basic Course is an U.S. Only classified two-day course presented by inter-agency instructors in an academic format. The course reviews the following topics: the roles and responsibilities of the DoD during a nuclear weapon incident as mandated by national policy; response by other Federal departments or agencies, including DOS, FBI, and DOE; and legal and public affairs issues specific to a nuclear weapon incident overseas. Course is presented via mobile training team (MTT) two times per fiscal year in the EUCOM AOR.

Nuclear Response Certification Programs

The Nuclear Response certification sequence is designed to develop the practical skills required for personnel to conduct an initial evaluation of a incident / accident environment. While appropriate for any personnel requiring skills to respond to a radiological hazard, the nuclear response certification sequence supports and integrates into the overall WMD-CST certification established by the National Guard Bureau (NGB). It is not intended to replace any WMD-CST training otherwise established by the NGB. The NGB recognizes the nuclear response certification sequence as a requirement for WMD-CSTs.

- **Nuclear Emergency Team Operations (NETOPS)**
- **Basic Incident Response**
- **Advanced Incident Response**

*for further details see, https://dnws.dtra.mil/*
DNWS host several courses owned and managed by other DTRA Directorates and Agencies, please contact the perspective point of contact for specific questions regarding details.

HOSTED TRAINING

- Defense Integration and Management of Nuclear Data Services (DIAMONDS)
- Joint Countering Weapons of Mass Destruction Planning Course (JCPC)
- U.S. Army Nuclear and Counter Proliferation Officer Course (NCP-52)*
- Theater Nuclear Operations Course (TNOC)

Hosted CBRN Modeling Simulation

- All Hazard Threat Assessment Course (AHTA)
- Advanced System Survivability Integrated Simulation Toolkit (ASSIST)
- Geospatial Analysis for Consequence Assessment (GACA)
- Hazard Prediction and Assessment Capability Level 1 (HPAC-1)
- Hazard Prediction and Assessment Capability Level 2 – Chemical, Biological, Radiological (HPAC-2-CBR)
- Hazard Prediction and Assessment Capability – Nuclear (HPAC-N)
- Hazard Prediction and Assessment Capability Executive Course (HPAC-Exec)
- Integrated Munitions Effects Assessment Level 1 (IMEA-1)
- Integrated Munitions Effects Assessment Level-2 – Conventional (IMEA-2-C)
- Integrated Munitions Effects Assessment - Nuclear (IMEA-N)
- Integrated Weapons of Mass Destruction Toolset – Consequence Assessment (IWMDT-CA)
- Intermediate Modeler Course (IMC)
- JEM Operator Course (JEM)
- Mission Assurance Assessment Course (MAAC)
- Vulnerability Assessment Protection Options Level 1 (VAPO-1)
- Vulnerability Assessment Protection Options Level 2 (VAPO-2)
- CBRN Military Assistance Team (CMAT) Operations Course
- USAF Security Forces Nuclear Security Certification Training Program

* - denotes restricted course
Defense Integration and Management of Nuclear Data Services (DIAMONDS)

Course ID/Number: NW130
Course Pre-requisites: N/A
Classification: CNWDI/SECRET, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: N/A, Course Length: 3 days

This Course is sponsored by the DTRA/J10NL. For more information please contact Diana Kuhn; 703-767-4315; diana.l.kuhn.civ@mail.mil

DIAMONDS Training is a three-day course that provides prospective and current DIAMONDS users hands-on familiarization training with the national nuclear stockpiles sole accountability database. Content of this course outlines current practices for generation, process, and submission of nuclear accountability transactions in the DIAMONDS system, as well as, the incorporation of DOD nuclear weapons accountability policies and procedures. Students should already be familiar with nuclear accountability transactions outside of DIAMONDS.

Joint Countering Weapons of Mass Destruction Planning Course (JCPC)

Course ID/Number: N/A
Course Pre-requisites: N/A
Classification: SECRET, Security Requirements: N/A, Uniform: Service utility uniform or civilian equivalent, Format: USANCA in residence or MTT, MTT: Upon request, Course Length: 5 days

This Course is sponsored by DTRA Intelligence and Plans Directorate. For more information please contact Mr. Todd Carter, Course Director, 703-767-6342, Victor.t.carter3.civ@mail.mil; or Mr. John Grewelle at 703-767-6049, john.l.grewelle.ctr@mail.mil

JCPC introduces students to U.S. Government and Department of Defense policy, strategy, doctrine, and planning related to CWMD; teaches students to recognize CWMD equities in a strategic and operational context; and demonstrates how to incorporate them into the Joint Operation Planning Process.

The first half of the course focuses on the three lines of effort (prevent acquisition, contain and reduce threats, and respond to crises) and the four CWMD Activities with their supporting tasks identified in the DoD Strategy for Countering WMD and joint doctrine. The second half of the course takes students through select areas of the JOPP and merges CWMD and JOPP concepts through a series of facilitator-led, small-group planning exercises.
U.S. Army Nuclear and Counter Proliferation Officer Course (NCP-52)*

Course ID/Number: USN S-140-0007, USA DNWS-NROOC
Course Pre-requisites: ARRT-1
Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: N/A,
Course Length: 22 days

For more information please contact USANCA; 703-806-7866; or DSN 656-7866. Also read ALARACT 129/2014 for specific travel guidance.

The Nuclear and Counterproliferation Officer Course (NCP-52) is presented annually at the DNWS by the U.S. Army Nuclear and CWMD Agency (USANCA). The training is primarily limited to U.S. Army officers and serves as the Functional Area (FA 52) qualification course. Army National Guard (ARNG), U.S. Army Reserve (USAR) and sister service officers assigned to the Nuclear or CWMD enterprises may attend on a space available basis. Topics include developing and revising COCOM-level orders, understanding the U.S. nuclear weapons program from inception to present, DOD Homeland Defense organization and doctrine, CBRNE overview, critical-site tours, and current FA52 career field information. For specific information regarding NCP-52, contact USANCA at (703)-806-7866/7854, DSN 656-7866/7854 or email usarmy.belvoir.hqda-dcs-g-3-5-7.mbx.usanca-proponency-division@mail.mil.

* - denotes restricted course

Theater Nuclear Operations Course (TNOC)

Course ID/Number: USN S-140-0004, USAF-J5OZD13B404DA,
USA-DNWS-RO13, DNWS-NW-305 & NW-305M
Course Pre-requisites: NCP-52 or NWOC
Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: As directed by the individual service for military & business casual for civilians., Format: In residence, MTT: Upon request, Course Length: 5 days

For more information please contact USANCA; 703-805-1202; or DSN 656-1202. Also read ALARACT 129/2014 for specific travel guidance.

This is a 5-day course that provides training for planners, support staff, targeting staff, and staff nuclear planners for nuclear joint operations and targeting. The course provides instruction on theater integration of US nuclear capabilities into conventional operations, U.S. nuclear policy, joint nuclear doctrine, nuclear effects modeling, consequences of execution, and targeting concepts. A tour of the classified Nuclear Weapons Instructional Museum (NWIM) (at the SECRET//CNWDI) is also included.
All Hazard Threat Assessment Course (AHTA)

Course ID/Number: DNWS-H-330
Course Pre-requisites: None
Classification: SECRET, Security Requirements: Sponsor will determine and ensure all security requirements are met prior to the start of course., Uniform: Business casual or service utility uniform, Format: In residence, MTT: Upon request, Course Length: 2 days

This two-day course provides hands-on training developing an All Hazard Threat Assessment (AHTA) in accordance with DoD 6055.17 and Defense Threat Reduction Agency (DTRA) methodology. This course utilizes the DTRA AHTA tool to illustrate and document location-specific hazards and threats and their probability of occurrence (score) as part of the Mission Assurance Assessment (MAA) risk management process.

Advanced System Survivability Integrated Simulation Toolkit (ASSIST)

Course ID/Number: DNWS-CM-270
Course Pre-requisites: Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbnedss.dtra.mil
Classification: SECRET/RD/CNWDI, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request
Course Length: 4 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.9.mbx.reachback-training@mail.mil

ASSIST is a four-day course that provides students the basic concepts of radiation, radio communications, radio frequency (RF), propagation, and optics modeling tools.

Students trained on the ASSIST tools model the environments of nuclear detonations in and above the earth’s atmosphere. The course includes demonstrations, hands-on familiarization and practice using the ASSIST graphical user interface to apply a suite of models to estimate radiation environments and their effects.
Geospatial Analysis for Consequence Assessment (GACA)

**Course ID/Number:** USA GACA, DNWS-CM-101  
**Course Pre-requisites:** Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** N/A, **MTT:** Upon request, **Course Length:** 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

GACA is a five-day course that provides students with concepts and skills to analyze mass-casualty events using the ESRI ArcMap software in conjunction with DTRA hazard modeling tools. Students will apply learning within the context of modeling, mapping, visualization, and consequence assessment using DTRA hazard modeling and assessment tools.

Hazard Prediction and Assessment Capability Level 1 (HPAC-1)

**Course ID/Number:** USA DTRA-ALEX-HL1, DNWS-CM-120  
**Course Pre-requisites:** Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** N/A, **MTT:** Upon request, **Course Length:** 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

HPAC-1 is a five-day course that provides students with a basic level of competency in the modeling of hazardous material releases using the DTRA HPAC software package. Upon completion of the course, students will understand the capabilities and limitations of the program and be able to perform basic hazard predictions and assessments.
Hazard Prediction and Assessment
Capability Level 2 – Chemical, Biological, Radiological (HPAC-2-CBR)

Course ID/Number: USA DTRA-ALEX-HL2, DNWS-CM-150
Course Pre-requisites: Requires completion of HPAC-1 and six months HPAC experience. Requires registration on Joint Operation Center, https://cbrnedss.dtra.mil.
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

HPAC-2-CBR is a five-day course that provides students with a higher level of proficiency in modeling and analysis of CBR hazard release using HPAC. Students will learn to apply and demonstrate HPAC source term functionality, computation methodologies, translating, and communicating results.

Hazard Prediction and Assessment
Capability – Nuclear (HPAC-N)

Course ID/Number: USA DTRA-ALEX-HL2, DNWS-CM-150
Course Pre-requisites: Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.
Classification: SECRET/RD/CNWDI, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

HPAC-2-N is a five-day course that provides students with a higher level of proficiency in modeling and analysis of nuclear hazard release using HPAC. Students will learn to apply and demonstrate HPAC source term functionality, computation methodologies, translating, and communicating results.
Hazard Prediction and Assessment Capability Executive Course (HPAC-Exec)

**Course ID/Number:** DNWS HPAC-Exec  
**Course Pre-requisites:** Requires registration on Joint Operation Center, https://cbrnedss.dtra.mil. A basic understanding of the HPAC model and Consequence Assessment Modeling is desired but not required.  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** N/A, **MTT:** Upon request, **Course Length:** 1.5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

HPAC-Executive Course is a one and a half day course that provides leaders/decision makers exposure to the Consequence Assessment Modeling methodologies and the capabilities and limitations of modeling. Upon completion of the course, consequence assessment managers will recognize HPAC products to best communicate the hazards associated with their operations, understand the uncertainties related to their HPAC products, and the guidance needed to provide the best modeling and simulation support.

Integrated Munitions Effects Assessment Level 1 (IMEA-1)

**Course ID/Number:** USA DTRA-ALEX-IL1, DNWS-CM-160  
**Course Pre-requisites:** Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.  
**Classification:** SECRET, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** N/A, **MTT:** Upon request, **Course Length:** 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

IMEA-1 is a five-day course that provides students with an initial level of competency in IMEA. Students will experience the capabilities and limitations of IMEA by obtaining target models, creating attack plans, and analyzing and interpreting results.
Integrated Munitions Effects Assessment Level 2 - Conventional (IMEA-2-C)

Course ID/Number: USA DTRA-ALEX-IL2, DNWS-CM-180  
Course Pre-requisites: Requires completion of IMEA-1. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.  
Classification: SECRET, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 5 days  

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

IMEA-2-C is a five-day course that provides students with advanced skills in the application of IMEA conventional strike capabilities and limitations. Students will achieve greater proficiency with importing and creating target models, developing attack plans, performing consequence assessment to WMD scenarios, and communicating results.

Integrated Munitions Effects Assessment - Nuclear (IMEA-N)

Course ID/Number: USA DTRA-ALEX-IL2, DNWS-CM-180  
Course Pre-requisites: Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.  
Classification: SECRET/FRD, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 5 days  

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

IMEA-2-N is a five-day course that provides students with advanced skills in the application of IMEA nuclear strike capabilities and limitations. Students will achieve greater proficiency with importing and creating target models, developing attack plans, performing consequence assessment to WMD scenarios, and communicating results.

Integrated Weapons of Mass Destruction Toolset – Consequence Assessment (IWMDT-CA)

Course ID/Number: DNWS-CM-260  
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 5 days  

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

IWMDT-CA is a five-day course in which the student achieves an initial level of competency in the modeling of hazard releases. Students learn in a collaborative, Net-centric environment by recognizing the IWMDT toolset, understanding and applying graphical user interface operations, and implementing and assessing consequence assessment initiatives to meet the users mission requirements.
Intermediate Modeler Course (IMC)

Course ID/Number: DNWS-R021
Course Pre-requisites: Requires completion of GACA and HPAC 1. Requires software user registration on Joint Operation Center, https://cbnedss.dtra.mil.
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

IMC is a five-day course that enables students to apply advanced concepts and features of DTRA’s CBRNE modeling in an integrated function-centric approach. This course will build upon previous tool-centric training with demonstrations and hands-on applications using a comprehensive hazard or risk assessment process. The classroom experience will expose students to Incident Commander CBRN decision making.

JEM Operator Course (JEM)

Course ID/Number: DNWS-CM-130
Course Pre-requisites: Requires basic computer skills. Requires software user registration on Joint Operation Center, https://cbnedss.dtra.mil.
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: Service utility uniform or civilian casual, Format: N/A, MTT: Upon request, Course Length: 4 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

The JEM Operator Course is a four-day course that gives users basic skills with the Joint Effects Model (JEM) to simulate and assess the effects of CBRN weapon strikes and incidents. JEM is a DoD Program of Record for CBRN modeling and represents the integration of selected current capabilities from existing models into a common operating architecture, interoperable system, and user interface. JEM will provide a capability to overlay hazard areas on a map or Common Operational Picture (COP).

Mission Assurance Assessment Course (MAAC)

Course ID/Number: G55000APCIL
Course Pre-requisites: N/A
Classification: SECRET, Security Requirements: Sponsor will determine and ensure all security requirements are met prior to the start of course., Uniform: Business Casual or Service Utility Uniform, Format: In residence, MTT: Participation can be scheduled through respective combatant command., Course Length: 5 days (40 hours)

This course provides training on the DoD Mission Assurance Assessment (MAA) Program, which is an integrated approach to assessing risk to mission. Students are provided the methodologies and tools to conduct MAAs of assets identified as critical to mission accomplishment. Students will also assess the seven protection programs as they apply to the asset(s) using the DoD Mission Assurance Assessment Benchmarks (DoD MAA BMs).
**Vulnerability Assessment Protection Options Level 1 (VAPO-1)**

**Course ID/Number:** USA DTRA-ALEX-VL1, DNWS-CM-170  
**Course Pre-requisites:** Requires completion of GACA and HPAC-1. Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** N/A, **MTT:** Upon request, **Course Length:** 5 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

VAPO-1 is a five-day course in which students will receive instruction in the full functionality of VAPO to include its capabilities, limitations, and assumptions. Using VAPO functionality, students will assess and analyze a spectrum of threats against assets and develop mitigating strategies with respect to vulnerability assessment and force protection.

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**Vulnerability Assessment Protection Options Level 2 (VAPO-2)**

**Course ID/Number:** USA DTRA-ALEX-VL2, DNWS-CM-190  
**Course Pre-requisites:** Requires completion of VAPO-1. Requires moderate computer skills. Requires registration on Joint Operations Center, https://cbrnedss.dtra.mil.  
**Classification:** UNCLASSIFIED, **Security Requirements:** N/A, **Uniform:** Service utility uniform or civilian casual, **Format:** N/A, **MTT:** Upon request, **Course Length:** 4 days

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division. For more information, please contact: dtra.belvoir.j9.mbx.reachback-training@mail.mil

VAPO-2 is a four-day course designed to enable users to achieve a higher level of understanding of the software’s physics based blast effects models to enhance the application of VAPO for force protection, anti-terrorism and vulnerability assessment modeling against a wide spectrum of real world threats.
This Course is sponsored by the DTRA CMAT Program. For more information, please contact Mr. Dale Petroff, dale.m.petroff.ctr@mail.mil, 703-767-4849.

The CBRN Military Assistance Team (CMAT) Operations Course is conducted semi-annually in the NCR by PI-TBPC Branch of the Defense Threat Reduction Agency (DTRA). The training is limited to those personnel who are assigned to the CMAT programs or Subject Matter Experts that support CMAT operations. After all prerequisites are completed, the CMAT Operations Course serves to qualify CMAT members at the Basic level. Topics include CBRN overview, CMAT exercises, and current CMAT field operational information.

Objectives:
- Introduce national crisis response policy
- Develop baseline skills for CMAT members
- Review CBRN mitigation, response, and recovery
- Review consequence management policy and doctrine
- Discuss CMAT missions and lessons learned
- Become familiar with CMAT equipment, including satellite communications
- Discuss current WMD issues
- Conduct assessments and prepare reports for various WMD scenarios
- Prepare and present briefs suitable for general officers and flag officers

Format: Facilitated discussions, lectures, and hands-on

Who Should Take This Course: DTRA J3BPC personnel assigned to support CMAT missions, and Subject Matter Experts (SMEs) from organizations that augment or support CMATs.
The USAF Security Forces (SF) Nuclear Security Certification Training Program (NSCTP) is designed for USAF SF personnel with responsibilities dealing with security of nuclear weapons. Level I certification is for SF nuclear security flight leadership such as flight chiefs, flight commanders, convoy commanders, flight security Officers, and similar personnel.

Level II certification is for SF nuclear security group/squadron leadership such as group commanders, squadron commanders, SF operations officers, SF managers, SF operations superintendents, and similar personnel.

Level III certification is for SF nuclear security policy personnel such as Air Staff, Headquarters Air Force Security Forces Center, MAJCOM, and Numbered Air Force nuclear security staff members and similar nuclear security policy personnel.

To become NSCTP certified, you must complete the following collective courses appropriate to your duty position or assigned position.

• Level I, USAF SF Flight Nuclear Certification
• Level II, USAF SF Group/Squadron Nuclear Certification
• Level III, USAF SF Nuclear Policy Certification

*for further details see, https://dnws.dtra.mil/
DNWS has a collaborative educational exchange agreement with the U.S. Air Force Nuclear College to expand the general audience’s awareness of available training within the CWMD realm.

For the latest course schedule and registration information, contact the Air Force Nuclear College Registrar at DSN 246-7784/7051 or visit the Air Force Nuclear College SharePoint site at https://cs2.eis.af.mil/sites/10771/default.aspx.
Air Force Nuclear Fundamentals Course (Nuclear 200)

Course ID/Number: ETCA: WNUC200; MILPDS: 2X1
Course Pre-requisites: N/A
Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: As directed by the individual service, Format: N/A, MTT: N/A,
Course Length: 5 days (40 hours)

This five day in-residence course is designed to enhance awareness among Airmen of the USAF nuclear mission; the course covers nuclear weapon fundamentals, force structure, nuclear stockpile guidance and planning, the DoD/AF nuclear surety program, the nuclear community, and current issues related to the USAF’s nuclear mission. The focus of this course is an ‘overview’ of the entire nuclear enterprise for individuals that have completed at least one operational nuclear assignment and will stay core nuclear for most of their career or for support function/AFSCs assigned to a nuclear unit/job in a supervisory, command, or decision making position and this is their first nuclear mission assignment.

Air Force Nuclear Concepts Course (Nuclear 300)

Course ID/Number: ETCA: WNUC300, MILPDS: 0I5
Course Pre-requisites: N/A
Classification: SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: As directed by the individual service, Format: N/A, MTT: N/A,
Course Length: 5 days (40 hours)

The course provides an in-depth look at key aspects of the Air Force nuclear enterprise to enable better understanding of nuclear deterrence history, theory, and application; nuclear operations policy and strategy; nuclear incident/accident response; and nuclear surety and effects. The focus of this course is for individuals who are at the 9+ year point working in the nuclear enterprise. They are ‘core nuclear’ and going to a position where they will be setting nuclear policy, procedures, etc. within their functional areas. Normally at the NAF division chief level, MAJCOM branch chief level or HAF/Joint 04 AO level or higher. Also, for nuclear AFSC Sq/CCs who have not attended before selection for command.

Senior Leader Nuclear Management (Nuclear 400)

Course ID/Number: ETCA: WNUC400, MILPDS: 0KQ
Course Pre-requisites: N/A
Classification: TOP SECRET//Restricted Data-CNWDI, Security Requirements: N/A,
Uniform: As directed by the individual service, Format: N/A, MTT: N/A,
Course Length: 2 days (16 hours)

The purpose of the Senior Leader Nuclear Management course is to provide a forum for senior leaders to discuss deterrence theory, nuclear policy, arms control, and other nuclear issues. Attendance is by invitation. Please contact the Air Force Nuclear College Registrar for more information.

The focus of this course is for senior leaders who are either: A) Flag Officers and SESs that have nuclear responsibilities anywhere in their portfolio of responsibilities; B) Working internal to the nuclear enterprise and are usually post Sq/ CC command in an O6/civilian equivalent level HAF/MAJCOM 3 Ltr billet or E9 in similar functional expert billet.
Air Force Nuclear Certification Process Course

Course ID/Number: In-Residence Course (Kirtland AFB):
ETMS: CKVNURC0000100SU, MIL PDS Code: CIA, MIL PDS Code: XW2
(Non-Resident Course), MIL PDS Code: ORV, (Non-resident Exec Course)
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A,
Uniform: As directed by the individual service, Format: N/A, MTT: N/A,
Course Length: In-Residence - 2 days (16 hours); Non-Residence - 1 day (8 hours)

This course provides attendees with an understanding of the Air Force Nuclear Certification Process as prescribed by AFI 63-125, Nuclear Certification Program. It identifies, defines, and explains the four phases of the certification process, the two major elements of Nuclear Certification (Design Certification and Operational Certification) and their components. The course provides a practical discussion on the development, submittal, and approval process for the Nuclear Certification Impact Statement (NCIS) and the Certification Requirements Plan (CRP).

Air Force Nuclear Certified Equipment (NCE) Users Course

Course ID/Number: ETMS: CKVNURC0000600SU; MILPDS: 05G
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: N/A, Uniform: As directed by the individual service, Format: N/A, MTT: Please contact the Air Force Nuclear College Course registrar to arrange MTT presentation, Course Length: 1 day (8 hours)

The Air Force Nuclear Certified Equipment (NCE) Users Course is designed to enhance Air Force Nuclear Surety by increasing awareness of the responsibilities and requirements for personnel who operate, maintain, and manage NCE. This course is designed to help field users and other personnel become familiar with the basics of handling, managing, and reporting NCE. The course will provide familiarization with elements of the NCE Management Program and enhance attendee’s knowledge and understanding of how to use the Master Nuclear Certification List. Primary topics in this course will cover how and why equipment is nuclear certified, requirements and responsibilities for the management of NCE, how to use the Master Nuclear Certification List, determining NCE serviceability and certification status, and the requirements for deficiency reporting on NCE.
Relative Doses from Common Radiation Sources

**Millisieverts Doses**

- Radon in average home
  - 2 millisieverts
  - 200 millirem (annual)
  - (approximately 50 chest x-rays)

- Diagnostic radiology
  - 0.5 millisieverts
  - 50 millirem (annual)
  - (approximately 12 chest x-rays)

- Mammogram
  - 0.3 millisieverts
  - 30 millirem (single procedure)
  - (approximately 7 chest x-rays)

- Cosmic radioactivity
  - 0.27 millisieverts
  - 27 millirem (annual)
  - (approximately 7 chest x-rays)

- Chest x-ray
  - 0.04 millisieverts
  - 4 millirem (single procedure)

**Millirem Doses**

- Gastrointestinal series
  - 14 millisieverts
  - 1400 millirem (single procedure)
  - (approximately 350 chest x-rays)

- Cosmic and terrestrial radiation living in Japan
  - 0.55 - 1.1 millisieverts
  - 55 - 110 millirem (annual, depending on location)
  - (approximately 12 - 27 chest x-rays)

- Natural radioactivity in the body
  - 0.4 millisieverts
  - 40 millirem (annual)
  - (approximately 10 chest x-rays)

- Terrestrial radioactivity
  - 0.28 millisieverts (annual)
  - 28 millirem (annual)
  - (approximately 7 chest x-rays)

- Cosmic radiation living at sea level
  - 0.24 millisieverts
  - 24 millirem (annual)
  - (approximately 6 chest x-rays)

Adapted from the EPA chart, "Relative Doses from Radiation Sources"
INFORMATION ANALYSIS RESOURCES

- Defense Threat Reduction Information Analysis Center (DTRIAC)
DTRIAC Core Activities

Core Activities are fully funded (by DTRA) to qualified users and includes the following activities:

- Respond to Technical Inquiries
- Provide online access to the DTRA S&T knowledge base using the Scientific & Technical Information Archival and Retrieval System (STARS)
- Maintain and grow the DTRA Scientific and Technical (S&T) knowledge base – over 3 million documents, films, videos, photographs, drawings, and engineering data

Technical Orders (TO)

TOs provide for timely support to IAC customers who require dedicated efforts which require more depth and specialization (greater than 8 hours) than is available as part of the core activities. TOs include studies, analyses, assembly of data collections, and development of tools and techniques for the collection and analysis of data, as well as other unique scientific and technical activities. TOs require separate funding by the requesting customer.

Defense Threat Reduction Information Analysis Center Holdings:

- Nuclear Weapon Effects
- High Yield Explosives and associated Phenomena such as Blast, Shock, and Overpressure
- Types of and Destructive power of various explosives
- Cooperative Threat Reduction Information
- Biological topics such as Agents and Warfare
- Bacteria and Bacterial Toxins, Fungi and Viruses
- Journals, Periodicals and Special Collections include:
  - Armed Forces Radiobiological Research Institute (AFRRI)
  - IEEE Transactions on Nuclear Science
  - Plowshare Project
  - Quick Look reports
  - And others
- Distribution Products:
  - Effects of Nuclear Weapons
  - Weapons of Mass Destruction Terms Handbook
  - Caging the Dragon, the Containment of Underground Nuclear Explosions
  - Building the Cage
  - Responding to War, Terrorism, WMD Proliferation: History of DTRA, 1998-2008
  - LANL Nuclear Weapons Analysis Tools, Ver 5.5 (CD)
  - EM-1 Chapters [CD’s are classified individually U-SRD; DTRA approval required]

Use of your STARS account will allow access to these as well as other holdings. If a reference is not yet digitized, DTRIAC will digitize it and provide the requester with an electronic copy of the requested information.

STARS - Scientific & Technical Information Archival and Retrieval System

STARS is DTRA’s online searchable database containing information that supports DTRA’s mission, such as documents, photographs, diagrams, numeric data, software, and videos.

STARS is comprised of two systems, each with its own user-id and password. The unclassified system (STARS-U) is a subset of the overall digitized information and is accessible via the NIPRNet/Internet. Access is possible with the use of a government issued CAC or SecurID token (which is provided upon getting an account). The classified system (STARS-C) contains 100% of the digitized information and is accessible via the SIPRNet.
DTRIAC's holdings in STARS include over eight and a half million pages with over 400,000 titles indexed by both author and title. STARS also holds in excess of 46,000 data sets and 3,000 photographs.

DTRIAC is actively adding digital files from its film library as the efforts to preserve and digitize these irreplaceable assets continue. In addition to the documents, databases, films and photographs, STARS has other tools to assist the researcher, such as:

- **Events**: An event is a test event summary of a weapons or high explosive test. It brings all the related information into single screen to allow detailed research.
- **Guides**: Guides provide information on a specific subject area (e.g., special-weapons effects testing, phenomena, test methods, operations, events, facilities, organizations, data systems).
- **Tables**: A table is a set of alphanumeric or numeric data values organized in rows and columns. Examples include data from spreadsheets or databases.
- **Diagram**: Consist of items such as blueprints, schematics and engineering drawings.
- **Numerics**: Numeric data is a digital representation of engineering or science data. Examples include waveform data recorded from an event or simulation, calibration data, and calculated results.

**Requesting a STARS Account**
To request a STARS account, contact the STARS Account Administrator at (505) 853-0854, DSN 263-0854 or via e-mail, DTRA-DTRIAC@mail.mil. Requirements for an account are: a visit request must be on file with DTRA Security, have a minimum of a SECRET clearance or higher and be briefed in on RD, CNWDI and NATO access, and have a DTRA sponsor (non-DTRA accounts only).

**Who We Serve**
DTRIAC services are available to members of U.S. government organizations with a valid need-to-know. Contractors must have a government contract sponsor. In order to receive export-controlled data, your organization must be registered with the Defense Logistics Information Services (DLIS).

**Visiting DTRIAC**
A visit will be most productive if planned. Members of the DoD or DOE should contact DTRIAC directly. Government contractors should contact their contracting officers to coordinate a visit. All other visits require DTRA approval in advance. Be sure to specify your technical query, issue or problem and type of assistance desired in advance of your visit.
E-mail: DTRA-DTRIAC@mail.mil

**STI Support Center**
Located in room 3880 of DTRA at Ft. Belvoir is the STI Support Center that provides ready access to DTRA personnel in the NCR. Access to both STARS systems is available. In addition, Research Assistants are on hand to help direct and refine inquiries.

**Contact Us**
DTRA/DTRIAC
Program Manager/COR
(571) 616-4091

All public and media inquiries should be directed to the Defense Threat Reduction Agency Office of Public Affairs:

Voice: (703) 767-5870
Fax: (703) 767-4450
Toll-free: (800) 701-5096
DSN: 427-5870
Email: dtra-PA@mail.mil
MEMORANDUM FOR DNWS/J10IES

ATTN: Registrar Office
1680 Texas St SE
Kirtland AFB, NM 87117-5669

SUBJECT: Request for DNWS Training Support/Mobile Training Team (MTT)

1. The following information is provided:

   a. Course/Training Requested: (Name and course number)
   b. Requesting Organization: (Your organization’s name)
   c. Expected Audience: (General background of audience and number of students)
   d. Requested Time Period: (Provide primary and at least two alternate dates, if possible)
   e. Equipment available to support training: (Your home station’s assistance is appreciated)
   f. Point of Contact / Resource Management Liaison: (Provide POC to act as liaison between your organization and the DNWS staff for planning & accounting purposes, etc.)
   g. Other: (Address other specifics as required by the course, such as special clearances)

2. My organization accepts responsibility for ensuring all personnel projected to attend the Training MTT have proper security clearance and access to the MTT course. A consolidated list of students, to include full name, rank, social security number, and security clearance will be provided to the instructor(s) before the course begins.

3. My organization accepts responsibility for all expenses associated with this Training/MTT, including travel expenses/costs/shipping of equipment. Furthermore, we agree to provide administrative support as required. Funding and travel-order authorization letter for Training/MTT will be forwarded to the DNWS NLT 15 working days prior to class start date.

4. We understand that approval of this request is based upon availability of DNWS staff and training schedules.

5. Direct questions regarding the request to (Your organization POC and duty phone).

Signature Block
(O-5/GS-14 or Higher)

Download this pdf form at: https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=31
MEMORANDUM FOR DNWS/J10IES
ATTN: Registrar Office
1680 Texas St SE
Kirtland AFB, NM 87117-5669

SUBJECT: Funding and Travel-Order Authorization for DNWS Training Support/Mobile Training Team (MTT)

1. Expenses are authorized for (Names of DNWS Personnel) to include but are not limited to transportation, billeting, meals, and rental car, as well as any other expenses authorized by the Joint Federal Travel Regulations.
   a. Fund Cite:
   b. Not-to-exceed amount for travel:

2. DNWS will submit the travel-order authorization, DD Form 1610 Request and Authorization for TDY Travel of DoD Personnel, through the Defense Travel System (DTS) and will cite the requestor funds as outlined in the letter of authorization.

3. Upon return from Temporary Duty Assignment (TDY), the traveler will prepare the DD Form 1351-2, Travel Voucher or Sub-voucher, and send to DNWS finance who will forward to the requesting agency for payment through DTS.

4. POC is ____________ and duty phone is _______________.

Signature Block
(O-5/GS-14 or Higher)

Download this pdf form at: https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=30
How to Register for Classes

DNWS Registration and Course Administration Information

General information about DNWS is available on the DNWS web site https://dnws.dtra.mil. The site is available to DOD and other Federal and state agencies, accessible only from .mil or .gov domains.

Course Registration Process

Please read all sections of the course registration process, paying particular attention to security requirements, prerequisites, quota limitations, and requirements for DOE personnel.

DNWS has simplified and automated the course registration process. New students will complete a two-step process to register for DNWS courses. Step 1 requires students to request access to the DNWS Learning Content Management System (LCMS). After receiving access to the LCMS, prospective students will complete Step 2 to register for courses. Returning students need only log in to the LCMS and complete Step 2.

Step 1 (New/Prospective Students)

Prospective students should click the link provided (https://dnws.dtra.mil), select the “Register” tab, complete the “Register for Access to the Portal” form, and click “Submit Credentials for Access.” All fields are required to provide contact information for the students. Upon completion and email will be sent to provided email address with login and password.

Step 2 (Registered and Returning Students)

Students who have received a DNWS LCMS User ID and password may register for courses. Click on the link provided (https://dnws.dtra.mil), enter User ID and password in the spaces provided, and click “Submit Credentials for Access.” A “forgot my password” button is located at the bottom of this page if password is forgotten, all other login issues please call or email DNWS Registrars office. Once logged in, students may review transcripts, update profile information, browse the DNWS catalog and certification programs, register for courses or review existing course registrations, and take DNWS distance learning courses (no course registration required).

Organization/Service Branch Quotas

Some DNWS courses are subject to organization/service branch quotas; however, many classes have open seats. These non-allocated quotas are considered on a first come, first serve basis, and are open to any authorized student. To ensure that your registration is within your organization’s quota, contact and coordinate your registration with your appropriate Formal Training Manager and Quota Manager.

Classified Course Security Clearance Requirements

Classified course registration requires additional information, including security clearance verification. The DNWS Course Registration Form must be printed and endorsed by your organization’s security manager/office. Please send the completed form(s) to the DNWS Registrar’s Office by email. It is imperative that the DNWS Registrar’s Office receive and verify security clearance information a minimum of 15 working days before the class start date. If the Registrar’s Office does not receive clearance information within that timeframe, the student may not be approved to attend the desired course.

Email: dtra.kirtland.J10.mbx.dnws-registrar@mail.mil
Fax: Comm: (505) 846-9168 DSN: 246-9168
U.S. Mail: Defense Nuclear Weapons School
Attn. Registrar’s Office
1680 Texas St. SE
Kirtland AFB, NM 87117-5669
Registering without Internet Access

Students complete the DNWS Course Registration Form (page 59 of this catalog) and contact their organizational Formal Training Manager and Quota Manager to coordinate a reservation for a DNWS course. If the course is classified, adhere to the requirements found under Classified Course Registration Requirements.

JNEODC and NWTIC Special Requirements

DOD personnel registering for the Joint Nuclear Explosive Ordnance Disposal Course (JNEODC) are required to submit a visit request through JPAS using the SMO Code 07187-SNL and fill out the Sandia Badge Request Form and email it to ml_tr@sandia.gov.

Enrollment Confirmation

The DNWS LCMS will automatically generate and send enrollment confirmation to prospective students by email upon completion of the DNWS course registration process and verification of security clearance information (as appropriate). To ensure receipt of confirmation and other course information, students must provide an unclassified government email address when they register for access to the LCMS.

The DNWS Registrar’s Office, as well as the DNWS website (https://dnws.dtra.mil/), will apprise students of changes in class dates, times, and/or location. If a student has not received enrollment confirmation by one week prior to the class start date, he or she should call the DNWS Registrar’s Office main line, (505) 846-5666 or DSN 246-5666, Monday–Friday, 0730–1630, Mountain Time or contact them by email, dtra.kirtland.j10.mbx.dnws-registrar@mail.mil.

Security Issues

All personnel entering the DNWS are required to show valid identification at the security desk and receive appropriate badging. As previously noted, specific courses may require a security clearance and some require special access. Each DNWS course has specific security requirements detailed in its catalog course description. For submission of electronic security clearance send visit request to:

\[
\text{JPAS SMO Code: GQDD614}\\
\text{ATTN: DNWS Registrar, TSgt Shijo Abraham}
\]

DOD Personnel

DOD personnel attending classified courses submit clearance and access information on the DNWS Course Registration Form. JPAS is the primary verification site for DOD personnel security clearance and Visit Authorization Requests (VARs).

Electronic Equipment

Telephone lines with DSN access, are available for students to make and receive official telephone calls. Internet access at the DNWS is available for students on a limited basis.

Security procedures prohibit bringing personal electronic devices (such as but not limited to cellular telephones, pagers, personal digital assistants, cameras, thumb drives, laptop computers, fitbits or like devices) into the school.

Other DTRA Courses (Hosted) Specific instructions will be provided in the course invitation message.
Billeting/Transportation/Dining, Kirtland Air Force Base, New Mexico

Billeting on Kirtland AFB, NM

Individuals attending courses at the DNWS are responsible for their own billeting arrangements. Military personnel and federal employees may make reservations by contacting the Kirtland AFB Billeting Office (Kirtland Inn) by calling (505) 846-9653 or DSN 246-9653 or by fax (505) 846-4142 or DSN 246-4142.

Military personnel of the rank of O-6 or above and civilian personnel at grade GS-15 or above should contact the Kirtland AFB Protocol Office at (505) 846-3894 or DSN 246-3894. The Kirtland Inn will accept reservations on base, if space is available. If space is not available, these individuals should make reservations at a local hotel at the government contract rate. The Kirtland Inn is the only agency that can issue statements of non-availability, and only if personnel make billeting arrangements through the Kirtland Inn office.

Arrival at Kirtland AFB, NM

Visitors without a military I.D. may need to obtain a visitor pass to enter Kirtland AFB. Individuals needing a pass should plan accordingly and, on the first day of class, arrive at one of the two Kirtland AFB Visitors’ Centers located at the Gibson and Truman Gates at least 45 minutes prior to class start time. Please ensure you have a valid driver’s license, proof of insurance, and vehicle registration or rental car agreement.

For your safety, please remember to observe all posted speed limits. Additionally, hands-free cell phone use, seat belt use, and valid driving insurance are required while driving on Kirtland AFB and the surrounding area.

Transportation to Kirtland AFB, NM

Kirtland AFB has limited taxi/transportation services. If staying at Kirtland AFB Billeting, on-base taxi service can be contacted at 505-846-8294. The Albuquerque International Airport is approximately five miles from the DNWS. On-base billeting is approximately three miles from the DNWS. A rental car is highly recommended.

Dining at Kirtland AFB, NM

All students are responsible for their own meals and should come to DNWS under full per-diem. Ample time is afforded to each student for meals. Kirtland AFB has several different options when it comes to meals and they are all located within a few miles of the school. These include an award-winning military dining facility, Main Exchange Food Court, Bowling Alley, Golf Course, McDonald’s, and several other facilities just outside the base.

National Capital Region

Billeting in the National Capital Region (NCR) and Ft. Belvoir, VA

Individuals attending a DNWS course held in the NCR are responsible for their own billeting arrangements. Students should come to the NCR under full per-diem or plan to pay out-of-pocket expenses, as necessary.

Arrival into the NCR

Despite the fact that the majority of courses are taught at facilities outside a military base, students may want to visit one of the local military facilities. Students without a military I.D. may need a visitor’s pass. To obtain a visitor’s pass, proceed to the Visitor Center and please ensure you have a government identification card, a valid driver’s license, proof of insurance, and vehicle registration or rental car agreement.

For your safety, please remember to observe all posted speed limits. Additionally, hands-free cell phone use, seat belt use, and valid driving insurance are required while driving within the NCR and surrounding area.

Transportation within the NCR

Two international airports service the NCR, Ronald Reagan Washington National (DCA) and Washington Dulles International (IAD). The airports are approximately 10-20 miles from DNWS instruction sites, distance dependent upon the airport and the identified instructional site. The NCR has unlimited taxi/transportation services; however, such service is expensive. A rental car is highly recommended.

Dining within the NCR

Students are responsible for their own meals, and instructors provide ample time during classes for student meals. The NCR offers a variety of dining options located within a few miles of the instruction sites.
## Course Registration Form

### DEFENSE THREAT REDUCTION AGENCY
### COURSE REGISTRATION
**For official use only. Privacy Act of 1974 applies**

#### PRIVACY ACT STATEMENT

**Authority:** 5 USC 301, Departmental Regulations; 5 USC 4103, Establishment of Training Programs; 10 USC 1701, Management Policies; EO 11348, Providing for the further training of Government employees; 5 CFR part 410, Office of Personnel Management-Training; and EO 9397 (SSN).

**Purpose(s):** To determine applicant eligibility, as a record of attendance and training completion or elimination, as a locator, and a source of statistical information.

**Routine Use:** Records may be disclosed outside the DoD as permitted under 5 USC 552a(b) of the Privacy Act to officials and employees of Government Agencies in the performance of their official duties related to training requirements and certification, screening and selection process to state and local Agencies to track, manage, and report on training and certification; also includes the DoD “Blanket Routine Uses.”

**Disclosure:** Voluntary; however, failure to provide the information may tender applicant ineligible to enroll in the course.

**INSTRUCTION:** To register for one of our courses, please ensure this form is fully completed and emailed to: dtra.kirtland.J10.mbx.dnws-registrar@mail.mil. Please verify that your security manager has updated your security clearance within the appropriate systems prior to registration. If you have any questions, please email us dtra.kirtland.J10.mbx.dnws-registrar@mail.mil or call us at 505-846-5666.

### APPLICANT INFORMATION

<table>
<thead>
<tr>
<th>NAME (Last, First, MI)</th>
<th>RANK / GRADE</th>
<th>SSN (Full SSN Required)</th>
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<tr>
<th>SERVICE</th>
<th>AGENCY</th>
<th>DUTY TITLE</th>
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<tr>
<th>UNIT MAILING ADDRESS (Organization, Street Number, Street Name, Installation or City, State, and Complete ZIP Code)</th>
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<tr>
<th>UNCLASSIFIED WORK E-MAIL ADDRESS (REQUIRED)</th>
<th>DUTY PHONE</th>
<th>FAX NUMBER</th>
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<tr>
<td>DSN:</td>
<td>Comm:</td>
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<tr>
<th>SUPERVISORY POC (Enter name, e-mail, and telephone number (including area code) and name of individual who can be contacted after normal duty hours in the event of an emergency.)</th>
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<tr>
<th>SUPERVISOR’S NAME (REQUIRED)</th>
<th>SUPERVISOR’S E-MAIL (REQUIRED)</th>
<th>SUPERVISOR’S TELEPHONE NUMBER (REQUIRED)</th>
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### COURSE INFORMATION

<table>
<thead>
<tr>
<th>COURSE TITLE / NUMBER</th>
<th>CLASS START DATE</th>
<th>CLASS END DATE</th>
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### SECURITY CLEARANCE AND SPECIAL ACCESS – To be completed by Security Office Personnel

Some courses may require a security clearance and other special access. Refer to course descriptions for prerequisites. Security clearance must be received by the DNWS Registrar no later than 15 working days prior to class start date. To tour the NWIM, all students / visitors are required to have a DoD secret-level clearance with restricted data (RD) or critical nuclear weapons design information (CNWDI) access, or a DOE “Q” clearance.

<table>
<thead>
<tr>
<th>PLACE OF BIRTH:</th>
<th>DATE OF BIRTH:</th>
<th>CITIZENSHIP:</th>
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<tr>
<th>FOREIGN NATIONALS: Please provide your PASSPORT NUMBER here:</th>
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<tr>
<th>APPLICANT’S CLEARANCE LEVEL</th>
<th>DATE OF CLEARANCE</th>
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<tr>
<td>S = SECRET</td>
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<tr>
<td>TS = TOP SECRET</td>
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<td>Q = DOE TOP SECRET</td>
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<th>ACCESS – CHECK AUTHORIZED ACCESS</th>
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<td>SIGMA 1-5</td>
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</tr>
<tr>
<td>RESTRICTED DATA (RD)</td>
<td></td>
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<tr>
<td>CNWDI</td>
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</tbody>
</table>

I certify that the above-named applicant requires access as indicated in this document in the performance of duty and that permitting such access will not endanger command defense and security.

<table>
<thead>
<tr>
<th>SECURITY MANAGER’S TYPED OR PRINTED NAME</th>
<th>DUTY PHONE</th>
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<thead>
<tr>
<th>SECURITY MANAGER’S SIGNATURE</th>
<th>SECURITY MANAGER’S UNCLASSIFIED E-MAIL ADDRESS</th>
<th>DATE</th>
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</thead>
</table>

DTTRA FORM 34 (JUN 10)

Download this pdf form at: https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=24
Sandia Badge Request Form

Sandia JPAS Code: 07187-SNL

Visitor’s Information

Rank: ____________________________
First Name: ______________________
Middle Name: ____________________
Last Name: _______________________
Suffix: ___________________________
SSAN: ___________________________
Birth Country/City/State: _______________ / ___________ / ________________
Clearance Level: __________________________ U.S. Citizen? __________
Organization/SMO Code: _______________ / ___________

Meeting Information

Visit/Class Start Date: __________________________
Visit/Class End Date: __________________________
Classification Level of Meeting/Class: __________________________
Meeting/Class POC: __________________________
Justification/Purpose: ____________________________________________

Contact Information

Visitor’s Telephone: (___)______________
Email address: ___________________________
Security Office Telephone: (___)______________
E-Mail Address: ___________________________

When the visit request is submitted into JPAS, fax or e-mail this form to:
Fax - 505-844-3377
ML Registration E-Mail: ml_tr@sandia.gov

For questions, call Marie Vaughn,
505-844-6334

OFFICIAL USE ONLY (When completed) Version 6, Apr 2017
Directions to the **Defense Nuclear Weapons School (DNWS)** from Albuquerque International Sunport (ABQ) and a map of the surrounding area.

From the Airport, take Yale north and turn right onto Gibson Boulevard. Head east to Gibson Gate; Gibson Gate is open from 0530-2200. Once past the gate, drive east until you reach the intersection of Gibson Blvd and Wyoming Blvd. Turn right and drive south until you pass Kirtland Federal Credit Union, which will be a small building on your left just past K Avenue. Turn left into the parking lot. The address is 1900 Wyoming Blvd. If arriving between 2200 and 0530, please use the Eubank or Truman Gate, open 24 hours, 7 days a week.

Please note: the building is labeled 1900, not 20602. There is a sign on Wyoming Blvd.
Map to DTRA Ft. Belvoir, VA

Large-scale-area map at left, close-up map below.

Take Fairfax County Parkway to the intersection of John J. Kingman Road. Turn right off of John J. Kingman Road into the parking lot accessway. Note that there are security guards who will issue you a pass. Park in designated areas only.

DTRA is a secured facility. You will require permission to enter the building; please see Security at the entrance.
Map to HQ DTRA CBRNE M&S Training Center
Alexandria, VA

Large-scale-area map above, close-up map at right.

CBRN Classes taught at DTRA CBRNE M&S Training Center
6361 Walker Lane, Suite C120
Alexandria, Virginia 22310
(571) 303-2171
If you encounter something suspicious, follow your specific local protocols. Recommend contacting your state fusion center.

DNDO Joint Analysis Center (JAC)
For 24-hour Technical Assistance, contact: 1-877-363-6522
(1-877-DNDO-JAC)
Email: DNDO.JAC@dhs.gov

DNDO JAC Information Line (Non-emergency): 1-866-789-8304
Email: dndo.jac2@dhs.gov

Radiation Warning Symbol (Trefoil)  Dangerous Radiation Sources
Symbol only on inside of device housing.
If seen, device has been taken apart.

For repeatable neutron alarms
Neutron radiation is a primary indicator of plutonium (nuclear weapon material) and therefore warrants analysis. If the source of radiation cannot be authenticated, contact your local/state Technical Reachback center or the DNDO JAC.

When using Personal Radiation Detectors (PRDs)
1. Determine the precise location of the source of the radiation.
2. Visually inspect and interview all personnel associated with the alarm.

When using Radiation Isotope Identifier Devices (RIIDs)
1. Longer collection times (preferably 5 minutes) improve analysis results.
2. For the unknown or suspect radioactive item(s) being screened at site, note exposure rate (µR/h or mR/h), collection location, and distance from the item.
3. The RIID may fail to identify or may misidentify the isotopes present. It is important to understand common sources of radiation and have the capability to transmit data to Technical Reachback. Technical Reachback would like RIID spectrum data files on the local background, calibration source (if available), and the unknown or suspect radioactive item(s).

Release Conditions
The person or vehicle may be released upon completion of the following conditions:
1. Conclusive identification of the type and location of the radioactive item(s) as non-threat material (natural, medical, legitimate shipment, etc.).
2. Completion of all screening and assessments in accordance with local SOPs, including determining no threats are present.

Nuclear Concerns/Threats

1. Improvised Nuclear Device (IND) A device designed or constructed outside an official government agency and which has, appears to have, or is claimed to have the capability to produce a nuclear detonation. The term IND also applies to a stolen nuclear weapon potentially modified by a terrorist or non-governmental organization.

2. Radiological Dispersal Device (RDD) A device which has, appears to have, or is claimed to have, the capability to produce radioactive contamination over an area without a nuclear explosion. Also referred to as a “dirty bomb.” Non-explosive dispersal methods include sprayers or powders placed in air ducts.

3. Radiological Exposure Device (RED) A device that is intended to expose people to radiation without dispersal of radioactive material into the air by detonation with conventional explosives or other means. An example of a RED is unshielded or partially shielded radioactive materials placed in any type of container and in a location capable of causing a radiation exposure to one or more individuals.

*IAEA Significant Quantity The approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded. International Atomic Energy Agency (IAEA) Safeguards Glossary, 2001 Edition.

Radiation Isotope Identifier Device (RIID) RIIDs can identify Uranium-235 (U-235), Uranium-233 (U-233), Uranium-238 (U-238), Plutonium-239 (Pu-239), and Neptunium-237 (Np-237).


Uranium Metal  Uranium Reactor Fuel Pellets  Uranium Yellow Cake

5. Uranium-233 (U-233) Could be used to make a nuclear explosive device. IAEA Significant Quantity of U-233: 8 kg (18 lb)*

6. Natural Uranium Mostly Uranium-238 (U-238) with less than 1% U-235. Found in some dirt, rocks, and ceramic tiles. Ore processed into “yellow cake” powder and then into uranium hexafluoride (UF₆), a highly corrosive gas.

7. Depleted Uranium (DU) Primarily U-238 with most U-235 removed. Found in industrial counter-weights, shielding in radiography cameras, some military ammunition, and some tank armor.


9. Neptunium-237 (Np-237) Could be used to make a nuclear explosive device.
Isotopes of Concern for use in RDDs and/or REDs -
with common uses
1. Cobalt (Co-60) Cancer treatment, level/density gauge, teletherapy, radiography, food sterilization/irradiation, brachytherapy.
2. Iridium (Ir-192) Radiography non-destructive testing, flaw detection, brachytherapy “cancer seed,” skin cancer.
3. Cesium (Cs-137) Gauge/level gauge, industrial radiography, brachytherapy/teletherapy, well logging/density gauges, instrument calibration sources.
5. Americium (Am-241) Check source/calibration source, smoke detector (ionization/type), thickness gauge, moisture/density gauge, x-ray fluorescence, component of used nuclear fuel and plutonium. Part of americium-beryllium (Am:Be) neutron source.
6. Americium-241 Source Capsule
7. Strontium-90 from Soviet RTG (about size of a coffee can)
8. Radium (Ra-226) Some medical uses, old luminescent dials, industrial gauges, Naturally Occurring Radioactive Material (NORM), common in ores, rocks and minerals.
10. Plutonium (Pu-239) In addition to nuclear weapons, used as part of a plutonium-beryllium (Pu:Be) neutron source.

Common Commodities with elevated levels of radiation
1. Aluminum/Aluminum Dross Aluminum is not radioactive. However, many materials that contain aluminum or that are involved in the processing of aluminum are radioactive. Aluminum dross is a grey coarse powder byproduct of aluminum production. A shipment of aluminum may contain Potassium (K-40), Thorium (Th-232), and Uranium (U-238).
2. Hall Cell Bath (HCB) Solid, granular powder in form; it is off-white to gray in color, and odorless. Hall Cell Bath may contain Uranium (U-238), Thorium (Th-232) and Radium (Ra-226).
3. Ceramics/Granite/Quartz/Cat Litter/Clay products Clay and rock based materials typically contain elevated levels of naturally-occurring radioactive materials (NORM) such as Potassium (K-40), Thorium (Th-232) and/or Uranium (U-238).
4. Trees, Cranberries, Blueberries, Huckleberries, Cowberries, Bilberries, Bananas, Tobacco, Marijuana Trees (wood products) and other plants (berries and other food) from Europe may have Cesium (Cs-137) from the Chernobyl accident. Investigate if Cesium discovered in plant products as it may be a hidden illicit Cesium source instead of just plant products. Other plants and plant products may have naturally occurring Potassium (K-40) [bananas] or Radium (Ra-226) [tobacco, marijuana].
5. Potash, Fertilizer Potash is the common term for potassium-based fertilizer. Contains Potassium (K-40).
6. Potassium Chloride Salt (KCl) Salt substitutes, ice melt, and “salt-free” water softeners pellets contain Potassium (K-40).

Medical Isotopes
Medical Isotopes When undergoing certain medical procedures, radiological isotopes may be injected into the bloodstream or implanted under the skin as pellets. Someone who has received a nuclear medicine treatment in the past few weeks may trigger a radiation alarm.
1. Gallium (Ga-67) Imaging of areas of inflammation.
2. Indium (In-111) Imaging of infection/white blood cell formation.
5. Molybdenum (Mo-99) Not found in people. Used to generate Tc-99m.
6. Phosphorus (P-32) Inflammation associated with joint pain.
8. Rubidium (Rb-82) Cardiac imaging techniques.
10. Strontium (Sr-89) Bone pain relief for patients with prostate cancer.
11. Technetium (Tc-99m) Most common medical isotope. Cardiac “heart” stress tests. Tracer to detect where a tumor is located.
12. Thallium (Tl-201) Imaging for heart related conditions.
13. Xenon (Xe-133) Imaging of heart, lungs, brain and blood flow.

Radioactive Material Shipment Placarding and Labeling

Radioactive Package Labels (Max Radiation Levels)
Radioactive White-I
Up to 0.5 mrem/h (500 urem/h) at the package surface.
Radioactive Yellow-II
0.5 mrem/h up to 50 mrem/h at the package surface.
Up to 1 mrem/h (1,000 urem/h) at 1 meter (40 inches).
Radioactive Yellow-III
50 mrem/h up to 200 mrem/h at the package surface.
Up to 10 mrem/h at 1 meter (40 inches).
Milleirem per hour (mrem/h) Radiation level measured with instrument. Normal background radiation levels are usually less than 0.010 mrem/h (or 10 urem/h, microrem per hour).
# U.S. Enduring Stockpile

<table>
<thead>
<tr>
<th>Bomb</th>
<th>Description</th>
<th>Carrier</th>
<th>Laboratories</th>
<th>Mission</th>
<th>Military Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>B61-3/4</td>
<td>Non-Strategic Bomb</td>
<td>F-15, F-16, &amp; Tornado</td>
<td>LANL</td>
<td>Air to Surface</td>
<td>USAF</td>
</tr>
<tr>
<td>B61-7/11</td>
<td>Strategic Bomb</td>
<td>B2</td>
<td>LANL</td>
<td>Air to Surface</td>
<td>USAF</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Warhead</th>
<th>Description</th>
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<th>Laboratories</th>
<th>Mission</th>
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</thead>
<tbody>
<tr>
<td>W78-0</td>
<td>ICBM Warhead</td>
<td>Minuteman III ICBM</td>
<td>LANL</td>
<td>Surface to Surface</td>
<td>USAF</td>
</tr>
<tr>
<td>W87-0</td>
<td>ICBM Warhead</td>
<td>Minuteman III ICBM</td>
<td>LLNL</td>
<td>Surface to Surface</td>
<td>USAF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warhead</th>
<th>Description</th>
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<th>Laboratories</th>
<th>Mission</th>
<th>Military Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>W76-0/1</td>
<td>SLBM Warhead</td>
<td>Trident II D5 SLBM</td>
<td>LANL</td>
<td>Underwater to Surface</td>
<td>USN</td>
</tr>
<tr>
<td>W88-0</td>
<td>SLBM Warhead</td>
<td>Trident II D5 SLBM</td>
<td>LANL</td>
<td>Underwater to Surface</td>
<td>USN</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Bomb</th>
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<th>Laboratories</th>
<th>Mission</th>
<th>Military Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>B83-1</td>
<td>Strategic Bomb</td>
<td>B-2</td>
<td>LLNL</td>
<td>Air to Surface</td>
<td>USAF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warhead</th>
<th>Description</th>
<th>Carrier</th>
<th>Laboratories</th>
<th>Mission</th>
<th>Military Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>W80-1</td>
<td>Cruise Missile Warhead</td>
<td>B-52</td>
<td>LLNL</td>
<td>Air to Surface</td>
<td>USAF</td>
</tr>
</tbody>
</table>

Some of the current planning guidance for radiological and nuclear terrorism used in today’s curriculum.
AN/PDR-77 Radiac Set

Note: the following fact sheet provides guidance on selecting the most appropriate probe to use with the AN/PDR-77 Radiac given various scenarios. This fact sheet will not train you on the proper use of the AN/PDR-77.

AN/PDR-77 Radiac Set: Choosing the Proper Probe

The AN/PDR-77 Radiac Set is a multipurpose radiation detection system. Its versatile, rugged design makes it ideal for nuclear accident and incident response. The meter, alpha probe, beta/gamma probe, and x-ray probe are the four major components of the AN/PDR-77. However, the capabilities of the PDR-77 may be augmented by the Radiation Protection Officer (RPO) Kit, which contains the micro-R probe and the pancake probe.

AN/PDR-77 Radiac with Beta/Gamma ($\beta/\gamma$) Probe (DT-616)

AN/PDR-77 Standard Probes

- X-ray Probe (DT-674)
- Alpha ($\alpha$) Probe (DT-669)
- Beta/Gamma ($\beta/\gamma$) Probe (DT-616)

AN/PDR-77 RPO Kit

- Pancake Probe (DT-695)
- micro-R Probe (DT-696)

U.S. Army Public Health Command
Health Physics Program
5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403
410-436-3502 or DSN 584-3502
Approved for Public Release; Distribution Unlimited
### Probe Selection Table

<table>
<thead>
<tr>
<th>Measuring Objective</th>
<th>α Probe</th>
<th>X-ray Probe</th>
<th>Pancake Probe</th>
<th>micro-R Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection or Measurement¹</td>
<td>C (Open Window)</td>
<td>A</td>
<td>B⁴</td>
<td>A</td>
</tr>
<tr>
<td>Locate Missing Source²</td>
<td>C (Open Window)</td>
<td>C</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>All Types</td>
<td>B (Open Window)</td>
<td>U</td>
<td>B⁴</td>
<td>A</td>
</tr>
</tbody>
</table>

### Measuring Objective

<table>
<thead>
<tr>
<th>Measuring Objective</th>
<th>α Probe</th>
<th>X-ray Probe</th>
<th>Pancake Probe</th>
<th>micro-R Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection or Measurement</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Locate Missing Source</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Basic External Radiation Dose Measurement Survey³</td>
<td>A</td>
<td>U</td>
<td>U</td>
<td>U</td>
</tr>
<tr>
<td>Detection or Measurement</td>
<td>B</td>
<td>U</td>
<td>B⁴</td>
<td>A</td>
</tr>
</tbody>
</table>

A = First Choice; B = Second Choice; C = Use if No Other Probes Are Available; U = Unacceptable

1. Determine the presence or intensity of radiation.
2. Find a radioactive source.
3. Determine ambient radiation doses and dose rates in a given area.
4. Most alpha and beta emitters have associated gamma rays and/or x rays. Therefore, these probes can be used to detect the presence of many alpha and beta emitters. If there are no associated gamma rays or x rays emitted, then these probes will not detect the radioactive material.

### Probe Considerations and Limitations

- The AN/PDR-77 does not have the ability to detect neutrons.
- The alpha probe responds to alpha particles above 3 MeV.
- On the X-ray probe, the 17 keV channel has lower and upper discriminators of 12.5 keV and 21.5 keV, respectively, the 60 keV channel has settings of 50 keV and 70 keV, and the “PEAK ALIGN” channel has settings of 70 keV and 95 keV.
- Despite the display, the beta/gamma probe is calibrated in mrad/hr.
- The beta/gamma probe is compensated to provide a tissue dose response; the response begins to fall off at energies below 100 keV.
- The difference in dose rate between the beta/gamma probe’s two positions (window open and window closed) does not yield the beta dose rate.
- The pancake probe entrance window effectively blocks beta particles with energies less than about 35 keV and alpha particles with energies less than 4 MeV.
- The response of the micro-R probe is highly dependent on photon energy. See response curve in the technical manual for more information.
- The micro-R probe is useful as a radiation detector, but not as a dose meter.
This graphic is from the Radiological Dispersal Device Shelter & Evaluation Technical Basis; Cal EMA RNER Framework Supplement. This graphic draws from the Los Angeles county Multi-Agency Radiological Response Plan (MARRP) as an example of shelter and evacuation guidance.
### Radiation Dose Rate Guidance

| Contaminated Persons\(^1\) | 2 x Background Reading (cpm or µR/h or mR/h) |
| Limit of Radioactive “Plume” on the Ground or Air\(^2\) | 5 x Background Reading (cpm or µR/h or mR/h) |
| Establish Hot Line\(^3\) | 1 mR/h to 10 mR/h (0.001 R/h to 0.010 R/h) |
| Work in Hot Zone | **CAUTION** - **DANGER** |
| Turn-Around Dose Rate For NON-Life-Saving\(^4\) | **DANGER** |
| Turn-Around Dose Rate for LIFE-SAVING\(^5\) | **DANGER** |
| Life-Saving, Very Short Duration Only (Informed Volunteers)\(^6\) | More than 100 R/h |
| **GRAVE DANGER** | |

\(^1\) EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents EPA 400-R-92-001
\(^2\) DOE FRMAC Monitoring and Analysis Manual Radiation Monitoring and Sampling. DOE/NV/11718-181-VOL.1
\(^3\) See guidance from local or state authorities. ASTM (E 2601-08 Standard Practice for Radiological Emergency Response), NCRP (Commentary No. 19), and IAEA (EPR-First Responders 2006) recommend 10 mR/h. Many local jurisdictions use 2 mR/h.
\(^4\) NCRP Management of Terrorist Events Involving Radioactive Material, NCRP Report No. 138
\(^5\) DOE FRMAC uses 1.5 R/h for Turn-Around, unless otherwise directed. DOE/NV/11718-181-VOL.1
\(^6\) Adapted from ASTM (E 2601-08 Standard Practice for Radiological Emergency Response), Federal Interagency Committee (Planning Guidance for Response to a Nuclear Detonation, 2nd Edition), and DOE Los Alamos National Laboratory (LA-UR-99 Emergency Medical Rescue in a Radiation Environment).

See guidance from local or state authorities for maximum dose rate that can be entered for life-saving activities.

### DHS/FEMA and EPA Emergency Worker Dose Guidelines

<table>
<thead>
<tr>
<th>Dose limit (whole body)</th>
<th>Emergency Action Dose Guidelines Activity performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000 mrem</td>
<td>5 rem All activities.</td>
</tr>
<tr>
<td>10,000 mrem</td>
<td>10 rem Protecting major property.</td>
</tr>
<tr>
<td>25,000 mrem</td>
<td>25 rem Lifesaving or protection of large populations.</td>
</tr>
<tr>
<td>More than 25,000 mrem</td>
<td>More than 25 rem Lifesaving or protection of large populations, Only by volunteers who understand the risks.</td>
</tr>
</tbody>
</table>

Dose includes sum of external dose and dose due to internal contamination. Dose limits for eyes is 3 x the values listed above. Dose limit for any other organ (including skin and extremities) is 10 times the values listed above.

EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents EPA 400-R-92-001
DHS/FEMA Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents

CTOS0003aV1 0910
Counter Terrorism Operations Support www.ctosnsa.org
<table>
<thead>
<tr>
<th>roentgen per hour (R/h)</th>
<th>rem per hour (rem/h)</th>
<th>sievert per hour (Sv/h)</th>
<th>gray per hour (Gy/h)</th>
<th>centigray per hour (cGy/h)</th>
<th>rad per hour (rad/h)</th>
<th>rem per hour (without prefixes) (rem/h)</th>
<th>sievert per hour (without prefixes) (Sv/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 µR/h</td>
<td>1 µrem/h</td>
<td>10 nSv/h</td>
<td>0.01 µGy/h</td>
<td>0.000001 cGy/h</td>
<td>1 µrad/h</td>
<td>0.000001 rem/h</td>
<td>0.0000001 Sv/h</td>
</tr>
<tr>
<td>Bkg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 µR/h</td>
<td>10 µrem/h</td>
<td>100 nSv/h</td>
<td>0.10 µGy/h</td>
<td>0.000010 cGy/h</td>
<td>10 µrad/h</td>
<td>0.000010 rem/h</td>
<td>0.0000010 Sv/h</td>
</tr>
<tr>
<td>50 µR/h</td>
<td>50 µrem/h</td>
<td>500 nSv/h</td>
<td>5.00 µGy/h</td>
<td>0.000050 cGy/h</td>
<td>50 µrad/h</td>
<td>0.000050 rem/h</td>
<td>0.0000050 Sv/h</td>
</tr>
<tr>
<td>100 µR/h</td>
<td>100 µrem/h</td>
<td>1000 nSv/h</td>
<td>10.00 µGy/h</td>
<td>0.000100 cGy/h</td>
<td>100 µrad/h</td>
<td>0.000100 rem/h</td>
<td>0.0000100 Sv/h</td>
</tr>
<tr>
<td>0.1 mR/h</td>
<td>100 µrem/h</td>
<td>1000 nSv/h</td>
<td>1.00 µGy/h</td>
<td>0.000100 cGy/h</td>
<td>100 µrad/h</td>
<td>0.000100 rem/h</td>
<td>0.0000100 Sv/h</td>
</tr>
<tr>
<td>0.5 mR/h</td>
<td>500 µrem/h</td>
<td>5000 nSv/h</td>
<td>5.00 µGy/h</td>
<td>0.000500 cGy/h</td>
<td>500 µrad/h</td>
<td>0.000500 rem/h</td>
<td>0.0000500 Sv/h</td>
</tr>
<tr>
<td>1 mR/h</td>
<td>1000 µrem/h</td>
<td>10000 nSv/h</td>
<td>10.00 µGy/h</td>
<td>0.001000 cGy/h</td>
<td>1000 µrad/h</td>
<td>0.001000 rem/h</td>
<td>0.0001000 Sv/h</td>
</tr>
<tr>
<td>10 mR/h</td>
<td>10000 µrem/h</td>
<td>100000 nSv/h</td>
<td>100.00 µGy/h</td>
<td>0.010000 cGy/h</td>
<td>10000 µrad/h</td>
<td>0.010000 rem/h</td>
<td>0.0010000 Sv/h</td>
</tr>
</tbody>
</table>

**Notes:** This table is intended to help convert and compare gamma radiation exposure and dose rate readings taken with different types of meters. It assumes the following conversion factors for gamma ray dose rates are used: 1 R/h = 1 rad/h = 1 rem/h and 1 Sv/h = 100 rem/h and 1 Gy/h = 100 rad/h.

Meters using the traditional "special units" (R, rem, rad) often use abbreviate "hour" as "h," while meters using SI units (Sv, Gy) often use "h" for "hour."

Natural Background radiation levels are usually around 5 to 25 µSv/h (0.05 to 0.25 mSv/h), and are represented by the row labeled "Bkg" 10 µR/h (100 mSv/h).
# STAY TIME TABLE

<table>
<thead>
<tr>
<th>DOSE RATE (Gamma Rate on Meter)</th>
<th>100 mrem</th>
<th>1,000 mrem</th>
<th>2,000 mrem</th>
<th>5,000 mrem</th>
<th>10,000 mrem</th>
<th>20,000 mrem</th>
<th>50,000 mrem</th>
<th>100,000 mrem</th>
<th>200 rem</th>
<th>300 rem</th>
<th>500 rem</th>
<th>1,000 rem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big</td>
<td>10 µR/h</td>
<td>10,000 h</td>
<td>100,000 h</td>
<td>250,000 h</td>
<td>625,000 h</td>
<td>1,250,000 h</td>
<td>3,125,000 h</td>
<td>7,812,500 h</td>
<td>10,000 h</td>
<td>15,000 h</td>
<td>25,000 h</td>
<td>50,000 h</td>
</tr>
<tr>
<td>Above Glance</td>
<td>5 µR/h</td>
<td>100,000 h</td>
<td>250,000 h</td>
<td>625,000 h</td>
<td>1,250,000 h</td>
<td>3,125,000 h</td>
<td>7,812,500 h</td>
<td>15,625,000 h</td>
<td>20,000 h</td>
<td>30,000 h</td>
<td>50,000 h</td>
<td>100,000 h</td>
</tr>
<tr>
<td>100 µR/h</td>
<td>10 mrem</td>
<td>1,000 h</td>
<td>2,500 h</td>
<td>6,250 h</td>
<td>15,625 h</td>
<td>39,062 h</td>
<td>98,125 h</td>
<td>245,312 h</td>
<td>3,125 h</td>
<td>4,750 h</td>
<td>7,812 h</td>
<td>15,625 h</td>
</tr>
<tr>
<td>Above Ground</td>
<td>5 mR/h</td>
<td>50,000 h</td>
<td>125,000 h</td>
<td>312,500 h</td>
<td>781,250 h</td>
<td>1,953,125 h</td>
<td>4,906,250 h</td>
<td>12,265,625 h</td>
<td>15,625 h</td>
<td>23,437 h</td>
<td>36,563 h</td>
<td>73,125 h</td>
</tr>
<tr>
<td>500 µR/h</td>
<td>50 µrem</td>
<td>100,000 h</td>
<td>250,000 h</td>
<td>625,000 h</td>
<td>1,250,000 h</td>
<td>3,125,000 h</td>
<td>7,812,500 h</td>
<td>19,531,250 h</td>
<td>25,000 h</td>
<td>37,500 h</td>
<td>62,500 h</td>
<td>125,000 h</td>
</tr>
<tr>
<td>Above Low Line</td>
<td>2 mR/h</td>
<td>100,000 h</td>
<td>250,000 h</td>
<td>625,000 h</td>
<td>1,250,000 h</td>
<td>3,125,000 h</td>
<td>7,812,500 h</td>
<td>19,531,250 h</td>
<td>25,000 h</td>
<td>37,500 h</td>
<td>62,500 h</td>
<td>125,000 h</td>
</tr>
<tr>
<td>1000 µR/h</td>
<td>10 mrem</td>
<td>1,000 h</td>
<td>2,500 h</td>
<td>6,250 h</td>
<td>15,625 h</td>
<td>39,062 h</td>
<td>98,125 h</td>
<td>245,312 h</td>
<td>3,125 h</td>
<td>4,750 h</td>
<td>7,812 h</td>
<td>15,625 h</td>
</tr>
<tr>
<td>Above Hot Line</td>
<td>5 mrem</td>
<td>50,000 h</td>
<td>125,000 h</td>
<td>312,500 h</td>
<td>781,250 h</td>
<td>1,953,125 h</td>
<td>4,906,250 h</td>
<td>12,265,625 h</td>
<td>15,625 h</td>
<td>23,437 h</td>
<td>36,563 h</td>
<td>73,125 h</td>
</tr>
<tr>
<td>LIFE-SAVING VOLUNTEERS ONLY</td>
<td>1 mrem</td>
<td>100,000 h</td>
<td>250,000 h</td>
<td>625,000 h</td>
<td>1,250,000 h</td>
<td>3,125,000 h</td>
<td>7,812,500 h</td>
<td>19,531,250 h</td>
<td>25,000 h</td>
<td>37,500 h</td>
<td>62,500 h</td>
<td>125,000 h</td>
</tr>
<tr>
<td>VOLUNTEER DANGER</td>
<td>0.1 mrem</td>
<td>100,000 h</td>
<td>250,000 h</td>
<td>625,000 h</td>
<td>1,250,000 h</td>
<td>3,125,000 h</td>
<td>7,812,500 h</td>
<td>19,531,250 h</td>
<td>25,000 h</td>
<td>37,500 h</td>
<td>62,500 h</td>
<td>125,000 h</td>
</tr>
</tbody>
</table>

Table shows time needed at a Dose Rate (row) to cause a specific Dose (column) and only takes into account external gamma radiation, not internal contamination.

Dose Rate colors based on Radiation Dose Rate Guidance table. Dose colors (columns) based on DHS-FEMA and EPA Emergency Workday Dose Guidelines.

1 µR = 0.001 mR = 0.000001 R  
Natural Background: about 10 µR/h = 0.01 mR/h = 0.00001 R/h = about 0.25 mR/day  
1,000 µR = 1 mR = 1 R  
1 day = 24 hours  
1,000 hours = 4 days  
1 week = 7 days = 168 hours  
10,000 hours = 416 days

Potentially Lethal: For whole body doses received in a short time, the LD50 dose (50% deaths in 30 to 180 days) is about 300 rem without treatment or 600 rem with medical treatment. The LD100 dose (100% deaths) is about 1,000 rem. If the exposure is spread out over a longer period of time (for example, days instead of minutes), the risk of death is lower.

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