The Defense Nuclear Weapons School (DNWS), in existence since 1947, is located on Kirtland AFB, Albuquerque, New Mexico. This Defense Threat Reduction Agency (DTRA) school is a unique entity that provides training to the Department of Defense (DOD), other federal, state, and local agencies on: Nuclear and Radiological Weapons; Nuclear Accident/Incident Command, Control and Response; Explosive Ordnance Disposal (EOD) Threat Awareness/Assessment; Weapons of Mass Destruction (WMD); and Chemical, Biological, Radiological and Nuclear (CBRN) modeling.

**Mission:** The Defense Nuclear Weapons School provides nuclear weapons core competencies and radiological/nuclear WMD training and education to DOD, interagency organizations, and international partners, to ensure a strong nuclear deterrence, prepare an effective accident/incident response force, and enable countering of WMD-cbRN threats.

**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 26 courses and 12 partnership topic areas. 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 when DNA became DTRA.

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 fields of nuclear weapons and countering of radiological and nuclear WMD.

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 proper donning of personal protective equipment, and the collection of airborne radioactivity samples; in procedures for cleaning, inspecting, and proper wear of respiratory 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 printed catalog.

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

Michael G. Conner
DNWS Division Chief
Defense Nuclear Weapons School

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.
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**Explosive Ordnance Disposal Specialty Training**

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(-) denotes class carried over one month to another

Check DNWS Website for latest course schedule - [https://dnws.dtra.mil/catalog/toc.cfm](https://dnws.dtra.mil/catalog/toc.cfm)
### DNWS FY 2020 Hosted Course Calendar

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

### DNWS FY 2020 MTT Course Calendar

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### DNWS FY 2020 MTT Course Calendar

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Check DNWS Website for latest course schedule - https://dnws.dtra.mil/catalog/toc.cfm

*Denotes class carried over one month to another*
Quick Lookup

DNWS Registrar Office
Email: dtra.kirtland.ne.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, SSgt Ryan Edmonds

Website support
https://dnws.dtra.mil
(must connect via a .mil or .gov domain)
Email: dtra.kirtland.ne.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
ARE YOU

Individual Student

Unit or Agency

DNWS Listed Courses

DNWS Existing Courses Custom Tailored

Specialized Training

Nuclear Enterprise Centric

Nuclear Enterprise Custom Tailored Courses

Nuclear Weapons Fundamentals - Whole of Enterprise/Operational

Nuclear Weapons Design, Effects, and Stewardship

Nuclear Weapons Policy, Strategy, & Deterrence

Nuclear Weapons Capable States & Proliferation

Nuclear Weapons Accident/Incident Response Fundamentals

Nuclear Weapons Accident/Incident Command, Control & Coordination

CWMD Centric

Basic Intermediate Radiological Nuclear Training (BIRNT)

Counter-WMD & Consequence Management

EOD Specific

Counter Proliferation

CBRN Modeling

Subject or Topic Centric

Partnership Training & Education Program (PTEP)
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 Number</th>
<th>Credit Amount and Level (Undergraduate)/Educational Department</th>
</tr>
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<td>ADT-1</td>
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<td>SUNY/Elective</td>
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<td>SUNNY/CHS 262804</td>
<td>1 lower/Intro to Emergency Management, Hazardous Materials or Military Science</td>
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</tr>
<tr>
<td></td>
<td>CTU/GENELE</td>
<td>1 Lower/Elective</td>
</tr>
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</table>

**How to request a joint service transcript:** The student must request a joint service transcript thru the educational services officer. The joint service transcript service is managed by the American Council on Education (ACE) which is free.

**To request an ACE transcript** please go to [http://www.acenet.edu/acecredit](http://www.acenet.edu/acecredit)

The DNWS partnered with Henley-Putnam School of Strategic Security at National American University (NAU-HP) to deliver a BS in Nuclear Enterprise Studies and 10 Undergraduate Certificate Programs. Up to 70% of the degree can come from DNWS or college transcripts, prior learning, ACE transcripts, Joint Service transcript’s, lifelong learning assessment etc. A 30% minimum NAU-HP. That does not apply to the 10 undergrad certificate programs. The DNWS is currently working with NAU-HP on a Master’s degree certificate.
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 or higher preferably 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.

Erik McIntyre • WIP Program Lead  
505-844-7921 • epmcint@sandia.gov
NUCLEAR WEAPONS ORIENTATION, POLICY AND SENIOR EXECUTIVE 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.

**Course Dates:** Dec 2-3, Mar 2-3, Jun 1-2, Aug 31-Sep 1

**Joint DOD-DOE Nuclear Surety Executive Course (JNSEC)**

**Course ID/Number:** DNWS NW 201 & 201M, USAF JBOZD32E1DOODA, 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.

**Course Dates:** Mar 18-19, Sep 16-17
NUCLEAR WEAPONS ORIENTATION, POLICY AND SENIOR EXECUTIVE TRAINING

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.

Course Dates: Nov 18-22, Jan 13-17, Mar 30-Apr 3

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

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.

Course Dates: Oct 28-Nov 1, Nov 4-8, Feb 3-7, Mar 9-13, Apr 13-17, Jun 8-12, Aug 17-21
Nuclear Weapons Technical Inspections Course (NWTIC)

Course ID/Number: DNWS H 120
Course Pre-requisites: Students must complete Defense Nuclear Weapons School’s Distance Learning Course: Nuclear Weapon Surety (NWS); Course Number: NW104DL
Classification: SECRET, Security Requirements: RESTRICTED DATA (RD) and Controlled Nuclear Weapons Design Information (CNWDI), Course Length: 4 days, 32 hours

Nuclear Weapons Technical Inspections Course (NWTIC) is a four-day in-residence hosted course at DNWS in which students will be taught common inspection methodology to better baseline and educate Service Inspectors for the nuclear enterprise. The course will use lectures, facilitated group discussions, and inspection scenarios to ensure strict and consistent application of nuclear weapon technical inspection guidance.

Course Dates: Nov 4-7, Feb 10-13, Mar 9-12, Jun 15-18

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 (IRNIR or NWOC)
- Intermediate Nuclear Weapons Certificate (NUCPOL & BNWC)
- Advanced Nuclear Weapons Certificate (TNOC & INWC)
- Advanced Nuclear Weapons Certificate - Surety (JNSEC & INWC)

*For further details see, https://dnws.dtra.mil/
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 Weapons Incident Response Training, Overseas Executive (NWIRT-OE)
- Incident Command & Control Certification Training Programs
- 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; Federal incident response; and a hands-on radiation practical.  
**Course Dates:** Dec 5-6, Mar 5-6, June 4-5, Sept 3-4

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**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 day

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.
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.

Course Dates: Oct 21-Nov 1, Jan 6-17, Mar 16-27, Apr 20-30, May 11-22, Jun 15-26, Sep 14-25

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).

Course Dates: Dec 17-19, May 5-7, Jul 14-16
Nuclear Weapons Incident Response Training, Domestic Executive (NWIRT-DE)

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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)

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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 Weapons Incident Response Training, Overseas Executive (NWIRT-OE)

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Nuclear Weapon Incident Response Training (NWIRT) Overseas Executive Course is an U.S. Only classified one-day course for Initial Response Force Team (IRT), Initial Response Force (IRF) and Response Task Force (RTF) senior leaders, COCOM and MAJCOM staff; it is 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) once per fiscal year in the EUCOM AOR.
Incident Command & Control Certification Training Programs

The Incident Command and Control Certificate Programs are designed for personnel with command and control responsibilities in the event of an incident involving WMD. This certificate is particularly valuable for combatant command staff members, joint task force staff members, or personnel working in similar capacities.

• IRNIR & NWIRT

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 an 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.

• ARRT-1 Certificate
• NETOPS Certificate
• Advanced Incident Response Certificate (NETOPS & BIR Cert)

*For further details see, https://dnws.dtra.mil/
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
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
CWMD Radiological and Nuclear Training

- Advanced Radiological & Nuclear Response Training (ARNT)
- Applied Radiological Response Techniques Level 2 (ARRT-2)
- Basic Intermediate Radiological Nuclear Training (B/IRNT)
- cbRN Joint Operations Course (cbRNJOC)
- WMD Site Recon and Hazard Awareness Course (WSRHAC)
Advanced Radiological & Nuclear Response Training (ARNT)

Course ID/Number: N/A
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: None,
Uniform: Service Utility uniform with winter support for FTX portion,
Format: In residence, MTT: Upon request, Course Length: 1-3 days

ARNT is a 1 – 3 day course tailored for an advanced audience of warfighter/responder already comfortable with basic/intermediate radiological and nuclear principles and topics. The topics are selected by the unit/organization to support mission needs and are intended to dive deeper into the topics taught in the B/IRNT. If refresher training is needed this course can be combined with B/IRNT. A FTX may be incorporated to reinforce training principles as well as mission needs.

Course Dates: Aug 31 – Sept 4, or by exception (call for scheduling)

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.

Course Dates: Nov 18-22, Mar 30-Apr 3, May 4-8, Jun 1-5, Jun 22-26, Jul 6-10, Aug 24-28
Basic Intermediate Radiological Nuclear Training (B/IRNT)

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: 2-5 days

B/IRNT is a tailorable 2-5 day course suitable for in-residence or MTT delivery. This course focuses on principles of radiological and nuclear force protection as well as hazard recognition and identification. These principles are taught through a set of core classes and electives selected based upon mission requirements. The core classes for the B/IRNT: Radiological fundamentals (1-2 hours), Exposure Guidance and Biological Effects of Radiation (1-2 hours), Radiation Detection Equipment Overview (1 hour), Detector Laboratory (1 -3 hours), and Personal Protective Equipment and Radiological Decontamination (1 hour). Elective classes: Detector Specific Overviews (Unit/Agency tailored), Radiological Material and SNM Hazards, Radiological and Nuclear Materials of Concern, Reactor Overview, Reactor Accidents, Nuclear Fuel Cycle, WMD Hazards on the Battlefield, HEMP/EMP, Risk Communication, Psychological Effects of Radiation, and other material upon further discussion.

Course Dates: Jan 21-24, Jun 15-19, or by exception (call for scheduling)
cbRN Joint Operations Course (cbRNJOC)

Course ID/Number: N/A
Course Pre-requisites: N/A
Classification: UNCLASSIFIED, Security Requirements: This information is cleared for public release (distribution A) and is to be used by military and civilian personnel in the execution of their normal duties., Uniform: Service Utility or civilian equivalent, Format: In residence, MTT: Upon request, Course Length: 4 Days

The cbRN-JOC is a 4 day course that provides the student with the basic joint planning concepts associated with the Adaptive Planning and Execution (APEX) and Joint Operations Planning Execution System (JOPES). Students will focus on the seven steps of the joint planning process, analyze higher operations orders, validate the mission analysis process, produce war-gaming results, compare courses of action, develop course of action brief, develop warning orders, and a concept of operation for a simulated mission. Examine planning and response considerations for a radiological/nuclear event.

Course Dates: Nov 12-15, Feb 18-21, Sep 8-11

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: 2-3 days

The WSRHA course emphasizes Force Protection requirements and awareness understanding of infrastructure that produces material for a nation states nuclear weapons program. The course is designed for units having the potential to or assigned to conduct reconnaissance where such infrastructure may exist. The course covers site specific hazards, how the material process works, and key identification features associated with these production facilities. Upon request, a table top exercise may be included. The TTX has teams conduct a scaled WMD Site recon mission to determine the nation state’s production process and associated hazards.

Course Dates: Jan 27-31, or by exception (call for scheduling)
EXPLOSIVE ORDNANCE DISPOSAL SPECIALTY TRAINING

• Advanced Diagnostic Training 1 (ADT-1)
• Advanced Diagnostic Training 2 (ADT-2)
• Joint Nuclear Explosive Ordnance Disposal Course (JNEODC)
• EOD WMD Certification Training Program
Advanced Diagnostic Training 1 (ADT-1)

**Course ID/Number:** USAF-E J5AAD3E851 0A1A, USAF-O J50AD32E3G 0A1A, USA DNWS-NR-130, USMC F04PXV1, S-431-8288, S-4318289  
**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.  
**Course Dates:** Dec 2-6, Jan 27-31, Mar 2-6, Apr 6-10, Jul 13-17, Aug 3-7

Advanced Diagnostic Training 2 (ADT-2)

**Course ID/Number:** USAF-E J5AAD3E851 0A2A, USAF-O J50AD32E3G 0A1A, USA DNWS-NR-201, USMC F04PXZ1, S-431-8288, S-4318289  
**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.  
**Course Dates:** Dec 9-13, Feb 3-7, Mar 9-13, Apr 13-17, Jul 20-24, Aug 10-14
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: N/A

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.

Course Dates: Dec 16-20, Feb 10-14, Mar 16-20, Apr 20-24, Jul 27-31, Aug 17-21

EOD WMD Certification Training Program

The EOD certification sequence is designed to develop the practical skills required for U.S. DOD EOD personnel to respond to a nuclear weapons accident as part of the Initial Response Force (IRF) and perform Phase 0 requirements for Level 3 Incident Response based on Federal guidance, to include Presidential Policy Directives (PPD), and DOD regulations. While appropriate for all general support EOD personnel requiring skills to respond to a nuclear weapon accident and nuclear incident, the EOD WMD certification sequence supports and integrates into the overall whole-of-government accident/incident response structure. It is not intended to replace any EOD WMD training otherwise established by the individual services EOD training commands.

• EOD WMD Certificate (ARRT 1, JNEODC, ADT-1, ADT-2)
SPECIALIZED TRAINING

• Partnership Training and Education Program (PTEP)
PTEP is an integral part of DTRA’s mission and goals to support the Nuclear Enterprise & CWMD community by providing specialized training and education to meet Combatant Commander, Interagency Partner, and academic requirements. PTEP has access to instructors and SMEs who can custom tailor curricula, lessons learned, and best practices across the full spectrum of Radiological, Nuclear, and related CWMD topics. Specialized training and education priorities and focus include:

- Combat support missions (e.g., support to GCCs, component schools, and joint university)
- Partnership collaboration (e.g., Interagency, academic, and international seminars)
- Facilitating innovation (e.g., Radiological detector developments and applications; Radiological and Nuclear site capability expansion)
- Empowering leadership (e.g., Radiological & Nuclear site visits and instruction; information sharing)

Please contact the PTEP team for further information:

**Program Manager**
Mr. Chris Pink

**Lead Instructors**
Mr. Tim Frederick
Mr. Chikiyo Jackson
Mr. Theodore Sharp

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) 846-1193
PTEP topic areas for tailored seminars, electives, and training iterations include but are not limited to:

• WMD/CBRNE, Radiological, & Nuclear Terrorism
• Radiological & Nuclear (SNM Focus) Materials of Concern
• EMP/HEMP Comparison for Responders
• Nuclear Reactors & Nuclear Reactor Accidents
• Radiological & Nuclear Cargo Hazards
• Survival on a Nuclear Battlefield
• Radiological & Nuclear Decontamination
• Nuclear Weapons Design and Design Evolution
• Operation TOMODACHI Lessons Learned
• Tuwaitha – Iraq Survey Group Case Study
• Minot to Barksdale Overview and Lessons Learned
• Legacy and current US nuclear weapons stockpile

Here are two examples of PTEP tailored courses:

• U.S. Legacy & Current Nuclear Stockpile Seminar -- A classified seminar covering the United States legacy and current nuclear weapons stockpile, with a focus on weapons accountability, handling, and deployment. This Secret/RD-CNWDI three day seminar is available once a year and only upon request. Due to the specialized nature of the seminar, participation is limited to 35 attendees.

• CWMD Radiological/Nuclear Operational Seminar (CRNOS) -- This seminar provides Operational Staff level awareness of the Radiological and Nuclear Operational environment as it relates to CWMD efforts. The three day seminar addresses the following topics and evolutions:
  - An overview of radiological and nuclear materials, categorization and equipment
  - An overview of RED, RDD and IND threats
  - Operational considerations concerning the medical effects of ionizing radiation
  - U.S. CWMD policies and capabilities as they apply to radiological and nuclear threats
  - Classified tour of Nuclear Weapons Instructional Museum with a CWMD/IND perspective
  - Hands on exposure to radiological sources and the entire spectrum of DOD radiological detectors
  - Visits and discussions with Rad/Nuc event response stakeholders

This is a three day seminar conducted at the Secret/RD-CNWDI classification. The target audience is TSOC, GCC and operational staff personnel participating in CWMD efforts. The seminar is conducted once a year. An additional iteration can be conducted by exception. Due to the hands-on nature of the seminar, participation is limited to 25 attendees.
Connecting Today’s Operational Forces to our Shared Nuclear History & Heritage

The PTEP program also actively supports the rich DTRA-DNWS history by connecting lessons learned with current training for today’s leaders, responders and the warfighters in classes, site visits, and museum tours.

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.

Example site visits include: EMP Trestle/ARES, Underground Facility tour, B-29 Crash Site, DNWS training areas, and the Trinity site.

PTEP helps facilitate foreign partner engagements at DNWS, sharing lessons learned and best practices, which directly supports the GCC’s Theater Security Cooperation Program (TSCP) outreach programs.
The school currently offers online training content on the local DNWS Learning Content Management System (LCMS): https://dnws.dtra.mil

Click on the “Training Courses” link on the DNWS Home Page.

Additionally, DNWS online content is available on the Joint Knowledge Online (JKO) Learning Management System (LMS): https://jko.jten.mil/

Login using your CAC or JKO login credentials and conduct a course catalog search for the following “prefix”: DNWS and apply the Search. Available DNWS courses will display in the list.
**Synopsis:** 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:** DNWS NR 100-DL  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED  
**Security Requirements:** N/A  
**Course Length:** 24 hours, self-paced

**Synopsis:** BRNIR is an 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; radiation hazards, detection equipment, personal protective equipment, and decontamination; and Federal incident response.
Joint Nuclear Weapons Publications System (JNWPS)

Course ID/Number: DNWS NS 105-DL  
Course Pre-requisites: N/A  
Classification: UNCLASSIFIED  
Security Requirements: N/A  
Course Length: 4 hours, self-paced

Synopsis: This course introduces basic concepts and principles related to the Joint Nuclear Weapons Publication System (JNWPS) to professionals supporting the nuclear weapons enterprise. The course goal is to provide clear understanding of the JNWPS and why it exists.

Nuclear Safety Studies and Review (NSSR)

Course ID/Number: DNWS SA 103-DL  
Course Pre-requisites: DNWS NI 101-DL (PRAP), DNWS NI 104 DL (NWS)  
Classification: UNCLASSIFIED  
Security Requirements: N/A  
Course Length: 4 hours; self-paced

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-NI104-DL  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED  
**Security Requirements:** 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.

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**Personnel Reliability Assurance Program (PRAP)**

**Course ID/Number:** DNWS NI 101-DL  
**Course Pre-requisites:** N/A  
**Classification:** UNCLASSIFIED  
**Security Requirements:** N/A  
**Course Length:** 3 hours, self-paced

**Synopsis:** The 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.

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**Virtual Tours**

The online virtual tours by DNWS provide an extensive online look at the following:

- UNCLASSIFIED Nuclear Weapons Instruction Museum Tour
- Operation Tomadochi
- Trinity Site
HOSTED & CBRNE MODELING SIMULATION TRAINING

- Defense Integration and Management of Nuclear Data Services (DIAMONDS)
- Functional Area 52 Qualification Course (FA-52 QC Phase 1)*
- Joint Countering Weapons of Mass Destruction Planning Course (JCPC)
- Theater Nuclear Operations Course (TNOC)

Hosted CBRNE Modeling Simulation

- CBRNE Military Assistance Team (CMAT) Operations Course
- Geospatial Analysis for Consequence Assessment (GACA-1)
- Geospatial Analysis for Consequence Assessment – Level 2 (GACA-2)
- 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)
- Integrated Weapons of Mass Destruction Toolset – Consequence Assessment - Nuclear (IWMDT-CA-N)
- 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)
- USAF Security Forces Nuclear Security Certification Training Program

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

**Course ID/Number:** DNWS H 100  
**Course Pre-requisites:** N/A  
**Classification:** SECRET  
**Security Requirements:** CNWDI  
**Course Length:** 3 days, 24 hours

DIAMONDS Training is a three-day course that provides prospective and current 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.

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

**Functional Area 52 Qualification Course (FA-52 QC Phase 1)**

**Course ID/Number:** DNWS H 500, USN S-140-0007, USA DNWS-NROOC  
**Course Pre-requisites:** ARRT-1  
**Classification:** SECRET  
**Security Requirements:** Restricted Data/CNWDI or DOE “Q”  
**Course Length:** 10 days, 80 hours

The Functional Area 52 Qualification Course (FA52 QC Phase I) is hosted annually at DNWS by the U.S. Army Nuclear and CWMD Agency (USANCA). The training is for U.S. Army FA-52 officers and serves as the Nuclear and Counter-proliferation Officers Functional Area Phase 1 qualifying course. Other students accepted by exception. Topics include; an overview of the physics of nuclear weapons, weapon characteristics, weapon engineering, weapon surety, weapon subsystem/component technology, scope of the US nuclear weapons program, stockpile stewardship, and the nuclear fuel cycle. In addition, students will conduct critical site visits to National Nuclear Administration laboratories and receive information briefings from subject matter experts.

For more information please contact: LTC Brett Carey, 703-806-7139, brett.a.carey.mil@mail.mil or usarmy.belvoir.hqda-dcs-g-3-5-7.mbx.usanca-proponency-division@mail.mil

* - denotes restricted course
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.

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

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.

For more information please contact: CW3 David McMorris, 703-806-7842, david.j.mcmorris.mil@mail.mil or
usarmy.belvoir.hqda-dcs-g-3-5-7.mbx.usanca-proponenty-division@mail.mil
CBRNE Military Advisory Team (CMAT) Operations Course

**Course ID/Number:** DNWS H 310  
**Course Pre-requisites:** Must gain acceptance from the CMAT leadership to participate. Also, must complete the prerequisites listed in this catalog under Basic CMAT Specialist Certificate.  
**Classification:** UNCLASSIFIED, **Security Requirements:** None,  
**Course Length:** 7 days, 56 hrs.

The CBRN Military Assistance Team (CMAT) Operations Course is conducted semi-annually in the NCR by J3OBP 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.

Maj Vincent Jackson, 571-616-5334, vincent.l.jackson4.mil@mail.mil

Geospatial Analysis for Consequence Assessment (GACA-1)

**Course ID/Number:** DNWS H 170, USA GACA - 1  
**Course Pre-requisites:** None  
**Classification:** UNCLASSIFIED, **Security Requirements:** None,  
**Course Length:** 4 days, 32 hours

GACA - 1 is a four-day course that provides students with tools to analyze CBRNE and natural hazards using Geospatial Information Systems (GIS) in conjunction with DTRA hazard modeling software. Students will work to produce comprehensive decision support products that communicate the operational impact of CBRNE and natural hazards to a Commander or Common Operational Picture (COP).

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division.

For more information, please contact: CW4 Leonardo Cargill, 571-616-5073  
leonardo.cargill.mil@mail.mil

Software registration on CBRNE Decision Support site: https://cbrnedss.dtra.mil.
Hazard Prediction and Assessment Capability Level 1 (HPAC-1)
Course ID/Number: DNWS-H 145, USA DTRA-ALEX-HL1
Course Pre-requisites: It is recommended that students complete HPAC-1 before GACA. Course also requires registration on CBRNE Decision Support website: https://cbrnedss.dtra.mil.
Classification: UNCLASSIFIED, Security Requirements: None,
Course Length: 5 days, 40 hours

Hazard Prediction and Assessment Capability Level 1 (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 learn to apply the HPAC model to predict hazard environment areas and potential human effects based on user’s mission requirements.

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

Geospatial Analysis for Consequence Assessment – Level 2 (GACA-2)
Course ID/Number: DNWS H 171, USA GACA - 2
Course Pre-requisites: Completion of GACA-1. Software registration on CBRNE Decision Support website: https://cbrnedss.dtra.mil
Classification: UNCLASSIFIED, Security Requirements: None,
Course Length: 4 days, 32 hours

GACA – 2 is a four-day course that builds on the work in GACA – 1 to apply modeling and analysis techniques to DTRA and third-party software to improve response time and streamline the modeling/analysis process of a CBRNE incident. Students will develop methods to communicate CBRNE Response products across multiple software platforms.

This Course is sponsored by the DTRA RD Information Science and Reachback (ISR) Technical Division.

For more information, please contact: CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@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. Upon completion of the course, students will learn to apply HPAC advanced software features to model the transport and dispersion of chemical, biological, or radiological materials and their potential human and collateral effects based on mission requirements.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@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 the HPAC model to predict hazard environment areas and potential human effects based on user’s mission requirements.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil

Requires registration on CBRNE Decision Support website: https://cbrnedss.dtra.mil.

Hazard Prediction and Assessment Capability Level 2 – Chemical, Biological, Radiological (HPAC-2-CBR)

**Course ID/Number:** DNWS H 150-C, USA DTRA-ALEX-HL2, DHS CM150

**Course Pre-requisites:** Requires completion of HPAC-1 and six months HPAC experience.

**Classification:** UNCLASSIFIED, **Security Requirements:** None,

**Course Length:** 5 days, 40 hours

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

**Course ID/Number:** DNWS H 150-N, USA DTRA-ALEX-HL2

**Course Pre-requisites:** Requires completion of HPAC-1 and six months HPAC experience.

**Classification:** UNCLASSIFIED, **Security Requirements:** None,

**Course Length:** 5 days, 40 hours
**Hazard Prediction and Assessment Capability Executive Course (HPAC-Exec)**

**Course ID/Number:** DNWS H 101, USA DTRA-ALEX-HL2  
**Course Pre-requisites:** A basic understanding of the HPAC model and Consequence Assessment Modeling is desired but not required.  
**Classification:** UNCLASSIFIED, **Security Requirements:** For Official Use Only (FOUO),  
**Course Length:** 2 days, 16 hours

The HPAC Exec course is a two 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 students 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.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil


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**Integrated Munitions Effects Assessment Level 1 (IMEA-1)**

**Course ID/Number:** DNWS H 105, USA DTRA-ALEX-IL1  
**Course Pre-requisites:** None  
**Classification:** SECRET, **Security Requirements:** None,  
**Course Length:** 5 days, 40 hours

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.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil

Register through the CBRNE Decision Support website: https://cbrnedss.dtra.mil.
IMEA-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.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil
Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.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 be exposed to an in-depth review of each methodology underlying the calculations in IMEA. Methodology lectures are followed by hands-on use of tailored IMEA scenarios.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil
Requires software user registration on Joint Operation Center, https://cbrnedss.dtra.mil.
IWMDT-CA is a five-day course in which the student achieves a basic level of competency in the modeling of hazard releases. Students use IWMDT-CA, a Net-centric tool, in a collaborative environment to predict hazard environment areas and potential human effects based on mission requirements.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil

WMDT-CA-N is a five-day course in which the student achieves an initial level of competency in the modeling of nuclear hazard releases. Students use IWMDT-CA, a Net-centric tool, in a collaborative environment to predict nuclear hazard environment areas and potential human effects based on mission requirements.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil
JEM Operator Course (JEM)

Course ID/Number: DNWS H 130
Course Pre-requisites: None
Classification: UNCLASSIFIED
Security Requirements: None
Course Length: 4 days, 32 hours

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).

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil

Mission Assurance Assessment Course (MAAC)

Course ID/Number: G55000APCIL
Course Pre-requisites: None
Classification: SECRET
Security Requirements: None
Course Length: 3 days, 24 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). Course provided via mobile training team only.

Students must contact the respective combatant command / installation that’s hosting the MAAC. Student will include full name, rank/grade, duty location/title, service/agency/command, phone number, email address, and requested course date.

This course is under revision.
VAPO-1 is a five-day hosted 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.

CW4 Leonardo Cargill
571-616-5073
leonardo.cargill.mil@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.

CW4 Leonardo Cargill, 571-616-5073, leonardo.cargill.mil@mail.mil
**USAF Security Forces Nuclear Security Certification Training Program**

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 (NWOC)**
- **Level II, USAF SF Group/Squadron Nuclear Certification (USAF Level I & NWTIC)**
- **Level III, USAF SF Nuclear Policy Certification (USAF Level II & JNSEC)**

*For further details see, [https://dnws.dtra.mil/](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: CKVNUC0000100SU, 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: CKVNUC0000600SU; 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.
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/NE-IES
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/NE-IERS  
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 ______________.  

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.ne.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 63 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 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 e-mail address when they register for access to the LCMS.

The DNWS Registrar’s Office, as well as the DNWS web site (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.ne.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:

**JPAS SMO Code: GQDD614**
**ATTN: DNWS Registrar, SSgt Ryan Edmonds**

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 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

**DTRA Defense Nuclear Weapons School Course Registration**

**For official Use only. Privacy Act of 1974 Applies**

## PRIVACY ACT STATEMENT


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 U.S.C. 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; and screening and selection process; to state and local agencies to track, manage, and report on training and certification; and the DoD ‘Blanket Routine Uses’.

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

## INSTRUCTIONS:

To register for one of our courses, please ensure this form is fully completed and forward to the DNWS Registrar,
1900 Wyoming Blvd SE, Kirtland AFB NM, 87117-5669, or fax to commercial line (505) 946-9168 or DSN 246-9168.
Department of Energy (DOE) personnel must also fill out DOE Form 5631.20 to register. Registration and security clearance data must be received a minimum of 15 working days prior to class start date.

## APPLICANT’S INFORMATION

<table>
<thead>
<tr>
<th>1. NAME (Last, First, MI)</th>
<th>2. RANK / GRADE</th>
<th>3. SSN (*Full SSN REQUIRED)</th>
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</thead>
<tbody>
<tr>
<td>4. SERVICE</td>
<td>5. AGENCY</td>
<td>6. DUTY TITLE</td>
</tr>
<tr>
<td>7. UNIT MAILING ADDRESS (Organization, Street Name, Installation or City, State, and Complete Zip Code)</td>
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<tr>
<td>8. UNCLASSIFIED WORK EMAIL ADDRESS (REQUIRED)</td>
<td>9. DUTY PHONE NUMBER</td>
<td>10. FAX NUMBER</td>
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<tr>
<td>SUPERVISORY POC (Enter name, email, and telephone number (including area code) and name of an individual who can be contacted after normal duty hours in the event of an emergency)</td>
<td>11. SUPERVISORY NAME (*REQUIRED)</td>
<td>12. SUPERVISORY EMAIL (*REQUIRED)</td>
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## COURSE INFORMATION

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<tr>
<th>14. COURSE TITLE / NUMBER</th>
<th>15. CLASS START DATE</th>
<th>16. CLASS END DATE</th>
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## SECURITY CLEARANCE AND SPECIAL ACCESS

To be completed and signed by Unit Security Manager

Some courses may require security clearance and special access. Refer to course descriptions for prerequisites. Security clearance must be received by the DNWS Registrar Office no later than 15 working days prior to class start date. To tour the Weapons Display Area, 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 with Sigmans 1-5. DOE personnel must use the DOE form 5631.20 to submit clearance information.

17. PLACE OF BIRTH: 18. DATE OF BIRTH: 19. CITIZENSHIP:

20. FOREIGN NATIONALS: (Please provide your passport number):

21. APPLICANT’S CLEARANCE LEVEL:

(Please annotate below -- S=Secret TS= Top Secret or Q= DOE Top Secret

ACCESS - CHECK AUTHORIZED ACCESS

| NONE | SIGMANS 1-5 | RESTRICTED DATA (RD) | CNWDI |

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

24. SECURITY MANAGER’S TYPED / PRINTED NAME: 25. DUTY PHONE:

26. SECURITY MANAGER’S SIGNATURE: 27. SECURITY MANAGER’S UNCLASSIFIED EMAIL ADDRESS: 28. DATE:

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Download this pdf form at: [https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=24](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

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

**Map to DNWS, Kirtland AFB, Albuquerque, NM**

*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
Nuclear Enterprise Branch References

Nuclear Weapons Section: NWOC/AWOC/NucPol

Nuclear Matters Handbook:

The Effects of Nuclear Weapons
https://www.osti.gov/servlets/purl/6852629

Manhattan Project General Information:
https://www.osti.gov/opennet/manhattan-project-history/Resources/library.htm

A Primer on U.S. Strategic Nuclear Policy:

2018, Nuclear Posture Review
https://dod.defense.gov/News/Special-Reports/0218_npr/

Treaty on the Non-Proliferation of Nuclear Weapons (NPT)
https://www.state.gov/t/isn/trty/16281.htm#

Treaties and Agreements
https://www.state.gov/t/avc/trty/

National Security Strategy

National Defense Strategy

Center for Strategic and International Studies
https://www.csis.org/programs/international-security-program/project-nuclear-issues

United States Air Force Counterproliferation Center

Stockpile Stewardship and Management Plan (SSMP)

Nuclear Response Section: NETOPS/NWIRT

Nuclear Accident Response Procedures
https://apps.dtic.mil/docs/citations/ADA474937

National Incident Management System
https://www.hsdl.org/?abstract&did=804929

Los Alamos Radiation Monitoring Notebook
http://www.nrnrpt.org/file/Los%20Alamos%20Radiation%20Monitoring%20Notebook%202011.pdf
Domestic Nuclear Detection Office
Radiation Quick Reference Guide

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 (uR/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 RADIOLOGICAL SOURCE CATEGORIES
- CATEGORY 1 Potential of death or permanent injury of individuals who are in close proximity for minutes to hours.
- CATEGORY 2 Potential of death or permanent injury of individuals who are in close proximity hours to days
- CATEGORY 3 Potential of permanent injury of individuals who are in close proximity to the source for a longer period of time than Category 2 sources.
- CATEGORY 4 Potential of temporary injury of individuals who may be in close proximity to the source for a longer than Category 3 sources.
- CATEGORY 5 Could, but are unlikely to, cause minor temporary injury of individuals.

Ref: IAEA—TECHDOC-1344
CTOS0001V2.1009

Counter Terrorism Operations Support www.ctosnnsa.org
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. Radium (Ra-226) Some medical uses, old luminescent dials, industrial gauges, Naturally Occurring Radioactive Material (NORM), common in ores, rocks and minerals.
7. Plutonium (Pu-238) Radioisotope thermoelectric generator (RTG) for NASA space missions, Soviet-era smoke detectors. Early heart pacemakers.
8. 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. Ceramic/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).

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.

Radioactive Material Shipment Placarding and Labeling

Radioactive Package Labels (Max Radiation Levels)

Radioactive White-I
Up to 0.5 mrem/h (500 μrem/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 μrem/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).

Millirem per hour (mrem/h) Radiation level measured with instrument. Normal background radiation levels are usually less than 0.010 mrem/h (or 10 μrem/h, micrometer per hour).
Relative Doses from Common Radiation Sources

**Millisieverts Doses**

**Millirem 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)

- **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”
# 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;</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>
<tr>
<td>W78-0</td>
<td>ICBM Warhead</td>
<td>Minuteman III</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</td>
<td>LLNL</td>
<td>Surface to Surface</td>
<td>USAF</td>
</tr>
<tr>
<td>W76-0/1</td>
<td>SLBM Warhead</td>
<td>Trident II D5</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</td>
<td>LANL</td>
<td>Underwater to Surface</td>
<td>USN</td>
</tr>
<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>
<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>

**Source:** Sandia Military Liaison. (2013, September) *Enduring Stockpile*, SAND 2013-3463 P
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 Standard Probes

- X-ray Probe (DT-674)
- Alpha (α) Probe (DT-669)
- Beta/Gamma (β/γ) 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>Detection or Measurement</th>
<th>β/γ Probe</th>
<th>α Probe</th>
<th>X-ray Probe</th>
<th>Pancake Probe</th>
<th>micro-R Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Open Window)</td>
<td>C</td>
<td>A</td>
<td>B&lt;sup&gt;4&lt;/sup&gt;</td>
<td>A</td>
<td>C</td>
</tr>
</tbody>
</table>

### Locate Missing Source

<table>
<thead>
<tr>
<th>Detection or Measurement</th>
<th>β/γ Probe</th>
<th>α Probe</th>
<th>X-ray Probe</th>
<th>Pancake Probe</th>
<th>micro-R Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Open Window)</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>C</td>
</tr>
</tbody>
</table>

### All Types

<table>
<thead>
<tr>
<th>Detection or Measurement</th>
<th>β/γ Probe</th>
<th>α Probe</th>
<th>X-ray Probe</th>
<th>Pancake Probe</th>
<th>micro-R Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Open Window)</td>
<td>B</td>
<td>U</td>
<td>B&lt;sup&gt;4&lt;/sup&gt;</td>
<td>A</td>
<td>C</td>
</tr>
</tbody>
</table>

### Measuring Objective

#### Detection or Measurement

- 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

<table>
<thead>
<tr>
<th>DOSE RATE Recommendations</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contaminated Persons¹</td>
<td>2 x Background Reading (cpm or μR/h or mR/h)</td>
</tr>
<tr>
<td>Limit of Radioactive “Plume” on the Ground or Air²</td>
<td>5 x Background Reading (cpm or μR/h or mR/h)</td>
</tr>
<tr>
<td>Establish Hot Line³</td>
<td>1 mR/h to 10 mR/h (0.001 R/h to 0.010 R/h)</td>
</tr>
<tr>
<td>CAUTION</td>
<td>Hot Line up to 10 R/h (up to 10,000 mR/h)</td>
</tr>
<tr>
<td>Work in Hot Zone</td>
<td></td>
</tr>
<tr>
<td>CAUTION - DANGER</td>
<td></td>
</tr>
<tr>
<td>Turn-Around Dose Rate For NON-Life-Saving⁴</td>
<td>10 R/h</td>
</tr>
<tr>
<td>DANGER</td>
<td></td>
</tr>
<tr>
<td>Turn-Around Dose Rate for LIFE-SAVING⁵</td>
<td>100 R/h</td>
</tr>
<tr>
<td>DANGER</td>
<td></td>
</tr>
<tr>
<td>Life-Saving, Very Short Duration Only</td>
<td></td>
</tr>
<tr>
<td>(Informed Volunteers)⁶</td>
<td>More than 100 R/h</td>
</tr>
<tr>
<td>GRAVE DANGER</td>
<td></td>
</tr>
</tbody>
</table>

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>All activities.</td>
</tr>
<tr>
<td>10,000 mrem</td>
<td>Protecting major property.</td>
</tr>
<tr>
<td>25,000 mrem</td>
<td>Lifesaving or protection of large populations.</td>
</tr>
<tr>
<td>More than 25,000 mrem</td>
<td>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

Counter Terrorism Operations Support- www.ctosnnsa.org
Detector Performance
Specific Array Semi-conductor options like pixel extrapolation

Band Gap Technology

+ ve Bias Voltage (Typically 10 to 1000 volts)

To Signal Amplifier

Incident Ionizing particle or quantum

Motion of Electrons

Motion of Holes

DIRECTION OF ELECTRIC FIELD

Extremely Thin n-type Region

p-type Single Crystal of Silicon or Germanium

Hardware Based Multi-Channel Analyzer (MCA)

Detector Performance
Specific Array Semi-conductor options like pixel extrapolation

Computer Based Multi-Channel Analyzer (MCA)

Microcontroller

Voltage Supply Bias/High Isolation Requirement

Microcontroller

Pulse Shaping

MCA Logic

MCA Memory

Analog to Digital Converter (ADC)

Pre-Amp Signal to Linear Amp Matching

Linear Amp Pre-Amp to MCA Matching

Analog to Digital Converter (ADC)

Pulse Shaping

MCA Logic

MCA Memory

How do we identify isotopes?
Radioisotope Identification Device (RIID) schematic showing typical scintillation and semi-conductor (Band Gap) types of technology.

Radioisotope Identification Device (RIID) schematic showing typical scintillation and semi-conductor (Band Gap) types of technology.

Supplemental Detector(s)

Neutron and/or GM

Optional

Spectrum Algorithms
Series of Criteria and Conditions Similar to actual Spectroscopy Analysis

User Interface
# Stay Time Table

<table>
<thead>
<tr>
<th>DOSE RATE (Gamma Rate on Meter)</th>
<th>Dose</th>
<th>Protect Property</th>
<th>Life-Saving</th>
<th>Life-Saving Volunteers Only</th>
<th>Potentially Lethal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big</td>
<td>10 mR</td>
<td>10000 h</td>
<td>10000 h</td>
<td>10000 h</td>
<td>10000 h</td>
</tr>
<tr>
<td>Above 1000 µR</td>
<td>100 µ</td>
<td>1000 h</td>
<td>1000 h</td>
<td>1000 h</td>
<td>1000 h</td>
</tr>
<tr>
<td>600 µR</td>
<td>200 h</td>
<td>2000 h</td>
<td>2000 h</td>
<td>2000 h</td>
<td>2000 h</td>
</tr>
<tr>
<td>750 µR</td>
<td>133 h</td>
<td>2666 h</td>
<td>2666 h</td>
<td>2666 h</td>
<td>2666 h</td>
</tr>
<tr>
<td>1000 µR</td>
<td>1000 h</td>
<td>10000 h</td>
<td>10000 h</td>
<td>10000 h</td>
<td>10000 h</td>
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<tr>
<td>2 mR</td>
<td>50 h</td>
<td>1250 h</td>
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<td>5 mR</td>
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<td>7.5 mR</td>
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<td>10 mR</td>
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<td>10000 h</td>
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<tr>
<td>20 mR</td>
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<td>5000 h</td>
<td>5000 h</td>
</tr>
<tr>
<td>30 mR</td>
<td>3 h</td>
<td>333 h</td>
<td>333 h</td>
<td>333 h</td>
<td>333 h</td>
</tr>
<tr>
<td>40 mR</td>
<td>15 min</td>
<td>250 h</td>
<td>250 h</td>
<td>250 h</td>
<td>250 h</td>
</tr>
<tr>
<td>50 mR</td>
<td>120 min</td>
<td>200 h</td>
<td>200 h</td>
<td>200 h</td>
<td>200 h</td>
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<tr>
<td>75 mR</td>
<td>8 min</td>
<td>133 h</td>
<td>133 h</td>
<td>133 h</td>
<td>133 h</td>
</tr>
<tr>
<td>100 mR</td>
<td>60 min</td>
<td>1000 h</td>
<td>1000 h</td>
<td>1000 h</td>
<td>1000 h</td>
</tr>
<tr>
<td>200 mR</td>
<td>30 min</td>
<td>5000 h</td>
<td>5000 h</td>
<td>5000 h</td>
<td>5000 h</td>
</tr>
<tr>
<td>300 mR</td>
<td>20 min</td>
<td>2000 h</td>
<td>2000 h</td>
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</tr>
<tr>
<td>400 mR</td>
<td>15 min</td>
<td>1500 h</td>
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<tr>
<td>500 mR</td>
<td>12 min</td>
<td>1000 h</td>
<td>1000 h</td>
<td>1000 h</td>
<td>1000 h</td>
</tr>
<tr>
<td>750 mR</td>
<td>8 min</td>
<td>133 h</td>
<td>133 h</td>
<td>133 h</td>
<td>133 h</td>
</tr>
<tr>
<td>1000 mR</td>
<td>60 min</td>
<td>10000 h</td>
<td>10000 h</td>
<td>10000 h</td>
<td>10000 h</td>
</tr>
</tbody>
</table>

**Work in Hot Zone Danger**

**DANGER**

<table>
<thead>
<tr>
<th>Dose</th>
<th>Protect Property</th>
<th>Life-Saving</th>
<th>Life-Saving Volunteers Only</th>
<th>Potentially Lethal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 h</td>
<td>3 min</td>
<td>60 min</td>
<td>60 min</td>
<td>60 min</td>
</tr>
<tr>
<td>3</td>
<td>15 min</td>
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**Life-Saving Only**

**DANGER**

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<th>Life-Saving Volunteers Only</th>
<th>Potentially Lethal</th>
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**Volunteers Only**

**DANGER**

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<td>60 min</td>
<td>60 min</td>
</tr>
</tbody>
</table>

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

Dose Rate color based on Radiation Dose Rate Guideline table. Dose colors (columns) based on DHS-FEMA and EPA Emergency Workload Dose Guidelines.

1 mR = 0.001 mR = 0.000001 R
Natural Background: about 10 µR = 0.01 mR = 0.00001 R h = about 0.25 mR/day
1 µR = 1000 mR = 1 R
1 year = 365 days
1 day = 24 hours
1 hour = 60 minutes
1 minute = 60 seconds

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.

CTOSs0003AV1.0910 Counter Terrorism Operations Support www.ctosema.org
### Gamma Radiation Dose Rate Conversions

<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>
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<td>1 µrem/h</td>
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<td>0.01 µGy/h</td>
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<td><strong>Bkg</strong></td>
<td><strong>Bkg</strong></td>
<td><strong>Bkg</strong></td>
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</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 “hr,” while meters using SI units (Sv, Gy) often use “h” for “hour.” Natural Background radiation levels are usually around 5 to 25 µR (0.05 to 0.25 µSv/h), and are represented by the row labeled “Bkg” 10 µR/h (100 nSv/h).
Los Alamos National Laboratory Chemistry Division

Periodic Table of the Elements

element names in blue are liquids at room temperature
element names in red are gases at room temperature
element names in black are solids at room temperature
Background Radiation distribution charts used with permission of the National Council on Radiation Protection and Measurement, http://NCRPonline.org