



DEFENSE NUCLEAR WEAPONS SCHOOL

Radiological & Nuclear Training

COURSE CATALOG



FY 2021



A Division of the Defense Threat Reduction Agency

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DNWS Overview

The Defense Nuclear Weapons School (DNWS) is located on Kirtland Air Force Base, in Albuquerque, New Mexico. In existence since 1947, this Defense Threat Reduction Agency (DTRA) school is a unique entity that provides training to the Department of Defense (DoD), and 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, nuclear accident and incident response, radiological force protection and CWMD hazard recognition for the warfighter and responder.

Courses: The DNWS delivers instructor-led courses in-residence and via Mobile Training Teams (MTTs), and offers several distance learning courses online. The DNWS also hosts courses presented by the U.S. Army Nuclear and CWMD Agency (USANCA) and the Air Force Institute of Technology (AFIT), providing facilities, instructors, subject matter expertise, and administrative support. While most courses are taught in-residence at the DNWS, an expanding array of courses are offered via distance learning or MTT. 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 school's history dates back to the Manhattan Engineer District, the organization that developed the world's first atomic bomb. Lieutenant General Leslie Groves, the director of the Manhattan Project, established the Armed Forces Special Weapons Project (AFSWP) on the U.S. Army's Sandia Base in 1947. General Groves hand selected 63 West Point graduates to man the AFSWP. These men were known as the Sandia Pioneers. One pioneer with an advanced degree and a background in military training, Colonel John A. Ord, was chosen to establish the Technical Training Group (TTG) to provide integral training in this revolutionary new warfare specialty.

The TTG's original core curricula was focused on the complex assembly of the first nuclear weapons. Nuclear weapon response was included as "disaster and salvage" training within these early courses, with bomb disposal classes added as early as 1948. Nuclear weapons orientation classes were also provided. As nuclear weapons evolved, the services took over more of the hands-on training of their weapons technicians while the school added more radiological defense training.

The TTG underwent several name changes over the early years: Special Weapons Training Group from 1956-1959; Atomic Weapons Training Group from 1960-1966; and Nuclear Weapons School from 1967-1971. In 1971, the Defense Atomic Support Agency (DASA), which managed the school, was disestablished and directed to transfer the school to the U.S. Air Force. The Air Force renamed it the Inter-service Nuclear Weapons School. In 1993, the school was transferred back to the Defense Nuclear Agency (DNA) and was subsequently renamed the Defense Nuclear Weapons School in 1995. DNA later 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 other 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, as well as other local training areas, providing a realistic environment where students can apply their classroom knowledge. Students receive hands-on instruction and experience in the use of radioac-

tivity monitoring instruments; the proper donning of personal protective equipment; the collection of airborne radioactivity samples; 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.

DNWS also supports the rich nuclear history of New Mexico with guided instructional site visits to the Trinity Test site, the 1950 B-29 Crash site, EMP test sites and other historic locations. Visits to these sites are coordinated through the Partnership, Training and Education Program (PTEP) and provide prospective students with training, education, and historical perspective in specialized topic areas.

In addition, DNWS 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, associated components and delivery systems, and 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. Separate arrangements can be made for groups and visitors to tour the NWIM. Classified tours require a DoD Secret security clearance with Restricted Data (RD) or Critical Nuclear Weapons Design Information (CNWDI) access, or a Department of Energy "Q" clearance to participate. Unclassified tours are 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 catalog.

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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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DNWS FY 2021 Course Calendar

NUCLEAR WEAPONS ORIENTATION, POLICY AND SENIOR EXECUTIVE TRAINING

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AWOC			7-9			1-3					(30 -1)	
JNSEC						17-18						
NUPOL		16-20		11-15		(29 -2)				26-30		
NWOC	26-30	(30 -4)			1-5	8-12	12-16		7-11		16-20	
NWTIC	5-8				8-11		19-22		14-18			

NUCLEAR WEAPONS INCIDENT, ACCIDENT AND RESPONSE TRAINING

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
IRNIR	Course Dates: by request											
NETOPS	19-30		7-18	4-15 (25 -5)		8-19 (29 -9)		10-21	14-25		9-20	13-24
NWIRT-DB				20-22		23-25						27-29
NWIRT-DE	Course Dates: by request											

CWMD RADIOLOGICAL AND NUCLEAR TRAINING

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
ARRT-2		16-20				(29 -02) 12-16		3-7	21-25	12-16	23-27	13-17
B/IRNT		2-6 (30 -4)		19-22	16-19	22-26	26-30	24-27	7-11		2-6	
WSRHAC	Course Dates: by request											

EXPLOSIVE ORDNANCE DISPOSAL SPECIALTY TRAINING

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
ADT-1		16-20 (30 -4)		25-29		1-5	5-9	10-14		12-16	9-13	
ADT-2			7-11		1-5	8-12	12-16			19-23	16-20	
JNEODC			14-18		8-12	15-19	19-23			26-30	23-27	
WREC	Course dates under review, check the DNWS Website											

(-) denotes class carried over one month to another



DNWS FY 2021 Hosted Course Calendar

HOSTED - CBRNE MODELING SIMULATION												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FA-52 QC Phase1*							5-16		14-25			
GACA-1			1-4				6-9				17-20	
GACA-2						16-19						
HANE						15-19						
HPAC-1			14-18	11-15			19-23	17-21		12-16	2-6	
HPAC-2-CBR		16-20				22-26						20-24
HPAC-N			14-18			8-12			7-11		23-27	
IMEA-1				25-29					7-11			
IMEA-2-C											9-13	
IMEA-N							12-16					
IWMDT-CA					8-12							13-17
IWMDT-CA-N									21-25			
JCPC						15-19		17-21				13-17
MAAC	Course dates under review, check the DNWS Website											
TNOC					22-26						2-6	
VAPO-1	5-9				8-12					26-30		
VAPO-2								3-7				
Location: <ul style="list-style-type: none"> DTRA DNWS, Kirtland AFB, Albuquerque, NM USSTRATCOM, Offutt AFB, NE DTRA CBRNE M&S Training Center, Alexandria, VA <i>*Restricted course - registration request must go through the controlling agency</i>												

GENERAL INFORMATION

DNWS FY 2021 MTT Course Calendar

NUCLEAR WEAPONS ORIENTATION, POLICY AND SENIOR EXECUTIVE TRAINING - MTT												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
JNSEC												15-16
NWOC			7-11	19-22				3-6		19-22		
NWTIC											9-12	13-16

NUCLEAR WEAPONS INCIDENT, ACCIDENT AND RESPONSE TRAINING - MTT												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
NWIRT-DB								11-13				
NWIRT-DE								14				
NWIRT-OB												
NWIRT-OE												

Due to the uncertain operating environment at the time of printing, please check the DNWS website (<https://dnws.dtra.mil>) for the most recent information, or contact the DNWS registrar for specific requests.



Defense Threat Reduction Agency Defense Nuclear Weapons School

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

DTRA CBRNE Decision Support Analysis

Capabilities Training Support

Email:

dtra.belvoir.rd.mbx.reachback-training@mail.mil

peggie.j.feaster.ctr@mail.mil

Phone: 571-303-2171 **Fax:** 571-303-2182

DTRA CBRNE M&S Training Center:

6361 Walker Lane, Suite C120

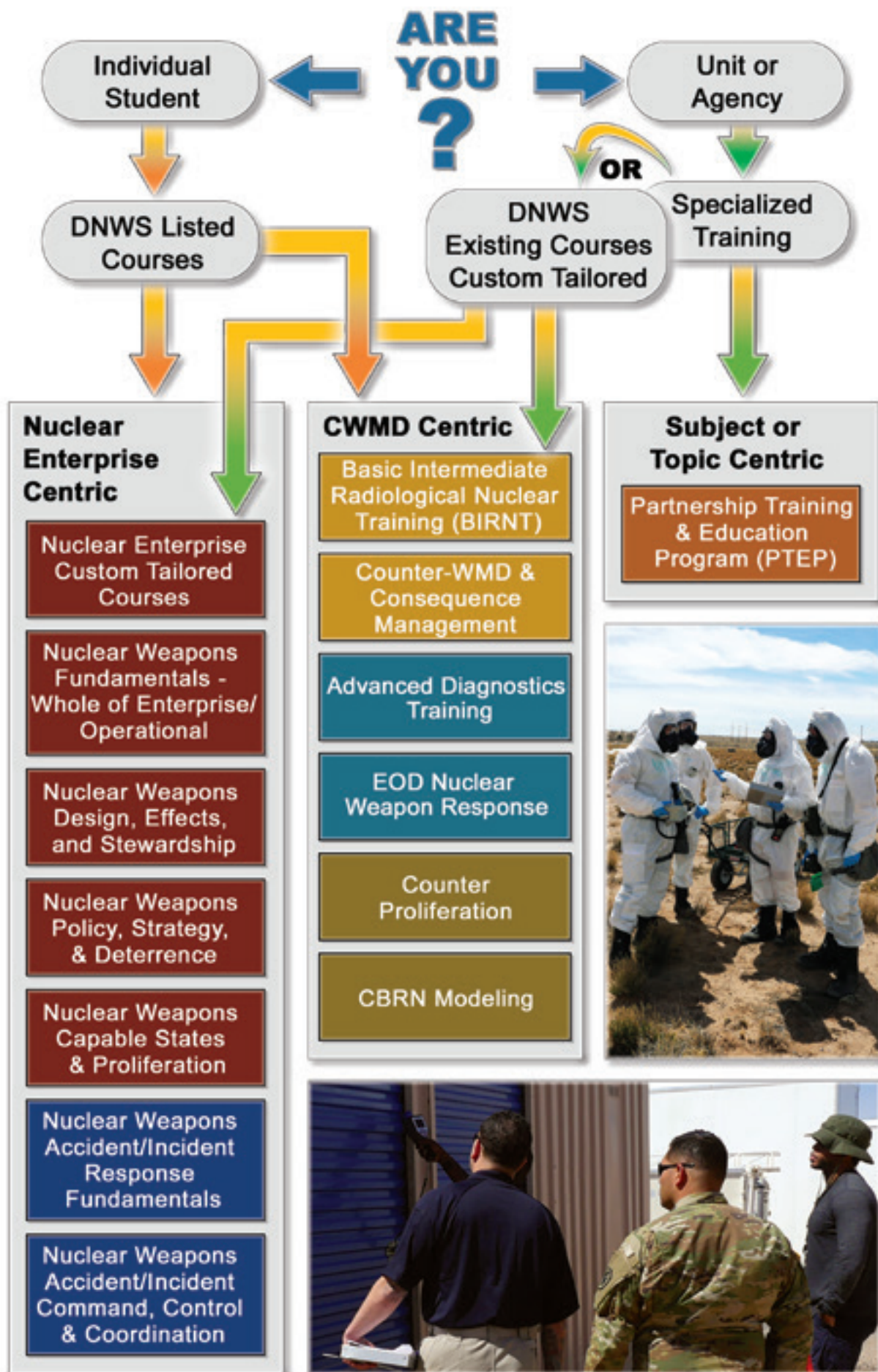
Alexandria, VA 22310

POC: COR Reachback Training CW4

Leonardo Cargill and CBRNE Training

Coordinator Mrs. Peggie Feaster





Defense Nuclear Weapons School Field Training Sites

DNWS currently occupies approximately 2.5 acres on Kirtland AFB, which includes a classroom complex, the Nuclear Weapons Instructional Museum (NWIM) and a vehicle yard used for training rehearsals. The school also utilizes and maintains several other training sites to improve the training value of the courses. Since many of the school's courses include realistic, hands-on training, access to unique radiological training sources and field training sites is essential.

Thorium seeded training fields on Kirtland AFB have provided simulated contaminated crash sites for nuclear weapon accident response training since 1966. Each of the four sites has either vehicle or aircraft wreckage scattered across a wide area allowing students to train in a variety of scenarios in simulated contamination. These sites are a critical part of several courses and represent the DoD's only dedicated radiological contamination training sites.

DNWS has partnered with DTRA R&D to use the Technical Evaluation Assessment and Monitor Site (TEAMS), a local 18-acre site designed for the testing and evaluation of various detectors. The TEAMS test facility replicates realistic environments for search and characterization exercises. TEAMS has a shipping container yard with an integrated capability to seed radioactive sources in the soil; temporary office buildings, shipping container stacks, and subway and train cars to validate search techniques; and an "international village" to replicate a large, complex environment for survey and search training.

DNWS also maintains a unique underground facility with over 12,000 square feet of enclosed training space to replicate complex industrial facilities. The former Advanced Research EMP Simulator (ARES) facility was first used by DNWS as a training site in 2018 in support of a 20th CBRNE Command training request. Now an authorized training site, DNWS continues to develop, maintain, and manage the site for internal courses as well as CWMD-themed training and exercises for other units.

DNWS also has access to the Kirtland AFB Base Exercise Evaluation and Skills Training (BEEST) Area as a supplemental scenario training area. BEEST was originally built in the late 1950's as part of an auxiliary training airfield and later modified for blast overpressure studies. BEEST Area is part of the KAFB exercise branch and often used by the USAF Para-rescue School.

College Credit and Recognition for DNWS Courses

The American Council on Education (ACE) has recommended college credit for nine DNWS courses, designated by the ACE logo in the respective course description. ACE is the major co-ordinating body for all of the nation's higher education institutions and provides a unifying voice on key higher education issues. The level of credit (undergraduate or graduate) and the number or recommended credit hours are listed in the adjacent table. DNWS has also partnered with



the following colleges and universities to simplify credit transfers: Strayer University, SUNY Empire State College, Colorado Technical University, University of Maryland University College (UMUC), and National American University (NAU) Henley-Putnam School of Strategic Security.

For more than 30 years, colleges and universities have trusted ACE to provide reliable course equivalency information to facilitate their decisions to award academic credit.

For more information, visit the website at <http://www.acenet.edu/news-room/Pages/The-ACE-CREDIT-College-and-University-Network.aspx>. Additionally, DNWS participates in the ACE CREDIT Transcript

Service. The Transcript Service offers a lifelong record for students who have successfully completed DNWS courses that have been evaluated and recommended by ACE CREDIT. For more information, visit the ACE CREDIT Transcript Service website at <http://www.acenet.edu/higher-education/topics/Pages/Transcript-Services.aspx>.



DNWS has also received certification from the Joint Staff, Department of Homeland Security, and New Mexico Department of Public Safety for several courses. Courses with these certifications will be designated by the respective logo in the course description. See below for more details.

The Joint Staff (JCS) Certification

There are currently seven DNWS courses that have joint certification. The Joint Staff Directorate for Joint Force Development (J7) certifies certain joint courses offered by DNWS for discretionary points toward Joint Qualified Officer (JQO) designation through the experience path of the Joint Qualification System (JQS). Students in the grades of O-1 through O-6 may self-nom-

inate their experiences and submit course certificates to <https://milconnect.dmdc.osd.mil/milconnect/>. Select "Viewing Your Joint Officer History" to view your status towards becoming a JQO, and to request award of joint experience points. This input will be reviewed by the proper Joint Officer Matters channels of the respective service branches to obtain JQS credit.



Department of Homeland Security (DHS) Certification

The Department of Homeland Security has certified and sponsored four DNWS courses. These courses have received an approval rating and been added to the National Training and Education Division's standards catalog. This approval means that DNWS students can use DHS/FEMA grants to attend courses. Throughout the catalog, courses that contain the DHS Logo in the course description have the approval rating.

New Mexico Department of Public Safety (NMDPS) Certification

The New Mexico Department of Public Safety has accredited several of our courses that meet the requirements for the Continuing Education Program (CEP) for First Responders. These courses include: ARRT-1, ARRT-2, IRNIR, and NETOPS. Once students complete one or more of these classes, they may download a certification letter from the transcript page. Students must use this letter in conjunction with the certificate to receive credit from the NM DPS Training Center.



College/ACE Number	DNWS Course Name	Colorado Technical University	Empire State College - SUNY	University of Maryland University College	Strayer University	National American University
DTRA-0011	NWOC	3 SH/Upper Div	2 SH/Lower Div	2 SH/Lower Div	2 SH/Upper Div	4.5 QH/Lower Div
DTRA-0013	NUCPOL	4.5 SH/Upper Div	3 SH/Upper Div	2 SH/Upper Div	3 SH/Upper Div	4.5 QH/Graduate
DTRA-0017	NETOPS	9 SH/Upper Div	6 SH/Upper Div		6 SH/Upper Div	9 QH/Lower Div
DTRA-0019	NWOC MTT	3 SH/Upper Div	2 SH/Lower Div		2 SH/Upper Div	4.5 QH/Upper Div
DTRA-0020	ARRT-1	3 SH/Lower Div	3 SH/Upper Div		2 SH/Upper Div	3 QH/Upper Div
DTRA-0021	ARRT-2	4.5 SH/Upper Div	2 SH/Upper Div	2 SH/Upper Div	3 SH/Upper Div	4.5 QH/Upper Div
DTRA-0022	ADT-1		3 SH/Upper Div			4.5 QH/Lower Div
DNWS NR 201	ADT-2					4.5 QH/Upper Div
DNWS NR 250	JNEODC					4.5 QH/Upper Div

College Credit Transfer Table (SH – Semester Hour, QH – Quarter Hour)

DNWS Training Certification Programs

The DNWS offers a variety of training certification programs to prepare personnel to perform specific functions associated with nuclear weapons, incident/accident response, incident command and control, security, and CBRN modeling. These certification programs are intended to raise professional standards and to recognize and document the achievement of those standards. In most cases, the certificates earned through the DNWS have no expiration date. Certification within a program demonstrates an individual's competency in a specific subject area within the DNWS. Training certifications pertaining to specific organizations are developed and managed in close coordination with the proponent organization and in accordance with their requirements.

Nuclear Weapons Certification Programs: The Nuclear Weapons Certification Programs are designed for personnel with responsibilities in the Nuclear Enterprise, such as 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 in other components of the Nuclear 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 (Basic Nuclear Weapons Certificate + NUCPOL)
- Advanced Nuclear Weapons Certificate – Operations (Intermediate Nuclear Weapons Certificate + TNOC)
- Advanced Nuclear Weapons Certificate – Surety (Intermediate Nuclear Weapons Certificate + JNSEC)

Nuclear Response Certification Programs: The Nuclear Response Certification Programs are 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 program supports and integrates into the overall WMD-CST certification established by the National Guard Bureau (NGB). This program is not intended to replace any WMD-CST training otherwise established by the NGB.

- Basic Incident Response (BIR) Certificate (ARRT-2)
- Advanced Incident Response Certificate (BIR Certificate + NETOPS)

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

- Incident Command and Control Certificate (IRNIR + NWIRT)

EOD WMD Certification Program: The EOD WMD Certification Program is designed to develop the practical skills required for EOD personnel across DoD to respond to a nuclear weapons accident/incident as part of the Initial Response Force (IRF) and perform appropriate Phase 0 requirements 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 Training Program supports and integrates into the overall whole-of-government accident/incident response structure. This program is not intended to replace any EOD WMD training otherwise established by the individual services.

- EOD WMD Certificate (ARRT-1 + ADT-1 + ADT-2 + JNEODC)

USAF Security Forces (SF) Nuclear Security Certification Training Program (NSCTP): NSCTP is designed for USAF SF personnel with responsibilities dealing with security of nuclear weapons. Level I certification is designed for SF nuclear security flight leadership such as flight chiefs, flight commanders, convoy commanders, flight security Officers, and similar personnel. Level II certification is designed 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 designed 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 Nuclear Flight Certification (NWOC)
- Level II, USAF SF Nuclear Group/Squadron Certification (Level I + NWITC)
- Level III, USAF SF Nuclear Policy Certification (Level II + JNSEC)

CBRN Modeling Certification Programs: The CBRN modeling certification programs are designed to recognize and document the completion of a comprehensive training program focused on specific hazard prediction modeling tools. This program is designed to support a wide audience that includes, but is not limited to WMD-CSTs; Consequence Management Advisory Teams (CMAT); Combatant Commands; and DoD, federal, state, and local emergency managers and planners. The following are the certification requirements for CBRN Modeling.

- Hazard Prediction and Assessment Capability (HPAC) Certificate (HPAC-1 + HPAC-2)
- Advanced CBRN Modeling Certificate (HPAC certificate + GACA)

DTRA CBRN Consequence Management Specialist Certification Programs: CBRN Consequence Management Specialist Certifications are for military, civilian, and contractors assigned to positions within DTRA/SCC-WMD as part of the CBRN Military Assistance Team (CMAT) program. The Basic and Advanced CMAT Certifications fulfill DTRA's requirement to field qualified CMATs. The following are the certification requirements.

Basic CMAT Specialist

- Hazard Prediction Assessment Capability (HPAC) Level 1
- Integrated Weapons of Mass Destruction Toolset (IWMDT)
- Completion of the CMAT Operations Course. Contact J3OBP Training for registration
- Multiple non-DNWS courses/events

Advanced CMAT Specialist

- Geospatial Analysis for Consequence Assessment (GACA)
- JKO Course: J3O P-US251-Applied Radiological Response Techniques (ARRT) Course
- Joint CWMD Planning Resident Course, (DNWS sponsored classroom course)
- Multiple non-DNWS courses/events plus Basic CMAT Specialist Certification

Personnel who have completed the criteria for a certification program may apply for certificates through the DNWS Registrar's Office. The entire sequence must be completed within three years of initial registration into the first course of the sequence. Upon proper completion of an application for certification, the individual will receive a DNWS Certificate of Training in the applicable certification program. For further details on these certificate programs, see, <https://dnws.dtra.mil/>.



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)**

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Advanced Weapons Operators Course (AWOC)

Course ID/Number: DNWS NW 112, USN S-140-0002

Course Prerequisites: NWOC or equivalent knowledge and/or experience

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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

Format: In residence, **MTT:** N/A, **Course Length:** 3 days

AWOC is a 3-day course designed to educate the next generation of operators in nuclear deterrence and the capabilities of the U.S. Nuclear Enterprise. The course covers the components of the Nuclear Enterprise, the evolution of nuclear policy, and basic nuclear weapons design and effects. A Nuclear Weapons Instructional Museum (NWIM) tour at the S//RD-CNWDI level is also included.

Course Dates: Dec 7-9, Mar 1-3, Aug 30-Sept 1



Joint DOD-DOE Nuclear Surety Executive Course (JNSEC)

Course ID/Number: DNWS NW 201 & 201M,

USAF JBOZD32E1DOODA, USN S-140-0003

Course Prerequisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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

Format: In residence, **MTT:** 1-day format only, NCR, **Course Length:** 1-day and 2-day formats available

JNSEC is an executive-level program offering an overview of safety, security, and C3 aspects of the U.S. nuclear weapons program. JNSEC is offered in two formats: a 1-day program conducted in the National Capitol Region (NCR), and a 2-day program conducted at the DNWS. A Nuclear Weapons Instructional Museum (NWIM) tour at the S//RD-CNWDI level is included in the 2-day format.

Course Dates: Mar 17-18 (DNWS); MTT Sep 15-16 (NCR)





Nuclear Policy Course (NUCPOL)

Course ID/Number: DNWS-NW 401, USN S-140-0005

Course Prerequisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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 a 5-day course that provides 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 Nuclear Weapons Instructional Museum (NWIM) at the S//RD-CNWDI, level is included.



Course Dates: Nov 16-20, Jan 11-15, Mar 29-Apr 2, Jul 26-30



Nuclear Weapons Orientation Course (NWOC)

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

Course Prerequisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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 weapons fundamentals, nuclear weapons effects, nuclear weapons stockpile, and foreign nuclear weapons capabilities and proliferation. A Nuclear Weapons Instructional Museum (NWIM) tour at the S//RD level is included.



Course Dates: Oct 26-30, Nov 30-Dec 4, Feb 1-5, Mar 8-12, Apr 12-16, Jun 7-11, Aug 16-20;

MTT Dec 7-11 Jan 19-22, May 3-6, Jul 19-22



Nuclear Weapons Technical Inspections Course (NWTIC)

Course ID/Number: DNWS H 120

Course Prerequisites: DNWS DL Course NW104DL: Nuclear Weapon Surety (NWS)

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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

Format: In residence, **MTT:** Yes, specified dates and upon request, **Course Length:** 4 days

NWTIC is a 4-day course that provides instruction on 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: Oct 5-8, Feb 8-11, Apr 19-22, Jun 14-18; MTT Aug 9-12 in Germany;

Sep 13-16 in Barksdale AFB, LA





NUCLEAR WEAPONS INCIDENT, ACCIDENT AND RESPONSE TRAINING

- **Introduction to Radiological and Nuclear Incident Response (IRNIR)**
- **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)**

Due to the uncertain operating environment at the time of printing, please check the DNWS website (<https://dnws.dtra.mil>) for the most recent information, or contact the DNWS registrar for specific requests.



Introduction to Radiological and Nuclear Incident Response (IRNIR)

Course ID/Number: DNWS-NR 100, USN S-140-0008, DHS DOD-001-COMM, NM DPS NM180524

Course Prerequisites: N/A

Classification: UNCLASSIFIED, **Security Requirements:** None, **Uniform:** As directed by the individual service for military & business casual for civilians, **Format:** In residence, **MTT:** Upon request, **Course Length:** 2 days

IRNIR is a 2-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: Upon Request





Nuclear Emergency Team Operations (NETOPS)

Course ID/Number: DNWS NR 101, USMC F045781, USN S-140-0009, USA DNWS-R038, USAF J5OZD32E3G00DA, NM DPS NM170289

Course Prerequisites: N/A

Classification: UNCLASSIFIED, **Security Requirements:** None, **Uniform:** Service Utility Uniform for military & casual for civilians, **Format:** In residence, **MTT:** N/A

Course Length: 10 days

NETOPS is a 10-day hands-on course which provides nuclear weapons accident response operations training to joint service responders. The course provides instruction 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 field training exercises during which students don complete sets of anti-contamination clothing, use RADIAC equipment, and perform realistic nuclear emergency team functions at DNWS live radioactive training sites. Military personnel from all branches and Federal employees occupying EOD, CBRN defense specialties and career fields, or other emergency response force positions are welcome to attend.

Course Dates: Oct 19-30, Dec 7-18, Jan 4-15, Jan 25-Feb 5, Mar 8-19, Mar 29-Apr 9, May 10-21,

Jun 14-25, Aug 9-20, Sep 13-24



Nuclear Weapons Incident Response Training (NWIRT) Series

The Nuclear Weapons Incident Response Training (NWIRT) series is tailored to four specific audiences and operating environments: domestic basic, domestic executive, overseas basic and overseas executive. 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 U.S. nuclear weapon incident. Each topic and module is presented by an interagency expert in an academic format. Details and course numbers for each variant are included below.

****Course Dates are not listed due to the uncertain operating environment at the time of printing. Please check the DNWS website (<https://dnws.dtra.mil>) for the most recent information, or contact the registrar or course manager for specific requests.**



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

Course ID/Number: DNWS NR 210-DB, USMC F04B0Z1, USN S-140-0010, USAF J5OZD13B402DA, USA DNWS-R003

Course Prerequisites: N/A

Classification: UNCLASSIFIED (S//FRD level upon specific request), **Security Requirements:** None, **Uniform:** As directed by the individual service for military & business casual for civilians, **Format:** In residence, **MTT:** Upon request, **Course Length:** 3 days

NWIRT-DB is a 3-day course designed for Initial Response Force (IRF) and Response Task Force (RTF) Commanders and staff, addressing issues specific to a domestic nuclear weapon incident.



Nuclear Weapons Incident Response Training, Domestic Executive (NWIRT-DE) Course

Course ID/Number: DNWS NR 210-DE, USMC F04B0Z1, USN S-140-0010, USA DNWS-R003, USAF J5OZD13B402DA

Course Prerequisites: N/A

Classification: UNCLASSIFIED, **Security Requirements:** None, **Uniform:** As directed by the individual service for military & business casual for civilians, **Format:** In residence, **MTT:** Upon request, **Course Length:** 1 day

NWIRT-DE is a 1-day executive-level course designed for IRT, IRF, and RTF senior leaders, GCC and MAJCOM staff members, addressing issues specific to a domestic nuclear weapon incident.



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

Course ID/Number: DNWS NR 210-OB, USMC F04B0Z1, USN S-140-0010, USA DNWS-R003, USAF J5OZD13B402DA

Course Prerequisites: N/A

Classification: SECRET, **Security Requirements:** FRD//NATO, **Uniform:** As directed by the individual service for military & business casual for civilians, **Format:** In residence, **MTT:** Upon request, **Course Length:** 2 days

NWIRT-OB is a U.S. Only, classified 2-day course designed for IRF and RTF Commanders and staff, addressing issues specific to a nuclear weapon incident overseas. The course is presented via MTT, and specifically in the EUCOM AOR twice per fiscal year.



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

Course ID/Number: DNWS NR 210-OE, USMC F04B0Z1, USN S-140-0010, USA DNWS-R003, USAF J5OZD13B402DA, **Course Prerequisites:** N/A

Classification: SECRET, **Security Requirements:** FRD//NATO//ACCM,

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

MTT: Upon request, **Course Length:** 1 day

NWIRT-OE is a U.S. Only, classified 1-day course for IRT, IRF and RTF senior leaders, GCC and MAJCOM staff, addressing issues specific to a nuclear weapon incident overseas. The course is presented via MTT, and specifically in the EUCOM AOR once per fiscal year.



Nuclear Weapons Instructional Museum

DNWS manages and operates the only classified Nuclear Weapons Instructional Museum (NWIM) in DoD. 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 reserve a special tour of the NWIM, a written request must be submitted to and received a minimum of 15 working days before the requested tour date. Download a sample NWIM tour request letter or use the template on the following catalog page. Requests may be mailed or faxed to 505-846-5560.

The NWIM is a member of the American Alliance of Museums.

For all tours of the Nuclear Weapons Instructional Museum (NWIM),
please contact the NWIM Scheduler at:
at: (505) 853-7809 or FAX: (505) 846-5560



DNWS Tour Request Procedures

The following actions are required to request and book a tour of the NWIM:

1. All tour attendees requesting entry into the classified Weapons Display Area (WDA) must possess Restricted Data (RD) and Controlled Nuclear Weapons Design Information (CNWDI) caveats on their security clearances. Please note that these caveats are not automatically included in a Secret or Top Secret clearance and require read-in by the owning organization to these respective programs if the personnel have a need to know. Personnel will not be read into RD and CNWDI by DNWS.
2. Please contact the NWIM Scheduler via email at dtra.kirtland.ne.mbx.dnws-nwim@mail.mil or via telephone at DSN 246-7958 or Commercial (505) 846-7958. Once you have received an acknowledgement and a draft Access Roster from the NWIM Scheduler you may proceed to the next step.
3. All organizations must download and return the NWIM Access Roster ASAP. The clearance information included on the Access Roster will be validated by the NWIM Scheduler, not your local Security Office/Manager. Changes to the roster can be made up to 15 days prior to visit. Deletions may be made at any time. No additions will be accepted within 15 days of the visit. The Access Roster can either be emailed to dtra.kirtland.ne.mbx.dnws-nwim@mail.mil or faxed. If faxed, please send to 505-846-5560.
 - A. DOE INSTRUCTIONS: DOE Personnel must have their security/badging office submit a DOE Form 5631.20 signed by their applicable security personnel. Members who fail to submit a signed and completed DOE Form 5631.20 will not be allowed entry into the NWIM. DOE personnel do NOT have to include SSN information on the roster as we cannot receive encrypted emails from most DOE organizations. If a tour attendee believes that they have a long term visit request on file, please notify the NWIM Scheduler (dtra.kirtland.ne.mbx.dnws-nwim@mail.mil) for clearance validation. DOE personnel must annotate "RD and CNWDI" in the DOE Form 5631.20 section labeled "Specific information to which access is requested" and both boxes in the next section labeled "Access is requested to" must be checked "Yes".
 - B. DoD INSTRUCTIONS: DOD organizations will submit a visit request in JPAS with the following information:
 - (1) SMO Code: GQDD614
 - (2) POC for JPAS: LT Gilbert Daigle
4. The following items are not permitted in NWIM:
 - A. Backpacks/purses of any kind (storage area available outside the NWIM)
 - B. Food or drinks
 - C. Cell phones
 - D. Bluetooth devices
 - E. Smart watches
 - F. Any item with a data port (including pedometers)
 - G. Any automobile key fobs with two way data transmission capability

You may leave these items in your vehicle or in the case of line items C-F, leave them in unsecured cubbies at the entrance to the facility.





CWMD Radiological and Nuclear Training

- **Basic Intermediate Radiological Nuclear Training (B/IRNT)**
- **Applied Radiological Response Techniques Level 2 (ARRT-2)**
- **WMD Site Recon and Hazard Awareness Course (WSRHA)**

Due to the uncertain operating environment at the time of printing, please check the DNWS website (<https://dnws.dtra.mil>) for the most recent information, or contact the DNWS registrar for specific requests.



Basic Intermediate Radiological Nuclear Training (B/IRNT)

Course ID/Number: DNWS CW 100

Course Prerequisites: N/A

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

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, designed for unit training, and suitable for in-residence or MTT delivery. Some of the target audiences for this course are Active Duty, Reserve and National Guard Bureau units with a WMD or CBRN-specific mission.

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 and elective modules. Electives are selected based upon mission requirements. Academic instruction is reinforced with hands-on and/or field training.

Core Modules for the B/IRNT:

- Radiological Fundamentals
- Managing Radiological Exposure
- Detector Theory
- Detector Laboratory
- Personal Protective Equipment and Radiological Decontamination
- Radiological Materials of Concern
- Nuclear Materials of Concern

Current Elective Modules Available for the B/IRNT:

- Detector Specific Overviews (Unit/Agency Tailored)
- Radiological Search Techniques
- Gamma Spectroscopy
- Radiological Terrorism
- Nuclear Terrorism
- EMP & HEMP Overview
- Nuclear Battlefield
- Aircraft and Vehicle Decontamination
- SNM Hazards
- Reactor Overview
- Reactor Accidents
- Operation TOMODACHI Lessons Learned
- Nuclear Fuel Cycle
- Tuwaitha Site Exploitation Lessons Learned
- Risk Communication
- Psychological Effects of Radiation



Additional or advanced modules developed upon request.

Course Dates: Nov 2-6, Nov 30-Dec 4, Jan 19-22, Feb 16-19, Mar 22-26, Apr 26-30, May 24-27, Jun 7-11, Aug 2-6, or by request (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 NM170288

Course Prerequisites: ARRT-1

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

Uniform: Service utility uniform with winter support for FTX portion,

Format: In residence, **MTT:** N/A, **Course Length:** 5 days

ARRT-2 is 5-day course designed to apply the theories learned in ARRT-1, with the focus on applied radiological problem solving methods. Approximately 20 percent of the course is conducted in detector laboratories while the remaining course time is dedicated to hands-on radiological experiences and the interpretation of survey data. Attendees should bring appropriate dress for outdoor activities for the given season.

Course Dates: Nov 16-20, Mar 29-Apr 2, Apr 12-16, May 3-7,

Jun 21-25, Jul 12-16, Aug 23-27, Sep 13-17





WMD Site Recon and Hazard Awareness Course (WSRHA)

Course ID/Number: DNWS CW 200

Course Prerequisites: N/A

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

Uniform: Service Utility or civilian equivalent, **Format:** In residence,

MTT: Upon request, **Course Length:** 2-3 days

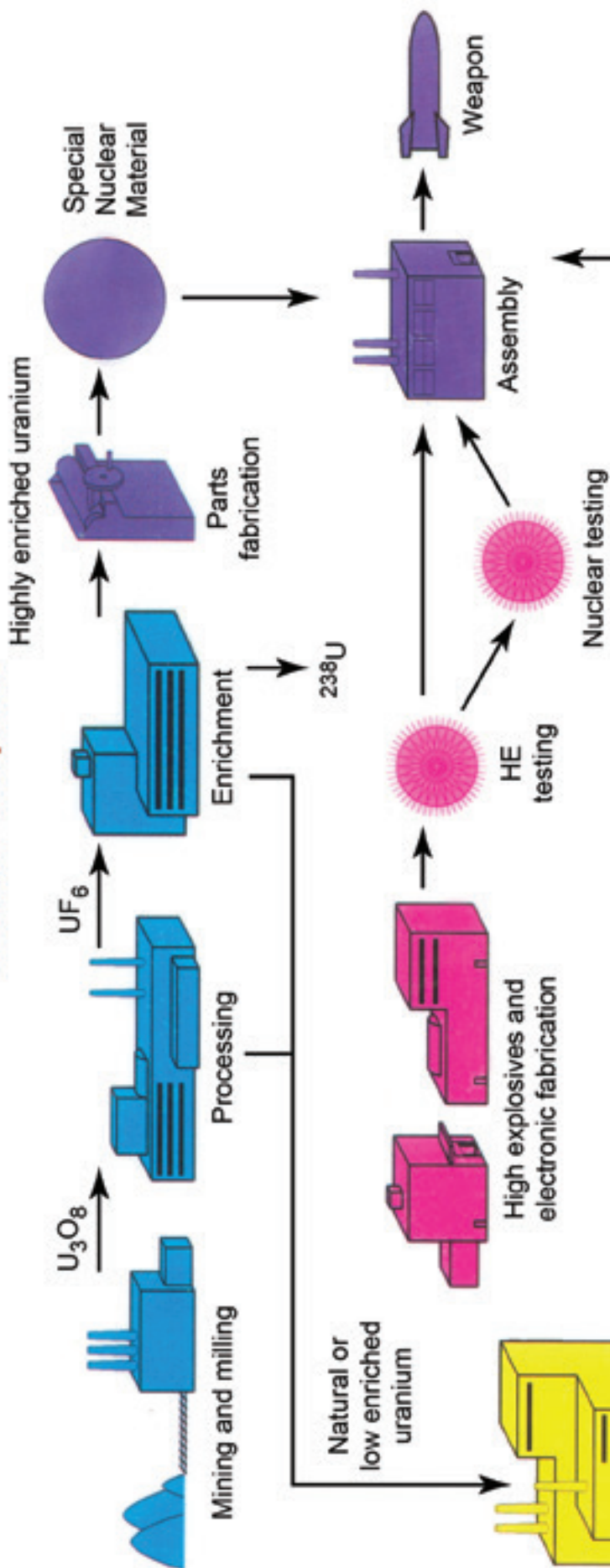
The WSRHA is a 2-3-day course that provides a familiarization of nuclear fuel cycle infrastructure and emphasizes force protection requirements for units assigned (or have the potential for assignment) to conduct reconnaissance where such infrastructure may exist. The course covers site specific hazards associated with a nation-state's weapons program; the mechanics of the material process; and key identification features associated with these production facilities. A table-top exercise (TTX) of a scaled WMD Site reconnaissance mission can be included upon request.

Course Dates: Upon request

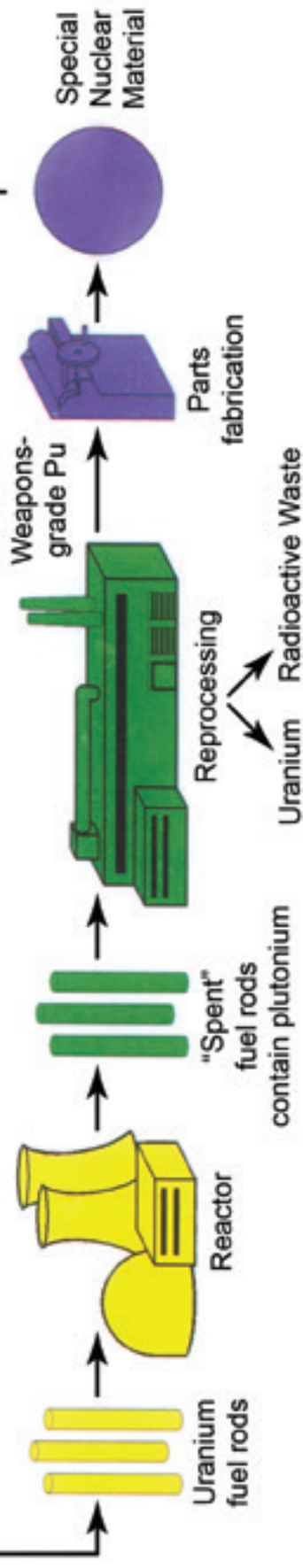


Nuclear Weapons Facilities

Uranium Weapons



Plutonium Weapons







EXPLOSIVE ORDNANCE DISPOSAL SPECIALTY TRAINING

- **Advanced Diagnostic Training 1 (ADT-1)**
- **Advanced Diagnostic Training 2 (ADT-2)**
- **Joint Nuclear Explosive Ordnance Disposal Course (JNEODC)**
- **Weapon Recovery EOD Course (WREC)**

Due to the uncertain operating environment at the time of printing, please check the DNWS website (<https://dnws.dtra.mil>) for the most recent information, or contact the DNWS registrar for specific requests.



Advanced Diagnostic Training 1 (ADT-1)

Course ID/Number: USA DNWS ED 300, USAF-E J5AAD3E851 0A1A, USAF-O J50AD32E3G 0A1A, USMC F04PXV1, S-431-8288, DPS NM190339, DHS DOD-015-RESP

Course Prerequisites: N/A

Classification: UNCLASSIFIED, **Security Requirements:** FOR OFFICIAL USE ONLY, **Uniform:** Service Utility uniform and casual for civilians, **Format:** In residence, **MTT:** Upon request, **Course Length:** 5 days

ADT-1 is a 5-day course that trains technical responders in "Threat Awareness", including radiological and nuclear response fundamentals. The target audiences are those who may be requested to support and/or work in conjunction with designated US Government CWMD authorities.



Course Dates: Nov 16-20, Nov 30 - Dec 4, Jan 25-29, Mar 1-5, Apr 5-9, May 10-14, Jul 12-16, Aug 9-13



Advanced Diagnostic Training 2 (ADT-2)

Course ID/Number: DNWS ED 301, USA DNWS-NR-201, USAF-E J5AAD3E851 0A2A, USAF-O J50AD32E3G 0A2A, USMC F04PXZ1

Course Prerequisites: ADT-1

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI, **Uniform:** Service utility with support equipment, **Format:** In residence, **MTT:** Upon request, **Course Length:** 5 days

ADT-2 is a 5-day course that trains EOD technicians in "Threat Assessment" to apply design concepts to differentiate between materials of concern and an Item of Primary Concern.



Course Dates: Dec 7-11, Feb 1-5, Mar 8-12, Apr 12-16, Jul 19-23, Aug 16-20



Joint Nuclear Explosive Ordnance Disposal Course (JNEODC)

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

Course Prerequisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI, **Uniform:** Service utility with support equipment, **Format:** In residence, **MTT:** N/A, **Course Length:** 5 days

JNEODC is a 5-day course that trains EOD technicians to safely perform functions of an Initial Response Force (IRF) during a Nuclear Weapon Accident/Incident Response and provides in-depth review of weapons and components.

Course Dates: Dec 14-18, Feb 8-12, Mar 15-19, Apr 19-23, Jul 26-30, Aug 23-27



Weapon Recovery EOD Course (WREC)

Course ID/Number: DNWS ED 400

Course Pre-requisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI

Uniform: Service utility uniform, **Format:** In residence, **MTT:** N/A,

Course Length: 2.5 days

WREC is a 2.5 day course that trains custodial/Direct Support Unit (DSU) EOD technicians to safely perform functions of a Response Task Force during a Nuclear Weapon Accident/Incident Response in conjunction with DOE response assets.

Course Dates: Upon request







SPECIALIZED TRAINING

- **Partnership Training and Education Program (PTEP)**

Due to the uncertain operating environment at the time of printing, please check the DNWS website (<https://dnws.dtra.mil>) for the most recent information, or contact the DNWS registrar for specific requests.



Partnership Training & Education Program (PTEP)

PTEP is an integral part of DTRA's mission to support the Nuclear Enterprise & CWMD community by providing specialized training and education to meet Combatant Commander and Interagency Partner academic requirements. PTEP has access to instructors and SMEs who can custom tailor curricula to include 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. 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) 846-1193 / (505) 853-0195 / (505) 853-7390

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 U.S. Nuclear Weapons Stockpile



Here are two current 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 3-day SECRET//RD-CNWDI seminar is available once a year 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 four 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
 - CWMD/IND focused classified tour of the Nuclear Weapons Instructional Museum (NWIM)
 - Visits and discussions with Rad/Nuc event response stakeholders
 - Hands on exposure to radiological sources and the entire spectrum of DoD radiological detectors

CRNOS is a 4-day seminar conducted at the TOP SECRET//SCI/RD-CNWDI classification. The target audience is TSOC, GCC and operational staff personnel participating in CWMD efforts. The seminar is conducted twice a year. An additional iteration can be conducted as required. 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.



DISTANCE LEARNING TRAINING

- **Applied Radiological Response Techniques – Level 1 (ARRT-1) Modules**
- **Basic Science Skills (BSS) Modules**
- **Basics for Radiological – Nuclear Incident Response (BRNIR)**
- **Joint Nuclear Weapons Publications System (JNWPS)**
- **Nuclear Safety Studies and Review (NSSR)**
- **Nuclear Weapons Surety (NWS)**
- **Personnel Reliability Assurance Program (PRAP)**

The school currently offers online training content on two platforms, on the DNWS Learning Content Management System (LCMS) and on the Joint Knowledge Online (JKO) Learning Management System (LMS).

Using DNWS LCMS:

Navigate to <https://dnws.dtra.mil>. Login using your CAC.

Click on the “Training Courses” link on the DNWS Home Page. Available courses will display in the list.

Using JKO LMS:

Navigate to <https://jko.jten.mil/>. Login using your CAC or JKO login credentials.

Conduct a course catalog search for the following “prefix”: DNWS. Apply the Search. Available DNWS courses will display in the list.

Note: The user must create/register for a student account on either of the above sites.



Applied Radiological Response Techniques – Level 1 (ARRT-1) Modules

DNWS Course Number: DNWS NR 200 DL, USA DNWS-R027, DPS NM170287, DTRA-0020

JKO Course Number: DNWS-AD01-AD08

Course Prerequisites: Basic Scientific Skills Modules and Nuclear Weapons Surety (NWS)

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

Course Length: 16 hours, self-paced

ARRT-1 is an awareness-level course that provides instruction on basic radiological response techniques. This course is based on a series of modules that cover the following: Basic Radiation Science, Characteristics of Radiation, Radiation Units of Measure, Gas Filled Detectors, Solid State Detectors, Radiation Exposure Control, Radiological Contamination Control, and Radiological Survey Planning.



Basic Science Skills (BSS) Modules

DNWS Course Number: DNWS HP 080 DL

JKO Course Number: DNWS-HD01-HD05

Course Prerequisites: None

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 5 modules approximately 30 min each (total 2.5 hours), self-paced

Basic Science Skills comprises five stand-alone modules that can be completed in sequence or individually, as the student or in-residence course manager sees fit. This online series is considered a prerequisite/refresher in the fundamentals of the basic sciences as they relate to the Nuclear Enterprise.

Note: BSS Modules 2-3 expected availability date is Oct 2020



Basics for Radiological – Nuclear Incident Response (BRNIR)

Course ID/Number: DNWS NR 100 DL

JKO Course Number: DNWS BD-01 through DNWS BD-12

Note: BD-12 is a series exam; each module has it's own exam.

Course Prerequisites: N/A

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

Course Length: 24 hours, self-paced

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)

DNWS Course Number: DNWS NS 105 DL

JKO Course Number: DNWS ID-01

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 4 hours, self-paced

JNWPS is an awareness level course that provides an introduction of basic concepts and principles related to the Joint Nuclear Weapons Publication System (JNWPS) for 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)

DNWS Course Number: DNWS SA 103 DL

JKO Course Number: DNWS SD-01

Course Prerequisites: DNWS NI 101- DL (PRAP), DNWS NI 104 DL (NWS)

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 4 hours; self-paced

NSSR is an awareness level course that provides an introduction of basic concepts and principles related to nuclear safety studies and reviews for 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)

DNWS Course Number: DNWS NI 104 DL

JKO Course Number: DNWS-ND01

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 8 hours

NWS is an awareness level course that provides an introduction of basic concepts and principles related to nuclear surety for professionals supporting the nuclear weapons enterprise. The course goal is to facilitate a clear understanding of what nuclear surety is and how nuclear surety is achieved.



Personnel Reliability Assurance Program (PRAP)

DNWS Course Number: DNWS NI 101 DL

JKO Course Number: JKO DNWS-WD01

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 3 hours, self-paced

PRAP is an awareness level course that provides an introduction of basic DoD PRAP fundamentals and concepts for personnel who are assigned duties involving nuclear weapons or nuclear command and control systems. The course addresses PRAP concepts, roles, responsibilities, and processes in support of nuclear surety and further explains these concepts in relationship to real-world scenarios.



The bomb is completely assembled atop the 100-foot tower.



HOSTED COURSES

- **CBRNE Military Assistance Team (CMAT) Operations Course**
- **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)**
- **Mission Assurance Assessment Course (MAAC)**
- **Theater Nuclear Operations Course (TNOC)**

CBRNE Modeling Simulation Courses

- **Geospatial Analysis for Consequence Assessment – Level 1 (GACA-1)**
- **Geospatial Analysis for Consequence Assessment – Level 2 (GACA-2)**
- **High Altitude Nuclear Effects (HANE)**
- **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 Executive Course (HPAC-Exec)**
- **Hazard Prediction and Assessment Capability – Nuclear (HPAC-N)**
- **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)**
- **Vulnerability Assessment and Protection Option Level 1 (VAPO-1)**
- **Vulnerability Assessment and Protection Option Level 2 (VAPO-2)**

* - denotes restricted course



CBRNE Military Advisory Team (CMAT) Operations Course

Course ID/Number: DNWS H 310

Course Prerequisites: 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

The CMAT Operations Course is a 7-day course conducted semiannually in the NCR. The training is limited to those personnel who are assigned to the CMAT programs or Subject Matter Experts that support CMAT operations. Topics include CBRN overview, CMAT exercises, and current CMAT field operational information. Once the prerequisites are completed, the CMAT Operations Course serves to qualify CMAT members at the Basic level.

This Course is sponsored by the DTRA/J3OBP. For more information please contact Maj Vincent Jackson, (571) 616-5334, vincent.l.jackson4.mil@mail.mil



Defense Integration and Management of Nuclear Data Services (DIAMONDS)

Course ID/Number: DNWS H 100

Course Prerequisites: N/A

Classification: SECRET
Security Requirements: CNWDI
Course Length: 3 days

DIAMONDS Training is a 3-day course that provides hands-on familiarization training with the national nuclear stockpile's sole accountability database for prospective and current users. 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, USA DNWS-NROOC, USN S-140-0007

Course Prerequisites: N/A

Classification: SECRET

Security Requirements: Restricted Data/CNWDI or DOE "Q"

Course Length: 10 days

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 CWMD 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 DOE laboratories and receive information briefings from subject matter experts.

For more information please contact: FA52 Proponent Manager, (571) 515-9951, usarmy.belvoir.hqda-dcs-g-3-5-7.mbx.usanca-proponency-division@mail.mil

* - denotes restricted course



Joint Countering Weapons of Mass Destruction Planning Course (JCPC)

Course ID/Number: DNWS H 300

Course Prerequisites: N/A

Classification: SECRET

Security Requirements: None

Course Length: 5 days

JCPC is a 5-day course that introduces students to U.S. Government and DoD 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 Planning Process (JPP). The first half of the course focuses on the three strategic end states (prevent (pathway defeat), protect (WMD defeat), and respond (minimize WMD effects)) and the six 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 JPP and merges CWMD and JPP 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. Victor Carter, (571) 616-6342, victor.t.carter3.civ@mail.mil



Mission Assurance Assessment Course (MAAC)

Course ID/Number: DNWS H 331, G55000APCIL

Course Prerequisites: JKO Course J3OP-US1401, Mission Assurance

Classification: SECRET

Security Requirements: None

Course Length: 5 days

MAAC is a 5-day course that 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 mission assurance related programs and activities as they apply to the asset(s) using the DoD MAA Benchmarks. The course includes facilitated discussions, case studies, mock interviews, classroom exercises, field group exercises, and subject matter expert breakout sessions.

This course is sponsored by the Joint Staff, Deputy Directorate for Nuclear, Homeland Defense, and Current Operations (DD NHDCO), and conducted by DTRA.

For more information please email the DTRA MAA Help Mailbox: dtra.belvoir.ne.mbx.ne-maa-help@mail.mil or dtra.belvoir.ne.mbx.ne-maa-help@mail.smil.mil.



Theater Nuclear Operations Course (TNOC)

Course ID/Number: DNWS H 305, USN S-140-0004, USA-DNWS-RO13, USAF-J5OZD13B404DA, DNWS MTT DNWS H 305 M

Course Prerequisites: NCP-52 or NWOC

Classification: SECRET

Security Requirements: Restricted Data-CNWDI

Course Length: 5 days

TNOC 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, US nuclear policy, joint nuclear doctrine, nuclear effects modeling, consequences of execution, and targeting concepts. A Nuclear Weapons Instructional Museum (NWIM) tour at the S//RD-CNWDI level is also included.

For more information please contact CW3 David McMorris, (571) 515-9965, david.j.mcmorris@mail.mil or usarmy.belvoir.hqda-dcs-g-3-5-7.mbx.usanca-proponency-division@mail.mil





Geospatial Analysis for Consequence Assessment – Level 1 (GACA-1)

Course ID/Number: DNWS H-170, USA GACA-1

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 4 days

GACA-1 is a 4-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).

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil> for FIRST Basic, FIRST Nuclear and ICWater).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571) 303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Geospatial Analysis for Consequence Assessment – Level 2 (GACA-2)

Course ID/Number: DNWS H-171, USA GACA-2

Course Prerequisites: DNWS H-170, USA GACA-1

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 4 days

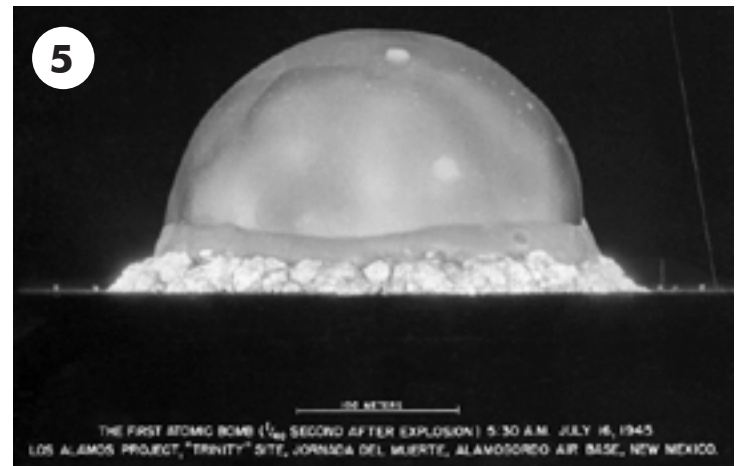
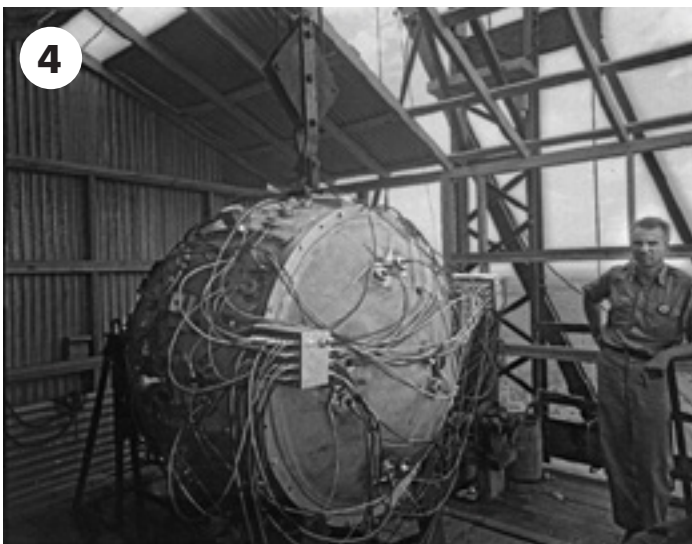
GACA-2 is a 4-day course that builds on the work in GACA-1 to apply modeling and analysis techniques to DTRA and third-party software to improve response time and streamline the modeling/analysis process of a CBRNE incident. Students will develop methods to communicate CBRNE response products across multiple software platforms.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil> for FIRST Basic, FIRST Nuclear and ICWater).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571) 303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil

The 75th Anniversary of the Trinity Test

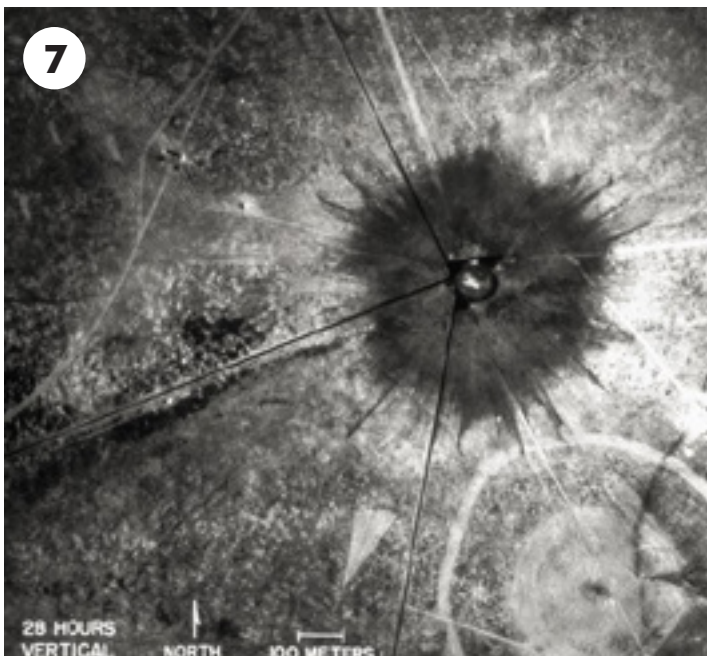
On 16 July 1945 at 5:30am, the world's first atomic detonation occurred in the desert of New Mexico, approximately 60 miles northeast of Alamogordo. Developed in a race to produce nuclear weaponry before the Nazi's, the "gadget" tested on that day was the result of some of the greatest collaboration of military, academic and industrial efforts ever seen. And, since the advent of nuclear weapons, the world has seen the longest period of freedom from great wars.



1. Sergeant Herb Lehr, an Army Special Engineering District (SED) engineer delivers the plutonium for the bomb.
2. The assembled plutonium is carefully loaded at the McDonald ranch house for transport to the waiting "gadget."
3. The assembled "gadget" is hoisted up the 100 foot tower.
4. Commander Norris Bradbury by the fully wired "gadget" on top of the tower, 14 July 1945.
5. 16 July 1945, 1/40th of a second after the detonation, visible to the right of this frame is a cable for a balloon, illuminated by the intense light from the detonation.
6. 15 seconds after the detonation, the fire-ball is starting to rise creating the characteristic mushroom cloud. Hundreds of cameras and instruments were set up to record the first detonation. Note the scale at the bottom of the photo.

All historic images courtesy of
Los Alamos National Laboratory

7. Aerial image of the Trinity Test Site 28 hours after the detonation. The area of fused glass is clearly seen.
8. Initial entry into ground-zero was done in lead lined tanks to gather samples.
9. By 11 September 1945, 9 days after the surrender of the Japanese military government, Dr. Robert Oppenheimer and Major General Leslie Groves visit the Trinity Site and look at what's left of the tower.
10. "Trinitite," the green glass created from the fused sand, was bulldozed over and collected by individuals in the 1950's. In 1975, the site was declared a National Historic Landmark and is protected today. DNWS students and other visitors to the site can still see preserved trinitite which is mildly radioactive.
11. The Trinity Site marker, erected in 1965 by the White Sands Missile Range, resides where the tower once stood.



All historic images courtesy of
Los Alamos National Laboratory



High Altitude Nuclear Effects (HANE)

Course ID/Number: DNWS CM-270

Course Prerequisites: N/A

Classification: SECRET

Security Requirements: Restricted Data-CNWDI

Course Length: 4 days

HANE is a modular, 4-day course that provides students with the basic concepts involving high altitude nuclear detonations, prompt and persistent nuclear environments, EMP, and their effects on military systems and infrastructure. The course includes basic understanding of the physics of high altitude nuclear explosions, survivability of space-based, airborne and ground based systems, and effects on radar and radio wave communications. Training includes software demonstrations, hands-on familiarization and practices using both command line and graphical user interfaces. Emphasis is placed on mission level and system performance impacts.

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



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

Course ID/Number: DNWS H-145, USA DTRA-ALEX-HL1

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 5 days

HPAC-1 is a 5-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.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.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 CM-150

Course Prerequisites: HPAC-1 and six months of HPAC experience

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

Course Length: 5 days

HPAC-2-CBR is a 5-day course that provides students with a higher level of proficiency in modeling and analysis of chemical, biological, or radiological (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 CBR materials and their potential human and collateral effects based on mission requirements.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Hazard Prediction and Assessment Capability Executive Course (HPAC-Exec)

Course ID/Number: DNWS H-101, USA DTRA-ALEX-HL2

Course Prerequisites: A basic understanding of the HPAC model and Consequence Assessment Modeling is desired but not required

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

Course Length: 2 days

HPAC-Exec is a 2-day course that provides Leaders/Decision Makers exposure to the Consequence Assessment Modeling methodologies and their capabilities and limitations. 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.

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



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

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

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 5 days

HPAC-N is a 5-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 mission requirements.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571) 303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Integrated Munitions Effects Assessment Level 1 (IMEA-1)

Course ID/Number: DNWS H-105, USA DTRA-ALEX-IL1

Course Prerequisites: N/A

Classification: SECRET

Security Requirements: None

Course Length: 5 days

IMEA-1 is a 5-day course that provides students with an initial level of competency in IMEA. Students will experience the capabilities and limitations of IMEA by creating/obtaining and equipping target models (buildings, bunkers and tunnels), analyzing conventional weapons penetration and damage capabilities, creating attack plans, and analyzing and interpreting results.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571) 303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Integrated Munitions Effects Assessment Level 2 - Conventional (IMEA-2-C)

Course ID/Number: DNWS H-110, USA DTRA-ALEX-IL2

Course Prerequisites: IMEA-1

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 5 days

IMEA-2-C is a 5-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.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571) 303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Integrated Munitions Effects Assessment - Nuclear (IMEA-N)

Course ID/Number: DNWS H-115, USA DTRA-ALEX-IL2

Course Prerequisites: IMEA-1 (preferred, not required)

Classification: SECRET

Security Requirements: Formerly Restricted Data (FRD)

Course Length: 5 days

IMEA-N is a 5-day course that provides students with basic skills in the application of IMEA nuclear strike capabilities and limitations. Students will achieve proficiency with importing and creating target models, developing attack plans, performing consequence assessment to WMD scenarios, and communicating results.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571) 303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



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

Course ID/Number: DNWS H-260

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 5 days

IWMDT-CA is a 5-day course in which the student achieves a basic level of competency in the modeling of Chemical, Biological, Radiological, and Nuclear (CBRN) 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.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



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

Course ID/Number: DNWS H-261

Course Prerequisites: N/A

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

Course Length: 5 days

IWMDT-CA-N is a 5-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.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Vulnerability Assessment Protection Options Level 1 (VAPO-1)

Course ID/Number: DNWS H 135, USA DTRA-ALEX-VL1

Course Prerequisites: N/A

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 5 days

VAPO-1 is a 5-day course in which students will receive instruction in the full functionality of VAPO to include its capabilities, limitations, and assumptions. Using VAPO functionality, students will assess and analyze a spectrum of threats against assets and develop mitigating strategies with respect to vulnerability assessment and force protection.

Software Registration is required (CBRNE Decision Support site: <https://cbrnedss.dtra.mil>).

For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil



Vulnerability Assessment Protection Options Level 2 (VAPO-2)

Course ID/Number: DNWS H 140, USA DTRA ALEX VL2

Course Prerequisites: VAPO-1

Classification: UNCLASSIFIED

Security Requirements: None

Course Length: 4 days

VAPO-2 is a 4-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.

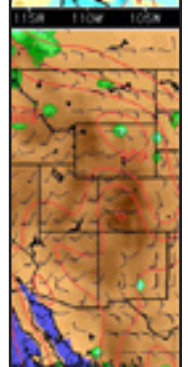
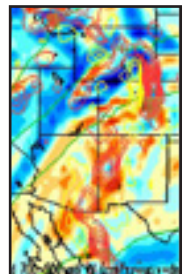
For more information contact CW4 Cargill and Mrs. Peggie Feaster, (571)303-2171, dtra.belvoir.rd.mbx.reachback-training@mail.mil or peggie.j.feaster.ctr@mail.mil

CBRNE Modeling and Simulations Training Team



DTRA Research & Development Directorate, Reachback Division (RD-OPR) provides 24/7 Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) SME and decision support for planning, operations, and post-event analysis to warfighters and emergency responders. Additionally, Reachback manages and implements the DTRA training contracts in support of Joint, Intergovernmental, Interagency, and Multinational organizations, providing training on DTRA CBRNE decision support analysis software tools. The DTRA CBRNE Decision Support Analysis Capabilities Training Support team provides training on DTRA- and third party-developed Weapons of Mass Destruction (WMD) models, tools, and capabilities for military and emergency responder operations. Reachback offers the following CBRN Modeling and Simulations courses at DNWS. Classes are normally 4-5 days in length.

- Geospatial Analysis for Consequence Assessment – Level 1 (GACA-1)
- Geospatial Analysis for Consequence Assessment – Level 2 (GACA-2)
- High Altitude Nuclear Effects (HANE)
- 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 Executive Course (HPAC-Exec)
- Hazard Prediction and Assessment Capability – Nuclear (HPAC-N)
- 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)
- Vulnerability Assessment and Protection Option Level 1 (VAPO-1)
- Vulnerability Assessment and Protection Option Level 2 (VAPO-2)



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.



AFIT SCHOOL OF STRATEGIC FORCE STUDIES, DEPARTMENT OF NUCLEAR STUDIES - AIR FORCE NUCLEAR COLLEGE

- Air Force Nuclear Fundamentals Course (Nuclear 200)
- Air Force Nuclear Concepts Course (Nuclear 300)
- Senior Leader Nuclear Management (Nuclear 400)
- Air Force Nuclear Certification Process Course
- Air Force Nuclear Certified Equipment (NCE) Users Course

***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 Prerequisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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: 015

Course Prerequisites: N/A

Classification: SECRET, **Security Requirements:** Restricted Data-CNWDI,

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 Prerequisites: N/A

Classification: TOP SECRET, **Security Requirements:** Restricted Data-CNWDI,

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 Prerequisites: 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 Prerequisites: 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.





CST

CST

DNWS has a collaborative educational exchange agreement with FEMA's Center for Domestic Preparedness (CDP) to expand the general audience's awareness of available training within the CWMD realm.



FEMA Center for Domestic Preparedness

- Incident Command: Capabilities, Planning, and Response Actions for All Hazards (IC)
- Radiological Emergency Response Operations (RERO) Course
- Advanced Radiological Incident Operations (ARIO) Course

For the latest CDP course schedule and registration information, contact CDP at (866) 213-9553 or visit the CDP website at <https://cdp.dhs.gov/>. The full training catalog may be viewed at: <https://www.firstrespondertraining.gov/frts/npcc>

CDP courses adhere to the following regulations: Federal Emergency Management Agency Radiological Emergency Preparedness Program; the Environmental Protection Agency Manual or Protective Action Guides; and Protective Actions for Nuclear Incidents.



Incident Command: Capabilities, Planning, and Response Actions for All Hazards (IC)

Course ID/Number: MGT-360

Course Prerequisites: AWR-160, IS-100.b or any of the ICS-100 series; and IS-200.b, or any of the ICS-200 series

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

Course Length: 3 days

IC is a 3-day course that provides management-level responders working in supervisory positions with knowledge of how decisions made by responders from various disciplines can impact the handling of a CBRNE incident. The course incorporates preparedness planning considerations and incident management concepts to train participants to serve as members of an incident management team. Other topics include: threat evaluation, target identification and prioritization, and Incident Response Plan (IRP) and Incident Action Plan (IAP) processes. The course culminates with a real-time, scenario-driven tabletop exercise that requires participants to plan for and manage emergency response resources.



Radiological Emergency Response Operations (RERO) Course

Course ID/Number: PER-904

Course Prerequisites: AWR-160, IS-100.b, IS-200.b, IS-700.a, IS-800.b, and IS-3

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

Course Length: 5 days

RERO is a 5-day course that provides participants with the basic skills necessary to safely respond to incidents involving radiological hazards. Participants learn the concepts, equipment, and procedures related to radiological incident response, including those of a commercial nuclear power facility. The course includes lectures, hands-on training, and team exercises, and culminates with an Integrated Capstone Event with the Advanced Radiological Incident Operations (ARIO) course. During the exercise, RERO course will focus on first responder hands-on equipment skills, and responsibilities as members of a field monitoring team during radiological Plume and Ingestion Pathway incidents.

The full training catalog may be viewed at:
<https://www.firstrespondertraining.gov/frts/npcc>



Advanced Radiological Incident Operations (ARIO) Course

Course ID/Number: PER-905

Course Prerequisites: AWR-160 and one of the following: PER-904, PER-240 or PER-241

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

Course Length: 5 days

ARIO is a 5-day course that provides participants with the advanced skills necessary to safely respond to and manage incidents involving radiological hazards. Participants apply these skills in tabletop exercises based on realistic radiological incident scenarios, set within the Incident Command System structure. The course culminates with an Integrated Capstone Event with the Radiological Emergency Response Operations (RERO) course. During the exercise, the ARIO course will focus on Emergency Operations Center responsibilities, coordination of the field monitoring teams, data collection, and developing recommendations for protective actions.



FEMA Regions and Location of Regional Offices

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 the 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 "Login." A "Recover Login ID/Password" button is located at the bottom of this window if password is forgotten. For all other login issues please call or email DNWS Registrar office. DoD students can tie their CAC/PIV certificates to their account for ease of access. This is recommended as it makes accessing the DNWS internal network computers much easier. 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.



Registration for DOE Students

Inbound students whose security clearances cannot be validated in the Joint Personnel Adjudication System (JPAS) must provide validation of their security clearance prior to being registered for classified courses. DOE personnel must work with their badging office to complete a DOE form 5631.20. For all of our classified courses the minimum DOE security clearance requirement is a "Q". The completed DOE form 5631.20 must validate a Q clearance, list the course to be attended, and request access to Secret/Restricted Data/Critical Nuclear Weapon Design Information. The form must also be signed by a security official or badging office and can be faxed to the DNWS Registrar at 505-846-9168.

Organization/Service Branch Quotas

The following DNWS courses are subject to organization/service branch quotas: ADT-1, ADT-2, JNEODC & NETOPS. Classes may show open seats on the website however, existing quota agreements may preclude general registration. Any student who exceeds the existing service quota will be placed on a wait-list until 30 days prior to the course start date. Once the 30 day mark is reached, wait-listed students will be registered in the order in which they were wait listed.

USAF & USMC personnel attempting to register for these courses be advised: The DNWS works with 2d Air Force and Training & Education Command (TECOM) to fill seats in these courses. Inbound students from those existing training pipelines are granted priority for registrations. Any USAF or USMC student who is set to be unit funded, will be wait-listed and will only be registered if seats are not filled by throughput from 2d AF or TECOM or if seats promised to the other sources remain available past the 30 day mark.

Classified Course Security Clearance Requirements

All prospective students should reference the security requirements of their desired training listed on the course information page accessible from the "Training Courses" page. Before attempting to register, students should ensure they meet the minimum requirements. Any student who does not meet the minimum requirements will be withdrawn and notified of withdrawal. The DNWS will not read inbound students into specific areas such as "Restricted Data" or "Critical Nuclear Weapon Design Information" (some exceptions apply for hosted courses such as TNOG).

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 who cannot access the website can submit a DTRA Form 34 (page 64 of this catalog). The form must be completed in its entirety and can be faxed to the DNWS registrar at (505) 846-9168. For classified courses, DoD students will be verified in JPAS. Non DoD students must provide alternate means of security clearance validation. DOE students may elect to submit a DOE Form 5631.20 as outlined in the instructions previously listed.

JNEODC Special Requirements

DoD personnel registering for the Joint Nuclear Explosive Ordnance Disposal Course (JNEODC) are required to submit a visit request to Sandia National Labs through JPAS using the SMO Code 07187-SNL and fill out the Sandia Badge Request Form. Completed forms can be faxed to 505-844-3377 emailed 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, 0800-1530, Mountain Time or contact them by email, dtra.kirtland.ne.mbx.dnws-registrar@mail.mil.

Security Check-In/Badging

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. Inbound DoD students are not required to submit a visit request through JPAS (exception: JNEODC).

Electronic Equipment

Telephone lines with DSN access, are available for students to make and receive telephone calls while in the facility. 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.

Specific instructions for other DTRA or hosted courses will be provided in the course invitation message.

Course Registration Form



DTRA Defense Nuclear Weapons School Course Registration **For official Use only. Privacy Act of 1974 Applies**



PRIVACY ACT STATEMENT

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

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

Routine Use: Records may be disclosed outside the DoD as permitted under 5 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) 846-9168 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

1. NAME (Last, First, MI)		2. RANK / GRADE	3. SSN (*Full SSN REQUIRED)
4. SERVICE	5. AGENCY	6. DUTY TITLE	
7. UNIT MAILING ADDRESS (Organization, Street Name, Installation or City, State, and Complete Zip Code)			
8. UNCLASSIFIED WORK EMAIL ADDRESS (REQUIRED)		9. DUTY PHONE NUMBER DSN: COMM:	10. FAX NUMBER DSN: COMM:

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)

11. SUPERVISORY NAME (*REQUIRED)	12. SUPERVISORY EMAIL(*REQUIRED)	13. SUPERVISORY TELEPHONE NUMBER(*REQUIRED)
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COURSE INFORMATION

14. COURSE TITLE / NUMBER	15. CLASS START DATE	16. CLASS END DATE
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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 Sigmas 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		22. DATE OF CLEARANCE:
ACCESS - CHECK AUTHORIZED ACCESS <input type="checkbox"/> NONE <input type="checkbox"/> SIGMAS 1-5 <input type="checkbox"/> RESTRICTED DATA(RD) <input type="checkbox"/> CNWDI		23. ACCESS DATE:

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:

DTRA Form 34 (SEPT 2018) (Adobe LiveCycle ES)

Download this pdf form at: <https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=24>

Mobile Training Team Course Request

Your Organizational Letterhead

DATE

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>

Funding Authorization Letter to DNWS for Mobile Training Team Course

Your Organizational Letterhead

DATE

MEMORANDUM FOR DNWS/NE-IES

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

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

1. Expenses are authorized for (Names of DNWS Personnel) to include but are not limited to transportation, billeting, meals, and rental car, as well as any other expenses authorized by the Joint Federal Travel Regulations.
 - a. Fund Cite:
 - b. Not-to-exceed amount for travel:
2. DNWS will submit the travel-order authorization, DD Form 1610 Request and Authorization for TDY Travel of DoD Personnel, through the Defense Travel System (DTS) and will cite the requestor funds as outlined in the letter of authorization.
3. Upon return from Temporary Duty Assignment (TDY), the traveler will prepare the DD Form 1351-2, Travel Voucher or Sub-voucher, and send to DNWS finance who will forward to the requesting agency for payment through DTS.
4. POC is _____ and duty phone is _____.

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

Download this pdf form at: <https://dnws.dtra.mil/Catalog/DisplayNC.cfm?id=30>

Billeting/Transportation/Dining, Kirtland Air Force Base, New Mexico

Billeting on Kirtland AFB, NM

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

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

Arrival at Kirtland AFB, NM

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

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

Transportation to Kirtland AFB, NM

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

Dining at Kirtland AFB, NM

All students are responsible for their own meals and should come to DNWS under full per-diem. 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 the AAFES Main Exchange Food Court, Bowling Alley, Golf Course, McDonald's. There are also a variety of dining options off-base within close proximity to Kirtland AFB.

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.

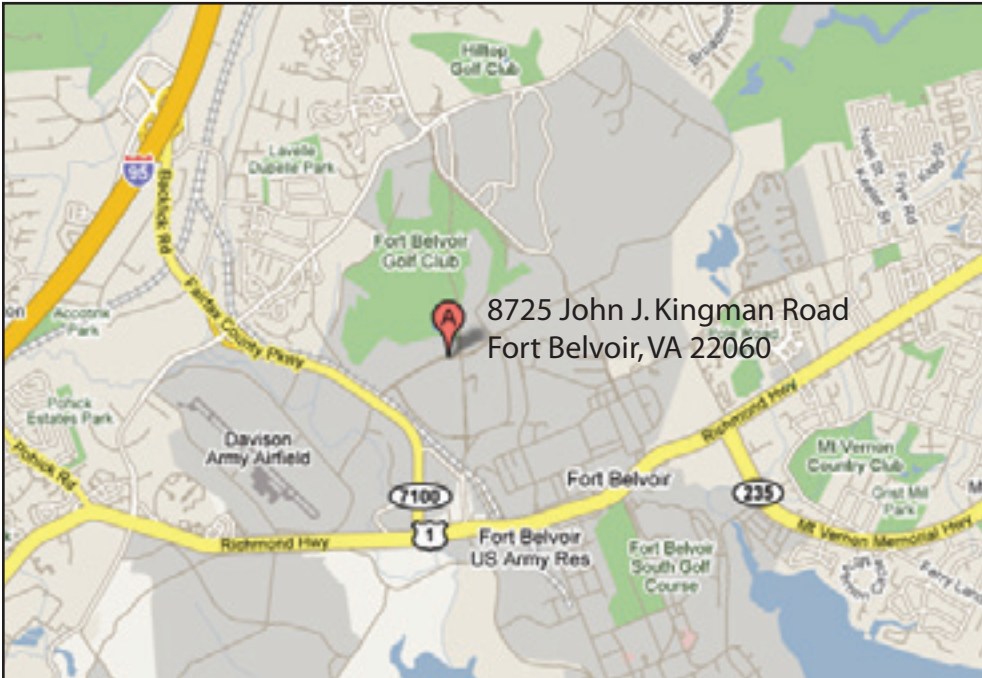
Directions to the **Defense Nuclear Weapons School (DNWS)** from Albuquerque International Sunport (ABQ) and a map of the surrounding area.



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

Please note: the building is labeled 1900, not 20602. There is a sign on Wyoming Blvd.

Map to DTRA Ft. Belvoir, VA



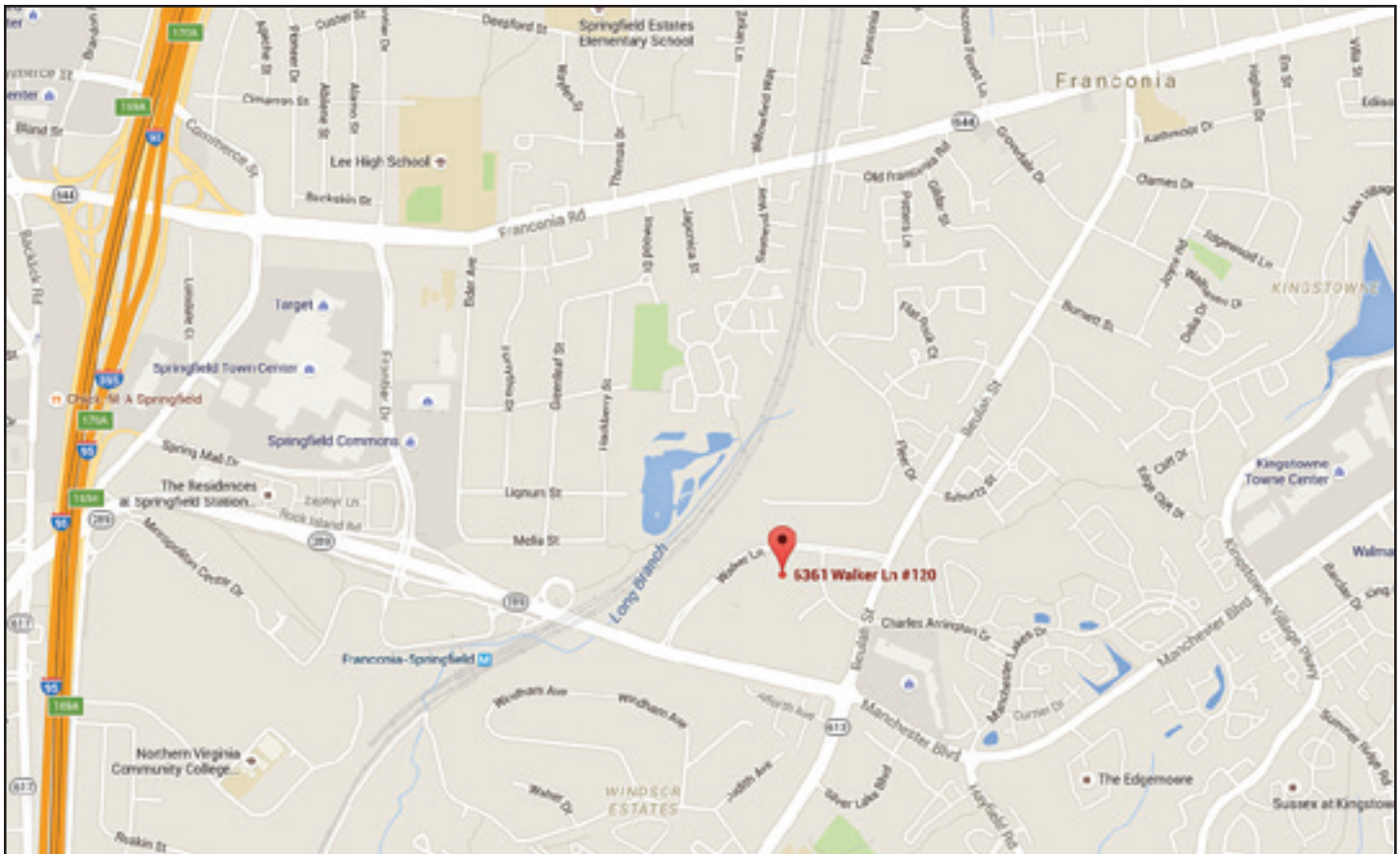
Large-scale-area map at left, close-up map below.

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

DTRA is a secured facility. You will require permission to enter the building; please see Security at the entrance.



Map to HQ DTRA CBRNE M&S Training Center Alexandria, VA



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

CBRN Classes taught at DTRA CBRNE M&S Training Center

6361 Walker Lane, Suite C120
Alexandria, Virginia 22310
(571) 303-2171





References

Nuclear Deterrence Works

Nuclear weapons deter potential adversaries every single day. The 2018 Nuclear Posture Review states:

“The fundamental reasons why U.S. nuclear capabilities and deterrence strategies are necessary for U.S., allied, and partner security are readily apparent. U.S. nuclear capabilities make essential contributions to the deterrence of nuclear and non-nuclear aggression. The deterrence effects they provide are unique and essential to preventing adversary nuclear attacks, which is the highest priority of the United States.”

The U.S. Nuclear Enterprise remains at the forefront of national security and international stability. However, it is clear that nuclear competitors such as Russia, China, and the Democratic Peoples of North Korea (DPRK) have modernized their respective nuclear forces while also taking actions that could be interpreted as provocative or destabilizing. There are also multiple signals that indicate Russia, China, and DPRK have “integrated” their nuclear and conventional forces. It is intolerable to allow nuclear competitors to gain any advantage over the U.S.

The Defense Nuclear Weapons School (DNWS) ensures those across the U.S. Nuclear Enterprise have access to the nation’s highest quality training. For more than 70 years, DNWS’s mission has been “to provide training, both resident and non-resident, in support of nuclear weapons training programs worldwide; [and] to be responsive to requests for training services and support required to meet the needs of all DOD components and other cognizant agencies.” The school offers an array of courses that satisfy existing and address emergent requirements across the enterprise. The skilled DNWS staff coordinates with many facets of the community and is quick to respond to all requests, from those of individual technicians and responders to those of executive-level leaders and policy-makers.

The January 2020 DOD Dictionary of Military and Associated Terms defines deterrence as “the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief that the cost of action outweighs the perceived benefits.” Many agree the basic foundation of successful deterrence is built upon capability, credibility, and communication. As these three elements are optimally applied, we will continue to deter potential adversaries and assure our partners and allies.

Key to the U.S. deterrence mission is the continued maintenance of the Strategic Nuclear Triad.

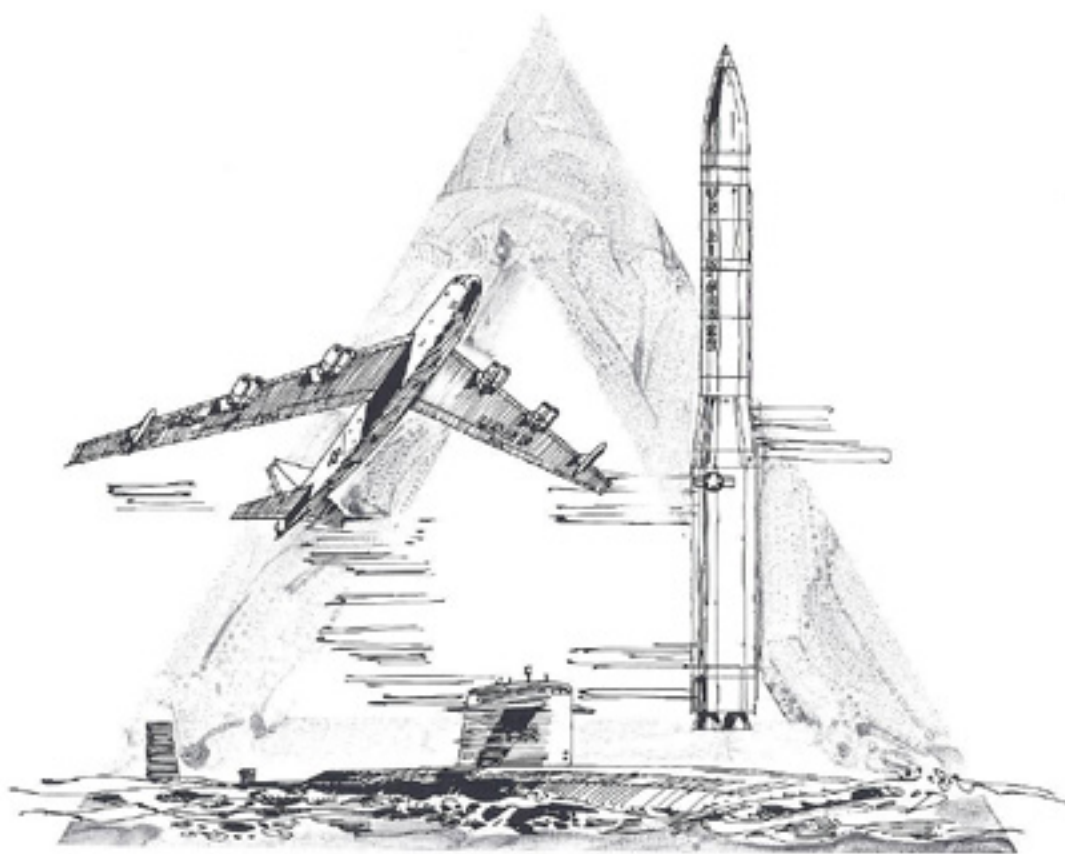


Image courtesy of the Atomic Heritage Foundation

The 2020 Nuclear Matters Handbook states the key attributes of the Nuclear Triad are:

"SSBNs are survivable. A portion of the SSBN fleet is always on patrol, making it very difficult to track U.S. ballistic missile submarines, which means they are highly survivable. ICBMs are responsive. ICBMs are deployed in hundreds of nuclear hardened silos and can be launched to reach targets within minutes, creating a complex targeting problem for adversaries. U.S. strategic bombers are a "show of force." Bombers are a clear and visible signal of U.S. intent and resolve during a crisis and provide a variety of deployment and yield options. Bombers may also be recalled."



The 2018 Nuclear Posture Review (Pg II) states:


"To this end, this review confirms the findings of previous NPRs that the nuclear triad—supported by North Atlantic Treaty Organization (NATO) dual-capable aircraft and a robust nuclear command, control, and communications system—is the most cost-effective and strategically sound means of ensuring nuclear deterrence. The triad provides the President flexibility while guarding against technological surprise or sudden changes in the geopolitical environment. To remain effective, however, we must recapitalize our Cold War legacy nuclear forces."





The above statement articulates it is the relationship of many different components that contribute to ensuring deterrence. The U.S. Nuclear Enterprise ensures that the U.S. and its allies/partners have confidence that the most dangerous potential adversaries are deterred. Please visit the Nuclear Enterprise Branch class synopsis' pages 12-14 for more information about current DNWS curriculum that may address your nuclear literacy pursuits.





U.S. Enduring Stockpile

Bomb	Description	Carrier	Laboratories	Mission	Military Service	 B61
B61-3/4	Non-Strategic Bomb	F-15, F-16, & Tornado	LANL	Air to Surface	USAF	
B61-7/11	Strategic Bomb	B2	LANL	Air to Surface	USAF	

Warhead	Description	Carrier	Laboratories	Mission	Military Service	 Minuteman III
W78-0	ICBM Warhead	Minuteman III ICBM	LANL	Surface to Surface	USAF	
W87-0	ICBM Warhead	Minuteman III ICBM	LLNL	Surface to Surface	USAF	

Warhead	Description	Carrier	Laboratories	Mission	Military Service	 TRIDENT II D5LE
W76-0/1/2	SLBM Warhead	Trident II D5 SLBM	LANL	Underwater to Surface	USN	
W88-0	SLBM Warhead	Trident II D5 SLBM	LANL	Underwater to Surface	USN	

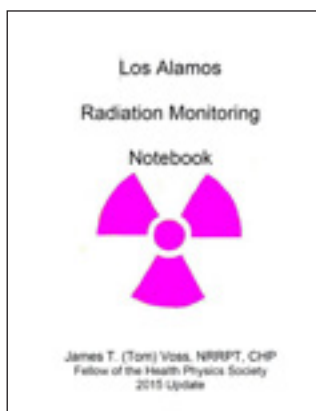
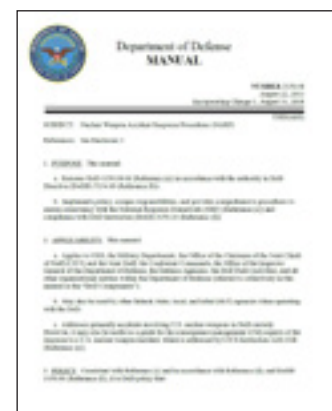
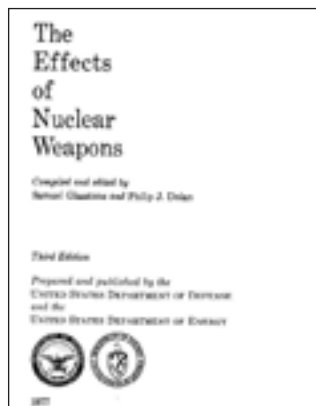
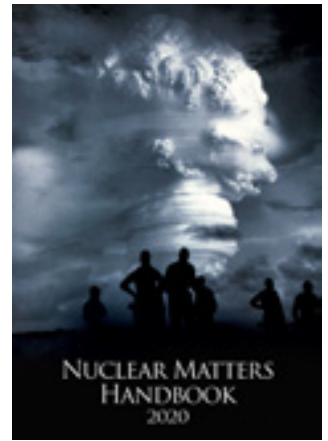
Bomb	Description	Carrier	Laboratories	Mission	Military Service	 B83
B83-1	Strategic Bomb	B-2	LLNL	Air to Surface	USAF	

Warhead	Description	Carrier	Laboratories	Mission	Military Service	 W80-1
W80-1	Cruise Missile Warhead	B-52	LLNL	Air to Surface	USAF	

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

References

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- 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>
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<https://www.state.gov/nuclear-nonproliferation-treaty/>
- Treaties and Agreements: <https://www.state.gov/nuclear-nonproliferation-treaty/>
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<https://www.energy.gov/nsa/downloads/stockpile-stewardship-and-management-plan-ssmp>
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<http://www.nrrpt.org/documents/la-ur-00-2584.pdf>
- DoDD 3150.08 DoD Response to Nuclear and Radiological Incidents:
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/302518p.pdf?ver=2019-02-05-090338-707>
- DoDI 3150.10 DoD Response to U.S. Nuclear Weapon Incidents:
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/315010p.pdf?ver=2018-10-11-075001-377>
- DoDM 3150.08 Nuclear Weapon Accident Response Procedures (NARP):
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/315008m.pdf?ver=2018-10-05-090638-530>
- DOD 3150.08-M "Nuclear Weapon Accident Response Procedures (NARP) Internet Supplement
<https://www.acq.osd.mil/ncbdp/nm/narp/index.htm>



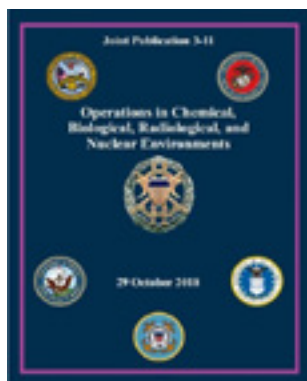
Key DOD CWMD/CBRN References



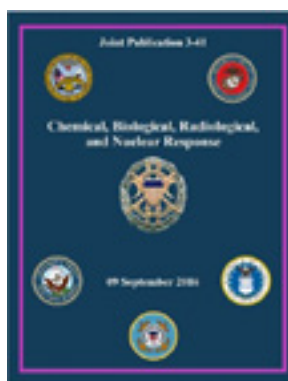
Joint Publications



JP 3-40 Countering Weapons of Mass Destruction
27 November 2019



JP 3-11 Operations in CBRN Environments
29 October 2018



JP 3-41 CBRN Response
9 September 2016

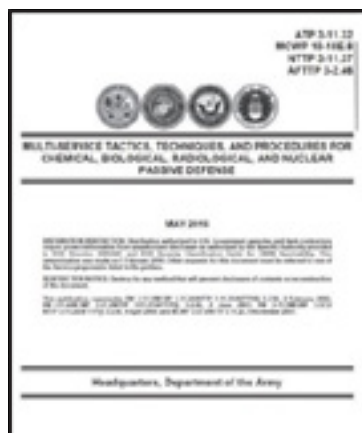


JP 3-28 Defense Support of Civil Authorities
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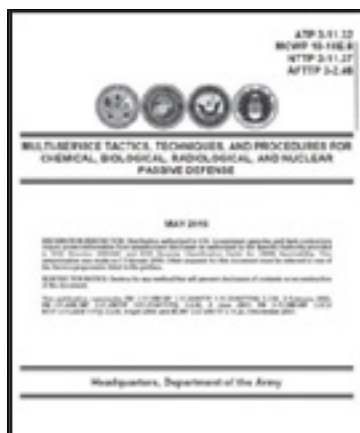
All Joint Publications are available through the Joint Chiefs of Staff Website:

<https://www.jcs.mil/Doctrine/Joint-Doctrine-Pubs/3-0-Operations-Series/>

Multi-Service References on Threats and Tactics, Techniques and Procedures



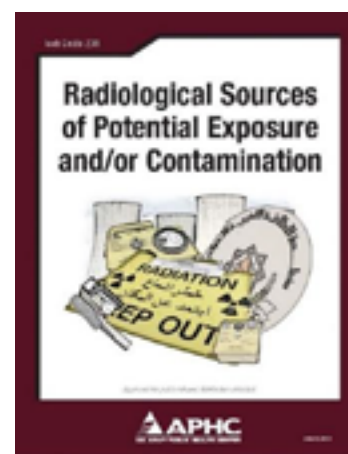
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Both references are For Official Use Only, please go to your appropriate service e-publication website.

Radiological Sources of Potential Exposure and/or Contamination



Tech Guide 238

Available from the Army Public Health Center

<https://phc.amedd.army.mil/Pages/default.aspx>

Additional Guidance and References:

Presidential Policy Directive 8: <https://www.dhs.gov/presidential-policy-directive-8-national-preparedness>

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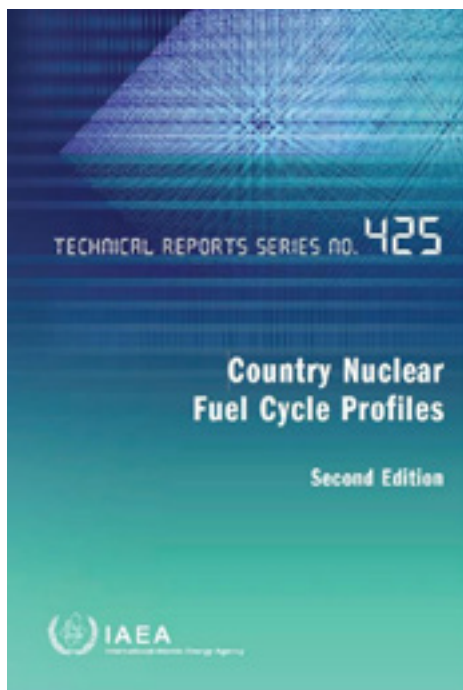
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<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/302518p.pdf?v>

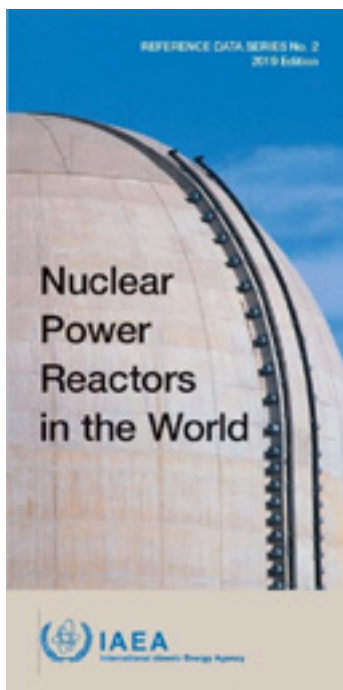
National Response Framework: <https://www.fema.gov/media-library/assets/documents/117791>

National Incident Management System: <https://www.fema.gov/national-incident-management-system>

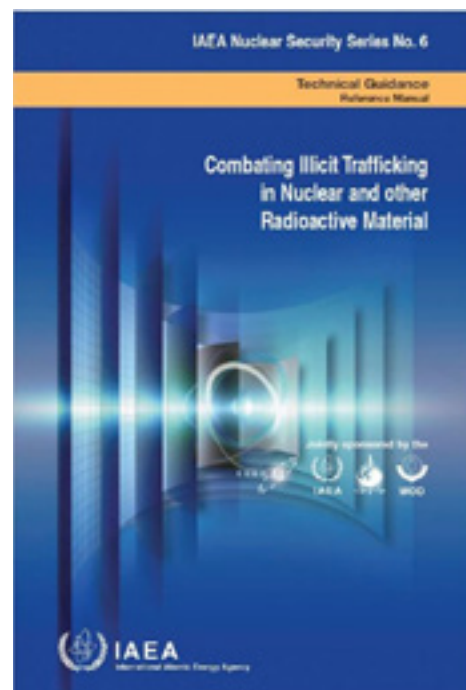
International Atomic Energy Agency (IAEA) Radiological & Nuclear References



[Country Nuclear Fuel Cycle Profiles - Second Edition](#)



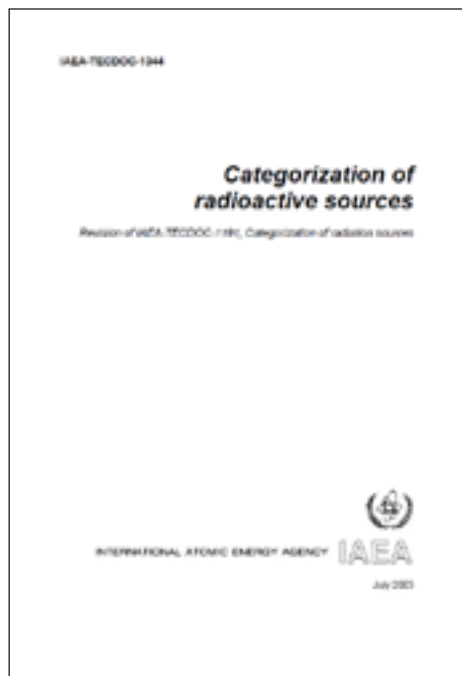
[Nuclear Power Reactors in the World](#)



[Combating Illicit Trafficking in Nuclear and other Radioactive Material](#)



[Guidance on the Management of Disused Radioactive Sources](#)



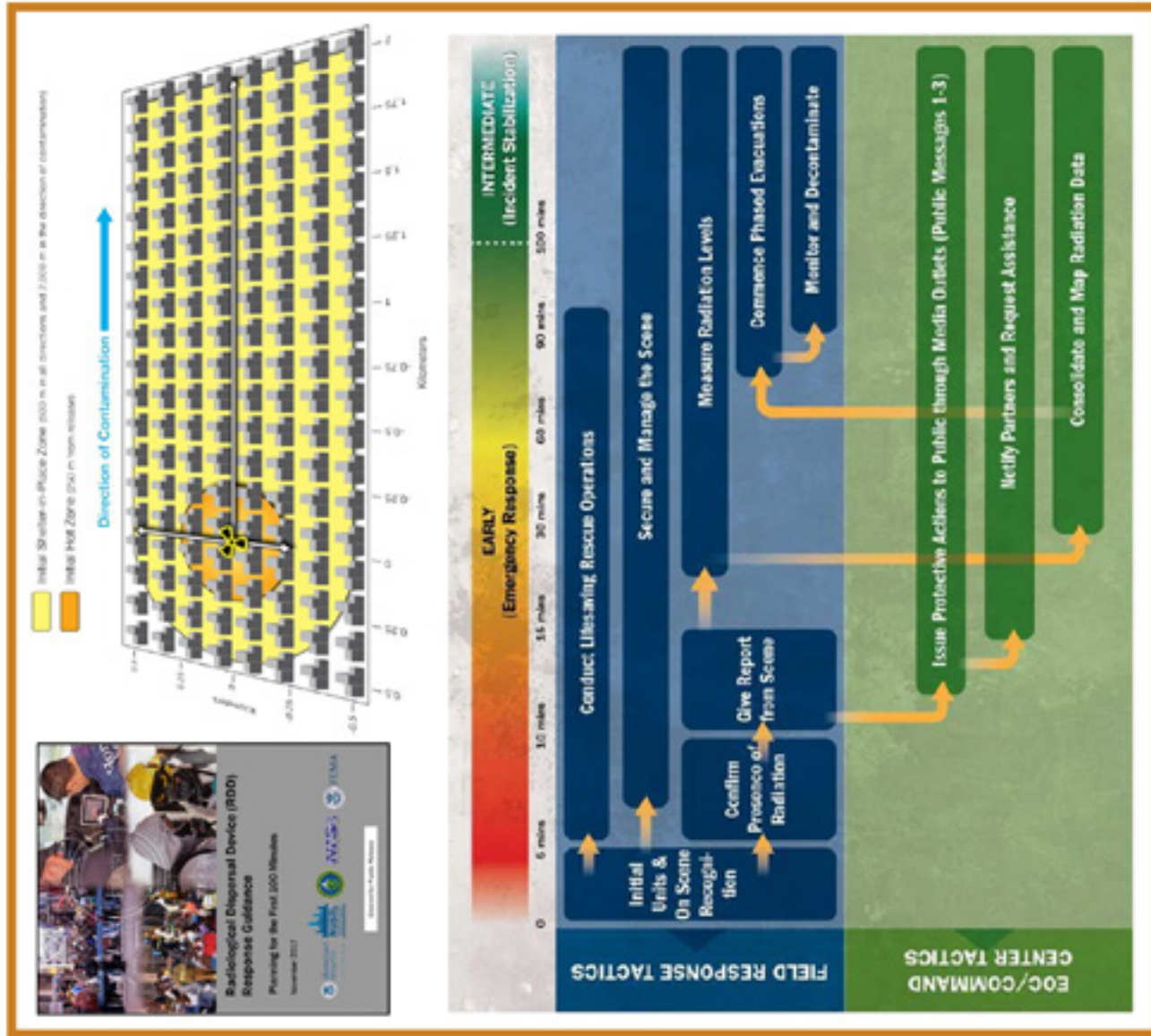
[Categorization of Radioactive Sources](#)



[Identification of Radioactive Sources and Devices](#)

IAEA Online Reference Library
<https://www.iaea.org/publications>

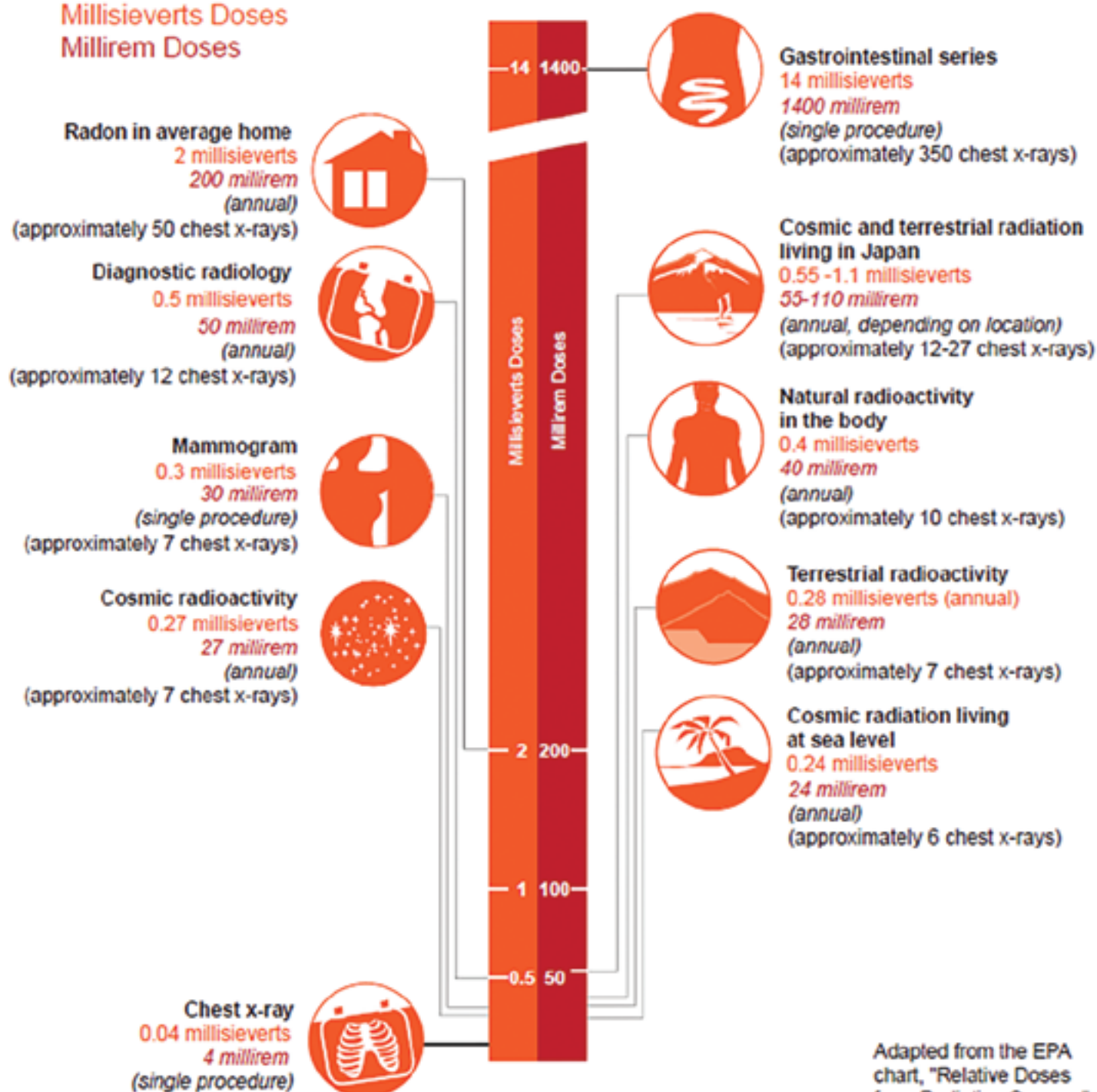
A selection of current response guides and references for Radiological Dispersal Device (RDD) and Nuclear Detonation for U.S. responders and emergency planners.





Relative Doses from Common Radiation Sources

Millisieverts Doses
 Millirem Doses



Adapted from the EPA chart, "Relative Doses from Radiation Sources"

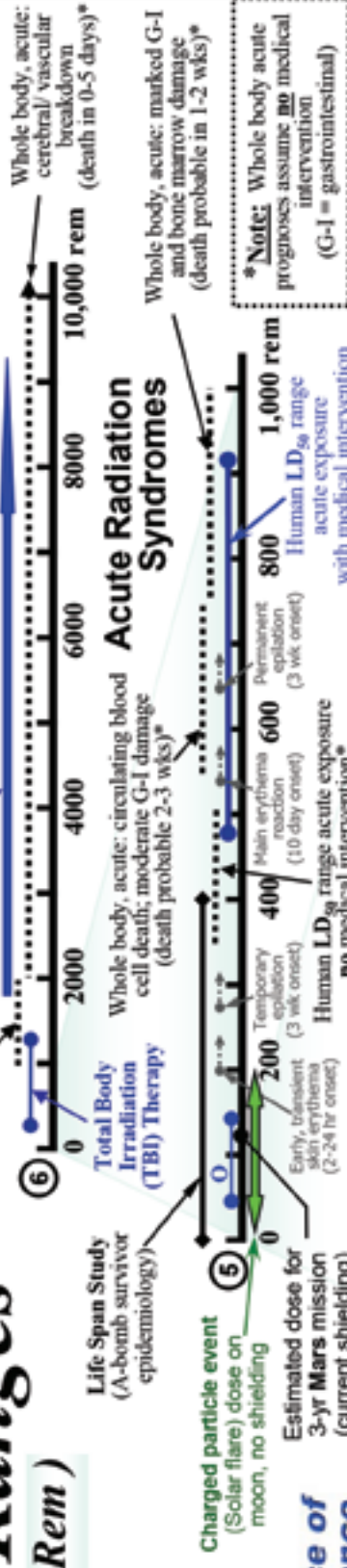
Ionizing Radiation Dose Ranges (Rem)



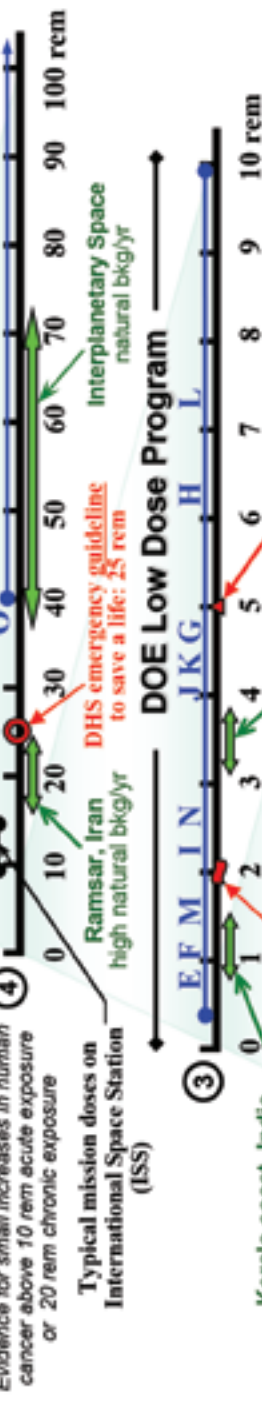
U.S. DEPARTMENT OF ENERGY

Whole body, acute: G-I destruction; lung damage; cognitive dysfunction (death certain in 5 to 12 days)*

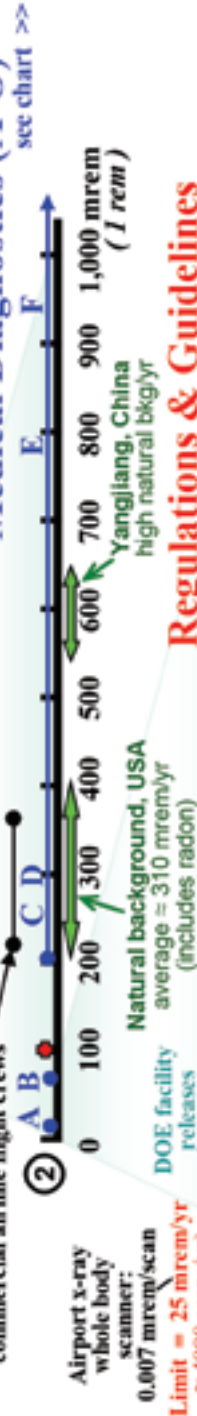
Cancer Radiotherapy
total doses to tumor



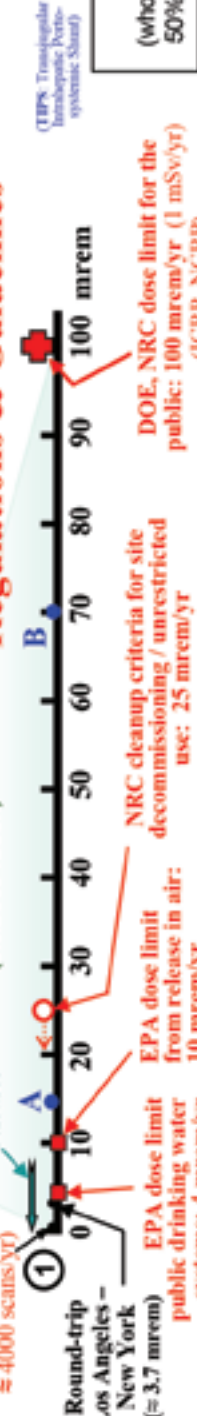
Cancer Epidemiology



Medical Diagnostics (A-O)



Regulations & Guidelines



NOTE: This chart was constructed with the intention of providing a simple, user-friendly, "order-of-magnitude" reference for radiation exposures of interest to scientists, managers, and the general public. In that spirit, most quantities are expressed as "dose equivalent" in the more commonly used radiological units, the rem and Sievert. Medical diagnostics are expressed as estimated maximum organ dose, as they are not in "effective dose" they do not imply an estimation of risk (no tissue weighting). Dose limits are in effective dose, but for most radiation types and energies the difference is numerically not significant within that context. It is acknowledged that the decision to use these units is a simplification, and does not address everyone's needs. (NRC = Nuclear Regulatory Commission; EPA = Environmental Protection Agency; DHS = Department of Homeland Security) Disclaimer: Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information disclosed.

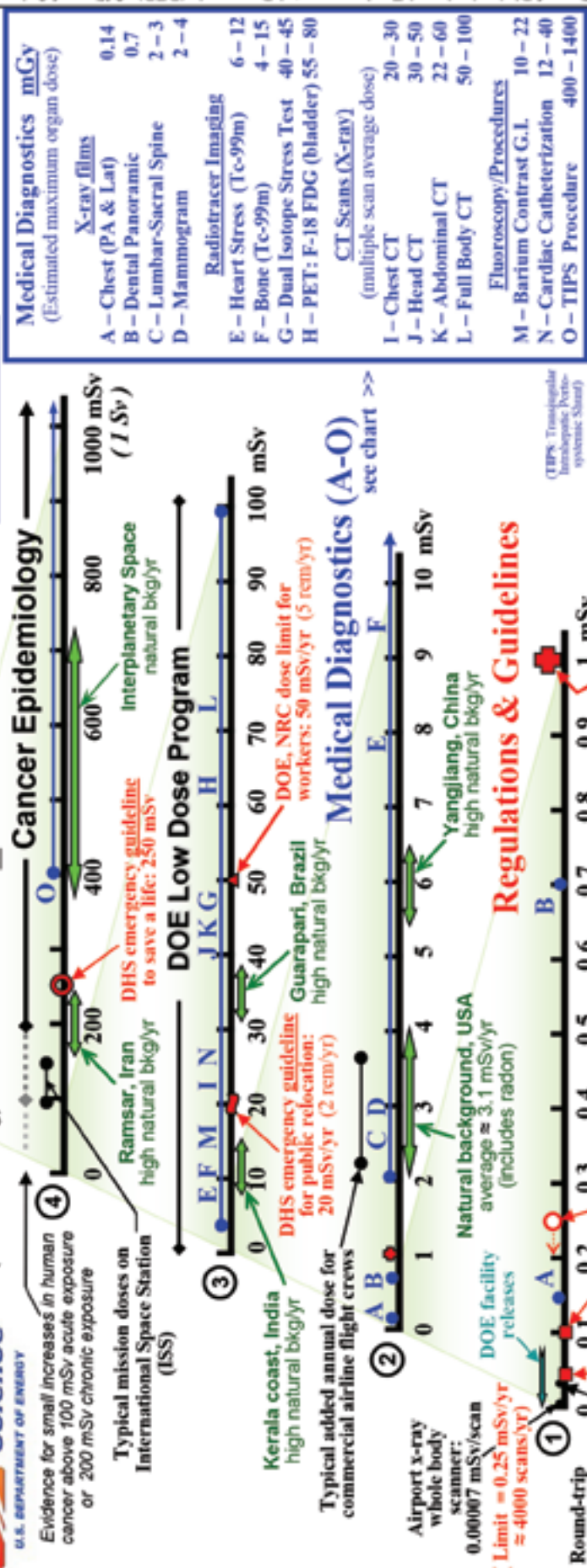
Medical Diagnostics /rads	
(Estimated maximum organ dose)	
X-ray films	
A - Chest (PA & Lat)	0.014
B - Dental Panoramic	0.07
C - Lumbar-Sacral Spine	0.2 - 0.3
D - Mammogram	0.2 - 0.4
Radioisotope Imaging	
E - Heart Stress (Tc-99m)	0.6 - 1.2
F - Bone (Tc-99m)	0.4 - 1.5
G - Dual Isotope Stress Test	4.0 - 4.5
H - PET; F-18 FDG (bladder)	5.5 - 8
CT Scans (X-ray)	
(multiple scan average dose)	
I - Chest	2 - 3
J - Head	3 - 5
K - Abdominal	2.2 - 6
L - Full Body	5 - 10
Fluoroscopy /Procedures	
M - Barium Contrast G.I.	1 - 2.2
N - Cardiac Catheterization	1.2 - 4
O - TIPS Procedure	40 - 140

LD₅₀ = Lethal Dose to 50%
(whole body dose that results in lethality to 50% of exposed individuals in 30-60 days)

Dose Equivalent: 100 rem = 1 Sievert
= (absorbed dose x radiation quality)
Absorbed Dose: 100 rad = 1 Gray
1 rem ≈ 1 rad for x- and gamma-rays
("≈" stands for "approximately equal to")

Source: Office of Biological and Environmental Research (BER), Office of Science, U.S. Department of Energy
<http://www.science.doe.gov/ober>

Cancer Radiotherapy
total doses to tumor



Los Angeles - New York
 $\approx 0.037 \text{ mSv}$

EPA dose limit from release in air:
 0.1 mSv/yr

EPA dose limit public drinking water systems: 0.04 mSv/yr

NRC cleanup criteria for site decommissioning / unrestricted use: 0.25 mSv/yr

DOE, NRC dose limit for the public: 1 mSv/yr (100 mrem/yr) (ICRP, NCRP)

LD₅₀ = Lethal Dose to 50%
 (whole body dose that results in lethality to 50% of exposed individuals in 30-60 days)

Dose Equivalent: 1 Sievert = 100 rem
 = (absorbed dose x radiation quality)

Absorbed Dose: 1 Gray = 100 rad
1 Sv \approx 1 Gy for x- and gamma-rays

Chart compiled by NF Meeting, Office of Science, DOE/BER, "Orders of Magnitude," revised June 2010
<http://www.lowdose.cncrr.gov/>
 ("n" stands for "approximately equal to")

NOTE: This chart was constructed with the intention of providing a simple, user-friendly, "order-of-magnitude" reference for radiation exposures of interest to scientists, managers, and the general public. In that spirit, most quantities are expressed as "dose equivalent" in the more commonly used radiation protection units, the rem and Sievert. Medical diagnostics are expressed as estimated maximum organ dose, as they are not in "effective dose" nor do they not imply an estimation of risk (no tissue weighting). Dose limits are in effective dose, but for most radiation types and energies the difference is not significant within this context. It is acknowledged that the decision to use these units is a simplification, and does not address everyone's needs. (NSRC = Nuclear Regulatory Commission; EPA = Environmental Protection Agency; DHS = Department of Homeland Security) (Disclaimer: Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the information disclosed.)

REFERENCE MATERIAL

STAY TIME TABLE

		DOSE												
		All Emergency Responder Activities Under the Emergency Conditions					Protect Property	Life-Saving		Life-Saving Volunteers Only		Potentially Lethal		
DOSE RATE (Gamma Rate on Meter)		100 mrem 0.1 rem	1,000 mrem 1 rem	2,000 mrem 2 rem	5,000 mrem 5 rem	10,000 mrem 10 rem	20,000 mrem 20 rem	25,000 mrem 25 rem	50,000 mrem 50 rem	100,000 mrem 100 rem	200 rem	300 rem LD 50	500 rem LD 50	1,000 rem LD 100
Bg	10 µR/h	10000 h												
	50 µR/h	2000 h												
	100 µR/h	1000 h	10000 h	20000 h										
	500 µR/h	200 h	2000 h	4000 h	10000 h									
	750 µR/h	133 h	1333 h	2666 h	6666 h									
Above Background	1000 µR/h 1 mR/h	100 h	1000 h	2000 h	5000 h	10000 h								
	2 mR/h	50 h	500 h	1000 h	2500 h	5000 h	10000 h	12500 h						
	5 mR/h	20 h	200 h	400 h	1000 h	2000 h	4000 h	5000 h	10000 h					
	7.5 mR/h	13 h	133 h	266 h	666 h	1333 h	2666 h	3333 h	6666 h					
	10 mR/h	10 h	100 h	200 h	500 h	1000 h	2000 h	2500 h	5000 h	10000 h				
SET UP HOT LINE CAUTION	20 mR/h	5 h	50 h	100 h	250 h	500 h	1000 h	1250 h	2500 h	5000 h	10000 h			
	30 mR/h	3 h	33 h	66 h	166 h	333 h	666 h	833 h	1666 h	3333 h	6666 h	10000 h		
	40 mR/h	150 min	25 h	50 h	125 h	250 h	500 h	625 h	1250 h	2500 h	5000 h	7500 h		
	50 mR/h	120 min	20 h	40 h	100 h	200 h	400 h	500 h	1000 h	2000 h	4000 h	6000 h	10000 h	
	75 mR/h	80 min	13 h	26 h	66 h	133 h	266 h	333 h	666 h	1333 h	2666 h	4000 h	6666 h	
WORK IN HOT ZONE DANGER	100 mR/h	60 min	10 h	20 h	50 h	100 h	200 h	250 h	500 h	1000 h	2000 h	3000 h	5000 h	10000 h
	200 mR/h	30 min	5 h	10 h	25 h	50 h	100 h	125 h	250 h	500 h	1000 h	1500 h	2500 h	5000 h
	300 mR/h	20 min	3 h	6 h	16 h	33 h	66 h	83 h	166 h	333 h	666 h	1000 h	1666 h	3333 h
	400 mR/h	15 min	150 min	5 h	12 h	25 h	50 h	62 h	125 h	250 h	500 h	750 h	1250 h	2500 h
	500 mR/h	12 min	120 min	4 h	10 h	20 h	40 h	50 h	100 h	200 h	400 h	600 h	1000 h	2000 h
	750 mR/h	8 min	80 min	160 min	6 h	13 h	26 h	33 h	66 h	133 h	266 h	400 h	666 h	1333 h
	1000 mR/h 1 R/h	6 min	60 min	120 min	5 h	10 h	20 h	25 h	50 h	100 h	200 h	300 h	500 h	1000 h
	1.5 R/h	4 min	40 min	80 min	3 h	6 h	13 h	16 h	33 h	66 h	133 h	200 h	333 h	666 h
	2 R/h	3 min	30 min	60 min	150 min	5 h	10 h	12 h	25 h	50 h	100 h	150 h	250 h	500 h
	3 R/h	2 min	20 min	40 min	100 min	3 h	6 h	8 h	16 h	33 h	66 h	100 h	166 h	333 h
DANGER	4 R/h	90 sec	15 min	30 min	75 min	150 min	5 h	6 h	12 h	25 h	50 h	75 h	125 h	250 h
	5 R/h	60 sec	12 min	24 min	60 min	120 min	4 h	5 h	10 h	20 h	40 h	60 h	100 h	200 h
	7.5 R/h	30 sec	8 min	16 min	40 min	80 min	160 min	3 h	6 h	13 h	26 h	40 h	66 h	133 h
	10 R/h	30 sec	6 min	12 min	30 min	60 min	120 min	150 min	5 h	10 h	20 h	30 h	50 h	100 h
	20 R/h	15 sec	3 min	6 min	15 min	30 min	60 min	75 min	150 min	5 h	10 h	15 h	25 h	50 h
LIFE-SAVING ONLY DANGER	30 R/h	10 sec	2 min	4 min	10 min	20 min	40 min	50 min	100 min	3 h	6 h	10 h	16 h	33 h
	40 R/h	5 sec	90 sec	3 min	7 min	15 min	30 min	37 min	75 min	150 min	5 h	7 h	12 h	25 h
	50 R/h	5 sec	60 sec	2 min	6 min	12 min	24 min	30 min	60 min	120 min	4 h	6 h	10 h	20 h
	75 R/h	5 sec	45 sec	90 sec	4 min	8 min	16 min	20 min	40 min	80 min	160 min	4 h	6 h	13 h
	100 R/h	1 sec	30 sec	60 sec	3 min	6 min	12 min	15 min	30 min	60 min	120 min	3 h	5 h	10 h
VOLUNTEERS ONLY GRAVE DANGER	200 R/h	1 sec	15 sec	30 sec	90 sec	3 min	6 min	7 min	15 min	30 min	60 min	90 min	150 min	5 h
	300 R/h	1 sec	10 sec	20 sec	60 sec	2 min	4 min	5 min	10 min	20 min	40 min	60 min	100 min	3 h
	400 R/h	1 sec	5 sec	15 sec	45 sec	90 sec	3 min	3 min	7 min	15 min	30 min	45 min	75 min	150 min
	500 R/h	1 sec	5 sec	10 sec	30 sec	60 sec	2 min	3 min	6 min	12 min	24 min	36 min	60 min	120 min
	750 R/h	1 sec	5 sec	10 sec	20 sec	45 sec	90 sec	2 min	4 min	8 min	16 min	24 min	40 min	80 min
	1000 R/h	1 sec	1 sec	5 sec	15 sec	30 sec	60 sec	90 sec	3 min	6 min	12 min	18 min	30 min	60 min

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

Times are rounded down for safety.

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

1 µR = 0.001 mR = 0.000001 R Natural Background: about 10 µR/h = 0.01 mR/h = 0.00001 R/h = about 0.25 mR/day

1,000 µR = 1 mR = 0.001 R 1 day = 24 hours 100 hours = 4 days 1 week = 7 days = 168 hours 10,000 hours = 416 days

1,000,000 µR = 1,000 mR = 1 R 1,000 hours = 6 weeks 2,000 hours = 12 weeks 1 year = 365 days = 8,760 hours 20,000 hours = 833 days

Potentially Lethal: For whole body doses received in a short time, the LD50 dose (50% deaths in 30 to 180 days) is about 300 rem without treatment or 600 rem with medical treatment.

The LD100 dose (100% deaths) is about 1,000 rem. If the exposure is spread out over a longer period of time (for example, days instead of minutes), the risk of death is lower.

Gamma Radiation Dose Rate Conversions

	roentgen per hour (R/h)	rem per hour (rem/h)	sievert per hour (Sv/h)	gray per hour (Gy/h)	centigray per hour (cGy/h)	rad per hour (rad/h)	rem per hour (without prefixes) (rem/h)	sievert per hour (without prefixes) (Sv/h)
	1 μ R/h	1 μ rem/h	10 nSv/h 0.01 μ Sv/h	0.01 μ Gy/h	0.000001 cGy/h	1 μ rad/h	0.000001 rem/h	0.00000001 Sv/h
Bkg	10 μ R/h	10 μ rem/h	100 nSv/h 0.10 μ Sv/h	0.10 μ Gy/h	0.000010 cGy/h	10 μ rad/h	0.000010 rem/h	0.00000010 Sv/h
	50 μ R/h	50 μ rem/h	0.50 μ Sv/h 500 nSv/h	0.50 μ Gy/h	0.000050 cGy/h	50 μ rad/h	0.000050 rem/h	0.00000050 Sv/h
	100 μ R/h 0.1 mR/h	100 μ rem/h 0.1 mrem/h	1000 nSv/h 1 μ Sv/h	1 μ Gy/h	0.00010 cGy/h	100 μ rad/h	0.00010 rem/h	0.0000010 Sv/h
	500 μ R/h	500 μ rem/h	5 μ Sv/h	5 μ Gy/h	0.00050 cGy/h	500 μ rad/h	0.00050 rem/h	0.0000050 Sv/h
	750 μ R/h	750 μ rem/h	7.5 μ Sv/h	7.5 μ Gy/h	0.00075 cGy/h	750 μ rad/h	0.00075 rem/h	0.0000075 Sv/h
SET UP HOT LINE CAUTION	1000 μ R/h 1 mR/h	1000 μ rem/h 1 mrem/h	10 μ Sv/h	10 μ Gy/h	0.0010 cGy/h	1000 μ rad/h 1 mrad/h	0.0010 rem/h	0.000010 Sv/h
	2 mR/h	2 mrem/h	20 μ Sv/h	20 μ Gy/h	0.0020 cGy/h	2 mrad/h	0.0020 rem/h	0.000020 Sv/h
	5 mR/h	5 mrem/h	50 μ Sv/h	50 μ Gy/h	0.0050 cGy/h	5 mrad/h	0.0050 rem/h	0.000050 Sv/h
	7.5 mR/h	7.5 mrem/h	75 μ Sv/h	75 μ Gy/h	0.0075 cGy/h	7.5 mrad/h	0.0075 rem/h	0.000075 Sv/h
	10 mR/h	10 mrem/h	100 μ Sv/h 0.1 mSv/h	100 μ Gy/h 0.1 mGy/h	0.010 cGy/h	10 mrad/h	0.010 rem/h	0.00010 Sv/h
WORK IN HOT ZONE DANGER	20 mR/h	20 mrem/h	200 μ Sv/h	200 μ Gy/h	0.020 cGy/h	20 mrad/h	0.020 rem/h	0.00020 Sv/h
	30 mR/h	30 mrem/h	300 μ Sv/h	300 μ Gy/h	0.030 cGy/h	30 mrad/h	0.030 rem/h	0.00030 Sv/h
	40 mR/h	40 mrem/h	400 μ Sv/h	400 μ Gy/h	0.040 cGy/h	40 mrad/h	0.040 rem/h	0.00040 Sv/h
	50 mR/h	50 mrem/h	500 μ Sv/h	500 μ Gy/h	0.050 cGy/h	50 mrad/h	0.050 rem/h	0.00050 Sv/h
	75 mR/h	75 mrem/h	750 μ Sv/h	750 μ Gy/h	0.075 cGy/h	75 mrad/h	0.075 rem/h	0.00075 Sv/h
	100 mR/h 0.1 R/h	100 mrem/h 0.1 rem/h	1000 μ Sv/h 1 mSv/h	1000 μ Gy/h 1 mGy/h	0.10 cGy/h	100 mrad/h	0.10 rem/h	0.0010 Sv/h
	200 mR/h	200 mrem/h	2 mSv/h	2 mGy/h	0.20 cGy/h	200 mrad/h	0.20 rem/h	0.0020 Sv/h
	300 mR/h	300 mrem/h	3 mSv/h	3 mGy/h	0.30 cGy/h	300 mrad/h	0.30 rem/h	0.0030 Sv/h
	400 mR/h	400 mrem/h	4 mSv/h	4 mGy/h	0.40 cGy/h	400 mrad/h	0.40 rem/h	0.0040 Sv/h
	500 mR/h	500 mrem/h	5 mSv/h	5 mGy/h	0.50 cGy/h	500 mrad/h	0.50 rem/h	0.0050 Sv/h
	750 mR/h	750 mrem/h	7.5 mSv/h	7.5 mGy/h	0.75 cGy/h	750 mrad/h	0.75 rem/h	0.0075 Sv/h
	1000 mR/h 1 R/h	1000 mrem/h 1 rem/h	10 mSv/h	10 mGy/h	1.0 cGy/h	1000 mrad/h 1 rad/h	1.0 rem/h	0.010 Sv/h
	1.5 R/h	1.5 rem/h	15 mSv/h	15 mGy/h	1.5 cGy/h	1.5 rad/h	1.5 rem/h	0.015 Sv/h
	2 R/h	2 rem/h	20 mSv/h	20 mGy/h	2 cGy/h	2 rad/h	2 rem/h	0.02 Sv/h
	3 R/h	3 rem/h	30 mSv/h	30 mGy/h	3 cGy/h	3 rad/h	3 rem/h	0.03 Sv/h
DANGER	4 R/h	4 rem/h	40 mSv/h	40 mGy/h	4 cGy/h	4 rad/h	4 rem/h	0.04 Sv/h
	5 R/h	5 rem/h	50 mSv/h	50 mGy/h	5 cGy/h	5 rad/h	5 rem/h	0.05 Sv/h
	7.5 R/h	7.5 rem/h	75 mSv/h	75 mGy/h	7.5 cGy/h	7.5 rad/h	7.5 rem/h	0.075 Sv/h
LIFE-SAVING ONLY DANGER	10 R/h	10 rem/h	100 mSv/h	100 mGy/h	10 cGy/h	10 rad/h	10 rem/h	0.10 Sv/h
	20 R/h	20 rem/h	200 mSv/h	200 mGy/h	20 cGy/h	20 rad/h	20 rem/h	0.20 Sv/h
	30 R/h	30 rem/h	300 mSv/h	300 mGy/h	30 cGy/h	30 rad/h	30 rem/h	0.30 Sv/h
	40 R/h	40 rem/h	400 mSv/h	400 mGy/h	40 cGy/h	40 rad/h	40 rem/h	0.40 Sv/h
	50 R/h	50 rem/h	500 mSv/h	500 mGy/h	50 cGy/h	50 rad/h	50 rem/h	0.50 Sv/h
	75 R/h	75 rem/h	750 mSv/h	750 mGy/h	75 cGy/h	75 rad/h	75 rem/h	0.75 Sv/h
	100 R/h	100 rem/h	1000 mSv/h 1 Sv/h	1000 mGy/h 1 Gy/h	100 cGy/h	100 rad/h	100 rem/h	1 Sv/h
VOLUNTEERS GRAVE DANGER	200 R/h	200 rem/h	2 Sv/h	2 Gy/h	200 cGy/h	200 rad/h	200 rem/h	2 Sv/h
	300 R/h	300 rem/h	3 Sv/h	3 Gy/h	300 cGy/h	300 rad/h	300 rem/h	3 Sv/h
	400 R/h	400 rem/h	4 Sv/h	4 Gy/h	400 cGy/h	400 rad/h	400 rem/h	4 Sv/h
	500 R/h	500 rem/h	5 Sv/h	5 Gy/h	500 cGy/h	500 rad/h	500 rem/h	5 Sv/h
	750 R/h	750 rem/h	7.5 Sv/h	7.5 Gy/h	750 cGy/h	750 rad/h	750 rem/h	7.5 Sv/h
	1000 R/h	1000 rem/h	10 Sv/h	10 Gy/h	1000 cGy/h	1000 rad/h	1000 rem/h	10 Sv/h

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 μ R/h (0.05 to 0.25 μ Sv/h), and are represented by the row labeled "Bkg" 10 μ R/h (100 nSv/h).

Radiation Dose Rate Guidance

DOSE RATE Recommendations	Values
Contaminated Persons ¹	2 x Background Reading (cpm or μ R/h or mR/h)
Limit of Radioactive "Plume" on the Ground or Air ²	5 x Background Reading (cpm or μ R/h or mR/h)
Establish Hot Line ³ CAUTION	1 mR/h to 10 mR/h (0.001 R/h to 0.010 R/h)
Work in Hot Zone CAUTION - DANGER	Hot Line up to 10 R/h (up to 10,000 mR/h)
Turn-Around Dose Rate For NON-Life-Saving ⁴ DANGER	10 R/h
Turn-Around Dose Rate for LIFE-SAVING ⁵ DANGER	100 R/h
Life-Saving, Very Short Duration Only (Informed Volunteers) ⁵ GRAVE DANGER	More than 100 R/h

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

DOE FRMAC uses 1.5 R/h for Turn-Around, unless otherwise directed. DOE/NV/11718-181-VOL.1

⁵ 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

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

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

Reactors in the USINDOPACOM Theater

Total #

130

29

38

● # of Power Reactors

● # Under Construction

● Research Reactors



USINDOPACOM





Homeland Security

Domestic Nuclear Detection Office Radiation Quick Reference Guide

If you encounter something suspicious, follow your specific local protocols. Recommend contacting your state fusion center.

DNDO Joint Analysis Center (JAC)

For 24-hour Technical Assistance, contact: 1-877-363-6522
(1-877-DNDO-JAC)

Email: DNDO.JAC@dhs.gov

DNDO JAC Information Line (Non-emergency): 1-866-789-8304

Email: dndo.jac2@dhs.gov



Radiation Warning
Symbol (Trefoil)



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

For repeatable neutron alarms

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

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.



RDD (Simulated) Explosive Dispersal



RDD Aerosol Spray

- 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.

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.

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

- 4. Highly Enriched Uranium (HEU, U-235)** Higher concentration of U-235 than natural uranium, with some U-238 remaining. Used in nuclear weapons and some nuclear reactor fuel. IAEA Significant Quantity of U-235: 25 kg (55 lb)*



Uranium Metal



Uranium Reactor Fuel Pellets



Uranium Yellow Cake

- 5. Uranium-233 (U-233)** Could be used to make a nuclear explosive device. IAEA Significant Quantity of U-233: 8 kg (18 lb)*
- 6. Natural Uranium** Mostly Uranium-238 (U-238) with less than 1% U-235. Found in some dirt, rocks, and ceramic tiles. Ore processed into "yellow cake" powder and then into uranium hexafluoride (UF₆), a highly corrosive gas.
- 7. Depleted Uranium (DU)** Primarily U-238 with most U-235 removed. Found in industrial counter-weights, shielding in radiography cameras, some military ammunition, and some tank armor.
- 8. Plutonium** Primarily Plutonium-239 (Pu-239). Emits neutron radiation due to Pu-240 impurity. Used in nuclear weapons and some nuclear reactor fuel. IAEA Significant Quantity of Plutonium: 8 kg (18 lb)*
- 9. Neptunium-237 (Np-237)** Could be used to make a nuclear explosive device.



Plutonium Metal

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.



Cobalt 60 sources



Americium-241 Source Capsule



Strontium-90 from Soviet RTG (about size of a coffee can)



Iridium-192 Radiography Cameras with Depleted Uranium Shielding



Cesium-137 Medical Seeds

3. **Cesium (Cs-137)** Gauge/level gauge, industrial radiography, brachytherapy/teletherapy, well logging/density gauges, instrument calibration sources.
4. **Strontium (Sr-90)** Radioisotope thermoelectric generator (RTG), fission product, industrial gauges, medical treatment.
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.



Soil Density Gauge Am:Be and Cs-137



Radium minerals



Empty Californium-252 Capsules

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.
9. **Californium (Cf-252)** Neutron source for moisture gauges, well-logging, brachytherapy cancer treatment. Shielded with polyethylene/paraffin shielding, boron/lithium/cadmium.

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 to powder in form; it is off-white to gray in color; and odorless. Hall Cell Bath may contain Uranium (U-238), Thorium (Th-232) and Radium (Ra-226).
3. **Ceramics/Granite/Quartz/Cat Litter/Clay products** Clay and rock based materials typically contain elevated levels of naturally-occurring radioactive materials (NORM) such as Potassium (K-40), Thorium (Th-232) and/or Uranium (U-238).



4. **Trees, Cranberries, Blueberries, Huckleberries, Cowberries, Bilberries, Bananas, Tobacco, Marijuana** Trees (wood products) and other plants (berries and other food) from Europe may have Cesium (Cs-137) from the Chernobyl accident. Investigate if Cesium discovered in plant products as it may be a hidden illicit Cesium source instead of just plant products. Other plants and plant products may have naturally-occurring Potassium (K-40) [bananas] or Radium (Ra-226) [tobacco, marijuana].
5. **Potash, Fertilizer** Potash is the common term for potassium-based fertilizer. Contains Potassium (K-40).
6. **Potassium Chloride Salt (KCl)** Salt substitutes, ice melt, and "salt-free" water softener pellets contain Potassium (K-40).



Potash

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. **Iodine (I-131)** Imaging of infection/white blood cell formation.
3. **Iodine (I-123, I-124, I-125, I-131)** Treatment of cancer, in particular thyroid cancer, and other thyroid diseases.
4. **Lutetium (Lu-177, Lu-177m)** Treatment of colon cancer, bone cancer, non-Hodgkin's lymphoma, lung cancer, and treatment of prostate, breast, and lung tumors.
5. **Molybdenum (Mo-99)** Not found in people. Used to generate Tc-99m.
6. **Phosphorus (P-32)** Inflammation associated with joint pain.
7. **Palladium (Pd-103)** Treatment of prostate cancer.
8. **Rubidium (Rb-82)** Cardiac imaging techniques.
9. **Samarium (Sm-153)** Pain treatment for bone cancer.
10. **Strontium (Sr-89)** Bone pain relief for patients with prostate cancer.
11. **Technetium (Tc-99m)** Most common medical isotope. Cardiac "heart" stress tests. Tracer to detect where a tumor is located.
12. **Thallium (Tl-201)** Imaging for heart related conditions.
13. **Xenon (Xe-133)** Imaging of heart, lungs, brain and blood flow.

Radioactive Material Shipment Placarding and Labeling



Vehicle Placards on the outside of the vehicle (all 4 sides) are required when transporting radioactive material packages with Yellow-III labels.

Package Types

Type A Package Designed to survive normal transport conditions. Does *not* contain life-threatening amounts of radioactive material.

Type B Package Designed to survive severe accidents. Life threatening conditions may exist only if contents are released or package shielding fails. May be as small as a lunch box (radiography camera) or as large as a trailer.



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, microrem per hour).



Los Alamos National Laboratory Chemistry Division

1A	2A	3A	4A	5A	6A	7A	8A
1 H hydrogen 1.008	4 Be beryllium 9.012	5 B boron 10.81	6 C carbon 12.01	7 N nitrogen 14.01	8 O oxygen 16.00	9 F fluorine 19.00	2 He helium 4.003
3 Li lithium 6.94	12 Mg magnesium 24.31	13 Al aluminum 26.98	14 Si silicon 28.09	15 P phosphorus 30.97	16 S sulfur 32.06	17 Cl chlorine 35.45	10 Ne neon 20.18
11 Na sodium 22.99	20 Ca calcium 40.08	31 Ga gallium 69.72	32 Ge germanium 72.64	33 As arsenic 74.92	34 Se selenium 78.96	35 Br bromine 79.90	18 Ar argon 39.95
19 K potassium 39.10	38 Sr strontium 87.62	49 In indium 114.8	50 Sn tin 118.7	51 Sb antimony 121.8	52 Te tellurium 127.6	53 I iodine 126.9	36 Kr krypton 83.79
37 Rb rubidium 85.47	56 Ba barium 137.3	81 Tl thallium 204.4	82 Pb lead 207.2	83 Bi bismuth 209.0	84 Po polonium (209)	85 At astatine (210)	54 Xe xenon 131.3
55 Cs cesium 132.9	88 Ra radium (226)	104 Rf rutherfordium (261)	105 Db dubnium (262)	106 Sg seaborgium (266)	107 Bh bohrium (264)	108 Hs hassium (277)	86 Rn radon (222)
							118 Og oganesson (294)

3B	4B	5B	6B	7B	8B	11B	12B
21 Sc scandium 44.96	22 Ti titanium 47.88	23 V vanadium 50.94	24 Cr chromium 52.00	25 Mn manganese 54.94	26 Fe iron 55.85	27 Co cobalt 58.93	28 Ni nickel 58.69
39 Y yttrium 88.91	40 Zr zirconium 91.22	41 Nb niobium 92.91	42 Mo molybdenum 95.96	43 Tc technetium (98)	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4
*	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.9	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1
**	104 Rf rutherfordium (261)	105 Db dubnium (262)	106 Sg seaborgium (266)	107 Bh bohrium (264)	108 Hs hassium (277)	109 Mt meitnerium (276)	110 Ds darmstadtium (281)

1A	2A	3A	4A	5A	6A	7A	8A
1 H hydrogen 1.008	4 Be beryllium 9.012	5 B boron 10.81	6 C carbon 12.01	7 N nitrogen 14.01	8 O oxygen 16.00	9 F fluorine 19.00	2 He helium 4.003
3 Li lithium 6.94	12 Mg magnesium 24.31	13 Al aluminum 26.98	14 Si silicon 28.09	15 P phosphorus 30.97	16 S sulfur 32.06	17 Cl chlorine 35.45	10 Ne neon 20.18
11 Na sodium 22.99	20 Ca calcium 40.08	31 Ga gallium 69.72	32 Ge germanium 72.64	33 As arsenic 74.92	34 Se selenium 78.96	35 Br bromine 79.90	18 Ar argon 39.95
19 K potassium 39.10	38 Sr strontium 87.62	49 In indium 114.8	50 Sn tin 118.7	51 Sb antimony 121.8	52 Te tellurium 127.6	53 I iodine 126.9	36 Kr krypton 83.79
37 Rb rubidium 85.47	56 Ba barium 137.3	81 Tl thallium 204.4	82 Pb lead 207.2	83 Bi bismuth 209.0	84 Po polonium (209)	85 At astatine (210)	54 Xe xenon 131.3
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							118 Og oganesson (294)

Lanthanide Series*

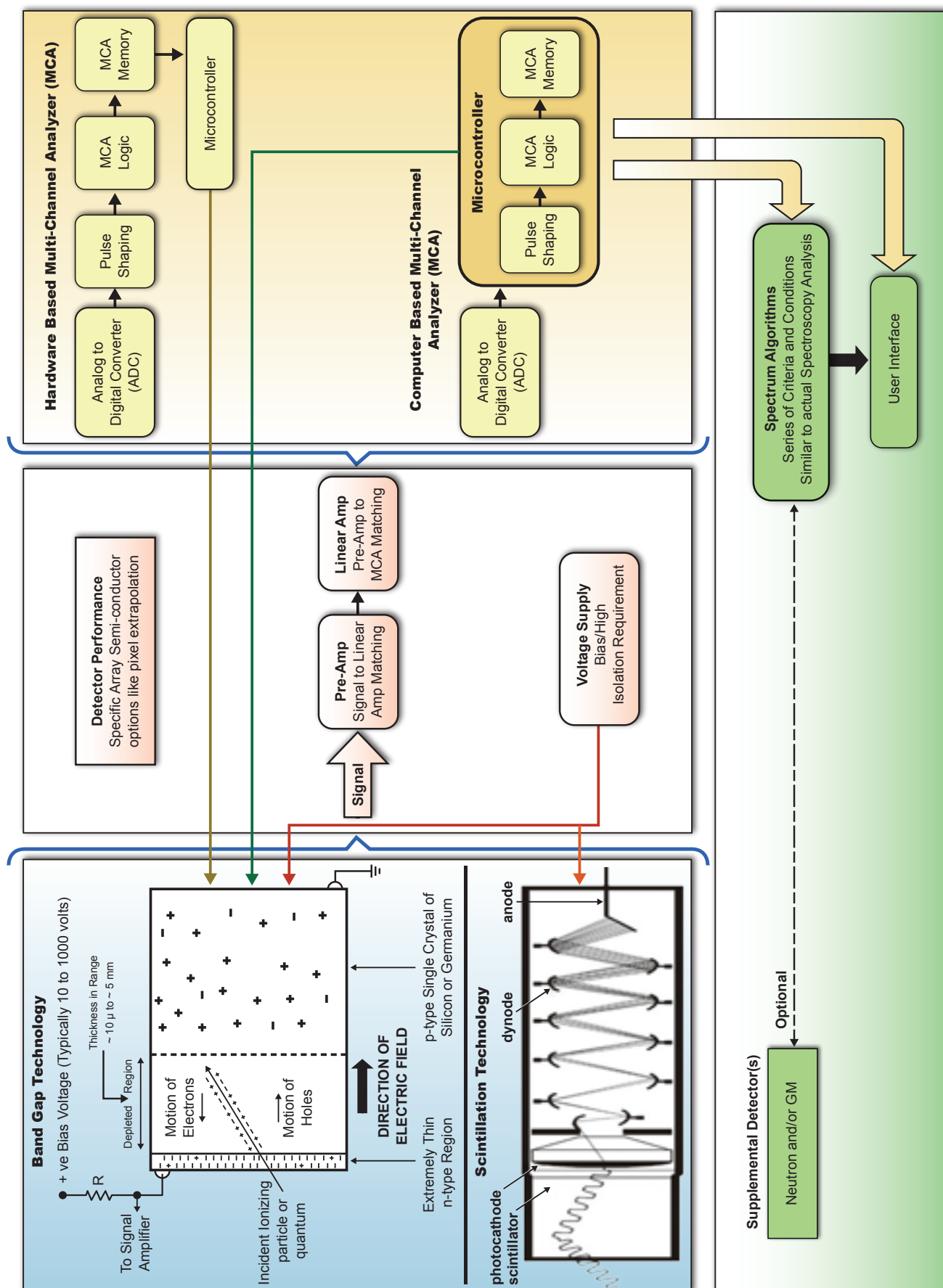
57 La lanthanum 138.9	58 Ce cerium 140.1	59 Pr praseodymium 140.9	60 Nd neodymium 144.2	61 Pm promethium (145)	62 Sm samarium 150.4	63 Eu europium 152.0	64 Gd gadolinium 157.2	65 Tb terbium 158.9	66 Dy dysprosium 162.5	67 Ho holmium 164.9	68 Er erbium 167.3	69 Tm thulium 168.9	70 Yb ytterbium 173.0	71 Lu lutetium 175.0
89 Ac actinium 227.0	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptunium (237)	94 Pu plutonium (244)	95 Am americium (243)	96 Cm curium (247)	97 Bk berkelium (247)	98 Cf californium (251)	99 Es einsteinium (252)	100 Fm fermium (257)	101 Md mendelevium (258)	102 No nobelium (259)	103 Lr lawrencium (262)

Actinide Series**

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

3/13/17

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





AN/PDR-77 Radiac Set

FACT SHEET 26-007-1214

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

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

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

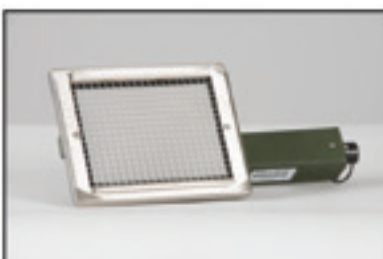


AN/PDR-77 Radiac with Beta/Gamma (β/γ) Probe (DT-616)

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

		Probe Type				
		β/γ Probe	α Probe	X-ray Probe	Pancake Probe	micro-R Probe
Measuring Objective		Alpha Emitters				
	Detection or Measurement ¹	C (Open Window)	A	B ⁴	A	C
	Locate Missing Source ²	C (Open Window)	C	A	A	C
		Beta Emitters				
	All Types	B (Open Window)	U	B ⁴	A	C
		Gamma Emitters				
	Detection or Measurement	A	U	A	A	A
	Locate Missing Source	A	U	A	A	A
	Basic External Radiation Dose Measurement Survey ³	A	U	U	U	B ⁴
		Unknown sources				
	Detection or Measurement	B	U	B ⁴	A	B ⁴

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.



New Equipment - FY21 Fielding of Joint Detector Systems



Under the Joint Program Manager CBRN Sensors, the Joint Product Leader Radiological and Nuclear Defense (JPdL RND) was established in 2013 partly out of the lessons learned from Operation TOMODACHI with an overarching goal to develop, test and field the Department of Defense's first joint, interagency and international radiological detector known as the Radiological Detection System which begins fielding in FY 21. Collaborating with the Department of the Navy, fielding has also already begun with the IM 276 PD and IM 278 U Joint Personal Dosimeters. Additionally, in FY 21 fielding also begins with the Man Portable Radiological Detection System or MRDS.

Radiological & Nuclear Protection - Radiological Detection System (RDS)

Description: The Radiological Detection System (RDS) will replace DoD's legacy Radiation Detection and Computation (RADIAC) survey meters as well as USCG, UK, and Canadian legacy systems. The RDS will provide the Warfighter with the capability to detect alpha, beta, gamma, neutron, and low energy x-rays.



Legacy System Replacement: Replaces following systems reaching obsolescence: USA & USMC AN/PDR 77, USA AN/VDR 2, USAF ADM 300, USN & USCG Multi functional RADIAC (MFR) Suite

Capabilities: RDS possesses modern capability upgrades over legacy RADIAC systems including open architecture smart probes, Net Ready, GPS interface, and data logging. Provides a common, interoperable equipment with adequate sensitivity and common units of measure.



Radiological & Nuclear Protection - Joint Personal Dosimeter Individual (JPD IND)



Description: Fielded as the IM-276PD (Navy) and the IM 278/U (Army), the dosimeter will provide a sensor to record and retrieve a Service member's radiation exposure from occupational to tactical levels.

Legacy System Replacement: The Joint Personal Dosimeter Individual (JPD IND) is intended to replace DoD's legacy dosimeter (the Navy's IM 270 and the Army's PDR 75 Series Systems).

Capabilities:

- No separate reader needed to obtain dose information
- Data Transfer from dosimeter to computer
- National Voluntary Laboratory Accreditation Program (NVLAP) Accreditable to obtain Dose of Record for Warfighter's Medical Records



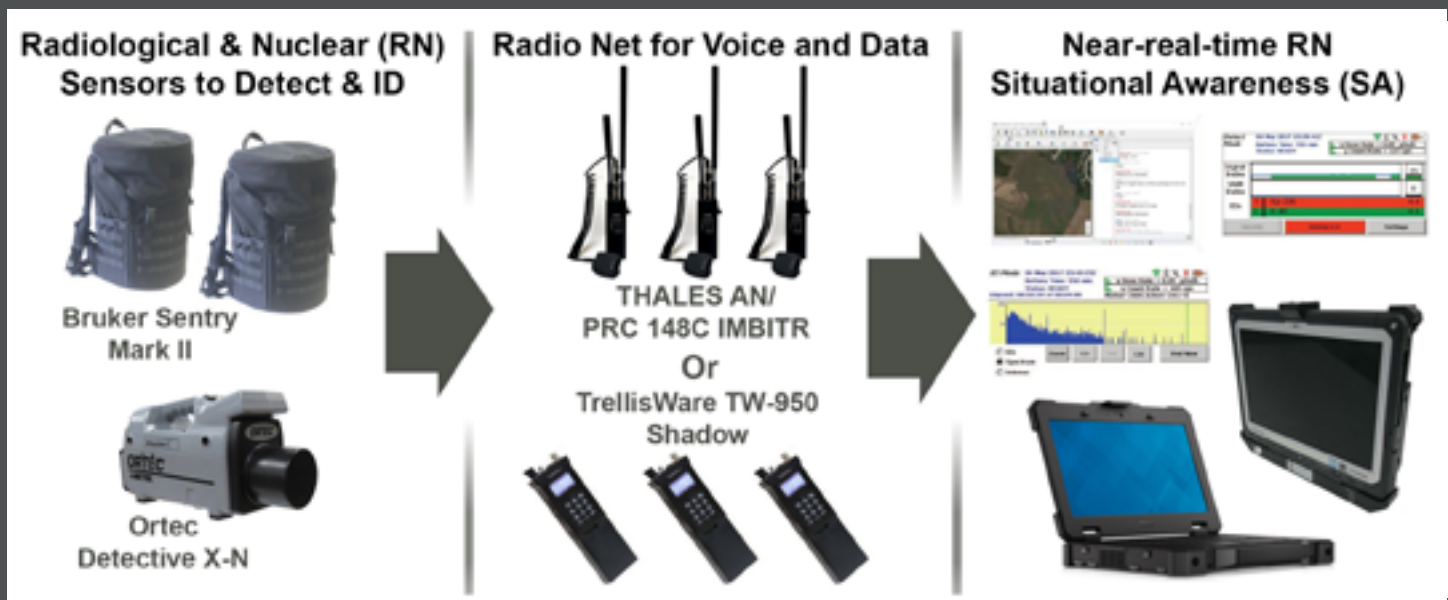
IM-276PD (Navy)



IM 278/U (Army)

Radiological & Nuclear Prevention - Man Portable Radiological Detection System (MRDS)

Description: The MRDS provides increased Radiological Nuclear (RN) detection, localization, and presumptive and field confirmatory identification of Special Nuclear Material (SNM) capabilities that are networked to provide a near real time situational awareness at the tactical level. MRDS supports Countering Weapons of Mass Destruction Interdiction and Elimination operations, specifically RN Sensitive Site Assessment (SSA) and Sensitive Site Exploitation (SSE).



Legacy System Replacement:

- TSTIRS JCTD equipment Nuclear Disablement Team
- Various COTS Civil Support Team
- Adds New Capabilities to more Army CBRN Teams

Capabilities: Hands Free (HF) and Hand Held (HH) RN sensors. Situational awareness (SA) suite displays sensor data from all sensors at the tactical level. MRDS allows for SNM searching in radio frequency restricted facility.

DEFENSE NUCLEAR WEAPONS SCHOOL

Col George R. Farfour, USAF

Commandant

Michael G. Conner

DNWS Division Chief

