THE DISPATCH

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Program Manager's Corner

The Defense Nuclear Weapons School (DNWS) plays a key role in the overall U.S. nuclear enterprise. The school's education and training mission serves a wide variety of both DoD and non-DoD students and covers a host of nuclear-related subjects. Like DTRIAC, DWNS is located on Kirtland AFB, NM, and has been in existence for decades. This issue devotes a majority of the articles to that operation.

This issue also has an article on a key initiative of DTRIAC's Next Generation STARS: database federation. DTRIAC is moving forward with efforts to federate their STARS database with the Defense Technical Information Center (DTIC) database, which stores information from 10 other DoD information analysis centers.

Database Federation will be the topic for the second quarterly DTRIAC Information Exchange Series that will be held on 12 July 2012, at 1000 and 1100, in the Brittigan Room, on the first floor of the HQ DTRA building, Ft Belvoir, Virginia. If possible, please join us for this joint presentation with DTIC and Google.

Also, feel free to contact me directly if you ever have any questions or comments related to DTRIAC: craig.hess@dtra.mil or (505) 846-2071.

Thanks,
Lt Col Craig Hess
DTRIAC Program Manager

Greetings from DNWS

This is a unique opportunity to highlight the Defense Nuclear Weapons School (DNWS) and broadcast its attributes to the greater CBRN community via The Dispatch. Education and training through in-residence courses and unique requests for our mobile training teams have proven to be the most reliable venue to support Department of Defense (DoD) nuclear enterprise.

DNWS continues to transform and leverage education technology that will enhance the delivery and expand new media for our courses.

Recently, we have conducted some "heavy lifting" to identify and migrate appropriate curriculum from the "brick and mortar" classroom to new, blended learning environments.

Greetings from DNWS *(continued)*

DNWS continues to evolve to meet growing educational needs of our students and staff alike. Through decades of experience and knowledge, and in partnership with our Instructional System Design and Information Technology teams, our instructors are developing ways to evolve our courses to provide an improved "in-residence" look and feel as well as an improved "virtual" classroom experience. It continues to be a daunting task, but we are completely revising our website and Learning Content Management System (LCMS) to be published this fall. This site will incorporate our existing distance learning (DL) courseware as well as showcase our new additions such as virtual training modules (VTM). The VTMs will allow a student to log into their profile and watch an mp4 video of a specific module/topic. We are excited about this revision and hope that you will be, too. One of our primary goals is to be on the forefront of technology to keep students enthralled with the training the DNWS continues to provide to the DoD and other government agencies.

Set a reminder on your personal calendars to visit our new LCMS on 1 October 2012 at https://dnws.abq.dtra.mil and review our course catalogue to register for a virtual course or a course in Albuquerque. Our schoolhouse, based at Kirtland AFB, is rich in history and dates back to the legacy Manhattan Engineering Project. Many of our resident offerings permit you to tour our state-of-the-art, classified museum while other courses provide hands-on training at our unique radiological training sites. Our courses will provide information on the greater nuclear enterprise, develop technical and tactical skills, inform and advise operational commanders of modeling and simulation products, and prepare students to operate in a potential radiological or nuclear environment.

The Defense Nuclear Weapons School

In January 1947, the Manhattan Engineer District was disestablished and the Armed Forces Special Weapons Project (AFSWP) was formed. To provide military training in nuclear weapons' operations, the Nuclear Weapons Technical Training Group was created. Later known as the Special Weapons School, the group was located on the U.S. Army's Sandia Base, near Albuquerque, New Mexico. Over the years, the school and its parent organization have undergone several name and agency changes. In 1967, it became the Nuclear Training Directorate Field Command under the Defense Atomic Support Agency (DASA). The year 1971 brought even more changes: the title was changed to the Nuclear Weapons School, and DASA became the Defense Nuclear Agency (DNA); DNA later transferred the Nuclear Weapons School to the U.S. Air Force, which renamed it the Interservice Nuclear Weapons School; finally, Sandia Base merged with Kirtland AFB.

The school was transferred back to DNA in 1993 and was subsequently named the Defense Nuclear Weapons School (DNWS) in 1997 under the Defense Special Weapons Agency (DSWA), now part of the Defense Threat Reduction Agency (DTRA). Today, DNWS is part of DTRA.

Despite these many organizational and staff changes, the primary mission of the DNWS remained:

" To provide nuclear weapons core competencies and weapons of mass destruction/chemical, biological, radiological, and nuclear response training to DoD; other federal, state, and local agencies; and national laboratories personnel."

To meet this critical mission, the staff and leadership devised the DNWS training objectives to:

"Create, develop, and implement professional training through both traditional and innovative training technologies, helping to ensure that our nation maintains a safe, reliable, and credible nuclear deterrent and a robust incident response capability."

The DNWS is staffed with military, government civilians, and contractor support personnel, each with a primary purpose of bringing the highest quality of education to the community. This is accomplished by the school instructors and administration working in tandem to strike a balance between current and future needs of the U.S. nuclear enterprise in terms of nuclear weapons training requirements.

Defense Nuclear Weapons School (DNWS) *(continued)*

The DNWS offers a variety of courses in several modalities—in-residence courses hosted at the Kirtland AFB DNWS facility, at customer location courses via mobile training teams (MTT), and a selection of timely and critical distance learning courses. DNWS offers 38 courses, including legacy courses such as the Nuclear Weapons Orientation Course, Joint DoD-DOE Nuclear Surety Senior Executive Course, and emergency operations courses. Additionally, new emerging courses dealing with U.S. Nuclear Weapons Policy course and hazard prediction modeling courses are offered.

Training can be tailored to meet specific needs or help units prepare for major exercises or other contingencies. DNWS provides facilities, instructors, subject matter expertise, and administrative support to host training conducted by organizations outside of DTRA, including the U.S. Army Nuclear and Chemical Agency and the Air Force Nuclear Weapons Center. Finally, DNWS provides experts to teach modules for courses taught by other federal entities, such as the Department of State and the Federal Bureau of Investigation (FBI).

Two other unequalled features that enhance the unique training capabilities and opportunities at the DNWS are the radiological training sites and the Nuclear Weapon Instructional Museum (NWIM).

DNWS operates DoD's only radiological training sites—thorium-seeded fields that are an integral part of field training for radiological emergency team members. A variety of radiological accident exercises are conducted at these sites, which provides a realistic environment where students can apply their classroom knowledge. Students receive hands-on instruction and experience in the use of radioactivity monitoring instruments, the collection of airborne radioactivity samples, and the proper use of personal protective equipment. Procedures for cleaning, inspecting, and donning respirator protection equipment as well as setup and operation of a contamination control station can be practiced. Students decide what processes and equipment are needed for this intricate scenario, integrating different modules of classroom instruction.

The school also maintains and operates DoD's only NWIM, containing classified national security information. 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 all stockpiled U.S. nuclear weapons, their associated components and delivery systems, and associated training aids. Tours are provided in conjunction with some courses conducted at the DNWS and vary in length from 2 to 4 hours, depending on the audience. Arrangements may be made for groups and visitors to tour the museum. Further information about NWIM unclassified and classified areas is in the "Nuclear Weapon Instructional Museum" article on page 6.

The DNWS is the DoD's premier site for training on nuclear weapons core competencies and weapons of mass destruction/CBRN response training. It has enjoyed a long and varied history of providing critical and timely training to federal, state and local agencies, including DoD, DOE, FBI, and national laboratories personnel. DNWS is continuously evolving to maintain the high quality of training and timeliness to meet current operations tempos of the various combatant commands. The school's course catalog and registration information is available online at: http://www.dtra.mil/oe/cs/programs/Training/DNWS/index.cfm.

Additional information regarding the school can be obtained by contacting the registrar at (505) 846-5666 or via email dnws@dtra.mil. Individuals on a .mil or .gov domain may visit DNWS online at https://dnws.abq.dtra.mil.

Instructor Opportunities at "The Schoolhouse"

When an Air Force Emergency Manager wants to broaden their knowledge and experience beyond everyday flight-level responsibilities, the first place they may turn to is the Enlisted Quarterly Assignments Listing (EQUAL) Plus, which advertises special duty assignments. Special duty assignments for our career field often include opportunities at Fort Leonard Wood, Missouri, as a technical school instructor or Lackland AFB, Texas, as a Warrior Week instructor.

Occasionally, though, you may get lucky and see an opening at Kirtland AFB as an instructor at the Defense Nuclear Weapons School (DNWS). Your first thought maybe, *"Hey, isn't that where the Nuclear Emergency Team Operations Course is taught?"* In addition to NETOPS, DNWS offers courses ranging from basic nuclear weapons orientation to advanced radiological response, effective downwind hazard modeling, and nuclear policy courses.

There are four Air Force Specialty Code (AFSC) 3E9X1 positions in the DNWS Nuclear Response Department: two support the Incident Command and Control (IC2) Section, and the other two support the Nuclear Accident/Incident Response (NAIR) Section. These positions provide training to command- and staff-level personnel responsible for responding to a nuclear weapons incident. The emergency managers assigned to the IC2 Section are tasked with managing IC2 courses that are designed for senior DoD personnel involved with the decision-making process during a nuclear weapons incident or accident. The weapons managers assigned to the NAIR Section manage technician-level courses that focus on how DoD responds to accidents involving nuclear weapons.

One of the many benefits of becoming a DNWS instructor is the unique opportunity to expand and hone nuclear and radiological knowledge and skills. You will also gain the unrivaled experience that comes from working in a joint service environment. Personnel assigned to DNWS work alongside soldiers, sailors, marines, airmen, and civilians from various specialties, including chemical, biological, radioactive, and nuclear specialists; explosive ordnance disposal specialists; health physics specialists; or weapons maintainers. This environment supports a broadened scope of how the Air Force, and DoD as a whole, operates in the nuclear world.

Many of DNWS's 20 in-residence courses, 10 distance learning courses, and several mobile training classes are open to Air Force Emergency Managers. DNWS also offers unique individual certification programs that allow students to complete a series of online and in-resident courses to enhance their nuclear and radiological competencies.
One aspect that sets DNWS apart from other training institutions is the realistic radiological field training sites—DoD's only thorium-seeded radiological training sites. These sites provide a training experience that allows students to utilize equipment and refine best practices in an actual contamination environment. Furthermore, the American Council on Education has recommended college credits for nine of the courses taught by DNWS staff. Some of the more popular courses offered by the DNWS that may be of interest to emergency managers include:

Online:
- ►Introduction to Combating WMD in the 21st Century (WMD-21)
- ►Nuclear Emergency Team Operations Primer (Pre-requisite for NETOPS)
- ►Applied Radiological Response Techniques Level 1 (ARRT-1)

In-Residence:
- ►Introduction to Radiological and Nuclear Incident Response (IRNIR)
- ►Nuclear Emergency Team Operations (NETOPS)
- ►Nuclear Weapons Incident Response Training, Basic (NWIRT)
- ►Applied Radiological Response Techniques Level 2 (ARRT-2)
- ►Hazard Prediction and Assessment Capability (HPAC)

Mobile Training:
- ► *Nuclear Weapons Incident Response Training, Basic (NWIRT)*

Instructor Opportunities at "The Schoolhouse" *(continiued)*

DoD and JNACC personnel participating in the ice cleanup after Broken Arrow incident at Thule, Greenland, 1968. (DTRA Data History Series; 1947-1997)

In today's ever-changing nuclear/radiological world, there are many uncertainties with nuclear and radiological incidents that range from a traditional broken arrow like the 1968 Thule Greenland incident, to the devastating 2011 Fukushima Dai-ichi nuclear power plant meltdown. Air Force Emergency Managers strive to prevent the unthinkable, prepare for the worst, respond to any hazard, and recover from any situation.

Satellite imagery of the Fukushima Daiichi Nuclear Power Plant as of 14 March 2011. (Image: Globalsecurity.org)

The Defense Nuclear Weapons School is committed to provide the Air Force, DoD, and the United States with highly trained professionals who stand ready to manage these situations.

Nuclear Weapon Incident Response Training, Basic Course

The Defense Nuclear Weapons School (DNWS) is proud to announce the development and delivery of its newest course to assist elements of the Department of Defense (DoD), Department of Homeland Security, Department of Justice, and the Department of Energy (DOE) in preparing for and responding to a nuclear weapons incident. After a year in the making, the Nuclear Weapons Incident Response Training, Basic Course (NWIRT, Basic) is here!

Many would question why a new course is necessary. To answer that question, we would need to look at the ever-evolving world in which we live and the fluid nature of guidance and policies to meet the new threats and operational environments.

DNWS has been at the forefront in providing timely and effective training to the community and helping commanders and staff prepare for a nuclear incident. One does not have to look very far back in history to understand that an incident could happen at any time or place. In the history of nuclear weapons enterprise there have been several accidents and incidents involving nuclear systems. The predecessor of DNWS, the Interservice Nuclear Weapons School (INWS), was instrumental in preparing teams to respond.

The earlier courses offered by the INWS included the Flag Officer Nuclear Accident Course (FONAC) and the Senior Officer Nuclear Accident Course (SONAC) courses; these were very much focused on the DoD, DOE, and Federal Emergency Management Agency (FEMA) response assets. With the changes in doctrine and governmental agencies incorporating other federal and nongovernmental entities, it was clear these courses needed to change. Newer courses, such as the Radiological Accident Command, Control and Coordination and the Nuclear-Radiological Incident Management (NRIM) course, expanded the outreach to include the FBI and the state and city governments.

With the implementation of new guidance; new National Security Presidential Directives; and the establishment of the Department of Homeland Security, United States Northern Command, and United States Global Strike Command, the doctrine landscape changed. A new era of training personnel to respond to a nuclear weapon incident was ushered in along with the conception, evolution, and development of the NIWRT course.

The NWIRT course combined the former Commander and Staff Nuclear Accident Response (mobile training team) and the NRIM courses. It also enabled the school to add the whole-government approach to a nuclear weapons incident as directed in the National Security Presidential Directive (NSPD) 28, United States Nuclear Weapons Command and Control, Safety, and Security. This unclassified, 3-day course is mandatory for Initial Response Force and Response Task Force commanders and staff. Interagency instructors provide students with a better understanding of the changing paradigm in a Unified Nuclear Weapons Incident Response.

Nuclear Weapon Incident Response Training, Basic Course *(continued)*

The course reviews:

- DoD personnel's roles and responsibilities during a nuclear weapon incident as mandated by national policy
- Response by other federal departments or agencies, including DHS, FBI, and DOE
- Legal and public affairs issues specific to a nuclear weapon incident

NWIRT course objectives are:

- Provide an overview of the current DoD nuclear weapon enterprise and potential hazards should an incident occur.
- Review national policy and structure for nuclear weapon incident response, including:
  - Applicable Presidential directives
  - The national response framework, roles, and responsibilities of DoD, other Federal departments and agencies; and state, local, and tribal jurisdictions
  - DoD policy and guidance
  - Applicable unified and major service command plans
- Provide an overview of DoD and other Federal agencies' special response teams and resources that could be requested to support following a nuclear weapon incident.
- Discuss state, local, and tribal nuclear/radiological incident response capabilities
- Recognize potential hazards associated with an nuclear weapon incident
- Identify legal issues associated with a nuclear weapon incident
- Practice media coverage and communication skills used during media interviews

NWIRT may be taught in-residence or by mobile training team (MTT). It is presented in a balanced mix of lectures provided by service and agency subject matter experts and is supported by video presentation, case studies of previous incidents, and practical hands-on exercises.

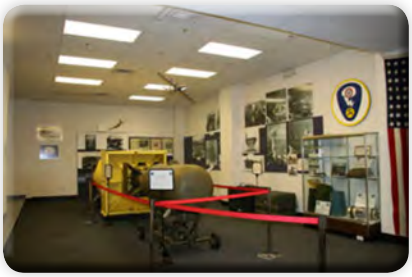
For additional information on this new course please contact the DNWS Nuclear Response Department at DSN: 243-0209 or commercial: 505-853-0209.

Nuclear Weapons Instructional Museum

The Defense Nuclear Weapons School (DNWS), part of the Defense Threat Reduction Agency (DTRA), is located on Kirtland Air Force Base, New Mexico. The school manages and operates the only classified Nuclear Weapons Instructional Museum (NWIM), previously known as the Weapons Display Area (WDA), in the Department of Defense. NWIM is an irreplaceable repository that traces the history and development of the U.S. nuclear weapons stockpile from its inception to the present. It contains a complete collection of all stockpiled U.S. nuclear weapons, their associated components and delivery systems, and related training aids. The NWIM is endorsed by the American Association of Museums and has been placed into the National Registry of Museums.

Foreign Missile Hallway

The current NWIM curator, Mr. Mark Kalina, is responsible for conducting tours, preserving current displays, and acquiring artifacts of unique historic significance for the NWIM. Additionally, there are 29 projects currently being refurbished for future displays.



The NWIM serves as an important teaching aid, providing tours in conjunction with some courses conducted at the DNWS. Tours vary in length from 2 to 4 hours, depending on the nature of the audience. The NWIM display affords students and other visitors a rare opportunity to view exhibits and to discuss stockpile issues with experienced instructors.

Nuclear Weapons Instructional Museum *(continued)*

Double stack thermonuclear weapons with associated components

As part of its prominent training role, the NWIM provides DoD personnel, the DOE National Laboratories, and the nuclear community as a whole with an opportunity to study design features associated with each weapon. In fiscal year (FY) 2010, the museum hosted 3,461 visitors; another 2,935 people visited NWIM in FY 2011. For FY 2012 (1 October 2011 through 30 April 2012), an average of 314 visitors (2,197 total), tour NWIM each month.

There are two major areas of NWIM:

(1) An unclassified area where visitors may view a number of different U.S nuclear weapons casings, a display of 1/10th-scale foreign missile delivery systems, a 1/10th-scale U.S. missile delivery systems display, and a rare collection of some U.S nuclear weapons that never made full production before cancellation.

Mr. Leon Smith.

Additionally, a special area was assembled and dedicated to Mr. Leon Smith. Mr. Smith served as a weaponeer in the 509th Composite Group, which was formed to carry out the atomic missions against Hiroshima and Nagasaki, Japan in WWII.

Dedicated Mr. Leon Smith Room.

(2) A classified area displaying over 78 detailed nuclear weapon models, several delivery systems, and over a 1,000 different nuclear weapons components.

SMII Missile with W81 Warhead

Arrangements can be made for special group tours of the NWIM classified area. Tours are available for anyone who meets security clearance requirements, has a need-to-know, and submits the required paperwork in accordance with DNWS policy. A DoD "Secret" clearance (with Restricted Data [RD] or Critical Nuclear Weapons Design Information [CNWDI] access) or a DOE "Q" clearance with Sigma's 1-5 is required.

Tours are available in the unclassified area for anyone that is a U.S citizen. To solicit an unclassified area tour or NWIM classified tour, a written request must be received a minimum of 15 working days before the scheduled tour date.

Individuals on a .mil or .gov domain may access more information about DTRA/DNWS (including a visit request form and a virtual tour of the unclassified area) at https://dnws.abq.dtra.mil.

Requests may be submitted by mail or fax to:

DTRA/DNWS
Registrar Office
Attn: NWIM Tours/Unclassified Tours
1680 Texas St. SE
Kirtland AFB NM 87117-5669

Comm: 853-7809
DSN: 246-9168
Fax: 505-846-9168

DTRIAC Moves Forward with Database Federation

DTRIAC's Scientific and Technical information Archival and Retrieval System (STARS) operates to support a broad combating weapons of mass destruction (CWMD) community of interest (COI) and is one of many databases and resources available to that COI. DTRA relies on DTRIAC to provide an information advantage by identifying and delivering information of value, regardless of where the data resides.

Federating data sources—allowing interoperability and information sharing between separate systems—provides an affordable and effective mechanism to supply a single portal to information of relevance to the larger CWMD COI. For the past 18 months, DTRIAC has actively engaged with DoD and DOE partners to federate STARS with organizations external to DTRA.

A brief survey of the CWMD community revealed a significant number of organizations producing and consuming science and technology information (STI), supporting research, development, and expertise against the threat of WMD. DTRIAC, the Defense Technical Information Center (DTIC), and Department of Energy's (DOE) Office of Scientific and Technical Information (OSTI) form the foundation for storing and disseminating CWMD data to the broader COI. These organizations, while specialized, are similarly chartered by their respective sponsors and share considerable overlap in mission, customers, and content type. Currently, program managers, researchers, policy makers, and operators must conduct multiple, independent searches across DoD and the other Federal agencies to perform exhaustive data reviews.

Federations using tailored, open architectures; secure information integration; and data sharing enterprises are designed to bring disparate organizations and data into a single framework. Organizations retain their full autonomy while providing interoperability across organizational lines. Participating organizations form a collective set of agree-upon architectures to develop guidance and standards; thus, balancing organizational autonomy with enterprise and COI needs. The value of enterprise-level cooperation through federation is recognized to improve data sharing, reduce costs, and improve efficiency. It is also consistent with the Open Government Initiative outlined in the January 2009 Presidential Memorandum calling for increased transparency, participation, and collaboration.

DTRIAC is working with DTIC as a first step in federating its resources with the larger set of IACs to include the Chemical, Biological, Radiological, and Nuclear IAC or CBRNIAC. Initially, efforts will focus on federating DTRIAC and DTIC at the classified level and progress to include unclassified systems. Future efforts will look to collaborate with DOE OSTI and their extensive collection of STI.

Database federation that adheres to complex security rules does not come without challenges, but they can be overcome. Among the big challenges are differing metadata standards, merging different search engine results, and user and data security.

Differing Metadata Standards. To benefit from the shared services that the Defense Information Systems Agency (DISA) has developed for federated search and data discovery, participating systems must adhere to the DoD Discovery Metadata Specification[1] (DDMS). This is a robust specification loosely based on the Dublin Core vocabulary with over 10 years of community-wide input. The new STARS system has completed the mapping from the library oriented MARC (Machine-Readable Cataloging) to the net-centric information sharing oriented DDMS. To federate with a system that does not adhere to DDMS, a series of technical and subject matter expert sessions must occur to develop the correct extract, transform, and load (ETL) mapping of catalog fields. This is a standard process required for two systems to interact and is not by any means technically difficult, just time consuming, painstaking, and sometimes emotional as both parties must compromise to reach agreement in field mappings. The challenge is to create an accurate mapping without getting pulled into 2 – 4 years of metadata working group meetings.

DTRIAC Moves Forward with Database Federation *(continued)*

Merging Different Search Engine Results. This process is referred to as "aggregating." Most popular search engines like Google Search Appliance and Apache's Solr Lucene can accept slight modifications to adhere to the Open Search[2] specification, developed by Amazon in 2005.

This allows a standards-based interaction between differing search engines for performing search requests and syndicating search results.

However, the merging of search results from differing engines to include removing duplicates is still very technically challenging due to differing scoring algorithms.

Solr Lucene has four basic factors for scoring: term frequency, inverse document frequency, coordination factors, and field length that can be extended or overwritten. Google uses hundreds of factors and prides itself on its high search result relevancy because of these hundreds of factors.

Search aggregators do exist but they must create their own algorithms that do a best guess at comparing scoring factors. Search results from various engines can be shown in separate windows but that is less than ideal for the end user as the user normally prefers to see all results in a single list.

User and Data Security. The DDMS security entities follow the Intelligence Community Information Security Markings (IC-ISM)specification, including title, abstract, metadata, overall document, and individual portions. It also supports Distribution Statement A–F and X, and caveats such as RD, ITAR, or NATO.

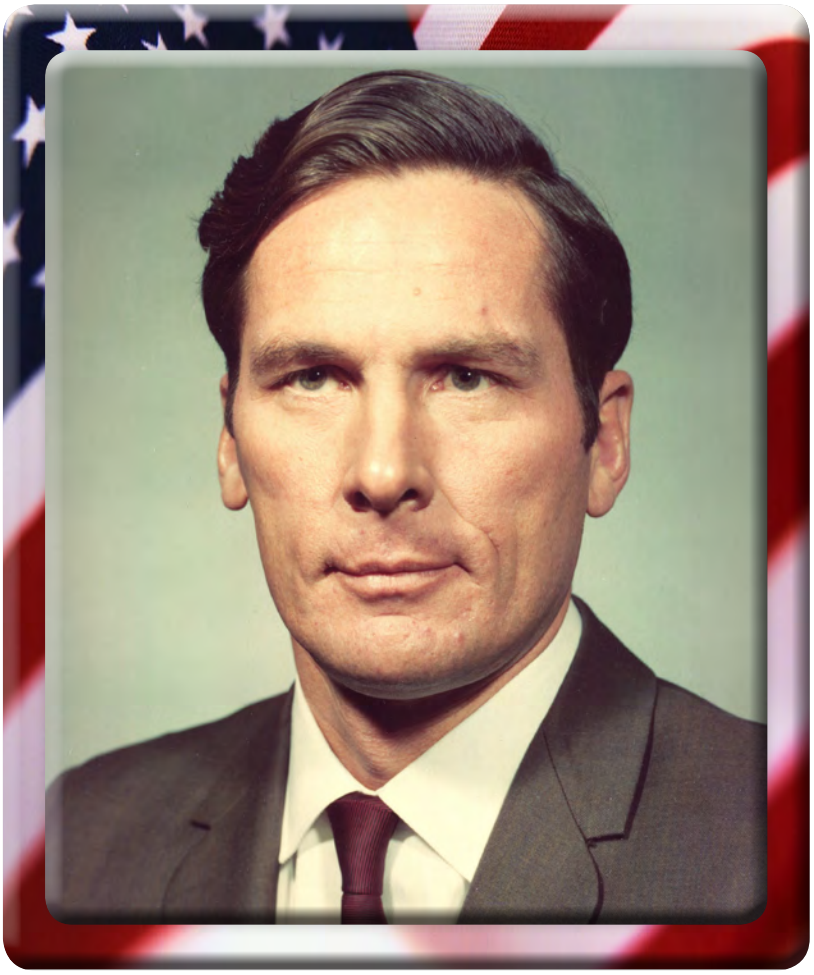
To safely and responsibly share information, the classification, distribution, and caveats on each marked element must be verified against an authoritative source for user security to control what each user can access. Many search applications have user security as a custom addition written specifically for their users and data sets.

In many cases, an application interface or shared service to allow another application to utilize the user security framework has not been created. In this case, detailed requirements discussions, interface design and engineering must take place to correctly protect data security in a federated search.

Despite the challenges that federation presents, such an undertaking is needed now more than ever. Ever-decreasing budgets and the push for improved data sharing and collaboration at the federal level are among the primary drivers. A primary goal of DTRIAC is to enhance our ability to improve the exchange of STI through the secure, state-of-the-art delivery of research results and federation with partner organizations is key.

1. Department of Defense Discovery Metadata Specification (DDMS) Home Page, accessed 4 June 2012, http://metadata.ces.mil/mdr/irs/DDMS/
2. OpenSearch.org, accessed 4 June 2012, http://www.opensearch.org/Specifications/OpenSearch/1.1
3. Main Schema IC-ISM.xsd, accessed 4 June 2012, http://www.dni.gov/ICEA/ism/ismxmlv7/SchemaGuide/SchemaGuide.html

Tribute - Dr. John Allen Northrop



DTRA has lost a pioneer; Dr. John Allen Northrop, Deputy Director of Science and Technology of DASA, died 15 April 2012 at the age of 85.

Dr. Northrop was born 5 June 1926 in Poughkeepsie, New York. He joined the US Navy, honorably serving in the Pacific Theatre during World War II. He received an American Theatre and Victory Medal. Dr. Northrop graduated from Phillips Exeter Academy and earned his doctorate in Nuclear Physics from Yale University.

Dr. Northrop came to DASA from Los Alamos National Laboratory where he was a deputy for testing. He was confirmed the acting Deputy Director, Scientific, on 8 June 1969, succeeding Dr. Nils Wikner. The office was re-designated Deputy Director, Science and Technology.

As the Deputy Director, Dr. Northrop supervised the formulation and execution of the Nuclear Weapons Effects Research and the Nuclear Weapons Effects Test programs. Under Dr. Northrop, DASA modeled and developed methods to use ground shock to collapse the line-of-sight (LOS) pipes, a technique that prevented debris damage to sample arrays. During his tenure, DASA would also become DNA.

Dr. Northrop left DNA in 1972 and worked as the Chief Scientific Adviser for General Alexander Haig at the Supreme Headquarters Allied Powers of Europe (SHAPE). Five years later, he joined Systems, Science, and Software as Vice President. The company changed its name to S Cubed Corporation and was acquired by Maxwell Laboratories (now Maxwell Technologies, Inc.). As a contractor, Dr. Northrop continued to support DNA and its follow-on agencies.

Notably, Dr. Northrop was the editor of the *Handbook of Nuclear Weapons Effects* while at Maxwell Technologies. The handbook was written to address the length and classification limitations of the eighth edition of DSWA's *Effects Manual One*. "Dr. John Northrop was responsible for many publications, but the preparation of a detailed technical nuclear weapons summary called the Handbook of Nuclear Weapons Effects was a classic example of his attention to detail," Dr. Don Linger stated.

"The inclusion of many characteristics and details not found in any similar publication is a tribute to the insight and the technological excellence which Dr. Northrop brought to all of his endeavors, " Dr. Linger continued, "His… understanding of important complex scientific issues was classic."

Dr. Northrop worked in a variety of positions associated with the Department of Defense and the Department of Energy, including work at Los Alamos National Laboratory. He retired from Maxwell Technologies in February 2000. He retired to Naples, Florida, and passed away 12 years later.

He will be missed by his loving wife of 10 years, Mary Jo Sanford-Northrop, as well as his sons, stepchildren, grandchildren, and siblings. Dr. Northrop was preceded in death by his first wife, Betty Lou (Jaeger) Northrop; and his second wife, Carole Ann (Bowen) Northrop.

A memorial service was held on 11 May 2012 prior to interment at the Columbia Gardens in Arlington, Virginia. Contributions may be sent to Yale University, Department of Physics, in his memory.

Ask the IAC

How Do I Register For A Course At DNWS?

Information on DNWS courses is available via two different avenues. The DNWS site (https://dnws.abq.dtra.mil/) is restricted to .mil or .gov domains. From any other domain, you can find basic information about the DNWS at the DTRA Homepage (http://www.dtra.mil/SpecialFocus/WMDEdu.aspx). The DNWS Course Catalog may be found on either site.

The majority of quotas for DNWS courses are based on organizational requests; however, many classes have open seats available. These nonallocated quotas are open to any authorized student on a first-come; first-served basis. Each organization or armed service has a designated quota manager as listed in the DNWS Course Catalog (page 17 of the 2012 catalog). To reserve your slot for any DNWS course, please contact the appropriate quota manager.

Occasionally, visitors from a .mil or .gov domain experience site access issues. If you encounter issues, you may need to clear your SSL Slate. To do this, open *Internet Explorer*► *Tools*► *Options*► *Content*. Select the *Clear SSL Slate* in the middle, left side of the window. Close Internet Explorer then reopen and attempt the site again. This tends to resolve most issues.

The DNWS Registrar's Office standardized and automated the registration process for each class. Because of this, every potential student must complete a two-step process to register for any course. If you are a returning student, only the second step is required.

1. Access the DNWS site (https://dnws.abq.dtra.mil) and select the Student Area tab. Please follow the on-screen instructions and complete the Site Access Form and click on Submit. If the course is classified, print the registration form and follow the instructions below.
2. Upon receipt of your DNWS LMS User ID and password, return to the DNWS site and again Student Area tab. Enter your User ID and password in the spaces provided and click the Log In tab. You will be taken to your Student Summary where you can review your transcript, update your profile, or review/sign-up for new classes.

If you do not have access to a .mil or a .gov computer domain, contact your organizational quota manager. After the quota manager has confirmed availability for a seat in the desired course, complete the DNWS Course Registration Form (page 88 of the 2012 catalog) Once complete, the form can be sent to the DNWS Registrar's Office via email, fax, or regular mail.

Note that if the course for which you are registering is classified, the registration form must be printed and endorsed by the organizational security office regardless of domain access. Once the clearance information has been coordinated, the form should be sent to the DNWS Registrar's Office via email, fax, or mail. The DNWS Registrar's Office must receive security clearance information no more than 15 duty days before the class start date.

Mail: Defense Nuclear Weapons School
Attn: Registrar's Office
1680 Texas St. SE
Kirtland AFB, NM 87117-5669

Email: DNWS@dtra.mil
Commercial Fax: (505) 846-9168
DSN Fax:246-9168

DTRIAC Collection Additions

DTRA Technical Reports

DTRA-TR-10-45, Impact of Hazardous Chemicals on Macrophages
DTRA-TR-10-46, Thermal History Using Microparticle Trap Luminescence
DTRA-TR-10-48, Combined Injury Modeling: Radiation and Burn Workshop Report
DTRA-TR-10-68, Discovery and Validation for Proteomic Biomarkers for Radiation Exposure
DTRA-IR-11-5, Maritime Radiological Standoff Detection and Identification Singapore Demonstration Final Report; FY 2010 Measurement Campaign Technical Data Analysis
DTRA-TR-11-7, Methodology Report for Chlorine Model (CTModel)
DTRA-TR-11-21, Methodology Report for Phosgene Model (CGModel)
DTRA-TR-11-22, Methodology Report for H2SModel
DTRA-TR-12-5, IR/Optical Emissions from Hyperthermal Collisions of Atomic Oxygen with CWAs and Simulants
DTRA-TR-12-6, 2011 Technology Readiness Evaluation of Defense Threat Reduction Agency Basic Research Grants FY07-FY110, October 30, 2011
DTRA-TR-12-7, Parametric Study of Rapid Response Unmanned Aircraft Systems for Atmospheric Sampling of Critical Events
DTRA-TR-12-14, Methodology Report for ACModel
DTRA-TR-12-15, Methodology Report for CKModel
DTRA-TR-12-16, Hematopoiesis Primer Modeling Combined Injury

DTRA Small Business Innovation Research

Enhanced Beta Batteries: A Long Power Source for Sensors Monitoring WMD
Chameleon Chemical Warfare Agent Sensor Development

This Quarter in History

June 14, 1947
William Brazel notices some strange debris near the homestead where he worked in Roswell, New Mexico. The Air Force recovered the debris, claiming it was a weather balloon; the military was accused of covering up information involving extraterrestrials. The debris was more likely an experimental high-altitude balloon from Project Mogul used to detect remote nuclear detonations. Over the years, scientists realized that high-altitude sensing equipment was not necessary and ground-based stations replaced them.

April 30, 1962
President John F. Kennedy signs a memorandum stating his intention to determine the feasibility, cost, and other factors involved in creating a larger Panama Canal using nuclear excavation methods developed in the PLOWSHARE Program. The new canal was obviously never realized.

April 26, 1986
During a mechanical test prior to routine shutdown, Chernobyl reactor 4 melts down, resulting in what is considered the worst nuclear accident in history. The accident was attributed to a flawed reactor design, operator error, and a general disregard for normal safety functions.