

THE DISPATCH

VOLUME 5 ISSUE 1

DEFENSE THREAT REDUCTION INFORMATION ANALYSIS CENTER

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INTRODUCING THE NEW DTRIAC SEAL



The new DTRIAC seal combines several important elements to show its association with DTRA as well as signify its purpose through the use of multiple supporting icons. The DTRA shield is present and dominates the middle of the seal to show DTRIAC's affiliation with DTRA. The atom symbol in the background shows DTRIAC's roots in atomic and other defensive testing. Next, the film reel, digital globe (i.e. it's a digital world) (the binary code spells DTRIAC), books and photos surround the DTRA shield to show the many different types of information and data the IAC supports/archives. Finally the seal features the Latin phrase "movens in futura dum conservans praeteritum tempus" which means, "moving into the future while preserving the past".

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FROM THE CHIEF SCIENTIST

I would like to take this opportunity to provide an introduction to this issue of the DTRIAC Dispatch. DTRIAC is operating under a new contract with a new contractor bringing new capabilities. We have developed a way forward for this new approach.

Perform

We plan to continue performing our core missions of maintaining and improving the information base; providing Scientific and Technology Information (STI) Program Support, maintaining and improving our Information Technology (IT) systems and providing customer service and outreach to the Combating Weapons of Mass Destruction (CWMD) Community.

Extend

We will extend beyond our historical boundaries to support DTRA/SCC-WMD Knowledge Management and increase our visibility and use throughout the CWMD Community.

Goal

Our goal is to be "One Stop Shop" for CWMD STI Information and Analysis.

Please contact us directly if you ever have any questions or comments related to the DTRIAC at DTRA-DTRIAC@mail.mil.

Thanks,
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or visit us at:

<http://www.dtra.mil/Research/DTRIAC.aspx>



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Ask the IAC

Q. WHAT IS DTRIAC'S MISSION?

A: The DTRIAC was chartered by the Department of Defense (DoD) in order to acquire, digest, analyze, evaluate, synthesize, store, publish, and disseminate scientific technical information pertaining to all of DTRA's mission areas in order to:

- (1) Provide access to its collection of documents, films, photographs and data to present and future researchers and program managers.
- (2) Assist DoD components/offices, other government agencies, and government contractors, as authorized, in the analysis and dissemination of information existing within the DTRIAC collection.
- (3) To promote the exchange of technical information within the DTRIAC subject areas throughout DoD's research, development and acquisition communities.

What's an IAC?

IAC stands for **Information Analysis Center**, an organization chartered by the DoD to collect, process, analyze and disseminate scientific and technical information (STI) in specific technical areas. The governing document for the centers' operation is **DoD Manual 3200.14 Volume 2 "Principles and Operational Parameters of the DoD Scientific and Technical Information Program (STIP): Information Analysis Centers (IACs)"** January 5, 2015. Key characteristics of the IACs include:

- ▶ **SCOPE:** IACs are distinguished from technical information centers or libraries. IACs use technically expert staff to assess and provide relevant technical information to meet a specific user need. Although an IAC normally maintains document or database collections, a significant differentiating aspect of an IAC is the use of scientists and engineers in an IAC-defined field or subject area to perform many of the IAC functions.
- ▶ **CORE ACTIVITIES:** Scientists, engineers and information specialists provide focused expert assistance and unbiased STI. They establish and maintain comprehensive knowledge bases, they identify sources and assess the relevance of data held by others, they coordinate closely with their DoD technical and user communities and they collect, maintain and develop analytical tools and techniques including databases, models and simulations.
- ▶ **ADDITIONAL OR SPECIAL ACTIVITIES OR TASKS:** IACs are established with the explicit intent to perform additional tasks within their areas of expertise and technical focus above and beyond their basic or core activities. These efforts that are defined by a requiring organization and are consistent with the area of competence are funded by the requiring activity.

FROM THE DTRIAC PROGRAM MANAGER

As the new DTRIAC Program Manager, I am pleased to present this issue of the DTRIAC Dispatch. Having been with DTRA for a number of years, I know the importance of DTRIAC in support to the Threat Reduction Community. I am looking forward to working with you in understanding your requirements and providing the information products you need to expertly execute your mission. This publication is just one example of the products and services available to you through the DTRIAC.

This issue of the DTRIAC Dispatch highlights the new DTRIAC team. Quanterion Solutions Incorporated was selected during a competitive procurement to provide DTRIAC core capabilities for the next five years. They bring a robust team with broad ranging subject matter expertise and skills.

DTRIAC will continue its focus on collecting data and making it accessible to the threat reduction community, respond to technical inquiries and provide STI Program support. With the vision and direction provided by the Chief Scientist, I feel confident that DTRIAC will be your go to place for information and analysis.

Please contact us directly if you ever have any questions or comments related to the DTRIAC at **DTRA-DTRIAC@mail.mil**.

Thanks,
Linda Qassim
DTRIAC Program Manager
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THE STI SUPPORT CENTER

The DTRIAC has long provided threat reduction information to the DTRA. The Agency recognized the need for on-site research and editing support and created the STI Support Center. The STI Support Center is located in the DTRC to conduct research, obtain reports, assist with program management and provide editorial assistance.

We Have Data and Information

DTRIAC Collection

- ▶ Includes DTRA Technical Library
- ▶ Over 300,000 cataloged documents indexed by Author, Title and Abstract
- ▶ Over 20,000 films and videos
- ▶ Over 2,000,000 still photographs
- ▶ Other Nuclear and WMD effects data
- ▶ Over 3,000,000 records



STARS

The Scientific and Technical Information Archival and Retrieval System (STARS) is the Defense Threat Reduction Agency's (DTRA) strategic data preservation and knowledge management information system and one element of DTRA's knowledge preservation initiative aimed at collecting and preserving past, present, and future data and knowledge generated across all DTRA mission areas. STARS preserves data (reports/ documents, photographs, film, waveforms, tables, and diagrams) and the knowledge of the many experts in a single, readily accessible database, effectively archiving these diverse data forms while providing users with data access via search engines and online data analysis tools.

There are two STARS systems; the unclassified system (STARS-U) is accessible via the NIPRNet/Internet while the classified system (STARS-C) is accessible via the SIPRNet.

Requesting a STARS Account

STARS-U can be accessed at <https://stars-legacy.dtra.mil> and STARS-C at <https://stars.dtra.smil.mil>. In order to access STARS, you must first have an account from DTRIAC. A person requesting a STARS account must have an active security clearance and a valid need to know. To request a STARS account, contact DTRIAC STARS Customer Support via telephone at (505) 853-0854 or e-mail at DTRA-DTRIAC@mail.mil.

Recent DTRIAC Collection Additions

DTRA-TR-14-46 Multimillion Atom Simulations of Nanoenergetic Materials

The objective is to perform first-principles based and experimentally validated, atomistic simulations of reactive nanosystems involving multimillion atoms to achieve atomistic-level understanding and predictive power for designing advanced and insensitive nanostructured energetic materials. The study focused on reactive and mechanical behavior of Al nanoparticles as well as thermo-mechanical properties and atomistic mechanisms of detonation of nanostructured materials consisting of Al nanoparticles encapsulated in nanophase RDX and oxidizers. **(This report is Distribution A)**

DTRA-TR-14-047 Rational Design and Development of Reactive Multifunctional Micellar Composite Nanoparticles for Destruction of Bio-agents

Due to increasing demand of efficient destruction, multi-functional composites have been recently investigated for destruction of bio-agents. Their materials have produced efficient destruction and neutralization of targeted biomolecules (chemical warfare agents, bio-agents, and other toxics) by combined effects of aero-oxidation, electro-oxidation, photo-catalytic oxidation and absorption. Four types of multifunction composites (Au-metal oxide core-shell nanoparticles, multifunction porous metal oxide-silica composites, porous silicon (PSi)-titania and PSi-silver heterojunctions) have been successfully synthesized to meet with the large scale synthesis and efficient co-encapsulation of one or more agents. **(This report is Distribution A)**

DTRA-TR-14-74 On the Radiation Effect in Nanostructures Related to Nanomagnetism and Spintronics

In this project we not only have advanced the understanding on radiation effects on spin transport related properties in novel magnetic materials, but also evaluated the next generation spin-transfer torque random access memory (STT-RAM) technology for "Rad Hard" that is essential to DTRA's mission. The overall goal is to investigate effects of displacement and ionization damage on the magnetic and structural properties of magnetic thin films and nanostructures, and to understand factors that control the radiation hardness of high-performance magnetic thin films and multilayers in nanoscale spin-based devices. To achieve these goals, a holistic approach has been taken to characterize the properties and microstructure of the thin films and spintronic devices and perform modeling and simulation to help understanding the underlying physics of experimental phenomena by an interdisciplinary team with expertise on materials science, device physics, and radiation physics. We have systematically investigated the displacement and ionization damage to the perpendicular magnetic tunnel junctions (p-MTJ), and also studied the effect of irradiation on novel magnetic materials. **(This report is Distribution A)**

DTRA-TR-14-73 Powder Processing of Amorphous Tungsten-bearing Alloys and Composites

The goal of this project was to develop a W-based amorphous-crystalline composite for penetrator applications. The composite was to have high strength, toughness, abrasion resistance, tailorable density, and a propensity of shear localization. Our year 3 tasks, as laid out in the project proposal, were to: 1) Consolidate amorphous or nanocrystalline powder blends, 2) Mechanical testing, 3) Ballistic testing. **(This report is Distribution A)**

Other Additions to the Collection

DTRA-TR-14-66 Detector Sensor Repackage (DSR) (This report is Distribution B.)

DTRA-TR-14-67 Modular Radiation Detector (MRD) (This report is Distribution B.)

DTRA-TR-15-29 NucSafe Task Order 3 (This report is Distribution B.)

DTRA-TR-15-30 Low Profile Wearable Sensor with Leave-Behind Capability Final Report (This report is Distribution B.)

DTRA-TR-14-75 Tri-Mode Single Crystal Detection System (This report is Distribution E.)

Quanterion Solutions Inc.

Quanterion is excited to become the prime contractor for the DTRIAC, continuing the outstanding leadership of the Center under Dea Hunt and Anthony Martinez. Staff at the company has been in the IAC business for almost 30 years as Quanterion and other companies as Directors, as well as Deputy and Technical Directors. We are currently also the prime contractor for the Cyber Security and Information Systems IAC (CSIAC) whose technologies include cyber security, software engineering, modeling & simulation and

knowledge management/information sharing. We are also a major subcontractor for the Defense Systems IAC (DSIAC) for the technologies of reliability, maintainability, quality, supportability and interoperability (RMQSI) (formerly the Reliability Information Analysis Center (RIAC)) and advanced materials (formerly the Advanced Materials, Manufacturing and Testing IAC (AMMTIAC)).

We view the DTRIAC as a tremendous resource

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in the IAC family of centers with tremendous skills and data/information resources uniquely appropriate to contribute to meeting the many of the most challenging issues in the years ahead. To assure that the Center makes these contributions we've carefully selected a variety of subcontractors to work with us in addressing the CWMD and CBRNE challenges in support of DTRA, other government organizations and industry.