



Introduction to Small Arms & Accessories Technology Area

*Helping the Warfighter Maintain
Technological Superiority on the Battlefield*

NDIA Armaments and Munitions Forum

12 Nov 2013



Agenda

A Premier Government, Industry & Academic Partnership

- Background
- Small Arms & Accessories (SAA)
 - Organization
 - Vision and Mission
 - Current Activities
 - ROTI
 - Requirements Collaboration and Review Workshop
- Takeaways



Background (How we arrived here)

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- Executive Board of the NSATC working closely with ARDEC senior management, Defense Ordnance Technology Consortium (DOTC) and the National Warheads and Energetics Consortium (NWEAC) have agreed to move forward on the following initiatives:
 - **Memorandum of Understanding (MOU) in place to integrate NSATC into DOTC-NWEAC.**
 - **New technology area under DOTC - Small Arms & Accessories (SAA).**
 - **Access to a world-class business development organization and structure to reach out and bring in new customers opportunities.**
 - **Economies of scale for customers in the following areas:**
 - Reduced administrative expenses (versus a unique NSAC OTA)
 - Elimination of duplicative efforts (small arms initiatives existed in both NSAC and DOTC OTAs)

MOU Effective as of 24-JUL-13



SAA Organization

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DOTC Executive Committee

Mr. Jose M. Gonzalez, Co-Chairman Government
Mr. Gary A. Schneider, Co-Chairman Industry/Academia

Dr. Jason Gilliam - AMRDEC Dr. Gerry Melendez - ARDEC Dr. Pat Baker - ARL Mr. Dennis McLaughlin - NSWC-IH Mr. Mike Till - NSWC-DD Mr. Dave Janiec - NAWC-CL Dr. John Wilcox - AFRL-Eglin Mr. Karl Rozelsky - SOCOM Mr. Dave Devine - NAVAIR-Lakehurst	Dr. Eric Boyer – Penn State Dr. Paritosh Dave – SAIC Dr. Tom DeAngelis – SciTech Mr. Dan Haun – Nammo Talley Ms. Diana-Lynn Herbst – C-Logic Mr. Christian Leimkuehler – Textron Mr. Larry Pitts – GD-OTS Mr. Charlie Zisette – ATK Mr. Karl Lewis – Lewis M&T
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Program Director

Mr. Donald A. Geiss Jr.

STEM Program Manager

Dr. Edward A. Peterson

Technology Manager

Mr. Don Palathinkal

Technology Manager

Ms. Lia Sosa

Technology Manager

Ms. Lynda Ru

Technology Manager

Mr. Devin Swanson



Small Arms & Accessories

Explosives

Enabling Technology

Propellants

Protection & Survivability

Fuze/ Sensors

Demilitarization

Joint Insensitive Munitions

Warheads

Pyrotechnics



SAA Vision and Mission

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Small Arms & Accessories

Vision: The continual development and demonstration of the technologies that will provide our Warfighters with enduring overmatch capabilities in all of our current and future small arms systems.

Mission: The projected funding available for technology sub-objectives in the Small Arms & Accessories Research Area is approximately \$XX.XXM for new initiatives. Research, development, and demonstration of technology for future lethal and non-lethal small arms weapon systems, accessories, and applications is the overall goal of this technology area. Initiatives in the small arms domain will consist of all individual and crew-served related weapons (whether mounted or dismounted), ammunition, target acquisition, fire control and ancillary devices ranging in calibers from 5.56mm to 25mm as well as 40mm grenade systems, both shoulder-fired and automatic grenade launchers. New technologies in this area will also include improved material applications, manufacturing techniques, and modeling and simulation methodologies relevant to the systems and sub-systems cited above as well as paradigm-shifting technologies supporting the close combat mission in traditional small arms applications.

Customer base:

JSSAP, ARDEC, CERDEC-NVL, PEO Ammo, PEO Soldier, PEO SOF Warrior, Joint Non-Lethal Weapons Directorate, MCCDC, Navy Crane, Office of Naval Research, Army Research Lab, DHS, and DoJ.

Agenda driven by Joint Service Small Arms Technology Plans and Service Lethality Roadmaps.



SAA Sub-Objective Areas

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Sub-Objective Areas

- **SAA-15-01 – Fire Control, Optics, Electro-Optics, Enablers**
- **SAA-15-02 – Modeling & Analysis, Studies**
- **SAA-15-03 – Weapons Technologies**
- **SAA-15-04 – Effects, Lethality, & Utility**
- **SAA-15-05 – Materials & Processes**
- **SAA-15-06 – Smart Munitions**
- **SAA-15-07 – Warheads & Energetics**
- **SAA-15-08 – New Concepts & Applications**
- **SAA-15-09 – Non-Lethal**
- **SAA-15-10 – Training & Simulations**



SAA Current Activities

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- **Where are we Today!**
 - **DOTC Request for Ordnance Technology Initiatives (ROTI) announcement**
 - Opened: 16 SEP 2013
 - Closed: 5 NOV 2013
 - Technical Areas:
 - **One-Way Luminescence (OWL)**
 - **Non-Lethal 1 Assessment:** Variable-Velocity man-portable weapon systems
 - **Non-Lethal 2 Assessment:** High Power Microwave Sub-systems
 - **SAA Requirements Collaboration and Review**
 - (3-4 DEC 2013), Fort Belvoir, VA, Bldg 20 (Officers' Club)
 - Annual Tech Plan Kick-off Agenda
 - Customer Briefs
 - Futures Brief/Emerging Results
 - Sub-Objectives Development
 - Industry Briefs
 - Department of Energy Collaboration Briefs
 - DOTC Education— How to navigate thru the DOTC process?
 - Customer, Industry one-on-one exchanges



SAA “Takeaways”

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SAA Collaboraton Meeting: 3-4 Dec 2013, Fort Belvoir Officers’ Club

- Gov’t/Industry Portal available at: <http://www.nwec-dotc.org>

Small Arms & Accessories (SAA Government POCs:)

- Mike Tauber, SAA Technology Area Lead, michael.j.tauber.civ@mail.mil, 973-724-7690
- Terence F. Rice, SAA Technology Area Co-Lead, terence.f.rice.civ@mail.mil, 973-724-9714
- Dr. Barton H. Halpern, SAA Technical Board Chair, barton.h.halpern.civ@mail.mil, 973-724-6009
- Dr. Stephen Small, SAA Science Technology Engineering Mathematics (STEM) Liaison, stephen.c.small.civ@mail.mil, 973-724-7043

DOTC Integration Benefits

- Economies of scale (based on contract volume, acquisition by large entity)
- Quicker contract award time after proposal(s) is/are selected (~ 45 days)
- SAA Tech Area would be the “point of entry” for Small Arms S&T



Back-up Slides



Proposed Small Arms & Accessories (SAA) Sub-Tech Objectives

**Small Arms & Accessories Requirements
Collaboration and Review, 3-4 Dec 2013**

in

Support of the DOTC Annual Technology Plan for FY15



SAA Sub-Objective Areas

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Sub-Objective Areas

- **SAA-15-01 – Fire Control, Optics, Electro-Optics, Enablers**
- **SAA-15-02 – Modeling & Analysis, Studies**
- **SAA-15-03 – Weapons Technologies**
- **SAA-15-04 – Effects, Lethality, & Utility**
- **SAA-15-05 – Materials & Processes**
- **SAA-15-06 – Smart Munitions**
- **SAA-15-07 – Warheads & Energetics**
- **SAA-15-08 – New Concepts & Applications**
- **SAA-15-09 – Non-Lethal**
- **SAA-15-10 – Training & Simulations**



SAA Sub-Objectives

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- **SAA-15-01 - Fire Control, Optics, Electro-Optics, Enablers**
 - **Technical**
 - Accurate Range Finding
 - Multi Pulse Laser
 - Automated Target Acquisition
 - Off Weapon Aiming
 - Image Stabilization/Registration/Recognition
 - Target Detection/Tracking/Recognition/ID
 - Multi-function Laser
 - Laser Steering
 - Decision Aids
 - Common Operational Picture
 - Hostile Fire Detection
 - **Tactical**
 - Networked Target Information
 - Sensor and Other Soldier Input
 - Collaborative Engagement
 - Target Hand-off
 - Engagement from Defilade
 - Network Firing Solution
 - Massed Fire
 - Automated Re-supply
 - Non-Line-of-Sight Engagement



SAA Sub-Objectives (cont.)

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- **SAA-15-02 – Modeling & Analysis**
 - Operation Modeling
 - Operational Effectiveness
 - What is good enough?
 - What is really required?
 - Which concepts offer best solutions?
 - Determine Total Ownership Costs



SAA Sub-Objectives (cont.)

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- **SAA-15-03 – Weapons Mechanisms**
 - Recoil Reduction
 - Muzzle Devices
 - Magazine and ammo handling devices
 - Power Generation
 - Linkless Concepts
 - Rate of Fire Control
 - Lightweight
 - Embedded maintenance
 - Embedded prognostics and diagnostics



SAA Sub-Objectives (cont.)

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- **SAA-15-04 – Lethality & Utility**
 - KE Bullets
 - Lightweight Ammunition
 - Caseless Ammunition
 - Tagging and Marking rounds
 - Future Caliber Selections
 - Rifle Launched Devices
 - Frangible Carriers
 - RF Marker
 - IR Marker
 - Davis Gun



SAA Sub-Objectives (cont.)

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- **SAA-15-05 – Materials & Processes**
 - Increased Life
 - Reduced Wear
 - Improved Reliability
 - Ceramic Liners and Barrels
 - Functionally Graded Materials
 - Polygonal Bores
 - Lubricious Coatings
 - Electro Explosive Coatings
 - Lightweight Materials



SAA Sub-Objectives (cont.)

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- **SAA-15-06 – Smart Munitions**
 - Assured Lethality
 - Steerable Munitions
 - Course Correcting Munitions
 - Seeking Munitions
 - Automated Engagement
 - Instantaneous Engagement
 - IR Sensors and Snapshot
 - Electronically Morphed Control Surfaces



SAA Sub-Objectives (cont.)

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- **SAA-15-07 – Warheads & Energetics**
 - Airburst Technology to other calibers
 - Proximity Rounds
 - Airburst Smoke
 - Multi-Effect Warheads
 - Smart Warheads
 - Tailorable Effects
 - Multiple Shaped Charges
 - Explosively Formed Penetrators
 - Thermitic Cutters
 - High Density Propellants
 - Nano Propellants and Explosives
 - Insensitive Explosives
 - Fuze Design
 - Explosive Train



SAA Sub-Objectives (cont.)

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- **SAA-15-08 – New Concepts & Applications**
 - Non-KE Lethality
 - Tunable Effects Concepts
 - Scalable Effects Munitions
 - Exoskeleton Mounted Concepts
 - Hot Trigger
 - Remote Organic Weapons
 - Recoil Reduction
 - Power Generation



SAA Sub-Objectives (cont.)

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- **SAA-15-09 – Non-Lethal**
 - Variable velocity
 - High voltage capacitors
 - Thermobaric technology
 - Airburst munitions
 - Continuous wave lasers
 - Pulsed lasers
 - High power microwaves



SAA Sub-Objectives (cont.)

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- **SAA-15-10 – Training & Simulations**

- Embedded Weapon and Enablers Training
- Training Aids, Devices
- Marksmanship/Operational Training
- Simulations and Simulators
- Immersive/Virtual Simulators
- Human Performance/Cognitive Abilities and Effects (reflexes, skills, reactions, learning, multi-tasking/input, etc)
- Instructional System Development (covers curriculum, tasks/conditions/standards goals, courses of fire, targets used, training/lesson plans, periods/rates/recurrence of training, instructor certifications and skills, environment, version or media used, etc)