

Lettre du



MSIAC

Munitions Safety Information Analysis Center

Newsletter

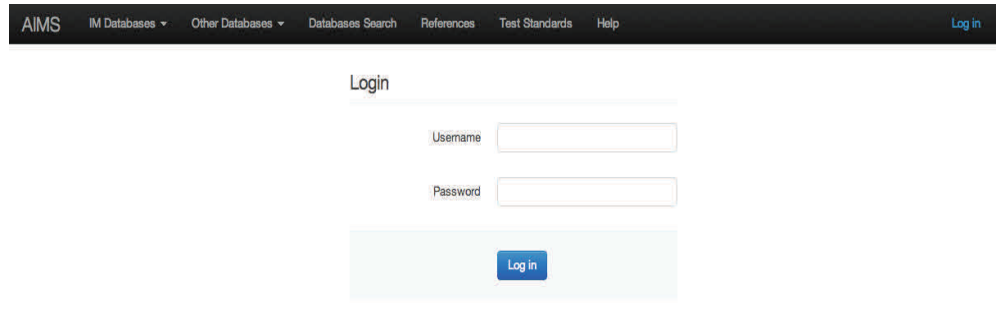


INSIDE THIS ISSUE

AIMS tool	1-5
Catalogue of IM/HC testing facilities	6
Latest Patents of interest	7
Procurement Issues Press Review	8-21
Accidents Reporting	22-26
MSIAC MS Award	27-29
MSIAC News	29

Advanced IM Search is fully operational

Good news to start 2013: your new MSIAC tool is fully operational!



Copyright © 2012 MSIAC. All Rights Reserved. By Webstack

After intensive work to finalize the last features and the migration of all the databases, this new web-based application has been successfully installed on our server. We not only hope that you will enjoy this new tool, but that it also eases your day-to-day work developing less sensitive munitions.

As already described in the previous Newsletter, AIMS (Advanced Insensitive Munitions Search) is a new platform to access and search for IM test results. The last 2 databases related to the thermal threats have now been migrated and the last features integrated in the platform.

Fast Cook-Off and Slow Cook-Off database

The Fast Cook-Off and Slow Cook-off databases are the result of the migration of the former HEAT database under Excel.

(Continued on page 2)

(Continued from page 1)

These 2 databases are organized the same way as the others (list view, detail view, searching feature). The list view presents all the results that we have populated and provides the main information on the test set-up and test result. The following picture shows you an extract of the Fast Cook-Off main view :

FCO Test		Tested Item Characteristics					Mitigation	Test Setup			Results		Ref
ID	Munition (Tested Item)	Energetic Material	Composition	External Diameter/Thickness (mm)	Case Material and Thickness (mm)	Pack.	Family / Name / Material	Type of FCO	Item Orientation	Average Fire T° (°C)	Reaction Type	First Reaction Time (s)	Ref
3646	105 mm APFSDS-T (Gun Propellant)	CLP-26	RDX NC Energ. Plasticizer	105	Brass	Packaged	Container // Case / Brass Cartridge Case / Brass	Fuel Fire	Horizontal		III/IV		206
3647	105 mm L31 Shell (Warhead)	Unknown	Unknown	105	Steel	Not Documented	None //				II		87
3648	105 mm M393 HEP	Enhanced	Unknown	105	High	Packaged	Case / Brass	Fuel	Horizontal		IV		86

Figure 1: Fast Cook-Off main view

The equivalent view for SCO is shown here below:

SCO Test		Tested Item Characteristics					Mitigation	Test Setup			Results		Ref
ID	Munition (Tested Item)	Energetic Material	Composition	External Diameter/Thickness (mm)	Case Material and Thickness (mm)	Pack.	Family / Name / Material	Heating rate (°C/Hr)	Preheating T° (°C)	Item Orientation	Reaction Type	First Reaction T° (°C)	Ref
3846	105 mm M915 DPICM Shell (Warhead)	PAX-2A	85% HMX 9% BDNPA/F 6% CAB	105	Steel	Packaged	Container / PA117 / Steel	27.8	65	Horizontal	III	215	55
3847	105 mm M915 DPICM Shell (Warhead)	Comp A-5	98.5% RDX 1.5% Stearic Acid	105	Steel	Packaged	Container / PA117 / Steel	27.8	59	Horizontal	I	194	55
3849	105 mm Modular Charge - Denel (Gun Propellant)	SSE-075	NC DNT	105	Combustible	Bare	None //			Horizontal	V	127	435

Figure 2: Slow Cook-Off main view

(Continued on page 3)

(Continued from page 2)

By clicking on "select a criteria", you will access the searching attributes:

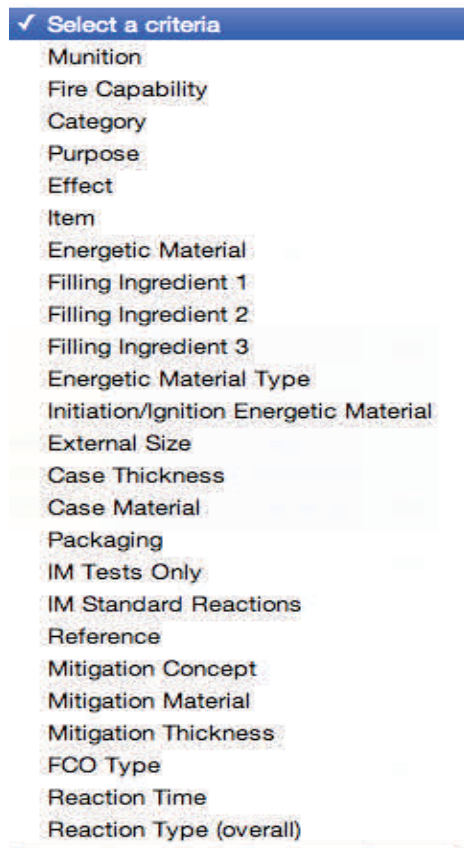


Figure 3: FCO searching attributes

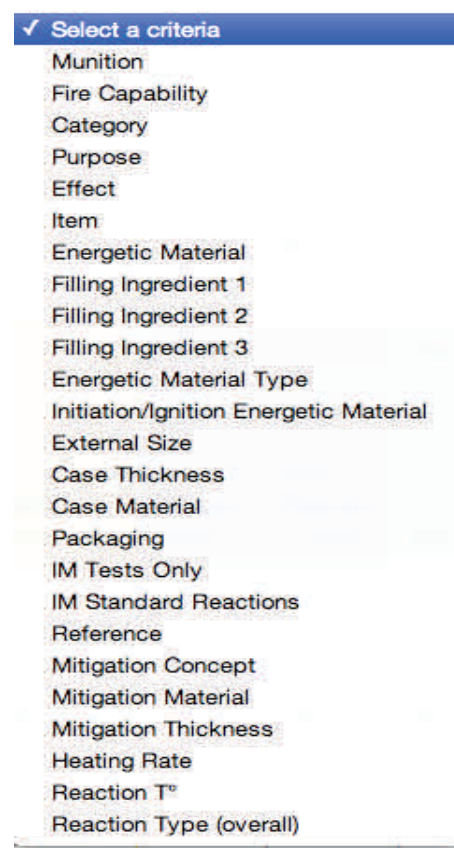


Figure 4: SCO searching attributes

The mitigation concept is organized by name and also by family to perform a more generic search:

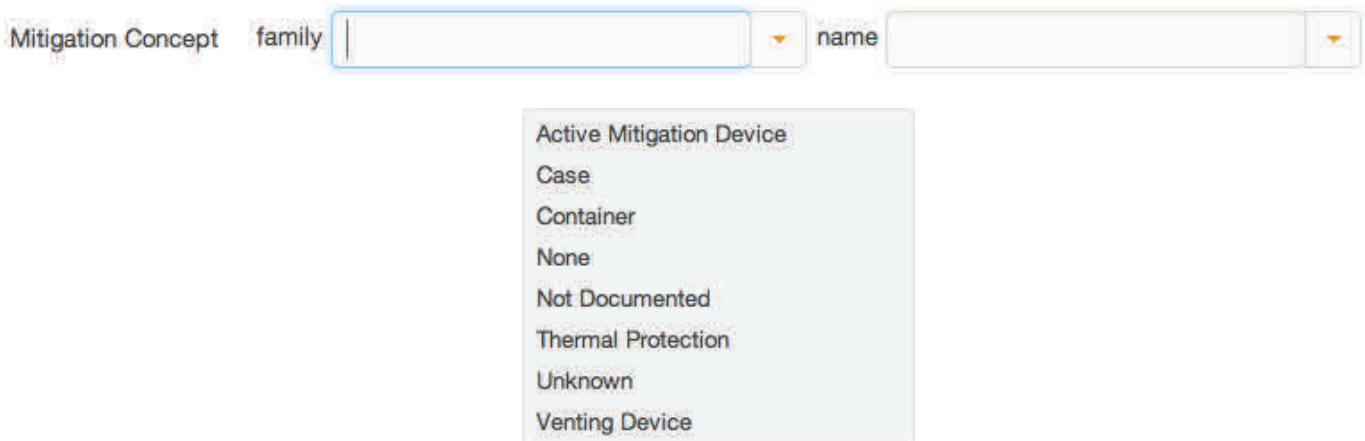


Figure 5: Mitigation families

Reference view

The reference view shows the list of references that we used to populate the database. This view provides the title, the author, the symposium and the year of the publication. And even better, by simply clicking on the publication title, you will view all test results associated with the publication:

(Continued on page 4)

(Continued from page 3)

Development and Assessment of Low Vulnerability Melt Cast Explosive Composition

Authors: Morand P.
Symposium, Report Number: NIMIC Workshop on IM Testing - Phase I
Year: 1997

This reference is used for the following Fast Cook-Off Test Results:

Test ID	Munition Name (Tested Item)	Main Energetic Filling	Material / Concept / Thickness (mm)	Type of FCO	Reaction Type
3787	GEMO 3L - GTU (Warhead)	XF-13153	Venting Device / Cover (Venting Pressure=25 to 30 Mpa) /	Fuel Fire	IV

This reference is used for the following Slow Cook-Off Test Results:

Test ID	Munition Name (Tested Item)	Main Energetic Filling	Material / Concept / Thickness (mm)	Heating Rate	Reaction Type
3976	GEMO 3L - GTU (Warhead)	XF-13153	Venting Device / Cover (Venting Pressure=25 to 30 Mpa) /	3.3°C/Hr	V

This reference is used for the following Sympathetic Reaction Test Results:

Figure 6: Extract from the reference view

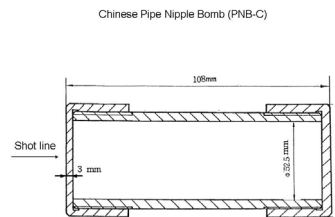
Generic Test Unit database (GTU)

Tests performed on GTU are always of great interest as they can help you compare several formulations in the same conditions. But there is nothing worse than spending hours trying to find the definition of this Chinese Pipe nipple bomb. To ease your task, AIMS provides access to the main characteristics of a bunch of usual GTUs.

AIMS IM Databases - Other Databases - Databases Search - References - Test Standards - Help - Admin Emmanuel Schultz | Log out

List of Generic Test Units

ID	Designation	Acronym	Country	Shot Line	Case Material	Case Thickness (mm)	Inner Diameter (mm)	Outer Diameter (mm)	Overall Length (mm)	Reference
1	3.2" Generic Shaped Charge Test Unit	3.2" GSCTU	USA	Radial	Aluminium	7.0	81.0	95.0	193.0	40
2	6.9" Generic Shaped Charge Test Unit	6.9" GSCTU	USA	Radial	Steel	7.6	175.3	190.5		40
3	Chinese Generic Test Unit	CGTU	China	Axial	Steel			56.0	127.0	132
4	Chinese Pipe Nipple Bomb	PNB-C	China	Radial	Steel	3.0	52.5	58.5	102.0	138
5	EMTAP Pipe Nipple Bomb	PNB-E	UK	Radial	Steel	9.5	57.0	76.0	120.0	332
6	GEMO 3 Liters Thick Wall Test Unit	GEMO 3L	France	Radial	Steel	10.0	123.0	143.0	260.0	15
7	GEMO 90 Gun Propellant Combustible Cartridge	GEMO Poudre C	France	Radial	Combustible Case	3.3	87.5	94.1	360.0	258



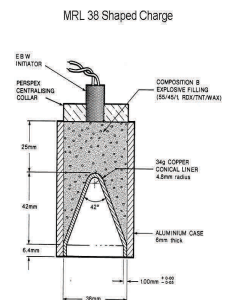
SCJ Database

As with the GTU, the SCJ database provides a description of the commonly used Shaped Charges.

AIMS IM Databases - Other Databases - Databases Search - References - Test Standards - Help - Admin Emmanuel Schultz | Log out

List of Shaped Charge Threats

ID	Designation	Munition Type	Country	Charge Diameter (mm)	Charge Caliber (mm)	Charge Weight (g)	Explosive Name	Explosive Mass (g)	Liner Material	Liner Apex Thickness (mm)	Stand-off (mm)	Jet Tip Velocity (km/s)	Jet Tip Diameter (mm)	Armor Penetration (mm)	References	
1	Rockeye	Bomblet	USA	53.6	50	600	Comp B	174	Copper	100	6.9	3	190	406		
2	MRL 38	Laboratory	Australia	50	38		Comp B		Copper	76	7.3		177	368 369		
3	SC 25	Laboratory	Germany	26	21		RDX based	18	Copper	90	1	50	4.6	1.5-2	70	390
4	M9A1	Laboratory	USA	55.6	41				Copper	44	1	101.6	8		393	
5	DM1348	Bomblet	Germany	42.3	33	292	Comp A5	43.5	Copper							
6	DM1383	Bomblet	Germany	42.2	36	293	Comp A5	43.5	Copper							
7	GE-PG7 Mock-up	Rocket	Germany		75				Copper	150	7.2	3.2			407	



(Continued on page 5)

(Continued from page 4)

IM Signature display

Probably the one you will prefer! By going to the database search, enter your search criteria and select the box "IM test only".

IM Tests Only

Remove

If ticked, only tests carried out in accordance with IM STANAGs are displayed.

AIMS will provide a simple display by IM signature as a function of your search criteria.

The tool arranges the results by munitions name, item, main energetic material and packaging configuration. The "comments" column will provide the main characteristic of the test (e.g. heating rate for SCO). By clicking on a result, you will be redirected to the detailed view of the test.

External Size: Diameter from 81 to 81 mm Remove

Based on the item shape: diameter for a cylinder and thickness for a parallelepiped.

IM Tests Only Remove

If ticked, only tests carried out in accordance with IM STANAGs are displayed.

Select a criteria

Search or Clear search

4 FCO Tests 6 SCO Tests 4 BI Tests 3 FI Tests 15 SR Tests 3 SCJ Tests 13 IM Signatures Export

Munition	Item	Main Energetic Material	Packaging	IM Test Results					SCJ	Comments
				FCO	SCO	BI	FI	SR		
81 mm HE Mortar	Warhead	Comp B	Bare			IV		I (x2)		BI - 850 m/s SR H-V-D (mm) = 203.2 - N/A - N/A
81 mm HE Mortar	Warhead	TBI-60	Bare		V					SCO - N/A °C/Hr
81 mm HE Mortar	Warhead	TBI-60	Packaged	V		NR (x3)	NR (x3)	NR		FCO - Fuel Fire BI - 850 m/s FI - 2400 (m/s) SR H-V-D (mm) = N/A - N/A - N/A
81 mm M816 Infrared Illuminating Mortar	Gun Propellant	M-38	Bare		V (x2)					SCO - 3.3 °C/Hr

Figure 7: Extract of the IM signature display for an 81 mm Mortar research

Access to the Platform

AIMS is available on the secure MSIAC server at <https://aims.msiac.nato.int/>. Login and password are the same as for the other MSIAC applications.

Feedback (even the positive one!!) is always welcome and will help us improve the application. There are a lot of other features that we have not disclosed in the Newsletters, such as the possibility to export your results to an Excel spreadsheet or to export the pictures, and many more. So play with it and let us know.

Contacts

Feel free to contact us to share your new experience:

Manfred Becker: m.becker@msiac.nato.int

Emmanuel Schultz: e.schultz@msiac.nato.int

Acknowledgements

We would like to acknowledge:

- ☞ **Pierre-François Péron** who has started the project and has always actively contributed even after his departure from MSIAC.
- ☞ **Stephane Raimbault** from Webstack who has developed the tool and has always positively replied to our uncommon requests.
- ☞ **Olivier Jusselin** from Solago for sharing his expertise with the team.

CATALOGUE OF IM/HC TESTING FACILITIES



MSIAC UNCLASSIFIED - MSIAC © 2013

L-156
Edition 5
January 2013

DIRECTORY OF INSENSITIVE MUNITIONS AND HAZARD CLASSIFICATION TESTING FACILITIES

5th Edition

by
Emmanuel Schultz

This document has been prepared for MSIAC member nations. Disclosure of the contents to other nations must be authorised by the MSIAC Steering Committee.

MSIAC Information Page on IOTAN
Routing #: Bureau 2, Box 1581
1113 Boulevard - Baguieu
Tel: 52-97023479 - Fax: 52-97043333 - Email: info@msiac.org
Website: www.msiac.org

MSIAC has collected information regarding organizations that perform InSensitive Munitions and Hazard Classification testing.

The information described in the catalogue has been directly provided by the test center facilities. In this new edition of the catalogue, 3 test centers have been newly introduced (ATK, AEROJET & GD-OTS), and 18 have provided an updated description of their facility.

The catalogue contains the description of 30 test centers from 12 nations.

For each test center, one can find a fiche that provides the following information:

- Name of the organization
- Contact information
- General information
- IM/HC testing experience
- Specific information for each test
- Cost of testing (when available)
- Status regarding the self-audit procedure (described in L_150)

The catalogue is available on our secure web environment (weblink), so feel free to download it. MSIAC would like to acknowledge all the contributors who have provided high level input to update this directory.

Point of contact
Name: Jared Olson
Phone: +01 852 2521
Fax: +01 852 2271
Email: jared@atkglobal.com

GENERAL INFORMATION
ATK offers a wide range of testing capabilities, including solid rocket motor performance, environmental testing of components and systems, analytical testing of risk and energetic materials, ballistic and impact testing, insensitive munitions, DOT classification, explosive and material testing.

FACILITIES
The ATK testing facility is capable of all standard STANAG IM tests, including slow and fast cook-off, bullet impact, fragment impact, sympathetic reaction and shaped charge jet impact. The facility uses recently updated and includes high-speed data acquisition systems (pressure, temperature, etc.) with high-speed digital video, regular video and still photos. Explosive testing up to 500 lbs net explosive weight may be performed for large articles, while non-fragmenting tests may be performed up to 1500 lbs of class 1.1 high explosive.

EXPERIENCE
Insensitive munitions tests have been performed at our Promontory facility for several decades. Experienced testing technicians, scientists, and engineers are available to design, perform and analyze data generated from STANAG MIL-STD and customer testing.

Point of contact
Name: [Illegible]
Phone: [Illegible]
Fax: [Illegible]
Email: [Illegible]

GENERAL INFORMATION
[Illegible text]

FACILITIES
[Illegible text]

EXPERIENCE
[Illegible text]

Point of contact
Name: Peter Uttersing / Dr. Burghard
Dobner
Phone: +049 201 43 2000
Fax: +049 201 43 2001
E-mail: WTD@bundeswehr.org
Website: www.bundeswehr.de

GENERAL INFORMATION
WTD 91 is the technology competence center for weapons and ammunition used by the Bundeswehr. It covers an area of 200 square kilometers and is thus the largest instrumented firing range in Western Europe.

The Bundeswehr Technical Center for Weapons and Ammunition

- conducts experiments and analyses as well as integrated compliance demonstrations as defined by the CPM (Customer Product Management) procedural requirements;
- manages research and technology (R&T) projects;
- provides technical support for armaments projects;
- acts as responsible for the technical support of defense material during the in-service phase;
- Depending on the weather conditions, the maximum net explosive quantity to be tested is restricted to 1000kg TNT;
- Long-term tests (Slow Heating) taking several days may be performed;
- The witness plates are available in any size;
- The maximum structural dimensions of a test item may be 0m x 4m x 3m;
- The meteorological data necessary for the tests are provided by the Technical Center's own meteorological station. Measuring points are installed near the test stands (TDS). In the registration area situated in close proximity to the test stand, the wind speed is measured using a calibrated hand-held instrument;
- The test items are considered to be a given temperature in a climatic chamber of the Center's user ammunition arsenal, and the transport of the ammunition to the test stand is done by means of an air-carrying cart.

Point of contact
Name: [Illegible]
Phone: [Illegible]
Fax: [Illegible]
Email: [Illegible]

GENERAL INFORMATION
[Illegible text]

FACILITIES
[Illegible text]

EXPERIENCE
[Illegible text]

Point of contact
Name: [Illegible]
Phone: [Illegible]
Fax: [Illegible]
Email: [Illegible]

GENERAL INFORMATION
[Illegible text]

FACILITIES
[Illegible text]

EXPERIENCE
[Illegible text]

Point of contact
Name: [Illegible]
Phone: [Illegible]
Fax: [Illegible]
Email: [Illegible]

GENERAL INFORMATION
[Illegible text]

FACILITIES
[Illegible text]

EXPERIENCE
[Illegible text]

Point of contact
Name: Cap. Alfredo Cubero Ponce
Phone: +046 01 174 2071
Fax: +046 01 174 2172
E-mail: aluch@itit.mil.cu
Website: www.itit.mil.cu

GENERAL INFORMATION
The Barahona Technological Institute (ITM) is the technological institution of reference for Defense Research and Development (RD) in Cuba. It is the only institution in the country that has the capability to conduct research and development in the field of defense technology. The Institute is a multi-disciplinary organization that includes the fields of electronics, computer science, mechanical engineering, materials science, and systems engineering. The Institute is also a center for the dissemination of scientific and technical knowledge and for the training of personnel in the field of defense technology.

FACILITIES
The Barahona Technological Institute (ITM) is a large facility located in the town of Barahona, approximately 100 km from Havana. It covers an area of 1000 hectares and is divided into several zones. The main zone is the research and development zone, which includes laboratories, workshops, and offices. There is also a zone for the production of prototypes and a zone for the testing of defense equipment. The Institute also has a large area for the storage of defense equipment and materials.

LATEST PATENTS OF INTEREST



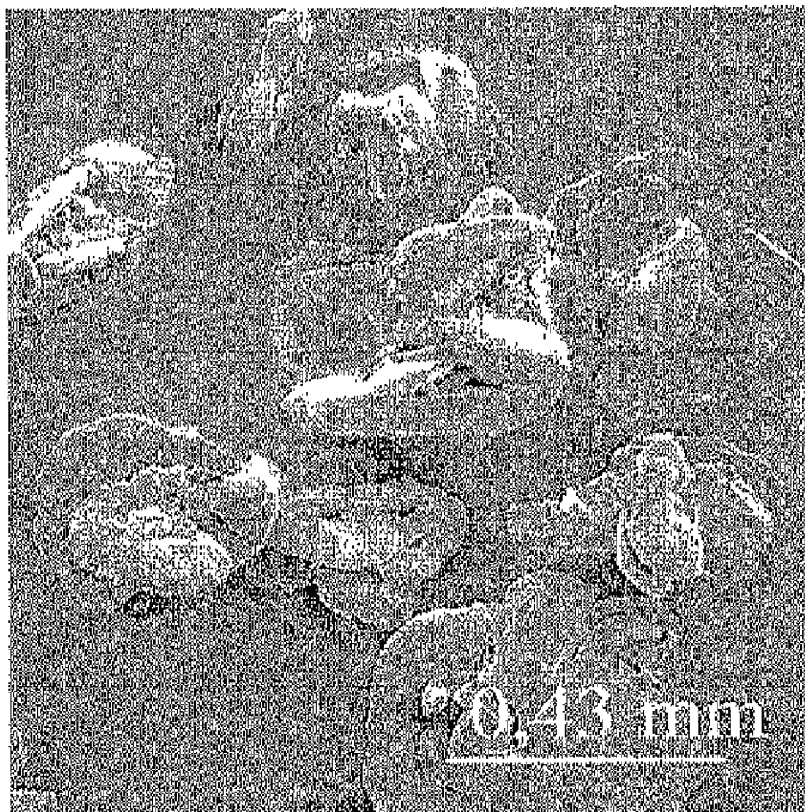
US 20120305149A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2012/0305149 A1**
Coulouarn et al. (43) **Pub. Date: Dec. 6, 2012**(54) **MELT-CAST INSENSITIVE EXPLOSIVE COMPOSITION**(30) **Foreign Application Priority Data**

Dec. 23, 2009 (FR) 0906239

(75) Inventors: **Christophe Coulouarn**, Arcay (FR); **Stéphane Bulot**, Bourges (FR)**Publication Classification**(51) **Int. Cl.**
C06B 45/06 (2006.01)(52) **U.S. Cl.** 149/18(73) Assignee: **NEXTER MUNITIONS**, Versailles (FR)(57) **ABSTRACT**(21) Appl. No.: **13/515,647**

An insensitive melt-cast explosive composition incorporating on the one hand a meltable part formed of at least one meltable explosive and, on the other hand, a solid part incorporating oxynitrotriazole (ONTA) and cyclonite (RDX). This composition is characterised in that the cyclonite is a cyclonite of reduced sensitivity, the particle size of the insensitive cyclonite being of between 315 micrometers and 800 micrometers, whereas the particle size of the ONTA is of between 200 micrometers and 400 micrometers, the ONTA further having an apparent density greater than or equal to 0.95 g/cm³. The invention is applied to the loading of projectiles by casting.

(22) PCT Filed: **Dec. 20, 2010**(86) PCT No.: **PCT/FR10/00853**§ 371 (c)(1),
(2), (4) Date: **Jul. 27, 2012**

PROCUREMENT ISSUES PRESS REVIEW

*If you have information you consider of relevance to this section
please do not hesitate to contact MSIAC at info@msiac.nato.int*

THALES AUSTRALIA AND NAMMO ANNOUNCE STRATEGIC AGREEMENT

Thales Australia and Nammo have signed a long-term strategic teaming agreement to cooperate in the ordnance market. The 10-year agreement expands on many years of cooperation between the two companies, and builds on a 2010 commitment to work together on ammunition for the F-35 fighter program, in particular on the Armor Piercing EXplosive (APEX) Norwegian ammunition concept. The agreement also covers Nammo's special Reduced Ricochet Risk training round, plus Thales's Armour Piercing Fragmenting & Incendiary (APFI) ammunition round.

Under the increased scope of the new agreement, Nammo and Thales will work together in Research & Development, technology transfer, and component supply from Nammo, and further collaborate within the market place. Edgar Fosheim, President & CEO of Nammo Group, said: "The APEX concept is based on more than 20 years of heritage in the aircraft ammunition business with presence on nearly all fighter aircraft of NATO and in the western world. Cooperation with Thales, as an ordnance industry leader from one of the primary JSF partner nations, will promote the introduction of APEX."

<http://www.nammo.com/News/Thales-Australia-and-Nammo-announce-strategic-agreement/>

NAMMO AND SANTA BÁRBARA SISTEMAS REACH AGREEMENT FOR TAKEOVER OF THE PALENCIA FACTORY

Santa Bárbara Sistemas, which is operated as part of General Dynamics European Land Systems, and Nammo have reached an agreement for the purchase of the Palencia operation. The factory is specialized in the manufacture of various types of ammunition. As the agreement provides, Nammo will assume Palencia's existing workforce, assets, operations and production lines. The completion of the acquisition is subject to the approval by the Spanish Ministry of Defense, which leases the Palencia site and factory to GDELS-SBS, and other regulatory approvals.

The Managing Director of GDELS-SBS, Carlos Villar, stated: "the transaction will help assure the future stability of the workforce at Palencia. The Nammo Group's purchase of the Palencia operations and facility will also help ensure that technological capabilities remain in the hands of one of the most important companies in the sector that adds new possibilities, thereby assuring support and backing for the needs of the Spanish Ministry of Defense and their allies".

<http://www.nammo.com/News/NAMMO-AND-SANTA-BARBARA-SISTEMAS-REACH-AGREEMENT-FOR-TAKEOVER-OF-THE-PALENCIA-FACTORY/>

ATK AWARDED CONTRACT TO DELIVER PRECISION EXTENDED RANGE MUNITION CAPABILITY FOR U.S. MARINE CORPS 120 MM MORTAR SYSTEM

12 December 2012

ATK announced today that it will begin execution of a \$14.3 million contract awarded to develop a solution to meet the U.S. Marine Corps' requirement for a rifled, 120mm, Precision Extended Range Mortar (PERM). ATK's Armament Systems division will serve as the prime contractor to the Marine Corps for the 24-month PERM development program that will demonstrate a precision mortar cartridge capable of reliably providing accuracy within 20 meters circular error probable and can then be quickly transitioned to production and ultimately fielding. The PERM initiative is integral to the Marine Corps Ship-to-Objective-Maneuver (STOM) contingency operations that call for precision, long-range (16 - 20km) mortars fired from the Expeditionary Fire Support System (EFSS) towed-mortar platform in support of Marine infantry units.

The ATK / GD-OTS PERM technical solution combines ATK's patented and operationally-proven precision guidance fuze technology with the GD-OTS extended-range rifled mortar energetic subsystems developed during the PERM Technical Demonstration program to Add Precision to the Marine Corps' Mature EFSS Capabilities. ATK guidance fuze technology is currently being used by the U.S. Army to meet precision guidance requirements for 155mm artillery projectiles (XM1156) and 120mm mortar cartridges (XM395).

The EFSS is a light, mobile and vertically transportable indirect fire support system designed for missions requiring tactical

(Continued on page 9)

(Continued from page 8)

versatility, speed and close-in fire support. The EFSS is designed to be internally transportable in the MV-22B Osprey and the CH-53 helicopter and has been in fielded with the Marine Corps since 2009.

NOTE: RAYTHEON was also awarded an Engineering Manufacturing Development contract for PERM in January. This will be added in the next Newsletter.

ATK SECURES .40 CALIBER AMMUNITION CONTRACT WITH DEPARTMENT OF JUSTICE, FEDERAL BUREAU OF INVESTIGATION

12 December 2012

ATK announced that it is being awarded a contract from the Department of Justice (DOJ) and Federal Bureau of Investigation (FBI) for .40 caliber ammunition. This contract to provide duty and training ammunition and has a maximum value of \$75 million over the life of the 5 year contract.

Speer also offers standard training ammunition and a reduced hazard option (RHT). The Speer RHT round features a frangible projectile that dissipates on contact and is ideal for training indoors and in close quarters.

ATK will produce the ammunition at the Speer facility in Lewiston, Idaho. Deliveries are expected to begin this month.

ATK AWARDED PRODUCTION CONTRACT FOR THE U.S. NAVY'S MULTI-OPTION FUZE FOR USN 5-INCH GUN AMMUNITION

6 December 2012

ATK announced that it received a five-year contract for the production of the MK 437 Multi-Option Fuze, Navy (MOFN). The contract has a maximum total value of \$84.1 million. Production of this fuze will occur at the U.S. Navy-owned, ATK-operated Allegany Ballistics Laboratory (ABL) facility in Rocket Center, W. Va. Deliveries are scheduled to begin in November 2013.

The MOFN increases the overall mission capability of 5-inch gun ammunition used on U.S. Navy ships by providing proximity, precision time, delay and point detonating impact functions in a single fuze. The inductive fuze setting feature also optimizes MOFN for use with automated ammunition handling equipment. MOFN will be used on projectiles fired in the MK 45 Single Lightweight Gun Mount on U.S. Navy cruisers and destroyers.

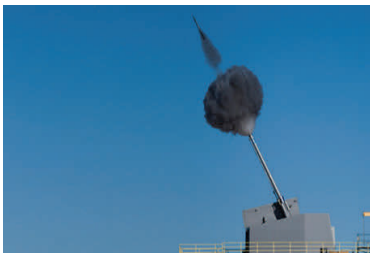
"MOFN leverages ATK's design, development and production experience, providing the U.S. Navy with an affordable, reliable fuze for its 5/54 caliber ammunition," said Dave Fine, ATK's Director of Fuzing and Warhead programs.

BAE SYSTEMS RECEIVES \$80 MILLION U.S. NAVY CONTRACT FOR TWO ADVANCED GUN SYSTEMS FOR THE LATEST IN THE ZUMWALT CLASS DESTROYER FLEET, THE DDG 1002

28 November 2012

This contract award marks the third destroyer to receive AGS applications and brings the total funding of the initial contract for this ship, first awarded in October 2011, to \$149 million.

The AGS is a 155mm, vertically loaded gun mount that is capable of storing, programming and firing the Long Range Land Attack Projectile (LRLAP). It is a fully automated weapon system that can fire 10 rounds per minute with ranges greater than 60 nautical miles. The AGS rounds are drawn from a fully-automated, below-deck weapon handling and storage system holding up to 300 rounds. By eliminating the need for personnel in the magazine, the AGS design supports the U.S. Navy's goals to significantly reduce overall crew requirements and increase crew safety.



To date, BAE Systems has designed, built and integrated four AGS for the first two DDG 1000 destroyers in the Zumwalt class fleet. Work under this contract will be performed at BAE Systems' Louisville, Kentucky and Cordova, Alabama facilities, and is expected to be completed by January 2018.

http://www.baesystems.com/article/BAES_154799/bae-systems-receives-80-million-us-navy-contract-for-two-advanced-gun-systems?_afLoop=3772353578696000OY SURFACES DEVELOPS DEMAND-DRIVEN HYDROGEN FUEL PRODUCTION SYSTEM

(Continued on page 10)

(Continued from page 9)

50KW HIGH ENERGY LASER SUCCESSFULLY DEMONSTRATED BY RHEINMETALL IN SWITZERLAND

18 December 2012

Rheinmetall has successfully tested a new 50kW high-energy weapon technology demonstrator. The test was conducted at the end of November 2012, at the company's Ochsenboden Proving Ground (EZO) in Switzerland. The test comprised three types of targets representing hardened targets, Unmanned Aerial Vehicles (UAV) and ballistic threats. A steel ball representing a mortar round target, travelling at approximately 50 m/sec was also intercepted.



The test witnessed by independent experts was designed to demonstrate the increase in efficiency of the 50kW HEL weapon, compared with the 10kW version demonstrated last year. The five-fold increase in laser power was demonstrated how such high-energy weapon can effectively perform Air Defense (AD), Counter Rocket, Artillery, Mortar (C-RAM), and Asymmetric Warfare operations.

The tests proved how multiple HEL weapon stations can irradiate a single target in a superimposed, cumulative manner. This modular technology approach makes it possible to maintain the very good beam quality of the individual laser modules, while increasing overall performance several times over. Thus, from the technical standpoint, nothing stands in the way of a future HEL weapon system with a 100kW output – considered the optimal power level for C-RAM weapon.

For this test Rheinmetall used its using HEL emitters employing the company's Beam Superimposing Technology (BST). The 50kW HEL weapon technology demonstrator consisted of two functional models. One system comprised a 30kW weapon station integrated into an Oerlikon Revolver Gun air defense turret for static and dynamic tests, coupled with an Oerlikon Skyguard fire control unit. The second system used a 20kW weapon station integrated into a Revolver Gun turret. In the first test the 50kW laser was fired from a distance of 1,000 meters, cutting through a 15mm-thick steel girder.

In the second test series the system engaged drones simulating UAVs. The Skyguard radar detected the incoming UAV at a distance of three kilometers. This data was handed over to the 30kW weapon, providing rough tracking using mechanical slew. At this stage, the optical tracking system in the Beam Forming Units (BFU's) in each of the individual laser weapon modules performed fine tracking of the nose-diving UAVs. After reaching the programmed fire sector the laser weapon modules engaged the UAV' and destroyed them within a few seconds, at a range of two kilometers.

The third test simulated the detection, pursuit and successful engagement of an extremely small ballistic target addressing potential Counter Rocket, Artillery and Mortar (C-RAM) application. A steel ball measuring 82 mm in diameter and travelling at approximately 50 m/sec replicated a mortar round type target. The Skyguard fire control unit detected the target, followed by mechanical tracking with the 30kW laser weapon station. At this point, the BFU of the laser weapon module took over, optically tracking the target, which was then engaged and destroyed in flight.

According to the test data, Rheinmetall experts claim that by using BST, the time necessary for engaging mortar rounds at long ranges can be substantially reduced. Today, the required engagement time is already low enough to be in the region needed for C-RAM applications – even when adverse weather conditions make targets difficult to detect.



Compared to last year, Rheinmetall has significantly increased the power density (kW/m³) of the technology demonstrator, enabling it produce twice the laser output within the same volume. To further enhance this capability Rheinmetall plans to introduce a 60kW technology demonstrator in 2013, providing even greater laser output. Besides laser weapon stations, the plan calls for integrating 35mm Ahead Revolver Guns into the system adding close-in defense, thus establishing 'multi-layer C-RAM' system. This will enable Rheinmetall engineers to identify and study possible synergies between laser weapons and automatic cannon. Lower-power applications are also studied, as part of a mobile HEL weapon. This concept was successfully implemented with 1kW functional model mounted on a special TM170 vehicle. Next year the company plans to experiment with such systems on other platforms, exploring the operational parameters for integrating an HEL weapon on vehicles operating in an open battlefield.

http://defense-update.com/20121218_rheinmetall_hel_weapon.html

(Continued on page 11)

(Continued from page 10)

LOCKHEED MARTIN DEMONSTRATES NEW GROUND-BASED LASER SYSTEM IN TESTS AGAINST ROCKETS AND UNMANNED AERIAL SYSTEM

27 November 2012

Lockheed Martin today announced that it has successfully demonstrated a portable, ground-based military laser system in a series of tests against representative airborne targets. Lockheed Martin developed the Area Defense Anti-Munitions (ADAM) system to provide a defense against short-range threats, such as rockets and unmanned aerial systems. Since August, the ADAM system has successfully engaged an unmanned aerial system target in flight at a range of approximately 1.5 kilometers (0.9 miles) and has destroyed four small-caliber rocket targets in simulated flight at a range of approximately 2 kilometers (1.2 miles).



Designed for short-range defense of high-value areas including forward operating bases, the ADAM system's 10-kilowatt fiber laser is engineered to destroy targets up to 2 kilometers (1.2 miles) away. The system precisely tracks targets in cluttered optical environments and has a tracking range of more than 5 kilometers (3.1 miles). The system has been designed to be flexible enough to operate against rockets as a standalone system and to engage unmanned aerial systems with an external radar cue. The ADAM system's modular architecture combines commercial hardware components with the company's proprietary software in an integrated and easy-to-operate system.

"In developing the ADAM system, we combined our proven laser beam control architecture with commercial hardware to create a capable, integrated laser weapon system," said Paul Shattuck, Lockheed Martin's director of directed energy systems for Strategic and Missile Defense Systems.

Sensor image shows engagement by the ADAM system of an unmanned aerial system target.

<http://www.lockheedmartin.com/us/news/press-releases/2012/november/1127-ss-adam.html>

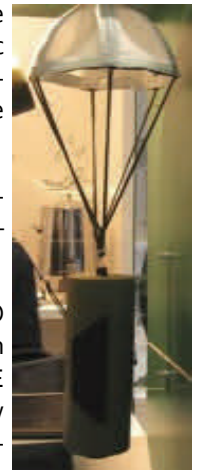
FUTURE FIRES TO FOCUS ON PRECISION, CLEAN WEAPONS

7 December 2012

In recent years the role of armaments and weapons in military exhibitions is diminishing, reflecting the diminishing role of kinetic effects and the complex public perception as to their role in modern asymmetric warfare. Hence, the armaments and munitions presented at AUSA and the Modern Day Marine Expo emphasized focused precision effect and low collateral damage as outstanding qualities. This reflected the concern of manufacturers and users alike to those issues.

Examples included weapons offering 'man in the loop' control, and 'clean' artillery projectiles or aerial munitions providing effective area saturation effect without the hazardous duds (unexploded ordnance – UXO), complying with the limitations derived from the Convention on Cluster Munitions (CCM).

Two manufacturers are offering new versions of munitions designed to cover a wide area but leave no UXO after the attack. At AUSA 2012 IMI unveiled a new M-454 Super-High Explosive (S-HE) round, a 155mm artillery projectile fitted with two fuses. According to IMI, the M454 is more efficient than standard HE rounds, requiring less ammunition to complete each mission, thus reducing logistics footprint. The new round is compatible with all NATO 39, 45 and 52 Caliber Guns. Textron Systems is offering a new area attack weapon system that is highly effective against soft targets including light vehicles, enemy combatants and air defense sites. Textron Systems is also using the AP-BLU as a unitary warhead for the Guided Clean Area Weapon (CLAW), designed to engage soft targets in open area, attacked from an unmanned aerial vehicle. IMI 454 Super HE artillery round. Photos: Tamir Eshel, Defense Update



Armies using the MLRS or HIMARS systems could find the new Ground-Launched Small Diameter Bomb (GL-SDB) an interesting prospect to modernize combat capabilities in compliance with the CCM. Boeing, the producer of SDB is planning to strap its bombs on existing M29 rockets emptied from their DPICM bomblets. Using the rocket motor to accelerate the bomb into a trajectory bringing it to an altitude and speed from where it can deploy its wings and glide to hit the designated as it would do when launched from an aircraft. Boeing is developing a laser-guided version of the Small Diameter Bomb for use with SOCOM AC-130J gunships.

(Continued on page 12)

(Continued from page 11)



Photo: Boeing

To enhance precision, while maintaining low cost, Boeing is developing the 'Laser SDB', utilizing the Laser JDAM guidance kits. 'With the laser SDB pilots can now prosecute moving, relocateable and maritime targets travelling at highway speeds' Boeing officials said. The first application of Laser SDB will be with the Air Force Special Operations Command (AFSOC) as the US Air Force plans to equip the new AC-130W 'Stinger II' gunships with this capability.

Boeing is also promoting new ideas about future weapons supporting expeditionary naval and ground forces. Among these conceptual designs is the Joint Air-Breathing Multi-role Missile (JABMM), extending the strike range of ground-launched weapons well beyond the range of rocket-propelled weapons. Such weapons could be deployed on surface combatants such as the Littoral Combat Ship (LCS) or carried on tactical vehicles supporting expeditionary ground forces, airborne or Marine Corps. Concept drawing: Boeing

Supporting future amphibious assault, the Marine Corps will have to rely on precision artillery fire delivered from the sea, by the Navy warships. However, today's destroyers are armed with 5" (127mm) guns that are not designed to provide precision fires. Such capability will be fielded with the Zumwalt class (DDG-1000) guided missile destroyers currently under construction, that will be equipped with 155mm Advanced Gun Systems (AGS) firing specially developed Long Range Land Attack Projectiles (LRLAP). See prior highlight on BAE Systems contract award for AGS.



While the AGS and LRLAP offer great future capabilities, the Navy plans to have only three such vessels. Hence the need to upgrade the current Mk45 Mod 4 5" gun system operational on DDG 51 guided missile destroyers and CG-47 guided missile cruisers. BAE Systems is developing such capability under the 5" Standard Guided Projectile (SGP) program. A sabot version of the 5" SGP projectile will also be compatible with the 155mm howitzers, enabling Marine and Army Artillery Corps to engage targets with high precision.



A futuristic weapon that has already passed the concept definition is the electromagnetic rail gun. A prototype developed by General Atomics Electromagnetics system (GA-EMS) group for the Office of naval Research has successfully performed initial firings at the Naval Surface Warfare Center at Dahlgren, VA. And at the Army Dugway Proving Ground in Utah. The gun is designed to deliver significantly higher muzzle energies that ever demonstrated in a tactical relevant configuration. The full scale 'Blitzer' EM Rail Gun System is currently undergoing a series of full energy tests and evaluation by the navy.

http://defense-update.com/20121207_fire-support.html

NAVY AWARDS BOEING \$23 MILLION FOR LASER JDAM

7 September 2012

The US Navy recently awarded Boeing \$23 million on the first full-rate production contract for the Laser Joint Direct Attack Munition (Laser JDAM), after successfully completing integrated test. Under the modified contract, Boeing will deliver 2,384 precision laser guided sets by February 2014. Previous contracts awarded by the Navy were three Low Rate Initial Production (LRIP) order amounting about 2,500 kits. The sets will be available for field weapons assembly, expanding the capability of basic JDAM tail kits, by providing a dual-mode, Global Positioning System aided Inertial Navigation System (GPS/INS) and laser guided weapon.

When employed, these weapons have proven highly accurate and can be delivered in any flyable weather. JDAM can be launched from more than 15 miles from the target with updates from GPS satellites to help guide the weapon to the target. Laser JDAM has been integrated with the GBU-38. Follow-on integration with the GBU-31 and GBU-32 is planned. The U.S. Navy's first Laser JDAMs were delivered in October 2008. In March 2010, the Navy selected Laser JDAM to satisfy its Direct Attack Moving Target Capability (DAMTC) requirement.



Laser JDAM destroys a target during testing at the China Lake Naval Weapons Station, Calif. Photo: NAWCWD

http://defense-update.com/20120907_navy_laser-jdam.html

(Continued on page 13)

(Continued from page 12)

GENERAL DYNAMICS AWARDED \$4.6 BILLION FOR SUBMARINE PROGRAMS

4 January 2013

General Dynamics Electric Boat was recently awarded three U.S. Navy contracts totaling \$4.6 billion to design and develop the next-generation strategic deterrent submarine, and to continue construction and purchasing of materials for Virginia-class attack submarines.

Under a five-year, \$1.85 billion Ohio Replacement Program contract, Electric Boat will perform research and development work for this new class of ballistic-missile submarine, which is scheduled for a 2021 construction start. Additionally, Electric Boat will continue development of the joint U.S. Navy / Royal Navy Common Missile Compartment for Ohio Replacement submarines and the UK Successor-class ballistic-missile submarine. The potential value of this contract is \$1.995 billion.

Electric Boat also received a \$2.5 billion award to build two Virginia-class submarines – South Dakota (SSN-790) and Delaware (SSN-791) – the 17th and 18th ships of the class. Construction of Virginia-class submarines is shared between Electric Boat, the prime contractor, and its teammate, Newport News Shipbuilding. Under the third award, Electric Boat will receive \$308 million to purchase long lead-time materials for the as-yet unnamed Virginia-class submarines SSN-792, SSN-793 and SSN-794.

http://www.generaldynamics.com/news/press-releases/detail.cfm?customel_dataPageID_1811=18233

QATAR REQUESTS SALE OF HIMARS, ATACMS AND GMLRS

24 December 2012

The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Qatar for rocket and missile systems and associated requests for an estimated cost of \$406 million.

The Government of Qatar has requested a possible sale of 7 M142 High Mobility Artillery Rocket System (HIMARS) Launchers with the Universal Fire Control System (UFCS); 60 M57 Army Tactical Missile System (ATACMS) Block 1A T2K Unitary Rockets; 360 M31A1 Guided Multiple Launch Rocket System (GMLRS) Unitary Rockets as well as Practice Rockets, Trainers, Field Artillery Tactical Data System and Vehicles. The prime contractor will be Lockheed Martin Missile and Fire Control in Dallas, Texas.

http://www.deagel.com/news/FMS-Qatar-Requests-Sale-of-HIMARS-ATACMS-and-GMLRS_n000011095.aspx

ISRAEL REQUESTS 6,900 GBU-31, GBU-38 AND GBU-39 SMART BOMBS

10 December 2012

The Defense Security Cooperation Agency notified Congress today of a possible Foreign Military Sale to Israel of 6,900 Joint Direct Attack Munitions (JDAM) tail kits and associated requests for an estimated cost of \$647 million.

The Government of Israel has requested a possible sale of the JDAM tail kits (GBU-31) for MK-84 warheads and BLU-109 warheads and (GBU-38) for MK-82 warheads; as well as 3,450 MK-84 2000 lb General Purpose Bombs; 1,725 MK-82 500 lb General Purpose Bombs; 1,725 BLU-109 Bombs; 3,450 GBU-39 Small Diameter Bombs; 11,500 FMU-139 Fuses; 11,500 FMU-143 Fuses; and 11,500 FMU-152 Fuses. Also included are parts, equipment, training, documentation, and other related elements of support.

http://www.deagel.com/news/FMS-Israel-Wants-6900-GBU-31-GBU-38-and-GBU-39-Smart-Bombs_n000011041.aspx

TURKEY REQUESTS 117 AIM-9X-2 SIDEWINDER AIR-TO-AIR MISSILES

24 December 2012

The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Turkey for SIDEWINDER missiles and associated requests for an estimated cost of \$140 million.

The Government of Turkey has requested a possible sale of 117 AIM-9X-2 SIDEWINDER Block II All-Up- Round Missiles, 6

(Continued on page 14)

(Continued from page 13)

AIM-9X-2 Block II Tactical Guidance Units, 6 Dummy Air Training Missiles, 130 LAU- 129 Launchers, containers, missile support and test equipment, provisioning, spare and repair parts, personnel training and training equipment, publications and technical data, U.S. Government and contractor technical assistance and other related logistics support. The prime contractor will be Raytheon Missile Systems Company in Tucson, Arizona.

http://www.deagel.com/news/FMS-Turkey-Wants-117-AIM-9X-2-Sidewinder-Air-to-Air-Missiles_n000011098.aspx

RAYTHEON AWARDED \$254.6 MILLION FOR TOMAHAWK BLOCK IV MISSILE

21 December 2012

The U.S. Navy awarded Raytheon Company a \$254.6 million contract to procure Tomahawk Block IV tactical cruise missiles for fiscal year 2013. The contract calls for Raytheon to build and deliver Tomahawk Block IV cruise missiles, conduct flight tests and provide life-cycle support. Production and delivery of the missiles is scheduled to begin in 2013.

A major enhancement to the Tomahawk Block IV missile includes a two-way satellite data-link that enables a strike controller to redirect the missile in-flight to preprogrammed alternate targets or more critical targets.

"This missile provides unparalleled capability and has greatly contributed to the security of our country and our allies," said Harry Schulte, vice president of Air Warfare Systems for Raytheon Missile Systems.

<http://raytheon.mediaroom.com/index.php?s=43&item=2244>

RAYTHEON AWARDED \$108 MILLION FOR SM-2 PRODUCTION

17 December 2012

The U.S. Navy awarded Raytheon Company a \$108 million contract for continued production of Standard Missile-2 all-up rounds, a majority of which will be sold to U.S. allies through foreign military sales. This award brings the total fiscal year 2011 contract value to more than \$200 million.

"The U.S. Navy has committed to supporting SM-2 past 2035, and this contract award reflects our international partners' desire to maintain this key defensive asset in their inventories," said Michael Campisi, Raytheon Missile Systems' senior director for SM-2 and SM-6 production. "The SM-2 production line is open for all our allies' requirements, and there will be full mission support available throughout the lifecycle of this critical asset."

SM-2 is deployed by the U.S. and eight allied navies. The missile provides high- and low-altitude intercept capabilities and performance against advanced anti-ship missile threats.

<http://raytheon.mediaroom.com/index.php?s=43&item=2242>

ATK AWARDED CONTRACT FOR MODULAR DIVERT AND ATTITUDE CONTROL SYSTEM (MDACS) TECHNOLOGY DEVELOPMENT AND RISK REDUCTION

3 December 2012

ATK has been awarded a \$52.7 million contract from the Missile Defense Agency (MDA) to continue development of Modular Divert and Attitude Control System (MDACS) technologies applicable to the Standard Missile-3 (SM-3) Block IIB missile interceptors. The technology contract will be executed by ATK Defense Group's Elkton, Maryland operation.

The MDACS propulsion system provides the impulse needed for the kinetic warhead to acquire and lock onto the target, maintain stable flight and perform end-game maneuvers for final intercept. Specific technologies to be advanced will include elements of the new MDACS system architecture to address the longer mission timelines associated with growing threats. ATK's unique approach to a ship-board compatible MDACS improves the SM-3 Block II kinematic performance, providing a key performance upgrade to the missile.

(Continued on page 15)

(Continued from page 14)

LOCKHEED MARTIN RECEIVES JASSM CONTRACT FOR INTEGRATION

December 2012

Lockheed Martin received a \$5.1 million Foreign Military Sale contract from the U.S. Air Force to support integration of the Joint Air-to-Surface Standoff Missile (JASSM) onto the Finnish Air Force (FiAF) F-18C/D aircraft.

The contract is for the first phase of a six-year effort of software development and aircraft integration support. Finland is the second international customer for JASSM, following the Commonwealth of Australia, which became the first export customer in February 2006.

JASSM integration will coincide with the FiAF Mid-Life Two upgrade of their F-18 aircraft. The U.S. Navy will lead the integration effort in coordination with the U.S. Air Force, Lockheed Martin and the FiAF. Integration activities will take place at the Naval Air Warfare Center Weapons Division in China Lake, Calif.

The award aligns with the recent JASSM Production Lot 10 procurement contract to employ economies of scale, reducing cost for both the U.S. Government and Finland. JASSM on the

F-18C/D enables Finland to fulfill its regional defense role, as well as its European community and NATO Partnership for Peace responsibilities.

JASSM is an autonomous, air-to-ground, precision-guided standoff missile designed to meet the needs of U.S. and allied warfighters. Armed with a penetrator and blast fragmentation warhead, JASSM cruises autonomously, day or night in all weather conditions. The missile employs an infrared seeker and enhanced digital anti-jam Global Positioning System to find specific points on targets.

http://www.lockheedmartin.com/us/news/press-releases/2012/december/mfc_120312_Lockheed_Martin_JASSM_Contract_Integration.html

FIRST MBDA METEOR FIRING FROM A EUROFIGHTER TYPHOON

6 December 2012

The Meteor Beyond Visual Range Air-to-Air Missile has been successfully launched from a Eurofighter Typhoon as part of the Future Enhancements Flight Test Programme. This current package of work begins the full integration of the Meteor missile with all Eurofighter Typhoon systems.

The missile was eject launched from a rear fuselage missile station, which on Eurofighter Typhoon is semi-conformal for aircraft drag and radar signature reduction. The missile motor was fired, providing data that will allow the missile launch envelope to be expanded. The flight trials were conducted with integrated support from QinetiQ and MBDA at a firing range in Aberporth, Wales, UK.



Meteor, a beyond visual range air-to-air missile manufactured by MBDA will provide the Eurofighter Typhoon aircraft with the next generation of cutting edge weapons capability. Featuring advanced air breathing motor technology for maximum range and the latest electronics to deliver optimum combat performance, it will further complement the Eurofighter Typhoon short and medium range air-to-air missile capabilities. The integration of the Meteor weapon adds another layer to Eurofighter Typhoon's swing-role capabilities and ensuring the pilot is able to engage hostile air threats at long range at the same time as identifying and engaging targets on the ground.

<http://www.mbda-systems.com/mediagallery/#/news/3014>

UK MOD ORDERS ADDITIONAL PAVEWAY IV PRECISION-GUIDED BOMBS

4 December 2012

Raytheon UK has won a £25 million contract from the UK MOD for further Paveway™ IV precision-guided bombs. This latest contract will adhere to the accelerated delivery timeframe of two previous orders, placed over the last year, totaling nearly £80 million.

(Continued on page 16)

(Continued from page 15)



Bob Delorge, chief executive Raytheon UK, commented: "The Paveway IV is well recognized as being the RAF's precision-guided bomb of choice, with accuracy, flexibility, and reliability being some of the key characteristics of the system. The Paveway IV weapon system has proved itself pivotal to operations in Afghanistan and also in Libya."

http://www.deagel.com/news/UK-MoD-Orders-Additional-Paveway-IV-Precision-Guided-Bombs_n000011021.aspx

RAYTHEON AWARDED \$422 MILLION CONTRACT FOR PAVEWAY™ II

28 November 2012

Raytheon Company was awarded a \$422 million contract for its combat-proven Paveway II family of precision-guided munitions. The company was awarded the direct commercial sale from an international customer. Paveway is a Raytheon-designed kit that transforms "dumb" bombs into precision-guided munitions.

"Paveway has revolutionized tactical air-to-ground warfare by providing the warfighter unparalleled accuracy and standoff capability, proving itself in every major conflict in which it has been used," said Dr. Taylor W. Lawrence, Raytheon Missile Systems president. "This contract further demonstrates Raytheon's long-standing commitment to its international customers."

Raytheon continues to evolve Paveway to meet the needs of the U.S. armed forces as well as allied nations. Newer versions of Paveway include Global Positioning System/Inertial Navigation System guidance capabilities, which combine the precision and flexibility of traditional laser-guided weapons with the all-weather capability of GPS guidance.

<http://raytheon.mediaroom.com/index.php?s=43&item=2228>

CASSIDIAN DEVELOPS ELECTRO-OPTIC PROTECTION SYSTEM AGAINST LASER-GUIDED WEAPONS

19 December 2012

Cassidian, the defence and security division of EADS, has developed an electronic defence system which, for the first time, will provide vehicles, ships and helicopters with reliable protection against laser-guided weapons.

"The threat from lasers to armed forces on a mission is continuing to increase, because weapons such as laser-guided missiles or sniper rifles with laser targeting optics are widespread," explains Elmar Compans, head of the Sensors & Electronic Warfare unit at Cassidian. "Through the combination of our many years of experience with laser warning sensors and the most varied defence lasers, as well as the use of commercially available components, we have succeeded in developing a uniquely effective, targeted countermeasure."

The defence concept, which Cassidian has developed for the German procurement authority, is based on the so-called "dazzling" process, which means dazzling the targeting optics of the enemy missile with an eye-safe laser beam. The most common countermeasure currently is to spray artificial fog. Cassidian's defence system uses special multispectral technology which is also effective against protective goggles. The use of an eye-safe laser is important to be able to use the system even in a civil environment, e.g. on board ships or helicopters in harbors or airports. This means that the dazzling is not associated with eye damage. Working together with the Luftwaffe Institute of Aviation Medicine, Cassidian has carried out a medicinal study and shown that the dazzle effect falls below the radiant flux density which is permissible for eyes. For protection to be effective, a threat must be quickly and precisely detected by a sensor with a very high directional resolution, which enables the precise targeting of the laser beam. Cassidian's defence system has demonstrated its effectiveness during successful field tests at the Bundeswehr Technical Centre 81 in Greding. Further tests are to follow next year.

http://www.deagel.com/news/Cassidian-Develops-Electro-optic-Protection-System-against-Laser-guided-Weapons_n000011072.aspx

(Continued on page 17)

(Continued from page 16)

BOEING TO UPGRADE B61 NUCLEAR FREE FALL BOMB

27 November 2012

Boeing will help to modernize the B61 free-fall ballistic munition by designing a new tail kit under a \$178 million contract from the U.S. Air Force. The design, development and qualification phase of the B61 (Mod 12) Life Extension Program is expected to run for three years. The program further expands Boeing's Direct Attack weapons portfolio. The B61 is a U.S. nuclear weapon that was designed in the early 1960s and went into full production in 1968. Per the contract, Boeing will work with the departments of Defense and Energy on this program to replace obsolete parts and improve its reliability.

"Boeing has provided a wide range of reliable and affordable direct attack weapon solutions to the warfighter for more than a decade," said Debbie Rub, Boeing vice president and general manager for Missiles and Unmanned Airborne Systems. "We will apply our proven experience in tail kit production to this platform to effectively upgrade a vital deterrent capability."

http://www.deagel.com/news/Boeing-to-Upgrade-B61-Nuclear-Free-Fall-Bomb_n000010996.aspx

SWEDISH NAVY ORDERS UPGRADED TORPEDO 62 HEAVYWEIGHT FROM SAAB

14 December 2012

Defence and security company Saab have received two new contracts from the Swedish Defence Material Administration with a total value of MSEK 194. The contracts comprise upgrade of the heavyweight Torpedo 62 and support for underwater weapon systems.

The Torpedo 62 is an advanced heavy weight torpedo for combating surface targets. The Torpedo 62 is equipped with an advanced propulsion system capable of high speed and long endurance together with a state of the art homing system. The upgrade of Torpedo 62 comprises of new and improved functions for communication and warhead initiation, providing an important capability enhancement for the system.

<http://www.saabgroup.com/en/About-Saab/Newsroom/Press-releases--News/2012---12/Orders-for-Saabs-Underwater-Weapon-Systems/>

SAAB HAS RECEIVES ORDER FOR THE SURFACE-TO-SURFACE MISSILE RBS15 MK3

14 December 2012

Defence and security company Saab has received an order from its German partner DBD for the Surface-to-Surface Missile RBS15 Mk3. The order value is SEK 615 million. Deliveries will take place during the period 2014 to 2016.

The RBS15 Mk3, jointly produced and marketed by Saab and DBD, is a heavy weight Surface-to-Surface Missile system with a range of more than 200 km and the added capability to combat land targets. The system has previously been sold to Germany, Poland and Sweden.

<http://www.saabgroup.com/en/About-Saab/Newsroom/Press-releases--News/2012---12/Saab-Receives-Order-for-RBS15-Mk3/>

US NAVY'S X-47B UNMANNED AIRCRAFT CONDUCTS FIRST CATAPULT LAUNCH

30 November 2012

The X-47B Unmanned Combat Air System (UCAS) demonstrator successfully completed its inaugural land-based catapult launch here Nov. 29, marking the start of a new era for naval aviation. "Carrier-based unmanned aircraft will change the concept of operations for the carrier-controlled airspace," said Rear Adm. Mat Winter, the program executive officer for Unmanned Aviation and Strike Weapons. "The N-UCAS program's goal is to demonstrate integration of an unmanned aircraft into a carrier environment and reduce technical risk associated with developing potential future unmanned, carrier-compatible systems." Video of the launch: <http://youtu.be/HTiRY2ieDNo>

"The X-47B shore-based catapult launch we witnessed here today will leave a mark in history," said Vice Adm. David Dunaway, NAVAIR commander. "We are working toward the future integration of unmanned aircraft on the carrier deck, some-

(Continued on page 18)

(Continued from page 17)

thing we didn't envision 60 years ago when the steam catapult was first built here."

The combined Navy and Northrop Grumman team will continue ground-based catapult verification and final flight software validation at Pax River before embarking on USS Harry S. Truman (CVN 75) later this month for its initial sea trials.

http://www.deagel.com/news/US-Navys-X-47B-Unmanned-Aircraft-Conducts-First-Catapult-Launch_n000011005.aspx

FIRE SCOUT FRIGATE INTEGRATION CONTINUES; TO BEGIN LIVE-FIRE ASSESSMENT

11 December 2012

Janes Review reported the US Navy (USN) intends to conduct a live-fire assessment of an MQ-8B Fire Scout vertical take-off and landing unmanned air vehicle (UAV) armed with the Advanced Precision Kill Weapon System (APKWS) in March 2013. The assessment is part of an urgent operational request to arm the MQ-8B with six APKWS.

CHINA UNVEILS YI LONG UAV

14 November 2012

China has unveiled for the first time its Yi Long unmanned aerial vehicle (UAV) local media reported on Wednesday, which its makers claim is far cheaper than its Israeli and American analogs at less than \$1 million. The UAV, which was unveiled at the Air China aerospace show in Zhuhai on Tuesday, has been under development by the Chengdu aircraft-building institute since 2005, and made a first test-flight in 2008, and has only been previously shown in model form.



Yi Long can be used for military or civil tasks, the makers say, including geophysical or post-disaster survey work. The aircraft has a length of 9.34 meters, a wingspan of 14 meters and a mass of just over a ton. It has a ceiling of 5,300 meters and a range of 4,000 kilometers, with an endurance of up to 20 hours.

Pictures shown on Sky News show it has having a similar configuration to the US-made MQ-9 Reaper, with a pusher engine, V-tail, long-span straight wing, and fuselage shape configured for low radar cross-section. It was also shown armed with under-wing missiles, and an electro-optical sensor turret under the forward fuselage. photo © AFP/ Philippe Lopez

http://en.rian.ru/military_news/20121114/177450890.html

GENERAL DYNAMICS AND RAFAEL TEAM TO PRODUCE REMOTE WEAPON STATIONS

29 November 2012

General Dynamics Armament and Technical Products, and RAFAEL Advanced Defense Systems Ltd., are offering the Samson line of Remote Weapons Stations (RWS) to the U.S. military. These cost-effective and field-proven remote weapons stations allow a gunner to remain protected inside the vehicle while operating a weapon remotely. The larger variant is lighter than manned turrets and does not require penetration into the vehicle hull, saving significant interior space for personnel and mission equipment.

Four Samson variants will be offered, including the combat-proven MKI which is fielded in Afghanistan on Czech Army Pandurs. Samson configurations are also currently in service with the Israeli Defense Forces and other allied armed services. The RWS variants support a variety of weapons including 5.56mm to .50 caliber machine guns, 40mm grenade launchers and cannons up to 40mm, and can be integrated onto new or existing light to heavy combat vehicles. The Samson RWS product line will be produced and supported in the US.

http://www.deagel.com/news/General-Dynamics-and-Rafael-Team-to-Produce-Remote-Weapon-Stations_n000011001.aspx

LS3 FOUR-LEGGED ROBOT PLAYS 'FOLLOW THE LEADER'

Last December, in the woods of central Virginia around Fort Pickett, the Legged Squad Support System (LS3) four-legged robot has been showing off its capabilities during field testing. Working with the Marine Corps Warfighting Laboratory (MCWL), researchers from DARPA's LS3 program demonstrated new advances in the robot's control, stability and maneuver-

(Continued on page 19)

(Continued from page 18)



ability, including "Leader Follow" decision making, enhanced roll recovery, exact foot placement over rough terrain, the ability to maneuver in an urban environment, and verbal command capability.

The LS3 program seeks to demonstrate that a highly mobile, semi-autonomous legged robot can carry 400 lbs of a squad's equipment, follow squad members through rugged terrain and interact with troops in a natural way similar to a trained animal with its handler. The robot could also be able to maneuver at night and serve as a mobile auxiliary power source to the squad while on patrol.

"This was the first time DARPA and MCWL were able to get LS3 out on the testing grounds together to simulate military-relevant training conditions," said Lt. Col. Joseph Hitt, DARPA program manager. "The robot's performance in the field expanded on our expectations, demonstrating, for example, how voice commands and "follow the leader" capability would enhance the robot's ability to interact with warfighters."

Video from the testing shows the robot negotiating diverse terrain including ditches, streams, wooded slopes and simulated urban environments.

The December testing at Fort Pickett is the first in a series of planned demonstrations that will test the robot's capabilities across different environments as development continues through the first half of 2014. The DARPA platform developer for the LS3 system is Boston Dynamics of Waltham, Mass. Video at: <http://defense-update.com/video/ls3-four-legged-robot-plays-follow-the-leader>.

DEPLOYMENTS TO TURKEY, AS REPORTED BY JANES NEWS

7 December 2012

Netherlands to deploy two Patriot batteries to Turkey

The Netherlands has agreed to deploy two Patriot surface-to-air missile (SAM) batteries to Turkey from its ground-based Air Defence Command, to defend the NATO ally against potential Syrian missile attacks, it was announced on 7 December. According to the Netherlands Ministry of Defence (MoD), "a maximum of 360 personnel" will be deployed to the country beginning in January, reportedly for a year.

Germany approves Turkey Patriot SAM deployment

The German cabinet has approved support for NATO's integrated air defence in Turkey, with Germany set to deploy two Raytheon Patriot Surface-to-Air Missile (SAM) batteries and up to 400 personnel, the German Ministry of Defence stated on 6 December. A Luftwaffe spokesperson told IHS Jane's on 7 December that each battery will consist of six launch units, compared with a standard peace complement of eight launch units.

SUBMERGED SEVERODVINSK SUB TEST FIRES CRUISE MISSILE

28 November 2012

Russia's newest attack submarine, the Yasen class Severodvinsk, successfully fired a cruise missile while submerged, a source in the United Shipbuilding Corporation told RIA Novosti on Wednesday. The test launch was the second during the current manufacturer's sea trials in the White Sea. On Monday, the sub fired a cruise missile from a surfaced position.

"The multipurpose nuclear-powered submarine Severodvinsk fired a supersonic cruise missile at a land target while submerged during sea trials in the White Sea. The target was successfully destroyed," the source said.

The Severodvinsk, laid down in 1993, is one of eight Yasen class boats ordered by the Russian Navy. The second sub of the series, the Kazan, is being built under the updated Project 885M Yasen-M. The Severodvinsk has a submerged displacement of 13,800 tons, length of 119 meters, speed of 31 knots, and can dive to 600



(Continued on page 20)

(Continued from page 19)

meters. It has a crew of 90 including 32 officers. Its main armament consists of 3M55 Oniks (SS-N-26) and 3M54 (SS-N-27) Kalibr cruise missiles, self-guided torpedoes and mines. © Photo Oleg Kuleshov

http://en.rian.ru/military_news/20121128/177797452.html

RUSSIA TO DEVELOP PRECISION CONVENTIONAL ICBM OPTION

14 December 2012

Russia may develop a non-nuclear precision-guided payload capability for its new hundred-ton class liquid-fueled ICBM if need be, Strategic Missile Forces (RSVN) Commander Col. Gen. Sergei Karakayev said on Friday. "The availability of a powerful liquid-fueled ICBM allows us the capability of creating a strategic high-accuracy weapons system with a conventional payload with practically global range, if the US does not pull back from its program for creating such missile systems," he said.

The new liquid-fuel ICBM will be able to penetrate any missile defense system likely to emerge in the near future, he said. "The higher energy provided by liquid fuels gives it more varied and effective methods of countermeasures against global missile defense screens including space-based elements of those systems," he said.

Analysts say arming ICBMs with conventional warheads for long-range attack might produce problems as well as solutions. "A conventionally-armed ICBM was one option considered as part of Washington's Prompt Global Strike studies," said Douglas Barrie, air warfare analyst at the London-based International Institute of Strategic Studies. "The advantages of reach and speed are self-apparent, however, the issue of differentiating between a nuclear and a conventional warhead once the system was launched but prior to impact raises a concern of how those targeted might respond," he added.

Russia is also developing a solid-fuel intercontinental ballistic missile (ICBM) to replace all its current "fifth-generation" long-range missile systems including the Yars and Topol M, Karakayev said. The RSVN has carried out a small number of test firings of a prototype of the new missile, the last of which was carried out from the Kapustin Yar range on October 24 from a mobile launcher. "This missile was built with maximal use of technologies developed in the course of producing fifth-generation systems in order to get it into service more quickly and reduce costs," he said.

It is the first formal announcement from the RSVN command that the fifth-generation solid-fueled ICBM would be deployed; but previously unnamed sources had said it would be deployed by 2014.

http://en.rian.ru/military_news/20121214/178154441.html

RUSSIA TO BRING BACK RAILROAD-BASED ICBM

26 December 2012

Russia will restart production of railway-based intercontinental ballistic missiles (ICBM), with prototypes to be deployed by 2020, a senior Russian defense industry official said on Wednesday. Work has already begun on the prototypes, which will utilize exclusively domestically-made components, the official told RIA Novosti on condition of anonymity. © Photo Courtesy of SMF (RVSN) press service

The Soviet military deployed its first missile train in 1987, and had 12 of them by 1991. But by 2005 they had all been destroyed under the START II arms reduction treaty with the United States. However, the treaty's 2010 replacement, New START, does not prohibit the development of railway-based ICBMs.

The original railway-based system involved SS-24 Scalpel missiles that weighed 104 tons, required three locomotives to move, and were so heavy that they damaged railroad tracks. It was thought that missiles launched from the moving trains were harder to track than stationary launches. The new missiles will be half the weight of their decommissioned Soviet analogues, allowing them to fit into one railcar, the official added.

The return to missile trains is an apparent response to US plans to position elements of its missile defense system in Eastern Europe, said Alexander Konovalov, the president of the Institute for Strategic Assessment, a Moscow-based private think-



(Continued on page 21)

(Continued from page 20)

tank. However, the prominent Russian military expert Konovalov said that this apparent return to the cumbersome Soviet technology, even in revamped form, was a "bad idea."

http://en.rian.ru/military_news/20121226/178413560.html

NEW 'SMART' LASER DEVICE CAN DETECT EXPLOSIVES IN A JIFFY

11 December 2012

Scientists have developed a new faster and sensitive laser device capable of detecting tiny traces of explosive vapor in a jiffy. Is this the end of bomb sniffer dogs! The prototype - a pulsed, quantum laser-based, cavity ring-down spectrometer - is being tested at the US government's Los Alamos National Laboratory in New Mexico.

The laser machine developed by the University of New South Wales (UNSW) is "about 100 times more sensitive and 100 times faster than any other detection device", Associate Professor Charles Harb said. "We can measure the components of TNT very clearly, down to the tiny sub-millitorr pressures, in other words in the parts per billion range in atmosphere," Harb said.

The laser device could sniff bags travelling along a conveyor belt and instantly alert security personnel if it detects explosive vapours from a passing object, such as a suitcase. It could replace intrusive airport security checks such as pat downs and full body scans and bomb sniffer dogs, UNSW said in a statement. According to Harb, the device uses mirrors to repeatedly pass through the vapour in a "figure-of-eight" path, which provides a more accurate measurement. Harb expected that it would take two years of testing and calibrating the prototype - to detect "unique signatures of other substances and different types of explosives" - before it's ready for commercial use.

Harb and his team began working on the device in 2005 when they were asked by the Australian Federal Police to create a machine that could assist with forensic investigations and detect explosive residue at crime scenes.

http://articles.economicstimes.indiatimes.com/2012-12-11/news/35749659_1_sniffer-dogs-device-conveyor-belt

CONTACT INFORMATION

☎ 32-2-707.54.16

☎ 32-2-707.53.63

🌐 <http://www.msiac.nato.int>

✉ info@msiac.nato.int

ACCIDENTS REPORTING

18 October 2012 - 27 December 2012

*(Re-printed with the permission of ility engineering (www.saunalahti.fi/ility)
from their Hazards Intelligence (Hint) Journal)*

18 October - UK

121018-14 Lancashire, near Preston, Bamber Bridge. Sprint Print. Thirteen people were affected, but not seriously injured, after workers disturbed a stockpile of phosphorous grenades left in the sealed-up cellar of a property in Bamber Bridge since the Second World War. Lancashire Fire and Rescue Service said it was thought that one of the grenades, issued to members of the Home Guard during the Second World War, was dislodged and cracked. The device is a glass bottle about eight inches high which, on being thrown and hitting the target, was intended to break and release the contents, a highly flammable mixture of phosphorus and benzene, self-igniting on exposure to air.

Fire-fighters were first called to reports of a fire at the premises of Sprint Print at 12:23, but on arrival they soon found that wisps of smoke thought to be from a fire were in fact chemical fumes from a source, thought to be a small container or bottle, in the cellar. Two drainage company employees investigating a report from the occupier of damp masonry were thought to have inadvertently dislodged one of the bottles in the stockpile, causing it to leak and release fumes. They were exposed to the fumes and were injured along with three workers at Sprint Print. Of these five casualties, two suffered chemical burns and three experienced breathing problems. Two paramedics and six hospital staff at the Royal Preston Hospital, where the casualties had been taken, also subsequently complained of breathing difficulties. One casualty suffered blisters to the ex-posed skin of his arms, but all 13 casualties responded well to treatment and were allowed home. The cracked grenade was made safe and removed from the building for disposal by an army disposal team and the rest of the stockpile will be disposed of in a controlled explosion.

23 October - Sudan

121023-02-A Khartoum. A major fire broke out around 23:30 after several explosions at an arms factory in Sudan's capital of Khartoum. Soldiers blocked roads to the Yarmouk ammunition factory where more explosions erupted as fire-fighters tried to contain the fire. After two hours the fire had been almost extinguished.

Abdelrahman alKhidir, governor of Khartoum state, said some people had been taken to hospitals after inhaling smoke but otherwise there were no casualties, according to the state news agency SUNA. The governor said the cause of the fire and the explosions was unclear, but that nothing pointed to "external reasons". He told state television the explosion had probably occurred in a storage hall of the huge complex.



The story changed on October 24, when Sudan's Culture and Information Minister Ahmed Bilal Osman accused Israel of bombing the arms factory, threatening retaliation after a resulting fire killed two people and injured a third. The minister said four "radar-evading" aircraft were involved in the attack, which occurred at about midnight (2100 GMT). It took troops several hours to contain the blaze. He claimed that evidence pointing to Israel was found among remnants of undetonated missiles: "The people have seen it with their eyes: four planes coming from the east, and we have no enemy other than Israel. The type of rockets which we have now – and some of them did not explode – we have the

codes, we have seen the planes directly, this is recorded, and all this evidence we are going to take to the [UN] Security Council."

1 November - Sweden

121101-12 Örebro County, Karlskoga. Saab Bofors Dynamics AB. Two men were taken to hospital after an explosion in a Saab Bofors Dynamics facility, manufacturing military materiel in Karlskoga, in central Sweden. Thomas Carlsén of the local emergency services said: "They were handling a small amount of gunpowder [sic] and for some reason it ignited." Saab Bofors Dynamics is a subsidiary of the Saab Defence Group, specializing in military materiel such as missile systems and anti-tank systems.

(Continued on page 23)

(Continued from page 22)

Three people were in the immediate area when the powder exploded; two were taken to hospital, one with burns, and one who was suffering from shock. The two men were first taken to the local Karlskoga Lasarett hospital and then transferred to the Örebro University Hospital.

Karin Walka, spokeswoman for Saab Bofors Dynamics, said: "The accident happened during a manufacturing process." She was unable to disclose exactly what it was that the men had been making when the explosion occurred.

1 November - USA

121113-03 LA, Webster Parish, Camp Minden. Goex. An explosion occurred at Camp Minden, though smaller and causing less damage than one in October. [HInt 12-10a, 121015-12.] The latest explosion happened at Goex, a black powder manufacturer on the former Louisiana Army Ammunition Plant reservation, as workers were preparing to start production. Webster Parish Sheriff Gary Sexton said the explosion was confined to an enclosed room containing a grinding wheel and caused no injuries and only a little damage to equipment. No personnel were around at the time. The explosion was at least the seventh at Goex since the black powder manufacturer moved to the reservation in 1997.

- June 7, 2011: About 1,000 pounds of black powder exploded in the Goex corning mill plant. [HInt 11-06a, 110607-07.] One worker was slightly injured when he slipped and fell during the evacuation. Temporary evacuations were ordered in the immediate vicinity.

- July 15, 2006: A fire and a small explosion caused no injuries at the Goex black powder facility. [HInt ExM 06-07, 060715-15.]

- Nov. 3, 2004: Goex explosion; no injuries.

- Oct. 31, 2001: An explosion at Goex injured two employees and caused \$2.5 million in damage.

- Jan. 25, 2000: A flash fire and explosion at Goex burned one employee.

- Nov. 5, 1998: A worker died in an explosion at Goex.

2 November - Indonesia

121102-09 Gresik, Bambe area. First Corp. Widodo. Marine Lt. Col. Ainur Rofiq, Howitzer Battalion Commander of the Navy, confirmed that the ammunition which exploded in the Bambe area in Gresik, on November 2, was ammunition type 105H TNT, normally used for the Navy's Howitzer. He said the Navy often sends inactive ammunitions to the welding shop belonging to First Corp. Widodo who works in the Karang Pilang marine unit in Su-rabaya. The Howitzer Battalion, he said, asked the shop to split the ammunition: "We want it split for our new students to gain practical learning experience."

Lt. Col. Eko Wibowo, Gresik military commander, confirmed that such activity was official: "Since we do not have the tools, we enlist the help of the welding shop." Eko further explained that the ammunition was actually clean of gun powder. The explosion occurred because the welder tried to split it in a horizontal position: "It should have been placed in standing position." Nevertheless, the Navy will continue to conduct an investigation into the incident. The Navy military police has been deployed to the location of the incident in Ngambar village, said Gresik.



6 November - France

121106-08-A Aisne (02), near Villers-Cotterêts, Fleury. The 149 inhabitants of the hamlet of Fleury were ordered to shelter-in-place following the discovery of a First World War shell containing mustard agent, which began leaking after EOD specialists removed it and placed it in their vehicle. The shell was about 700mm long, and 150mm diameter, and weighed about 50 kg. It contained between four and five liters of mustard agent.

The shell was uncovered by workers of water utility company Lyonnaise des Eaux, who were digging a trench. A decontamination unit was put in place, and operatives from Civil Protection sealed the shell in a hermetic container. It was taken to their depot for destruction.

23 November - Georgia



121123-01 Krtsanisi. Georgian Defence Ministry: Krtsanisi National Training Centre. An Azerbaijani serving in Georgian armed forces, Mammad Guliyev, died in an explosion in Georgia. The explosion reportedly occurred as a result of an attempt to dismantle a shell.

According to the Georgian Defence Ministry: "An accident has occurred at the Krtsanisi training center today. Serviceman Mammad Guliyev died as he was executing his military duties. At 12.00 serviceman Guliyev found a combat shell on the polygon. By preliminary

(Continued on page 24)

(Continued from page 23)

data, he tried to dismantle the shell. The shell exploded and Mammad Guliyev died on the spot. The administration of the armed forces and a group of criminalist experts immediately arrived on the spot."

27 November - UK

121127-14 Kent, six miles north of Sheerness. Royal Navy bomb disposal experts detonated a large German mine off the Kent coast after a delicate operation to remove it from a dredger. It took seven hours to safely dislodge the Second World War magnetic/acoustic mine, containing 1,500 pounds of high explosive, which was trapped in the teeth of the dredger's drag head. The air-dropped LMB mine [British designation GC] was brought to the surface by the dredger six miles [10km] north of Sheerness.

Before carrying out a controlled explosion, a four man Navy team from Southern Diving Unit 2 in Portsmouth had carefully to remove the device from its precarious location. CPO Ian 'Scouse' Fleming, who led the team, worked for seven hours through the night in atrocious conditions to safely extract the mine and hoist it onto the dredger's upper deck. He said: "I had to crawl along a pipe to reach the mine to attach chains. It was a confined space, and waves were splashing all around me. The fuses had been bashed about a bit and were quite dangerous and the explosives were exposed. It was a tiring operation, one of the most testing I have been involved in, but everything went to plan."

The mine, which measured two meters long by 50cm diameter, was towed two miles out to sea and dropped to a depth of about ten meters. A controlled explosion then destroyed the device.

29 November - Germany

121129-11 Nordrhein-Westfalen/North Rhine-Westphalia, Dortmund. More than 7,000 Dortmund residents were evacuated after an unexploded Second World War bomb with dangerous acid fuses was discovered during construction work. By midnight, the EOD experts were able to give the all clear. The EOD experts had succeeded in making the bomb, loaded with 500 kilograms of explosives, harmless, despite a damaged acid igniter. Had it not been able to do so, the bomb would have had to be blown up – in the heart of the hospital district of the Ruhr city.

Construction workers had exposed the UXO while working at ground level, and the chemical detonator of the bomb was accidentally damaged by an excavator. Consequently, more than 7,000 were urged to leave their homes. In the evacuation zone were also three hospitals, including a children's hospital. The latter, however, did not have to be completely evacuated; patients were only moved to secure parts of the building.

30 November - Yemen

121130-03 Sanaa. A weapons depot of an arms dealer in the Yemeni capital of Sanaa exploded, injuring at least 12 people.

The Interior Ministry said in a brief statement: "Until now, 12 people were injured by the explosion of the weapons depot in Sanaa and fire-fighters have put out the fire." The explosion occurred in a basement weapons store belonging to arms dealer Garman Abdu Garman, located in a crowded neighborhood in south-western Sanaa. Four nearby houses were damaged.

A police official said on condition of anonymity that the armed bodyguards of Garman prevented the security personnel from entering the area for investigation. Another security official cited two of Garman's bodyguards as saying that "a shell fired by unknown gunmen into Garman's house caused the explosion". Garman is one of three well-known arms dealers in Yemen who come from the northern Saada province and live in Sanaa.



03 December - Mexico

121203-09 Guanajuato state, Celaya. Four people died as a result of severe burns suffered in the explosion of a powder magazine located in a desert, near the community of Jáuregui, while another five involved in the incident remained hospitalized.

04 December - India

121204-01 Maharashtra state, Pune/Poona. Ordnance Factory. An accident at Ordnance Factory injured four workers, including one in a critical condition. The incident occurred at 10.40 am Tuesday when a particular composition that the four workers were mixing went off accidentally. The factory ordered an internal inquiry into the incident. According to officials,

(Continued on page 25)

(Continued from page 24)

the four are experienced employees and were working on a chemical composition in an area called Danger Building: "The workers – Danger Building Workers as they are designated – were mixing a particular composition when the mishap took place. They are experienced professionals who have been working with the factory for years. An internal departmental inquiry has been ordered."

Initially, when the news of the mishap broke, it was rumored that there had been an explosion, but the official said: "It was not a blast. It may be called a minor accident. There has been no damage to property."

Senior inspector Ram Jadhav of Dehu Road police station said: "Our primary probe suggests that this was an accident and that there is no foul play. The incident took place when two substances were being mixed for some process. Prima facie, it looks all the precautions were taken. People are employed at the factory only after they are made aware of the risks involved here. The employees who got injured and those present are experienced staff."

13 December - Libya

121213-01 Near Sirte, village of Harawa. Ordnance experts destroyed a Scud missile warhead near Sirte after it had lain untouched for nearly 17 months. The missile, thought to be Russian-made, was allegedly fired by forces loyal to Qaddafi during fighting in the area in 2011, but failed to detonate. A bomb disposal team from Handicap International (HI), an NGO that helps the vulnerable in conflict zones, moved the warhead from the village of Harawa, where it was discovered last in November, to a secure location 21 km from Sirte and successfully disposed of it. Brendan Ramshaw, HI's technical adviser in Sirte, said: "We first came and surveyed the missile from information gathered by our community liaison teams and at the time we were unsure whether it was safe to move, or if it should be destroyed in situ." However, after an examination of the missile, the group decided it was safe to move, and transported it to a secure location outside of Sirte to be blown up. After the controlled explosion was successfully carried out, Sirte City Council presented the HI workers with a certificate of appreciation for their services in the region.



19 December - Honduras

121219-06 Department of Copán, municipality of Nueva Arcadía. At least one person was killed and three others injured when a rocket factory exploded in the department of Copan, western Honduras. Pedro Salazar, a member of the Fire Department of this area, said the explosion occurred inside a rocket factory located in a hamlet of New Arcadia Township, Copan, apparently due to careless handling of explosives. The fatality was identified as Bayron Lopez, 19, who was employed by the factory, which meets all legal requirements for operation. The injured suffered injuries of varying severity, so they were taken to a government hospital in the area.

25 December - China

121225-12-A Shanxi Province, near Linfen City. China Railway Tunnel Group: Erchu Co Ltd. At least eight construction workers died and five others were injured in a railway tunnel explosion in north China's Shanxi Province. Local government officials said the accident happened around 15:00 on December 25 when the workers were digging the Nanlu-Liangshan Tunnel in a mountain near Linfen City. The project manager reportedly tried conceal the accident that killed eight workers and injured five who are now being treated in the hospital.

The tunnel is being built by Erchu Co Ltd, a subsidiary of China Railway Tunnel Group. The company's work safety department confirmed the accident, but details of the accident were not disclosed as the official investigation is still ongoing. The accident was exposed on December 9 when someone posted a microblog that a severe accident happened on a railway construction site in Linfen City.

On January 4, the Work Safety Committee of the State Council condemned a subsidiary of a State-Owned Enterprise [SOE] which tried to cover up the explosion and called for heavier punishment for such violations. The explosion occurred around 14:40 when the workers were setting explosives in a tunnel under construction in Shanxi province. According to the Work Safety Committee of the State Council, the accident was caused by illegal blasting operations. However, the construction company, a subsidiary of the China Railway Tunnel

Group, did not report the accident to the government until it was exposed by netizens and confirmed by the government five days later on December 30. China Railway Tunnel Group is China's largest corporation for tunnel and underground projects.

(Continued on page 26)



(Continued from page 25)

Li Xiaopeng, acting governor of Shanxi province, said he felt very angry and shocked at the SOE's concealment of the fatal accident. Li and some other officials stood in silent tribute to the dead during a meeting on January 1.

Four managers in charge of the construction project were detained by police on allegations of not reporting work safety accidents. To conceal the accident, the company sent some of the injured workers to a hospital in Mengzhou in Henan province, which is more than 360 km from Puxian county of Shanxi province where the accident occurred.

According to state media, Tang Fu, 26, a worker from Sichuan province, said that he was driving a forklift in the tunnel when the explosion with the power of 120 kg of TNT occurred, saying: "I fainted after hearing a 'bang', and when I woke up, my right eye was lost." Zhao Dejun, a 48-year-old worker from Sichuan province, suffered serious injuries to his spine and hipbone, and also lost hearing in the accident. Li Guoli, vice-chairman of the labour union of an SOE subsidiary in Shanxi province, said that some SOEs contracted out their projects to unqualified private companies, which increases safety risks.

Follow-Up Article of 29 September 2012:

FORMER TOTAL UNIT BOSS SENTENCED FOR DEADLY BLAST

A French appeals court on Monday fined a unit of Total oil giant 225,000 euros and sentenced its former manager to a year in prison for a massive blast at a chemical plant that killed 31 and injured 2,500 in the southwestern city of Toulouse in 2001.

A French appeals court Monday sentenced a former boss of a subsidiary of oil giant Total to a year in prison for a 2001 chemical plant blast that killed 31 people.



The court slapped a three-year term -- two of them suspended -- and a 45,000-euro (\$58,000) fine on former plant chief Serge Biechlin for manslaughter.

Total subsidiary Grande Paroisse, the company he managed, was fined 225,000 euros, the maximum amount, when an appeal court overturned the verdict reached in a 2009 trial in the southwestern city of Toulouse.

The blast which erupted in September 2001 in a storage warehouse packed with 300 tonnes of ammonium nitrate at the AZF chemical fertilizer plant near Toulouse also injured 2,500 people and devastated 30,000 homes.

Prosecutors argued in the first trial that negligence of security measures were to blame but the defense said the explosion had been a simple industrial accident.

The prosecution appealed after the Toulouse court ruled there was not enough evidence to prove manslaughter charges against Grande Paroisse and Biechlin, and a new negligence trial began late last year.

Since the blast, Grande Paroisse has paid out more than two billion euros (\$2.7 billion) in compensation to more than 16,000 victims, according to Total's figures.

The blast came just days after the September 11 attacks in New York and initially sparked fears that it was a terrorist attack. That theory was later dismissed by investigators.

MSIAC MUNITIONS SAFETY (MS) AWARDS

Yes, it is that time again! The MSIAC MS Awards are coming up later this year. So time for you to start thinking about nominating someone for a special technical contribution or career achievement.

What do you need to consider?

CRITERIA

There will be two kinds of MSIAC MS Awards.

The MSIAC MS Award for Technical Achievements will be awarded to individuals or teams who have made significant contributions in research and/or engineering related to the field of munitions safety. The individuals or teams should have published open technical papers on MS related work and/or made presentations of MS related work at open symposia such as the NDIA Insensitive Munitions and Energetic Materials Technology Symposium, DDESB Seminar or Parari. This Award is intended to advance technically the options available to munitions program managers to enhance the safety of munitions throughout the entire life cycle.

The MSIAC MS Award for Career Achievements will be awarded to individuals who have made consistent contributions in research, engineering, production, procurement, fielding, standardization, policy, etc. related to MS, over an extended period. The individuals should have a long record of open papers, presentations and achievements in the field of munitions safety. This Award is intended to acknowledge career dedication to the cause of MS throughout the entire lifecycle.

And what do you need to do?

PROCEDURES

The Awards will be made at a convenient international meeting, such as, but not exclusively, the NDIA IMEM Technology Symposium, DDESB Seminar or Parari and about every two years depending on the calendar of convenient meetings. The winners will be chosen by the Steering Committee on the basis of proposals made by MSIAC and by Steering Committee Members, NFPOs, or any other interested parties.

These proposals are to be made to the PM/MSIAC, in time for preparation of a discussion with the Steering Committee.

A deadline for the recommendations has not been set at this time. However, you can expect a late summer deadline.

Applications should be accompanied by a written justification, not more than one side of A4/Letter paper in length, excluding any list of publications, which the proposer may consider relevant to the case.

(Continued on page 28)

(Continued from page 27)

Wouldn't it be nice to have your name added to this list ?

Remember these?

These are the Award winners of the last years:

- ◆ **Career Achievements** - for dedication and outstanding contribution to the cause of Munitions Safety for the benefit of the International Munitions community:
 - ⊕ Alice Atwood, (2012)
 - ⊕ Roland Wild (2010)
 - ⊕ Dr. Peter Barnes (2009)
 - ⊕ Dr. Richard E. Bowen (2007)
 - ⊕ Alain Frèche and Ray Beauregard (2006)

- ◆ **Technical Achievements:**
 - ⊕ US Army PM-CAS, US Army ARDEC, US Army ARL teams and BAE Systems for Implementation o Reduced Sensitivity Explosive IMX-101 to replace TNT in 155mm Artillery Shells (2012);
 - ⊕ NAMMO AS, GT-OTS, GT-OTS St Marks Powder and BAE Systems Holston for development of the 120mm IM HE-T Round (2010);
 - ⊕ PMA-201 Naval Air Systems Command, Naval Air Warfare Center, 328th Armament Systems Group, US for IM improvements in the 500, 1000 and 2000 pound General Purpose Bombs (2009);
 - ⊕ PMA-201 Naval Air Systems Command and 328th Armament Systems Group, US for many improvements towards IM compliance and PMA-259 Naval Air Systems Command towards IM compliance of AMRAAM (2007);
 - ⊕ Nitrochemie - Rheinmetall Weapon and Ammunition for their achievements in the field of IM-improved gun propellants and charges and The Forcitt Company for the FOXIT Extremely Insensitive Detonating Substance for Underwater Applications (2006)

MSIAC NEWS

WELCOME TO DIANE VANOVERSTRAETEN

Office Manager & Admin Assistant

Diane joined MSIAC on January 7th 2012.

Diane trained as a Licensed translator Dutch/French/Portuguese but worked for about 15 years as a Personal Assistant & Office Manager in the private sector, mainly in Pharmaceutical companies such as Johnson & Johnson, Kyphon Europe, IMS (Pharmaceutical Research company). Before joining MSIAC in early January, she worked in the Logistics and Resources Department - Manpower & Armaments Branches of the International Military Staff here at NATO HQ for about a year. She speaks Dutch, French, English, German, Portuguese and has notions of Spanish.

Welcome Diane and good luck in your new job.



LATEST PUBLICATIONS

(Available on the MSIAC secure website <https://sw.msiac.nato.int/SecureWeb/> or on request at info@msiac.nato.int)

OPEN PUBLICATIONS

O-150 Ammunition Accident at the Evangelos Florakis Naval Base, Zygi, Cyprus by Dr Michael Sharp with Contributions from Thomas Taylor and MSIAC Staff, January 2013. This article has also been published in the December 2012 Explosives Engineering (UK) Journal.

LIMITED PUBLICATIONS

L-106 Edition 5 Directory of Insensitive Munitions and Hazard Testing Facilities, 5th Edition by Emmanuel Schulz, January 2013.

CONTACT INFORMATION

☎ 32-2-707.54.16

📠 32-2-707.53.63

🌐 <http://www.msiac.nato.int>

✉ info@msiac.nato.int