

CALL FOR PAPERS
PROPOSED SUBJECTS FOR 2009 S&T SYMPOSIUM
Organized by Society for Counter Ordnance Technology (SCOT)
UNCLASSIFIED

TO ORGANIZE AND EXECUTE A SCIENCE and TECHNOLOGY COUNTER-ORDNANCE
SYMPOSIUM

The Officers and Fellows of the Society for Counter-Ordnance Technology (SCOT) intend to organize and execute a Science and Technology Symposium with target dates of Sept 16-18, 2009. 2009 is the Centennial Year of the Naval Postgraduate School (NPS) and the Fifteenth year of determined emphasis on Mine Warfare and related issues at NPS. Inter alia, we are seeking sponsorship and support from both Government and Private organizations. Among such are

Department of State, Office of Weapons Removal and Abatement
Office of the Secretary of Defense, Joint Improvised Explosive Devices Defense Office
Department of the Army, Army Research Office and Army Material Command
Department of the Navy, Office of Naval Research
US Marine Corps, Combat Development Command and USMC Warfighting Laboratory
Naval Postgraduate School
Department of the Air Force, Wright-Patterson Research and Development Laboratories
Department of Homeland Security, Program Executive Office, (C-IED)
Mine Warfare Association

Contained herein is a list of proposed technology-related topics for countering mines and Improvised Explosive Devices (IED's) in war zone, urban, and homeland scenarios.

We are soliciting volunteers who desire to organize technical sessions or serve as referees around the proposed topics. Since this Symposium is seen as a major refereed Science and Technology symposium, we are issuing the Call for Papers now and will need full papers for the referees by March 1, 2009. Details regarding paper lengths and formats can be obtained from <carol@dmccompanies.com>.

Papers are requested in the following areas. Please indicate whether the papers is basic research, exploratory development, or "proof of concept" - emerging technology. This third category can also include new systems applications although the desire is to feature technology base activities.

Please differentiate between technologies directed at the land environment applications and those directed at the sea or littoral environment applications and to the extent possible please assist symposium staff in identifying the principal applications areas.

A Descriptions (definitions) of National or Regional S&T Objectives

This might typically include overviews of S&T Program Objectives and implicitly present S&T shortfalls.

B. Economic and Operational Figures of Merit or Measures of Effectiveness

Serious consideration of analytical measures of effectiveness and the supporting rationales is notable for its absence in the literature. There has been some consideration of economic measures of

effectiveness with reference to Mine Action (humanitarian demining). The literature shows little of physics based or probabilistic applications to what by its very nature is a stochastic system.

C Organizational Experience with Mine Action and with Military Explosive Ordnance Clearance. There must be a great deal of material from both government (military) counter-explosive activities and the activities of Non-Government Organizations (NGOs). What works, what doesn't. What are the shortfalls? Given recent history we may have to limit the number of papers that we can accept for presentation although all papers of quality will appear in the PROCEEDINGS of the Symposium.

This topic ties in with such statistical studies in Mine Action of military mine clearance as may have been conducted. What methodologies have been employed? What assumptions have been made?

D Decision Support/ Geographical Information Systems

The advent of remote sensing and mapping capabilities has given rise to applications in exploration geology as well as in wide-area mapping of crops and the effects of climate. Have there been applications to explosive detection and removal? One hopes that there have been significant advances since the use of pin-maps that showed where casualties to people or animals have occurred. What is the analogue in the water? Please note the very great need for detection of changes in the littoral environment resulting from the introduction of foreign objects.

E. Surveillance/Change Detection /Remote Sensing (Land)

Monitoring for the introduction of explosive materials in an area

F. Surveillance/Change Detection/Remote Sensing (Water)

G. Electromagnetic Detectors and Devices (land Applications)

H. Acoustic or Short Range Magnetic Detectors (Water) or, more generally, sensors for underwater detection of explosive devices

I Mechanical Demining on Land and at Sea.- mechanical minesweeping at sea – physical neutralization on Land (Bulldozers, Plows, Flails)

J. Optical-Electronic Imaging (Thermal effects on Land or in the water)

K Robotic Technology

- 1 “Golf Cart” Technology with remote controls
- 2 Biomimetic Robots
- 3 Command and Control of ensembles of robots – multi-robot tasking
- 4 Endurance and Power Supplies

L Animals in Mine Countermeasures

1. Dogs, rats, bees, etc in detection applications
- 2 Dolphins
3. Toward a “Dolphin Sonar”
4. The “Dog's Nose” What are the technological barriers?

M Advances in Underwater Detection – Optical Approaches and Multispectral Imaging.

N Seismic/Acoustic Detection on Land and at Sea

O. Overcoming the Barriers to the Use of Ground Penetrating Radar

P Area Surveillance (Looking for Changes)

1 On Land

2 In the Water

3 Investigations of Remote Looking including Airborne Sensors (or Space-borne sensors)

Q Advances in Data Fusion (Sensor Fusion)

R. Personal Protection Systems – Prodders, Protective Clothing and Footwear

The vast majority of land mine neutralization is by people using very primitive methods. This is true on land and at sea.

R1 Vehicular Protection

S. Techniques for Neutralization/Disposal of mines and explosives

T. Detection of Bulk Explosives (Chemical, Nuclear, and Biological)

U. Advances in Nuclear Detection Methods

V Chemical Detection of Explosives

W. The Potentials of Emerging Technologies (Nanno-Technology, for example)

X The Land and Sea Environments – HOW Characterize?

Y Special Topics – Detection/Neutralization of Suicide Bombers, etc

Z Special Needs/Opportunities arising from the intersection of mine casualties and approaches to economic and physical rehabilitation.

User Community or Operational Aggregations

The technological areas above map into one or more of the “applications” outlined below. These categories may have greater meaning for the users and sponsors.

I The Physical, biological and geological environments

II Platforms and Vehicles

III Sensors

IV Destructors or Neutralizers

A. Minesweeping

B. Minehunting

C. Mine Avoidance or Channel Conditioning

V Command and Control (Organizational Matters)

VI Explosive Ordnance R&D Initiatives

Symposium Staff will map contributed papers into the above categories. The assistance of authors in that task will be appreciated.

This symposium is a refereed symposium. The referees need complete draft papers to work with. We must request strict adherence to the timelines set forth herein.

Oct 15, 2008 Statement of Intent to contribute a paper. Please provide Title, Technology area (see above) and a brief abstract.

Apr. 15, 2009 Complete paper ready for the referees. Information of formats, etc, will be provided by symposium staff in response to the submitted abstract. Requests from the referees and response to the referees will be handled through the symposium staff.

There will be a PROCEEDINGS of the symposium – DVD, print, or both.

Symposium points of contact are A.M. Bottoms <amb@demine.org> and the DMC staff <carol@dmccompanies.com> Tel (831)373-0508.

One other request to all. We need volunteers to serve as referees, organize sessions, recruit contributors from the research and technology communities in academe, industry, and government. We need to reach into the Army, Navy, and Marine Corps. We need to overcome institutional barriers. We need to reach abroad to scientists and technologists in Europe and Asia.. We need to reach the Non-Government Organizations. In short, we need to come together as a community

For the Organizing Committee

Albert M. Bottoms.