



ITRC PROJECT PROPOSAL: Geophysical Prove-outs for Munitions Response Projects

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PROPOSAL DATE: March 9, 2009

Please use brief statements or bullet items to input the requested information.

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Call for Proposals Topical Area

- Munitions constituents (MUNI)

Technologies and approaches for identifying, characterizing, removing, and/or remediating unexploded ordnance and other munitions constituents.

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Problem Statement (why is this project necessary and relevant to ITRC's purpose & mission¹?)

The ITRC UXO Team published the ITRC Technical and Regulatory Guideline "Geophysical Prove-outs for Munitions Response Projects" (UXO-3) in 2004. However, since the publication of this document, technological advancements in geophysical detections systems and GPO process improvements may render UXO-3 obsolete. UXO-3 may require significant revisions to remain germane to regulators, the public, DoD and the munitions response community.

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¹ **ITRC Purpose:** To advance innovative environmental decision making
ITRC Mission: Develop information resources and help break down barriers to the acceptance and use of technically sound innovative solutions to environmental challenges through an active network of diverse professionals.

The Department of Defense (DoD) has a potential liability of more than \$35 billion for the cleanup of unexploded ordnance (UXO) and discarded military munitions (DMM), at Base Realignment and Closure (BRAC) sites, Formerly Used Defense Sites (FUDS), and other DoD munitions response (MR) sites.

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The DoD uses geophysical systems to detect buried UXO and DMM at MR sites. Before conducting a geophysical survey, the DoD requires its contractors to conduct a geophysical prove-out (GPO). The GPO is a process designed to evaluate and demonstrate the capabilities and effectiveness of one or more geophysical detection systems under consideration for the MR. Information collected during the GPO is collected, analyzed and used to select the geophysical system capable of meeting site specific performance requirements.

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To conduct a GPO various geophysical systems are deployed over a test plot which has been constructed to simulate actual site conditions. Geophysical data collected during the test run is used to evaluate, select and hone the selected geophysical system, as well as the processes/procedures for data collection and analysis. The GPO is a crucial quality control activity that provides DoD, regulator, and stakeholders confidence that the geophysical detection system selected to detect buried munitions will meet project goals.

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Most regulators and stakeholders responsible for oversight on MR projects were unfamiliar with the GPO process. Further, most of the information available on the GPO was geared to the geophysicist and therefore, highly technical in nature. To fill this knowledge gap, the ITRC UXO Team published the ITRC Technical and Regulatory Guideline “Geophysical Prove-outs for Munitions Response Projects” (UXO-3) in 2004. Since its publication UXO-3 and has proven to be a valuable tool for state regulators and stakeholders responsible for oversight at MR projects. Moreover, members of the MR community routinely cite UXO-3 when explaining the GPO process to the public.

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However, technological advancements in geophysical detections systems and GPO process improvements may render UXO-3 obsolete. Over the past several years DoD has conducted many GPOs. From this experience the DoD has accumulated a significant body of knowledge and data documenting the capabilities and limitations of various geophysical systems. Environmental Security Technology Certification Program (ESTCP) staff, a research wing of the DoD, has recently evaluated the current state of the GPO. Based on this evaluation ESTCP personnel are recommending significant changes to the original GPO process and have prepared draft guidelines detailing their recommendations. Review of these recommendations by the UXO Team has confirmed the changes proposed by ESTCP staff will significantly modify the scope, objectives and the overall process for conducting a GPO. As a result the original scope and objectives of the GPO detailed in UXO-3, may no longer apply, and if ESTP recommendations are confirmed, the ITRC UXO-3 will be obsolete.

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Upon publication of the ESTCP GPO document there will be two GPO guidance documents: the highly technical ESTCP document, and the much cited often used UXO-3. Unfortunately, UXO-3 will not reflect the latest technological advancements and procedural improvements for evaluating and deploying geophysical detection systems. The GPO process detailed in UXO-3 will conflict with the ESTCP GPO process. Having two conflicting GPO processes will create confusion in the MR community and in particular for regulators and stakeholders. This confusion has the potential to cause misunderstandings, project delays, arguments and cost over-runs.

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The GPO process detailed in UXO-3 may no longer be the most effective and efficient way to evaluate geophysical systems. By not updating UXO-3 to incorporate the years of experience and improvement in GPO, the reputation of the ITRC as a source of reliable, cutting edge technology documents, may diminish in the MR community.

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Proposed Scope to Address Problem (what is the approach for this project?)

The ITRC UXO Team proposes to update the existing Technical and Regulatory Guidance Document (Tech-Reg) “Geophysical Prove-Outs for Munition Response Projects” (UXO-3) to reflect technical and procedural advances in the GPO. The UXO Team will use DoD GPO data and ESTCP research as the foundation for revisions to the GPO. The revised document will replace UXO 3 as the source of information for MR project managers, regulators and stakeholders to clearly understand and evaluate the sufficiency of a GPO. The revised document will provide:

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- the latest information on the purpose, design, and limitations of the GPO,
- a clear understanding of GPO performance metrics and how the metrics are achieved and maintained throughout the MR,
- sufficient information to perform field oversight to ensure the GPO planned and implemented will achieve project objectives, and
- consistent and unambiguous guidelines to facilitate clear and concise communication between regulators and those implementing the GPO.

Targeted Users (who will use products generated by this project?)

- Federal, state, and local regulators involved in oversight of MR projects
- DoD consultants and munitions response contractors
- Community and tribal stakeholders.

Summary of Deliverables (primary project product(s))

The primary deliverable will be an updated technical and regulatory guidance document and revised internet-based training. The working title is "Geophysical Prove-out, The Next Generation".

Impact (How will this project result in more effective environmental decision making?)

Updating UXO-3 will ensure that the two important guidance documents on GPO - ESTCP and ITRC UXO-3 - will complement and not conflict with one another. The revised UXO-3 will also ensure this document continues to provide correct and up-to-date information on the GPO to the ITRC target audience. The update of UXO-3 will guarantee that that this important guideline will continue to be a valuable resource to regulators and stakeholders, the MR community in general and DoD,.

Project Schedule

Year One (Jan.-Dec. 2010)

- Prepare schedule
- Scope Project (Data gathering)
- Define scope of the revised UXO-3
- Form team sub-units; make writing assignments
- Produce draft Tech Reg.
- Begin development of IBT

Year Two (Jan.-Dec. 2011)

- Complete Tech Reg;
- Complete IBT

Year Three (January-December 2012)

- Project implementation Initial and Final Phase
- Offer IBT
- Attend conferences. Presentations, poster sessions, etc.
- Prepare and submit implementation report.

Proposed Personnel

This proposal was developed based on a survey of current UXO team members. The team developed a list of six potential proposals for consideration by the team. Based on a preliminary survey of the team three proposals were selected for development based on: need within the MR industry and regulatory community, a project scope that could be addressed by the UXO team, and a determination that the technology was mature enough for evaluation and development of a Tech-Reg. The three proposals were reviewed by the team and two proposals were determined to be appropriate for ITRC Board consideration. Therefore, this proposal has been determined by the team to represent an: identified need, project scope that is achievable for the team, and the technology is mature enough for technology evaluation and preparation of a Tech-Reg.

Proposed Team Leaders:

- 5 • **Bill Harmon**, Michigan Department of Environmental Quality: Bill Harmon is the state coordinator for the Formerly Used Defense Site program. Bill has worked for the MDEQ since 1992. Bill is responsible for oversight of DoD military munitions and Superfund Site response actions in Michigan. Bill has been a member of the ITRC UXO team since 2006 and has served as team leader since 2007. Bill served six years with the U. S. Navy and retired from the Naval Reserve with the rank of Commander. Bill has a BS degree in biology with a minor in physics from Michigan Technological University.
- 10 • **Guy Warren, Alaska Department of Environmental Conservation:** Guy Warren is an Environmental Program Specialist with the Federal Facilities Environmental Restoration Program for the Alaska Department of Environmental Conservation in Anchorage, Alaska. Mr. Warren has worked for ADEC since 2006 and serves as the Federal Facility Agreement, Restoration Project Manager for the Former Adak Naval Complex and the Military Munitions Response Program Coordinator for ADEC. Mr. Warren works with other ADEC project managers to ensure the MMRP program is implemented consistently across the state. Mr. Warren has experience with all
15 DoD services conducting MMRP work in the State of Alaska and has overseen several large MEC remediation projects on Adak. Prior to working for ADEC he served as the Environmental Director for the Native Village of Tanacross, a village in interior Alaska, and worked for over 5
20 years as a private consultant in Anchorage. Mr. Warren has served on the ITRC UXO team since 2007 and has served as team leader since 2008. Guy earned a Bachelors Degree in Environmental Studies from Utah State University in Logan, UT in 1998.

Potential State Interest:

25 GPO is a critical QC process in the MR industry. The GPO increases the confidence of the regulator and stakeholder in the completed project, which minimizes rework thereby reducing the cost of cleanup for MR Sites. Therefore, it is critical for the state regulator to understand the technology, its benefits, and limitations and have the latest information available on the GPO.

- 30 • Currently the UXO team has membership from the following States: Alabama, Alaska, Colorado, Michigan, Nevada, New Jersey, Oklahoma, South Carolina, and Texas. The team is currently seeking to improve state participation in the UXO team for our current project. We are seeking participation from Arizona, California, Florida, New Mexico, Utah, Montana, and Wyoming. Since the UXO team is a standing team State participation is anticipated to carry over from project to project.

Other Organizations:

- 35 • The UXO team has representatives from the following federal and state organizations: USGS, Washington DC Department of the Environment, US Army ERDC, USACE (Omaha District, Albuquerque District, Huntsville Ordnance and Explosives Center of Expertise), US Air Force Air Armament Center, US Army Environmental Command, West Virginia Army National Guard, USEPA (OSWER, Federal Facilities Restoration and Reuse Office), Pacific Northwest National Laboratory, US Army Center for Health Promotion and Preventative Medicine, Kansas Army National Guard, NOSSA, and ESTCP/SERDP.
- 40 • The UXO team also has the following IAP member organizations: DuPont, Tetra Tech-EC, Tetra Tech-Inc., Battelle, AMEC Earth and Environmental Solutions, ARCADIS, UXOPro Inc., SAIC, Weston Solutions, Kleinfelder, and WL Gore and associates.

45 **Skill Mix of Team Members Required**

- The UXO team represents a diverse group of professionals from the range of specialties involved within the munition response industry. The team will continue to solicit participation from all segments of the MR industry.

Sectors of Team Members Required

- 50 • Federal, State, DoD and MR Industry

Related Work:

5 Environmental Security Technology Certification Program (ESTCP) staff, a research wing of the DoD, is recommending significant changes to the GPO. ESTCP, has agreed to participate with the ITRC UXO Team and assist in updating UXO-3.