Explosive Remnants of War in the Republic of Croatia

Drazen Simunovic
Croatian Mine Action Centre

Follow this and additional works at: https://commons.lib.jmu.edu/cisr-journal
Part of the Defense and Security Studies Commons, Emergency and Disaster Management Commons,
Other Public Affairs, Public Policy and Public Administration Commons, and the Peace and Conflict
Studies Commons

Recommended Citation
Vol. 10 : Iss. 2 , Article 13.
Available at: https://commons.lib.jmu.edu/cisr-journal/vol10/iss2/13

This Article is brought to you for free and open access by the Center for International Stabilization and Recovery at
JMU Scholarly Commons. It has been accepted for inclusion in Journal of Conventional Weapons Destruction by an
authorized editor of JMU Scholarly Commons. For more information, please contact dc_admin@jmu.edu.
Explosive Remnants of War in the Republic of Croatia

Explosive remnants of war represent a constant threat to normal life and activities of the population living in mine-affected areas in the Republic of Croatia. The author considers the extent and impact of unexploded ordnance and other ERW contaminating the country as a consequence of military operations between 1991 and 1995.

Mine and UXO Contamination Analysis in the Republic of Croatia

Based on the publication of the Geneva International Centre for Humanitarian Demining, Explosive Remnants of War (ERW)—A Threat Analysis, the factors affecting overall ERW threats are:

1. The type of conflict (e.g., international versus civil war)
2. The number of forces involved
3. The tactics used by the warring parties (e.g., use of air power rather than ground attacks)
4. Types of weapon systems deployed
5. The duration of conflict
6. Ammunition expenditure
7. Failure rate of ammunition used
8. Terrain (soft, wooded areas will generally lead to more failures than concrete, urban areas)
9. Population density
10. Population movements in contaminated areas
11. Population awareness
12. Progress of clearance operations

The text below presents mine- and UXO-contamination analysis for the Republic of Croatia. Each of the items on the above list is described in more detail.

Details of the Conflict

The conflict described is widely known as the Croatian War of Independence or to others as the Homeland War. The basic premise behind the conflict was Croatia's desire to be a full, self-sufficient republic after being oppressed by the Communist states of the former Yugoslavia. This attempt at independence was met with resistance by Croatian Serbs, who felt that this new republic would be a threat to them since in this new state, they would be considered minorities; therefore, Serbian rebels, with the aid of the Jugoslovenska narodna vojska (Yugoslav People's Army), fought against the newly formed Croatian Army to determine control over the country. The conflict lasted from 1991 until 1995 with the Croatian government ultimately claiming victory over the rebels and the JNA.

The types of weapon systems deployed during the conflict include (see below for specific information):
- Small arms
- Cannons
- Howitzers
- Self-propelled guns (76-mm Helkac, 90-mm M36, etc.)
- Mortars (60 mm, 82 mm, 120 mm)
- Rocket weapons (including cluster munitions)
- High-explosive anti-tank (HEAT) rockets
- Aircraft bombs and rockets (including cluster and "dumb" bombs)
- Air-to-ground rockets
- Anti-aircraft rockets

The Republic of Croatia consists of 21 counties and the city of Zagreb. Twelve counties are within a mine-suspected area, totaling 1,147 square kilometers (713 square miles) of land. Around 1.1 million inhabitants are directly endangered within the MSA; one in five inhabitants is threatened by a possible accident within the MSA. ERW that has been located and removed and remaining ERW is emplaced in mine-locations within the MSA. Surfaces where ERW has been detected are smaller, at present totaling approximately 500,000 square meters (124 acres). The approximately 3,000 people live near locations still contaminated with ERW.

Progress of Clearance Operations

One of the issues on the third international symposium organized by the Croatian Mine Action Centre and Centre for Testing, Development and Training Ltd., held from April 24–26, 2006, in Šibenik, Croatia, was UXO detection at depths over 20 centimeters (8 inches). This is an important concern for safely carrying out construction activities in certain areas where it is necessary.

Ammunition Expenditure/Failure Rates

Small-arms ammunition (≤ 14.5 mm).
Most of the ammunition was originally packaged and represented a small threat to locals. Little effort was needed to remove and destroy them. According to the official statistics from the CRDOMAC database, eight persons have been wounded by this type of ammunition since 1991.

Pyrotechnics (smoke, flares).
Pyrotechnics represented a small quantity of the findings and a medium-level threat for locals, and little effort was needed for their removal and destruction. The most common pyrotechnics found were the smoke-flare simulates MIL 4 signal M8 P1 canister and cannon blast simulants. Two persons have been wounded since 1991 by these munitions.

Cannon shells and artillery projectiles (≤ 14.5 mm).
A medium quantity of almost all types of artillery cartridges and projectiles (shells and shrapnel) was found in the Republic of Croatia, representing a huge threat for locals. Their removal, disposal and destruction were of medium risk. Two persons have died from this type of ammunition and six have been wounded since 1991.

Submunitions. Attacks deploying submunitions occurred in 1991 (around the Vransko lake area, Gospić and Medulin) and in 1995. In 1995, all commonly used submunitions were found to be dangerous: high risk for involvement for their removal. Eleven persons have died and 19 have been wounded by this type of submunition since 1991.

Hand and projected (rifle) grenades.
These grenades are common in the Republic of Croatia. They represent a huge threat for locals. It takes medium risk for their removal, transport and disposal. Thirty-three people have died and 66 have been wounded from this type of UXO since 1991.

Mortar ammunition. A huge quantity of mortar ammunition was found because it was used for destroying targets up to six kilometers (four miles) away—the range between parties to the confrontation. This type of ERW represented a high threat because it included a certain number of unexploded mortar HE shells that usually were 60-mm, 82-mm and 120-mm caliber. These require a very high risk for removal and destruction and represent a medium threat for locals. One person has died from this type of UXO and 14 have been wounded since 1991.

Free-flight rockets (ground-to-ground and air-to-ground). These rockets were found in medium quantity and are a huge threat for locals, although their destruction is relatively easy. Six persons have died from this type of UXO and 15 have been wounded since 1991.

Guided missiles. A small quantity of guided missiles was found, but they represented a huge threat for locals as it takes a medium risk for their destruction.

 Published by JNUT Scholarly Commons, 2006.

42 | Journal of mine action | winter 2006 | 10.2

10.2 | winter 2006 | Journal of mine action | issue 1.41

by Drazen Simunovic [Croatian Mine Action Centre]
to first survey the ground to large depths (usually up to 6 meters [13 feet]). In some of these survey areas, common skills may have been acquired, which increases the threat to the local population. Also discussed were specific problems related to UXO and ERW found within mine-suspected areas in the Republic of Croatia. During the symposium, the following guidelines were agreed upon to improve detection and removal of UXO:

- Improvement of legislation concerning UXO
- Definition of space and location for which some indications of UXO at depths of over 20 centimeters (8 inches) exist
- Application of new methods, operating procedures, and devices
- Improvement of safety measures

A database that includes information on types of UXO found, the amount collected, location of the UXO, and methods used to retrieve them and methods of their destruction. From 2001 to 2007, CROMAC surveyed the land and concluded that 1,747 square kilometers (455 square miles) of Croatia were contaminated with mines and UXO. Included in this area, CROMAC classified 121 towns and areas within 12 countries suspected of being within the vicinity of mined areas. As of January 2006, Croatia reported that number to be 1,147 square kilometers (445 square miles) as being contaminated with mines. There are still an estimated 115,119 anti-personnel mines and 88,078 anti-vehicle mines that need to be detonated. Fortunately, pieces of UXO are not too threatening to the community as they have been well-marked and made recognizable to the public. Croatia is now working to meet a goal of clearing 50 square kilometers (134 square miles) of mine-contaminated land by the end of 2009. This goal is subject to change due to the speed of detonation activities, which varies depending on the availability of funds, the cost of detonating, and capacity.

Conclusion

The ERW problem has not yet been successfully solved in the Republic of Croatia. It is important to point out that all projects for ERW removal in Croatia require considerable funds to fulfill capacity requirements, equipment procurement needs, and their methodology and other expenditures. From the knowledge and experience gained so far, Croatian authorities estimate that disposal professionals are able to apply their expertise to other ERW-related activities. Professional personnel dealing with ERW are CROMAC employees as well as employees of the Ministry of Internal Affairs and Ministry of Defence. The Republic of Croatia, and CROMAC specifically, will be working to solve the ERW problem as a part of the broader humanitarian de-mining issue.

See Endnotes, page 114

News Brief

“Devil’s Garden” Cleared of Explosive Debris

The thousands of landmines, unexploded and abandoned ordnance, and booby traps located in minefields around Bagaran, Afghanistan, have been successfully cleared. During the effort, two deminers were accidentally killed by mines booby-trapped to hinder clearance.

Touted as the “Devil’s Garden” because the area was considered to have the most dangerous minefields in the world, the land is now being used by 72,000 refugees and thousands of internally displaced persons for agriculture, habitation, and commerce.

The HALO Trust conducted clearance of the minefields with financial support from the U.S. Department of State. Clearance operations began in December 2001 and cost nearly $2.5 million. Additional funding was provided by the Governments of Germany, Ireland, Japan, the Netherlands, Norway, and the United Kingdom.