CUIRA 2022 – INSIGHTS OF AN INTERNATIONAL TEST SERIES ON FULL-SCALE AMMUNITION MAGAZINES

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ABSTRACT

CUIRA is the name of a test series with 3 full-scale earth-covered magazines (ECM) that took place during 2022 in Sweden. These ECM are a new type of modular ammunition magazine planned for Swiss training areas and shooting ranges. The test series was led by Switzerland and conducted in collaboration with United States of America, Germany, Norway and United Kingdom.

The main objectives of this project were:

- to collect data on explosion effects, especially on debris throw to derive lethality models for risk analysis;
- to assess the damage to the adjacent magazine, so that eventually a max. charge which is still safe for propagation can be defined;
- to validate the protective design and constructive details of the reinforced concrete structure.

Experimental data includes measurements on ground shock between the magazines and air blast in the different directions and distances as well as an extensive collection of debris throw. The debris pick-up was performed manually by international teams and supported by latest technologies such as mobile LIDAR scanning and several types of drones.

The knowledge gained from the test series should help to store military ammunition and explosives even more safely in Switzerland in the future as well as contributing to the related state-of-the-art.

This article should give an overview of the test series and answer the following questions:

- why Switzerland needed these full-scale tests?
- who was involved on a national and international level?
- what were the main specifications of the ECM's and the charges?
- what main evaluation efforts are under way within the international group?