Abstract ID: **17269**

Title: Harmonization and Improvements to Fast Heating Test Procedures – IMEMG Proposals

Abstract Text: Many modern munitions are designed to be insensitive to outside influences and external aggressions. In order to classify munitions as insensitive, positive results to standard tests that simulate the effect of varied external environments must be accomplished. One such test is the NATO standard Fast Heating (FH) test to simulate munitions behaviour, when submitted to a liquid fuel fire. The FH test as described in STANAG 4240 (edition 2) requires the test munitions to be engulfed in a jet fuel fire. Due to the environmental impact of burning jet fuel and the high cost of performing such a standard test, attempts have been made to replace jet fuel with an alternative method of heating the munitions, in representative conditions.

As part of IMEMG, the FCO EWG was mandated to make proposals to improve upon the STANAG 4240 (edition 2) and to harmonize its supporting test procedures.

The current requirements in STANAG 4240 (edition 2) are reviewed in light of the FH test key objectives; to ensure a standard heating profile of the test item and to assess the reaction time and violence. An overview of the recent FH studies is provided, including alternative FH test methods being developed in Europe and in the US. The Liquid Fuel fire method is discussed along with the benefits of Gas Fire alternatives, the key features of the test designs are reviewed with respect to the FH test rationale; including heat flux level and uniformity, the equivalence across the whole fire duration and the impact of heat transfer mode. Techniques for calibrating the test across test venues are considered.

The acceptance criteria for new alternative FH fire test facilities are key elements of the future NATO FH test standard. They shall guarantee the consistency of IM test results across all test methods.

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