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Title: DEVELOPMENT AND MANUFACTURE OF AN INSENSITIVE COMPOSITION B REPLACEMENT EXPLOSIVE IMX-104 FOR MORTAR APPLICATIONS

Abstract Text: BAE SYSTEMS Ordnance Systems Inc. (OSI) had been involved in the development of melt-cast explosive formulations for consideration in the U. S. Army's selection process for a common Insensitive Munition (IM) explosive fill for mortar ammunitions. As part of the U.S. Army Project Manager Combat Ammunition Systems (PM-CAS) Common Low-cost IM Explosive (CLIMEx) program, this main objective was to develop a common IM explosive fill to replace Composition B for the 60mm, 81mm and 120mm mortar munitions.

Following the successful development and manufacturing of IMX-101 as an insensitive TNT replacement explosive fill for artillery ammunitions, BAE SYSTEMS developed an insensitive DNAN based melt pour explosive IMX-104 (previously known as OSX-7) as one of the candidates for evaluation in the CLIMEx program for mortar ammunitions. In extensive evaluation of both IM properties and energetic performance, the IMX-104 satisfied all requirements outlined by the U. S. Army. As a result, IMX-104 was down-selected as the lead candidate for an insensitive Composition B replacement and is currently undergoing full material qualification by the U. S. Army. To date, several batches of IMX-104 have been manufactured successfully in full production scale at Holston Army Ammunition Plant (HSAAP) with substantial production quantities of the explosive scheduled for later in the calendar year.

This paper details the technical approach in the lab scale development of IMX-104, the large scale production process development at HSAAP, and key chemical, physical, sensitivity properties of the explosive.