EXPLOSIVE SYSTEM

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to explosive devices and, in particular, it concerns a system and method for rendering an explosive device non-detonable until it is transformed into a detonable state.

The sensitivity of an explosive charge to various stimuli is a major concern in many situations such as storage, transportation, handling and tactical usage. In particular explosive charges are vulnerable to external stimuli such as detonation of nearby charges (sympathetic detonation), fire that can "go DDT" (deflagration to detonation transition), bullet impact, fragment impact and the effect of shaped-charge jets. There is a need to reduce the sensitivity of explosive systems to all of the above-mentioned stimuli in order to reduce the risks to personnel and property in the vicinity of explosive devices.

There is also a need to provide warheads of scalable effects, meaning that one can vary the performance output by choosing which part of the explosive will detonate and which part will undergo only low-level reaction such as deflagration or burning. Making such choice is of importance in avoiding unnecessarily powerful explosive blasts when not specifically needed.

The level of sensitivity to various stimuli depends on the specific charge configuration, including but not limited to parameters such as type of explosive, charge dimensions and structure.

In order to detonate in its entirety, an explosive body must have certain minimal dimensions, generally referred to as critical dimensions, such as critical diameter or critical thickness, depending on the specific shape of the body. If any of the body dimensions is below the critical dimension, the detonation will not propagate throughout the body even if initiated at a certain point. The general underlying reason for non-propagation in such case is the pressure release at the body surface and the resultant inability to sustain the detonation process. The type