THE MEASUREMENT OF TORSIONAL IMPULSE USING IN-BORE TELEMETRY TECHNIQUES

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ABSTRACT

In recent years, the artillery projectile community has recognized the phenomenon of torsional impulse as a major factor affecting the structural integrity of projectile designs. Since 1976, when it was first hypothesized as accounting for structural failures experienced in projectiles, methods of characterizing it as well as the response of a projectile have been sought. This is a natural application for the in-bore telemetry techniques developed in recent years by the Technical Support Directorate (TSD) of ARDC. This paper will present an approach cooperatively developed by TSD and Large Caliber Weapon Systems Laboratory Personnel of ARDC. The development of both the transducer package and the state-of-the-art telemetry system for this application will be described, along with the methods used for screening and calibrating the transducers. A brief description of torsional impulse and its ramifications will be presented.