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**Ballistic Impact Flash Resulting from Complete Projectile Penetration of Titanium Targets**

Authors: [Joseph G. Aja](#); [AIR FORCE INST OF TECH WRIGHT-PATTERSONAFB OH SCHOOL OF ENGINEERING](#)

**Abstract:** The down range flash resulting from the perforation of thin titanium plates by high velocity steel spheres was investigated to quantify the magnitude and duration of this flash. The titanium flash was compared with the flash resulting from identical spheres impacting **aluminum** targets. Visually the titanium flash was significantly larger, but measurement of the spectral irradiance at selected wavelengths found the peak intensities were approximately the same. The duration time of the titanium flash was approximately five times as long as the **aluminum** flash. The flash was found to occur as two events, each of which had distinct flash intensity maxima. The first maxima occurred approximately 10 microseconds after penetration, while the second occurred 30 to 80 microseconds later. Coating the impact surface of the titanium target with either white polyurethane paint, white **barium** titanate silicone paint, or white fluorocarbon paint reduced the down range flash only a small amount.

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**Limitations:** APPROVED FOR PUBLIC RELEASE

**Description:** Master's thesis

**Pages:** 144

**Report Date:** DEC 1975

**Report Number:** A123910

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