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Heat Flux and Infrared Spectral Measurements of Burning SRM Propellant (Postprint)

Authors: [Marty Venner](#); [James Parker](#); [William McKeon](#); [ENGINEERING RESEARCH AND CONSULTING INC. \(ERC INC\) EDWARDS AFB CA](#)

Abstract: On 23 August 2005 the Air Force Research Laboratory (AFRL) Propulsion Directorate at Edwards AFB conducted an open air burn of over 2000 kg of Titan IV solid rocket motor propellant. Multiple remote sensors were deployed to measure the heat flux and spectral emissions during the burn. The heat flux data was utilized to help determine the hazard classification for the propellant. An average normalized irradiance of 1.62 kW/m² was obtained during a nominal portion of the burn and supports a classification of 1.4. A Fourier Transform Infrared (FTIR) spectrometer collected data over a spectral range of 1.4 - 14 μ m. Those data show strong gaseous emissions from carbon dioxide, water, and hydrogen chloride as well as a continuum emission component due to the aluminum oxide particulates.

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