

Conference:

62<sup>nd</sup> JANNAF Propulsion Meeting and Joint Meeting of the 10<sup>th</sup> Modeling & Simulation Subcommittee (MSS) / 8<sup>th</sup> Liquid Propulsion Subcommittee (LPS) / and 7<sup>th</sup> Spacecraft Propulsion Subcommittee (SPS)

Nashville, TN June 1-4, 2015

Title:

“Design and Fabrication Development of J-2X Engine Metallic Nozzle Extension”

Authors:

C. Kopicz (Jacobs/ESSSA Group)

P. Gradl (NASA MSFC)

Abstract:

Maximized rocket engine performance is in part derived from expanding combustion gasses through the rocket nozzle. For upper stage engines the nozzles can be quite large. On the J-2X engine, an uncooled extension of a regeneratively cooled nozzle is used to expand the combustion gasses to a targeted exit pressure which is defined by an altitude for the desired maximum performance. Creating a J-2X nozzle extension capable of surviving the loads of test and flight environments while meeting engine system performance requirements required development of new processes and facilities. Meeting the challenges of the development resulted in concurrent J-2X nozzle extension design and fabrication. This paper describes how some of the design and fabrication challenges were resolved.