Abstract Submittal Form

Abstract Due Date: Monday, 11 July 2016

Check here if you are submitting an abstract because you have been INVITED to participate in a Specialist Session or Workshop. If so, who is the Chair?

* Title: DETERMINATION OF HERITAGE SSME POGO SUPPRESSOR RESISTANCE AND INERTANCE FROM WATERFLOW PULSE TESTING

* Submitted to: □ PIB □ MSS □ LPS □ SPS □ Other

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IF MORE THAN 4 AUTHORS, PLACE THEIR COMPLETE CONTACT INFORMATION (as requested below) ON P.2 AFTER ABSTRACT TEXT.

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Waterflow tests of a heritage Space Shuttle Main Engine pogo suppressor were performed to experimentally quantify the resistance and inertance provided by the suppressor. Measurements of dynamic pressure and flow rate in response to pulsing flow were made throughout the test loop. A unique system identification methodology combined all sensor measurements with a one-dimensional perturbational flow model of the complete water flow loop to spatially translate physical measurements to the device under test. Multiple techniques were then employed to extract the effective resistance and inertance for the pogo suppressor. Parameters such as steady flow rate, perturbational flow rate magnitude, and pulse frequency were investigated to assess their influence on the behavior of the pogo suppressor dynamic response. These results support validation of the RS-25 pogo suppressor performance for use on the Space Launch System Core Stage.