Abstract Title: Testing of the J-2X Augmented Spark Igniter (ASI) and its Electronics
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Reliable operation of the spark ignition system electronics in the J-2X Augmented Spark Igniter (ASI) is imperative in assuring ASI ignition and subsequent Main Combustion Chamber (MCC) ignition events are reliable in the J-2X Engine. Similar to the man-rated J-2 and RS-25 engines, the J-2X ignition system electronics are equipped with spark monitor outputs intended to indicate that the spark igniters are properly energized and sparking. To better understand anomalous spark monitor data collected on the J-2X development engines at NASA Stennis Space Center (SSC), a comprehensive subsystem study of the engine's low- and high-tension spark ignition system electronics was conducted at NASA Marshall Space Flight Center (MSFC). Spark monitor output data were compared to more detailed spark diagnostics to determine if the spark monitor was an accurate indication of actual sparking events. In addition, ignition system electronics data were closely scrutinized for any indication of an electrical discharge in some location other than the firing tip of the spark igniter - a problem not uncommon in the development of high voltage ignition systems.