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**COMBUSTION AND OPERATIONAL CHARACTERISTICS OF SASOL FULLY  
SYNTHETIC JET FUEL**

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Prior to the introduction of Sasol's semi-synthetic jet fuel (SSJF) at Johannesburg International Airport (JIA) in July 1999, all commercial aviation fuel had been derived solely from petroleum sources. SSJF is a blend of petroleum-derived jet fuel with up to 50 percent of a synthetic iso-paraffinic kerosene (IPK). IPK is processed from synthesis gas through a Fischer-Tropsch process followed by conventional refining processes. Since the approval of SSJF under the DEF STAN 91-91 fuel specification, about half of the jet fuel deliveries to JIA contain IPK in fractions ranging from less than 5 percent up to 50 percent with an average of around 20 percent. SSJF has enabled Sasol to meet the growing demand for jet fuel at JIA despite the limited capacity for petroleum refining in the Johannesburg area. To further ensure future availability, Sasol is now working to develop acceptance of fully synthetic jet fuel from their Fischer-Tropsch process streams. Sasol has 5 process streams in the kerosene boiling range that are synthesized from coal at the refinery in Secunda, South Africa. These streams are blended appropriately to meet the specification requirements for Jet A-1. In addition, the fuel has been evaluated according to the requirements of DEF STAN 91-91 to demonstrate the fuel is fit-for-purpose as commercial jet fuel.

This paper summarizes the engine and combustor tests conducted on Sasol fully synthetic jet fuel to evaluate atomization, ignition and altitude relight, exhaust emissions, and durability. The results of the tests showed that the fully synthetic jet fuel has combustion characteristics that are the same as conventional, petroleum-derived, jet fuel.