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POSTER

**RENEWED STORAGE STABILITY LIMITS FOR JET A-1 BEING USED
BY INDIAN AIR FORCE**

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Jet A-1 is a kerosene grade of fuel suitable for most turbine engine based aircraft. It is produced as per stringent internationally agreed standard with flash point above 38°C (100°F) and freeze point of -47°C maximum. Jet A-1 meets the requirements of British specification DEF STAN 91-91 (Jet A-1), (formerly DERD 2494 (AVTUR)), ASTM specification D1655 (Jet A-1) and IATA Guidance Material (Kerosine Type), NATO Code F-35. Jet A-1 fuel is used for fueling both civilian and military aircraft.

Storing of Jet A-1 fuel in storage tanks for 30 to 45 days for civilian aircraft is not an issue, since all the fuel meant for storing is consumed within the stipulated time. However, it is a serious problem when stored for more than a year, as practiced for storing Jet A-1 fuel for fueling military aircrafts.

Fuel stored for a longer time gives rise to instability in which hydroperoxides and peroxides are the initial reaction products. These products remain dissolved in the fuel and shorten the life of some fuel system elastomers. Also additional reactions results in the formation of soluble gums and insoluble particulates. These products may clog fuel filters and deposit on the surfaces of aircraft fuel systems thereby restricting flow of fuel to engine.

Under Indian context, Jet A-1 is certified for first six months and then every three months recertification is done provided the fuel meets the full specification when tested as per Def Stan 91-91/1 Derd 2494, for Aviation Turbine Fuel Kerosine Type, Jet A-1.

In order to study the enhances service life of Jet A-1, a comprehensive research programme was initiated at IndianOil R&D Centre. Three refineries were identified and for collection of the fuel samples, epicoated containers were specially made and sampling was done as per as per ASTM D-4057 procedure. A systematic study was taken up for predicting the renewed storage stability limits of JETA-1 Fuel. A set of ATF samples from the three refineries were evaluated at zero day, six months, twelve months, eighteen and twenty four months of storage, as per Def Stan 91-91/1 Derd 2494, for Aviation Turbine Fuel Kerosine Type, Jet A-1.

Details of evaluation, experimental set up and interpretation of data is discussed in the paper.