Fuel Fraud Tax Proposal
Jet Fuel (Jet A) vs. Kerosene (K-1)

Production Levels

The Energy Information Administration (EIA) is the statistical agency of the United States Department of Energy. The EIA provides independent data regarding energy, including petroleum products and fuels. According to the EIA, kerosene makes up only .4% of the annual U.S. refinery yield. Jet fuel composes almost 10% of the annual U.S. refinery yield. The demand for kerosene is dramatically smaller than the demand for jet fuel, as today kerosene is primarily used for some burner appliances, home heaters, and specialty lamps. Among the several types of kerosene, K-1, which is discussed in this paper, is the fuel most similar to jet fuel. However, the two types of fuel are not interchangeable.

Production Standards

The American Society for Testing and Materials (ASTM) establishes and controls the specifications for all fuel products manufactured and sold in the United States. The ASTM includes the Petroleum Products and Lubricants committee, which oversees the Jet Fuel Specifications subcommittee. This subcommittee includes representatives from airframe manufacturers, aircraft engine manufacturers, airlines, and oil companies.

The ASTM, with the guidance and direction of the Jet Fuel Specification subcommittee, drafts the standards required for jet fuel. **More than 20 detailed requirements and tests make up the specification for jet fuel, known as D 1655.** Jet fuel specifications and testing include tests for sulfur content, corrosiveness limitations, freezing point determination, particulate contamination testing, and many other evaluations.

The ASTM's Petroleum Products and Lubricants committee also includes a Burner, Diesel, Non-Aviation Gas Turbine, and Marine Fuels subcommittee. This subcommittee drafts the standards required of kerosene, found in specification D 3699. Kerosene faces far fewer tests in order to meet the less stringent requirements of D 3699.

This difference in evaluating the integrity of kerosene versus that of jet fuel is significant and very practical. It is cost-prohibitive to subject kerosene, used for non-safety critical functions, to the rigorous testing and evaluation of the jet fuel specification D 1655. Jet fuel must be manufactured to a very high standard to maintain its integrity in performing safety critical functions.

Below are a few of the detailed standards outlined in the ASTM specifications for jet fuel (Jet A) and kerosene. While there are many similarities, there is one crucial difference: the freezing point.

Product	Fuel Color	API Gavity	Relative Density	lbs./gal	Flash Pt. (F°) min	Freezing Point (F°) max	Sulphur (%/Wt.)
Jet A	clear-straw	37-51	.78-.84	6.5-7.0	100	-40	0.3
Kerosene #1	clear	37-51	.78-.84	6.5-7.0	100	-22	0.04
Kerosene #2	clear	37-51	.78-.84	6.5-7.0	100	-22	0.3

Table Provided by Air BP Aviation Services

The freezing point for petroleum products is the point at which the components of the liquid fuel solidify. In jet fuel and kerosene, the freezing point is the point at which the paraffin in the fuel congeals. The outside air temperature at typical cruise altitudes is extremely low. Fuel with a freezing point higher than jet fuel, such as kerosene, would be highly susceptible to solidification at these exceptionally cold temperatures. Any fuel that is not refined to the exact specifications of jet fuel could result in a blockage of an aircraft's fuel system and lead to engine failure. ***There is no known substance or additive that can lower the freezing point of kerosene to make it an acceptable, safe alternative to jet fuel.***

Handling, Storage, and Accepting Standards

Once jet fuel is refined, it is handled and stored in a manner very different from kerosene or other petroleum products. Accompanying paperwork identifies the fuel as jet fuel to ensure that it is handled and stored properly. Jet engines are highly susceptible to damage caused by contaminants, so tanks in which jet fuel is to be stored must be clean and dedicated solely to the holding of jet fuel. Residues from other types of fuels or inadequate seals that could allow water contamination in tanks used for purposes other than the storage of jet fuel can render the jet fuel unsafe. In addition, the filtration tolerance, distribution lines, and tank design must all be specific to jet fuel to avoid contamination and ensure product segregation. Therefore, once a refinery designates a particular fuel as "kerosene" and not jet fuel, paperwork accompanying the fuel will always differentiate it as such.

Jet fuel is accepted by an airport or fixed base operator (FBO) using very detailed standards. The Air Transport Association publishes an aviation fuel quality standard titled "ATA Specifications 103 – Standard for Jet Fuel Quality Control at Airports." ATA 103 sets the industry standard for the safe acceptance and handling of jet fuel. No airport abiding by ATA 103 would accept fuel without the appropriate paperwork identifying it as jet fuel.

Jet fuel is also tested upon receipt at an airport and again before being pumped into aircraft. An airport or FBO operator visually inspects the fuel for particulate and water contaminants. The recipient of the fuel also uses special equipment to test the jet fuel's American Petroleum Institute (API) gravity to evaluate the fuel for contaminants from other petroleum products. The airport or FBO operator rejects jet fuel that does not meet these requirements.

Addressing Potential Fuel Fraud

Congressional staff have raised concerns about the possibility of diverting regular kerosene to aviation use if the tax rates on jet fuel were raised above the rate on kerosene. Any responsible aircraft operator would have significant safety concerns about using any fuel that was not sold by a refinery specifically as jet fuel for aviation purposes. That safety concern would serve as the primary deterrent to fuel fraud.

In theory, there may be cases where a person could purchase a fuel that meets the standards for jet fuel, even though it is designated by the refinery as kerosene and not as jet fuel. The purchaser conceivably could resell the fuel for aviation purposes

(presumably after having it tested and certified). ***This kerosene would clearly not have been designated by the refinery as jet fuel, and therefore would not necessarily have been handled or stored properly.***

There are several alternatives for dealing with this theoretical fuel fraud scenario.

A first option would be to tax all fuels, even if labeled kerosene by the refinery, at the jet fuel rate if the fuel meets the ASTM standards for any type of jet fuel. A person who purchased such kerosene for non-aviation purposes but paid the aviation rate could obtain a refund through the existing refund procedure. As stated previously, the volume of non-aviation kerosene usage in the United States is small and, consequently, a minimal number of consumers would be affected.

A second option would simply be to tax all kerosene, regardless of its specifications, at the jet fuel tax rate. Again, persons who purchased kerosene for non-aviation purposes could obtain a refund through the existing refund procedure.

A third option would be to require refineries to dye kerosene that is sold for non-aviation purposes if the fuel meets the ASTM standards for any type of jet fuel. The dye would prevent the use of the fuel as jet fuel both because the dye would indicate that the fuel was not sold and taxed as jet fuel and, more importantly, because dyed fuel is risky to use in a jet engine. The dye itself, depending on its composition, can damage a jet engine. Pilots are rigorously trained in fuel appearance and the potentially catastrophic effects of contaminated fuel. Any pilot would question and reject jet fuel that is not the expected color – clear or straw. Fuel dying would not be a new process for refineries, as refineries already dye kerosene that is sold for non-taxable purposes.