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Quantitative Determination of Corrosion Inhibitor Levels in Jet Fuels by HPLC.

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Abstract:
Corrosion inhibitors are mandatory additives which are added to Navy Jet fuels to reduce corrosion of transfer lines and storage tanks. In addition, they are known to enhance lubricity properties of hydro-treated fuels. It is known that, as fuels pass through transfer lines or are stored, the level of corrosion inhibitor present decreases and with this decrease there is a corresponding decrease in both the corrosion protection and the lubricity characteristics of the fuel. Since there are potentially deleterious effects resulting from a decrease in corrosion inhibitor concentrations, a method of quantifying their concentrations was desired in order to be able to make appropriate after market adjustments to fuels. Thus, the ultimate goal of this project was to develop and analytical method to quantitaively determine the amount of corrosion inhibitor present in fuel samples. A secondary goal was to gain more specific experimental evidence regarding the fate of the inhibitors. A method which efficiently extracts nine of the military approved commercial

corrosion inhibitors from aircraft turbine fuels and qualitatively and quantitatively determines them by gel permeation chromatography is described. Additive concentration for quantitation ranges between 1 and 35 ppm (V/V). In addition the fate of the corrosion inhibitors at these concentrations in fuel was examined in the presence of steel surfaces, fresh water and sea water.

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