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# Airworthiness Alert 2020-1
# Fungus Contamination in Fuel

***Overview***

*With recent warm and humid weather in Adelaide, a CASA registered Super Dimona was found to have water in the fuel tanks and the start of fungus contamination growing at the fuel to water interface. The aircraft had not been flown for some time and had been parked with half full fuel tanks. It is likely that condensation had built up in the fuel tanks leading to good conditions for fungal growth.*

***Investigation***

*Cladosporium Resinae and similar fungi occur in the natural environment and assist with breaking down organic matter. Their spores become easily airborne and can be drawn into aircraft fuel tanks via the tank vent. The fungus requires water to live in and prefers warmer conditions. Once there is water in the bottom of the fuel tank the fungus can quickly grow by eating the fuel. The fungus is fibrous to start with but can quickly form a slimy mat at the fuel water interface.*

*The fibrous nature of the fungus means that it will choke up the fuel filter once it is ingested into the fuel lines. It is possible that it could also clog fine apertures in carburettors. The fungus can also then attack and break down natural rubber gaskets and seals in the fuel system. The fungus excretes its waste into the water which turns acidic. This can lead to rapid corrosion of metal fuel tanks.*

*Previously it was unlikely to occur in leaded Mogas and Avgas as the lead content was a fungicide. It was most likely to occur in diesel or jet fuel (without FSII). However with the adoption of low lead Avgas and unleaded Mogas, it is now possible to occur in these fuels.*

*The recent rain in Queensland and East coast of New South Wales along with warm and humid conditions in other areas of the country is likely to create very good conditions for fungal growth in aircraft fuel tanks.*

***Recommendation/Action***

1. *Take a low point fuel sample and check for water present. Any brown or black fibrous material in the water is considered to be fungal growth. See Figure 1 as an example.*

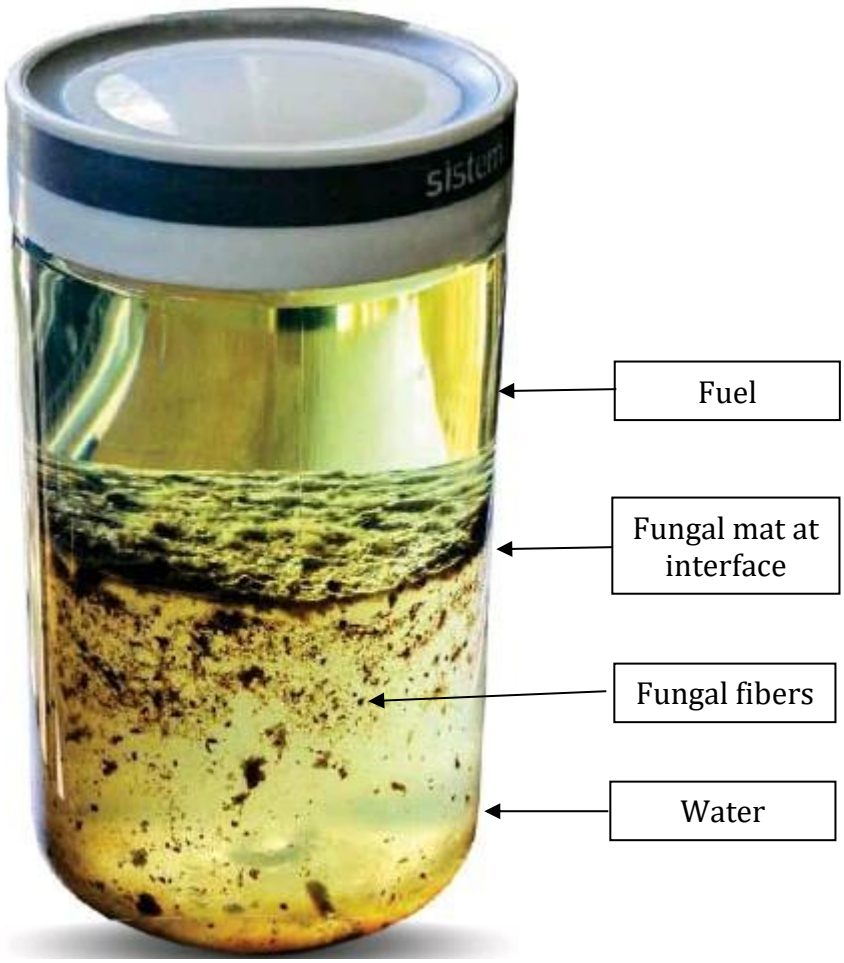


*Figure 1: Severe fungal contamination of fuel*

2. *If fungus is present:*
    a. *Drain the aircraft of fuel and discard the fuel appropriately.*
    b. *If the fuel tank is of metal construction and long term contamination is suspected, visually inspect the interior of the tank for corrosion.*
    c. *The fuel tanks should be flushed with fuel to remove any fungus residue and then refilled with clean fuel treated with a suitable fungicide (an example is Biobor-JF). Take appropriate precautions with the fungicide as it may be highly toxic.*
    d. *Replace the fuel filters.*
    e. *If long term contamination is suspected, inspect all rubber seals and rubber components in the fuel system for degradation.*

***Reporting***

*Notify the GFA of defects in the usual manner by submitting an online SDR ie Defect Report by the SOAR system on the GFA website.*

Dennis Stacey
GFA CTO
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