Fuel Filter: Check frequently for particle accumulation. Deterioration of o-rings and elastomer type bladder fuel tanks may appear as sediment in the filter element.

Fuel Primer: Sticking may indicate swelled 0-rings. Replace o-ring ensuring that the replacement has the proper specifications and is compatible with the fuel in use. Monitor closely.

General: The frequency of functional checks on all fuel system control devices (fuel selector valves, fuel tank floats, etc.) should be increased while operating on Mogas.

3.2 Carburettor Icing

Mogas is generally higher in volatility than Avgas. Mogas will thus absorb more heat from the mixing air when vapourizing, resulting in ice accumulation at higher ambient temperatures. THE LIKELIHOOD OF CARB ICING WHILE FLYING ON MOGAS IS HIGHER.

Although the severity of the carb icing and the methods to deal with it are similar for both Avgas and Mogas, its ONSET is likely to occur at HIGHER AMBIENT TEMPERATURES and at LOWER HUMIDITY with Mogas. In other words, conditions under which a pilot may feel there is only a slight risk for carb icing on Avgas may in fact be ideal for the formation of ice while using more volatile Mogas. This will result in the need to select "carb heat on" in less severe icing conditions and for a longer duration while using Mogas.

TP 2700 is available from Transport Canada as a rough guide to conditions conducive to carburettor icing. Since this chart cannot take into account variances in fuel volatility, it should only be considered an approximate educational tool. Since the graph pertains to Avgas volatility fuel, the size of the risk areas would be larger with Mogas. A reproduction is provided in Appendix D.

The following should always be remembered while using Mogas:

- The onset of icing will result in a progressive power reduction leading to a loss of altitude and/or airspeed. With a fixed pitch propeller, a loss of RPM will be noticed. With a constant speed propeller, the RPM will remain constant, but the manifold pressure (MAP) will drop, and the same reduction in performance will be noticed. Engagement of carb heat should be the first reaction to this. The throttle should not be disturbed until there are signs of improvement. A further power loss will be noticed upon application of carb heat, but power will return when the ice has melted.

- DO NOT, in temptation to avoid the rough running associated with carb heat selected "on", select carb heat "off" too quickly. Sufficient time must be allowed for accumulated ice build up to melt.

- Failure to recognize the first signs of icing is a common cause of aviation accidents in conventionally carburetted aircraft. If carb heat is not applied, the initial power loss will continue until altitude may be impossible to maintain and engine roughness may lead to engine stoppage.

- An RPM or MAP drop due to the onset of icing while in descent may not be noticeable due to the reduced throttle setting. The engagement of carb heat whenever in descent is strongly recommended while using Mogas. During a descent it is recommended to periodically advance the throttle to ensure that full power is still available.

- Make sure during the pre-takeoff check that a good RPM drop is obtained when carb heat is selected.

- DO NOT be fooled by warm ambient temperatures. With the right humidity conditions, carb icing can easily occur at temperatures of 25 degrees C or higher, depending on fuel volatility.

- DO review the procedures outlined in your owners manual for dealing with carburettor icing.

3.3 Vapour Lock

Vapourization of fuel (boiling) can result in vapour blockages in fuel systems, thus starving the engine of a constant supply of liquid fuel. Due to the higher volatility of Mogas as compared to Avgas, the margin of safety in conditions conducive to vapour lock will be less with Mogas.

One common cause of vapour lock is "heat soak", where an engine, after running at full operating temperature, is shut down. Initially, the temperature of the engine compartment will actually rise due to the sudden loss of cooling air flow and the thermal mass of the hot engine. If the engine is started again shortly thereafter, the temperature of the fuel in the engine compartment may be beyond its initial boiling point, and thus the risk of vapour lock is at its highest. The risk is greater with Mogas, due to its lower initial boiling point.

In the situation of shutdowns of short duration, all means to cool the engine prior to the re-start should be taken, including opening of engine cowl flaps and/or the oil access door and then waiting for sufficient cooling to take place. After starting, the pilot should ensure that full power is available before entering an active runway. This also will replace hot fuel in the lines of the engine compartment with cooler fuel from the tanks. Another safety precaution is to drain about one quarter litre of fuel from the firewall sediment collection bowl (return this sample to the fuel tank) just prior to starting the engine. This also helps to ensure an initial flow of cooler fuel. Also, painting the wing area above wing tanks white or another light colour will reduce the tendency for fuel to heat up while the aircraft is exposed to the sun.