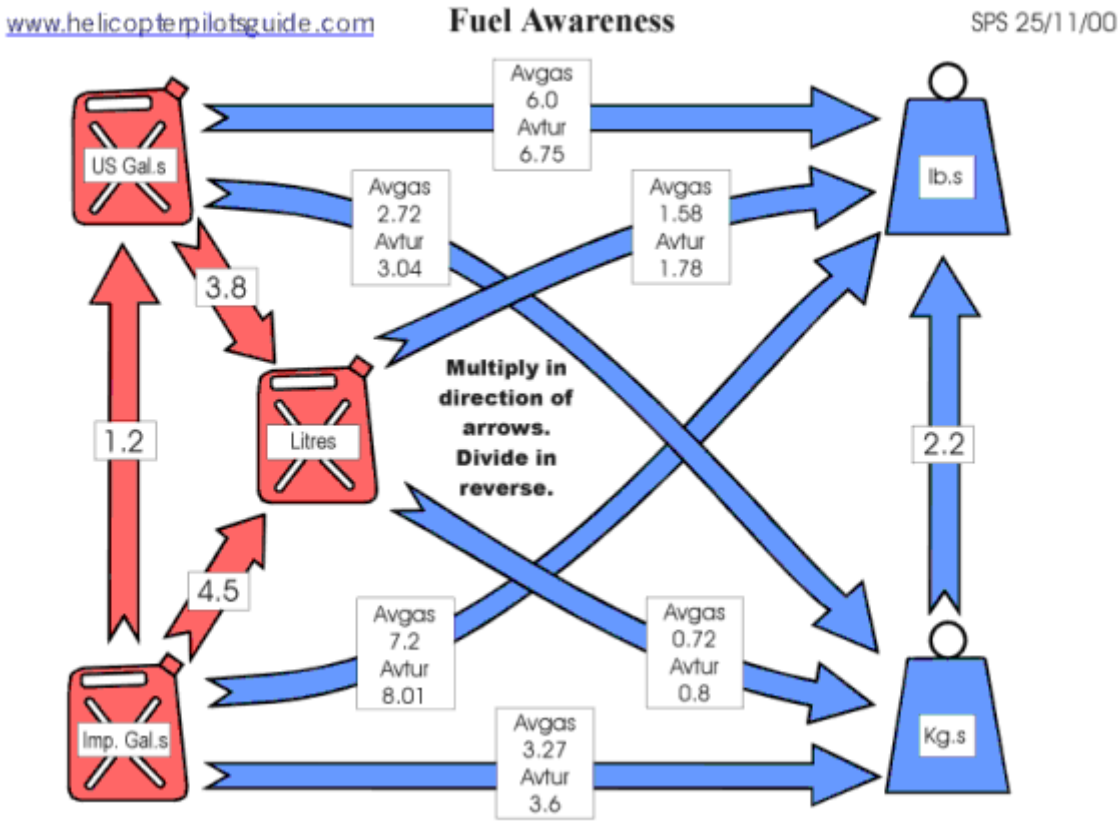

Converting volume (eg. US Gal.s to Litres) is easy. We are primarily interested fuel volume for endurance but must also consider all up weight of the aircraft. To find that we must consider not only the volume of fuel carried but its weight per volume (eg. Kg.s per litre). This is expressed as the Specific Gravity (S.G.) of the liquid. The reference for weight (a label for the force of gravity) of a liquid is water. 1 litre of pure water weighs exactly 1 Kilo. (This is a small part of how the metric system was devised.) Thus, S.G of water is expressed as 1.0. Some liquids are heavier than water per litre (eg. the sulphuric acid in a conventional lead/acid battery has an S.G. of 1.250 +, -). Their S.G. will be over 1.0. Other liquids such as Avgas and Avtur are lighter than water per unit volume so their S.G. will be less than 1.0. A typical S.G. used for Avgas is 0.72 (giving 0.72 Kgs per litre) and 0.8 is the accepted S.G. for Avtur.To find out what your fuel load (Avgas or Avtur) weighs it is best to begin with litres (because that's how we buy or load it these days) and convert remaining tank content volume(s) to litres (say having established that from a dipstick graduated in US gallons). When you have the required total for endurance plus reserve** in litres just multiply it by the quoted S.G. to obtain the weight of that volume. If this has to be converted into pounds for the weight and balance of an American aircraft then fine, that's easily done using the chart above.

OK, I've done all the work up to now, its your turn. You need to know how much fuel per hour the R22 (or whatever aircraft you are flying) consumes. (It is widely held that 9 USG is a reliable figure for an R22.) Use that figure and the chart above to find your own hourly rate of fuel burn in litres. Find out how much time your journey will take and add ** reserve. Plan how much fuel must be added at the pump, minus usable fuel already in the tank(s). Recheck your figures, convert the total fuel load straight into endurance. If the resulting endurance is **reserve longer than the flight time you have predicted then all well and good. Keep a mental note of fuel useage against time elapsed (Make sure you know what time you begin the flight!) Work out and note the time you must 'land by' without using

reserve fuel. Use some common sense and you will never have to declare a fuel emergency (or risk death for yourself and others). There really is no excuse for that to happen.

Make this train of thought habitual;

"The Aircraft I will be flying burns _____ litres of fuel per hour." "I need _____ litres to make this trip PLUS margin for safety **, totalling _____ litres." "My fuel load will weigh _____* kilos or _____ * pounds." **Delete the inappropriate.*
*** In N.Z. fuel reserve must be 30 mins.(at cruise consumption) for fixed wing. For Heli.s 20 mins. or equal to flight time if less than 20 mins. eg.10 mins planned flight, 10 mins reserve*

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STUCK FAST..... Dealing with the most likely scenario (that a Heli. has been flown to a site other than an airfield, landed on a paddock or similar and left for some time before the return trip is made) a Helicopter may be landed on a frozen surface without the Pilot being aware of the danger that awaits.

Latent heat from a skid or wheel may melt ice on the surface which can refreeze shortly afterward. It can be very strongly bonded to the surface. **Dynamic rollover** can end the next (very short) flight. Check that skids or wheels are free **before** attempting to take off. Use a lever (not to be confused with collective lever) if you have to, under the front of the skids (it can be done with a length of timber in preference to metal which may cause damage). If there is doubt when at an airfield (especially the Heicopter's base) then go and get the positioning wheels and use those for the check.

For an R22 Pilot the initial check is easy to perform, no lever or wheels required. Gently pull down on the tail in the same way as you would check the TR gearbox oil level. If the front of the skids lift readily then it is less likely (but not impossible) that the heels are stuck. If there is any resistance don't hang from the tail but be suspicious and move on to the lever check. (It is unlikely that the heels of the skids would 'dig in' to a grass surface by lowering the tail as it is harder when frozen but use your judgement.) **SPS.**

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SEAT BELTS AND LOOSE ARTICLES..... Always be sure to secure seatbelts when not in use (especially if a passenger has alighted and your flight is to continue). Beware of your own or a passenger's lose articles (forgotten sunglasses, cameras, mobile phones and so on). Anything that may slide or fall can have a nasty habit of lodging itself just where you would not want it to be, and you may not be able to reach it in flight. It could be a lose article as described ot the belt buckle itself. It may hamper control movement. A lose seat belt can also wrap itself around a collective or be wrongly secured around it, limiting control movement. **CHECK THEM!** Best of all - If you are carrying non - Pilot passengers in the front seat(s) then *take the duals out altogether.* **Ray Wilson, NZ.**

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WEIGHT PLACED IN THE SEATBOX..... Whilst the R22 is given a maximum passenger seat loading (240 Lbs) what of the box underneath? Its maximum load is only 50 Lbs.

It only works only one way too, in that the passenger can be up to 240 Lbs with nothing in the seatbox but the seatbox can only have 50 Lbs placed in it even if there is no passenger in the seat. The object must not have sharp corners as it may damage the floor during a heavy landing. The seat box is constructed to take the maximum permissible weight of its occupant from above whilst the floor of the box is quite light and flexible. It is a good safe place to put the weight used for a student's first solo (ie. when the instructor is not in the seat) but should the weight (or any load) be more than 50 Lbs it can only be put on the seat base and firmly secured.

'Firmly secured' is defined as using only approved restraint (eg. the seat harness provided). Nothing else is approved and cannot therefore be used to secure a load to the seat. **Arnold Catlin, NZ.**

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Loss of tail rotor effectiveness..... I have experienced it in an R22 (a long while back!) and I was totally to blame.

Right pedal turning when in a hover is not a good idea with 25kt of wind. TR begins to develop Vortex, losing thrust but the weathercocking of the vertical stabiliser does you a favour by turning you back into wind. That's just fine as long as the guy on the pedals remembers to remove the right pedal input...

If not, the TR regains its lost thrust, turning the tail crosswind again. A nasty oscillation is set up.

And guess what? You may be safe with wind on the nose, only to exceed demonstrated X wind conditions (R22 17 kt) when making a pedal turn.

The R22 is not susceptible to LTE/A as long as the demonstrated conditions are observed. **SPS.**

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UNARMED JACKET KILLS ENGINE..... An R22 pilot had flown out early to the hills. Sensibly dressed for the early morning chill and the bush terrain he was to land at, all seemed well planned. The doors were removed before flight began as the weather was forecast to become hot and hunting was the aim.

The first landing was on a ridge. The sun was up and insolation made the temperature rise in the bubble, even with the doors removed. The Pilot didn't want to shut down, but he did want to remove his jacket. A solution - Slip off the jacket and slide it down the seat, sit on it. No need to make the passenger get out to put it in the seatbox, no need to shut down.

All fine then?

NO....! Later, during an approach to a confined area one sleeve of the jacket became loose and flapped out of the door aperture. Why would this be a problem? It couldn't go anywhere because it was firmly attached to the jacket, sat upon by the Pilot.

But engine air intake is on the right hand side, behind the door aperture. The sleeve flapped over it and was held there by suction. The engine requires more air as power demand (as in the late stages of a confined area approach) increases. As the Pilot added power to arrest ROD the sleeve was sucked harder and harder onto the intake until it blocked it completely.

The engine was starved of air. **It stopped.**

Thankfully this happened at a height of 2ft. The Helicopter settled onto the level area the Pilot had selected for landing.No damage or injury was sustained and the sleeve (intake suction now gone as the engine breathed no more) innocently slid off and hung downwards.

Lucky, just so LUCKY!

The Pilot's summary of the occurence?

"I won't do THAT again.....!" *(I'll bet he won't !!)* **Anon.**