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Recreational Aircraft Assn. of New Zealand (Inc.)

RAANZ NATIONAL FLY-IN

STRATFORD AERODROME : FEBRUARY 16,17,18TH 2018

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High sulphur MOGAS issue

You may have heard on the news of an issue with a recent batch of MOGAS having a higher than normal sulphur levels, causing fuel gauges to read high, with some motorists running out of fuel while their gauges indicated plenty in their tanks.

It appears the sulphur was affecting the electrical characteristics of the level senders which were immersed in the fuel tank, causing them to send an incorrect indication to the gauges.

For aircraft running on MOGAS this could be an issue, depending on the type of fuel level sender fitted, and whether its electrical components are exposed to the fuel. And depending on the set-up, the error could be to read either low or high.

RAANZ is seeking further information regarding where and when this fuel was distributed, and whether the effect on senders is likely to be permanent (requiring replacement) or will revert to normal when immersed in standard fuel.

From the report from Z Energy below, it appears the effect is a permanent reaction to silver based sender components. If so, it is less likely to affect simple resistive, conductive or possibly capacitive fuel senders- but you never know.

The solution...

DIP YOUR TANKS BEFORE EVERY FLIGHT

but you do that anyway...don't you?

Article reproduced from Z Energy website

Questions and answers on fuel supplied potentially causing fuel gauge accuracy issue

26/01/2018 - General News

What has happened here?

Investigation is still ongoing at this time, however early indications are that one batch of 91 octane petrol and three batches of 95 octane petrol were released between the end of November and the middle of December, which we suspect contained higher than usual levels of “active” sulphur that could potentially affect a specific engine component in some types of vehicle. Diesel and 98 octane fuels are not affected.

The presence of this active sulphur species (or elemental sulphur) may be linked to a small number of complaints from motorists regarding the accuracy of their fuel gauges. This is because the sulphur species could affect a specific silver component in the engine of some automobiles, called a fuel sender card or fuel sender unit.

This means a small number of motorists may experience fuel gauges showing they have a quarter of a tank remaining when they are in fact out of fuel. However, not all vehicles will be affected.

While the vast majority of this fuel was supplied into the Auckland region, there may be isolated cases in neighbouring regions such as Northland and Waikato.

Why is there active sulphur in the fuel in the first place?

Crude oil and the resulting fuels (i.e. petrol, diesel, jet fuel) naturally contain sulphur, which is reduced during the manufacturing process to meet legislated, as well as voluntary industry requirements. Every batch of petrol manufactured or imported into NZ is extensively tested to ensure it’s of the standard required in NZ. Industry is investigating how this elevated active sulphur level has occurred.

What is the difference between sulphur and "active sulphur"?

Active sulphur refers to reactive sulphur compounds which may be an occasional by-product of removing other sulphur compounds from fuel, and which can, even if present in small traces, chemically react with the silver alloy used in the fuel sender units inside the fuel tank of certain vehicles.

Sulphur on the other hand, is naturally occurring in crude oil and bound in the chemical make-up of crude. High levels of sulphur burned in fuel has negative environmental and air quality consequences. In New Zealand, the legal limit for sulphur in petrol is a maximum of 50 parts per million (ppm). Australia has the same standard for 95 and 98 octane petrol, but a higher limit for 91 octane petrol where it is 150 ppm. From 1 July, this legal limit in New Zealand will lower to 10 ppm. Fuel sold by the industry meets the current legislated limit of 50ppm, including during the period of late November to mid-December when the fuel sender issues were first identified.

Total sulphur content of the fuel is not an indicator of reactivity of the sulphur compounds that could be in the fuel. However the fuel industry uses specific tests for Copper Corrosion (ASTM D130) and Silver Corrosion (ASTM D7671) to identify if there are any reactive sulphur compounds in the fuel and, through specified limits for these corrosion tests, to prevent the release of batches where reactive sulphur compound are present in significant enough amounts to cause corrosion of the test strips.

Active sulphur is not bound to the molecular make up of petrol, which is why even a very small amount can react with alloys in some fuel sender units. However, the overall amount of sulphur, active or otherwise, is still well below the legislated limit, and in such small amounts, has no impact on a vehicle's engine or performance, but can impact on silver alloys used in vehicle fuel sender units.

What is the required fuel specification for active sulphur?

There is no mandated level for active sulphur present in New Zealand fuel, though the fuel industry conducts testing designed to detect unacceptable levels of active sulphur species and prevent the release of batches that do not meet a specified limit. While initial certification testing did not detect any issues with product batches in the supply window of concern, subsequent investigative testing of samples retained at fuel storage terminals has indicated they exceeded the industry limit.

Why are you telling us this?

Independent test result data confirming levels of an active sulphur species exceeding the industry limit in RON 91 and RON 95 fuel grades was received just before the New Year.

This was made public as quickly as possible.

While the number of complaints has been very small, and so far limited to a few vehicle brands, we want to ensure our customers are aware of this issue and know who to contact if they have experienced problems with their fuel gauge as a result of filling up during this period.

Is this fuel still in the market?

This fuel will have been used up at service stations by now, and motorists should not be concerned with the fuel they are buying now. Additional testing has been conducted to give assurance of this.

What companies have been selling this fuel?

Almost every brand in the market could potentially have sold this fuel, except Gull which imports its own fuel.

Will there be any other impact on a vehicle?

No. And we stress the point: we don't think this has or will have had any impact on the overwhelming majority of vehicles. There are approximately four million vehicles in New Zealand, this fuel was sold widely across almost all fuel retailing brands. As an indication of the scale of this issue, the fuel industry has received only a small number of complaints.

Are fuel sender problems commonly caused by an issue with the fuel?

No. To our knowledge, this has not happened in New Zealand before. It is unusual for it to be caused by an issue with the fuel.

How many complaints are you aware of and where / what vehicles?

Industry has so far received around 100 verified cases of this fuel potentially leading to inaccurate

readings. These complaints have generally been from people who have filled up in the wider Auckland region.

So what are you doing about it?

We are continuing to investigate the cause of this issue, and to promptly assess any claims received from our customers.

Where the symptoms being experienced in customer vehicles are verified as being related to the active sulphur, individual fuel companies are progressing these through their complaints resolution processes.

We do not expect these levels of active sulphur to present a problem for the vast majority of vehicles, as most motor vehicles have fuel sender units with a level of additional protection against such an occurrence."

Fuel companies will assess any claims for the costs of repairs that are found to be a result of this issue.

So what should I do?

We encourage vehicle owners primarily in the Auckland area who have refuelled between approximately late November and the middle of December – particularly owners of Holden, Mazda and Toyota – who have concerns around the accuracy of their fuel gauge to ensure they maintain their gauges reading at above half full before having their fuel sender unit inspected by their local vehicle dealer or mechanic.

Customers should also contact the fuel company they purchased their fuel from with any queries or concerns. The relevant fuel company will assess any claims for the costs of repairs that are found to be a result of this issue.

Fuel company helpdesk numbers:

BP	0800 805 111
Caltex	0800 567 723
Mobil	0800 880 361
Z Energy	0800 567 723

Incident report

Incident Details

Microlight type/model	Xenon RST
Place of incident	Fielding 16 July 2017
Other aircraft involved	None
Describe the incident	Shortly after takeoff the pilot discovered the RH door was not latched. Shortly after this the door flew open and broke in half. The two halves remained attached to the airframe. A PAN call was made followed by a rapid return to the airfield. Landing was without incident.
Describe the affect on safety	Failure to check door was latched as part of normal pre-takeoff checks. If the door had parted company with the aircraft it would have gone through (and wrecked) the prop with more serious consequences.
Remedial action taken	
Corrective or preventive action recommendations	More care in pre-takeoff checks.

Membership changes

David Klein	Southern Recreational Aircraft Club	Flight Instructor	Upgrade
David Yeo	Bay of Plenty Microlight Assn	Senior Flight Instructor	Upgrade
Noel Smith	Gyrate Flying Club	Advanced Local	Upgrade
Martin Little	Associate	Novice	Joined
Trevor Smith	Bay of Plenty Microlight Assn	Advanced National	Upgrade
David Horner	Parakai Aviation Club	Flight Instructor	Upgrade
Jason Poynter	West Coast Microlight Club	Advanced Local	Upgrade
Steven DeGrey	Feilding Flying Club	Flight Instructor	Upgrade
John Hollings	Canterbury Recreational Aircraft Club	Intermediate	Upgrade
Gregory Campbell	Associate	Novice	Joined
Andrew Leith	Canterbury Recreational Aircraft Club	Novice	Joined
Luke Goleman	Canterbury Recreational Aircraft Club	Advanced Local	Upgrade
Virginia Westerberg	Feilding Flying Club	Novice	Joined
Dan Nickens	Bay of Plenty Microlight Assn	Senior Flight Instructor	Upgrade
Robert Dalrymple-Wilson	Canterbury Recreational Aircraft Club	Novice	Joined
Richard Royds	Canterbury Aero Club	Advanced National	Upgrade
Laurence Anderson	West Coast Microlight Club	Senior Flight Instructor	Joined
Kin Tam	Matamata Aero Club	Novice	Joined
Brent Martlew	Canterbury Recreational Aircraft Club	Novice	Joined
Louis Blurton	Matamata Aero Club	Novice	Joined
Oscar Bennett	Matamata Aero Club	Novice	Joined
Leyton Wright	Canterbury Recreational Aircraft Club	Novice	Joined
Stephen Franks	Mercury Bay Aero Club	Novice	Joined

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