Shell Aviation

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Action	**All Airports under Shell Operational Control** **All Airports operated by Shell to JIG standards**

Filter Monitors: Restrictions of Use

1 Background

Filter monitors are currently the preferred filter type for into-plane use because of their ability to remove dirt and absorb water from fuel. However, recent performance issues have led to further restrictions on their use, in particular the requirement to avoid using filter monitors with jet fuels doped with FSII.

This bulletin serves to remind users to carry out diligently all routine checks of filter monitors, to notify users of the new restrictions covering jet fuel containing FSII, and to remind users that in-to-out-flow monitor (namely 6-inch diameter) elements are not approved for Shell Group use.

2 Checks on Filter Monitors

Operational checks on filter monitors were tightened in 2003 in response to performance degradation issues. It is essential that all users of filter monitors continue to carry out the necessary checks on monitors, and ensure that:

A) filter monitor vessels are drained of water at least daily;

B) the filter differential pressure is checked, corrected for flow rate and recorded daily

C) the elements are changed when the DP reaches 22psi, when the DP drops by 5psi or after a service life of one year.
NOTE: Filter monitor elements in service must always remain fuel-wetted and never allowed to dry out.

3 Jet Fuels containing Fuel System Icing Inhibitor (FSII)

It has long been known that FSII, which contains di-EGME (di-ethylene glycol monomethyl ether) can reduce the effectiveness of filter monitors. As a result, earlier recommendations were that monitor elements exposed to FSII were changed at the lower DP of 15psi.

However, filter manufacturers now recommend that filter monitors are not used in the presence of FSII, and as a result this practice is no longer allowed.

FSII is present in several branded commercial additives eg 'Prist', 'Fizzy' and military additives, such as AL48, AL41.

4 Action Required

Filter monitors (all types) must not be used for delivering jet fuel doped with FSII.

Where filter monitors are currently used for delivering jet fuel doped with FSII, the following is required:

A) Where pre-mixed FSII is delivered, replace the FSII pre-mix arrangement with an additive injection system installed downstream of the filter monitor (note that the standard arrangement for Shell Aerojet systems requires the injection point to be downstream of the filter, and so is already compliant with this bulletin);

Or

B) Stop adding FSII altogether and liaise with the customers so that they can make their own arrangements regarding additive use;

Or

C) Replace the filter monitor elements/vessel with an approved filter water separator, FWS, (note that the larger size of a FWS compared to a monitor of equivalent flow rate means that this option may not be straightforward for fuelling vehicles with limited space. The FWS is required to meet the latest 5th edition of IP/API 1581 and is required to be fitted with a sump water detection system – see SAOM 03.04.02)

This change applies to all filter monitor elements (2-inch, 6-inch, spin-on etc from all manufacturers) and all applications (vehicles, fixed facilities).

5 Special situations - Defuelling

Where jet fuel containing FSII, eg Aerojet, is defuelled from an aircraft, it must not be refueled through a filter monitor.

If it is **certain** that jet fuel contains FSII, for example if the defuelling is a load adjustment following delivery of Aerojet, then the defuelled product may not be redelivered through a filter monitor. Such defuelled product should, subject to the normal controls (SAOM 06.03.00), be redelivered through an approved filter water separator, or disposed of.

If it is **suspected** that defuelled jet fuel contains FSII, eg from the aircraft technical log, its concentration must be checked using a refractometer (eg Gammon B/2HB Test Kit). If FSII is detectable, the defuelled product may not be redelivered through a filter monitor. If the concentration is below the detection limit for FSII (0.05%) the defuelled product may be deemed to be undoped and may be delivered through a filter monitor.

6 Inadvertent use of filter monitors with FSII

If jet fuel containing FSII is inadvertently delivered through a filter monitor, the elements must be changed immediately.

7 6-inch diameter in-to-out flow filter monitor elements

This bulletin serves as a reminder that in-to-out flow 6-inch monitor elements (eg Velcon ACI series elements) are **not** approved for use by Shell Aviation. These elements are occasionally recommended by filter manufacturers for use in filter-water separator vessels that have been converted to filter monitors. Where in-to-out monitors are in use, these must be removed and alternative filtration arrangements made.

These changes are effective immediately and must be implemented before the end of October 2006. Until the changes are carried out, please ensure that all the current operating procedures for filter monitors are diligently carried out, particularly those contained in Section 2 above.

8 Further information

Section 03.03.02 (ii) of the SAOM will be amended in due course.

For further information, contact John Buxton at j.buxton@shell.com or Phil Rugen at phil.rugen@shell.com .

End of Bulletin