UKOG will not inject any dilute acid into rocks in the Dunsfold area

UK Oil & Gas PLC would like to emphasise that it has no plans or intention to inject any dilute acid into either the gas-bearing Portland sandstone reservoir (our primary Dunsfold objective) or the underlying naturally fractured Kimmeridge Limestone rocks, situated at depths of around a kilometre or more below Dunsfold.

Similarly, we have no intention to use this process, known as matrix acidisation, in the future at Horse Hill, Broadford Bridge or other Weald Basin wells with the same targets.

Recent studies of our nearby Broadford Bridge-1 well show that, because of the chemical composition of the rocks, the acidisation process can have a significantly detrimental effect on the ability of oil and gas to flow into the well.

However, we reiterate that this process, which was fully permitted and approved by the Environment Agency, has been used safely and widely for over 100 years to improve the fluid flow from wells in limestone rocks ("lime" rich rocks made primarily from calcium carbonate) that produce public drinking water and hydrocarbons.

The process, which attempts to enlarge flow pathways in limestones by dissolving lime, utilises exactly the same chemistry as household lime scale removal from sinks, baths, showers and toilets, using similar acid concentrations of up to 15%. The lime and acid is converted into water, carbon dioxide and highly soluble calcium chloride, a naturally occurring significant constituent of the fossil salt water already present within the Weald's underground sedimentary rock sequence.

Crucially, the Portland and Kimmeridge rocks also contain significant amounts of microscopic clay particles bound within the rock. Consequently, as the lime dissolves, some of these clay particles are released into flow paths within the rock. The "free" clay particles then migrate towards the well and combine, forming a clay "sludge", restricting or blocking some of the flow pathways, which can significantly reduce the well's performance. Once blocked the flow pathways cannot be reopened.

It makes neither commercial or technical sense for UKOG to utilise this acidisation process, as its future use could seriously reduce the significant natural flow potential and the good flows of hydrocarbons we expect.

Furthermore, as per our information leaflet, in order to flow test any well, we must first line it with continuous heavy-gauge steel tubing (known as "casing") which is then surrounded by a layer of impermeable concrete ("cement") which binds to the steel and surrounding rock. This creates a pressure controlled 7-inch diameter well bore over the full length of the well.

To permit flow into the well from the hydrocarbon bearing zone, we must then make small finger-sized holes, or perforations, through the steel casing and concrete. However, the perforating process often leaves concrete debris in the perforations, hampering fluid flow into the well.

In this case, a process called an acid wash is standard global oil field practice, as it is in limestone water wells, whereby a small volume of dilute acid, in our case 5% acetic acid (i.e. domestic strength vinegar) is left to soak for a couple of hours solely over the perforated zone.

The process dissolves the lime of the concrete debris into soluble calcium chloride. The reactants, consisting of calcium chloride, salt water and any hydrocarbons are then flowed into surface tanks, neutralised if necessary and sent to an appropriate EA approved handling site.