

## **Statement by UK Oil & Gas PLC on letter to The Times**

**6 August 2018**

UK Oil & Gas PLC (UKOG) is very disappointed that these four university academics propose to issue their letter prematurely. We hope their motives are purely scientific, but it appears otherwise as they have not been involved in the scientific investigation of the Newdigate, Surrey tremors.

The British Geological Survey (BGS) and Oil and Gas Authority are both already actively addressing this issue, alongside a number of academics from Southampton University and Bristol University. The Environment Agency and Health and Safety Executive have also made inquiries and been reassured.

In summary, there is no evidence that would suggest oil and gas activity is the cause of these tremors in Surrey. We therefore feel these academics should rely on scientific principles and review the evidence before sending this letter.

Our understanding is that there have been 12 small tremors, one of 3.0 on the Richter Scale, four further above 2.0 on the Richter Scale, with the most recent being on 18 July 2018. Tremors below 2.0 on the Richter Scale are often not felt or reported.

The Horse Hill operator, Horse Hill Developments Ltd, was pumping at the Horse Hill site during only one of these 12 events. Pumping only started on 9 July 2018, following the first 8 tremors. Also, the Horse Hill oil well was shut-in all day on 18 July 2018.

UKOG is in active communication and cooperation with the expert seismology academics at Southampton University (Dr Stephen Hicks) and Bristol University, who are involved in BGS's investigation. BGS have to date installed five seismic monitoring stations in the area of the Surrey earthquakes to monitor seismic activity and understand the source of such activity.

BGS are publishing all of their seismic data, so this is fully available for academic review, for those who wish to do so.

We would like to outline the historic exploration activities in south-east England (known geologically as the Weald Basin) and operations carried out at Horse Hill:

1. There have been over 100 oil & gas wells drilled in the Weald Basin over many decades. No seismic activity was previously reported.
2. There are 13 producing oil & gas fields in the Weald Basin, some have been producing for over 30 years. No seismic activity was previously reported.
3. The Horse Hill-1 oil discovery well (HH-1) was drilled between September and November 2014. No seismic activity was reported.
4. The HH-1 well was flow tested in February and March 2016. No seismic activity was reported.
5. We returned to the Horse Hill site on 25 June 2018, but initially only to locate and connect equipment at the site surface.
6. We first started pumping in the HH-1 wellbore pressure on 9 July 2018. This has been gentle pumping using a standard industry linear rod pump – no unusual pumping. To be clear, no fluids have been pumped or injected into the HH-1 well in 2018. The first HH-1 test zone is the shallow (around 600m deep) Portland sandstone interval.

Bristol University and Southampton University do not consider that the evidence to date supports that oil and gas activities are the cause of the Surrey tremors. This is due to the timing of oil and gas

activities, the low volumes of fluids extracted from oil and gas wells and the distances from the nearest wells to the source of the tremors.

Combined with the history of previous oil and gas production, drilling and flow testing activities in the Weald Basin, critically with no corresponding history of seismic activity, UKOG also does not believe the recent tremors are related to oil and gas activities.

There has been no seismicity associated with any period where we have flowed oil via pump to surface.

#### **Well integrity test**

The largest recorded earthquake was on the 5<sup>th</sup> July 2018 which was 3.0 on the Richter Scale. We tested the integrity of HH-1 on the 8<sup>th</sup> July 2018 above the packer to 2000 psi. There were No issues. The highest recorded earthquake since then was 2.4 on the Richter Scale on the 18<sup>th</sup> July 2018.

#### **Well cellar integrity test**

The well cellar integrity test was carried out on the 20<sup>th</sup> June 2018 and completed on the 21<sup>st</sup> June 2018. Again, there were no issues.

Pressure data from the well shows the well investigates up to a radius of 6-700 ft, not 6 Km.

No seismicity recorded when the well was flowing in 2018, 2016 and drilling in 2014.