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Study Ties Fracking to Quakes in England

By ALEXIS FLYNN

LONDON—The company leading efforts to unlock the U.K.'s potentially vast shale-gas reserves suffered a setback Wednesday after a report found it was "highly probable" a controversial production technique caused two small earthquake tremors in the country earlier this year.

The report, which was financed by U.K. energy company Cuadrilla Resources Ltd., pointed to "strong evidence" that the two minor earthquakes and 48 weaker seismic events resulted from Cuadrilla's pumping drilling fluids used in hydraulic fracturing, or "fracking." At the same time, the report said the events were the result of a "rare combination of geological factors."



Bloomberg News

Cuadrilla Resources' shale gas exploration site, in July.

The report could complicate efforts by privately held Cuadrilla to resume hydraulic-fracturing activity that was halted after the two seismic incidents.

The company said the report concluded that none of the events recorded, including one in April of 2.3 and one in May of 1.5 on the Richter scale, had any structural impact on the surface above.

The U.K. has become the latest venue in Europe to see shale gas spur major debate over fracking, which has been heavily criticized by environmental groups. In June, France became the first country to ban shale-gas

exploration.

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The Staffordshire, England-based company said the report vindicated its stance that its operations pose "no threat to people or property in the local area," but it pledged to implement an early-warning system and other recommendations to mitigate the risk.

Cuadrilla in September announced a big shale-gas discovery, but development is on hold after the company and government agreed in June to stop its shale-gas test drilling until its potential consequences were better understood.

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U.K. regulators said they would review the findings before shifting policy. Leading environmental groups and local-government officials also called for caution on fracking, which has been a key component in the rise of shale gas in the U.S. and other areas.

The U.K. Department of Energy and Climate Change will study the implications of the report, a department spokesman said. "The implications of this report will be reviewed very carefully—in consultation with the British Geological Survey, independent experts, and the other key regulators," said the spokesman.

The report found that the combination of geological factors that caused the quakes was rare and would be unlikely to occur together again at future well sites.

"If these factors were to combine again in the future, local geology limits seismic events to around magnitude 3 on the Richter scale as a worst-case scenario," the report said.

The Richter scale measures magnitude, which is expressed in whole numbers and decimal fractions, and not damage caused. Each whole number represents a tenfold increase in measured amplitude, so a 5.3 tremor might be rated moderate, while a strong earthquake could be recorded at 6.3.

Cuadrilla said the report was overseen by an independent team of seismic experts and was prepared in consultation with the Department of Energy and Climate Change. A department spokesman said the report was commissioned by the company and that it would comment on the substance of the conclusions after it studied the report's findings.

An earlier study by the British Geological Survey put the epicenter for each earthquake as being 500 meters (1,650 feet) away from the Preese Hall-1 well, at Weeton, near Blackpool, England.

British Geological Survey Earthquake Seismologist Dr. Brian Baptie said Wednesday's report confirmed his organization's own initial conclusion that fracking was responsible for the earthquakes. "It seems quite possible, given the same injection scheme in the same well, that there could be further earthquakes," he said.

Dr. Baptie said a way to minimize future risks could include the type of traffic-light monitoring system proposed by Cuadrilla but pointed out that even an "acceptable magnitude 2.6 earthquake might, at a depth of three kilometers (1.9 miles), result in an intensity of shaking that would not be expected to cause any damage but would be widely felt by people indoors and out, and may displace objects on shelves."

Spotting these types of seismic events could also be tricky, explained Dr. Baptie. "Earthquakes such as this result from very small movements on small faults that may be very difficult to identify," he said.

Nick Molho, head of energy policy at environmental group WWF-UK, said the findings "are worrying, and are likely to add to the very real concerns that people have about fracking and shale gas."

Local Liberal Democrat Councillor Sue McGuire, who also leads a residents' group opposed to fracking, said that if Cuadrilla drilled the 400 to 800 wells proposed than "we could be looking at significant seismic activity in the area, which could have major impact on peoples' homes and

businesses in the area, not to mention the impact on the environment."

"A moratorium would give the government time to ensure that industry specific legislation can be put in place," she said.

Cuadrilla has said some 200 trillion cubic feet of shale gas may be contained in northwest England, enough to meet the country's gas demand for 64 years, although it has cautioned the actual recoverable figure may be much lower.

—Guy Chazan contributed to this article.

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Corrections & Amplifications

An earlier version of this story erroneously referred to a Cuadrilla estimate of 200 million feet of gas in northwest England; the estimate is for 200 trillion cubic feet of gas.

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