
Researchers Investigate Oil/Gas Link to Texas Quakes

785 words

18 May 2016

NGI's Shale Daily

SHDL

English

Copyright 2016 Intelligence Press, Inc. All Rights Reserved.

Oil and gas activities are probably linked to at least 59% of induced earthquakes that rattled Texas over the past four decades, according to a report published online Wednesday by researchers with the University of Texas at Austin (UT) and Southern Methodist University (SMU).

In a 17-page [report](#), "A Historical Review of Induced Earthquakes in Texas," which will be published in the July/August issue of Seismological Research Letters, the UT/SMU researchers developed a five-question test and scoring system to assess how strongly the evidence suggests that an earthquake is induced. Those questions address an earthquake's:

Using their new system, the UT/SMU researchers analyzed 162 earthquakes that struck the Lone Star State between 1975 and 2015, and which registered 3.0-magnitude or greater on the Richter scale. They determined that 42 quakes (26%) "almost certainly induced" seismic activity, while another 53 temblors (33%) were "probably" induced and 45 (28%) were "possibly" induced. The remaining 21 earthquakes were deemed tectonic occurrences.

"Although the Texas data support the assertion that when earthquakes occur, they often are situated within a few kilometers of high-rate injection wells or near fields where large volumes of oil and gas have been produced over many years from relatively shallow strata, the converse is not true," the researchers, led by Cliff Frohlich at UT's Institute for Geophysics, wrote.

"Nevertheless, it is important to emphasize that although association is not causation, we cannot dismiss the correlations in time and space over a long operational history, reported at multiple sites, and noted in numerous peer-reviewed publications."

Ramona Nye, spokesperson for the Railroad Commission of Texas (RRC), told NGI's Shale Daily on Wednesday that the commission "will continue to use objective, credible scientific study as the basis for our regulatory and rulemaking functions. However, this new study acknowledges the basis for its conclusions are purely subjective in nature, and in fact admits its categorization of seismic events to be arbitrary."

Last year, the RRC determined it was unlikely that a link exists between wastewater injection wells and seismic activity in the state (see Shale Daily, [Sept. 11, 2015](#); [Sept. 2, 2015](#)).

The researchers said that induced seismicity in Texas "is still poorly understood," but more knowledge will be gained with additional seismic monitoring stations. Last week, Texas announced 22 new stations would be added to 17 existing ones (see Shale Daily, [May 12](#)). All are part of the TexNet Seismic Monitoring Program, which is administered by UT's Bureau of Economic Geology.

Last year, researchers from SMU, UT and the U.S. Geological Survey collaborated on a study of earthquakes that struck near the town of Azle, TX, in the Barnett Shale between late 2013 and the spring of 2014 (see Shale Daily, [April 21, 2015](#)). They concluded that high volumes of wastewater disposed at injection wells, coupled with saltwater extraction from natural gas wells, were the "most likely cause" of the quakes.

Steve Everley, spokesman for Energy In Depth (EID), an energy industry-backed national shale gas education initiative, called the earlier study on Azle "an admirable attempt to advance science in this field," for developing a three-dimensional model to assess changing fluid pressures within a rock formation in the affected area. But although many of the same researchers also contributed to the latest report, Everley said the latter "appears to be an unfortunate step backwards."

"Determining whether an earthquake was natural or manmade is difficult, to say the least, and will always be subject to differing interpretations," Everley said in a blog published on EID's website on Tuesday. "However, the problem with the UT/SMU test is that researchers who use it are prevented from even having disagreement over the key questions of induced seismicity -- namely, whether subsurface pressure was sufficient to cause an earthquake, and whether a plausible pathway exists from the injection site to the fault."

Ed Longanecker, president of the Texas Independent Producers & Royalty Owners Association, was also critical of the latest report, saying it "ignores several important factors and presents subjective assertions regarding a connection between oil and natural gas development and seismic activity."

"The report seeks to preempt proactive research efforts currently underway designed to identify the true cause of seismic events in the state of Texas," Longanecker said Wednesday. "While the report makes reference to some of these initiatives, the data presented is premature, deficient in making a definitive connection to oil and natural gas activities, and unnecessary given the amount of focus, structure and funding allocated to this issue."

You must have JavaScript enabled to enjoy a limited number of articles over the next 180 days.

Document SHDL000020160519ec5i00005