

PROJECT UPDATES — August 2016

Summary — Since Governor Abbott signed legislation on June 22, 2015, authorizing funding for TexNet, project personnel at the Bureau, along with our University of Texas at Austin (UT), Southern Methodist University (SMU), and Texas A&M University (TAMU) research partners, are creating the foundation for a successful program. Along with network installation and operation, our focus remains on several main areas—recent seismicity in Texas, partnerships, research, and outreach.

Network Installation and Operations

- SMU is maintaining their TexNet-funded seismic network, archiving data to IRIS and updating their catalog.
- Nanometrics has delivered approximately 95% of the TexNet equipment, with the remainder expected by the end of September 2016.
- Scouting and initial site evaluation of proposed permanent station sites progresses with 22 sites identified, including back-up sites. Noise surveys have been conducted at 11 of 22 proposed permanent sites, and we are proceeding with no-fee lease contracts at six sites.
- We have identified 12 sites in the Fort Worth Basin for portable station deployments. Installation is expected to start in September of 2016.

Synopsis of Recent Seismicity in Texas

- In August, the USGS reported an earthquake of M2.5 in the area of Snyder, Texas. The hypocentral depth is estimated at 5 km. The horizontal and depth uncertainties of the location are 4.8 and 2 km, respectively.
- SMU cataloged 12 earthquakes of M<2 during August, all tentatively associated with the 2015 Venus sequence.

Recruitment

- Johnathon Osmond (M.Sc.) has accepted the position of Structural Interpretation Specialist at the Bureau.

Partnerships

- The Railroad Commission of Texas has been collaborating with the Bureau to ensure proper legal understanding of the disposal and injection program in Texas.
- Anadarko Petroleum Company and Occidental Petroleum Company have joined the CISR Industrial Associates program, bringing the total membership to 10.

Research

- SMU is continuing research on seismic velocity imaging of the Azle earthquake sequence using ambient noise tomography combined with local earthquake data.
- The BEG has identified injection and disposal zones within the Ft. Worth Basin, and these zones are being characterized in terms of fluid budgets and subsurface structural controls. Similar work is beginning for the Permian Basin.
- The Bureau is integrating and compiling petrophysics, volumetrics, and well construction data into a 3D geologic model.
- TAMU continues to test workflows for coupled fluid flow and geomechanical modeling of fluid injection and production and has performed preliminary sensitivity studies of rock failure conditions with respect to key parameters.

Outreach

- Accepted: Frohlich et al. reply to "Comment on 'A historical review of induced earthquakes in Texas' by Steve Everley," *Seismol. Res. Lett.*, 87, 2016.
- The Bureau presented their geomechanics research at the Best of RPSEA 10 Years of Research Ultra-Deepwater and Onshore Technology Conf, in Galveston, Texas. Current TexNet research activities were mentioned as an outgrowth of DOE-RPSEA-funded research in 2013-2015.
- TexNet Principal Investigators have established a draft outline and timeline for the December Governor's report.