PROJECT UPDATES — April 2017

Summary — Project personnel at the Bureau, along with our UT-Austin, SMU, and TAMU research partners, continue to make progress on this highly successful program as highlighted below.

Network Installation and Operations
- TexNet deployed an auxiliary station in Huntsville (temporary station installation, multiyear deployment).
- Proposed permanent station sites in NE and S Texas failed the required 24-hr noise survey. Alternative sites have been identified. An additional site in the Upton County area is also being assessed for a permanent station.
- Current operations status can be found at: http://www.beg.utexas.edu/texnet/operations-status

Synopsis of April 2017 Seismicity in Texas
- TexNet catalogued 108 earthquakes in Texas ($M_L \le 2.6$) in areas of DFW, Pecos, Snyder, Fashing and elsewhere. It should be noted that the ability of TexNet to detect earthquakes has improved significantly and will continue to improve as the network is completed in the coming months.
- SMU catalogued seven earthquakes ($M_L < 1.0$) associated with the Venus, NE Johnson County, sequence.

Partnerships
- *Bureau Hydrology* team has received complete datasets for Texas wellbores, production, and injection through partnership with the RRC Underground Injection Control team.

Research
- *UTIG Seismicity Studies* team developed a local magnitude calibration for West Texas.
- *Bureau Hydrology* team collected information and developed a script to convert surface pressure of injection wells into bottomhole pressure. To date, ~15 injection well operators have been contacted to obtain information on injection operations not typically provided to the RRC.
- *Bureau Geomechanics* team incorporated latest in-situ stress data from Stanford into their model to investigate links between fault reactivation and fluid injection/production.
- *UT-PGE Geomechanics* team updated their Ft. Worth reservoir model with pore pressure data through December 2016, began incorporating water production and injection data, and performed sensitivity studies on subsurface permeability parameters for the rupture propagation models.
- *TAMU Fluid Flow, Geomechanics* teams finished testing a workflow for multi-objective history matching using pressure data and seismic events. The team is building a multi-phase flow model to evaluate multi-phase effects.
- *UT Seismic Hazard and Risk* team is developing shear wave velocity profiles from surface wave data collected at 11 TexNet stations in the DFW area.
- *UT Social Science* team completed all case study interviews and transcriptions with oil and gas regulatory agency executives and data analysis has begun. UT-IRB approved a study to be run at the TOPCORP conference in May.

Outreach
- *UT Communications* launched a multi-pronged promotion of the Bureau's TexNet video with a UT home page feature, "Why is Texas Shaking?" (https://news.utexas.edu/2017/03/30/why-is-texas-shaking).
- *TexNet-CISR Team* participated in an induced seismicity panel discussion during the Responsible Shale Energy Extraction Symposium at Earth Day Dallas.
- *UT Seismic Hazard and Risk* team presented "Ground Motion Prediction Equation for Small-to-Moderate Earthquake Events in Texas, Oklahoma, and Kansas" at the SSA Annual Meeting in Denver, CO.
- *TexNet* team met with potential European partners to better link TexNet data collection and research to ongoing seismological research.