# PROJECT UPDATES — June 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:

- Siting and contracting for the final installation campaign of eight remaining permanent TexNet seismic stations is nearing completion and site construction should be completed in August.
- Comments have been received from our stakeholders on the test version of the TexNet Earthquake Portal web site. Improvements are currently being implemented. The estimated release date of the public version of the web site will be provided in the July project update.
- Contracting is in progress for the first portable station in the Eagle Ford operating area and deployment is planned for early July.

Synopsis of June Seismicity in Texas:

- *TexNet* cataloged 75 events in Texas, most occurring in West Texas and the Snyder area. Three events were recorded at ML≥2.5. The highest local magnitude event (ML=2.9) occurred June 21st near Reno, TX.
- The SMU North Texas earthquake network recorded 18 events, including four on June 21 along a previously active fault of the Azle earthquake sequence with ML -0.6 to 2.8. Fourteen events of ML -0.4 to 0.7 were recorded in the Venus sequence.

Research:

- *Bureau Faults and Geomodels* team has completed the 1st edition of the Fort Worth Basin 3D fault model, which will be integrated with the geological, fluid flow and geomechanical models to predict: (1) spatiotemporal likelihood of fault reactivation, (2) variation in the mean distance to nearest fault of concern, and (3) assessment of basin seismogenic potential.
- *Bureau Hydrogeology* team continued developing the fluid flow model of the Fort Worth Basin. Petrel coverage was received, with stratigraphy and well data. Methods to convert surface pressure of disposal wells into bottomhole pressure were improved.
- *UT Pore Pressure Analysis of Ft. Worth Basin* team has been working on injection rate, injection pressure, and fault distance scenarios to test the correlation between injection volume and maximum earthquake magnitude (the McGarr hypothesis). The result will be used to propose hazard mitigation strategies.
- *UT Seismic Hazard and Risk* team is preparing for $V_s30$ measurements at 9 TexNet stations near Pecos in July.
- *TAMU Fluid Flow, Geomechanics* team verified that 30-well production data from an operator is consistent with production data from a commercial database. The team added additional history matching runs with the pre-stressed fault before operation, and classification and entropy uncertainty analyses using previous simulations.
- *UT Social Science* team completed the data collection phase with surveys at the TOPCORP conference in Austin. Case study interviews are being analyzed.

Outreach:

- *Bureau Fault Reactivation, Geomechanics* team presented: "The effect of variable fluid injection rate on the stability of seismogenic faults" at the American Rock Mechanics Association (ARMA) meeting in San Francisco.
- *Bureau Hydrogeology* team contacted 19 disposal well operators to obtain information on disposal operations not typically reported to the RRC. Detailed injection data were received from 2 operators, as well as useful information on operational details from several others.
- *TexNet Seismic Monitoring* team is developing a website for public display continuous seismic data feed. This website is in beta mode testing and has not yet been released.

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