

# 9th Quarterly Report – Public Page

Date of Report: November 30, 2015

Contract Number: DTPH56-13-T-000002

Prepared for: DOT Pipeline and Hazardous Material Safety Administration

Project Title: Real-Time Multiple Utility Detection During Pipe Installation Using Horizontal Directional Drilling (HDD) System

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For quarterly period ending: November 30, 2015

## Results and Conclusions:

The new noise maker has been designed, manufactured and tested. The new design uses rod-in-rod system used in the existing directional drilling system. In this new design, the inner rod can be rotated independent of the outer rod and can be used to rotate a shaft which has a hammer assembly installed. Anvils are welded into the outer case, projecting into the interior of the housing where they will be struck by the rotating hammers. The new noise source is tested and appears to produce considerable more acoustic energy for transmission into the ground to detect buried pipes.

Several pieces of metallic disks/caps were made and fitted to the existing sensor modules. These external weighting mechanisms were made of stainless steel and additional coupling weight did assist the sensor module to have a tighter coupling effect. The mobility of array structure, however, will suffer a little bit due to the overall weight increase. The software improvement focuses on the forward-looking detection process which corrects (excludes) the test result of pipe/target location falling behind the acoustic system array.

## Plans for Future Activity:

- Finalize the noise source driven by mud motor or similar device and conduct tests in the local area with improved acoustic sensors.
- Write monthly and quarterly reports.
- Initiate preparation of the final report.