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A Processing of very noisy LOTEM data from Hockley Salt Dome, Houston, Texas

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The electromagnetic method, Long-offset Transient Electromagnetic (LOTEM), can detect resistivity changes of the material for geophysics and geologic interpretation. However, the area with high cultural noise and geologic noise is a challenge to obtain the satisfactory result. Using new system, we measured the data over the salt dome where it is closed to residential area with high noise. In addition, the system also collects microseismic data which is separated from the EM data in processing sequence under data marge. The calibration and header checking were performed for assurance before data processing. Carefully, reviewing and correcting all of the individual data steps, we can filter the data pre-stack and post-stack and increase signal to noise ratio (SNR) of it by several orders of magnitude. Extreme care needs to be taken when using the data in time lapse mode. All processing leads to inversion and for the Hockley salt dome we performed focused source EM which allows to get a more accurate 3D model.