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Rapid hazard assessment of oil and gas pipeline based on the Shakemap

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The oil and gas pipeline is one of important lifeline systems. Based on the ground motion obtained by Shakemap, a method of rapid hazard evaluation for oil and gas pipelines is presented in this paper. The spatial distribution of PGA and PGV along the oil and gas pipeline could be obtained by Shakemap in about 30 minutes after the strong earthquake. It can be estimated whether or not the strain in pipeline caused by ground motion is larger than the allowable tension and compression strain of buried steel pipe. According to the density of population and the important level of pipeline, the possible consequences of the damage of oil and gas pipeline are classified. Considering the important level and the population density near the pipeline, the possible seismic disaster distribution along the total oil and gas pipeline is evaluated. The rapid hazard assessment of Nanjiang Gas Pipeline was realized with this method, which was affected by Pishan Ms 6.5 earthquake on July 3, 2015. The result provided the help for the oil and gas pipeline maintenance department to decide the emergency response after the earthquake.