

## **ABSTRACT**

Construction and industrial processes such as mining and quarry blasting or pile driving near a pipeline create vibrations that will result in stress on the pipeline. This stress is added to the normal operating stress on the line. The obvious way to determine these stresses is by exposing the pipeline, installing strain gauges, reburying the line and measures its response to the event. This is very costly and not a practical approach in most cases. A common method that is used for monitoring these activities is to measure the vibration of the ground above the pipeline. The question then becomes, how do these vibrations relate to the stress on the pipe? The answer to this question is very important both to the pipeline and the construction/process operators as it will determine what the allowable vibration levels are. We will present the results of a recent project where 4 pipelines located within a coal field production area were instrumented with strain gauges and the stress on the lines measured along with the particle velocity in the soil above the lines during a large blast. This data will be compared with blasting data generated by the Bureau of Mines and Esparza. We will then look at methods for estimating the stress to see how they compare with the data. Finally we will present guidelines for determining acceptable vibration levels over a pipeline based on these results and an integrity analysis of the pipeline.