

## **SPA2. Smart Pigging Pipeline Inspection**

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### **Introduction**

Smart pigging is a high-tech method for detecting imperfection as corrosion, dents, and other anomalies. The smart pig is actually a cylindrical electronic inspection device that is covered with sensor to gather information. As the smart pig travels through the pipeline, the sensor collect data about the condition of the pipe and record it in the pig's computer. Smart pigs are generally pushed through pipelines by fluid shipped in the pipeline at slow rate of speed (about two to four miles per hour). Once the smart pig reaches its destination it is removed from the pipeline. The data is analyzed with a computer, and repairs to the pipeline are made. Smart pigging is the most modern and accurate method in which the inside of a pipe may be inspected. The method is non-destructive.

### **Technical Approach & Results**

My poster on smart pigging will consist of six major parts. The first part will be the description of different types of a smart pigs. The pigs are divided into three categories: utility pigs, in line inspection tools, and gel pigs. The second part will show how a smart pig is loaded into the receiver barrels with images of the pipeline about to be pigged. It will also include photos of the AGM (Above Ground Markers) being laid out in order to track the pig as it goes through the pipeline. Next is a brief description of the electromagnetic technology NLH (Non Linear Harmonic) smart pig process. This part will show how an alternating magnetic field is attracted to the metal, or steel pipe. 360-degree magnetic field coverage of the inside of the pipe detects any deformity in the pipe. Another part of the poster will be the graphs and images taken by the smart pig revealing the damage or deformity of the pipes. I will also put pictures and information about how the damage occurred. The final part will show and tell how to correct the problems.

### **Conclusions**

Many people do not realize that there are thousands of gas pipelines buried throughout the entire United States. These pipelines are sometimes continuous for hundreds or even thousands of miles, and they endure the elements of nature such as extreme temperature change, and they are also exposed to human tampering. With required tools and qualification, someone has to inspect these pipes. Different in-line non-destructive inspection tools serve mainly one purpose, to clean and inspect areas that are difficult to access. The combination of modern technology and simple transport of devices through pipelines are the most effective ways to inspect pipelines today. These procedures are important in the pipeline industry, and the federal government regulates them.