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HM Tracking Initiative Passes Feasibility Test

During a recent tracking project for Alliance Pipeline, problems with the speed control of an inline inspection tool resulted when HM tracking information was not properly communicated to the pipeline operators in the control room. HM called pig positions, speeds and Estimated Time of Arrivals (ETAs) into the control room via cell phone calls every hour. As each of these times and ETAs were called in, the operators filled in a hard copy hard copy of the HM tracking site list, supplied at the beginning of the run, and implemented speed control measures after the inspection tool passed key points along the pipeline.

A miscommunication between the HM trackers and the pipeline operator taking the phone calls resulted in a key point on the pipeline being missed. This consequently resulted in the need to make a sudden change in pipeline speed, resulting in a pressure wave in the pipeline. The final outcome was that the inline inspection survey was incomplete and was to be re-run at Alliance's cost; possibly several hundred thousand dollars.

HM began working toward a solution to deter, if not prevent similar occurrences in the future. Procedure changes were implemented to help with the communication of tracking information to pipeline control centers, and an R&D effort was also initiated to explore technologies that might assist in this improvement; **Project Armadillo had begun. . .**

A concept was conceived to post pig passage times to HM's SQL Server, connected to HM's web site, which would allow passage times and calculated speeds and ETAs to be posted on the internet. While the server side of the concept was easy to develop for HM's programmers, transferring the data from the field to the server was to be a challenge. HM had been testing cell phone technologies that promise Internet access, but all of the available systems had limitations that restricted operation geographically. The next alternative was a direct modem to modem connection by dialing from the field PC through the cell phone to the SQL Server. This alternative required data capable cell phones and PC connection cables as well as complicated PC configurations, which would result in very slow modem connections, therefore other applications were sought.

The idea then came to use a Telephony technology, where computers take conventional phone calls through a modem and turn touch tones into digital data on the PC. HM's IT group researched software for this purpose and found an application that provided the necessary functionality. The HM programming team then made the software communicate with HM's SQL Server, and built a web page using ASP to post the pig run data. Methods

of posting data included touch tones from the key pad, modem to modem, voice recognition and direct entry through the Internet.

Beta testing on the system has been completed and the technology is currently being used in the field. When completed, anyone with access to the web page will be able use any PC web browser to view the real time pig position, speed and ETA data. The programmers are even building an animated schematic of the pipeline that will show the pig's progress from the launch to the trap.

Benefits of the system include full access to all tracking information in real time to anyone with Internet access and the login permission for the web site; no need to make phone calls to request information, or for trackers to call control center with continuous updates. Only critical site information, predetermined before the inspection, requiring pipeline control center action will be called in to the control center, making tool tracking a "no news is good news" operation. If HM trackers are in areas with no cell or communication coverage, the ETA and ETE calculations will continue to display the pig position based on the last site entered.

The new system also requires less than 30 seconds to post data, reducing communication time. Furthermore, the system operates on a toll free number, which dials into the server in HM's Edmonton facility, reducing long distance charges. Reporting costs may also be reduced as the client will be able to view and print reports from the web page, rather than waiting for a field and final hard copy to be sent at a later date.

This system saw its first live field test on June 9th, during the re-run for Alliance pipelines from Loreburn to Alameda SK, on the same pipeline section from which the idea originated. There were some technical problems encountered during the field test, including a modem that shutdown on the server a few hours into the run. The modem was reset the next morning and continued to operate for the remainder of the inspection. A redundant modem is being investigated for a backup to prevent a similar interruption in the future.

Poor cell coverage was another problem during the inspection, resulting in missed data input and math calculation errors resulting from erroneous entries, as well as a data clipping issue between the Telephony software and the SQL Server. The intermittent cell phone coverage is being addressed with satellite cell phones in areas of poor cell phone coverage, as well as additional error checking and validation during cell phone data entry. The data clipping and other programming issues have also been fixed and additional functionality has been added and is now being tested.

This new system will provide HM clients with an innovative and easy to use method to view and relay field tracking data to the control center. Any employee within the pipeline company can view the pig run status with a simple login and password, through their web browser, which reduces communication time, costs, and the potential for errors. HM tracking technicians will also benefit from reducing communication time as well as having redundant tracking data.

Another industry first from *The Pipeline Professionals*.

