# Winter &Spring 2013

# MAVERICK NEWSLETTER

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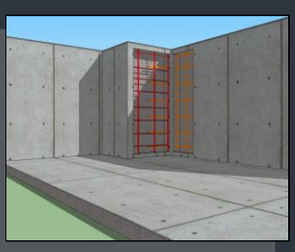

**IR – Process Vessels**
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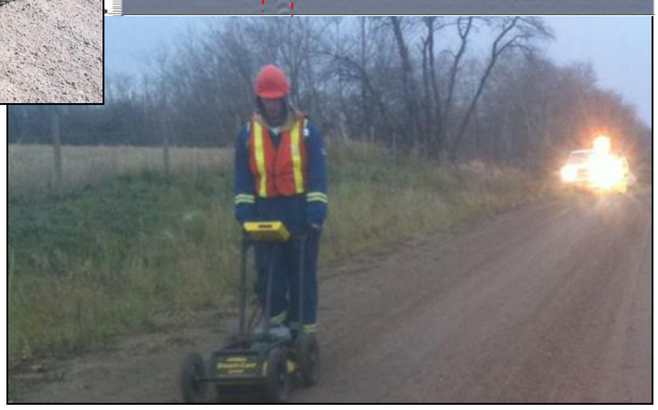
***Contact: Ryan Cote***

**Find us on the web @**

## GPR Application Spotlight: *A Case Study of Pipeline Road Crossings*





**James Harrison from Maverick Inspection Ltd. co-authored a paper which was presented at the IPC 2012 conference in Calgary Alberta regarding sinkhole prevention using GPR.**

*How do we look for underground hazards? Maverick regularly performs Ground-penetrating Radar (GPR) on sites to gather data for coordinators and engineers to evaluate subsurface conditions prior to setting up for pipeline road crossings. This work - and similar data gathering for ice roads, pipeline crossings, bridge components, structural slabs, and other radar applications - helps us trust the ground we walk and work on.*

***The Problem:*** During construction of new pipeline segments from the heart of Alberta's Industrial Heartland extending south into the United States, decisions were made to use horizontal boring in order to minimize destructive and intrusive roadway construction. While this method proved to be initially cost effective, within a few years of pipeline construction, major issues ensued. Several roadway crossings had been over-bored, had voids and water intrusions introduced and had weakened structural integrity. This led to the formation of sinkholes on several, but not all, roadway crossings. This begs the question of how to determine which of the other roadway crossings might contain similar imminent failures without digging up and correcting 100% of the remaining roadways and highways.

***The Solution:*** The pipeline company initiated talks with Maverick. Prior experience at Maverick has included the search for imminent sinkholes prior to establishing critical crane-lift limits and locations. Maverick has experience in searching for voids beneath asphalt, gravel and concrete pads and this experience was expected to translate well to roadway crossings. Over the course of a few weeks, Maverick was able to examine several hundred roadway crossings where no surface evidence of failure existed. Through a detailed data analysis for alterations in signal phase and attenuation characteristics, the void-like and imminent sinkhole formations which we had seen on some crane lifts were clearly evident in some of the roadway crossings. This information allowed quick prioritization of the remaining crossings.

***The Result:*** In September of 2012, Maverick helped to present a paper, co-authored by James Harrison, GPR Department manager, to the International Pipeline Conference in Calgary AB. The findings were that when using current generation GPR systems, and employing proprietary methods of data handling and analysis, that GPR could predict potential void formations with 80% accuracy. The 20% error was primarily composed of false-positive readings as a result of erring on the side of caution. The company with which we co-authored this paper, and helped to present our results have since written a GPR specification into future HD Bore projects, with GPR used immediately after the bore to search for critical voids, and a follow up scan 6-12 months after construction to examine the crossings for degradation, moisture intrusion, subsurface movements and other imminent sinkhole formation indicators.



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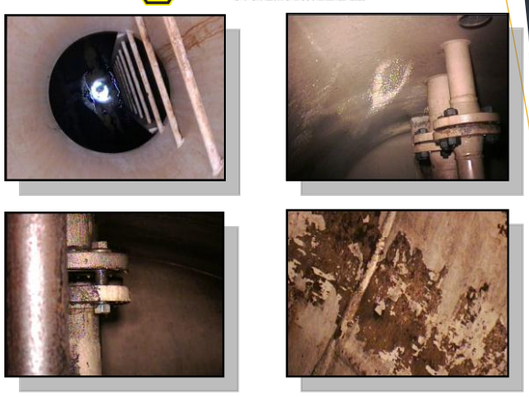
## Flare Knockouts Inspections Using Remote Video

INTRINSICALLY SAFE AND EXPLOSION PROOF SYSTEMS AVAILABLE



**Maverick** provides alternative solutions for visual observations of underground and above ground flare knockout tanks using explosion-proof robotic pan and tilt cameras. These systems provide quick and safe ways to gather information related to the knockout tanks, shell-side, internal piping, coatings and cleanliness.

The use of these robotic video cameras is also ideal for assisting in eliminating confined-space entry.

Please visit Maverick's YouTube Channel @ http://www.youtube.com/user/maverickinspection

**For more information on RVI technology, please contact Ryan Brosda @ 780-467-1606**

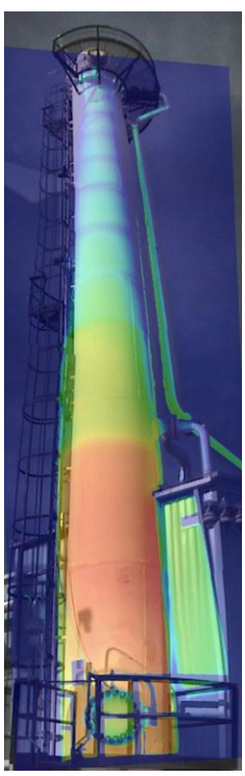
## Infrared Science on Process Applications

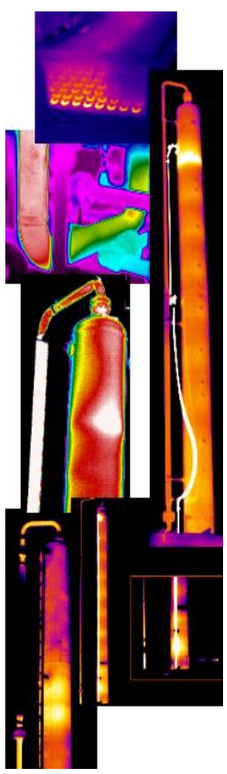
**Maverick** provides predictive maintenance program support with infrared service, program development, inspection route planning, procedure and test development and application research.
Infrared thermography is a powerful tool for troubleshooting many of the persistent and difficult to diagnose operational problems that facilities face.

**APPLICATIONS INCLUDE:**

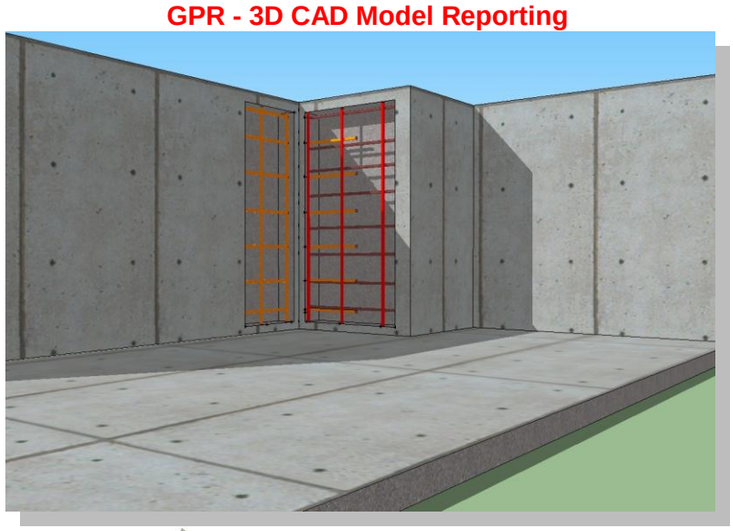
- Glycol dehydration tower obstruction
- Separator and scrubber pluggage
- Shellside exchanger build-up
- Piping restrictions
- Storage tank deposits and levels
- Faulty insulation

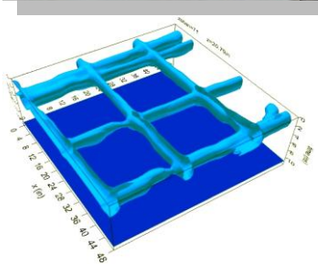
**For more information on IR applications, please contact Ryan Cote @ 780-467-1606**

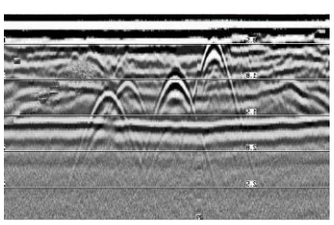




## GPR - 3D CAD Model Reporting







The GPR software employed by Maverick is able to provide quantitative results with regards to depth of coverage, concrete thickness, rebar spacing and other often unknown information. This quantitative information can then be used with CAD programs to build 3D models in a computer showing a very clear representation of subsurface features.

**For more information about GPR capabilities, please contact James Harrison @ 780-467-1606**

**For information about Maverick's safety program, please contact Leslie Tessari @ 780-467-1606**

*Company Culture ○ Safe Behaviour ○ Accountability ○ Safe Environment*

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