VEOLIA
ENVIRONMENTAL SERVICES

SPECIAL SERVICES

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Dear Dan,

Attached you will find the job overview report. The report will contain detailed information from the Enbridge Energy, Straits of Mackinac pipeline inspection project. Included with the report are: Daily Survey logs, ROV inspection logs.

ROV inspection services started Aug. 19, 2007 – Aug. 27, 2007 for Enbridge Energy's, Straits of Mackinac east and west legs, pipelines. ROV inspections were conducted following each of the pipelines looking for pipeline condition and spans.

Thank you for allowing Veolia Special Services, Inc. to perform survey and diving services. If there is any question, please don't hesitate and call.

Sincerely,

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Project Overview

Veolia ES Special Services, Inc was retained by Enbridge Energy Inc. to inspect and 1 each, east and west, 24 inch diameter steel pipelines crossing the Straits of Mackinac. These lines run parallel to each other and are separated by approximately 1000 feet along the 4.6-mile length of the crossing, and are situated in water depths ranging from 0 to 250ffw. Both lines are buried out to water depths of approximately 50 feet, and then lie uncovered on the bottom.

The focus of this project is to inspect, identify existing conditions and repair areas which could potentially compromise the safety of the lines. Examples of these conditions could include exposed or unsupported areas of pipe, severely degraded or missing coating, or damage caused by impact. The accompanying CD has a detailed span log identifying location of all spans with northing / easting coordinates to each end of span.

Remotely operated vehicle inspection mobilized to Cheboygan Aug 12, 2007 and was de-mobilized to Cheboygan Aug 27, 2007. The inspection services were conducted with a remote operated vehicle (ROV), Acoustical tracking, along with video records.

Operations

Veolia ES Special Services, Inc. and Durocher Marine completed the inspection barge/tug mobilization at Durocher Marines, Cheboygan yard, and mobilized to Mackinaw City on Aug. 14, 2007 where the vessels would dock for the entire job. From the Mackinaw City dock, the inspection barge would mobilize to the work site where Veolia ES and Durocher Marine went through a series of equipment calibration procedures.

Enbridge Energy's pipeline inspections on the East pipeline leg from Aug. 19, 2007- Aug. 22, 2007. Inspections on the West pipeline leg from Aug. 25, 2007- Aug. 27, 2007. Veolia ES Special Services, Inc. would provide the navigation, positioning, remotely operated vehicles (ROV). While Durocher Marine would provide the tug boats, inspection and diving barges, anchors and crane.

In planning the inspection operations of the pipelines, the East pipeline would first be filled with NGL and then be shutdown for the entire survey of that line. As the ROV survey proceeded, affected areas of concern were determined by Enbridge Energy management viewing documentation from the remotely operated vehicle (ROV) inspection videos and reports. The West pipeline would then follow the same procedure as the east.

The pipeline would have NGL placed in the line and then be locked out of service. When the inspection and repair work was concluded, the pipeline would then be placed back into service. The same procedure would be done to the west pipeline.

Summary of Methods / Equipment Limitations

Remote Operated Vehicles – "SUB-fighter 7500"

The "SF 7500", Remotely Operated Vehicle (ROV) system is extremely versatile and can be employed to carry out a variety of tasks including surveying, searching and inspections. A pilot on the surface controls the vehicle remotely by sending commands to the vehicle via an umbilical and tether. The vehicle can be moved in any direction or by using the autopilot facility remain accurately on course and depth to provide a stable platform. The pilot can also control the vehicle's video system, lighting and any other equipment fitted to the unit.

For this inspection, the vehicle is fitted with altimeter and sector scanning sonar, which enabled the operator to see objects out of the visual range of the video camera. The Hypack navigation program, located on the inspection barge,

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brings in information provided from the RTK tracking, Vector Sensor, Motion Reference Unit (MRU) and Link-quest tracking, which is then relayed to a monitor on the tug for the tug captain to follow. The ROV is fitted with a Link-quest acoustic transponder, which sends out a sound signal to be picked up by a transceiver mounted on the survey pole in front of the surface support barge. The offset of the vehicle (calculated by Link-quest) is fed to the navigation computer that plots a corresponding XY position based on Real Time Kinematics (RTK) information. Video from the on-board camera is recorded in a computerized format, with the operator entering position information to the on-screen display. Once data has been gathered as acoustic records, video documentation is encouraged in order to provide definitive ground truthing of the indications on the sonar record.

In operation, the tug and barge is positioned over the pipeline using a live boat operation for the survey. With evidence of a strong fix RTK lock on the RTK as well as a solid return from the vehicle tracking system, the vehicle is launched from the surface to begin its descent to the bottom. Once on bottom, the operator utilizes the navigation system to guide the vehicle to the pipeline. With the pilot free to "fly" the vehicle, the survey supervisor takes notes with further direction given by the client representative on site. "Parking" the vehicle at the desired location attains accurate location of anomalies, while the Linkquest tracking and RTK stabilize and update the position. This position is noted in the inspection log for future reference. After taking a fix on the span location, the ROV, tug and barge would proceed north on the pipeline to the next span. With the survey running a live boat operation, Veolia ES was able to survey in a more efficient mannor.

The main limitations to this equipment are related to water clarity (visibility), water current, and surface weather and wave conditions. Obviously, in highly turbid water conditions, an acceptable video record is impossible to generate. Fortunately water clarity for this project was exceptional, allowing for a very clear video record. Higher water velocities (current) can pose difficulties in keeping the vehicle on station, or even getting it to the target. Currents of 1 to 2 knots were encountered during this project, which did pose challenges.

The most prevalent limitation of this equipment is imposed by weather conditions. High winds/waves make for difficulties in launch and recovery of the remotely operated vehicle. Throughout the survey period we encountered periodic weather delays and equipment set-backs.

Equipment Overview (Inspection Operations)

For the inspection, Veolia ES mobilized the Remote Operated Vehicle (ROV), a vessel and additional equipment from Cheboygan, MI to Mackinaw City, MI. This package consisted of the following:

- 140' x 40' Barge
- Tug boat
- ROV LARS – Launch and Recovery System
- SF 7500 - Remotely Operated Vehicle with all associated equipment
  - Typhoon Camera
  - Tilt Unit
  - Lighting
  - Compass
  - Depth Sensor
- Comprehensive field spares kit
- Sector Scanning Sonar / Altimeter
- Link-quest tracking, short base line acoustic tracking system
- TSS Standard Gyro
- Motion Reference Unit (MRU)
- Trimble - Real Time Kinematics (RTK) (centimeter accuracy)
- Computer navigation system
- Computerized recording equipment
- Offshore safety package

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Findings

The Remote Operating Vehicle (ROV) survey inspection took place Aug. 19, 2007 – Aug. 27, 2007 on the east and west pipelines. Data obtained by the ROV survey inspection closely followed past findings and data obtained in the 2006 survey. Points of interest on this survey are as follows;

Following the East Pipeline from the south end northwards;
Span E-32A is now divided into spans E-32A and E-32A-A.
Magnet was knocked off the south end of span E-40.
Span E-56 is now divided into spans E-56A and E-56B.
Span E-61A is now divided into spans E-61A and E-61A-A.
Span E-76 is now divided into spans E-76A and E-76B.
Span E-02 is now divided into spans E-02A and E-02B.
Span E-04 is now divided into spans E-04A and E-04B.
About 60' north of where the East pipeline goes underground the pipe is exposed, just the very top part of the pipeline and only for about 3'.

Following the West Pipeline from the south end northwards;
About 300' north of where the pipeline comes out of the ground there is a cable over the line that should be removed.
W-2A and W-3 are getting closer to each other.
W-7 and W-8 are getting closer to each other.
W-48A and W-49 are getting closer to each other.
Rope on pipeline about 10' south of the north end of span W-49.
Span W-59A is now divided into spans W-59A and W-59A-A
North anchor of span W-59B needs repair.
About 20' south of the north end of W-59B there is metal debris on pipeline.
A new span W-79 about 15' south of span W-61 (15' long).

The exposed portion of the pipeline is heavily covered in zebra mussel growth, making a detailed analysis of the coating and actual pipe condition impossible.

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