

## Smatibitoc

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**De:** Fabio Varon [fvaron@apci.com.co]  
**Enviado el:** Jueves, 25 de Octubre de 2007 09:46 a.m.  
**Para:** 'sergio julio'  
**Asunto:** RV: RE: CONSULTA HENRY BARDAKJIAN SOBRE MONITOREO TUBERIA PCCP 2m TIBITOC CANTARRANA

Sergio, te adjunto el concepto de Henry Bardakjian sobre el tema del asunto, comentamos  
Saludos cordiales,

FABIO VARON  
Gerente Ingeniería  
American Pipe and Construction Intl. / Contubos S. A.  
fvaron@apci.com.co

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-----Mensaje original-----

De: Jose Antonio Camargo [mailto:jcamargo@apci.com.co] Enviado el: Lunes, 22 de Octubre de 2007 08:38 a.m.  
Para: fvaron@apci.com.co  
Asunto: FW: RE: CONSULTA HENRY BARDAKJIAN SOBRE MONITOREO TUBERIA PCCP 2m TIBITOC CANTARRANA

- original message -

Subject: RE: CONSULTA HENRY BARDAKJIAN SOBRE MONITOREO TUBERIA PCCP 2m TIBITOC CANTARRANA  
From: "Henry Bardakjian" <HBardakjian@Ameron.com>  
Date: 19/10/2007 10:06 pm

Jose,

I am familiar with the Pressure Inspection Company and their Eddy Current system to identify broken wire. A representative of that company contacted Pat few years ago and wanted to form a partnership; we had discussions with them here also on the same topic. We did not find any value for Ameron for such partnership.

Conceptually their system is fine. The accuracy of their predication is dependent on the accuracy of their calibration against one or more existing pipe sections. The following factors will influence the results:

- \* Shorting straps. Less accurate without shorting straps
- \* Cylinder thickness. In areas with thicker than 16 gauge cylinders

the signals will be different and thus have to be identified.

- \* Bevel ends and field joint space will influence the results.
- \* Wire diameters and spacing has to be identified since it will influence the signals.
- \* The accuracy of the system near the joints is less than that away from the joints. You expect false positives.

Although I was not around when the project was built, I believe that no shorting straps were used. Do we still have drawings?

If the objective is to determine the over all condition of the pipeline; this test may be fine. I am sure that the result will show broken wires. Then what is next? I have the following comments regarding the possible follow up actions:

- \* The next step will be some verification by exposing the pipe at locations with maximum number of broken wires. How much is that going to cost?
- \* You will need a good consultant such as Mehdi Zarghamee of SGH to make recommendations for repairs.
- \* The next step will be repairing the line; if the repair areas are extensive then installing the steel liner will be the best option of repair.
- \* If the broken wires and distressed pipe can be identified with a degree of certainty, then the post tensioning repair method can be used if the pipe can be exposed. My recollection that part of the pipeline was installed in the road median. I am not sure if the twenty kilometers are in the road median or in the open fields.

I think that the most important question to ask is what has been the history of this 20 km segment? If only limited failures have occurred, it may be worth while to spend the money to conduct the eddy current survey. Many agencies in the west coast have conducted such surveys. In case of SDCWA they have used the survey to determine the priorities for the installation of the steel liners.

I will be glad to provide more comments if required.

Regards,

Henry

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From: Jose Antonio Camargo [mailto:jcamargo@apci.com.co]  
Sent: Thursday, October 18, 2007 2:12 PM  
To: Henry Bardakjian  
Cc: Fabio Varon; Pat van Rensselaer  
Subject: RV: CONSULTA HENRY BARDAKJIAN SOBRE MONITOREO TUBERIA PCCP 2m TIBITOC CANTARRANA

Henry

As you know, we rehabilitated around 30 kms of 2000 mm PCCP pipe recently. There is still around 20 kms of the Tibitoc pipeline that have not been rehabilitated.

The EAAB (Bogota Water Utility) is thinking of hiring a study of measurement of current continuity in the postensioned wire pipe by pipe to try to determine the extent of repair or rehabilitation needed for the remaining 20 kms of pipeline.

They have asked us to take a look at the procedure that a consultant is proposing for this pipeline analysis and indicate if we think this is an appropriate procedure to determine the extent of pipe replacement or rehabilitation that is needed.

Attached is information on the monitoring system and testing procedure that the consultant is proposing.

We would appreciate it if you can give us an opinion about this procedure

Thanks

JOSE ANTONIO CAMARGO  
Gerente General  
American Pipe and Construction Intl.  
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De: Fabio Varon [mailto:fvaron@apci.com.co]  
Enviado el: Thursday, October 18, 2007 3:39 PM  
Para: 'Jose Antonio Camargo'  
Asunto: CONSULTA HENRY BARDAKJIAN SOBRE MONITOREO TUBERIA PCCP 2m TIBITOC

CANTARRANA

José como te he comentado la E. A. A. de Bogotá ha venido ejecutando el estudio para la rehabilitación del tramo faltante de la tubería de la referencia. Ha surgido la posibilidad de que la Empresa haga un monitoreo de la continuidad del alambre de postensionamiento tubo a tubo siguiendo la tecnología que adjunto. Me parece conveniente conocer el concepto de Henry sobre esta tecnología

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