

January 15, 2001

Mr. David Meaux  
Motiva Enterprises, LLC  
1507 E. Frisco Drive  
LaPlace, LA 70068



*For Every Corner of Your World*

RE: Alternate Procedure Application  
Corrosion Control – Aboveground Fuel Storage Tanks

Dear Mr. Meaux,

As requested, Corrpro has reviewed the corrosion monitoring plan as an alternate to the repair of cathodic protection systems in double bottom above ground storage tanks in Florida. We offer the following additional information and comments in support of your application to the State of Florida, Department of Environmental Protection.

The application of corrosion monitoring as a tool in corrosion control plans for above ground storage tanks is not new. Corrosion monitoring devices have long been applied to tanks where the standard reference cells and cathodic protection monitoring devices could not be applied. In many cases this was due to temperature limitations or where the chemicals in the soils would affect the long term integrity of the reference. Some tank owners have employed the technology as a second proof of the effectiveness of the corrosion control through cathodic protection.

The type of corrosion monitoring probe employed is an electrical resistance type probe. This device employs a calibrated element made from the same material as the tank floor. Corrosion rates are determined by measuring the resistance to current flow in the probe element. As the probe element corrodes, the resistance increases. The probes used are calibrated so that this change in resistance can be used to calculate the loss of material in the element. The probes being employed include a protected reference element that also allows the measurements to be corrected for other environmental effects including temperature. The typical element being used by Motiva has a 25 mil range and has a detection limit of around .25 mils per year.

The goal in this application is to monitor the corrosivity of the environment under the tank floor for changes which could affect the operational life of the tank bottom. In order to apply this method, accurate inspection data must be available on the tank floor. The corrosion rates measured by the probe are compared to the API 653 inspection data and calculated corrosion rates. If the data from the probe indicates that corrosion is occurring at a higher rate than projected by the inspection data, then the interval for the next internal inspection would be adjusted. This will provide for a detailed inspection of the tank floor prior to the point at which the minimum acceptable floor thickness (0.050") would occur.

Generally, this technique is applied using monthly monitoring of the corrosion loss in the probe. This allows the loss rate to be tracked over time. The information can be collected using a hand held measuring device. The losses measured are recorded and compared against previous data points. Some variation in the corrosion rate may occur

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as the environment around the tank changes, but the historical tracking will allow for compensation for these variations.

In the case of Motiva, the probe data is being collected both manually and electronically. The use of electronic communications equipment allows the data to be collected on a more frequent interval if so desired, without significant additional cost. The increased data collection may be needed to establish the initial rates or if data indicates a significant change from previous values. Once the rate is established however the monthly values should be adequate.

Over the life of the system, the probes are corroding. As a result they will require periodic replacement. In each case, the probes were installed to allow for the old probe to be removed and a new probe of the same type to be installed in its place. In addition, if the corrosion rates are determined to be below the detectable limits of the current probe, a more accurate probe can be installed.

While this approach does not alter the corrosion rate on the tank floor, it allows the owner to perform predictive analysis to prevent a failure of the tank. It can be categorized as a preventative measure in that it allows the tank to be taken from service before a release would occur.

The program described above provides more detailed monitoring of the corrosion process on the tank bottom than other options available in the regulations such as the use of concrete as a fill material in the interstitial space with no corrosion control or corrosion monitoring. When considering the benefits of the corrosion monitoring program along with the existence of secondary containment beneath each tank floor, this program should be considered as protective to human health and the environment as the options available in the present regulation.

I hope that this letter provides the input needed to complete your application to the state. If you have any questions or comments, please feel free to contact me at (770) 760-15400 extension 320.

Respectfully submitted,

**Corrpro Companies, Incorporated**

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SE Regional Manager  
NACE Cathodic Protection Specialist #5928

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