

SOLUTION MINING RESEARCH INSTITUTE

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**MEETING
PAPER**



A METHODOLOGY FOR COMPARING INTERNAL CEMENT MORTAR LININGS FOR CORROSION PROTECTION OF BRINE PIPELINES WITHIN THE STRATEGIC PETROLEUM RESERVE*

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ABSTRACT

Internal cement mortar linings for brine pipelines in the Strategic Petroleum Reserve (SPR) were tested for corrosion protection using a combination of laboratory and field experimental procedures. Samples of lined pipe were exposed to the corrosive brine environment at the Big Hill SPR facility and in the laboratory. Specimens were returned to the lab where several tests were performed. Visual observation of the interfacial area provided the an initial determination of the performance of the lining materials. Electron probe microanalysis (EPMA) determined the chemical analysis of the damaging species, such as Cl, in cement-mortar linings. Interfacial shear strength measurements provided a measurement of the cement-steel bond condition. Electrochemical impedance spectroscopy (EIS) provided a measure of the charge transfer resistance associated with the passive area as well as the apparent corrosion rate.

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