

## **Novel Single Stage Water Mitigation Treatment**

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A new silicate (liquid glass) chemistry formulation, now called SPI Technology, has been identified that can provide a low cost silicate system to be mixed on the surface and pumped downhole for delayed formation of strong, resilient “green” gels. This new formulation appears more favorable than the current chromium based systems or even the original Glass system, although it has similar environmentally friendly and low cost chemicals, but it provides a more resilient gel, controlled delayed gelation, simpler surface mixing and less labor to monitor and treat. Such well treatments will allow deep treatments of stripper wells for long term diversion of formation waters. This will reduce excess and unwanted water production from oil and gas wells resulting in operational cost savings and increased recoverable oil and gas reserves. Stiffer gel from this same basic formulation can also be prepared for casing repairs, preventing these damaged wells from being plugged and abandoned prematurely. Due to the low treatment cost and environmental friendly chemicals, it will be very cost effective for stripper well operators to utilize.

Laboratory tests will be conducted to outline the testing matrix of the SPI chemical concentrations and other variables. Further testing will be done to characterize the gel properties in the identified ‘sweet spot’ of the SPI formulation. Specific lab testing will evaluate the gels with different brines and specific multivalent ions. Laboratory physical modeling will be done (optional) with sand packs and simulated casing leaks. Well information and waters will be obtained from selected wells for possible field treatments and laboratory tests will be made to determine the optimal treatment plans. Six (6) field treatments will be made out of this selection. The results will be monitored for performance and benefits obtained.