

# Fixture Testing

## High Pressure Exposure Testing in Sour ( $H_2S$ ) Environments

Southwest Research Institute® (SwRI®) has a long track record of providing research and testing services to the oil and gas industry. SwRI offers unique facilities and capabilities to help oil and gas companies advance the technology required for upstream and downstream applications. SwRI is working with industry to determine the sealing integrity, compatibility and degradation resistance of seal packet assemblies residing inside choke valves and wellhead equipment exposed to high-pressure hydrogen sulfide (HP  $H_2S$ ) sour service environments. SwRI has developed HP  $H_2S$  sour capabilities up to 20,000 psi and  $-30^{\circ}F$  to  $650^{\circ}F$  for testing in aggressive toxic environments.

### Capabilities

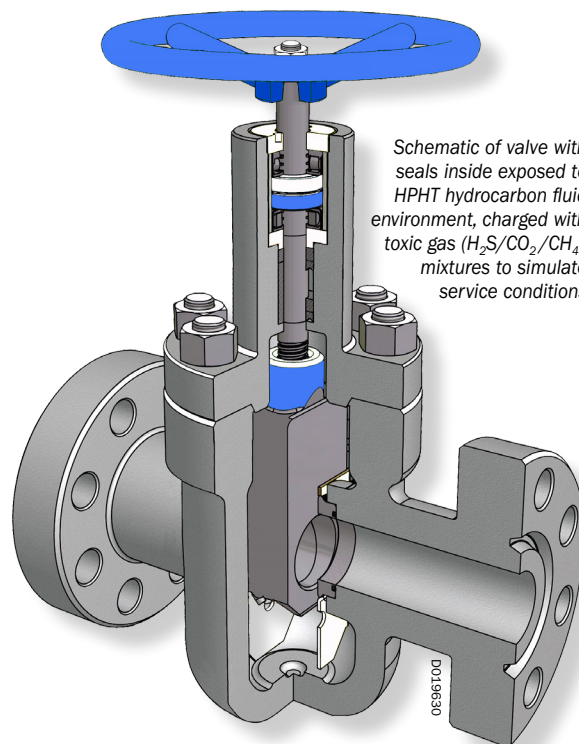
To help clients meet new requirements for sealing material performance at higher pressures and greater thermal gradients in  $H_2S$  sour environments, SwRI uses a selection of API, ISO and ASTM standardized testing methods. Customized tests designed to meet client specifications allow SwRI to address client needs and provide flexibility in testing.

SwRI engineers offer a broad-based view of sealing material performance through long-term exposure testing in HP  $H_2S$  environments, valve seat localized corrosion-induced seal failures, seal materials selection, life prediction and failure evaluations.

### Facilities

SwRI's high-pressure high-temperature (HPHT) sour gas fixture testing facility maintains various temperature-controlled ventilated test chambers, equipped with  $H_2S$  monitoring alarms and gas scrubbers, dedicated for HPHT sour exposure testing of test fixtures, full-size valves and drilling equipment.

Test environments include hydrocarbon-chlorinated brine fluids charged with an array of  $H_2S/CO_2/CH_4$  combinations depending on the material class designated for seals at elevated temperatures. Cyclic HPHT and rapid gas decompression testing can also be performed on seal assemblies inside valves or drilling equipment in compliance with API, ISO, NORSOK and NACE standards.



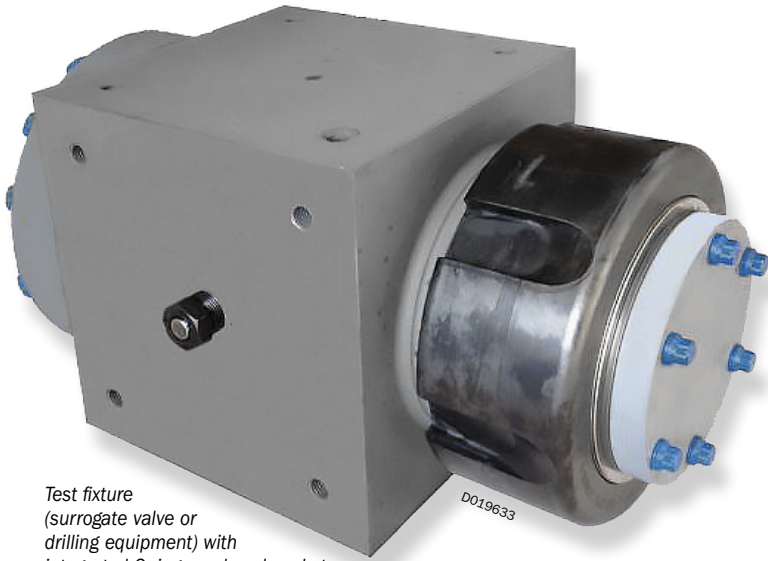
Schematic of valve with seals inside exposed to HPHT hydrocarbon fluid environment, charged with toxic gas ( $H_2S/CO_2/CH_4$ ) mixtures to simulate service conditions



Seal packet assembly (non-metallic seals, gaskets and metal energized seal) and O-rings of various shapes and sizes

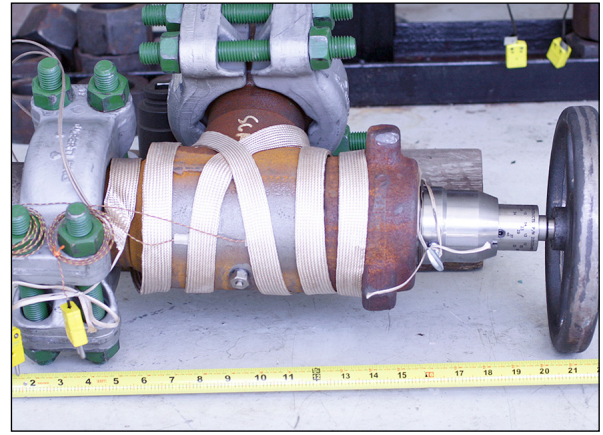


HPHT Sour Gas Fixture Testing Facility



Test fixture (surrogate valve or drilling equipment) with integrated O-rings and seal pocket assembly used to test non-metallic sealing materials in simulated HPHT H<sub>2</sub>S/CO<sub>2</sub>/CH<sub>4</sub> hazardous service environments

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Choke valve with integrated seal assemblies during setup for exposure to simulated HPHT H<sub>2</sub>S/CO<sub>2</sub>/CH<sub>4</sub> hazardous service environments

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Insulated test fixture, pressurized and heated remotely from a control room during the HPHT H<sub>2</sub>S/CO<sub>2</sub>/CH<sub>4</sub> exposure

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## We welcome your inquiries. For additional information, please contact:

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