



SOUTHWEST RESEARCH INSTITUTE



Multiphase Flow Facility

Southwest Research Institute® (SwRI®) has a long track record of providing multiphase flow 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 topside and subsea applications.

Facility Capabilities

Fluids

- Natural gas, nitrogen
- Hydrocarbon liquids
- Fresh water, saltwater
- Oil and water combined
- Additives
- Crude oil, condensate, refined oil

Operating Conditions

- Pressure: 200 psig to 3,200 psig
- Temperature: 60°F to 110°F
- Gas volume fraction: 0% to 100%
- Water cut: 0% to 100%

Instrumentation

- Various gas and liquid reference meters
- Temperature, pressure, differential pressure
- Gas volume fraction (GVF)
- Water cut
- Deposition and holdup monitoring by gamma ray densitometer
- High-pressure flow visualization

Flow Rate Range

- Total volumetric rate limited to 2.4 acfs (combined gas and liquid), depending on test section DP
- Liquid flow rates up to 32,000 bpd

Research Areas

Multiphase Flow

- Characterization
- Hydrodynamics
- Modeling

Equipment Testing and Qualification

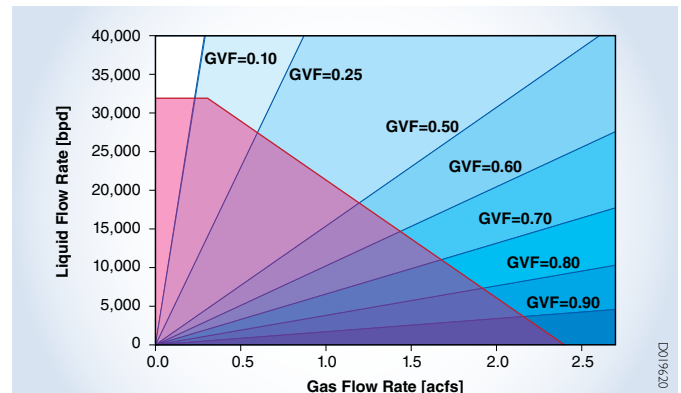
- Multiphase/wet gas meters
- Sampling systems
- Multiphase pumps
- Gas-liquid separators
- Phase fraction instrumentation

Flow Assurance Studies

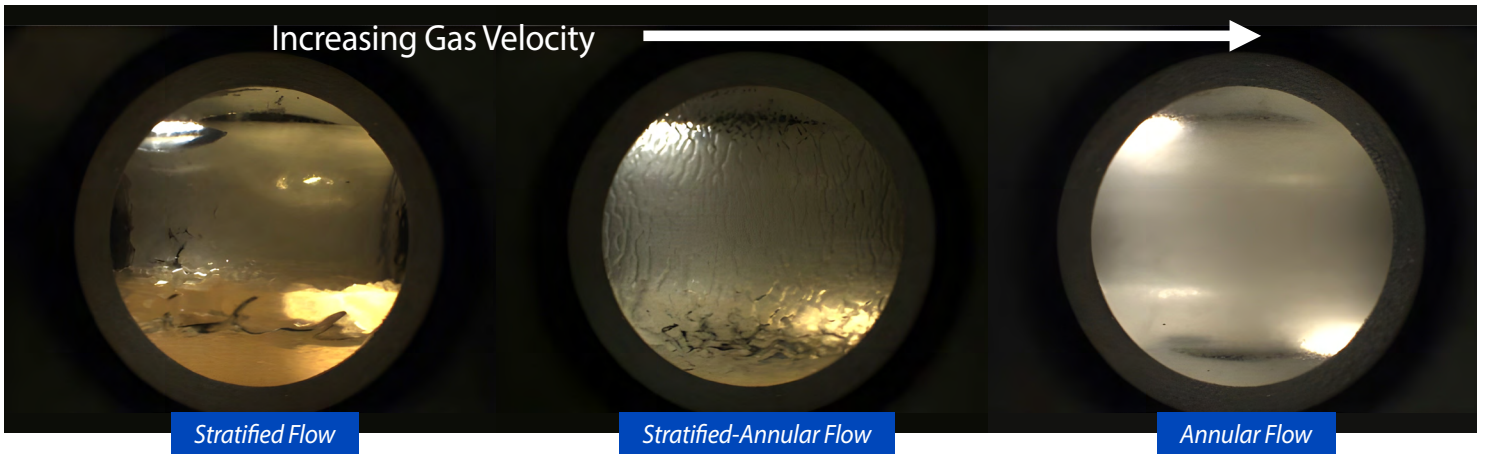
- Hydrate
 - Agglomeration/deposition
 - Plug removal techniques
 - Transport
- Wax deposition
- Gelled crude oil yield strength
- Phase distribution
- Transient flow



Gas-liquid separator performance evaluations at high pressure



Combined flow rates of gas and liquid constrained within the total volumetric limit of 2.4 acfs



High-Pressure Multiphase Flow Loop Capabilities

- Test sections are assembled from 1-inch to 8-inch nominal pipe sizes
- Over 3,500 ft² of area to build fully customized test sections
- Flow visualization, including conventional and high-speed imaging
- Droplet size measurement
- Total system differential pressures of up to 100 psi
- Field-realistic fluid sampling
- Gas composition assessment via gas chromatograph



We welcome your inquiries. For more information, please contact:

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SOUTHWEST RESEARCH INSTITUTE®

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