NSURE Invert Emulsion Drilling Fluid System
Reduce offshore risk and ensure zonal isolation

The Baker Hughes NSURE™ invert emulsion drilling fluid system exhibits constant rheology in challenging or extreme offshore environments. Conventional oil-based fluid systems thicken at low temperatures, increasing pressure surges and creating equivalent circulating densities (ECDs) during drilling. These may induce fractures and create lost circulation zones that can affect the quality of your subsequent cement job and jeopardize zonal isolation.

In the warmer sections of a well, conventional systems may have inadequate viscosity for optimal hole cleaning or even experience a loss of suspension properties, resulting in barite sag and compromised static density. This can lead to problems such as stuck pipe, lost circulation, wellbore instability, or well-control events.

With conventional systems, the operator is forced to choose between a fluid designed for colder temperatures and one designed for higher temperatures, even though both conditions may exist in the wellbore.

The NSURE system’s innovative chemistry and fragile gel structure ensures a flexible, highly robust and stable fluid that provides excellent drilling, casing, and cementing properties regardless of temperature variations and water depth. The system provides balanced hydraulics in temperatures from 40°F (4°C) to 325°F (162°C), which imposes significantly less pressure on the formation to reduce the risk of induced fractures when running in hole. It also reduces the risk of mud losses, nonproductive time (NPT), and their associated costs.

Applications
- Pressure-critical applications
- Environmentally sensitive offshore environments

Features and benefits
- Reduced viscosity in cold temperatures and during prolonged static conditions
  - Reduces pressure on the formation when circulating
  - Reduces the risk of fractures, mud losses, NPT, and associated costs
  - Reduces downhole surge pressures and ECD
  - Preserves wellbore integrity
  - Improves zonal isolation and enables better cement placement
  - Decreases the time needed to run casing
- Balanced hydraulics while drilling
  - Improves hole cleaning
  - Reduces the risk of barite sag and subsequent well-control events
  - Brings flexibility to well designs and drilling programs
- Norway yellow environmental rating, no substitution warnings in the UK, and compliant with Gulf of Mexico regulations
  - Meets or exceeds global standards of HSE performance
Baker Hughes uses a series of ratios to measure and evaluate the system’s fluid properties in a variety of temperatures. This quantitative approach to measuring the fluid’s reaction to temperatures ensures reliable performance regardless of the environment. The NSURE system not only hits stringent performance targets, but it does so using all common base oils and with components that meet or exceed global standards of health, safety, and environmental (HSE) performance.

### ECD at casing shoe

- **A 0.78-ppg reduction in pressure**

**Pressure needed to break gels with 9½-in. casing in a 12½-in. hole**

![Graph showing ECD at casing shoe](image-url)