Stim Star Brasil Stimulation Service Vessel

DESIGNED AND BUILT FOR A MAJOR OPERATOR IN BRAZIL’S DEEPWATER OPERATIONS

OVERVIEW
Halliburton has reintroduced itself to the Brazilian offshore stimulation market with its newly built Stim Star Brasil. The vessel was designed specifically for dedicated use by a major operator in Brazil. The Stim Star Brasil will provide acid-on-the-fly (AOF), sand-fracturing, and self-generating nitrogen (SGN) capabilities to the customer.

The Stim Star Brasil is designed to provide real-time control and recording of all blending and pumping operations. The proprietary Halliburton automatic controlled equipment (ACE™) system is used to control and monitor stimulation equipment. The fluid management system is controlled via a touch-screen process logic control (PLC) system. This system controls all of the package’s process pumps and valves, and provides feedback of pressure, rates, density, and volume.

FOCUSED ON SAFETY AND COMPLIANCE
The Stim Star Brasil is designed to meet or exceed requirements of International Convention for the Safety of Life at Sea (SOLAS), International Maritime Organization (IMO), International Electrotechnical Commission (IEC), and International Convention for the Prevention of Pollution from Ships (MARPOL) zero-discharge regulations. The stimulation system is certified for well stimulation by the American Bureau of Shipping (ABS). Safety is a pivotal concern. Features such as the high-pressure pump over-pressure kick-out system, as well as a dedicated gas-detection and fire-suppression system, help to ensure that the operations are safe at all times.

FEATURES
- Cargo capacity – 196,500 gallons of acid
- Redundant blending systems (frac and acid)
- Automated cargo transfer blending systems
- On-the-fly blending capabilities

ACID-ON-THE-FLY BLENDING FOR OPTIMIZED TREATMENTS
The Halliburton AOF blending system provides significant improvements in acidizing by several capabilities:
- Enables real-time, on-the-fly adjustments to the acid blend
- Delivers a precisely controlled acid blend downhole
- Enables sample taking for testing and verification at any time during the treatment
- Results in no wasted material; acid is only blended as it is used
- Equipment delivers nonstop high and low rates during treatment

The Halliburton AOF blender not only improves treatment efficiency, but also improves safety and reliability by having these attributes:
- Primary power generation separate from vessel power, with built-in redundancy
- Control room contains backup power supply for primary control systems
- Operations can be controlled remotely from the control room or from the equipment itself

BENEFITS
- Real-time data logging
- Dedicated customer/crew quarters
- Onboard crane for re-supply capabilities
- Improved customer experience with first-in-class control room
- Longer station keeping due to increased cargo capacity
- Local support from Halliburton Brazil Technology Center

SAND-FRACTURING SYSTEM
The sand-fracturing system includes:
- High-rate and low-rate Growler blenders featuring:
  - 1-bpm to 75-bpm discharge rates
  - 20 lb to 17,500 lb per minute
  - 1 lb/gal @ 1 bpm to 10 lb/gal @ 75 bpm
- On-the-fly gel blender
- 5,400 cubic feet of deck storage for sand proppant
DESIGNED WITH CAPACITY AND CAPABILITY

The **Stim Star Brasil** stimulation package covers more than 11,500 square feet of open deck space, and packs equipment and tanks on four different levels to increase cargo capacity and equipment function.

### QUALITY ASSURANCE WITH HALLIBURTON TECHNOLOGY

Halliburton has a long record for excellence in the energy industry, and the **Stim Star Brasil** continues this commitment to quality and technology. Some of the quality control mechanisms integrated on the ship include the following:

- Fluid testing in onsite laboratory, including acid titration, specific gravity, compatibility testing, sludge testing, high-pressure/high-temperature (HPHT) rheology, and wettability testing
- Liquid-additive pumps that have two means (primary and backup) of monitoring and recording rates and volumes pumped; pump set points can be adjusted on the fly from the control room to allow real-time adaptability of the fluid
- Hazardous-fluid tanks that have real-time monitoring capabilities

### Stim Star Brasil

#### Specifications

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Loaded draft</th>
<th>Width</th>
<th>Dead weight</th>
<th>Depth</th>
<th>Berths (vessel)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td>312 ft (95.1 m)</td>
<td>21.3 ft (6.5 m)</td>
<td>66 ft (20.1 m)</td>
<td>6,363 MT</td>
<td>26 ft (7.9 m)</td>
<td>41</td>
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</tbody>
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#### Pumping System

- 13,500-hhp total dual fluid suction header
- 2 x 50-bpm acid-on-the-fly blenders with 50-bbl tanks
- 2 x 50-bbl acid batch mixer
- 2 x 75-bpm Growler frac blenders
- 50-bpm Gel-Pro™ preblender trailer with a 125-bbl hydration tank
- 22-pump liquid-additive metering system
- SGN blending system

#### Chemical Storage

- 196,500-gallon acid storage
- 104,000-gal solvent storage
- 37,500-gallon liquid-additive storage (chemical storage)
- Five bins – 5,400 cubic feet of sand storage above deck
- Four bulk tanks – 11,200 cubic feet of storage below deck
- 12,000-gallon brine mix tank
- 11,600-bbl completions fluid storage
- 4,200-gallon waste tank

#### Safety and Special Equipment

- 200-cubic-foot BioVert® storage bin for solid diversion
- 30-ton crane with 70-foot boom
- Auto-pump kick-out system
- Dedicated gas and fire detection systems with auxiliary fire-fighting system
- Acid fume scrubber
- Dual 4-inch discharge iron with two 4-inch x 450-foot, 15,000-psi Coflexip® reels
- 3.7-MW stimulation power generation and distribution system
- 11,000-square-foot stimulation control room with lab and conference area
- InSite Anywhere® capabilities allow for remote treatment monitoring

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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