

Skipsey Tide

Vessel delivering flexible, efficient offshore stimulation using the FlexSTIM system

APPLICATIONS

- Large-volume, high-pressure stimulation operations
- Complex stimulation treatments
- Acid fracturing treatments

BENEFITS

- Increases operational flexibility and job frequency with storage and blending capacities that accommodate operations from large acid fracturing jobs to small squeeze treatments
- Minimizes nonproductive time by delivering high-pressure stimulation operations even in rough seas up to Sea State 5
- Maximizes operational efficiency and accuracy with experienced vessel and stimulation crews, state-of-the-art data acquisition and automation systems, and fit-for-purpose pumping and blending equipment

FEATURES

- Installed horsepower: 6,650 hhp
- Noncorrosive fluid storage capacity: 1,966.1 m³ [12,364 bbl]
- Corrosive fluid storage capacity: 378 m³ [2,380 bbl]
- Liquid additive storage capacity: 112.5 m³ [707 bbl]
- Blending capacity: 15.9 m³ [100 bbl] of corrosive fluid



For offshore stimulation, the Skipsey Tide vessel delivers acid and other fluids with pumps that deliver up to 6,650 hhp.

Skipsey Tide is an offshore supply vessel that has been outfitted with storage, mixing, and pumping equipment, using the FlexSTIM* modular offshore stimulation system. *Skipsey Tide* was surveyed by American Bureau of Shipping (ABS) and complies with the relevant sections of the ABS Offshore Stimulation Vessel Rules to maintain classification status to perform well stimulation operations. The vessel is capable of delivering stimulation services worldwide.

The *Skipsey Tide* is capable of staying on station in challenging sea conditions. Bow and stern thrusters maximize maneuverability when controlled by the proven Kongsberg K-Pos dynamic positioning system. They enable the vessel to automatically maintain station to platforms, semis, and jack-up rigs.

Stimulation equipment and instrumentation improve operations

At the heart of the vessel is the blending and pumping system that executes complex stimulation treatments. Careful planning of the overall package permits the preparation of stimulation fluids ranging from VDA* viscoelastic diverting acid to SXE* emulsified acid and the precise control of additive concentrations over a full range of treatment rates. The system comprises

- five diesel-driven high-pressure pumps capable of delivering 6,650 hhp
- several storage tanks lined with corrosion-resistant fiberglass-reinforced plastic that can hold raw acid before it is mixed into designed treatment concentrations
- ten liquid additive tanks fitted with independent computer-controlled injection pumps
- two 50-bbl blenders capable of blending viscoelastic, emulsified, and polymer-based fluids.

All phases of the stimulation treatment are controlled remotely from a central control room. Continuous monitoring and control of critical parameters ensure the highest degree of quality control and assurance.

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Treatments are delivered through a flexible treating line with a quick-disconnect coupling that enables rapid vessel movement if required in an emergency.

Automation ensures efficiency and accuracy

The stimulation control center includes a main control room and an instrument and equipment interface room, with an onboard laboratory nearby to monitor quality control of all fluids.

The control console remotely operates pumps, blenders, and valves. Instrument feedback from flowmeters, pressure gauges, and tank levels is presented in digital form. Essential parameters in the stimulation operation are displayed in real time and include

- blender fill levels
- flow rates of each fluid and additive
- downstream pressures of each pump

Skipsey Tide Vessel Specifications

Marine data

Dimensions

Length, m [ft]	72 [236]
Breadth moulded, m [ft]	16 [53]
Depth moulded, m [ft]	5 [17]
Max. loaded draft, m [ft]	5.8 [19]

Performance

Speed at 85%, knots	11
Speed at 100%, knots	12
Crash stop, s	58

Capacities

Deadweight, Mg at 5.9-m draft [tonUS at 19.2-ft draft]	4471.9 [4,929.4]
Freshwater, m ³ [bbl]	1,966 [12,365]
Potable water, m ³ [bbl]	218 [1,371]
Fuel oil, m ³ [bbl]	833 [5,241]

Thrusters

Bow thrusters (2), kW	880
Stern thrusters (2), kW	1,600

Auxiliary engines

Generators (2), kW	300
Diesel generators (2), kW	320

Accommodations

One-person cabins	5
Two-person cabins	22
Hospital	1
Total berths	49

Anchoring equipment

Windlass, tonUS	10
Anchors (2), kg [lbm]	2,460 [5,423]
Chain cable (2) length and diameter, m × mm [ft × in]	247.5 × 38 [812 × 1.5]

ROV support

ROV plug-in wiring connections from deck

- venting pressures of the pressure relief valve
- pressure and rates of treating fluid at critical points in the system
- cumulative volumes pumped.

Data is recorded in real time at 1-s intervals and fed into the FracCAT* fracturing computer-aided treatment system. This system comprises hardware and software for monitoring, recording, and reporting all types of stimulation treatments. Its real-time displays and plots present a clear picture of the treatment as it occurs, providing decision-makers with real-time detailed job information from the surface to the perforations.

Job information may be viewed onshore using the InterACT* global connectivity, collaboration, and information service. The InterACT service enables real-time data sharing via a permanent satellite link, thus maximizing efficiency of engineering resources.

Stimulation data

Treatment pumps

Total pump power, kW [hhp]	4,958.9 [6,650]
High-pressure pump 1	
Nominal plunger size, in	5
Max. pressure, MPa [psi]	83 [12,000]
Max. rate, m ³ /min [bbl/min]	2.5 [15.5]
High-pressure pumps 2 and 3	
Nominal plunger size, in	4½
Max. pressure, MPa [psi]	138 [20,000]
Max. rate, m ³ /min [bbl/min]	1.4 [8.7]
High-pressure pump 4 front	
Nominal plunger size, in	3¾
Max. pressure, MPa [psi]	69 [10,000]
Max. rate, m ³ /min [bbl/min]	0.9 [5.8]
High-pressure pump 4 rear	
Nominal plunger size, in	3
Max. pressure, MPa [psi]	103 [15,000]
Max. rate, m ³ /min [bbl/min]	0.6 [3.7]

Acid blenders and centrifugal pumps

Raw acid centrifugal pumps (2) max. rate, m ³ /min [bbl/min]	5.56 at 827 kPa [35 at 120 psi]
6- × 8-in blending centrifugal pumps (2) max. rate, m ³ /min [bbl/min]	5.56 at 827 kPa [35 at 120 psi]
Auxiliary 5- × 6-in blending centrifugal pump (1) max. rate, m ³ /min [bbl/min]	1.9 at 310 kPa [12 at 45 psi]

slb.com/flexstim

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