BigBore™ Ile

HPHT SUBSEA WELLHEAD SYSTEMS

15,000 psi
20,000 psi
The BigBore Ile Subsea Wellhead System meets the severe demands of HPHT well environments, eliminates trips, and saves you money.

The BigBore Ile Wellhead is the only system that is fatigue tested to over 90+ million bending cycles. It has been tested to Normal - 7.4 MM ft-lbs, Extreme - 8.8 MM ft-lbs, Survival - 11.5 MM ft-lbs rated loads per API 17TR7. The BigBore Ile Wellhead DXe™ locking profile is approved by both I3P and BSEE per API 17TR8. Operator’s existing BigBore II-H inventory can be converted to BigBore Ile.

The BigBore Ile Subsea Wellhead System is highly flexible to accommodate a complex and heavy casing program that satisfies deep HPHT well objectives, while providing superior structural strength and unmatched fatigue life.

**Features and Benefits**

- Reduces capital expense by eliminating the need for extra drilling and production lockdown devices
- Reduces operational expenses by eliminating the number of trips into the well
- Seal Assembly provides 2 million lbs. hanger lockdown capacity to resist thermal and pressure loads
- High load capacity meets requirements of next generation 20 Ksi drilling rigs and HPHT well designs
- DXe™ locking profile offers industry best structural capacity and fatigue resistance proven with validation testing
- Structurally tested and qualified to normal, extreme and survival loads per API 16A 4th Edition and API 17 TR7
- Full scale Wellhead and BOP connector fatigue tested
- Metal-to-metal seal assembly qualified to 20,000 psi WP and 35° to 350° F per API 6A Appendix F PR2 Group 4, with additional dynamic cycles, metal seal endurance testing with gas

[Dril-quip.com/BBIle](http://dril-quip.com/BBIle)
The BigBore II Subsea Wellhead System maximizes life of field integrity.

- Designed for 15,000 psi (27") and 20,000 psi (30") rated working pressure and H2S service between 35° to 350° F with all metal-to-metal sealing.
- Supports 8.8 million lbs of end-load (combination of casing weight and test pressure) at the bottom internal landing / load shoulder profile.
- Highest available combination of bending, tension and load capacities using the Dril-Quip DXe™ profile.
- Utilizes landing adapters positioned in 22”/23” surface casing joints for landing 18” and 16” supplemental casing hanger systems.
- 18” and 16” casing, casing hangers and testable / retrievable / replaceable seal assemblies can pass through 21” OD drilling riser, 18-3/4” BOP Stack and BigBore II wellhead housing.
- All casing hangers and seal assemblies are run, set and tested on drill pipe running string in a single trip.
- Time saving bit-runnable wear sleeves and wear busings available.
- High pressure wellhead actively locked into low pressure wellhead with 2.0 millions lbs of preload to unitize both conductor and surface strings for superior bending load reaction and fatigue resistance.
- Utilizes field proven BigBore II-H HPHT metal-to-metal, gas tight sealing technology.
- Incorporates ROV-assisted annulus monitoring and shutoff system for all casing strings cemented back to surface.
- Large cement return flow-by areas on all casing hanger systems.
- Available with hydrate diversion plate option.
- Complex casing programs accommodated.
- All component designs are based on existing BigBore II-H technology and long successful BigBore II field history.

The BigBore II Seal Assembly delivers bidirectional high pressure liquid and gas tight metal-to-metal sealing, and provides high lockdown capacity.

- Seals in a recessed groove in the wellhead bore, which protects against scoring in the seal bore.
- Locks to the wellhead using the outer lock ring to hold down the seal and prevent excessive movement of casing hanger and seal when casing strings are exposed to thermal growth loading.
- Seal assembly outer lock ring as 2,000,000 lbs end-load lockdown capacity.
- Successfully tested in gas medium per API 6A PR-2 requirements with zero leakage and Group 4 Dynamic seal endurance testing with no elastomers.
- Weight set metal-to-metal seal assembly.
- Seal assembly easily retrieved with hydraulic tool.
- Seal assembly can be run separately with seal assembly running tool.
- Casing hanger seal assembly running tool has a 2.5 million lb. load capacity.
- Casing hanger seal assembly running tool retrieves seal assembly if it doesn’t test and lockdown.
- Same dependable running tool design used for over 25 years.
VERIFICATION AND VALIDATION TESTING

DRIL-QUIP has taken a "systems" approach to evaluating the strength characteristics and overall performance of the Subsea Wellhead System.

SUBSEA WELLHEAD SYSTEMS IN-HOUSE VERIFICATION ANALYSIS AND VALIDATION TESTING IS EXTENSIVE

- Design verification analysis using fine mesh 2-D and sophisticated 3-D FEA modeling tools used to evaluate the behavior of the wellhead system.
- Design and capacity validation testing is tested with machines capable of applying multiple load scenarios to a complete wellhead system.
- Adjustments are made to the 3-D FEA model to deliver more precise results.
- DRIL-QUIP’s validation test machine is test machine than can deliver the forces required to test the system as a whole.
- DRIL-QUIP uses a fatigue test on the whole wellhead system to evaluate stresses between the wellhead and wellhead connector.

SUBSEA WELLHEAD AND COMPONENTS ARE QUALIFIED TO THE LATEST INDUSTRY STANDARDS

- The latest API standards are used for both design verification and validation testing.
- Wellhead components have been tested and qualified to API 17D 2nd Edition and 6A (PR2) 20th Edition requirements.
- High pressure/high temperature wellhead system components have been tested and qualified to API 6A Appendix F Group 4 in addition to dynamic seal testing over and above API industry requirements.
- Complete system integrated verification and validation testing assures individual component capacities match or exceed the system capacity requirements.

HORIZONTAL TEST MACHINE - CAPABILITIES

* 20 million ft-lbf of bending loading
* 12.75 million lbf of tension / compression loading and 8 million lbf of compression loading
* 6+ million lbf of simulated casing weight
* Internal / External pressure and associated pressure end loads to test specimen capacities

Data Acquisition and Control System for Seal Testing

Fatigue Test Machine with Specialty Connector Test Specimen

Annulus Seal Assembly with Environmental Controls

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