Weatherford®

Transformer™ Wellhead System

Build efficiency

Transform the way wellheads handle drilling, completion and production.

Transform expenses into savings.

Improve safety, simplify the job and save time

Safe, simple and time-saving were the mandates given to the dedicated Weatherford resource team that developed the *Transformer* wellhead system. The result is a system that enables operators to safely move the rig off faster and rapidly transition from spud to production in hours, instead of days.

Our team took advantage of proven advancements in offshore rig technology to craft an out-of-the-box solution for land-based drilling activities. They defined the parameters of efficiency through wellhead technology that improves cost and saves time, while greatly enhancing safety.

Our *Transformer* wellhead design offers working access from the rig floor, rather than underneath a suspended blowout preventer (BOP), and thus provides greater safety for personnel. This system also enables quick make up of the BOP, further reducing time spent by personnel working in the cellar. It suspends all tubular products, seals all annuli and controls the flow of produced hydrocarbons.

The *Transformer* system is widely used on various rig types and has the flexibility to be adapted to the client's well-specific requirements. The system consists of a series of individually engineered component parts designed to work together, creating a safer, more efficient installation.

The *Transformer* wellhead system enables quick deployment from well to well.

Saving rig time

The innovative design of the *Transformer* system can reduce wellhead installation time from days to hours—significantly reducing rig time. Weatherford's unique Rapid-Lock™ drilling adapter features a radial interference-fit seal, requiring 150 ft-lb (203 N·m) of torque. Our system eliminates the cost, time and danger for crews working in confined spaces. The *Transformer* system reduces nonproductive time and enables production to come on line faster.

No waiting for cement to set on surface or production casing. Integration of the casing head onto the casing is completed off line and before the commencement of the drilling operations. When made up to the running tool, the casing head is then installed from the rig floor as the last joint of casing is installed. Once installed, the landing base provides a rigid work platform. This process provides the option to begin cement operations immediately and suspends the surface casing, enabling operations to continue without waiting on the cement to set.

No waiting to nipple up. Nippling up the BOP stack to the *Rapid-Lock* BOP adapter takes place off line, even before the conductor is set—saving significant hours (6 to 48) of rig time. Removing and replacing the BOP is as simple as loosening and tightening the eight recessed pins in the *Rapid-Lock* adapter.

No concerns about stuck pipe. Offering ultimate flexibility, our wellhead system is standardized and modularized for quick deployment from well to well, speeding up pad drilling. If the casing gets stuck, simply cut the pipe and proceed using conventional slip technology.

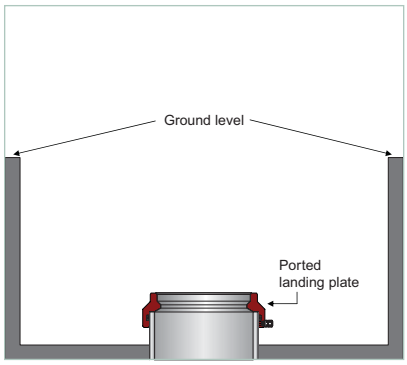
Additional features include:

- Enables offline BOP testing
- Reduces BOP installation time
- Eliminates welding (no welded components)
- Maximizes short drilling cycles

The casing head is integrated into the last joint of casing and runs through the rotary table for maximum installation efficiency.

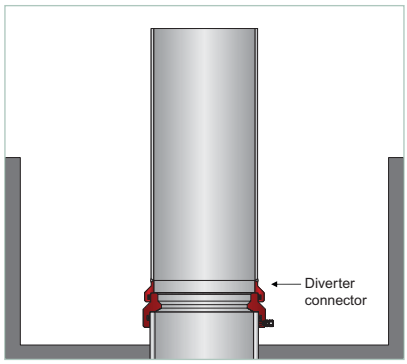
Proven, safe performance in hours, not days

The timeline below illustrates the *Transformer* system as configured for a zero discharge closed-loop applic



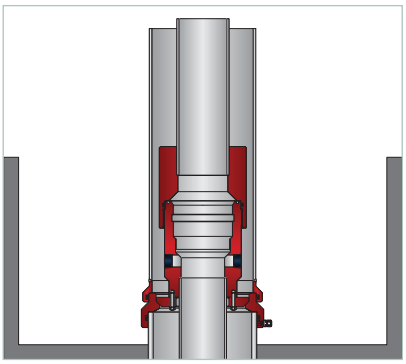
A ported landing plate is installed and, if required, welded onto the conductor pipe before moving rig to location.

Conventional *Transformer* System
0 Hours : 2 Hours*
*If welded.



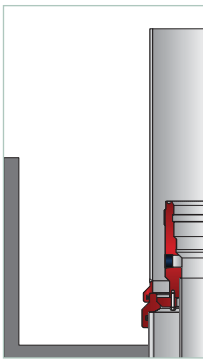
A prefabricated drilling nipple is installed with slip-over diverter connector. No welding required.

Conventional *Transformer* System
2 Hours* : 0.25 Hours
*Welding required.



Land casing head assembly on conductor stub. Cement surface casing.

Conventional *Transformer* System
10-12 Hours : 2.25 Hours
Includes cement.

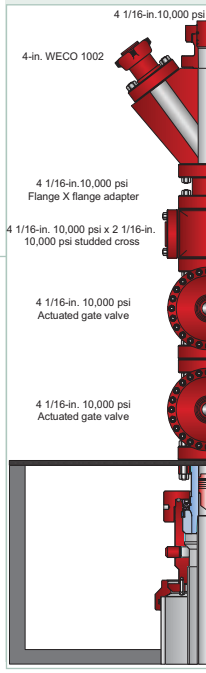


After landing joint and out of the way, diverte

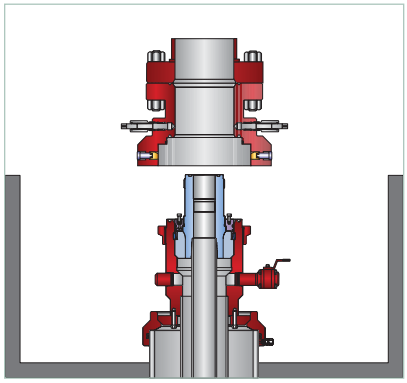
Conventional *T*
0 Hours : 0

Off line w

Conventional
2 Hours :

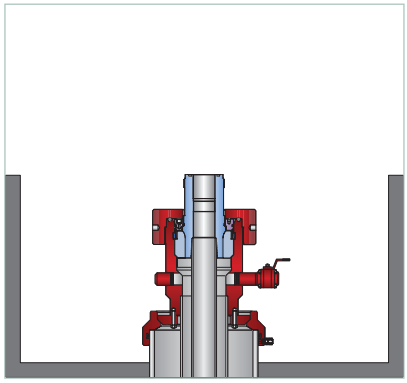


Conventional *Transformer* System
2 Hours : 0.25 Hours



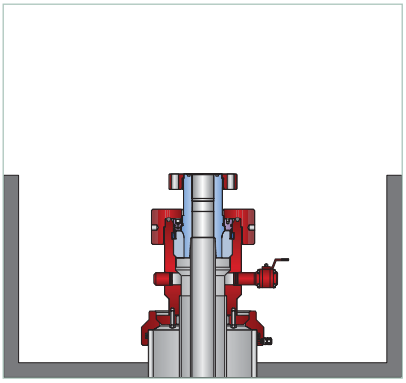
Lift BOP stack and park off line.

Conventional *Transformer* System
4 Hours : 0.50 Hours



Install retainer cap.

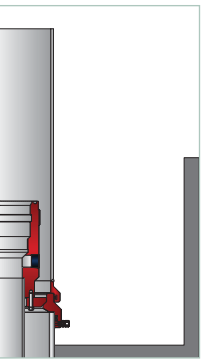
Conventional *Transformer* System
0 Hours : 5 Minutes



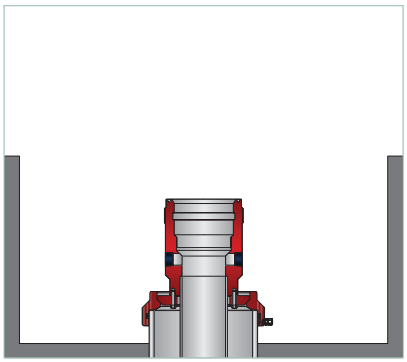
Install rotating flange on top of mandrel. Ready for frac tree installation.

Install frac tree assem against two-way chec

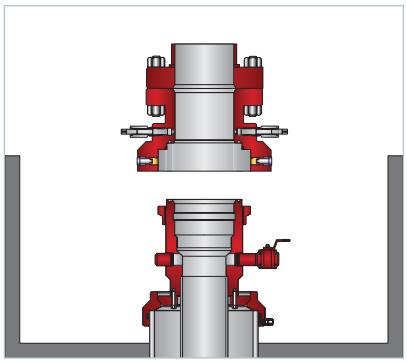
cation.



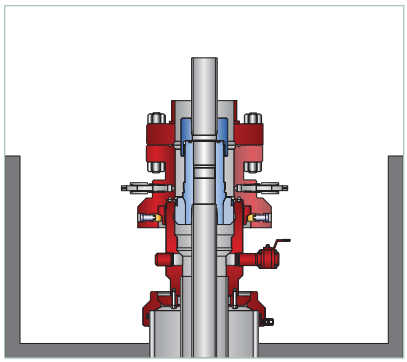
l running tool are
r can be removed.



Remove all flush plugs and wash wellhead thoroughly inside and out.



Before installation of Rapid-Lock™ BOP adapter, clean and inspect seals, seal surfaces and ensure wear bushing retention screws are fully backed out.



Install fluted casing hanger on last joint of casing. Run casing hanger in hole and land at proper depth.

ransformer System
0.50 Hours

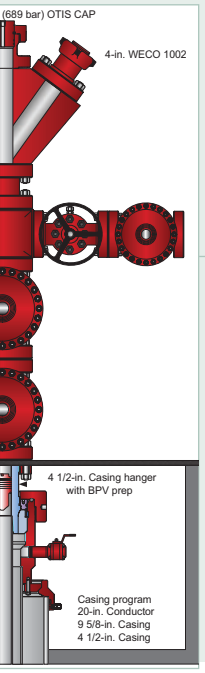
Conventional *Transformer* System
0 Hours : 0.50 Hours

Conventional *Transformer* System
2-4 Hours : 0.50 Hours

Conventional *Transformer* System
4-8 Hours* : 0.50 Hours
*Wait on cement.

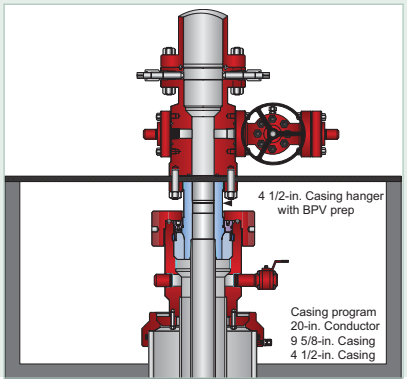
ithout rig ——— Transformation phase ———→

Transformer System
: 2 Hours



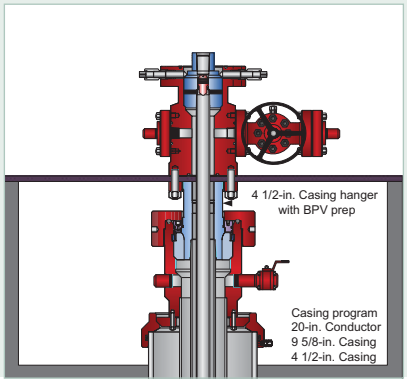
nbly. Pressure test
k valve.

Conventional *Transformer* System
1 Hours : 1 Hours



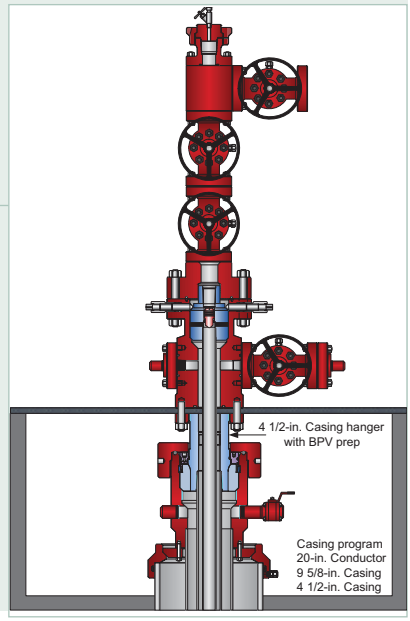
Well is ready to complete. Tubing can be run.

Conventional *Transformer* System



Tubing is run and tubing hanger installed. Ready for production tree.

Comparative Totals
Conventional *Transformer* System
28 Hours : 7.55 Hours



Production tree is landed.

Enhancing safety for personnel and the environment

Our commitment to safety means that the *Transformer* system incorporates safety at a fundamental level.

Our Rapid-Lock™ drilling adapter locks onto the flush surface of the casing head—eliminating the need for rig hands to go below the rig floor to align the BOP and hammer-up bolting. This feature increases the level of safety on the rig.

The *Transformer* system also reduces the number of service companies required to perform any functions during the life cycle of the well. Fewer people equal fewer risks.

Other features include:

- Uses mandrel casing hangers with slip-style hangers for contingency situations
- Protects flange threads at all times
- Self-contained, providing circulation and flowback through a closed-loop system
- Has zero discharge capability

The patent-pending packoff engages the lock ring, enabling the casing hanger and packoff to be locked down and ready for completion later.

Providing job efficiency and simplicity

The *Transformer* system offers the reliability of field-proven, time-tested technology with a fresh, innovative approach that uses new technologies that are compatible with conventional parts. Manufactured to API and ISO standards, the system can be incorporated into a single or multiple casing-string design. The system has proven easy to manage in pad wells with tight parameters, as easily as single wells.

Simplicity of fracturing operations. With our *Transformer* system, you simply remove the BOP stack and attach a 10,000-psi (689-bar) rotating flange to the top of the *Transformer* tubing hanger, providing complete metal-to-metal, casing-to-casing valve integrity at 10,000 psi (689 bar). You can fracture without the need for expensive isolation sleeves or high-pressure wellhead equipment.

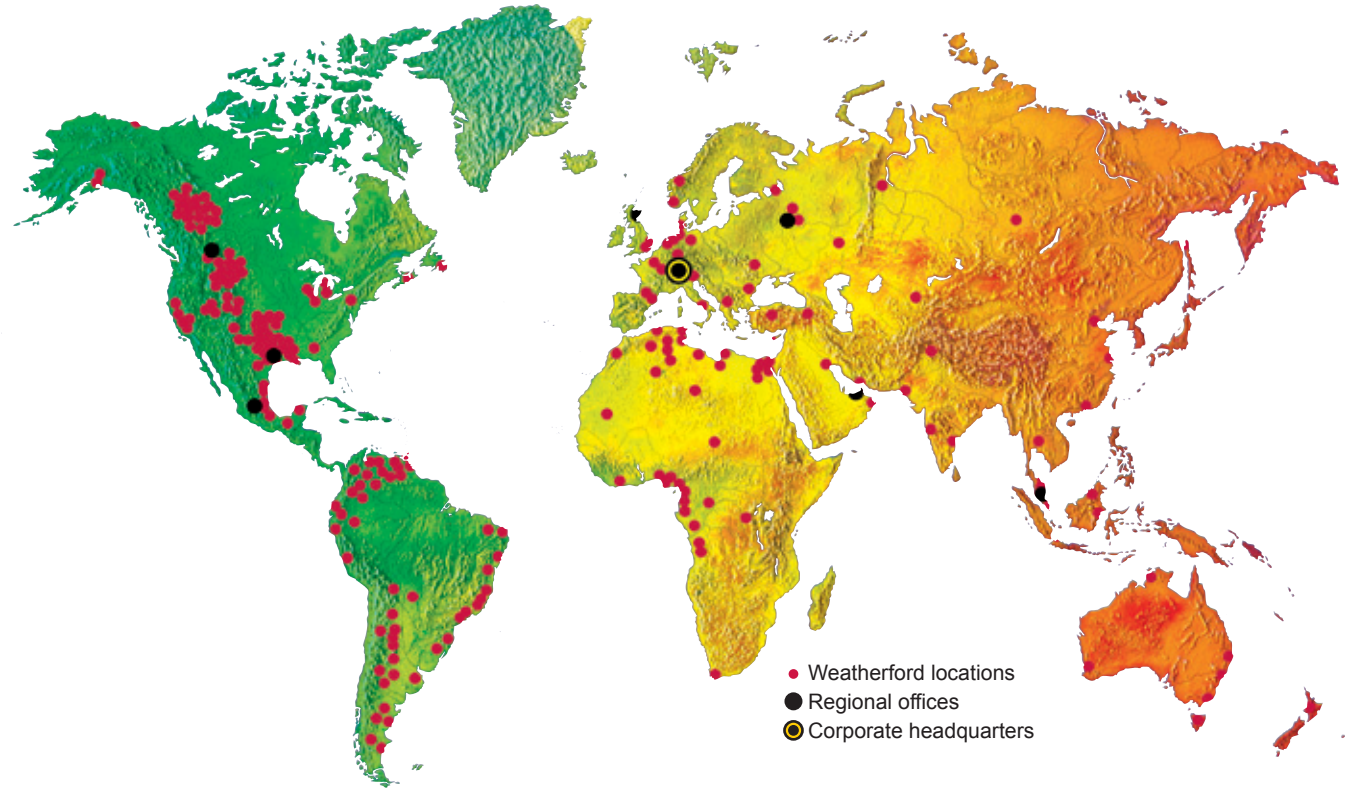
No worries about damage to production equipment. With our *Transformer* system, all fracturing and flowback takes place through our rental equipment engineered for heavy use. The production-tubing spool goes on only after fracturing and flowback phases are complete. With a conventional system, you frac through the production-tubing spool, exposing it to wear and damage from the debris in the fracture and flowback phases.

Additional features include:

- Facilitates offline cementing
- Eliminates need for frac isolation sleeves
- Maintains high-frac pressure
- Has a full-bore frac potential
- Offers low-production pressures
- Operates with or without a diverter
- Can be run through a 16-in. or larger-size rotary or diverter
- Provides use of a standard metal-to-metal, seal-ring gasket
- Enables interface with standard tubing spools
- Uses industry-standard internal components

Weatherford's revolutionary *Transformer* system can be installed quickly and securely.

During any phase of drilling and production, operators can revert from the *Transformer* system to conventional technology—enabling the use of existing client-owned assets.



Weatherford locations can be quickly ramped up for wellhead installation.

To learn more about our *Transformer* wellhead system, contact **transformer@weatherford.com,** or visit us online at **weatherford.com/wellheads**.

Weatherford®

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