Jack-Up and Platform Drilling and Completion Systems with Unitized Wellhead Systems
Dril-Quip, Inc. is one of the world’s leading manufacturers of offshore drilling and production equipment that is well suited for use in deep-water applications. The Company designs and manufactures subsea, surface and rig equipment for use by oil and gas companies in offshore areas throughout the world. Dril-Quip also provides installation and reconditioning services and rents running tools for use with its products.

Dril-Quip’s principal products consist of subsea and surface wellheads, subsea and surface production trees, mudline hanger systems, specialty connectors and associated pipe, drilling and production riser systems, wellhead connectors and diverters. The Company has developed its broad line of subsea, surface and offshore rig equipment exclusively through internal product development efforts. Dril-Quip has continually introduced new products and product enhancements since its founding in 1981.

Dril-Quip’s manufacturing operations are vertically integrated, with the Company performing essentially all of its forging, heat treating, machining, fabrication, inspection, assembly and testing at its own facilities.

The Company’s common stock is traded on the New York Stock Exchange under the symbol “DRQ”.

Facilities

Headquartered in Houston, Texas, Dril-Quip has manufacturing facilities in the United States, Scotland, Singapore and Brazil. The Company also has sales and service offices in numerous locations throughout the world.
CAPABILITIES

PROJECT MANAGEMENT
Project management capabilities have enabled Dril-Quip to better manage the design, manufacture and delivery of Dril-Quip products on large, integrated projects throughout the world.

The project management techniques utilize time-proven processes, which are defined at the start of a project via a formal Project Execution Plan (PEP). This formalized project management system has proven invaluable for successful management of the resources necessary to complete projects on time and to the customers’ requirements.

ENGINEERING
Dril-Quip’s technological leadership in the industry is the result of an ongoing commitment to a professional engineering staff with in-depth experience in the design of drilling and production equipment. This experience is supported by state-of-the-art computer systems networked to expedite and optimize the process of modeling, analyzing, modifying and testing each design. These capabilities enable Dril-Quip to consistently provide new and improved products to the oil and gas industry worldwide.

MANUFACTURING
Dril-Quip products are manufactured from selected high-grade forging material. Computer-controlled machine tools are used for dimensional accuracy, precision machining and consistent quality. Each product is inspected, assembled and tested prior to shipment. Computer tracking systems are used to schedule and monitor each customer’s order during the manufacturing process. This attention to detail ensures product quality and on-time delivery.

SERVICE
In order to ensure vital support to the offshore industry, Dril-Quip field service technicians are rigorously trained and tested in the proper use, handling and repair of Dril-Quip products. Only the most qualified and knowledgeable personnel are employed by Dril-Quip for field service. These technicians are then posted at strategically located Dril-Quip facilities throughout the world, readily available to our customers on a 24-hour basis.

TRAINING
The Dril-Quip Training Department offers to the industry training courses in the installation, operation and maintenance of offshore drilling and production equipment. These courses utilize computer-assisted training tools, models and actual equipment to enhance the participants’ knowledge of offshore operations. Dril-Quip’s Training Department offers custom courses tailored toward specific projects and customer requirements.
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Dril-Quip’s Jack-Up Drilling and Completion System

Dril-Quip’s many years of experience with Jack-Up drilling and completion operations has led to the development of over 100 wellhead and mudline suspension system configurations to satisfy the demanding requirements of Jack-Up drilling applications. Each component of the system has been designed for high reliability and field-proven performance.

Dril-Quip’s Jack-Up Drilling and Completion System can be configured with a variety of equipment specifications to meet the requirements of customers and applications.
SPECIALTY CONNECTORS
FOR LARGE-DIAMETER TUBULARS

QUIK-THREAD® CONNECTORS
Quik-Thread Connectors offer fast make-up, reliable sealing and versatility to excel in a variety of drilling applications. Their rugged thread form and automatic self-aligning profiles allow for quick and easy installation in the field. Quik-Thread Connectors can be outfitted with anti-rotation keys for added security in harsh drilling environments. Metal-to-metal sealing is also an option.

Quik-Thread Connectors make up in 2 1/2 turns and cannot be cross-threaded.

Recommended Applications
- Recommended for use with anti-rotation keys for “lost circulation” hole sections
- Recommended for use with anti-rotation keys for use in riser casing strings when used above mudline hangers
- Long-term high fatigue capacities

FEATURES: Quik-Thread and Multi-Thread
- Easy stabbing
- Self-aligning
- No cross-threading
- Fast make-up
- Low torque
- Visual indication of make-up
- High strength
- High-pressure sealing
- Driveable
- Anti-rotation devices available
- Reusable
- Fully tested
- Field-proven technology
- Easily weldable

MULTI-THREAD™ CONNECTORS
The Multi-Thread Connector is a member of the Quik-Thread line of connectors. It maintains the field-proven performance of the Quik-Thread design with the advantage of making up in only 5/8 of a turn, and also cannot be cross-threaded.

Make up in 5/8 of a turn

Multi-Thread Connectors and protectors have an identifying groove that easily distinguishes them from Quik-Thread Connectors.

Recommended Applications
- Recommended for applications where casing will be run directly into the hole
- Available with metal-to-metal sealing
- Available with long-term high fatigue capacities

The Quik-Thread Connector provides a fast and reliable means of running large diameter tubulars in any application.
**Quik-Stab™ Connectors**

Quik-Stab Connectors provide for fast, reliable weight-set connections of large-diameter tubulars. Their design allows for high-angle stabbing and self-aligning and automatic locking of pin and box. Quik-Stab Connectors are an excellent choice for applications that require fast make-up without rotation.

**Features:**
- High-angle stab
- Self-aligning
- Automatic positive lock
- Mechanical release
- Requires no rotation
- Rugged, high-strength design
- Reliable high-pressure sealing
- Reusable
- Easily weldable
- Driveable
- Anti-rotation features
- Field-proven technology

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**Quik-Jay™ Connectors**

Quik-Jay Connectors are ideal for use at the mudline for quick, remote release of riser strings. They provide fast make-up, effective anti-rotation, remote disconnect and diverless tie-back. The Quik-Jay box accepts a standard Quik-Stab pin for diverless, weight-set tie-back operations.

**Features:**
- Mechanical, diverless release
- High-angle, self-aligning tie-back
- Only 1/16 turn to make up
- Reusable
- Effective anti-rotation
- Field-proven technology
- Diverless tie-back
- Easily weldable

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*The release cable is pulled from the surface and the cam reacts against the reaction plate to provide the necessary clearance to remove the anti-rotation key.*
available in a wide range of pressures for all standard BOP sizes in 1 Stack or 2 Stack Systems for platform, jack-up or land applications.

**System Versatility**

At the core of each Dril-Quip SU Series Unitized Wellhead System is a unique surface wellhead that incorporates subsea wellhead metal-to-metal sealing technology, providing benefits not available in typical surface wellhead systems.

Dril-Quip SU Series Wellheads are manufactured in accordance with API Q1 and ISO-9001 standards and specifications.

**Features**

- Compact size and time-saving features make the SU Series Unitized Wellhead Systems the technical and economic choice
- The SU Series Unitized Wellhead Systems provide a means of utilizing mandrel casing hangers with mudline suspension
- The SU Series Unitized Wellhead Systems simplify rig operations by replacing spooled wellhead components
- System flexibility allows adaptation to most casing programs
- Annulus seal is pressure-energized and can be retrieved and replaced without disturbing the casing hanger or tubing hanger
- Mandrel-type casing hangers simplify installation process
- Fully compatible with mudline suspension systems with patented adjustment sub
- Adjustment in height and tension to ensure wellhead systems on platforms can be installed to identical height
- Metal-to-metal seals can be pressure tested externally as part of an ongoing maintenance program through the life of the well
- Annulus seal is pressure energized and can be tested from inside the wellhead during drilling operations and outside the wellhead for maintenance program
- Offered with a “stuck casing” solution that maintains full system metal-to-metal sealing without compromise
- Fire-resistant production tree designs offered in compliance with API 6FA, API 6FB and API 6FC
- SU-90° systems can be specified to operate within a temperature range of -75°F to 350°F and up to 15,000 psi
- Field-proven performance
SU-902 WELLHEAD SYSTEMS

For high pressure, severe service applications
**SINGLE-stack**
**DUAL-stack**
with Vertical Production Trees

**SU-702 WELLHEAD SYSTEMS**

efficient, cost-effective systems for standard applications
**SINGLE-stack**
**DUAL-stack**
**MULTI-slot**
with Vertical or Horizontal Production Trees

**SU Series Wellhead System** components have been designed and modeled using the most advanced computer techniques. Each wellhead component has undergone rigorous engineering analysis and testing. Prototypes of each system component have been extensively tested to confirm that the product meets the design criteria. This underlines Dril-Quip’s commitment to provide advanced technology in precision-crafted products for the oil industry.

All Dril-Quip SU Series Unitized Wellhead Systems are engineered and designed in compliance with API 6A guidelines where applicable, and can be supplied in compliance with European Union Explosive Atmospheres Directive (ATEX) and EPS regulations.
Dril-Quip offers a Multi-Slot Wellhead System that integrates two or more wellheads inside of one conductor string. Each specially designed wellhead system incorporates features of our field-proven SU-90 or SU-702 Unitized Wellhead Systems.

Dril-Quip’s Multi-Slot Wellhead System includes double and triple well or producing zone completions. The Multi-Slot Wellhead is available in vertical or horizontal tree configurations and can accommodate stack valve or block valve tree designs.

**Features**

- Maximizes conductor slot utilization
- Compact wellhead design saves space
- Space-saving feature results in smaller platform size requirements
- Fewer connections reduce possible leak paths and save BOP nipple-up/nipple-down time
- Weight-slip hangers for surface casing; mandrel hangers optional
- Available for standard or H₂S service
- Simple control line termination block assemblies
- Each well can be drilled and completed independently
- Compatible with surface horizontal completion trees
- Field-proven system performance
**MS-15 Mudline Suspension System**

Dril-Quip’s unique MS-15 Mudline Suspension System is a series of casing hangers that support the weight of each casing string at or near the mudline. Designed for use with bottom-supported drilling vessels and platforms, the system allows disconnect from and reconnect to the well at the mudline.

## System Features

- High pressure capacity; system rated for 15,000 psi working pressure
- High load capacity at each hanger interface
- Easy handling, trouble-free operation
- Hangers have left-hand running threads, right-hand tie-back threads
- Metal-to-metal seals on running and tie-back tools with resilient backup seals
- Automatic centralization ensures concentricity
- Stack-down system for washout efficiency and easy access to tie-back thread profile
- Designed for temporary abandonment
- Designed with large flow-by areas
- Subsea completion possible with Dril-Quip’s Mudline Conversion System
- Critical service configurations available
- Extra metal-to-metal sealing for higher pressure and critical service
- Extra centralization for high-angle drilling
- Heavier wall for greater load and pressure capacity
- Fully tested
- Field-proven technology
- Torque tool option available for running tools
MS-15 System Components

**DRILLING PHASE**
- 20" Shoulder Hanger
- 13 ¼" Shoulder Hanger
- Buttweld Sub
- 9 ½" Split Ring Hanger
- 7" Split Ring Hanger
- Running Tools

**TEMPORARY ABANDONMENT PHASE**
- 30" Corrosion Cap
- 30" Quick-Jay™ Connector
- Temporary Abandonment Caps
The Shoulder Hanger will use a multiple load shoulder profile in the hanger’s ID to transition to the Split Ring Hanger for running casing string with higher load-carrying requirements.

There are two types of Casing Hangers utilized in the MS-15 Suspension System: Shoulder Hangers and Split Ring Hangers. Shoulder Hangers are generally required with larger-size casing strings and are used when enough annular space exists to allow a single load shoulder to hang the casing load and still pass the drill bit needed for the casing string. The Shoulder Hanger features either a single or multiple load shoulder profile in the ID, depending on the casing program.

**Features**

- High pressure, high load capacity
- Easy installation; weight-set hanger
- Field-interchangeable landing rings accommodate changes in casing programs
- Large flow-by areas for running and cementing
- Full 360-degree load-bearing area on landing ring for maximum load-carrying capacity
- Unique, two-step landing ring provides automatic centralization when landed
- Independent metal-to-metal sealing surfaces: one for running tools, one for tie-back tools
When casing loads exceed a single load shoulder’s ability to support the weight of the casing string, the MS-15 system uses a unique Split Ring Hanger with a multiple load shoulder profile. The system’s patented split ring and detent ring accommodate high loads while allowing passage of required drill bit sizes.

**Features**

- High pressure, high load capacity
- Large flow-by areas during running and cementing
- Unique design ensures full engagement of each split ring load shoulder with mating profile
- Positive backup of split ring when landed
- Detent ring allows hanger resetting while eliminating shear pins and tensile coupons
- Dual metal-to-metal seals; one for running tools, one for tie-back tools

**Split Ring Setting Sequence**

1. **Running Position**
   - **Hanger Body**
   - **Load Ring**
   - **Split Ring** — multiple load shoulders on split ring protected from casing ID while running
   - **Detent Ring** — eliminates premature vertical movement of split ring

2. **Landed/Not Detented**
   - **Hanger Body** — provides full centralization with load ring above split ring and retainer ring below split ring
   - **Split Ring** — energy in split ring forces multiple load shoulders into mating profile of outer hanger ID

3. **Detented Position**
   - **Load Ring** — maintains large flow-by area and provides high load capacity at interface of split ring and hanger
   - **Hanger Body** — backup shoulder provides full backup behind top of split ring
   - **Detent Ring** — activated by casing weight and centralizes split ring, provides full backup behind bottom of split ring
The MS-15 Mudline Hanger Running Tool allows the casing string to be run and landed in the previous mudline hanger. The running tool incorporates tangentially bored washports for cleaning the annulus between casing strings. The tool’s left-hand threads allow the use of right-hand rotation to remove the running string or open the washports.

**Features**

- High pressure, high load capacity
- Low torque make-up
- Self-aligning profile allows full alignment with hanger prior to thread engagement
- Slots for direct make-up of running tool with torque tool are optional
- Optional stab-in running tools for mudline hangers 16” and larger eliminate left-hand rotation
- Dual O-rings above washports
- Seal below washport never exposed during wash operations
- One-way seal on nose of pin prevents pressure lock during make-up
- Field-proven performance

Right-hand rotation of approximately six turns opens washports for washout of casing. After washout, running tool is made up with six turns to the left.

Right-hand rotation of approximately six turns with weight picked up opens washports for washout of casing. After washout, weight is slacked off and running tool is made up.
The **Dril-Quip** Adjustment Sub eliminates the need to cut casing and set slip-type hanger assemblies in the surface wellhead system. This unique design eliminates BOP stack nipple up/nipple down procedures, thereby saving valuable rig time and providing safer drilling operations.

**FEATURES**

- Fast and safe operation
- Compatible with standard casing programs
- Metal-to-metal seals provide pressure capacity compatible with the casing
- Provides adjustment of the casing string length between two fixed points
- Eliminates the need for slip-type casing hangers
- Engineered for strength and pressure integrity
- Available for standard or H₂S service
- Full-bore design
- Field-proven performance

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The Adjustment Sub solves costly stuck casing problems that occur in floating, bottom-supported or land drilling operations. Using the Adjustment Sub in conjunction with the DRIL-QUIP Emergency Backout System makes cutting and patching stuck casing a thing of the past.

**Adjustment Sub**

The threaded section of the adjustment sleeve is designed to transmit the load in shear, rather than tension, resulting in high load-carrying capacity. Torque requirements are reduced because the adjustment sleeve thread is not subjected to tension loads during setting operations.

**Seal Assembly**

Dual metal-to-metal seals provide full pressure integrity even after repeated usage.

**Adjustment Sleeve**

The threaded section of the adjustment sleeve is designed to transmit the load in shear, rather than tension, resulting in high load-carrying capacity. Torque requirements are reduced because the adjustment sleeve thread is not subjected to tension loads during setting operations.
Prior to the introduction of the Dril-Quip Adjustment Sub, mandrel-type hangers could not be used with mudline suspension systems. The problem of landing casing on two shoulders simultaneously is now solved. The Adjustment Sub provides the means for modifying the length of the casing string to land the mandrel-type
hanger on its seat inside the surface wellhead while allowing the mudline hanger to support the casing weight. Mudline tools can be rotated to the left or right from the surface because the Adjustment Sub transmits torque through the casing string.

**STEP 3**
Pick up the drill pipe to locate the Running Tool in the Adjustment Sub and pull tension. Rotate right to stroke the Adjustment Sub and move the Casing Hanger down.

**STEP 4**
Release and retrieve the Adjustment Sub Setting Tool.
**LS-15™ LINER HANGER SYSTEM**

Dril-Quip’s LS-15 Liner Hanger System is available with all of Dril-Quip’s Wellhead Systems. The LS-15 Liner Hanger products are built to perform under a wide range of conditions, and are ideally suited for long reach, high angle, horizontal and ultra-heavy liner completions. This premium liner hookup incorporates many innovative tool designs, ensuring reliable operation and service in many of today’s most demanding wells.

### LS-15 System Features

The LS-15 Liner Hanger System features field-proven technology that incorporates the following:

- **High strength, high pressure, high load-carrying capacity**
- **Metal-to-metal Annulus Packer Seal for high pressure service**
- **No hydraulic or mechanical devices on the hanger body, minimizing leak paths**
- **Large slip area and controlled friction minimizes stress in the supporting casing**
- **All hangers are automatically centralized when C-Ring Slip is set**
- **Bypass flow area is the same after setting the liner hanger slip as in the running-in position**
- **Maximizes circulating flow-by areas for efficient cementing operations**
- **The LS-15 Liner Hanger System can be sized and configured to customer specifications**

### LS-15 Packer Seal Features

- **Integral, one-trip metal-to-metal sealing design**
- **Anti-swab design for faster running speeds and higher circulating rates, and resists mechanical damage while running**
- **Standard service for many sizes is 10,000 psi at 400°F. Higher pressures are achievable and are only limited by the capacity of the packer mandrel and casing**

### Rotational Option

With the addition of a rotating bearing assembly, the LS-15 Liner Hanger can be rotated with the slips in the set position during the cementing operation. This feature can assist in completing a successful cement job.
The Liner Hanger is run to total depth with the slip in the retracted, running position. The hanger body is then slacked off onto the slip. The sharp teeth on the slip will secure the Liner Hanger to the supporting casing. At light loading, the dull inner slip teeth will not yet grab the cone as it slides behind the slip.

When released from its locked-down running-in position, the slip will spring open and come into contact with the ID of the supporting casing.

As the loading increases and travel progresses, the inner teeth begin to form small shoulders on the liner hanger slip cone. As the shoulders increase in size, the downward travel of the Liner Hanger is stopped before loading gets high enough to collapse the liner hanger body or burst the supporting casing.

One-Piece C-Ring Slip

Dril-Quip’s proprietary one-piece C-Ring Hang-off Slip has been developed to greatly reduce the amount of hoop stress placed on the supporting casing by the liner load. Dril-Quip’s circumferential slip design distributes the liner load much more evenly around the casing than conventional multi-slip segment hanger systems. The C-Ring Slip also incorporates a method of controlling the friction between the slip and the hanger body. This “controlled friction” design redirects hoop load into axial load, drastically reducing the collapsing load on the hanger body and burst pressure on the casing. This combination of stress loading permits the LS-15 Liner Hanger System to hang longer and much heavier liners than possible with conventional technology.
The MS-15 Mudline Suspension System offers Temporary Abandonment (TA) Caps that protect each mudline hanger’s tie-back profile from debris during abandonment and while the well is in suspension. Temporary Abandonment Caps make up in the hanger running tool threaded profile and supply resilient seals between the TA Cap and the mudline hanger.

The MS-15 system also offers a simple, weight-set, rotation-lock stab-in TA Cap. When angular misalignment is a problem, this cap allows temporary abandonment of the mudline hanger. The cap’s threaded split lock ring engages the running threads in the mudline hanger.

**Features**
- Simple installation
- Caps make up into left-hand running threads, protecting tie-back threads
- Full alignment prior to make-up
- Available vented or with back-pressure valve
- Low torque make-up
- Optional stab-in TA cap allows weight-set make-up

**Temporary Abandonment Cap Running and Retrieving Tool**
An overshot type tool with three J-slot profiles, the MS-15 TA Cap Running and Retrieving Tool runs on drill pipe and lands on the TA cap mandrel with running and retrieving J-lugs.

**Features**
- Removable back-pressure valve stinger available
- Seals and locks to top of TA cap mandrel
- Porting for pressure control of well
The stack-down configuration and unique design features of the MS-15 Mudline Suspension System make it an excellent choice for production wells.

Centralizing shoulders on each hanger body help establish concentricity around the centerline of the well. Centralized tie-back tools incorporate an alignment profile that forces full alignment between the tool and the hanger body prior to any thread engagement. Special stab-in tie-back tools are available to solve problems with angular misalignment and platform-to-well misalignment.

**System Features**

- System stacks down to fully expose tie-back threads
- Reliable metal-to-metal sealing
- Tie-back threads and sealing areas are unused and protected during drilling
- Hangers have left-hand running threads, right-hand tie-back threads
- All strings tie back using right-hand rotation

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- 20" Shoulder Hanger
- 13 3/8" Shoulder Hanger
- 30" Butt weld Sub
- 9 1/4" Split-Ring Hanger
- 7" Split-Ring Hanger
- Split Ring
- Detent Ring
- Stab-In Tie-Back Tools
- Threaded Tie-Back Tools
Dril-Quip’s MS-15 Tie-Back Tools reconnect the mudline hanger to the surface for completion. For subsea completion, the tools tie the well back to a tubing head.

The Stab-In Tie-Back Tool offers a simple, weight-set design that provides an easy way to tie back to the well when platform misalignment is a problem. It includes a threaded split lock ring that engages the tie-back threads in the top of each mudline hanger.

**Features**
- Fully aligned prior to make-up
- High pressure containment provided by metal-to-metal primary seal and resilient backup seals
- Sized to match each Dril-Quip mudline hanger
- Threaded tie-back tool makes up with just six right-hand turns for metal-to-metal seal with resilient backup
- Stab-in tie-back tool’s resilient seals are weight set; metal-to-metal seals energize with ½ to 1 right-hand rotations

Run on drill pipe, Dril-Quip’s Tie-Back Torque Tool is used to apply high direct torque to the Stab-In Tie-Back Tool.

**Features**
- Spring-loaded torque keys for easy torque slot engagement
- Sized to match each Dril-Quip tie-back tool
- Can be used to apply torque to mudline hanger running tools equipped with torque slots
GATE VALVES

SERIES DH, DHS, DM AND DL GATE VALVES

The Dril-Quip series DH, DHS, DM, and DL Gate Valves are bidirectional sealing gate valves designed to offer maximum reliability for extended service in the field. All Dril-Quip gate valves are manufactured in accordance with API and ISO-9001 quality standards. The bore sizes of the DH, DHS and DM Gate Valves are 2 1/16 through 7 1/16 inches, with pressure ranges from 2,000 to 15,000 psi.

The Series DH Gate Valve has metal-to-metal seat seals and non-elastomeric stem packing, and is available in API 6A material classes AA to HH, and PSL levels 2 to 4.

The Series DHS Gate Valve also uses metal-to-metal seat seals and non-elastomeric stem packing. Its unique split-gate design reduces torque requirements and facilitates simultaneous testing of the upstream and downstream seats with the valve in the closed position. The DHS Gate Valve is available in API 6A material classes AA to HH, and PSL levels 2 to 4.

The Series DM Gate Valve utilizes metal-to-metal seat seals and elastomer stem packing, and is available in API 6A material classes AA to FF, and PSL levels 2 to 4.

The Series DL Gate Valve comes in bore sizes 2 1/16, 2 9/16, and 3 1/8 inches, with pressure ranges of 2,000 to 5,000 psi. This Gate Valve has Resilient/elastomer seat seals, and resilient stem packing, and is available in API 6A material classes AA and DD, PSL levels 1 and 2.

FIRE-SAFE GATE VALVES – MODELS 6FC AND 6FA FEATURES:

• Designs meet standard API Specifications
• Metal-to-metal seat-to-body and seat-to-gate seals
• Fire-resistant bonnet design
• The 6FA model is available for Dril-Quip split gate valves

The Series DH Gate Valve has metal-to-metal seat seals and non-elastomeric stem packing, and is available in API 6A material classes AA to HH, and PSL levels 2 to 4.

The Series DHS Gate Valve also uses metal-to-metal seat seals and non-elastomeric stem packing. Its unique split-gate design reduces torque requirements and facilitates simultaneous testing of the upstream and downstream seats with the valve in the closed position. The DHS Gate Valve is available in API 6A material classes AA to HH, and PSL levels 2 to 4.

The Series DM Gate Valve utilizes metal-to-metal seat seals and elastomer stem packing, and is available in API 6A material classes AA to FF, and PSL levels 2 to 4.

The Series DL Gate Valve comes in bore sizes 2 1/16, 2 9/16, and 3 1/8 inches, with pressure ranges of 2,000 to 5,000 psi. This Gate Valve has Resilient/elastomer seat seals, and resilient stem packing, and is available in API 6A material classes AA and DD, PSL levels 1 and 2.

FIRE-SAFE GATE VALVES – MODELS 6FC AND 6FA FEATURES:

• Designs meet standard API Specifications
• Metal-to-metal seat-to-body and seat-to-gate seals
• Fire-resistant bonnet design
• The 6FA model is available for Dril-Quip split gate valves

The Series DH Gate Valve has metal-to-metal seat seals and non-elastomeric stem packing, and is available in API 6A material classes AA to HH, and PSL levels 2 to 4.

The Series DHS Gate Valve also uses metal-to-metal seat seals and non-elastomeric stem packing. Its unique split-gate design reduces torque requirements and facilitates simultaneous testing of the upstream and downstream seats with the valve in the closed position. The DHS Gate Valve is available in API 6A material classes AA to HH, and PSL levels 2 to 4.

The Series DM Gate Valve utilizes metal-to-metal seat seals and elastomer stem packing, and is available in API 6A material classes AA to FF, and PSL levels 2 to 4.

The Series DL Gate Valve comes in bore sizes 2 1/16, 2 9/16, and 3 1/8 inches, with pressure ranges of 2,000 to 5,000 psi. This Gate Valve has Resilient/elastomer seat seals, and resilient stem packing, and is available in API 6A material classes AA and DD, PSL levels 1 and 2.

FIRE-SAFE GATE VALVES – MODELS 6FC AND 6FA FEATURES:

• Designs meet standard API Specifications
• Metal-to-metal seat-to-body and seat-to-gate seals
• Fire-resistant bonnet design
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STACKED VALVE PRODUCTION TREE

Dril-Quip offers surface production trees utilizing a stacked valve configuration for land or platform completion systems. The systems are designed and assembled to meet customer specifications. Both valves and components are manufactured to meet API specifications.

SOLID BLOCK VALVE PRODUCTION TREE

Dril-Quip’s solid block valves are popular for offshore platform completions where conserving space and minimizing leak paths are important. Dril-Quip block valves are manufactured to API specifications.

SYSTEM FEATURES

- Offered in a wide range of sizes, pressure ratings and trims
- Production tree-to-wellhead connection available with flange, clamp hub, Dril-Quip Quik-Clamp™ or Radial Bolt Connector
- Production system components offered with standard API connections or customer-specified connections
- Component selection consistent with well service specifications
Subsea completions on mudline-suspended wells are possible with DRIL-QUIP’s Mudline Conversion System. This system of adapters provides an efficient way to convert a mudline suspension system for subsea completion.

**System Features**

- Subsea tubing hanger installs through BOP stack and riser for safe rig operations
- Metal-to-metal sealing profile optional in tubing hanger ID
- Diver-friendly make-up adapter ring on tubing head provides centralization, maximum height adjustment and rigid support
- Tubing head provides internal lockdown profile for annulus metal-to-metal sealing and positive lockdown of tubing hanger
- Field-proven tubing hanger systems available

**Typical tie-back conversion; alternative casing programs and configurations available upon request**
Worldwide Sales & Service