

SECURE DRILLING® SERVICES

SAFESHIELD® ROTATING CONTROL DEVICES

Enabling closed-loop drilling
in all land environments using
reliable RCDs

■ DRILLING & FORMATION EVALUATION

WELL CONSTRUCTION
COMPLETION & STIMULATION
PRODUCTION



Weatherford®

DRILL SAFER, FASTER, AND MORE COST EFFECTIVELY.

Our field-proven SafeShield® rotating control devices set the stage for closed-loop drilling.

Extreme drilling is fast becoming the norm. Pore-pressure and fracture-gradient windows can be razor thin. The risk of pressure-related hazards—kicks, losses, and influxes—is incredibly high. Drilling these wells with century-old technology is difficult at best and unsafe at worst.

The critical component of any closed-loop drilling (CLD) system—and the first line of defense for your wellbore—is the rotating control device (RCD). The simple addition of an RCD to the standard open-fluid-return system on a rig creates a closed and pressurized drilling system, which delivers key environmental, cost, and safety benefits. As the global leader of CLD technologies and services, Weatherford has developed a broad range of RCDs for virtually any onshore application.

STRUCTURED FOR CRADLE-TO-GRAVE SERVICE

Our SafeShield RCD support and maintenance services are always nearby. No matter where you operate around the globe, we are ready to help you get the most from your RCD.

LARGE FOOTPRINT AND CLOSE PROXIMITY

We offer the world's most extensive RCD distribution network, which includes widespread facilities for pressure control and Secure Drilling* services.

THOROUGH TECHNICAL TRAINING

Before you begin your project, our qualified technicians train your rig crew at a designated offsite or on-site location. After the training, we're always available for timely technical assistance.

ACCESSIBLE AFTERMARKET MAINTENANCE

Support is always available from our global network of facilities and technical specialists—anytime during the life of the equipment.

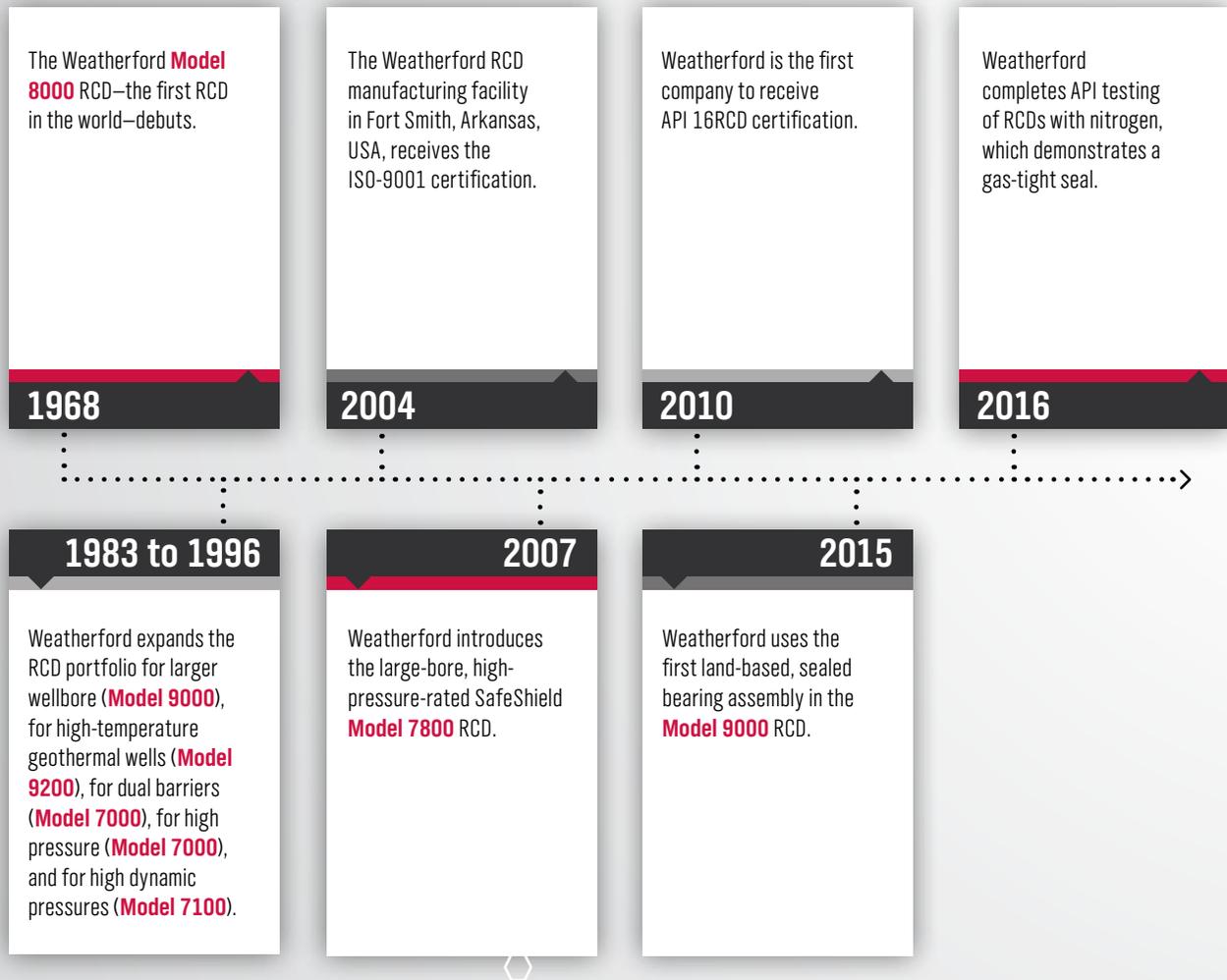


Weatherford

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WEATHERFORD RCD MILESTONES

Since 1968, we have operated at the forefront of RCD development and have achieved many industry milestones by continually evolving our technology to keep pace with new drilling complexities.



SIGNIFICANT INDUSTRY FIRSTS: 2004 to 2014

Leveraging continuous engineering development towards marine applications to further advance our land RCD portfolio.



First RCD designed for marine environments



First RCD to drill a deepwater well



First managed-pressure-drilling (MPD) job in the Gulf of Mexico



First RCD integrated into an MPD riser joint and placed below the tension ring



First fully integrated MPD riser assembly below the rig termination joint



First subsea RCD above the lower marine riser package

ADVANCING RCD ENGINEERING AND RELIABILITY

5,000-PSI

(34.5-MPa) static pressure ratings

LONGEST-LASTING

seal life in the industry

NITROGEN TESTED

to API 16 RCD standards for a gas-tight seal

IMPROVED

differential pressure sensors for enhanced pressure monitoring

STATE-OF-THE-ART

latching system keeps bearing assembly in place to safeguard against variances in wellbore pressure

THE SAFESHIELD RCD PORTFOLIO

We provide SafeShield RCDs for virtually any onshore application. We exercise 100-percent control over our RCD technologies—from engineering to manufacturing and inspection. We have tested and qualified our entire SafeShield RCD portfolio to the API16 RCD standard.



MODEL 7000

Static pressure:
3,000 psi (20.7 MPa)
Dynamic pressure:
1,500 psi (10.3 MPa)
Dual element



MODEL IP 1000

Static pressure:
1,500 psi (10.3 MPa)
Dynamic pressure:
1,000 psi (6.9 MPa)
Single element



MODEL 7100

Static pressure:
5,000 psi (34.5 MPa)
Dynamic pressure:
2,500 psi (17.2 MPa)
Dual element

BUILT TO LAST THE ENTIRE DRILLING PROGRAM

SafeShield RCD bearing, latch assembly and sealing elements provide maintenance-free service that lasts longer than the industry average drilling program.

Bearing Assembly

The bearing assembly enables deployment of the RCD through all rotary tables.





MODEL 7800

Static pressure:
5,000 psi (34.5 MPa)
Dynamic pressure:
2,200 psi (10.3 MPa)
Dual element



MODEL 9000

Static pressure:
500 psi (3.5 MPa)
Dynamic pressure:
500 psi (3.5 MPa)
Single element

SafeShield RCD Accessories

Sealed bearing and hydraulic latch systems in the Model 9000 eliminate the need for an external oil lubricator and the need for personnel to connect bearing lubrication lines.

Snubbing and logging adaptors replace an RCD bearing assembly during snubbing and wireline logging operations, which reduces shut-in time for the blowout preventer (BOP).

Casing sealing elements divert drilling fluid, cement, and cuttings while running casing.

Sealing Elements

The single- or dual-barrier elastomeric sealing elements in the bearing assembly rotate with the drillpipe, maintain a tight seal, and contain returning fluids in the annulus as the drillpipe passes through the RCD. These features enable you to safely mitigate common drilling hazards.



Latch Assembly

The latch assembly in the interior profile of the body secures and releases the bearing and sealing element assembly. A hydraulic locking mechanism provides a means for remotely locking and unlocking the bearing assembly and such accessories as a protective sleeve, logging adapter, and snubbing adapter. This mechanism enhances safety by eliminating the need for personnel beneath the rig floor to loosen and tighten the locking mechanism.



THE SAFESHIELD RCD ADVANTAGE

When you integrate a SafeShield RCD into your drilling system, you create a closed-loop drilling environment that diverts mud and cuttings away from the drill floor. Our technology augments primary well control on your rig by introducing better response capabilities.

SafeShield RCDs are a critical component to multiple closed-loop drilling applications, including MPD air, flow, and underbalanced drilling. In any application, our RCDs reduce nonproductive time and enhance health, safety, and environmental results.

Improve Efficiency

- SafeShield RCDs enable CLD techniques in challenging onshore formations, which means drilling to total depth takes less time and requires fewer trips.
- RCDs safely contain and divert fluids and gas kicks to a return system, where potential problems are detected and promptly solved. This prevents the well-control incidents and nonproductive time that can derail your drilling schedule.
- The gas-tight sealing element of SafeShield RCDs wipes drillpipe clean while it is tripped out of the well. This eliminates unnecessary steps in the drilling process for cleaning pipe and minimizes the potential for fluid spillage around the wellhead.



Reduce Costs and Optimize Return on Investment

- SafeShield RCDs help you manage fluid and gas influxes before they become problems. The cost of incorporating a SafeShield RCD into your rig is insignificant compared to the consequences of not having one.
- Faster, incident-free drilling means lower costs.
- RCDs enable the use of lower mud weights in high-pressure environments, which minimizes mud volume and costs.
- Reservoirs that would otherwise be impossible to access are open for production. With an RCD, your drilling prospects are much less limited.

Enhance Safety

- As an effective means of managing drilling hazards, SafeShield RCDs provide a gas-tight seal that protects your people and property.
- RCDs divert toxic gas, including hydrogen sulfide, away from the rig floor to protect personnel.
- RCDs prevent gas influxes from ascending above the blowout preventer and entering the riser—a serious safety hazard.
- The capability of the SafeShield RCD bearing assembly to hydraulically latch onto the RCD body reduces manual handling of equipment and removes personnel from the drill-floor area.

REAL RESULTS

MONTNEY FORMATION, CANADA

Model 9000 RCD provides
MPD-ready services,

**MITIGATES
H₂S ISSUES,**
enables cost savings through
**REDUCED
CIRCULATION
TIMES**

CENTRAL TEXAS, USA

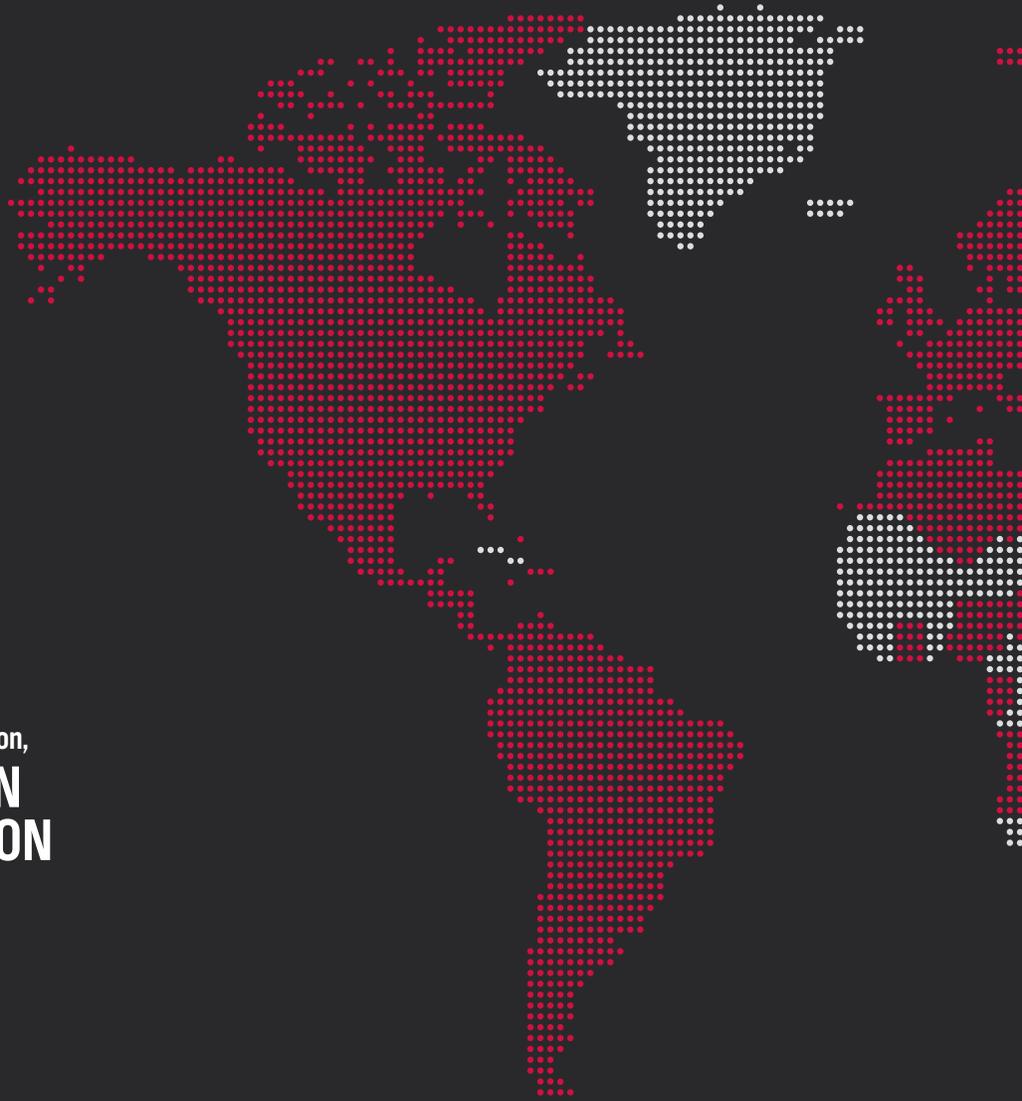
Model 7100 RCD

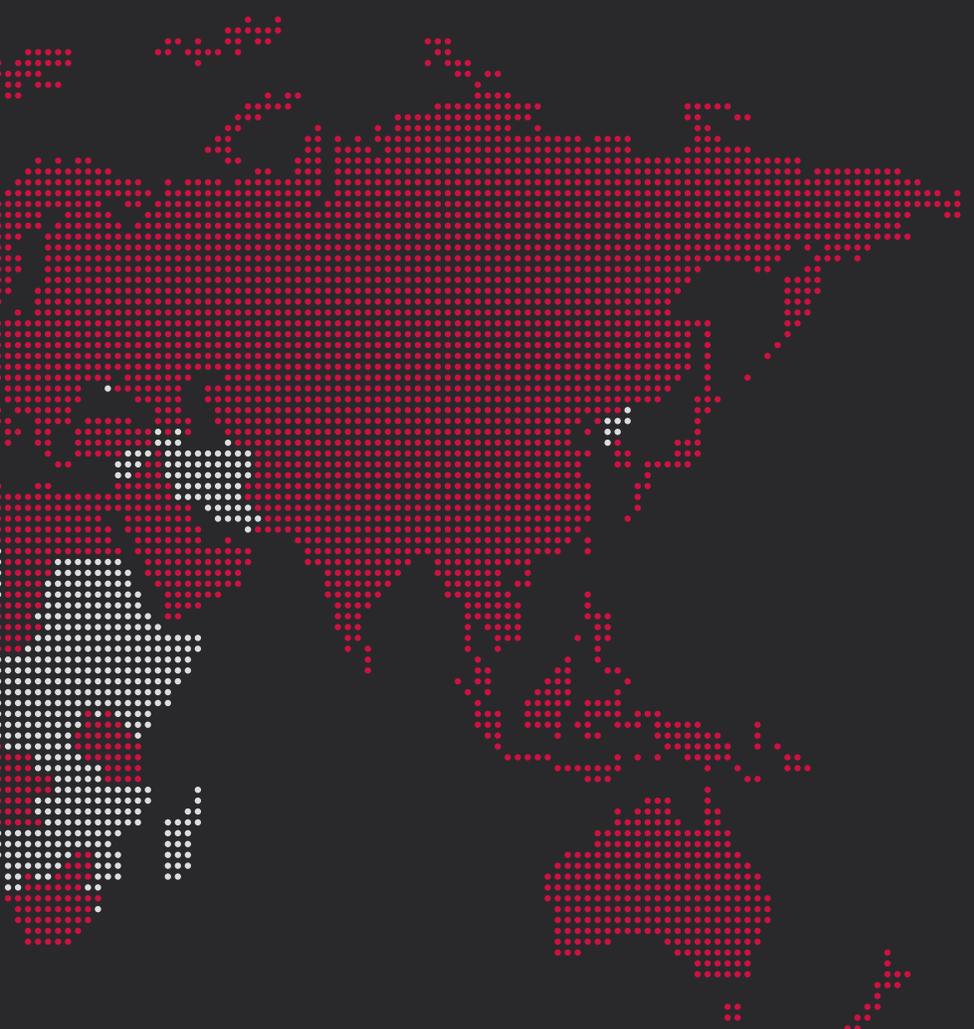
**SAVES \$500,000
IN MUD LOSSES,**
drills through highly unstable formation,
**ENABLES \$1 MILLION
IN EARLY PRODUCTION**

CENTRAL MEXICO

Model 9000 RCD

**RESOLVES MUD
RETURN ISSUES**
by maintaining optimal flow,
**INCREASES DRILLING
EFFICIENCY**





KARACHAGANAK FIELD, KAZAKHSTAN

Model 7800 RCD

**MITIGATES 7
LOSS ZONES,**
eliminates the need for liner,
**SAVES RIG AND
EQUIPMENT COSTS**

WEST JAVA, INDONESIA

Model 7800 RCD

**SAFELY DIVERTS
GAS MIGRATION**
in a fractured limestone
carbonate formation,
**ENABLES FLOATING
MUD CAP DRILLING**

NEUQUÉN BASIN, ARGENTINA

Model 7100 RCD

**REDUCES
OPERATIONAL
TIME BY 10 DAYS**
during drilling and casing running,
**REDUCES RISK IN
HIGH-PRESSURE
FORMATION**



Weatherford SafeShield RCDs enable closed-loop drilling in all onshore drilling environments, including highly complex unconventional applications. For more information on our land RCD series technologies, please visit weatherford.com or contact RCDsupport@weatherford.com



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