PROMORE provides *Your Eyes to the Reservoir™* through innovative HPHT downhole sensor technology.

Since 1994, PROMORE has been providing the Oil and Gas Industry with reliable, permanent downhole monitoring solutions.

Our sophisticated surface electronics (MOREVision) and proprietary ERD™ (Electrical Resonating Diaphragm) sensor technology eliminate the need for downhole electronics. The absence of downhole electronics makes the ERD™ sensor unequalled in reliability in HPHT operating environments.

### ERD™ Version ‘C’ Sensor Features
- No downhole electronics
- Industry leading reliability of 97%
- Maximum temperature rating of 300 Celsius, 572 Fahrenheit
- Maximum pressure rating to 172 MPa, 25,000 psi
- Pressure accuracy of 0.03% FS
- Resolution of 0.00005% FS
- Maximum depth rating of 30,000 feet
- Superior shock (500G’s) and vibration resistance (35G’s at 10 to 70 Hz)
- Slim hole sensor housing; 1.0” OD

### MOREVision Data Acquisition System Features
- “Automated Technician” feature constantly monitors system performance and sensor health
- Dynamic sensor excitation feature, for automatic adjustment for conductor length, wire gauge and temperature
- System loop resistance integrity detection
- One second sample rate
- Onboard memory storage; up to 256 MB
- Multiple communication ports
- Industry standard communication protocols
- IWIS (Intelligent Well Interface Standardization) compliant for subsea applications

### ERD™ Track Record

#### Tubing Conveyed Reliability 97%
- Number of Sensors: 2,036
- Deepest: 21,897 feet
- Hottest: 530 F
- Highest Pressure: 20,000 psi

#### Casing Conveyed Reliability 97%
- Number of Sensors: 815
- Deepest: 13,957 feet
- Hottest: 490 F
- Highest Pressure: 17,000 psi
MORE™ System (Tubing Conveyed)

The ERD™ sensor, accompanied by a custom designed tubing mandrel, is incorporated into the completion string and run into the wellbore—inclusive of cable and protectors. The cable exits the wellhead via a pressure barrier and connects to the MOREVision data acquisition unit. Sensors in this configuration are utilized for reservoir monitoring and artificial lift monitoring and optimization.

MORE® System (Casing Conveyed)

Similar in design to the MORE™, the MORE® incorporates the ERD™ sensor and custom designed casing mandrel into the production casing string, and is cemented in place.

Communication to the wellbore (and reservoir pressure) is provided through an internal pressure port in the casing mandrel.

Once in place, the MORE® system begins transmitting vital pressure and temperature throughout all stages in the life of the well.

Continuous real-time data is available during cementing, underbalanced drilling, perforating, hydraulic fracture and production operations. The MORE® system is extremely useful for optimizing hydraulic fracture models. Real-time bottomhole pressure data eliminates friction-related errors associated with all fracture models. Having bottomhole data tied into the frac van allows for making decisions on-the-fly.

Bottomhole pressure and temperature is available for post-treatment flow back analysis and history matching; which is useful for fracture geometry determination.

The MORE® system provides information for reservoir analysis and production optimization—even during workover operations, that take most other monitoring systems out of service. Unscheduled shut-ins provide excellent opportunities for pressure build-up tests.

MORE®EX System (Casing Conveyed)

For reservoir pressure and temperature monitoring in observation wells, the MORE®EX system combines the Owen Oil Tools RTG (retrievable tubing gun) perforating assembly in conjunction with the MORE® system. The result is added assurance of ERD™ pressure sensor communication to the reservoir.

Typical applications for the MORE®EX system include single zone and multi-zone observation wells for: thermal EOR, water and CO₂ floods and tight gas.

CT-MORE System (Coil Tubing Conveyed)

Patented technology for deployment of multi-point pressure and temperature measurements along a horizontal well.

The clear advantage of this monitoring system design is that it offers unprecedented protection of the instrumentation in a completely DRY operating environment—inside the sealed coil tubing.

The CT-MORE system is a custom designed, built-for-purpose monitoring system. Its design flexibility allows for retrieval and modifications before re-deployment in another horizontal well.

This monitoring system is typically utilized in thermal EOR applications, providing downhole information to assist in determining downhole steam quality, steam chamber performance, pressure drawdown along the lateral and ultimate reserve recovery.

ERD™ sensors can be installed at the heel, mid-point and toe of the well, along with PROMORE Oilwell thermocouples at numerous measurement locations. Design configurations can also incorporate capillary tubes for fiber optic DTS (distributed temperature sensing) systems.

MORE®EX System (Casing Conveyed)

For more information, please visit our website at: www.promore.com