

Telemetry Acquisition System (TAS®)



Real Time Diagnostics, Inc.

A ProTechnics Company

Real-Time Well Data by Telemetry

Telemetry system sends pressure/temperature data real-time, all the time

RTD's Telemetry Acquisition System (TAS®) samples downhole temperature and pressure data in real time and transmits that data to the surface by using our patented electromagnetic telemetry system. A receiver at the surface captures and interprets the intelligence; then, it records and displays temperature and pressure data in a constantly updated form. Pressure and temperature values are also stored downhole at user-programmable intervals. With TAS, temperature/pressure data are available immediately, allowing the operator to make informed decisions without incurring the expense or time associated with traditional gauge operation.

Figure 1 illustrates the use of TAS during a hydraulic fracture treatment. Temperature and pressure data are sent real-time to the surface; the frac supervisor uses this data to make real-time decisions to optimize the fracture treatment.

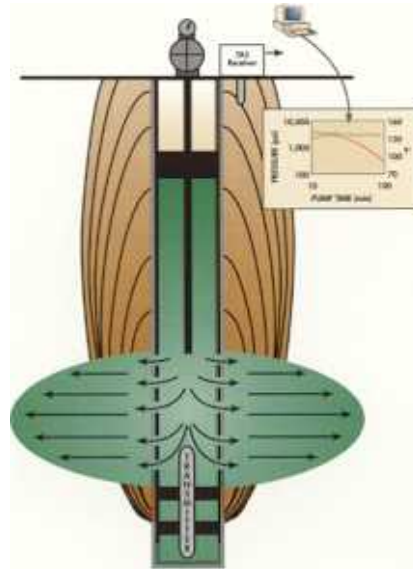


Figure 1—The TAS sensor detects temperature and pressure of hydraulic fracture fluid and sends data to the surface in the form of electromagnetic waves.

Figure 2 shows real-time data display results of a drillstem test conducted with TAS.

The rig time normally required during drillstem testing was reduced through the use of TAS, which eliminates rig waiting time while the test tools and data are retrieved from the borehole.

Figure 3 shows how the use of TAS can result in more accurate fracture pressure information than can normally be calculated. In this example, calculated value was off by 2,000 psi from the actual RTD-measured pressure.

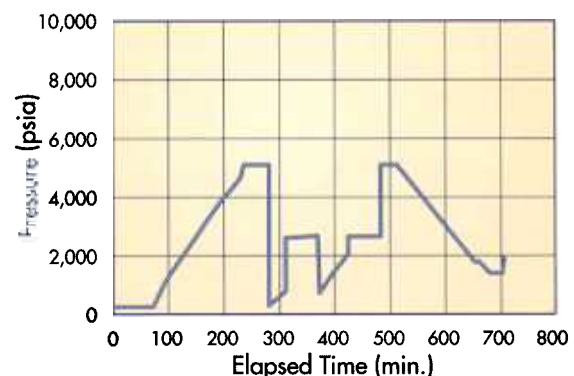


Figure 2—Output of a TAS drillstem test taken without a trip out of the hole. The data plotted on this chart was sampled at 13,200 ft.

Capabilities

The TAS pressure/temperature tool provides the capabilities listed below:

- wireless, real-time telemetry
- transducer selection of 5,000, 6,000, and 10,000 psi
real-time pressure and temperature values stored in non-volatile memory
- set and retrieved on slickline, wireline, or tubing
- used in tubing or casing
- acquisition initiated by programmable pressure switch or pre-programmed start time.

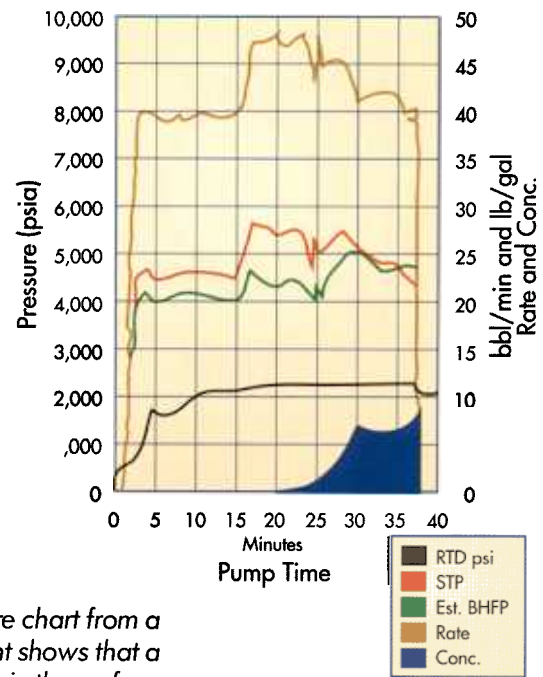


Figure 3—This pressure chart from a foam fracture treatment shows that a 2,000-psi error was made in the surface calculation of bottomhole pressure.

Applications

TAS capabilities can be applied in the situations listed below:

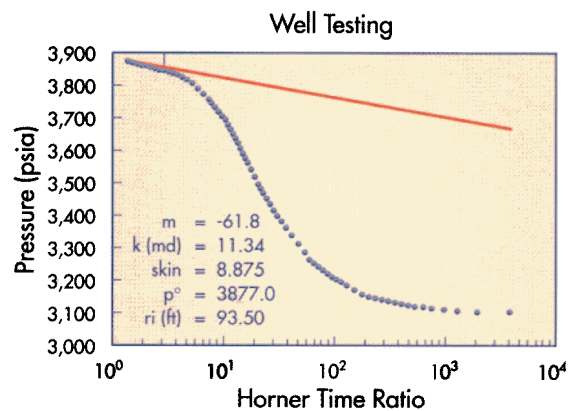
- stimulation treatments
- injection profiling
drillstem testing
reservoir analysis and monitoring
- well testing/pressure buildup
- directional drilling orientation
- gas storage monitoring

Figure 4—Various well-testing applications are now possible with wireless real-time updates of bottomhole pressure and temperature during well shut-in tests, pressure buildup tests, pressure drawdown tests and even flow tests while the well is pumping.

Benefits

Several benefits accrue from the use of RTD's Telemetry Acquisition System:

- excellent real-time bottomhole data
- capability of real-time changes to job design
rig-time savings
- no need to kill well for measurement
- real-time assurance of packer seal



Technical Specifications

Pressure Transducer - Strain Gauge

Range	5,000 psi	6,000 psi*	10,000 psi
Accuracy	±0.15% F.S.	±0.03% F.S.	±0.15% F.S.
Standard			
Resolution	±2 psi	±0.8 psi	±4 psi
High			
Resolution	N/A	±0.02 psi	N/A
Stability	±0.03 @ 300°F for 14 days		

Temperature Probe

Range	0°F to 300°F
Accuracy	±0.54°F
Resolution	±1°F

*DST and well testing only

TAS Mechanical Specifications

Electronics Sonde Length - 10.8 ft
High-Resolution Sonde Length - 14.3 ft
OD - 1 1/2 in.
Maximum pressure - 17,000 psi

Temperature Rating

Standard - 120°F, Improved - 220°F, High - 300°F
Service Environment - Acid, CO₂, H₂S
Battery life - Programmable, depending on update frequency

Surface System

PC - Portable 486DX266
Interface - RS232, 2400, n, 8, 1