

# Xaminer® Hostile Formation Tester (XHT) Service

## OBTAIN FORMATION PRESSURES AND FLUID SAMPLES IN TOUGH ENVIRONMENTS

### HOSTILE FORMATION TESTER HISTORY

Obtaining formation pressure measurements and fluid samples in a hostile, high-pressure and/or high-temperature environment is very challenging, but achievable. Collecting accurate pressure data and efficient PVT-quality fluid samples in an efficient manner is an ultimate objective. In the past, Halliburton developed the Hostile Sequential Formation Tester (HSFT™) tool, which enabled pressure measurements and fluid sampling at 400°F (200°C) and 25,000 psi with efficiency not previously seen in the industry and well above the industry standard. Followed by the release of the second-generation Hostile Sequential Formation Tester (HSFT-II™) tool, which enhanced capabilities in more drastic hostile conditions to obtain pressure measurements and fluid samples at 450°F (232°C) and 30,000 psi with the incorporation of dual probes and oval pad options

### XAMINER® HOSTILE FORMATION TESTER (XHT) AND PVT SAMPLING

Building on previous successes and reliability of the HSFT and HSFT-II platforms, which have completed thousands of efficient operations, the XHT formation tester was designed and developed to enable enhanced pressure transients and improved PVT sampling in hostile environments of up to 450°F (232°C) and 30,000 psi.

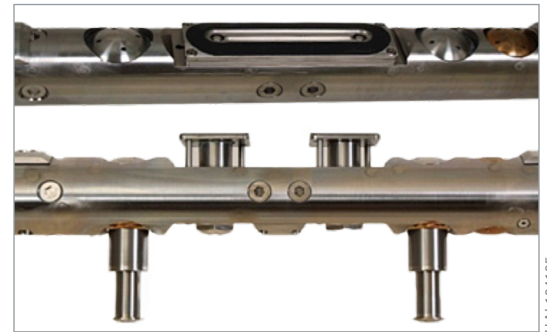
### ADVANTAGES OF XHT FORMATION TESTER

The XHT formation tester acquires formation pressures with variable pretest volumes and drawdown rates enabling the user to take an unlimited number of tests with full control of each individual test. The XHT tool allows the flow of fluids from the reservoir using a superiorly designed flow control pump, with pumping rates ranging from 0.5 to 25 cc/sec and pump pressure differential of up to 10,000 psi. The high-horsepower pump allows the formation fluid to be pumped for extended periods of time enabling faster cleanup and PVT sampling into the 450-cc PVT sample chambers, which can be configured for either zero-shock standard PVT and N<sub>2</sub> compensated.

This new XHT formation tester tool is designed with two options:

- » Dual Probe: This may operate simultaneously or individually, allowing fluid intake redundancy and pressure anisotropy detection.
- » Oval Pad: Great for laminated low-permeability reservoirs with a greater fluid flow area for both pressure measurements and faster fluid sampling.

At our Material Test Laboratory, the XHT formation tester tool has passed extensive testing and qualification benchmarks to meet the challenging operations environments, including pumping for extended periods of time at pressure and temperature of up to 450°F (232°C) and 30,000 psi.



The Xaminer® Hostile Formation Tester (XHT) service builds upon the success and reliability of previous Halliburton Hostile Sequential Formation Tester platforms and has been extensively tested to meet the rigorous demands of hostile environments.



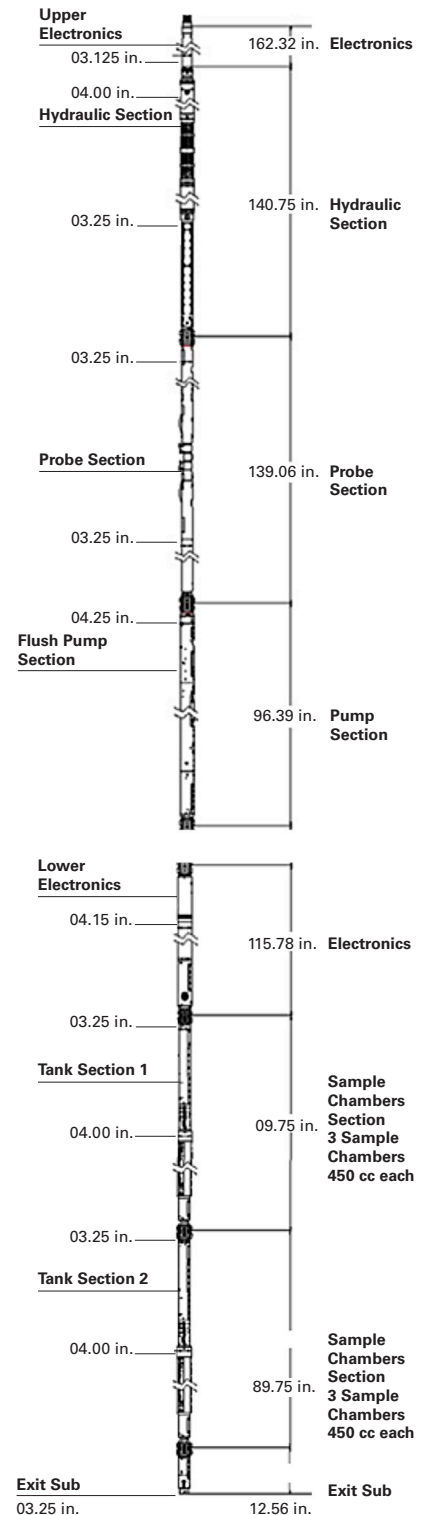
The XHT formation tester can obtain pressure measurements and fluid samples at hostile reservoir conditions of up to 450°F (232°C) and 30,000 psi.

### XHT MEASUREMENTS

- » Formation pressure using quartz gauge and variable volume pretest chambers
- » Anisotropy using the dual probe measuring interference between the probes spaced 6 inches apart
- » Fluid bubblepoint and compressibility at any stage of the pumping process enables fluid cleanup to be monitored and such important fluid property to be measured
- » Formation fluid temperature measured as the fluid flows into the tool probe section

## Xaminer® Hostile Formation Tester (XHT) Specifications

Dimensions and Ratings	
Maximum Temperature	450°F (232°C)
Maximum OD	4¼ in. at Pump Tool OD ¾ to 4¼ in.
Maximum Pressure	30,000 psi (207 Mpa)
Weight	1,458.7 lb (661.6 kg) Variable PT 1,943.3 lb (881.4 kg) 6 PVT Samples
Length (Makeup)	56.4 ft (17.2 m) Variable PT 71.37 ft (21.75 m) 6 PVT Samples
Min/Max Hole Size	5¼ to 12¼ in.
Borehole Conditions	
Borehole Fluids	Salt ■ Fresh ■ Oil ■ Air ■
Recommended Maximum Logging Speed	Stationary
Tool Positioning	Centralized □ Eccentralized ■
Probe Section	
Probes	2
Probe Vertical Spacing	6 in.
Snorkel Cleaning	Each Set
Probe Operation Options	Single, Dual, Oval
Diameter at Dual Probe	3.62 in.
Pretest Fixed	2 x 12 cc @ 10,000 psi, 2 x 7 cc @ 20,000 psi
	Precision ± 0.02% of Full Scale
Quartz Pressure Gauges	Resolution ± 0.01 psi (0.07 kps)
	Accuracy ± 1 psi (6.89 kps)
Versatile Pretest Section	
Variable Pretest Volume	0.5 to 273 cc³ (10,000) 1 to 681 cc³ (4,000)
Variable Pretest Rate	0.5 to 10 cc/sec (10,000) 1 to 25 cc/sec (4,000) @ 500 psi
Pretest per Station Number of Pretests	Unlimited
Pretest Control	Surface Control
Pump Section	
Pump Rate @ 500-psi Differential Displacement	0.5 to 10 cc/sec (10,000) 1 to 25 cc/sec (4,000) Variable
Pump Control	Surface Control
Pump Pressure Monitored	Inlet and Outlet Pressure
Hydraulic Oil Cooling	Yes
Sample Chambers Section	
Volume	450 cc
Chamber Type	Standard PVT and N <sub>2</sub> Compensated
Chambers per Section	3
Maximum Number of Chamber Sections	3
Zero Shock	Yes
Overpressure	Max Pump Differential (Limit 34,000 psi)
Fluid Identification	
Bubblepoint	Pressure vs. Volume Inflection
Fluid Compressibility	1/psi
Fluid Temperature Sensor	Monitoring Changes in Temperature while Pumping



For more information, contact your local Halliburton representative or visit us on the web at [www.halliburton.com](http://www.halliburton.com)

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