

CONTINUOUS CORING

Continuous wireline retrievable coring is the answer for long interval coring programs. Foothills Resource Services has been completing projects with up to 2000 meters of core per well with wireline retrievable coring systems since 1999. To date thousands of wells have been successfully cored using the Foothills system.

Continuous coring brings efficiency to your coring program by eliminating the need to trip pipe between cores. Core samples are cut and then retrieved by using a wireline with overshot to bring samples to the surface, a new inner barrel is dropped and coring resumes while the previous run is processed. In addition to the advantage of speed, wireline retrievable core reduces pipe handling and enhances safety.



Equipment

As the formations change so do the requirements of the coring program and so does the equipment to successfully complete them. Foothills Resource Services offers a variety of fully customizable components to match the needs of each program. All of the equipment is designed in house and manufactured to API specs under the supervision of Foothills.

All core pipe is fitted with custom flush ID tool joints and threads. There are no internal upsets to ensure smooth travel of the inner tube from top to bottom. The tool joints use an elevator ring instead of wrench slots so the string is adaptable to a great variety of rigs.

Outer barrels are in 3 meter sections which can all be screwed together for continuous cores up to 18 meters in a single run depending on conditions.

All systems are fully compatible with various forms of surface well control and have been designed to handle LCM.

Mechanical latching provides the ability to core with air, or little to no fluid in sensitive or severely unconsolidated lithology.

Standard on all systems

- Heavy Duty Outer Core Barrel Assembly in 3 meter sections
- Core pipe
- Core collars
- Inner tube assembly
- Mechanical Latch
- Lithology matched catcher and bit configuration
- Lithology matched stabilizers

Inner Tubes

- Conventional Steel
- Aluminum Inner Tube
- Fluted Aluminum
- Thin walled aluminum sleeves
- PVC Sleeve
- Fiberglass Inner Tube
- Fiberglass Sleeved
- Pressure Venting Available on request

STANDARD SYSTEM SELECTIONS

Application	System Configuration	Well Bore Diameters		Core Diameters	
Slim Hole	5" (127mm) outer barrel	6 1/4"	159mm	2 3/4", 3", 3 1/2"	70mm, 76mm, 89mm
Large Hole	6 1/4" (159mm) outer barrel	7 7/8"	200mm	3 1/2", 4"	89mm, 101 mm
	6 3/4" (171mm) outer barrel	8 1/2"	216mm		
		8 3/4"	222mm		
Deep Hole	6 3/4" (171mm) High Torque	7 7/8"	200mm	3 1/2", 4"	89mm, 101 mm
		8 1/2"	216mm		
		8 3/4"	222mm		
Marine	6 3/4" (171mm) High Torque	7 7/8"	200mm	3 1/2", 4"	89mm, 101 mm
		8 1/2"	216mm		
		8 3/4"	222mm		
Geothermal Mineral	5" (127mm) High Heat	6 1/4"	159mm	3", 3 1/2"	76mm, 89mm
	Q series	6 1/4"	159mm	3"	76mm



Catchers

Catcher systems are recognized as an integral part of capturing full and quality samples. Foothills has different configurations of these basic designs that are matched to the lithology anticipated.

- Split Ring
- Basket
- Collet
- Slip and Dog
- Mechanical Finger

CATCHERS BY LITHOLOGY

	Very Soft	Soft	Medium Soft	Medium Hard	Hard	Very Hard
Split Ring	X	X	X	X	X	X
Basket	X	X	X			
Collet				X	X	X
Slip and Dog				X	X	X
Finger	X	X	X			
Scribe			X	X	X	X

Drill Ahead System

- Available for all configurations
- PDC drill plugs are jetted to improve bit cleaning and cooling
- Higher ROP than comparable systems
- PDC drill plugs are engineered to line up with blades and lock in place
- Compatible with LCM
- Capable of air drilling



Core Bits

Foothills exclusive bit designs are based on decades of coring experience. The low invasion styles minimize the washing and contamination of a core by diverting the fluids away from the core from the moment of cutting.

For most formations a PDC core head is used to gain the highest ROP's possible. In very hard formations Foothills utilizes natural surface set and impregnated diamond core bits. The unique design allows for maximum core recovery and ROP. Only the highest quality synthetic or natural diamonds are used and they are distributed evenly maximizing the concentration of diamonds throughout the core head.

	Friable / Highly Unconsolidated	Very Soft	Soft	Medium Soft	Medium Hard	Hard	Very Hard
WC-46					X	X	
WC-48						X	X
611PDC	X	X	X	X	X		
613PDC	X		X	X	X	X	
619PDC				X	X	X	
808PDC	X	X	X	X			
811PDC	X		X	X	X		

Recovery

FRS can provide core recovery shacks that enable recovery technicians and site geologists to recover core and inspect it in a well lit, climate controlled environment. These shacks can be skid mounted for easy transport and they can also include a custom designed winch. This allows FRS to offer a complete wireline coring service, with winch and recovery shack, if required. Configurations can also vary in order to provide the best and most economical solution.

Recovery shacks are designed to be plugged into the rig's electrical system for efficiency or to be fully stand alone units with an incorporated generator.

Winches

- 2500 Meter Capable
- Fully equipped with brakes, pressure control, stuffing box, depth counter and weight indicator
- Custom designed electric over hydraulic
- Spooled with 4000M of braided, non rotating cable

Service

Foothills' Coring Supervisors are an integral piece of any coring project. Foothills employs Coring Supervisors with knowledge gathered around the world, many of whom have over 30 years coring experience. With such experience, Foothills can deliver outstanding results with confidence, maximizing safety and value.