

Comparison of Claim 1 in the '013 Patent family

Grandparent Patent	Parent Patent	'013 Patent	Child Patent
1. A core barrel head assembly, comprising: an elongate tube body defining a first interior cavity and a selectively sealed interior cavity spaced distally from the first interior cavity, wherein the elongate tube body has a threaded proximal end for coupling to a wire line retrieval portion of a head assembly, wherein the first interior cavity extends distally from the threaded proximal end to a base portion of the elongate tube body, and wherein the elongate tube body further defines a port positioned proximate the base portion and extending from the exterior surface of the elongate tube body into fluid communication with the first interior cavity; a plurality of windows defined in the elongate tube body that extend from the exterior surface of the elongate tube body into optical communication with the sealed interior cavity proximate a closed proximal end of the sealed interior cavity; at least one electronic instrument that is configured to obtain orientation data mounted therein the sealed interior cavity, wherein the at least	1. A core barrel head assembly having an exterior surface and comprising: a first interior cavity; a selectively sealed interior cavity spaced distally from the first interior cavity and having a closed proximal end; a threaded proximal end portion for coupling to a wire line retrieval portion of a head assembly; a base portion, wherein the first interior cavity extends distally from the threaded proximal end portion to the base portion; a port positioned proximate the base portion and extending from the exterior surface into fluid communication with the first interior cavity; a window that extends from the exterior surface into optical communication with the sealed interior cavity proximate the closed proximal end of the sealed interior cavity; at least one electronic instrument that is configured to obtain orientation	1. A core barrel head assembly having an exterior surface and comprising: a first interior cavity; a selectively sealed interior cavity spaced distally from the first interior cavity and having a closed proximal end; a threaded proximal end portion for coupling to a wire line retrieval portion of a head assembly; a base portion, wherein the first interior cavity extends distally from the threaded proximal end portion to the base portion; a window that extends from the exterior surface into optical communication with the sealed interior cavity proximate the closed proximal end of the sealed interior cavity; at least one electronic instrument that is configured to obtain core orientation data, wherein the at least one electronic instrument comprises at least one digital and/or electro-mechanical sensor in a core orientation data recording tool; and	1. A core barrel head assembly having an exterior surface and comprising: a first interior cavity; a sealed interior cavity spaced distally from the first interior cavity and having a closed proximal end; a threaded proximal end portion for coupling to a wire line retrieval portion of a head assembly, wherein the first interior cavity extends distally from the threaded proximal end portion; a threaded distal end portion, wherein the sealed interior cavity extends distally to the threaded distal end portion of the core barrel head assembly, wherein the threaded distal end portion defines an opening; a seal coupler that is configured to be sealingly received in the opening of the threaded distal end portion; a window that extends from the exterior surface into optical communication with the sealed interior cavity; at least one electronic instrument that is configured to obtain core

one electronic instrument comprises at least one digital and/or electro-mechanical sensors in a core orientation data recording tool that can be configured to determine a core orientation of a sample core just prior to or after the core break; a power source in operable communication with the at least one electronic instrument, wherein the power source is mounted therein the interior cavity; and communication means to receive and/or transmit core orientation data, wherein the sealed interior cavity is sized and shaped to hermetically enclose the at least one electronic instrument and the power source	data mounted therein the sealed interior cavity, wherein the at least one electronic instrument comprises at least one digital and/or electro-mechanical sensor in a core orientation data recording tool that can be configured to determine a core orientation of a sample core just prior to or after a core break; a power source in operable communication with the at least one electronic instrument, wherein the power source is mounted therein the interior cavity; and a transmitter configured to transmit core orientation data, wherein the sealed interior cavity is sized and shaped to hermetically enclose the at least one electronic instrument and the power source.	a transmitter configured to transmit core orientation data, wherein the sealed interior cavity is sized and shaped to enclose the at least one electronic instrument.	orientation data, wherein the at least one electronic instrument comprises at least one digital and/or electro-mechanical sensor in a core orientation data recording tool; a check valve assembly that is configured to drive the seal coupler into a sealed position within the opening of the threaded distal end portion, wherein the check valve assembly is configured to provide fluid control for wire line operation; and a transmitter configured to transmit core orientation data, wherein the sealed interior cavity is sized and shaped to enclose the at least one electronic instrument.
---	---	---	--