

Abstract

**SURFACE COMMUNICATION APPARATUS AND METHOD
FOR USE WITH DRILL STRING TELEMETRY**

A system for bidirectional communication between the downhole equipment and a processor subsystem at the earth's surface, including: a section of wired drill pipes comprising at least the upper portion of a string of drill pipes, and forming at least a portion of a bidirectional communication link between downhole equipment and the top of the string of drill pipes; a drive string portion of the drill string, mechanically coupleable with the topmost wired drill pipe; a drive mechanism mechanically coupleable with said drive string portion, for rotating the drill string; a first wireless transceiver subsystem mounted on the drive string portion of the drill string, for rotation in conjunction with the drill string; a cable, electrically coupled between the top joint of the topmost wired drill pipe and the first transceiver subsystem; and a second wireless transceiver subsystem coupled with the uphole processor subsystem, the second wireless transceiver subsystem communicating bidirectionally with the first wireless transceiver subsystem.

Figure 1