

ABSTRACT

PORTABLE DRILL STRING COMPENSATOR

A closed system drill string compensator having a hydraulic fluid accumulator, at least one air pressure vessel, and a piston and a piston rod slidably engaged within a cylinder. The drill string compensator provides tensioning force for supporting a drill string and permits the drilling vessel to remain connected to the drill string during ocean level changes caused by wave action or ocean heave. In one embodiment, the accumulator surrounds the cylinder and at least one air pressure vessel is radially disposed around the accumulator and the cylinder. In another embodiment, the accumulator surrounds the cylinder and includes two ports, one port for permitting fluid communication between the cylinder and the accumulator and a second port for permitting fluid communication between the accumulator and the air pressure vessel, the first port including a shut-off valve disposed therein. Methods of compensating a drill string are also disclosed.

FIGURE 1