

Claims:

1. A method of drilling a wellbore, comprising:
drilling the wellbore through a formation by injecting drilling fluid through a drill
5 string and rotating a drill bit, wherein the drill string comprises a shifting tool, a
receiver in communication with the shifting tool, and the drill bit;
retrieving the drill string from the wellbore through a casing string until the
shifting tool reaches an actuator, wherein the casing string comprises an isolation
valve in an open position and the actuator;
10 sending a wireless instruction signal to the receiver, wherein the shifting tool
engages the actuator in response to the receiver receiving the instruction signal; and
operating the actuator using the engaged shifting tool, thereby closing the
isolation valve and isolating the formation from an upper portion of the wellbore.
- 15 2. The method of claim 1, wherein the actuator is operated by longitudinally
moving the drill string.
3. The method of claim 1, wherein the actuator is operated by rotating the drill
string.
- 20 4. The method of any of claims 1 to 3, further comprising detecting a position of
the actuator or isolation valve after operating the actuator.
5. The method of claim 4, wherein
25 the actuator comprises a wireless identification tag (WIT) embedded therein,
and
the position is detected using the WIT.
6. The method of claim 4, wherein:
30 the isolation valve comprises an wireless identification tag (WIT) dispenser,
the tag dispenser is operable to release a WIT encoded with the position of the
valve in response to closure of the valve, and
the position is detected by reading the dispensed tag.

7. The method of claim 4, wherein:
the isolation valve comprises a flapper, and
the position of the flapper is detected.
- 5 8. The method of claim 7, further comprising:
communicating the detected position to the shifting tool; and
sending the detected position to surface wirelessly.
9. The method of any preceding claim, wherein:
10 the casing string further comprises a second actuator, and
the method further comprises:
retrieving the drill string from the wellbore;
deploying a workstring into the wellbore, the workstring comprising the
shifting tool;
15 sending a second wireless instruction signal to the shifting tool, wherein
the shifting tool engages the second actuator in response to receiving the
instruction signal; and
operating the second actuator using the engaged shifting tool, thereby
opening the isolation valve.
- 20 10. The method of any preceding claim, wherein the instruction signal is sent from
a drilling rig.
11. The method of any of claims 1 to 9, wherein the instruction signal is sent from
25 the casing string.
12. A method of drilling a wellbore, comprising:
drilling the wellbore through a formation by injecting drilling fluid through a drill
string and rotating a drill bit;
30 retrieving the drill string from the wellbore through a casing string until the drill
bit is above a closure member, wherein the casing string comprises the closure
member in an open position, and an actuator, and an antenna in communication with
the actuator;

during or after retrieving the drill string, bringing a wireless identification tag (WIT) into range of the antenna, thereby sending a wireless instruction signal from the WIT to the actuator antenna;

5 closing the closure member by the actuator in response to receiving the signal,
thereby isolating the formation from an upper portion of the wellbore.

10 13. The method of claim 12, ~~wherein the instruction signal is sent from a drilling rig by pumping a wireless identification tag (WIT) tag through the drill string the WIT is brought into range of the antenna by pumping the WIT through the drill string.~~

14. The method of claim 12, wherein:
the drill string comprises ~~a wireless identification tag (WIT)~~ the WIT embedded therein, and
the WIT is brought into range of the antenna during retrieval of the drill string.
15 ~~operable to command closing of the closure member, and~~
the ~~instruction signal is sent by moving the WIT in range of an antenna of the actuator.~~

15. The method of any of claims 12 to 14, wherein:
20 the drill string comprises a charger, and
the method further comprises charging a battery or capacitor of the actuator.

16. The method of claim 15, wherein the battery or capacitor is charged wirelessly.

25 17. The method of claim 15 or 16, wherein:
the charger comprises an electromagnet, and
the battery or capacitor is charged by longitudinally moving the charger relative to the isolation valve.

30 18. The method of any of claims 12 to 14, wherein:
the isolation valve comprises a thermoelectric generator, and
the method further comprises charging a battery or capacitor of the actuator by circulating drilling fluid through the wellbore.

19. The method of any of claims 12 to 18, further comprising detecting a position of the actuator or closure member after the closure member is closed.
20. The method of claim 19, wherein the position of the closure member is detected.
21. The method of claim 19, wherein:
a wireless identification tag (WIT) dispenser is connected to the closure member,
the tag dispenser is operable to release a WIT encoded with the position of the valve in response to closing the closure member, and
the position is detected by reading the dispensed tag.
22. The method of any of claims 19 to 21, further comprising sending the detected position to surface wirelessly.
23. The method of any of claims 12 to 22, wherein the actuator closes the closure member.
24. The method of claim 23, wherein:
the casing string comprises a hydraulic pump in fluid communication with a bore of the casing, an accumulator, and a piston operably coupled to the closure member,
the pump charges the accumulator in response to pressure fluctuations in the casing bore, and
the actuator selectively provides fluid communication between the accumulator and the piston.
25. The method of any of claims 12 to 24, wherein:
the drill string comprises a shifting tool, and
the closure member is closed by operating the actuator using the shifting tool.

26. The method of claim 25, wherein:
the actuator engages the shifting tool in response to receiving the instruction signal, and
the actuator is operated by rotating the shifting tool.

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27. The method of claim 25, wherein:
the actuator unlocks in response to receiving the instruction signal, and
the method further comprises engaging the shifting tool with the actuator.

10 28. The method of any of claims 25 to 27, further comprising:
retrieving the drill string from the wellbore;
deploying a workstring into the wellbore, the workstring comprising the shifting tool;
sending a second wireless instruction signal to the actuator; and
15 opening the isolation valve.

~~29. The method of any of claims 12 to 28, wherein the instruction signal is sent by striking the casing.~~

20 ~~30~~29. An actuator for use in a wellbore, comprising:
a tubular housing having a bore formed therethrough;
a power source;
~~a receiver~~an antenna for receiving a wireless instruction signal from a wireless instruction tag (WIT);
25 a controller in communication with the power source and antenna;
a pump or piston operable to supply pressurized hydraulic fluid to an isolation valve;
a position or proximity sensor in communication with the controller for determining a position of the isolation valve; and
30 a lock operably connected to the pump or piston and the controller,
wherein the controller is operable to release the lock in response to receiving the instruction signal.

3430. The actuator of claim 3029, further comprising a manual override operable by engagement with a shifting tool of a drill string.

3231. A shifting tool for use in a wellbore, comprising:

5 a tubular housing having a bore formed therethrough and a pocket formed in a wall thereof;

a driver moveable relative to the housing between an extended position and a retracted position and disposed in the pocket in the retracted position;

10 a piston disposed in the housing, longitudinally movable relative thereto between an engaged position and a disengaged position, and operable to extend the driver when moving from the disengaged position to the engaged position;

a lock operable to retain the piston in the engaged position; and

an actuator operable to release the lock in response to receiving an instruction signal.

15 3332. The shifting tool of claim 3231, wherein:

the housing has a seat formed in an inner surface thereof, and

the shifting tool further comprises a manual override operable by receiving a blocking member.