Remote Activated Deflector

BACKGROUND

[0001] Hydrocarbons may be produced from wellbores drilled from the surface through a variety of producing and non-producing formations. The wellbore may be drilled substantially vertically or may be an offset well that is not vertical and has some amount of horizontal displacement from the surface entry point. In some cases, a multilateral well may be drilled comprising a plurality of wellbores drilled off of a main wellbore, each of which may be referred to as a lateral wellbore. Portions of lateral wellbores may be substantially horizontal to the surface. In some provinces, wellbores may be very deep, for example extending more than 10,000 feet from the surface.

[0002] A variety of servicing operations may be performed on a wellbore after it has been initially drilled. A lateral junction may be set in the wellbore at the intersection of two lateral wellbores and/or at the intersection of a lateral wellbore with the main wellbore. A casing string may be set and cemented in the wellbore. A liner may be hung in the casing string. The casing string may be perforated by firing a perforation gun. A packer may be set and a formation proximate to the wellbore may be hydraulically fractured. A plug may be set in the wellbore. Typically it is undesirable for debris, fines, and other material to accumulate in the wellbore. Fines may comprise more or less granular particles that originate from the subterranean formations drilled through or perforated. The debris may comprise material broken off of drill bits, material cut off casing walls, pieces of perforating guns, and other materials. A wellbore may be cleaned out or swept to remove fines and/or debris that have entered the wellbore. Those skilled in the art may readily identify additional wellbore servicing operations. In many servicing operations, a downhole tool is conveyed into the main wellbore and possibly into one or more laterals drilled off of the main wellbore and/or drilled off of a lateral wellbore.

SUMMARY

[0003] ~~In an embodiment, a wellbore y-block junction is disclosed. The y-block junction comprises a first bore channel, a second bore channel, a deflector selectable to a neutral position, to a first bore channel selected position, and to a second bore channel selected~~

~~position, a radio receiver, and a controller, wherein the controller is configured to command the deflector position to one of the neutral position, the first bore channel selected position, or the second bore channel selected position based on an input from the radio receiver.~~

According to first aspect of the present disclosure, there is provided a wellbore y-block junction, comprising: a first bore channel; a second bore channel; a deflector selectable to a neutral position, to a first bore channel selected position, and to a second bore channel selected position; a radio transceiver, wherein the radio transceiver is a radio frequency identity (RFID) tag scanner; and a controller, wherein the controller is configured to command the deflector position to one of the neutral position, the first bore channel selected position, or the second bore channel selected position based on an input from the radio transceiver, wherein the input from the radio receiver comprises an identity read from a radio frequency identity tag.

[0004] ~~In an embodiment, a method of performing a wellbore service job is disclosed. The method comprises running in a tool string into a wellbore above a first y-block junction, wherein the wellbore comprises at least a first bore and a second bore, wherein the tool string carries a radio frequency identity (RFID) tag on an end of the tool string, reading the radio frequency identity tag by a first controller of the first y-block junction, and directing the tool string into the first bore based on reading the radio frequency identity tag.~~

According to a second aspect of the present disclosure, there is provided a method of performing a wellbore service job, comprising: running in a tool string into a wellbore above a first y-block junction, and a deflector position sensor indicating the deflector position, wherein the wellbore comprises at least a first bore and a second bore, wherein the tool string carries at least one radio frequency identity (RFID) tag on an end of the tool string; reading a first identity from the at least one radio frequency identity tag by a first controller of the first y-block junction; and directing the tool string into the first bore based on reading the first identity.

[0005] ~~In an embodiment, a method of performing a wellbore service job is disclosed. The method comprises running in a tool string into a wellbore above a first y-block junction, wherein the wellbore comprises at least a first bore and a second bore, wherein the tool string carries a first near field communication (NFC) transceiver on an end of the tool string,~~

~~transmitting a command from the first near field communication transceiver to a second near field communication transceiver coupled to the first y-block junction, and directing the tool string into the first bore based on the command.~~

According to a third aspect of the present disclosure, there is provided a method of performing a wellbore service job, comprising: running in a tool string into a wellbore above a first y-block junction, and a deflector position sensor indicating the deflector position, wherein the wellbore comprises at least a first bore and a second bore, wherein the tool string carries a first near field communication (NFC) transceiver on an end of the tool string; transmitting a command from the first near field communication transceiver to a second near field communication transceiver coupled to the first y-block junction; and directing the tool string into the first bore based on the command.

[0006] These and other features will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] For a more complete understanding of the present disclosure, reference is now made to the following brief description, taken in connection with the accompanying drawings and detailed description, wherein like reference numerals represent like parts.

[0008] FIG. 1 illustrates a wellbore and a workstring therein according to an embodiment of the disclosure.

[0009] FIG. 2A, FIG. 2B, and FIG. 2C illustrate a y-block junction according to an embodiment of the disclosure.

[0010] FIG. 3A is a flow chart of a method according to an embodiment of the disclosure.

[0011] FIG. 3B is a flow chart of another method according to an embodiment of the disclosure.

[0012] FIG. 4 is a flow chart of a method according to an embodiment of the disclosure.

[0013] FIG. 5 is an illustration of a computer according to an embodiment of the disclosure.

DETAILED DESCRIPTION

CLAIMS

~~What is claimed is:~~

1. A wellbore y-block junction, comprising:

a first bore channel;

a second bore channel;

a deflector selectable to a neutral position, to a first bore channel selected position, and to a second bore channel selected position;

a radio ~~receiver~~ transceiver, wherein the radio transceiver is a radio frequency identity (RFID) tag scanner; and

a controller, wherein the controller is configured to command the deflector position to one of the neutral position, the first bore channel selected position, or the second bore channel selected position based on an input from the radio ~~receiver~~ transceiver, wherein the input from the radio receiver comprises an identity read from a radio frequency identity tag.

~~2. The wellbore y-block junction of claim 1, wherein the radio receiver is a radio frequency identity (RFID) tag scanner and wherein the input from the radio receiver comprises an identity read from a radio frequency identity tag.~~

~~3~~2. The wellbore y-block junction of claim 1, further comprising a near field communication (NFC) radio transceiver, wherein the radio receiver is a component of the near field communication radio transceiver.

43. The wellbore y-block junction of claim ~~3~~1, further comprising a deflector position sensor, wherein the controller is further configured to command the ~~near field communication~~ radio transceiver to transmit a message containing an indication of the deflector position based on an input from the deflector position sensor.

~~5~~4. The wellbore y-block junction of claim ~~1~~3, wherein the deflector is in a substantially sealing engagement with the second bore channel when in the first bore channel selected position and is in a substantially sealing engagement with the first bore channel when in the second bore channel selected position.

~~6~~5. The wellbore y-block junction of claim ~~1~~3, wherein the deflector mechanically holds its position after actuated to the neutral position, to the first bore channel selected position, and to the second bore channel selected position.

6. The wellbore y-block junction of claim 1, wherein the deflector comprises an electrically actuated deflector.

7. A method of performing a wellbore service job, comprising:

running in a tool string into a wellbore above a first y-block junction, and a deflector position sensor indicating the deflector position, wherein the wellbore comprises at least a first bore and a second bore, wherein the tool string carries at least one radio frequency identity (RFID) tag on an end of the tool string;

reading a first identity from the at least one radio frequency identity tag by a first controller of the first y-block junction; and

directing the tool string into the first bore based on reading the first identity.

~~8. The method of claim 7, further comprising:~~

~~running in the tool string into the wellbore above a second y-block junction, wherein the wellbore further comprises at least a third bore;~~

~~reading a second identity from the at least one radio frequency identity tag by a second controller of the second y-block junction; and~~

~~directing the tool string into the third bore based on reading the second identity.~~

~~9~~8. The method of claim 7, ~~wherein the first y-block junction is positioned in a junction of the first bore and the second bore,~~ wherein the first y-block junction comprises a controller and a first deflector selectable by the ~~first~~ controller to a neutral position, to a first bore channel selected position, and to a second bore channel selected position, and further comprising:

selecting the first deflector to the first bore channel selected position by the first controller based on reading the first identity~~; and~~

~~running the tool string into the first bore~~.

9. The method of claim 8, further comprising:

withdrawing the tool string from the first y-block junction;

reading the first identity from the at least one radio frequency identity tag by the first controller as the end of the tool string is withdrawn above the first y-block junction; and

selecting the first deflector to the neutral position from the first bore channel selected position by the first controller based on reading the first identity.

10. The method of claim 9, further comprising returning the first deflector to the neutral position based on reading the first identity.

11. The method of claim 10, further comprising:

running in the tool string into the wellbore above a second y-block junction, wherein the wellbore further comprises at least a third bore;

reading a second identity from the at least one radio frequency identity tag by a second controller of the second y-block junction; and

directing the tool string into the third bore based on reading the second identity.

12. The method of claim 10, wherein the tool string comprises a conveyance comprising one of a coiled tubing, a wireline, or jointed pipe.

~~10~~13. The method of claim ~~9~~10, further comprising:

running in the tool string into the first bore channel above a second y-block junction, wherein the first bore channel comprises at least the first bore and a third bore;

reading a second identity from the at least one radio frequency identity tag by a second controller of the second y-block junction positioned in a junction of the first bore and the third bore, wherein the second y-block junction comprises a second deflector selectable by the second controller to a neutral position, to a first bore channel selected position, and to a third bore channel selected position;

selecting the second deflector to the third bore channel selected position by the second controller based on reading the second identity; and

after the second deflector is selected to the third bore channel, running the tool string into the third bore.

~~11~~14. The method of claim ~~10~~13, further comprising:

configuring the first controller to select the first deflector to the first bore channel based on reading the first identity; and

configuring the second controller to select the second deflector to the third bore channel based on reading the second identity.

~~12. The method of claim 7, further comprising:~~

~~withdrawing the tool string from the first y-block junction;~~

~~reading the first identity from the at least one radio frequency identity tag by the first controller as the end of the tool string is withdrawn above the first y-block junction; and~~

~~selecting the first deflector to the neutral position from the first bore channel selected position by the first controller based on reading the first identity.~~

~~13~~15. The method of claim ~~7~~10, wherein the first controller reads the at least one radio frequency identity tag by receiving an input from a radio receiver of the first y-block junction, wherein the radio receiver scans the at least one radio frequency identity tag.

~~14~~16. The method of claim ~~7~~10, wherein the tool string comprises at least one of a fracturing tool or a completion tool.

~~15~~17. A method of performing a wellbore service job, comprising:

running in a tool string into a wellbore above a first y-block junction, and a deflector position sensor indicating the deflector position, wherein the wellbore comprises at least a first bore and a second bore, wherein the tool string carries a first near field communication (NFC) transceiver on an end of the tool string;

transmitting a command from the first near field communication transceiver to a second near field communication transceiver coupled to the first y-block junction; and

directing the tool string into the first bore based on the command.

~~16~~18. The method of claim ~~15~~17, wherein the command is a deflector position command, wherein the first y-block junction comprises a controller and a first deflector selectable by the controller to a neutral position, to a first bore channel selected position, and to a second bore channel selected position and further comprising:

selecting the first deflector to the first bore channel selected position by the controller based on the deflector position command~~;~~

~~transmitting a deflector position status from the second near field communication transceiver to the first near field communication transceiver~~.

19. The method of claim 18, further comprising:

withdrawing the tool string from the first y-block junction;

reading the first identity from a second near field communication transceiver positioned by the first controller as the end of the tool string is withdrawn above the first y-block junction; and,

selecting the first deflector to the neutral position from the first bore channel selected position by the first controller based on reading the first identity.

20. The method of claim 19, wherein the deflector is in a substantially sealing engagement with the second bore channel when in the first bore channel selected position and is in a substantially sealing engagement with the first bore channel when in the second bore channel selected position.

21. The method of claim 19, wherein the deflector mechanically holds its position after actuated to the neutral position, to the first bore channel selected position, and to the second bore channel selected position.

22. The method of claim 19, further comprising:

running in the tool string into the first bore channel above a second y-block junction, wherein the first bore channel comprises at least the first bore and a third bore;

reading a second identity from a third near field communication transceiver by a second controller of the second y-block junction positioned in a junction of the first bore and the third bore, wherein the second y-block junction comprises a second deflector selectable by the second controller to a neutral position, to a first bore channel selected position, and to a third bore channel selected position;

selecting the second deflector to the third bore channel selected position by the second controller based on reading the second identity; and

after the second deflector is selected to the third bore channel, running the tool string into the third bore.

23. The method of claim 22, further comprising:

configuring the first controller to select the first deflector to the first bore channel based on reading the first identity; and

configuring the second controller to select the second deflector to the third bore channel based on reading the second identity.

24. The method of claim 19, further comprising transmitting a deflector position status from the second near field communication transceiver to the first near field communication transceiver.

~~17~~25. The method of claim ~~16~~19, further comprising actuating the deflector to the first bore channel selected position, wherein the actuating is motivated by electrical energy.

~~18~~26. The method of claim ~~16~~19, further comprising actuating the deflector to the first bore channel selected position, wherein the actuating is motivated by fluid flow.

~~19~~27. The method of claim ~~15~~19, where in the tool string comprises a conveyance comprising one of a coiled tubing, a wireline, or jointed pipe.

~~20~~28. The method of claim ~~15~~19, wherein the wellbore service job is at least one of a fracturing job and a well completion job.