CONTROL LINE PROTECTION SYSTEM

BACKGROUND

[0001] This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present invention, which are described and/or claimed below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present invention. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

[0002] Control lines and other components of a drilling and production system are typically coupled together to provide a fluid path for hydraulic fluid, chemical injections, or the like to pass through the wellhead assembly. The control lines may be formed from hoses and various passages through components of the wellhead assembly, such as a tubing hanger. In operation, fluid is typically routed from an external location (e.g., surface rig) to the wellhead assembly to control equipment. Unfortunately, control line inlets may be exposed to surrounding fluids (e.g., seawater) after removal of certain equipment (e.g., running tool).

SUMMARY

[0002A] According to a first aspect, there is provided a system, comprising: a mineral extraction system, comprising: a first tubular comprising a first control fluid passage with a first fluid inlet; a second tubular comprising a second control fluid passage with a first fluid outlet, wherein the second control fluid passage is configured to fluidly couple to the first control fluid passage to supply a control fluid when the second tubular is in a first axial position; a protective cover system configured to protect the control fluid in the first control fluid passage, comprising: a protective cover; and one or more seals on the first tubular or the protective cover; wherein the second tubular couples to the protective cover and is configured to move the protective cover into a sealing position around the first fluid inlet when the second tubular moves along an axial path of travel from the first axial position to a second axial position, wherein the sealing position of the protective cover blocks undesirable fluids from entering the first control fluid passage.

[0002B] According to a second aspect, there is provided a system, comprising: a first tubular comprising a first fluid passage and a second fluid passage configured to receive one or more fluids for use in a mineral extraction system; a second tubular surrounding the first tubular; a protective cover coupled to the second tubular, wherein the second tubular is

configured to move the protective cover from a first axial position to a second axial position, and the protective cover is configured to form a first seal around the first fluid passage and a second seal around the second fluid passage; and a retainer coupled to the first tubular or the protective cover and configured to couple the protective cover to the first tubular.

[0002C] According to a third aspect, there is provided a method, comprising: moving a protective cover between a first axial position and a second axial position via movement of a first tubular coupled to a tool along an axial path of travel, wherein the tool, the first tubular, or a combination thereof, comprises one or more first control fluid passages; enabling flow of a control fluid between the one or more first control fluid passages and one or more second control fluid passages in a second tubular in the first axial position of the protective cover; and sealing the one or more second control fluid passage in the second tubular in the second axial position of the protective cover, wherein sealing comprises blocking undesirable fluids from entering the one or more second control fluid passages.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Various features, aspects, and advantages of the present invention will become better understood when the following detailed description is read with reference to the accompanying figures in which like characters represent like parts throughout the figures, wherein:

[0004] FIG. 1 is a block diagram of an embodiment of a mineral extraction system;

[0005] FIG. 2 is a cross-sectional view of an embodiment of a mineral extraction system with a protective cover system in an unenergized state;

CLAIMS

1. A system, comprising: a mineral extraction system, comprising: a first tubular comprising a first control fluid passage with a first fluid inlet; a second tubular comprising a second control fluid passage with a first fluid outlet, wherein the second control fluid passage is configured to fluidly couple to the first control fluid passage to supply a control fluid when the second tubular is in a first axial position; a protective cover system configured to protect the control fluid in the first control fluid passage, comprising: a protective cover; and one or more seals on the first tubular or the protective cover; wherein the second tubular couples to the protective cover and is configured to move the protective cover into a sealing position around the first fluid inlet when the second tubular moves along an axial path of travel from the first axial position to a second axial position, wherein the sealing position of the protective cover blocks undesirable fluids from entering the first control fluid passage.

2. The system of claim 1, wherein the protective cover system includes a retainer that couples the protective cover to the first tubular, and the retainer comprises first and second retainer portions that abut one another in an axial direction relative to the axial path of travel.

3. The system of claim 1, wherein the protective cover system includes a retainer that couples the protective cover to the first tubular, and the retainer comprises a retaining ring that couples to an annular groove on the protective cover or the first tubular.

4. The system of claim 1, wherein the protective cover system includes a retainer that couples the protective cover to the first tubular, and the retainer comprises a pin that couples to a groove on the protective cover or the first tubular.

5. The system of claim 1, wherein the protective cover comprises an annular sleeve.

6. The system of claim 1, wherein the protective cover couples to the second tubular with a shear pin, the protective cover is configured to move to the sealing position around the first fluid inlet in response to movement of a tool, and the shear pin is configured to shear during retrieval of the tool such that the protective cover remains in the sealing position.

7. The system of claim 1, wherein the first tubular comprises a third control fluid passage with a second fluid inlet, and the first fluid inlet and the second fluid inlet are at different axial positions on the first tubular.

8. The system of claim 7, wherein the protective cover is configured to seal the first and second fluid inlets.

9. The system of claim 1, wherein the first control fluid passage is configured to inject chemicals as the control fluid into a well.

10. The system of claim 1, wherein the first control fluid passage is configured to supply a hydraulic fluid as the control fluid to actuate a hydraulic component.

11. The system of claim 1, wherein the one or more seals are disposed on the first tubular, the protective cover, or a combination thereof.

12. The system of claim 1, comprising a tool coupled to the second tubular, wherein the tool is configured to supply the control fluid through the first and second control fluid passages when the second tubular is in the first axial position, the tool is configured to move the second tubular to the second axial position moving the protective cover into the sealing position, and the tool is configured to be retrieved after the protective cover is moved into the sealing position.

13. A system, comprising: a first tubular comprising a first fluid passage and a second fluid passage configured to receive one or more fluids for use in a mineral extraction system; a second tubular surrounding the first tubular; a protective cover coupled to the second tubular, wherein the second tubular is configured to move the protective cover from a first axial position to a second axial position, and the protective cover is configured to form a first seal around the first fluid passage and a second seal around the second fluid passage; and a retainer coupled to the first tubular or the protective cover and configured to couple the protective cover to the first tubular.

14. The system of claim 13, wherein the retainer comprises a retaining ring that couples to an annular groove on the protective cover or the first tubular.

15. The system of claim 13, wherein the retainer comprises a pin that couples to a groove on the protective cover or the first tubular.

16. The system of claim 13, wherein the protective cover comprises an annular sleeve.

17. The system of claim 13, wherein the first fluid passage comprises a first control fluid passage and the second fluid passage comprises a second control fluid passage.

18. The system of claim 13, comprising a tool coupled to the second tubular, wherein the tool is configured to supply the one or more fluids through the first and second fluid passages when the protective cover is in the first axial position, the tool is configured to move the protective cover from the first axial position to the second axial position to form the first and second seals, and the tool is configured to be retrieved after the protective cover forms the first and second seals.

19. The system of claim 18, wherein the protective cover is coupled to the second tubular with a shear structure, and the shear structure is configured to shear to enable retrieval of the tool while the first and second seals block entry of undesirable fluids into the first and second fluid passages.

20. A method, comprising: moving a protective cover between a first axial position and a second axial position via movement of a first tubular coupled to a tool along an axial path of travel, wherein the tool, the first tubular, or a combination thereof, comprises one or more first control fluid passages; enabling flow of a control fluid between the one or more first control fluid passages and one or more second control fluid passages in a second tubular in the first axial position of the protective cover; and sealing the one or more second control fluid passage in the second tubular in the second axial position of the protective cover, wherein sealing comprises blocking undesirable fluids from entering the one or more second control fluid passages.

21. The method of claim 20, wherein enabling flow of the control fluid comprises supplying chemicals as the control fluid into a well, or supplying a hydraulic fluid as the control fluid to actuate a hydraulic component, or a combination thereof.

22. The method of claim 20, comprising coupling the protective cover to the second tubular with a retainer on the protective cover or the second tubular that engages a recess on the protective cover or the second tubular.

23. The method of claim 20, wherein sealing the one or more control fluid passages comprises sealing with a first seal around a first control fluid passage and sealing with a second seal around a second control fluid passage in the second axial position of the protective cover.

24. The method of claim 20, wherein enabling flow of the control fluid occurs while the tool is coupled to the first tubular, wherein sealing the one or more second control fluid passage occurs prior to retrieval of the tool.

25. The method of claim 24, comprising shearing through a shear structure to enable separation and retrieval of the tool, leaving the protective cover in the second axial

position to block undesirable fluids from entering the one or more second control fluid passages.