the control block to seal spaces about the control line, rendering coupling typical control blocks to the wellhead assembly difficult and time consuming.

SUMMARY

[0003A] According to a first aspect, there is provided a system, comprising: a tubing member; and a control block configured to be coupled to a tree of a wellhead assembly, the control block comprising: a housing; a plate supported by the housing and having a radially inner wall defining an opening configured to receive the tubing member extending from the tree; and a first recess extending circumferentially about the radially inner wall of the plate and configured to support a first annular seal to facilitate sealing of the tubing member within the opening while the tubing member is positioned within the opening; wherein the tubing member is configured be inserted into the tree, such that the tubing member extends through the tree and into a hanger of the wellhead assembly and couples to a passageway extending generally longitudinally through the hanger, and wherein the tubing member and the control block are configured to receive and to support a control line that extends through the tubing member and through the passageway to one or more downhole components of the wellhead assembly.

[0003B] According to a second aspect, there is provided a system, comprising: a tubing member configured to be inserted through a tree and into a hanger of a wellhead assembly, wherein a first end of the tubing member comprises a threaded end that is configured to be threadably coupled to a passageway extending generally longitudinally within the hanger and a second end of the tubing member is configured to extend generally radially outward from the tree while the first end of the tubing member is threadably coupled to the passageway; and a control block having a plate supporting a first annular seal, wherein the control block is configured to receive the tubing member within an annulus of the first annular seal when the control block is coupled to the tree of the wellhead assembly.

[0003C] According to a third aspect, there is provided a method, comprising: positioning a tubing member that extends from a first end to a second end proximate to a tree of a wellhead assembly; inserting the first end of the tubing member through a first space extending generally radially through the tree of the wellhead assembly and into a second space extending generally radially within a hanger of the wellhead assembly; subsequently receiving the second end of the tubing member that extends radially outwardly from the wellhead assembly within an annular opening of a control block; and coupling the control block to the tree, wherein the control block comprises one or more annular seals disposed about an opening that is configured to receive the tubing member when the control block is coupled to the tree.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] 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:

[0005] FIG. 1 is a cross-sectional perspective view of a portion of a resource extraction system having a control line termination assembly, in accordance with an embodiment of the present disclosure;

[0006] FIG. 2 is a cross-sectional top view of the control line termination assembly of FIG. 1, in accordance with an embodiment of the present disclosure;

[0007] FIG. 3 is a cross-sectional top view of a portion of the control line termination assembly of FIG. 2, taken within line 3-3, in accordance with an embodiment of the present disclosure;

[0008] FIG. 4 is a perspective view of a portion of the resource extraction system of FIG. 1, in accordance with an embodiment of the present disclosure; and

[0009] FIG. 5 is a flow diagram of an embodiment of a method for installing a control line termination assembly within a resource extraction system.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

[0010] One or more specific embodiments of the present invention will be described below. These described embodiments are only exemplary of the present invention. Additionally, in an effort to provide a concise description of these exemplary embodiments, all features of an actual implementation may not be described in the specification. It should be appreciated that in the development of any such actual implementation, as in any engineering or design

CLAIMS

1. A system, comprising: a tubing member; and a control block configured to be coupled to a tree of a wellhead assembly, the control block comprising: a housing; a plate supported by the housing and having a radially inner wall defining an opening configured to receive the tubing member extending from the tree; and a first recess extending circumferentially about the radially inner wall of the plate and configured to support a first annular seal to facilitate sealing of the tubing member within the opening while the tubing member is positioned within the opening; wherein the tubing member is configured be inserted into the tree, such that the tubing member extends through the tree and into a hanger of the wellhead assembly and couples to a passageway extending generally longitudinally through the hanger, and wherein the tubing member and the control block are configured to receive and to support a control line that extends through the tubing member and through the passageway to one or more downhole components of the wellhead assembly.

2. The system of claim 1, wherein the first annular seal is a helical seal or a chevron seal.

3. The system of claim 1, wherein the first annular seal is formed from an elastomer, a metal, or a metal alloy material.

4. The system of claim 1, wherein the control block comprises a control port configured to be coupled to and to deliver a hydraulic fluid to the control line that extends through a channel of the tubing member and the passageway to the one or more downhole components.

5. The system of claim 1, wherein the tubing member extends from a first end that is configured to couple to the passageway to a second end, the control block comprises a second recess extending circumferentially about the radially-inner wall of the plate, the first recess supports the first annular seal and the second recess supports a second annular seal that facilitates sealing of the tubing member within the opening, the first annular seal comprises an elastomer material and the second annular seal comprises a metal or metal alloy material, the first recess supporting the first annular seal is positioned within the opening such that the first annular seal is proximate to the first end of the tubing member when the tubing member is positioned within the opening and when the control block is coupled to the tree of the wellhead assembly, and the second recess supporting the second annular seal is positioned within the opening such that the second annular seal is between the first recess and the second end of the tubing member along a radial axis of the tree when the tubing member is positioned within the opening and when the control block is coupled to the tree of the wellhead assembly.

6. The system of claim 1, comprising multiple other tubing members and multiple other control blocks, wherein each of the multiple other control blocks comprises a respective housing, a respective plate, and a respective first recess configured to support a respective first annular seal to facilitate sealing of a respective one of the multiple other tubing members, wherein the control block and the multiple other control blocks are coupled to the tree of the wellhead assembly at discrete locations about a circumference of the tree to facilitate passage of multiple control lines to multiple downhole components.

7. The system of claim 1, wherein the plate is coupled to the housing via one or more first

fasteners and the control block is configured to be coupled to the tree of the wellhead assembly via one or more second fasteners.

8. The system of claim 1, comprising an annular support ring extending circumferentially about a radially-outer surface of the plate.

9. The system of claim 1, wherein the tubing member comprises a one-piece annular structure that extends from a first end to a second end, and the first end is configured to couple to the passageway and the second end is configured to be positioned within the control block.

10. A system, comprising: a tubing member configured to be inserted through a tree and into a hanger of a wellhead assembly, wherein a first end of the tubing member comprises a threaded end that is configured to be threadably coupled to a passageway extending generally longitudinally within the hanger and a second end of the tubing member is configured to extend generally radially outward from the tree while the first end of the tubing member is threadably coupled to the passageway; and a control block having a plate supporting a first annular seal, wherein the control block is configured to receive the tubing member within an annulus of the first annular seal when the control block is coupled to the tree of the wellhead assembly.

11. The system of claim 10, comprising a second annular seal supported by the plate, wherein the first annular seal comprises an elastomer material and the second annular seal comprises a metal or metal alloy material.

12. The system of claim 10, wherein the tubing member and the control block are configured to receive and to support a control line coupled to one or more downhole components of the wellhead assembly, wherein the control line extends through a channel of the tubing member and through the passageway to the one or more downhole components of the wellhead assembly.

13. The system of claim 10, wherein the tubing member comprises a continuous annular structure that extends from the first end to the second end.

14. A method, comprising: positioning a tubing member that extends from a first end to a second end proximate to a tree of a wellhead assembly; inserting the first end of the tubing member through a first space extending generally radially through the tree of the wellhead assembly and into a second space extending generally radially within a hanger of the wellhead assembly; subsequently receiving the second end of the tubing member that extends radially outwardly from the wellhead assembly within an annular opening of a control block; and coupling the control block to the tree, wherein the control block comprises one or more annular seals disposed about an opening that is configured to receive the tubing member when the control block is coupled to the tree.

15. The method of claim 14, comprising inserting an alignment guide about the tubing member within the tree after inserting the first end of the tubing member through the first space.

16. The method of claim 14, comprising coupling the first end of the tubing member to a passageway of the hanger, wherein the passageway is configured to extend generally longitudinally along the hanger to facilitate routing a control line from a channel of the tubing member to downhole components of the wellhead assembly.

17. The method of claim 14, wherein the one or more annular seals comprise a first seal comprising an elastomer material and a second seal comprising a metal material.

18. The method of claim 14, comprising pre-assembling the control block, wherein a plate defining the opening and the one or more annular seals disposed about the opening are coupled to one another and to a housing of the control block prior to coupling the control block to the tree.

19. The method of claim 14, comprising threadably coupling the first end of the tubing member to a passageway of the hanger via threads of a threaded fitting of the first end.

20. The method of claim 14, comprising: coupling a control line to a valve supported by the control block; extending the control line from the valve, through a channel of the tubing member, and through a longitudinally-extending passageway of the tree to downhole components of the wellhead assembly; and adjusting the valve to provide a fluid through the control line.