CLAIMS

1. A system comprising:
a wellhead;
a tubing hanger configured to suspending tubing from the wellhead; and
a tubing hanger running tool (THRT) configured to position the tubing hanger within the wellhead, wherein the THRT comprises a pressure release valve in fluid communication with a hydraulically operated subsurface safety valve (SSV), the pressure release valve is biased toward a closed position that blocks fluid flow from the SSV, and contact between the pressure release valve and the wellhead drives the pressure release valve toward an open position that facilitates fluid flow from the SSV.

2. The system of claim 1, wherein the SSV is biased toward a closed position, the SSV is configured to open by application of hydraulic pressure, and the pressure release valve is configured to maintain sufficient hydraulic pressure within the SSV to hold the SSV in an open position while the pressure release valve is in the closed position.

3. The system of claim 1, wherein the pressure release valve comprises a poppet valve, a shuttle valve, or an actuated valve apparatus.

4. The system of claim 1, wherein the pressure release valve is disposed along an outer surface of the THRT such that contact between the pressure release valve and a bore of the wellhead drives the pressure release valve toward the open position.

5. The system of claim 1, wherein the pressure release valve is disposed along an inner surface of the THRT such that contact between the pressure release valve and a coexisting external moving part drives the pressure release valve toward the open position.

6. The system of claim 1, wherein the THRT comprises a hydraulic conduit fluidly coupled to the pressure release valve, and in fluid communication with the SSV.

7. The system of claim 1, wherein the THRT comprises an integrated soft landing system, comprising:
an annular chamber disposed between an outer casing of the THRT and a body of the THRT, wherein the annular chamber is configured to contain sufficient hydraulic fluid to suspend the body relative to the outer casing;

a valve in fluid communication with the annular chamber and an annulus of the wellhead; and

a release mechanism coupled to the valve, wherein activation of the release mechanism opens the valve to facilitate flow of hydraulic fluid from the annular chamber to the annulus of the wellhead.

8. The system of claim 1, wherein the THRT comprises an integrated pressure equalization system, comprising:

a tube having a first end in fluid communication with an annulus of the wellhead, and a second end in fluid communication with a control line; and

a piston disposed within the tube, wherein the piston is configured to move within the tube to balance a pressure differential between a first fluid within the annulus and a second fluid within the control line.

9. The system of claim 1, wherein the THRT comprises an integrated soft landing system, comprising:

an annular chamber disposed between an outer casing of the THRT and a body of the THRT, wherein the annular chamber is configured to contain sufficient hydraulic fluid to suspend the body relative to the outer casing;

a valve in fluid communication with the annular chamber and a first annulus of the wellhead; and

a release mechanism coupled to the valve, wherein activation of the release mechanism opens the valve to facilitate flow of hydraulic fluid from the annular chamber to the first annulus of the wellhead; and

wherein the THRT comprises an integrated pressure equalization system, comprising:

a tube having a first end in fluid communication with a second annulus of the wellhead, and a second end in fluid communication with a control line; and

a piston disposed within the tube, wherein the piston is configured to move within the tube to balance a pressure differential between a first fluid within the second annulus and a second fluid within the control line.

10. The system of claim 1, wherein the THRT selectively connects to the tubing hanger during a running procedure of the tubing hanger into the wellhead and selectively disconnects from the tubing hanger after the running procedure, and the pressure release valve is configured to maintain sufficient hydraulic pressure within the SSV to hold the SSV in an open position during the running procedure.

11. A system comprising:
a subsurface safety valve (SSV) biased toward a closed position, and configured to open by application of hydraulic pressure;
a tubing hanger running tool (THRT), comprising:
a conduit in fluid communication with the SSV; and
a pressure release valve fluidly coupled to the conduit, wherein the pressure release valve is configured to maintain sufficient hydraulic pressure within the conduit to hold the SSV in an open position while the pressure release valve is in a closed position.

12. The system of claim 11, wherein opening the pressure release valve releases sufficient hydraulic pressure to close the SSV.

13. The system of claim 11, wherein the pressure release valve comprises a valve stem and a valve body, wherein movement of the valve stem relative to the valve body causes the pressure release valve to transition between an open position and the closed position.

14. The system of claim 13, wherein the pressure release valve comprises a spring disposed between the valve stem and the valve body, wherein the spring is configured to bias the pressure release valve toward the closed position.

15. The system of claim 13, wherein the pressure release valve is positioned along an outer surface of the THRT such that contact between the valve stem and a bore of a wellhead induces the valve stem to move toward the open position.

16. The system of claim 11, wherein the THRT is configured to position a tubing hanger within a wellhead, and the pressure release valve is configured to maintain the sufficient hydraulic pressure within the conduit to hold the SSV in the open position while the THRT positions the tubing hanger within the wellhead.

17. A system comprising:
a subsurface safety valve (SSV) biased toward a closed position, and configured to open by application of hydraulic pressure; and
a tubing hanger running tool (THRT) comprising a pressure release valve in fluid communication with the SSV, wherein the pressure release valve is biased toward a closed position that blocks fluid flow from the SSV such that sufficient hydraulic pressure is maintained within the SSV to hold the SSV in an open position while running a tubing hanger

into a wellhead, and wherein contact between the pressure release valve and the wellhead drives the pressure release valve toward an open position that facilitates fluid flow from the SSV such that sufficient hydraulic pressure is released from the SSV to close the SSV.

18. The system of claim 17, wherein the pressure release valve comprises a valve stem and a valve body, wherein movement of the valve stem relative to the valve body causes the pressure release valve to transition between the open position and the closed position.

19. The system of claim 17, wherein the THRT comprises a hydraulic conduit fluidly coupled to the pressure release valve, and in fluid communication with the SSV.

20. The system of claim 17, wherein the pressure release valve is disposed along an outer surface of the THRT such that contact between the pressure release valve and a bore of a wellhead drives the pressure release valve toward the open position.

21. The system of claim 17, wherein the THRT comprises an integrated soft landing system, comprising:
an annular chamber disposed between an outer casing of the THRT and a body of the THRT, wherein the annular chamber is configured to contain sufficient hydraulic fluid to suspend the body relative to the outer casing;
a valve in fluid communication with the annular chamber and an annulus of the wellhead; and
a release mechanism coupled to the valve, wherein activation of the release mechanism opens the valve to facilitate flow of hydraulic fluid from the annular chamber to the annulus of the wellhead.

22. The system of claim 17, wherein the THRT comprises an integrated pressure equalization system, comprising:
a tube having a first end in fluid communication with an annulus of the wellhead, and a second end in fluid communication with a control line; and
a piston disposed within the tube, wherein the piston is configured to move within the tube to balance a pressure differential between a first fluid within the annulus and a second fluid within the control line.

23. The system of claim 17, wherein the THRT comprises an integrated soft landing system, comprising:

an annular chamber disposed between an outer casing of the THRT and a body of the THRT, wherein the annular chamber is configured to contain sufficient hydraulic fluid to suspend the body relative to the outer casing;

a valve in fluid communication with the annular chamber and a first annulus of the wellhead; and

a release mechanism coupled to the valve, wherein activation of the release mechanism opens the valve to facilitate flow of hydraulic fluid from the annular chamber to the first annulus of the wellhead; and

wherein the THRT comprises an integrated pressure equalization system, comprising:

a tube having a first end in fluid communication with a second annulus of the wellhead, and a second end in fluid communication with a control line; and

a piston disposed within the tube, wherein the piston is configured to move within the tube to balance a pressure differential between a first fluid within the second annulus and a second fluid within the control line.

CLAIMS

1. A system comprising:

a wellhead;

a tubing hanger configured to suspending tubing from the wellhead; and

a tubing hanger running tool (THRT) configured to position the tubing hanger within the wellhead, wherein the THRT comprises a pressure release valve in fluid communication with a hydraulically operated subsurface safety valve (SSV), the pressure release valve is biased toward a closed position that blocks fluid flow from the SSV, and contact between the pressure release valve and the wellhead drives the pressure release valve toward an open position that facilitates fluid flow from the SSV.

2. The system of claim 1, wherein the SSV is biased toward a closed position, the SSV is configured to open by application of hydraulic pressure, and the pressure release valve is configured to maintain sufficient hydraulic pressure within the SSV to hold the SSV in an open position while the pressure release valve is in the closed position.

3. The system of claim 1, wherein the pressure release valve comprises a poppet valve, a shuttle valve, or an actuated valve apparatus.

4. The system of claim 1, wherein the pressure release valve is disposed along an outer surface of the THRT such that contact between the pressure release valve and a bore of the wellhead drives the pressure release valve toward the open position.

5. The system of claim 1, wherein the pressure release valve is disposed along an inner surface of the THRT such that contact between the pressure release valve and a coexisting external moving part drives the pressure release valve toward the open position.

6. The system of claim 1, wherein the THRT comprises a hydraulic conduit fluidly coupled to the pressure release valve, and in fluid communication with the SSV.

7. The system of claim 1, wherein the THRT comprises an integrated soft landing system, comprising:

an annular chamber disposed between an outer casing of the THRT and a body of the THRT, wherein the annular chamber is configured to contain sufficient hydraulic fluid to suspend the body relative to the outer casing;

a valve in fluid communication with the annular chamber and an annulus of the wellhead; and

a release mechanism coupled to the valve, wherein activation of the release mechanism opens the valve to facilitate flow of hydraulic fluid from the annular chamber to the annulus of the wellhead.

8. The system of claim 1, wherein the THRT comprises an integrated pressure equalization system, comprising:

a tube having a first end in fluid communication with an annulus of the wellhead, and a second end in fluid communication with a control line; and

a piston disposed within the tube, wherein the piston is configured to move within the tube to balance a pressure differential between a first fluid within the annulus and a second fluid within the control line.

9. A system comprising:

a subsurface safety valve (SSV) biased toward a closed position, and configured to open by application of hydraulic pressure;

a tubing hanger running tool (THRT), comprising:

a conduit in fluid communication with the SSV; and

a pressure release valve fluidly coupled to the conduit, wherein the pressure release valve is configured to maintain sufficient hydraulic pressure

within the conduit to hold the SSV in an open position while the pressure release valve is in a closed position.

10. The system of claim 9, wherein opening the pressure release valve releases sufficient hydraulic pressure to close the SSV.

11. The system of claim 9, wherein the pressure release valve comprises a valve stem and a valve body, wherein movement of the valve stem relative to the valve body causes the pressure release valve to transition between an open position and the closed position.

12. The system of claim 11, wherein the pressure release valve comprises a spring disposed between the valve stem and the valve body, wherein the spring is configured to bias the pressure release valve toward the closed position.

13. The system of claim 11, wherein the pressure release valve is positioned along an outer surface of the THRT such that contact between the valve stem and a bore of a wellhead induces the valve stem to move toward the open position.

14. The system of claim 9, wherein the THRT is configured to position a tubing hanger within a wellhead.

15. A system comprising:

a subsurface safety valve (SSV) biased toward a closed position, and configured to open by application of hydraulic pressure; and

a tubing hanger running tool (THRT) comprising a pressure release valve in fluid communication with the SSV, wherein the pressure release valve is biased toward a closed position that blocks fluid flow from the SSV such that sufficient hydraulic pressure is maintained within the SSV to hold the SSV in an open position, and wherein contact between the pressure release valve and a

wellhead drives the pressure release valve toward an open position that facilitates fluid flow from the SSV such that sufficient hydraulic pressure is released from the SSV to close the SSV.

16. The system of claim 15, wherein the pressure release valve comprises a valve stem and a valve body, wherein movement of the valve stem relative to the valve body causes the pressure release valve to transition between the open position and the closed position.

17. The system of claim 15, wherein the THRT comprises a hydraulic conduit fluidly coupled to the pressure release valve, and in fluid communication with the SSV.

18. The system of claim 15, wherein the pressure release valve is disposed along an outer surface of the THRT such that contact between the pressure release valve and a bore of a wellhead drives the pressure release valve toward the open position.

19. The system of claim 15, wherein the THRT comprises an integrated soft landing system, comprising:

an annular chamber disposed between an outer casing of the THRT and a body of the THRT, wherein the annular chamber is configured to contain sufficient hydraulic fluid to suspend the body relative to the outer casing;

a valve in fluid communication with the annular chamber and an annulus of the wellhead; and

a release mechanism coupled to the valve, wherein activation of the release mechanism opens the valve to facilitate flow of hydraulic fluid from the annular chamber to the annulus of the wellhead.

20. The system of claim 15, wherein the THRT comprises an integrated pressure equalization system, comprising:

a tube having a first end in fluid communication with an annulus of the wellhead, and a second end in fluid communication with a control line; and

a piston disposed within the tube, wherein the piston is configured to move within the tube to balance a pressure differential between a first fluid within the annulus and a second fluid within the control line.