SHUNT SYSTEM WITH SHROUD SECURED BY A LOCKING MEMBER

TECHNICAL FIELD

The present disclosure relates generally to well completion and production operations and, more specifically, to facilitating the making-up of a completion joint on an oil or gas platform by utilizing a shunt system with a shroud secured by a locking member.

BACKGROUND

In the process of completing an oil or gas well, a tubular is run down-hole and used to communicate fluids between the surface and the formation. During production, a well-screen assembly may be utilized to control and limit debris such as gravel, sand, or other particulates from entering the tubular and being communicated to the surface. The well-screen assembly is coupled to the tubular and includes several completion joints connected in series with one another. A gravel-packing operation may be utilized to form the filter around the well-screen assembly within the wellbore. During the gravel-packing operation, a slurry containing a particulate material is communicated from the surface to the wellbore. The particulate material is packed around the well-screen assembly to form a permeable mass, through which fluid is permitted to flow. Shunt tubes may be disposed longitudinally along the completion joints of the well-screen assembly to provide an alternate flow path for the slurry during the gravel-packing operation. The shunt tubes are in communication with the wellbore and operate to reduce sand-bridging during the gravel-packing operation, i.e., blockages formed in the wellbore by accumulated particulate material, which could inhibit the flow of the slurry around the well-screen assembly. The shunt tubes are susceptible to damage when the tubular and well-screen are run down-hole from the surface. However, a significant amount of time and tools are needed to install components capable of adequately protecting the shunt tubes before the completion joints are run down-hole. Therefore, what is needed is a system, assembly, method, or apparatus that addresses one or more of these issues, and/or other issues.

SUMMARY

According to a first aspect of the present disclosure, there is provided an assembly adapted to be disposed within a wellbore, the assembly including: first and second completion joints, each of which includes: a base pipe; a shunt tube disposed along the base pipe; and a tubular outer shroud disposed about respective portions of the shunt tube and the base pipe; a jumper tube coupling the shunt tube of the first completion joint to the shunt tube of the second completion joint; and a tubular sliding shroud disposed about at least one of the first and second completion joints and adapted to slide longitudinally to a run-in position, in

which the tubular sliding shroud is disposed about the jumper tube and respective portions of the first and second completion joints, thereby covering the jumper tube; wherein the assembly includes: a locking mechanism connected to the first completion joint, the locking mechanism being operable to secure a first end portion of the tubular sliding shroud to at least partially secure the tubular sliding shroud in the run-in position; and/or a retaining member connected to the second completion joint, the retaining member being operable to secure a second end portion of the tubular sliding shroud to at least partially secure the tubular sliding shroud in the run-in position, wherein the assembly comprises the locking mechanism connected to the first completion joint; wherein the locking mechanism includes: a support member connected to the first completion joint; a groove formed into the support member; a key disposed at least partially within the groove; a tubular locking member adapted to be disposed about the first completion joint, and adapted to slide longitudinally relative to the support member into a locking position; and a cavity formed into the tubular locking member; wherein when the tubular locking member is in the locking position, the tubular locking member is disposed about the support member and the first end portion of the tubular sliding shroud.

According to a second aspect of the present disclosure, there is provided a method for making-up a connection between first and second completion joints, the method including: providing the first and second completion joints, each of the first and second completion joints including: a base pipe; a shunt tube disposed along the base pipe; and a tubular outer shroud disposed about respective portions of the shunt tube and the base pipe; coupling the shunt tube of the first completion joint to the shunt tube of the second completion joint with a jumper tube; shifting a tubular sliding shroud from a first position to a second position; and locking the tubular sliding shroud in the second position; wherein the tubular sliding shroud is disposed about at least one of the first and second completion joints in the first position; wherein the tubular sliding shroud is disposed about the jumper tube and respective portions of the first and second completion joints in the second position; and wherein locking the tubular sliding shroud in the second position includes: securing a first end portion of the tubular sliding shroud with a locking mechanism connected to the first completion join by shifting a tubular locking member of the locking mechanism from a third position to a fourth position and locking the tubular locking member in the fourth position, the tubular locking member being disposed about a support member and the first end portion of the tubular sliding shroud in the fourth position, the support member being connected to the first completion joint; and/or securing a second end portion of the tubular sliding shroud with a retaining member connected to the second completion joint.

CLAIMS

1. An assembly adapted to be disposed within a wellbore, the assembly comprising:

first and second completion joints, each of which comprises:

a base pipe;

a shunt tube disposed along the base pipe; and

a tubular outer shroud disposed about respective portions of the shunt tube and the base pipe;

a jumper tube coupling the shunt tube of the first completion joint to the shunt tube of the second completion joint; and

a tubular sliding shroud disposed about at least one of the first and second completion joints and adapted to slide longitudinally to a run-in position, in which the tubular sliding shroud is disposed about the jumper tube and respective portions of the first and second completion joints, thereby covering the jumper tube;

wherein the assembly comprises:

a locking mechanism connected to the first completion joint, the locking mechanism being operable to secure a first end portion of the tubular sliding shroud to at least partially secure the tubular sliding shroud in the run-in position; and/or

a retaining member connected to the second completion joint, the retaining member being operable to secure a second end portion of the tubular sliding shroud to at least partially secure the tubular sliding shroud in the run-in position,

wherein the assembly further comprises the locking mechanism connected to the first completion joint;

wherein the locking mechanism comprises:

a support member connected to the first completion joint;

a groove formed into the support member;

a key disposed at least partially within the groove;

a tubular locking member adapted to be disposed about the first completion joint, and adapted to slide longitudinally relative to the support member into a locking position; and

a cavity formed into the tubular locking member;

wherein when the tubular locking member is in the locking position, the tubular locking member is disposed about the support member and the first end portion of the tubular sliding shroud.

2. The assembly of claim 1, wherein respective portions of the base pipes and shunt tubes that are longitudinally disposed between the tubular outer shrouds of the first and second completion joints are covered by the tubular sliding shroud when the tubular sliding shroud is placed in the run-in position.

3. The assembly of claim 1, wherein the key is moveable between a retracted position and a deployed position;

wherein the key nests within the groove when the key is in the retracted position, such that the tubular sliding shroud and the tubular locking member can slide freely past the support member into the run-in position and the locking position, respectively;

wherein the key protrudes from the support member when the key is in the deployed position; and

wherein the cavity is adapted to receive the key when the tubular locking member is in the locking position and the key is in the deployed position.

4. The assembly of claim 3, wherein when the tubular locking member is in the locking position and the key is in the deployed position, the key secures the tubular locking member in the locking position and obstructs longitudinal displacement of the tubular sliding shroud.

5. The assembly of claim 4, wherein the tubular locking member is integrally formed with the first end portion of the tubular sliding shroud.

6. A method for making-up a connection between first and second completion joints, the method comprising:

providing the first and second completion joints, each of the first and second completion joints comprising:

a base pipe;

a shunt tube disposed along the base pipe; and

a tubular outer shroud disposed about respective portions of the shunt tube and the base pipe;

coupling the shunt tube of the first completion joint to the shunt tube of the second completion joint with a jumper tube;

shifting a tubular sliding shroud from a first position to a second position; and

locking the tubular sliding shroud in the second position;

wherein the tubular sliding shroud is disposed about at least one of the first and second completion joints in the first position;

wherein the tubular sliding shroud is disposed about the jumper tube and respective portions of the first and second completion joints in the second position;

and

wherein locking the tubular sliding shroud in the second position comprises:

securing a first end portion of the tubular sliding shroud with a locking mechanism connected to the first completion join by shifting a tubular locking member of the locking mechanism from a third position to a fourth position and locking the tubular locking member in the fourth position, the tubular locking member being disposed about a support member and the first end portion of the tubular sliding shroud in the fourth position, the support member being connected to the first completion joint; and/or

securing a second end portion of the tubular sliding shroud with a retaining member connected to the second completion joint.

7. The method of claim 6, wherein locking the tubular sliding shroud in the second position comprises securing the first end portion of the sliding shroud with the locking mechanism connected to the first completion joint; and
wherein the jumper tube and respective portions of the first and second completion joints, including respective portions of the base pipes and shunt tubes that are longitudinally disposed between the tubular outer shrouds of the first and second completion joints, are covered by at least one of the tubular sliding shroud and the tubular locking member when the tubular sliding shroud is in the second position and the tubular locking member is in the fourth position.

8. The method of claim 6, wherein locking the tubular locking member in the fourth position comprises deploying a key from a groove formed into the support member into a cavity formed into the tubular locking member by rotating a handle through an opening formed in the tubular locking member;
wherein the key is disposed within both of the groove and the cavity when the key is deployed.

9. The method of claim 8, wherein the tubular locking member is integrally formed with the first end portion of the tubular sliding shroud.

10. The method of claim 6, wherein locking the tubular sliding shroud in the second position comprises securing the second end portion of the tubular sliding shroud with the retaining member connected to the second completion joint;
wherein the retaining member is connected to the second completion joint; and
wherein securing the second end portion of the tubular sliding shroud with the retaining member comprises receiving the tubular sliding shroud within a portion of the retaining member as the tubular sliding shroud is displaced from the first position to the second position.