CLAIMS

What is claimed is:

1. A multi-bore junction assembly, comprising:

a connector body having an upper end and a lower end, the lower end providing a main bore leg receptacle and a lateral bore leg receptacle;

a main bore leg coupled to the main bore leg receptacle and extending longitudinally therefrom;

a lateral bore leg coupled to and deviated from the main bore leg at a junction, the lateral bore leg coupled to the lateral bore leg receptacle and extending longitudinally therefrom, wherein the main and lateral bore legs are round, tubular structures; and

at least one mechanical stiffener arranged exterior and adjacent to the main and lateral bore legs, and extending longitudinally between the connector body and a D-round connector arranged on one of the main and lateral bore legs,

wherein the at least one mechanical stiffener provides a first end and a second end, and first and second intermediate ends disposed between the first and second ends, the at least one mechanical stiffener comprising a length adjustment device having a body configured to receive the first and second intermediate ends, and

wherein rotation of the body causes the first and second ends of the at least one mechanical stiffener to extend in opposing axial directions simultaneously.

2. The multi-bore junction assembly of claim 1, wherein one or both of the main and lateral bore legs are threadably coupled to the main and lateral bore leg receptacles, respectively.

3. The multi-bore junction assembly of claim 1, wherein the at least one mechanical stiffener is a structure selected from the group consisting of a tubing, a tie-rod, and an elongate bar.

4. The multi-bore junction assembly of claim 1, wherein the D-round connector is secured to the one of the main and lateral bore legs by at least one of welding, brazing, an adhesive, shrink fitting, one or more mechanical fasteners, and any combination thereof.

5. The multi-bore junction assembly of claim 1, wherein the D-round connector comprises an integral part of the one of the main and lateral bore legs.

6. The multi-bore junction assembly of claim 1, wherein the first end is received into a first opening defined in the connector body and the second end is received into a second opening defined in the D-round connector.

7. The multi-bore junction assembly of claim 6, wherein the first and second ends are secured within the first and second openings, respectively, via at least one of the following: welding, brazing, an industrial adhesive, shrink fitting, and one or more mechanical fasteners.

8. The multi-bore junction assembly of claim 6, wherein the length adjustment device is arranged between the first and second ends.

9. The multi-bore junction assembly of claim 8, wherein the length adjustment device is a turnbuckle, and the body threadably receives the first and second intermediate ends.

10. The multi-bore junction assembly of claim 1, wherein the at least one mechanical stiffener comprises a first mechanical stiffener and a second mechanical stiffener, where the first and second mechanical stiffeners are arranged on opposing sides of the main and lateral bore legs.

11. A well system, comprising:

a main wellbore and a lateral wellbore extending from the main wellbore at a junction;

a deflector arranged in the main wellbore at or near the junction;

a multi-bore junction assembly extendable within the main wellbore and including a connector body, a main bore leg coupled to the connector body at a main bore leg receptacle, and a lateral bore leg coupled to and deviated from the main bore leg at a junction, the lateral bore leg coupled to the connector body at a lateral bore leg receptacle, wherein the main and lateral bore legs are round, tubular structures; and

at least one mechanical stiffener arranged exterior and adjacent to the main and lateral bore legs, and extending longitudinally between the connector body and a D-round connector arranged on one of the main and lateral bore legs,

wherein the at least one mechanical stiffener provides a first end and a second end, and first and second intermediate ends disposed between the first and second ends, the at least one mechanical stiffener comprising a length adjustment device having a body configured to

receive the first and second intermediate ends, and wherein rotation of the body causes the first and second ends of the at least one mechanical stiffener to extend in opposing axial directions simultaneously.

12. The well system of claim 11, wherein one or both of the main and lateral bore legs are threadably coupled to the main and lateral bore leg receptacles, respectively.

13. The well system of claim 11, wherein the at least one mechanical stiffener is at least one of a tubing, a tie-rod, and an elongate bar.

14. The well system of claim 11, wherein the D-round connector is secured to the one of the main and lateral bore legs by at least one of welding, brazing, an adhesive, shrink fitting, and one or more mechanical fasteners.

15. The well system of claim 11, wherein the D-round connector comprises an integral part of the one of the main and lateral bore legs.

16. The well system of claim 11, wherein the first end is received into a first opening defined in the connector body and the second end is received into a second opening defined in the D-round connector.

17. The well system of claim 16, wherein the first and second ends are secured within the first and second openings, respectively, via at least one of the following: welding, brazing, an industrial adhesive, shrink fitting, and one or more mechanical fasteners.

18. The well system of claim 16, wherein the length adjustment device is arranged between the first and second ends.

19. The well system of claim 11, wherein the at least one mechanical stiffener comprises a first mechanical stiffener and a second mechanical stiffener, where the first mechanical stiffener is arranged on a first side of the main and lateral bore legs, and the second mechanical stiffener is arranged on a second side of the main and lateral bore legs opposite to the first side.

20. A method, comprising:

lowering a multi-bore junction assembly into a main wellbore having a deflector arranged therein at or near a junction between the main wellbore and a lateral wellbore, the

multi-bore junction assembly including a connector body, a main bore leg coupled to the connector body at a main bore leg receptacle, and a lateral bore leg coupled to and deviated from the main bore leg at the junction, the lateral bore leg coupled to the connector body at a lateral bore leg receptacle, wherein the main and lateral bore legs are round, tubular structures;

rotating the multi-bore junction assembly within the main wellbore to align the main bore leg with the deflector and to align the lateral bore leg with the lateral wellbore; and

stabilizing one of the main and lateral bore legs with at least one mechanical stiffener arranged exterior and adjacent to the main and lateral bore legs, and extending longitudinally between the connector body and a D-round connector arranged on the one of the main and lateral bore legs,

wherein the at least one mechanical stiffener provides a first end and a second end, and first and second intermediate ends disposed between the first and second ends, the at least one mechanical stiffener comprising a length adjustment device having a body configured to receive the first and second intermediate ends, and wherein rotation of the body causes the first and second ends of the at least one mechanical stiffener to extend in opposing axial directions simultaneously.

21. The method of claim 20, wherein stabilizing one of the main and lateral bore legs comprises reducing axial loading on the one of the main and lateral bore legs with the at least one mechanical stiffener.

22. The method of claim 20, wherein stabilizing one of the main and lateral bore legs comprises resisting torsional loading on the one of the main and lateral bore legs with the at least one mechanical stiffener.

23. The method of claim 22, further comprising preventing the main and lateral bore legs from twisting about one another with the at least one mechanical stiffener.

24. The method of claim 22, wherein one or both of the main and lateral bore legs are threadably coupled to the main and lateral bore leg receptacles, respectively, the method further comprising preventing the one of the main and lateral bore legs from unthreading from the main and lateral bore leg receptacles, respectively, with the at least one mechanical stiffener.

25. The method of claim 20, wherein the first end is received into a first opening defined in the connector body and the second end is received into a second opening defined in the D-round connector, the method further comprising placing an axial load on the one of the main and lateral bore legs with the length adjustment device arranged between the first and second ends.