

MULTILATERAL WELLBORE STIMULATION

Technical Field

[0001] The present disclosure relates generally to methods and assemblies for the stimulation of multiple lateral wellbores of a subterranean wellbore in a multilateral well system, and more particularly (although not necessarily exclusively), to methods and assemblies for stimulating and isolating one or more wellbores in a multilateral well system.

Background

[0002] A well can be a multilateral well. A multilateral well can have multiple lateral wellbores that branch off a wellbore. The wellbore can be drilled vertically, directionally, or at an inclined angle, and the lateral wellbores can be drilled horizontally, or otherwise deviated, off the wellbore. Multilateral wellbores can have an increased productive capacity and higher recoverable reserves. Once a first lateral wellbore is considered to be an active or a live wellbore, for example by perforation or stimulation, the entire well, including the first lateral wellbore and any other lateral wellbores, can all be considered to be in a “live well” scenario. To address this scenario, operators can introduce procedures and well control equipment to stabilize the first lateral wellbore and other wellbores prior to stimulating any additional wellbores. For example, the first lateral wellbore can be overbalanced with heavy weighted muds or fluids. The use of heavy weighted muds or fluids can damage the stimulated or “live” first lateral wellbore and can diminish its capacity to produce desired production at a sufficient or economical rate or require extensive remediation to improve reservoir performance. In another example, a

hydraulic workover unit or high pressure-snubbing unit can be used to drill, complete, and stimulate additional lateral wellbores without overbalancing the first lateral wellbore. These additional workover units and ancillary surface components can add to the scale and cost in developing unconventional wells and can be uneconomical for many markets, such as shale oil and gas, and tight oil and gas.

Brief Description of the Drawings

[0003] FIG. 1 is a cross-sectional view of a multilateral well system with a first isolation device within a liner string of a wellbore and a second isolation device within a liner string of a lateral wellbore according to one aspect.

[0004] FIG. 2A is a cross-sectional view of a multilateral well system with an isolation device within a casing string of a wellbore and a tubing assembly shown by side view disposed within the wellbore according to one aspect.

[0005] FIG. 2B is a cross-sectional view of the multilateral well system of FIG. 2A with the isolation device in the casing string in a closed position and a tubing assembly shown by side view disposed within a lateral wellbore according to one aspect.

[0006] FIG. 3A is a cross-sectional view of a multilateral well system with a first isolation device in a liner string of a wellbore, a second isolation device in a lateral wellbore, and an intermediate tubing assembly shown by side view disposed within the wellbore according to one aspect.

[0007] FIG. 3B is a cross-sectional view of the multilateral well system of FIG. 3A with the first isolation device in the liner string in a closed position and a tubing assembly shown by side view disposed within a lateral wellbore according to one aspect.

[0008] FIG. 4A is a cross-sectional view of a multilateral well system with an isolation device within a short or intermediate completion string shown by side view and a tubing assembly shown by side view disposed within a wellbore according to one aspect.

[0009] FIG. 4B is a cross-sectional view of the multilateral well system of FIG. 4A having the isolation device within the short or intermediate completion string shown by side view in a closed position and a tubing assembly shown by side view disposed within a lateral wellbore according to one aspect.

[0010] FIG. 5 is a cross-sectional view of a multilateral well system with an isolation device within a liner string of a wellbore and a tubing assembly including an extension device shown by side view disposed within the wellbore according to one aspect.

[0011] FIG. 6 is a cross-sectional view of a multilateral well system with a retrievable plug device positioned within a liner string of a wellbore and a tubing assembly shown by side view disposed within the wellbore according to one aspect.

Detailed Description

[0012] Certain aspects and features of the present disclosure relate to methods and systems for isolating a lateral wellbore from additional lateral wellbores in a multilateral well system, when the lateral wellbore is considered to be a live wellbore. The lateral wellbore can be considered to be a live wellbore after a procedure, such as stimulation or perforation, is performed on the wellbore. The live lateral wellbore can be temporarily isolated or closed off from any additional lateral wellbores by an isolation device that is in a closed position. Production and pressure from the live lateral wellbore can remain within the live lateral wellbore and not enter

a main wellbore or other lateral wellbores when the isolation device is in the closed position. The live lateral wellbore is isolated from the rest of the multilateral well system and any associated pressure or producing constituents of the live lateral wellbore are not in communication with the rest of the multilateral well system with the isolation device in the closed position.

[0013] Isolating the live lateral wellbore can allow work to be performed on the rest of the multilateral well system without the live lateral wellbore being able to communicate back to the surface and avoiding an uncontrolled well scenario. For example, additional lateral wellbores can be safely drilled, completed, and stimulated with the isolation device in the closed position. The isolation device can also be in an open position, in which the live lateral wellbore is accessible and production and pressure from the live lateral wellbore is not isolated from any additional lateral wellbores.

[0014] The isolation device can include a closure component that can move between an open position and a closed position. The closure component can include a valve, a flapper, a ball, a chemical pill, or other suitable closure components. The isolation device can also be a plug device that can be positioned within the wellbore to isolate or close off the lateral wellbore. The plug device can be a retrievable plug device that can be temporarily positioned within the wellbore to isolate a lateral wellbore. The plug device can be removed from the wellbore to allow access to the lateral wellbore. In another aspect, the plug device can remain in the wellbore and can include a closure component such as a valve, a flapper, a ball, a chemical pill, or other suitable closure component. The plug device can be positioned within the wellbore by passing the plug device through a tubing assembly, for example a completion string.

[0015] The lateral wellbore can be re-accessed at a later time by re-opening the isolation device or, in another aspect, by removing the plug device. For example, after a second lateral wellbore is stimulated, the isolation device can be re-opened, thereby providing access to the first live lateral wellbore. The production of the first live lateral wellbore and the production of the second lateral wellbore can be comingled when the isolation device positioned in the first lateral wellbore is in the open position. In another aspect, the second lateral wellbore, and any additional lateral wellbores, can include additional isolation devices to isolate additional lateral wellbores selectively. Isolation devices can allow the first lateral wellbore and any additional lateral wellbores to be produced individually or collectively by positioning the isolation devices within each lateral wellbore and controlling the isolation devices among an open or a closed position.

[0016] The closure component of the isolation device can be pivotally mounted and can be displaced between an open and a closed position by mechanical means. For example, the closure component can be displaced from the open to the closed position by a wellbore string being removed from the wellbore, or by a wireline, coil tubing, or e-line intervention. In another example, the closure component can be displaced between the open and the closed position by a hydraulic or pulsation method and by hydraulic communication. In other examples, the closure component can be displaced between the open and the closed position by a remote method, including but not limited to by way of radio frequency identification means, by wireless telemetry, and by acoustic telemetry. The closure component of the isolation device can be displaced between the open position and the closed position multiple times. In an example, the closure component can be a chemical pill or other suitable substance that can create a removable barrier. The

isolation device can also or alternatively be a plug device that is retrievable from within a wellbore. The plug device can be considered in the closed position when positioned within the wellbore and in the open position when removed from the wellbore.

[0017] The isolation device can also be positioned in a variety of locations in a multilateral wellbore. For example, the isolation device can be positioned in a casing string of the wellbore, in a short or an intermediate completion string within the wellbore, or in a liner string of the wellbore. Or the isolation device can be a self-contained device, for example a plug device, that can be positioned within and removed from the wellbore.

[0018] Wellbore strings, for example, tubing assemblies, tubing strings and completion strings, can be run into the wellbore to perform various procedures on a first lateral wellbore. For example, a tubing string can be positioned in the wellbore to stimulate or perforate a first lateral wellbore. The wellbore string can also isolate at least a portion of a wellbore and any additional lateral wellbores from a pressure or other downhole activity applied to the first lateral wellbore during the procedure. For example, a fracturing string with a seal member or sealing assembly can be latched or landed into a receptacle within the wellbore and coupled back to the surface. The sealing assembly can be any suitable sealing means. The receptacle can be a polish bore receptacle or other suitable receptacle for receiving a wellbore string. The fracturing string can be used to stimulate the first lateral wellbore while the isolation device is in the open position. The fracturing string can also isolate a portion of a wellbore and any additional lateral wellbores from a pressure applied to the first lateral wellbore during stimulation. In another example, a short or intermediate completion string with a seal member or sealing assembly and an

anchor device, such as a packer assembly, can be latched or landed into the wellbore. The first lateral wellbore can be stimulated using a casing string and the short or intermediate completion string can isolate any additional lateral wellbores and a portion of the wellbore, such as a junction between the wellbore and an additional lateral wellbore, from a pressure or other downhole activity applied to the first lateral wellbore during stimulation.

[0019] After the first lateral wellbore has been stimulated, the tubing assembly can be removed and the first lateral wellbore can be temporarily isolated or closed off by moving the isolation device into the closed position or by introducing a plug device into the wellbore. While the first lateral wellbore can then be considered to be a live wellbore, the isolation device in the closed position can prevent production or pressure from the first lateral wellbore from entering other areas of the wellbore, including any additional lateral wellbores. A diverter device, such as a whipstock or deflector, can be positioned within the wellbore and a tubing assembly can be positioned within the wellbore for stimulating a second lateral wellbore. The tubing assembly can include a fracturing string or a short or intermediate completion string, as described above. The tubing assembly can isolate the first lateral wellbore from the pressure applied to the second lateral wellbore during stimulation. The tubing assembly and diverter device can be removed after the second lateral wellbore and any additional lateral wellbores have been stimulated. The second lateral wellbore can also include an isolation device that can isolate the second lateral wellbore after it has been stimulated. The isolation device positioned within the first lateral wellbore can be re-opened to allow the production and pressure of the first lateral wellbore and the production and pressure of the second lateral wellbore to be commingled. Additional isolation devices can be positioned in additional lateral

wellbores of the multilateral wellbore and the additional lateral wellbores can be stimulated and isolated in this same manner.

[0020] These illustrative aspects and examples are given to introduce the reader to the general subject matter discussed here and are not intended to limit the scope of the disclosed concepts. The following sections describe various additional features and examples with reference to the drawings in which like numerals indicate like elements, and directional descriptions are used to describe the illustrative aspects but, like the illustrative aspects, should not be used to limit the present disclosure.

[0021] FIG. 1 depicts by cross-section an example of a multilateral well system that includes a bore that is a main wellbore 102 extending through a surface 104 and various earth strata. The main wellbore 102 is a wellbore from which at least one lateral wellbore extends. A “main wellbore” may itself also be a lateral wellbore. A first lateral wellbore 106 extends substantially horizontally from the main wellbore 102. A second lateral wellbore 108 is positioned above the first lateral wellbore 106 and extends substantially horizontally from the main wellbore 102.

[0022] The main wellbore 102 includes a casing string 110 cemented at an upper portion of the main wellbore 102. A liner string 112 of the main wellbore 102 includes a receptacle 114, which may be a polish bore receptacle or other type of receptacle, positioned above the liner hanger 116. The liner hanger 116 can also be an anchor. The liner string 112 can be cemented or non-cemented, and can be part of a completion string. A liner string 118 of the first lateral wellbore 106 is hung from a liner hanger 116 and extends into the first lateral wellbore 106. The liner string 118 can be cemented or non-cemented and can be a part of a completion string. The liner string 118 extends along a length of the first lateral wellbore 106. An isolation

device 124 is positioned within the liner string 112 of the main wellbore 102. The isolation device 124 includes a closure component 126, shown in FIG. 1 in the open position. The isolation device 124 can be positioned in other locations within the main wellbore 102, including within the casing string 110 of the main wellbore 102, within the intermediate casing string, within a separate completion string positioned within the main wellbore 102, or other suitable locations.

[0023] Another liner string 120 can be hung from an anchor, such as the open hole type anchor 122, positioned within a second lateral wellbore 108. The liner string 120 extends along a length of the second lateral wellbore 108. Another isolation device 128 is positioned in the liner string 120 of the second lateral wellbore 108. Either of the first lateral wellbore 106 or the second lateral wellbore 108 can be stimulated first using a tubing assembly positioned within the respective lateral wellbore. For example, if the first lateral wellbore 106 is stimulated first, the isolation device 124 can be closed after the first lateral wellbore 106 is stimulated by positioning the closure component 126 in the closed position.

[0024] With the isolation device 124 in the closed position, the second lateral wellbore 108 can be stimulated without being considered in a “live well” scenario. The isolation device 128 positioned within the second lateral wellbore 108 can also isolate the second lateral wellbore 108 from the remainder of the wellbore when in the closed position. The production of the first lateral wellbore 106 and the production of second lateral wellbore 108 can be comingled after the stimulation of the second lateral wellbore 108 by moving the isolation device 124 into the open position and retaining the isolation device 128 in the open position. In the alternative, the isolation device 128 positioned within the second lateral wellbore 108 can be moved into the closed position to isolate production and pressure from the

second lateral wellbore 108 from the remainder of the wellbore. Additional lateral wellbores can also include isolation device for selectively isolating the lateral wellbores after stimulation or perforation.

[0025] FIG. 2A depicts by cross-section an example of a multilateral well system with an isolation device 204 positioned in a casing string 206 of a main wellbore 208. A first lateral wellbore 210 extends substantially horizontally from the main wellbore 208. A second lateral wellbore 212 extends substantially horizontally from the main wellbore 208 above the first lateral wellbore 210. The isolation device 204 is positioned below a junction between the main wellbore 208 and the second lateral wellbore 212. The isolation device 204 includes a closure component 214 that is a flapper or another type of component, shown in FIG. 2A in an open position. The closure component 214 can be retained in the open position by an internal sleeve or other device, though in other aspects other suitable closure components can be used. The closure component 214 can also be positioned in a closed position. In the closed position the closure component 214 extends across the diameter of the casing string 206 isolating or closing off the first lateral wellbore 210. A receptacle 216 is positioned in the liner string 218 of the main wellbore 208, between a liner hanger 217 and the isolation device 204. The liner hanger 217 can also be an anchor. In another aspect, the receptacle 216 can be positioned above the isolation device 204.

[0026] A tubing string 220 is positioned within the main wellbore 208 and extends to the surface of the main wellbore 208. The tubing string 220 includes a seal member or sealing assembly 222 that is latched or landed into the receptacle 216. The first lateral wellbore 210 can be stimulated or fractured by the tubing string 220. The pressure applied to the first lateral wellbore 210 during stimulation can be

isolated by the tubing string 220 that extends to the surface of the main wellbore 208. After the first lateral wellbore 210 is stimulated, the tubing string 220 can be removed and the closure component 214 can be closed. With the closure component 214 closed, the isolation device 204 is in the closed position and production and pressure from the first lateral wellbore 210 cannot exit the first lateral wellbore 210. An additional isolation device can also be positioned within the second lateral wellbore 212 to isolate or close off the second lateral wellbore 212 after it is stimulated.

[0027] In another example, the tubing string 220 can include an extension positioned below the seal member or sealing assembly 222. The extension and seal member or sealing assembly 222 can be latched or landed into the receptacle 216. The extension can cause the closure component 214 to move from the open position to the closed position as the tubing string 220 is removed from the main wellbore 208. The extension can also protect the receptacle 216 and isolation device 204 from damage. For example, the extension can protect the receptacle 216 and the isolation device 204 during stimulation of the first lateral wellbore 210.

[0028] In another example, a completion string, such as a short or intermediate completion string, can be run into the main wellbore 208 instead of the tubing string 220. The completion string can include a seal member or sealing assembly that is latched or landed into the receptacle 216. The completion string can also include an anchor device, such as a packer assembly, that can set the completion string within the main wellbore 208 above the junction between the main wellbore 208 and the second lateral wellbore 212. The first lateral wellbore 210 can be stimulated using the casing string of the main wellbore 208 and the first lateral

wellbore 210. The completion string can isolate the junction and the second lateral wellbore from a pressure applied to the first lateral wellbore 210 during stimulation.

[0029] FIG. 2B depicts by cross-section the multilateral well system of FIG. 2A with the closure component 214 of the isolation device 204 in a closed position. A diverter device 230, shown by side view, can be run into the main wellbore 208 and latched or landed into a latch coupling 232 just below the junction between the second lateral wellbore 212 and the main wellbore 208. In another example, the diverter device 230 can be landed or latched into another type of anchor or locating device. A tubing string 236 with a seal member or sealing assembly 238 can be latched or landed into a receptacle 240 positioned within the liner string 242 of the second lateral wellbore 212. The tubing string 236 can extend to the surface of the main wellbore 208. The second lateral wellbore 212 can be safely stimulated by the tubing string 236 without being considered in a “live well” scenario with the isolation device 204 in the closed position, isolating the live first lateral wellbore 210 from the second lateral wellbore 212. The first lateral wellbore 210 and the junction between the second lateral wellbore 212 and the main wellbore 208 can be isolated from the pressure applied to the second lateral wellbore 212 during stimulation by the tubing string 236.

[0030] After the second lateral wellbore 212 has been stimulated, the isolation device 204 can be re-opened. With the isolation device 204 in the open position, production from the first lateral wellbore 210 and the second lateral wellbore 212 can be comingled. The isolation device 204 can be opened shortly after the stimulation of the second lateral wellbore 212 or at a later time. The second lateral wellbore 212 can also include an additional isolation device that can isolate or close off the second lateral wellbore 212, as desired, after stimulation.

[0031] In another example, a completion string, such as a short or intermediate completion string, can be run into the second lateral wellbore 212 instead of the tubing string 236. The completion string can include a seal member or sealing assembly that is latched or landed into the receptacle 240. The completion string can also include an anchor device, such as a packer assembly, that can set the completion string within the main wellbore 208 above the junction between the main wellbore 208 and the second lateral wellbore 212. The second lateral wellbore 212 can be stimulated using the casing string of the main wellbore 208 and the second lateral wellbore 212. The completion string can isolate the junction and the first lateral wellbore 210 from a pressure applied to the second lateral wellbore 212 during stimulation.

[0032] FIG. 3A depicts by cross-section an example of a multilateral well system with an isolation device 400 positioned in liner string 402 of a main wellbore 406 above the liner hanger 403 of a first lateral wellbore 404. The isolation device 400 includes a closure component 408 that is a flapper or another type of component, shown in FIG. 3A in an open position. The closure component 408 can also be positioned in a closed position. In the closed position, the closure component 408 extends across the diameter and is sealed against the liner string 402. A receptacle 410 is positioned in the liner string 402 above the isolation device 400. A short or intermediate completion string 412 is positioned within the main wellbore 406. The short or intermediate completion string 412 includes a packer assembly 414 that is set above the junction between a second lateral wellbore 416 and the main wellbore 406. The short or intermediate completion string 412 also includes a seal member or sealing assembly 418. The seal member or sealing assembly 418 is landed or latched into the receptacle 410. The first lateral wellbore

404 can be stimulated by fracturing using a casing string 401 of the main wellbore 406 and the first lateral wellbore 404. The short or intermediate completion string 412 can isolate the second lateral wellbore 416 and the junction between the main wellbore 406 and the second lateral wellbore 416 from the pressure applied to the first lateral wellbore 404 during stimulation.

[0033] In another aspect, a tubing string can be latched or landed into the receptacle 410 and extend to the surface of the main wellbore 406. The tubing string can provide pressure isolation during stimulation of the first lateral wellbore 404. After the first lateral wellbore 404 is stimulated, the short or intermediate completion string 412 can be removed and the closure component 408 can be closed. The first lateral wellbore 404 can be considered a live wellbore after being stimulated. Production and pressure within the live first lateral wellbore 404 can be isolated from the rest of the multilateral wellbore by the closed isolation device 400. With the live first lateral wellbore 404 isolated, the second lateral wellbore 416 can be safely stimulated without being in a “live-well” scenario. In some examples, an extension can extend below the seal member or sealing assembly 418 and pass over the isolation device 400. The extension can protect the isolation device 400 from damage during stimulation or during the performance of other downhole activities on the first lateral wellbore 404.

[0034] FIG. 3B depicts by cross-section the multilateral well system of FIG. 3A and an example of stimulating the second lateral wellbore 416. A diverter device 420 can be run into the main wellbore 406 and latched or landed into a latch coupling 421 that is proximate and below the junction between the second lateral wellbore 416 and the main wellbore 406. In another example, the diverter device 420 can be latched or landed into another suitable latch assembly or anchor device.

A short or intermediate completion string 424 with a seal member or sealing assembly 426 can be run into the second lateral wellbore 416 and latched or landed into a receptacle 428 positioned within the liner string 430 of the second lateral wellbore 416. The short or intermediate completion string 424 can be set by a packer assembly 422 in the main wellbore 406. The second lateral wellbore 416 can be stimulated using the casing string 401 of the main wellbore 406 and the second lateral wellbore 416. The short or intermediate completion string 424 can isolate the junction and the first lateral wellbore 404 from the pressure applied to the second lateral wellbore 416 during stimulation.

[0035] After the second lateral wellbore 416 has been stimulated, the short or intermediate completion string 424 can be removed and the closure component 408 of the isolation device 400 can be re-opened. Production and pressure from the first lateral wellbore 404 and the second lateral wellbore 416 can be comingled with the closure component 408 in the open position. The closure component 408 can be opened shortly, such as substantially contemporaneously, after the stimulation of the second lateral wellbore 416 or at a later time. In another example, the second lateral wellbore 416 can include an isolation device that can isolate the second lateral wellbore 416 after it is stimulated, allowing additional lateral wellbores to be stimulated without being considered in a “live-well” scenario.

[0036] In another example, a tubing string with a seal member or sealing assembly can be latched or landed into the receptacle 428 instead of the short or intermediate completion string 424. The tubing string can extend to the surface of the main wellbore 406. The second lateral wellbore 416 can be stimulated by the tubing string. The tubing string can also isolate a pressure applied to the second lateral wellbore 416 during stimulation.

[0037] FIG 4A depicts by cross-section an example of a multilateral well system with a short or intermediate completion string 500, shown in side view, that includes an isolation device 502 that is positioned within a main wellbore 505. The short or intermediate completion string 500 includes a packer assembly 508 that is positioned above the isolation device 502 in the short or intermediate completion string 500. A receptacle 510 is positioned above the packer assembly 508. A seal member or sealing assembly 509 is positioned below the isolation device 502. The isolation device 502 includes a closure component 512 that is a flapper or another type of component, shown in FIG. 4A in an open position. The closure component 512 can also be in a closed position and can isolate a first lateral wellbore 504. The seal member or sealing assembly 509 is latched or landed into a receptacle 514 in the liner string 516 of the main wellbore 505 above the liner hanger 507 of the first lateral wellbore 504. A tubing string 518 can extend from the surface of the main wellbore 505 and a seal member or sealing assembly 517 of the tubing string 518 can be latched or landed into the receptacle 510 of the short or intermediate completion string 500. The first lateral wellbore 504 can be stimulated by the tubing string 518. The pressure applied to the first lateral wellbore 504 during stimulation can be isolated by the tubing string 518. Once stimulated, the live first lateral wellbore 504 can be isolated by closing the closure component 512. Additional lateral wellbores can be safely stimulated with the live first lateral wellbore 504 isolated from the rest of the multilateral wellbore.

[0038] In another example, a completion string, such as a short or intermediate completion string, can be run into the main wellbore 505 instead of the tubing string 518. The completion string can include a seal member or sealing assembly that is latched or landed into the receptacle 510. The completion string

can also include a packer assembly or other anchor device that can set the completion string within the main wellbore 505 above a junction between the main wellbore 505 and a second lateral wellbore 506. The first lateral wellbore 504 can be stimulated using the casing string of the main wellbore 505 and the first lateral wellbore 504. The completion string can isolate the pressure applied to the first lateral wellbore 504 during stimulation.

[0039] In another example, an isolation device can be positioned within the second lateral wellbore 506. The second lateral wellbore 506 can be stimulated prior to stimulating the first lateral wellbore 504. The isolation devices that close off the second lateral wellbore 506 and the first lateral wellbore 504, respectively, can be separately opened and closed to control the comingling of the production and pressure from the respective wellbores. The isolation devices can be closed during any time of the life of the well. For example, an isolation device within a lateral wellbore can be closed if the lateral wellbore's production declines to a point that it no longer is making sufficient contribution or because the lateral wellbore's production decline is diminishing production from other portions of the wellbore. The isolation device can also be closed in the event that the lateral wellbore begins to produce unwanted excess production, such as water. The isolation device can be closed in the event that one desires to re-enter and workover a portion of the remainder of the multilateral wellbore.

[0040] FIG. 4B depicts by cross-section the multilateral well system of FIG. 4A and an example of stimulating the second lateral wellbore 506. After the first lateral wellbore 504 has been stimulated, a diverter device 520, can be run into the main wellbore 505 and positioned just below the junction between the main wellbore 505 and the second lateral wellbore 506. A tubing string 522 can be latched or landed

into a receptacle 524 in the liner string 526 of the second lateral wellbore 506. The tubing string 522 can extend to the surface of the main wellbore 505. The second lateral wellbore 506 can be stimulated by the tubing string 522. In another aspect, a completion string, such as a short or intermediate completion string, can be latched or landed into the second lateral wellbore 506 and the second lateral wellbore 506 can be stimulated using the casing. The first lateral wellbore 504 and the junction can be isolated from a pressure applied to the second lateral wellbore 506 during stimulation by the tubing string 522 extending to the surface the main wellbore 505. After the second lateral wellbore 506 has been stimulated, the closure component 512 of the isolation device 502 within the main wellbore 505 can be re-opened allowing access to the first lateral wellbore 504. With the closure component 512 open, production of the first lateral wellbore 504 and production of the second lateral wellbore 506 can be comingled.

[0041] FIG. 5 depicts by cross-section an example of a multilateral well system with an isolation device 600 positioned in the liner string 602 of a main wellbore 604 of a multilateral wellbore having a first lateral wellbore 606 and a second lateral wellbore 608. In another aspect, additional isolation devices can be positioned within a liner string of additional lateral wellbores. The isolation device 600 is positioned between a receptacle 610 within the liner string 602 and a liner hanger 612. In another aspect, the isolation device 600 can be positioned elsewhere in the liner string. The isolation device 600 includes a closure component 614 that is a flapper or another type of component, shown in FIG. 5 in an open position. The closure component 614 can also be in a closed position. In the closed position, the closure component 614 extends across the diameter of the liner string 602 and can be sealed against the liner string 602. The first lateral wellbore 606 can be isolated

from the rest of the multilateral well system, including the main wellbore 604 and any additional lateral wellbores, when the closure component 614 of the isolation device 600 is in the closed position.

[0042] A short or intermediate completion string 616 is positioned within the main wellbore 604 and is set above a junction between the main wellbore 604 and the second lateral wellbore 608 by a packer assembly 618. The short or intermediate completion string 616 can also be an intermediate completion string. The short or intermediate completion string 616 includes a seal member or sealing assembly 620 that is latched or landed into the receptacle 610. The short or intermediate completion string 616 also includes an extension 622 below the seal member or sealing assembly 620. The extension 622 extends a sufficient length to pass over the isolation device 600. The extension 622 can protect the isolation device 600 from damage, for example, from erosion. The first lateral wellbore 606 can be stimulated or fractured down a casing string 624 of the main wellbore 604. The junction and the second lateral wellbore 506 can be isolated from a pressure applied to the first lateral wellbore 606 during stimulation by the short or intermediate completion string 616. In another aspect, a tubing string that extends from the surface of the main wellbore 604 can be used in place of the short or intermediate completion string 616 and the first lateral wellbore 606 can be stimulated by the tubing string. After the first lateral wellbore 606 is stimulated, the short or intermediate completion string 616 can be removed and the closure component 614 can be closed. The extension 622 can shift the closure component 614 from the open position to the closed position as it is pulled out of the liner string 602. The second lateral wellbore 608 can be stimulated in any suitable manner as described with respect to various aspects of this disclosure.

[0043] FIG. 6 depicts by cross-section an example of a multilateral well system with an isolation device that is a plug device 702, shown by side view, that is passed through a completion string 704 positioned within a liner string 712 of the main wellbore 706. After a first lateral wellbore 714 has been stimulated or perforated the completion string 704 can be set in the main wellbore 706 by a packer assembly 708 positioned above a junction between the main wellbore 706 and a second lateral wellbore 707. The completion string 704 can be latched or landed into a receptacle 710 positioned within a liner string 712 of the main wellbore 706. The plug device 702 can be passed through the completion string 704 by wireline or coil tubing or other suitable conveyance means that can be run through the completion string 704. With the plug device 702 positioned within the liner string 712 restricting or blocking access to the now live first lateral wellbore 714, the first lateral wellbore 714 can be isolated from the rest of the multilateral wellbore. For example, the first lateral wellbore 714 can be isolated from the main wellbore 706 and the second lateral wellbore 707. The second lateral wellbore 707, or any additional lateral wellbores, can be stimulated in any suitable manner as described with respect to various aspects of this disclosure when the plug device 702 is positioned to isolate the first lateral wellbore 714. In another aspect, the second lateral wellbore 707 can be stimulated and a plug device can be inserted into the second lateral wellbore 707 to isolate the live second lateral wellbore 707 from the rest of the multilateral well system. Additional lateral wellbores can also be isolated after stimulation or perforation by inserting a plug device in the manner disclosed above. The plug device 702 can also remain in the wellbore and can include a closure component that can be moved from an open position to a closed position to selectively isolate the first lateral wellbore. For example, the plug device 702 can include a barrier

component, such as a flapper, a ball, or another type of closure component. In another example, the plug device 702 can include a chemical barrier or chemical pill that can selectively restrict access to the first lateral wellbore 714.

[0044] In some aspects, methods and systems are provided for stimulating and isolating one or more wellbores in a multilateral well system according to one or more of the following examples.

[0045] Example 1: A wellbore system includes a subsurface isolation device that has an open position and a closed position to temporarily close off an active lateral wellbore in a multilateral well by isolating the active lateral wellbore from at least one other wellbore in the multilateral well.

[0046] Example 2: The wellbore system of Example 1 can feature the subsurface isolation device being positionable within a casing string or a liner string of the active lateral wellbore.

[0047] Example 3: The wellbore system of any of Examples 1 to 2 can feature the subsurface isolation device being positionable within a short or an intermediate completion string and the short or the intermediate completion string as positionable within the active lateral wellbore.

[0048] Example 4: The wellbore system of any of Examples 1 to 3 can feature the subsurface isolation device being a plug device that is positionable within a liner string of the active lateral wellbore.

[0049] Example 5: The wellbore system of any of Examples 1 to 4 can include a wellbore string that includes a sealing assembly. The wellbore string can be positionable within the wellbore system for isolating the at least one other wellbore from a pressure applied to the active lateral wellbore.

[0050] Example 6: The wellbore system of Example 5 can feature the wellbore string having an extension device for shifting the subsurface isolation device from the open position to the closed position.

[0051] Example 7: The wellbore system of Example 5 can feature the wellbore string having a short or an intermediate completion string including a seal assembly on a first end and an anchor device on a second end.

[0052] Example 8: A method including positioning an isolation device within a multilateral well and performing a procedure on a wellbore of the multilateral well to cause the wellbore to be a live wellbore. Substantially contemporaneously to the wellbore becoming the live wellbore, the isolation device can be changed from an open position to a closed position at which the isolation device isolates the wellbore from at least one other wellbore of the multilateral well. Another procedure can be performed on the at least one other wellbore of the multilateral well while the isolation device is in the closed position.

[0053] Example 9: The method of Example 8 can include isolating the wellbore from the at least one other wellbore of the multilateral well by preventing production and pressure from the wellbore from exiting the wellbore and entering the at least one other wellbore.

[0054] Example 10: The method of any of Examples 8 to 9 can include performing the procedure on the wellbore of the multilateral well to cause the wellbore to be the live wellbore by stimulating the wellbore of the multilateral well.

[0055] Example 11: The method of any of Examples 8 to 10 can include positioning the isolation device within the multilateral well by positioning a plug device within the multilateral well.

[0056] Example 12: The method of any of Examples 8 to 11 can include changing the isolation device from the open position to the closed position by removing a wellbore string having an extension device from the multilateral well, the extension device shifting the isolation device from the open position to the closed position.

[0057] Example 13: The method of any of Examples 8 to 12 can include positioning a wellbore string having a sealing assembly on an end into the wellbore for isolating the at least one other wellbore from a pressure applied to the wellbore while performing the procedure on the wellbore of the multilateral well to cause the wellbore to be the live wellbore.

[0058] Example 14: The method of Example 13 can include positioning the wellbore string having the sealing assembly on the end into the wellbore for isolating the at least one other wellbore from the pressure applied to the wellbore while performing the procedure on the wellbore of the multilateral well by positioning a short or an intermediate completion string that also includes an anchor device on another end within the wellbore.

[0059] Example 15: The method of any of Examples 8 to 14 can include re-opening the isolation device and allowing production from the wellbore and the at least one other wellbore to come in.

[0060] Example 16: A multilateral wellbore system includes a wellbore, at least one other wellbore, and a subsurface isolation device having an open position and a closed position. The subsurface isolation device can isolate the wellbore from the at least one other wellbore substantially contemporaneous to the wellbore becoming a live wellbore.

[0061] Example 17: The multilateral wellbore system of Example 16 can feature a wellbore string having a sealing assembly on an end for isolating the at least one other wellbore from a pressure applied to the wellbore while stimulating the wellbore.

[0062] Example 18: The multilateral wellbore system of any of Examples 16 to 17 can feature the subsurface isolation device being positioned within a casing string or a liner string of the wellbore.

[0063] Example 19: The multilateral wellbore system of any of Examples 16 to 18 can feature the subsurface isolation device being positioned within a short or an intermediate completion string that includes a sealing assembly on a first end and an anchor device on a second end and positionable within the wellbore.

[0064] Example 20: The multilateral wellbore system of any of Examples 16 to 19 can feature the subsurface isolation device including a valve for positioning the subsurface isolation device in the open position and the closed position.

[0065] The foregoing description of certain aspects, including illustrated aspects, has been presented only for the purpose of illustration and description and is not intended to be exhaustive or to limit the disclosure to the precise forms disclosed. Numerous modifications, adaptations, and uses thereof will be apparent to those skilled in the art without departing from the scope of the disclosure.

CLAIMS

What is claimed is:

1. A wellbore system comprising:

a subsurface isolation device having an open position and a closed position to temporarily close off an active lateral wellbore in a multilateral well by isolating the active lateral wellbore from at least one other wellbore in the multilateral well,

wherein the subsurface isolation device is positionable within a short or an intermediate completion string.

2. The wellbore system of claim 1, wherein the subsurface isolation device is positionable within a short or an intermediate completion string, and wherein the short or the intermediate completion string is positionable within the active lateral wellbore.

3. The wellbore system of claim 1, further comprising a wellbore string that includes a sealing assembly, the wellbore string being positionable within the wellbore system for isolating the at least one other wellbore from a pressure applied to the active lateral wellbore.

4. The wellbore system of claim 3, wherein the wellbore string includes an extension device for shifting the subsurface isolation device from the open position to the closed position.

5. The wellbore system of claim 3, wherein the wellbore string includes a short or an intermediate completion string having a seal assembly on a first end and an anchor device on a second end.

6. A method, comprising:

positioning an isolation device within a multilateral well;

wherein the subsurface isolation device is positionable within a short or an intermediate completion string;

performing a procedure on a wellbore of the multilateral well to cause the wellbore to be a live wellbore;

substantially contemporaneously to the wellbore becoming the live wellbore, changing the isolation device from an open position to a closed position at which the

isolation device isolates the wellbore from at least one other wellbore of the multilateral well;
and

performing another procedure on the at least one other wellbore of the multilateral well while the isolation device is in the closed position.

7. The method of claim 6, wherein isolating the wellbore from the at least one other wellbore of the multilateral well comprises preventing production and pressure from the wellbore from exiting the wellbore and entering the at least one other wellbore.

8. The method of claim 6, wherein performing the procedure on the wellbore of the multilateral well to cause the wellbore to be the live wellbore comprises stimulating the wellbore of the multilateral well.

9. The method of claim 6, wherein positioning the isolation device within the multilateral well comprises positioning a plug device within the multilateral well.

10. The method of claim 6, wherein changing the isolation device from the open position to the closed position comprises removing a wellbore string having an extension device from the multilateral well, the extension device shifting the isolation device from the open position to the closed position.

11. The method of claim 6, further comprising positioning a wellbore string having a sealing assembly on an end into the wellbore for isolating the at least one other wellbore from a pressure applied to the wellbore while performing the procedure on the wellbore of the multilateral well to cause the wellbore to be the live wellbore.

12. The method of claim 11, wherein positioning the wellbore string having the sealing assembly on the end into the wellbore for isolating the at least one other wellbore from the pressure applied to the wellbore while performing the procedure on the wellbore of the multilateral well comprises positioning a short or an intermediate completion string that also includes an anchor device on another end within the wellbore.

13. The method of claim 6, further comprising re-opening the isolation device and allowing production from the wellbore and the at least one other wellbore to comeingle.

14. A multilateral wellbore system, comprising:

a wellbore;

at least one other wellbore; and

a subsurface isolation device having an open position and a closed position to isolate the wellbore from the at least one other wellbore substantially contemporaneous to the wellbore becoming a live wellbore,

wherein the subsurface isolation device is positionable within a short or an intermediate completion string.

15. The multilateral wellbore system of claim 14, further comprising a wellbore string having a sealing assembly on an end for isolating the at least one other wellbore from a pressure applied to the wellbore while stimulating the wellbore.

16. The multilateral wellbore system of claim 14, wherein the subsurface isolation device is positioned within a short or an intermediate completion string including a sealing assembly on a first end and an anchor device on a second end and positionable within the wellbore.

17. The multilateral wellbore system of claim 14, wherein the subsurface isolation device includes a valve for positioning the subsurface isolation device in the open position and the closed position.