REMOTE AND MANUAL ACTUATED A WELL TOOL

BACKGROUND

[0001] This disclosure relates to remotely and mechanically actuated tools for use in subterranean well systems.

[0002] There are numerous tools for use in a subterranean well that can be remotely actuated by a hydraulic, electric, and/or other type of signal generated remote from the tool. Some of these tools further include provisions for mechanical actuation, for example, by a shifting tool manipulated from the surface. The mechanical actuation provides an alternative or contingency mode of actuation apart from actuation in response to the remote signal. In actuating the tool manually, however, the shifting tool must overcome the remote actuator mechanism or the remote actuator mechanism must be uncoupled from the actuated element of the tool.

SUMMARY

[0002a] According to a first aspect of the present invention, there is provided a well tool, comprising: a housing; an actuator sleeve in the housing, the actuator sleeve having an internal shifting tool engaging profile; an actuator in the housing, the actuator responsive to a remote signal to change from an unactuated state to an actuated state and shift the actuator sleeve from a first position to a second position; and a collet in the housing supported to couple the actuator sleeve to the actuator while the actuator changes from the unactuated state to the actuated state and unsupported to allow the actuator sleeve to move relative to the actuator when the actuator is in the actuated state.

[0002b] According to a second aspect of the present invention, there is provided a method of actuating a well tool, comprising: supporting a collet to couple an actuator to an actuator sleeve while moving the actuator sleeve axially relative to the actuator; operating the actuator to axially move the actuator sleeve while the collet is coupling the actuator to the actuator sleeve; and then, unsupporting the collet to allow the actuator sleeve to uncouple from the actuator.

[0002c] According to a third aspect of the present invention, there is provided a device for use in a subterranean well, the device comprising: an actuator responsive to actuate in response to a signal generated remote from the device; an actuator sleeve coupled to an actuated

element of the device to operate the actuated element when the actuator shifts axially in the device; and a collet that couples the actuator to the actuator sleeve to move the actuator sleeve when the actuator actuates, that allows the actuator sleeve to operate the actuated element when the actuator is coupled to the actuator sleeve without operating the actuator and that allows the actuator to uncouple from the actuator sleeve when the actuator has been remotely actuated.

DESCRIPTION OF DRAWINGS

[0003] FIG. 1 is a side cross-sectional view of an example well system.

[0004] FIGS. 2A and 2B are detail side cross-sectional views of an example valve. FIG. 2A shows the example valve in an open position. FIG. 2B shows the example valve in a closed position.

[0005] FIGS. 3, 4A and 4B are detailed views of an example releasable coupling assembly. FIG. 3 is a half cross-sectional view with an actuator assembly of the valve unactuated and the valve closure open. FIG. 4A is a quarter sectional view showing the actuator assembly changing from an unactuated to an actuated state. FIG. 4B is a quarter sectional view showing the actuator assembly in the actuated state.

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