CLAIMS

1. Subsea pumping system for use in a remote location such as a subsea hydrocarbon production facility, comprising:
a source for high pressure fluid; ~~and~~
a reciprocating or oscillating fluid driven pump (12, 32, 66, 92); and
a sequential valve (17, 27, 102, 104, 106, 108, 110) able to transform a steady fluid pressure to a pulsating fluid pressure in a motive fluid for excitation of the fluid driven pump, the sequential valve being fitted in a branch pipeline (26, 70, 87) between the source for high pressure fluid and the fluid driven pump (12, 32, 66, 92),
~~characterized in that~~ wherein the high pressure fluid, ~~is~~ used as a motive fluid for the pump (12, 32, 66, 92), is a fluid produced from a well in a pipeline (25, 62, 82). ~~that the pump is an reciprocating pump and that it comprises means for creating pressure pulses in the motive fluid.~~

2. The subsea~~Subsea~~ pumping system according to claim 1, wherein ~~characterized in that~~ the source for the motive fluid is a compressor using produced gas.

3. The subsea~~Subsea~~ pumping system according to claim 1, wherein ~~characterized in that~~ the source for the motive fluid is a liquid pump using produced liquids, i.e. oil or water.

4. The subsea~~Subsea~~ pumping system according to claim 1, wherein ~~characterized in that~~ the source for the motive fluid is an injection fluid provided by a pump located at topside facility.

5. The subsea~~Subsea~~ pumping system according to claim 1, wherein ~~characterized in that~~ the reciprocating pump is a diaphragm pump.

6. The subsea~~Subsea~~ pumping system according to claim 1, wherein ~~characterized in that~~ the reciprocating pump is a hose diaphragm pump.

7. The subsea~~Subsea~~ pumping system according to claim 1, wherein~~characterized in that~~ the reciprocating pump is a piston pump.

~~8. Subsea pumping system according to claim 1, characterized in that the means for creating pressure pulses comprises at least one valve arranged between the source and the pump.~~

~~9~~8. The subsea~~Subsea~~ pumping system according to claim 1~~8~~, wherein ~~characterized in that~~ the sequential valve ~~pulse means~~ comprises an inlet valve and an outlet valve that is synchronized to provide the pulses.

~~10~~9. The subsea~~Subsea~~ pumping system according to claim 1~~8~~, wherein ~~characterized in that~~ the sequential valve ~~pulse means~~ comprises a rotating sequencing valve.

~~11~~10. The subsea~~Subsea~~ pumping system according to claim ~~10~~9, wherein ~~characterized in that~~ the rotating sequencing valve has a rotational axis parallel or transverse to a pipeline axis for the pipeline wherein the valve is arranged.

~~12~~11. The subsea~~Subsea~~ pumping system according to claim 1, ~~characterized in that it comprises~~further comprising at least one separator.

~~13. Method for operating a subsea reciprocating pump, comprising the steps of~~

~~separating out one fluid phases from the well stream,~~

~~increasing the pressure of said one fluid phase, and~~

~~extracting some of the pressurized fluid to use as the motive fluid for the reciprocating pump.~~

~~14. Method according to claim 13 where the pressurized fluid is fed to the reciprocating pump through a sequential valve.~~

~~15. Method according to claim 13 having means to regulate the pressure differential.~~