ABSTRACT

ANNULAR SAFETY SYSTEM FOR CASED WELL

An annular safety system for a well produced by gas lift includes a packer (15), a landing nipple (16) below the packer and an operating seal unit (14) to which primary (11) and secondary (12) well tubings and a control line (22) are connected. There is an inline valve (13) in the secondary tubing (12) and safety valve (20) operated by the control line in a primary flow conduit (18) in the operating seal unit. After the operating seal unit (14) is inserted through the packer (15) to automatically land and be locked in the landing nipple (16) and the packer (15) operated to anchor and seal in a well casing, flow passages are formed for conveying lift gas from the secondary tubing to around the landing nipple for lifted flow upward through the primary conduit and tubing. When the well is being produced by lift gas, and pressure in the control line (22) is reduced purposely or by rupture of the control line, the safety valve (20) operates to prevent upward lifted flow in the primary tubing. If lift gas pressure in the secondary tubing is reduced purposely or by rupture, the inline valve (13) prevents upward flow. The operating seal unit (14) may be unlocked from the landing nipple (16) for retrieval from the packer (15) and well.

Figs. 2A-2F