

Capping and Shut-in On a Blowout with a Competent Casing String circulation technique employed and the condition of surface equipment (BOP, choke manifold, flare, etc.) this applies the least amount of wellbore stress to the blowing well.

3.2.3 Capping/Diverting. A capped well must be diverted when the shut-in pressures would exceed the casing integrity or the formation fracture gradient. The capping assembly normally has a blind ram and 1 or 2, 4-6" diverter lines. (Figure 3.2.3)

Pipe is snubbed to bottom and mud or water is circulated. The pipe running can be with a snubbing unit or coil tubing unit. The coil tubing is easier and faster to rig up and run but it has certain strength limitations, notably little resistance to collapse. Some coil tubing

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with a surface stinger. The stinger may be some type of packer forced into drill pipe or casing and hydraulically closed. Metal sleeves may be used as an alternative to a packer. Fluid is pumped into the well through the stinger.

The most frequent application of the stinger is with blowouts where access to the drill pipe or tubing is available. Methods have been developed in certain situation to stab a small packer into the pipe and it is closed hydraulically. Kill fluid is pumped into the pipe. Most wells on Piper Alpha and in Kuwait were killed with stingers.

Fire does not prohibit the use of a stinger. Water monitors are arranged to keep the packer and pump lines as cool as possible. Also, the fire does not generally damage the top part of the drill pipe or tubing to the extent that it fails upon the introduction of cooler kill fluids.

It is not considered feasible in blowouts with moderate to high flow rates to stab a packer into a casing string. The flow out of the well prevents stabbing. The US-DOE salt dome blowout in Hackberry, Louisiana was killed in the mid 1970's with a packer shoved into the casing. The oil was not flowing at a high rate.

3.2.5 Vertical Intervention. The term "vertical intervention" was coined by Adams in 1986-87. It has received wide spread industry acceptance since that time.

The operations are restricted to offshore blowouts. A semisubmersible is moved directly (vertically) over a live blowout. (Figure 3.2.4) Work is done on the blowout from the verti-