

COILED TUBING CONVEYANCE OF WELL FLUIDS TO SURFACE

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Availability of CT as well known OCTG and the need to have new options on artificial lift, prompted a CT consulting firm to investigate the use of CT to convey well fluids to the surface. In previous presentations we discussed the application of CT as pumping string in a beam pumping well.

While changing from sucker rods to CT in a regular well, has been proven, the main obstacle is the lack of affordable equipment to deploy/retrieve CT strings economically.

In this particular presentation we want to put emphasis in a new application that can bring additional oil or gas to surface and the type of equipment needed for the job.

RECOVER SEMI-ABANDON WELLS

While P&A justifies abandonment of wells due to the depletion of producing formations, in some cases, wells are abandon due to “technical reasons” mainly corroded casing. Most of those wells have either 7” or 5.1/2” casing.

If a well can be re-cased with production tubing, either 2.7/8” or 3.1/2”, the recovered well is a new “Slim Hole” and we know that we can produce slim holes using CT as a pumping string.

Some owners of wells don’t realize that they are setting on an idling investment worth over \$ 100,000 or more, that easily can be put back on production, and at present oil/gas prices make a profit

And what is also important, the recovery of wells presently “down”, can bring new production to surface in a much needed market.

COST OF DRILLING A NEW WELL

With today prices no well can be drilled and cased between 4,000 and 6,000 ft for less than \$ 100,000. Just the rig cost and casing will add that amount. This number is just to have a cased hole, which still needs to be completed. The lack of drilling rigs to drill new wells and the high cost of tubulars to case with present diameters supports this statement.

COST OF RECOVERING A SEMI-ABANDON WELL.

Table 1 shows a reasonable cost to reclaim a candidate well for P&A by clean it, re-case and install the CT string as a production or pumping string.

There will be additional cost of miscellaneous such as packers and tools, plus surface installation as pumping unit, but we just wanted to remark major items of cost component. Not considering surface installations the cost to put back the well on production with this technique will be around \$ 100,000.

EQUIPMENT

To rework this wells three type of units are needed:

- ✓ A small CTU, “bobtail type” to do the well cleaning, and run CT as production string
- ✓ A pump truck to circulate fluid, clean sand, and eventually cement the new casing
- ✓ A small pulling unit to run the new casing (2.7/8” or 3.1.2” tbg) and also do some minor surface work

STATISTICS

According to data released by the DOE, in the period from 1994 to 2003 approximately 142,000 marginal wells were plugged and abandoned, costing the US more than \$ 3.0 billion in lost oil revenue, and we can assume that the present average is more than 10,000 P&A wells per year.

Knowing that is difficult to drill new wells economically in marginal areas, perhaps the solution is to take a serious look in holes drilled in the past with possibilities of rehabilitation

CONCLUSIONS

CT as pumping string not only can produce new Slim Hole wells, but also can contribute to bring more production to surface by recovering and converting semi abandon wells, into Slim Holes.

Table 1

Equipment	Days on loc	u\$s /day	\$
CTU	3	7,000	21,000
Pulling unit	1	3,000	3,000
Pumping (*)	1	8,000	8,000
Sub total			32,000
Materials	Qty feet	\$/ft	\$
Tubing 2.7/8	5,000	6	30,000
CT 1.1/2"	5,000	3	15,000
Sub pump			2,500
Sub total			47,500

(*) Cementer/Pump truck



Bobtail CTU



Pulling Unit