



SapuraKencana  
P E T R O L E U M

Well Services



# Cement Injection Tool (CIT)

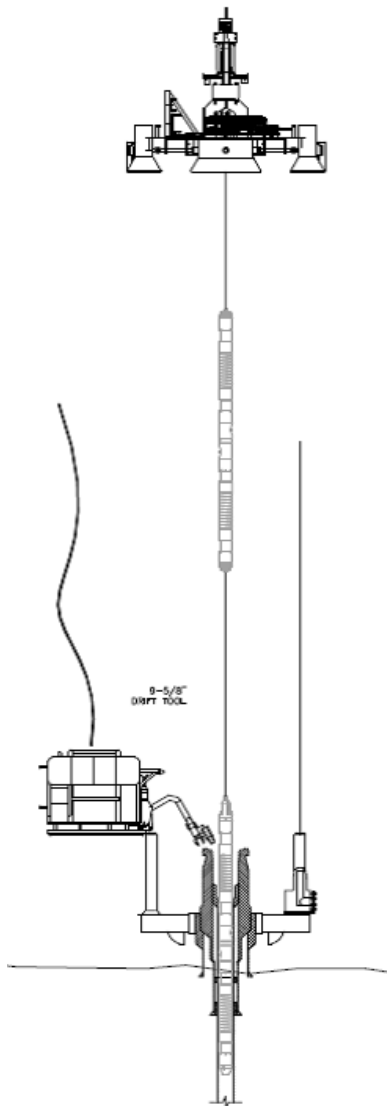
Final well abandonment tool, combining perforating, pressure monitoring and the placement of cement plugs in annulus and production casing

SapuraKencana Well Services' Cement Injection Tool (CIT) is a combination, disposable, isolation, squeeze packer and casing perforating system. It enables the perforation of production casing, monitoring and control of annular pressure and, if required, re-cementation of the production casing annulus and placement of an abandonment plug in the casing itself.

The tool has two main components including an upper and lower subassembly. Each subassembly is similar and comprises dual packers and perforating units. The subassemblies are interconnected by a lifting wire and hydraulic umbilical. A hydraulic umbilical connects the tool to surface controls, the length of which is determined by the plug requirement depth.

Any 15ksi hydraulic power unit or test pump can be utilised to function the tools.

The CIT is run into the well to the required depth using a standard deck winch, hang-off tool and lifting wires (depth adjustment). The upper perforating subassembly is set then activated, and annular pressure monitored. The lower perforating subassembly ( $\pm 100\text{m}$  below the packer) is then set and activated. Circulation is confirmed with a flow path into the annulus through the lower subassembly and returns via the upper subassembly, enabling a cement plug of  $\pm 100\text{m}$  to be placed in the annulus. The CIT units can then be removed from the well or left in hole as packers for placement of further cement plugs in the casing. Tools are designed for use in 9 $\frac{5}{8}$ " casing. Other sizes can be manufactured by request.



## FEATURES

- 24 mm perforations
- Opposing packer seals
- Two (2) perforators per subassembly
- Hydraulic controls
- Pressure monitoring umbilical

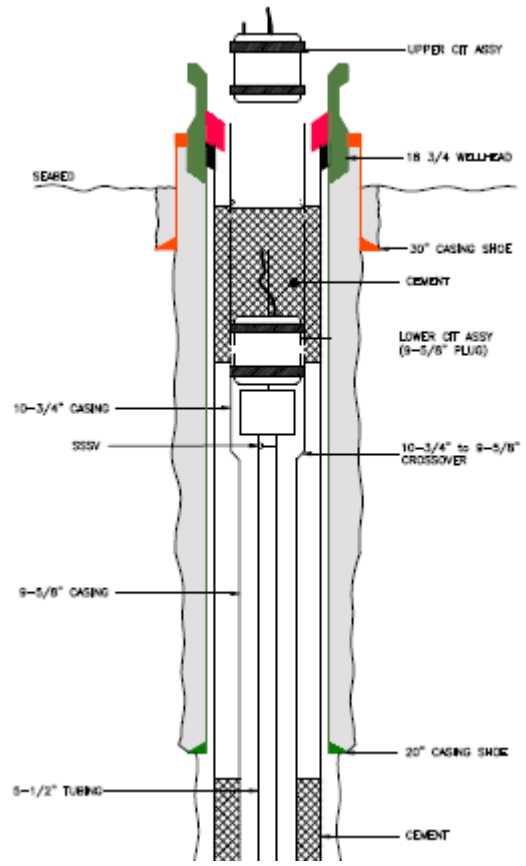
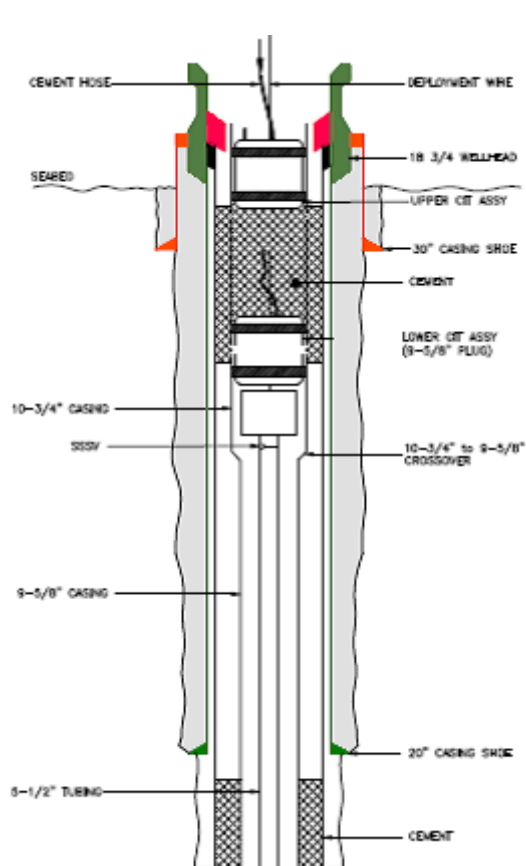
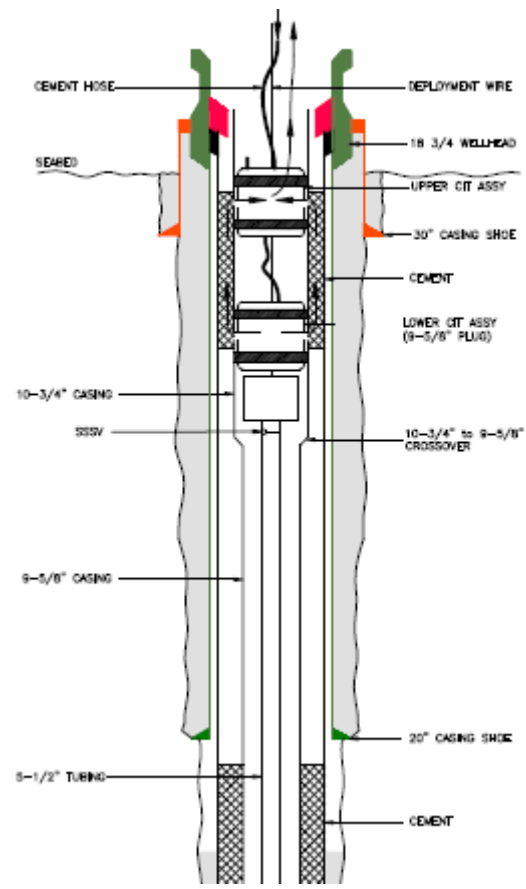
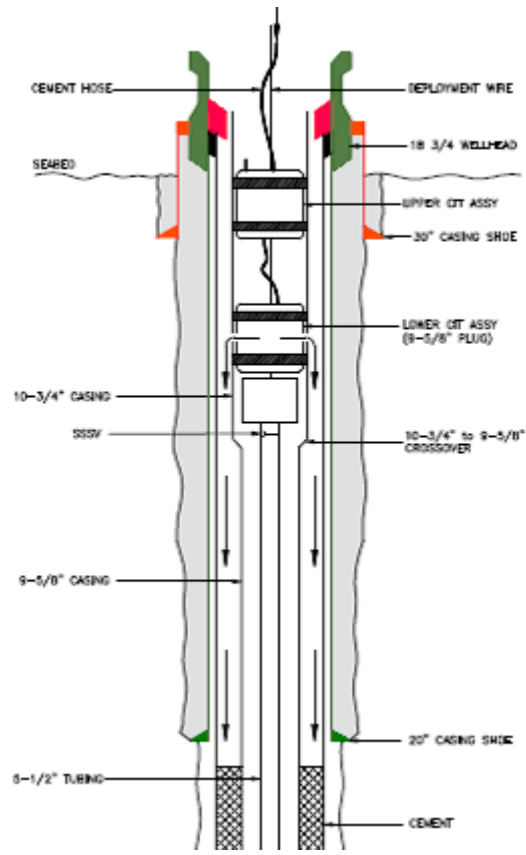
## SPECIFICATIONS

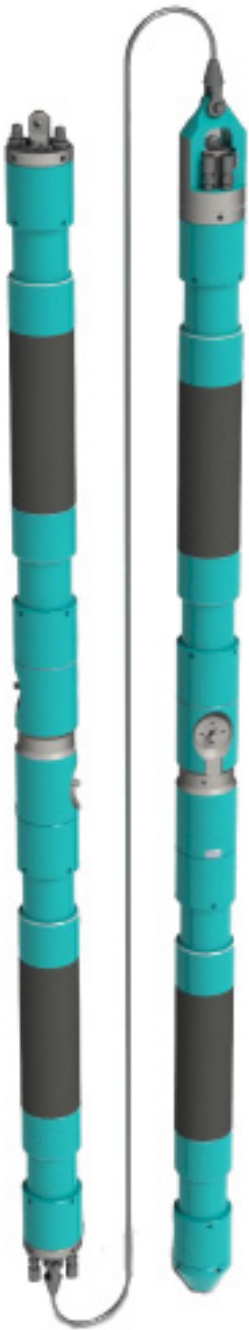
Upper tool length	:	4.5 m
Lower tool length	:	4.25 m
Tool mass	:	550 kg (each subassembly)
Maximum tool diameter	:	208 mm (8 <sup>3</sup> / <sub>16</sub> inch)
Maximum working pressure	:	15,000 psi (1034 bar)
Perforation diameter	:	24 mm (0.945 inch)
Perforators	:	2 per sub
Transport skid dimensions	:	L5.1 m x W1.1 m x H1.2 m
Transport skid capacity	:	12 tools

## BENEFITS

- Eliminates requirement for explosives or wireline perforating systems
- Disposable tool, reducing W.O.C time and total abandonment time
- Cost effective, rigless operations
- Establishes circulation path in un-cemented annulus







## EQUIPMENT HISTORY

### 2008 Apache NWS Repair of Production Wells

1 x 10<sup>3</sup>/<sub>4</sub>" reusable tool – perforation of production tubing to create circulation path for annulus cement repair job

### 2008 ConocoPhillips Timor Sea

Final Abandonment of 5 Subsea Wells – 5 x 9<sup>5</sup>/<sub>8</sub>" disposable tools (10 subassemblies in total, 5 left in place)

Placement of 100 m annulus plug and 50 m surface plug

### 2006 Total Vietnam Wellheads

Removal of five (5) subsea wellheads in 50 m water depth; three (3) through 7" x 13<sup>3</sup>/<sub>8</sub>" x 20" x 30" casings and two (2) through 9<sup>5</sup>/<sub>8</sub>" x 13<sup>3</sup>/<sub>8</sub>" x 20" x 30" casings

### 2005 Nexen Timor Sea Platform Wellhead

Final Abandonment of 5 Subsea Wells – 5 x 7" tubing disposable tools (10 subassemblies in total, 5 left in place)

Placement of 50 m annulus plug and 30 m surface plug

SapuraKencana Well Services

is operated by subsidiaries of SapuraKencana Petroleum



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