DSCCT (Downhole Self-contained Combined Tool)

Purpose.

Downhole self-contained combined tool DSCCT descends into the well on the wire and produces up to seven registration parameters (pressure PRES, temperature TEMP, gamma-rays GK, bottom flow-meter FLOW, additional upper flow-meter FLOW2 or capacitance water holdup VL, casing collar locator CCL, stream thermal indication STI).

One of the channels of the flowmeter can be reversible, i.e. to show the flow direction.

Information from the sensors is received in a block memory of the tool that stores data at all times during measurement. Tool powered by lithium batteries or accumulator.

For empowerment of **DSCCT** additional module GEO-MSconnects to the tool, which has additional channels such as capacitance water holdup, resistivity meter and thermometer.

Tool configuration can be different and depends on the number of channels, a range of pressure, a range of temperature and gas factor at work environment.

Binding the tool by depth can be produced by logging control system (SKK) or by a separate measurement depth unit (MU) with adapter MU-USB that connects directly to your computer.

The tool can be programmed to the different operating modes with selection of channels you need and set the delay of measurement, cycle and duration of each mode.

Upon the request it is possible to produce a tool with any combination of channels and with shortened length (for example combined with flow-meter).

Using the tool allows to:

- to produce a study of injection wells in operation at a pressure of 20 MPa on the wellhead without stopping and emptying spout formation water;
- study the well around the trunk, including the upper freshwater horizons;
- receive geophysical material from the PC directly on the well;
- you can to reduce the duration of the study wells by excluding works on depressurization and injection mode restore.

After lifting the tool the information is read into a PC, where you can see the processing of measurement on the screen. Further material is translated into the depth format (LAS) as a standard geophysical material. If necessary, all material is available to print in standard form.

Downhole self-contained combined tool **DSCCT** has the certificate of

conformity.New features of the **DSCCT**:

- No power switch, the stability of the tool to the power failure.
- Tool modification with a diameter of 28 mm and the pressure of 400 kgf/sq.cm, 30/38 mm to 600 kgf/sq.cm, 38 mm at 800 kgf/sq.cm (optional) and the range of temperatures up to 150 °C.
- Use the high capacity accumulator as a power source allows to work autonomously with all channels switched on

(including GK and STI) not less than 11 hours. With STI switched off tool will work for 56 hours.
STI channel with indirect heat sensor can work as additional temperature sensor (with switched off STI heater).
Built-in power source monitor turns off power-consuming channels STI and GK of the tool in process of working of tool in write mode and prevents deep discharge of power supply. The recording for the other channels is not interrupted.
There is a possibility to connect a second top flow-meter. As a second flow-meter uses a standard flow-meter module.
It is possible to connect Caged(Open/Close) Fullbore Flowmeter
The possibility of restore the factory settings in case improper calibration or memory failure of the tool.

Technical characteristics

Parameter	**Value**
The number of recording channels (parameters)	from 1 to 7
Measuring range, kgf/sq.cm	0-400, 0-600, 0-800, 0-1000
Number of bits of ADC	16
The relative error, %	± 0.15
Absolute error, kgf/sq.cm	0.6\ 0.9\ 1.2\ 1.5
Pressure resolution, %	0.0015
Pressure resolution,* kgf/sq.cm	0.006
* for range 0-400 kgf/sq.cm	
Measuring range, °C	0...+100, 0...+120, 0...+150
Number of bits of ADC	16
Absolute error, °C	0.5
Temperature sensitivity, °C	0.003
Time constant, sec	1.5
Measuring range, microR/hour	0...250
Sensitivity, imp/min on 1 microR/hour, not less than	150
Relative error, %	± 15
Signal/noise ratio, not less than	5
Design options of flowmeters:	
Flow-meter diameter 30(32) mm, 20 mm diameter spinner, range, m3/hour	3-250
Flow-meter diameter 38(42) mm, 27 mm diameter spinner, range, m3/hour	2-200
Open/close flow-meter diameter 38/110 mm (opened/closed), rubber spinner diameter 60 mm, range, m3/hour	0.5-50
Flow-meter diameter 115mm, 60mm diameter spinner, range, m3/hour	0.5-100
Flow-meter half-packer diameter 115/67 mm (external/internal), 60 mm diameter spinner, range, m3/hour	0.15-50
Overheating sensor in still water, °C, not less than	4.5
Time constant, sec	3
Amount of memory of the tool	4 Mbytes or 270336 points (with all channels), may be increased up to 8 Mbytes
The time of storage of information	10 years
Filling time memory (9 channels on), h	22
Number of write cycles in the internal memory	100 000

Parameter	Value
Sample Rate (measurement period), sec	0.125-125
Delay time of writing of the tool, h	Up to 1650
Power source	Accumulator 18650 2.2 Ah capacity (for work up to 95°C) or 2 batteries CR123 1-1.5 Ah capacity (for work up to 120°C) or 1 battery 10 Ah capacity (for work up to 150°C)
Current consumption in delay mode, mA, no more	0.1
Current consumption in the recording mode for all channels enabled, mA, no more	120
Current consumption in the recording mode when the channel is off STI, mA, no more	25
Current consumption in the recording mode with off channels GR and STI, mA, no more	5
- To enable (with delay) the tool in the record mode using a computer - To view the actual values of the channels when checking the tool - Set the Sample Rate - Setting different measurement programs (up to 16) with the ability to set different modes of operation of the tool (on / off individual channels, turn-on delays, duration and polling cycle) within each program - LAS standard output files	
- Communication with PC	COM, USB
Length, mm	1160-2330
Diameter, mm	28-42
Weight, kg, not more than	8-12

Modifications

Model	Description
DSCCT -28 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW. Power source - accumulator
DSCCT -28 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW. Power source - Battery
DSCCT -30 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW. Power source - accumulator
DSCCT -30 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW. Power source - Battery
DSCCT -32 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW. Power source - accumulator
DSCCT -32 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW. Power source - Battery
DSCCT -38 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - accumulator
DSCCT -38 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - Battery
DSCCT -42 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - accumulator
DSCCT -42 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - Battery
DSCCT -42 MPa /°C	Channels: T,P,GR,CCL,STI,FM,FM2. Power source - Battery (2 Blocks) , titanium sonde
DSCCT -38 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - accumulator (2 Blocks)

Model	Description
DSCCT -38 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - Battery (2 Blocks)
DSCCT -42 MPa /°C	Channels: T,P,GR,CCL,STI,FLOW,FLO2. Power source - Battery (2 Blocks) , beryllium copper sonde