

Radial Bond Tool (RBT17&23)

Overview

The Radial Bond Tool is a newly developed logging tool with radial measurement for more information. The tool is of simple mechanical structure with good sealing performance and is easy to operate and maintain. Electrically, it uses intelligent control with simple circuit to ensure high reliability.

RBT17 and RBT23 are of 79.4mm in diameter. The tool is composed of the acoustic part and the electronics. The former has one transmitter and three receivers of 3Ft, 5Ft and the radial receiver. The radial receiver covers eight sectors, each for 45 degrees of the circumference.

The electronics receives the telemetry commands, controls the tool operation, and sends the acquired data to the telemetry.

Applications

- High temperature tool uses multi-conductor connection for easier expansion
- Proven good logging results
- Relative azimuth information available

Specifications

| | |
|----------------------|--|
| Model | RBT17 |
| Tool OD | 79.4mm (3 1/8") |
| Max Working Temp | 175°C (347°F) |
| Max Working Pressure | 120MPa (17400Psi) |
| Make-up Length | 2768mm (108.98") |
| Tool Length | 2863mm (112.72") |
| Measuring Point | CBL: 1567mm (61.70") VDL: 1263mm (49.72") |
| Receiving Sector | Eight sectors |
| Weight | 48Kg (106.67Lbs) |
| Transmission | Mono-conductor |
| Protocol | WSHTbus |
| Working Voltage | 18V±5% |
| Working Current | 50mA |
| Measuring Range | 95-340mm (3 3/4-13 3/8") |
| Transducer Type | Piezoelectric ceramic |
| Transducer Frequency | 22KHz |
| Threads | WSDJ-GoC-1A |



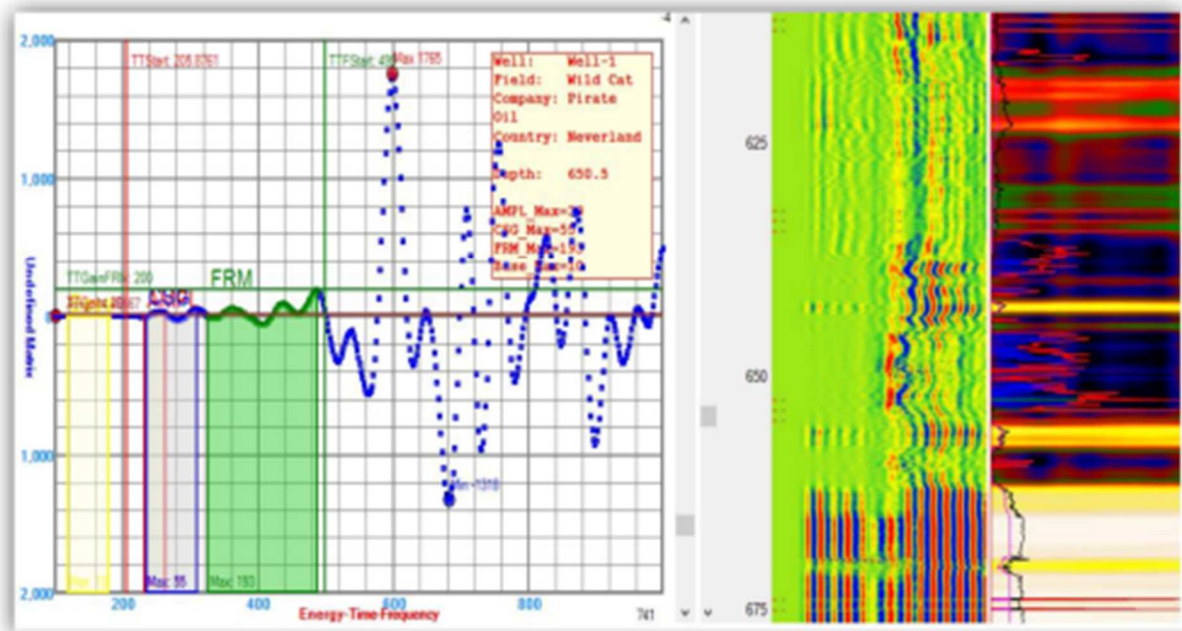


Figure 5 Full waveform good casing bonding zone selection, with bad/poor bonding for formation (650.5m).

Ratio of frequency/amplitude between formation gate (green) arrivals and casing gate (blue-gray) arrivals enables classification of bonding for formation. Figure 6 shows example of full waveform in case of good bonding for casing while in same time there is also very good formation response meaning good bonding for formation.

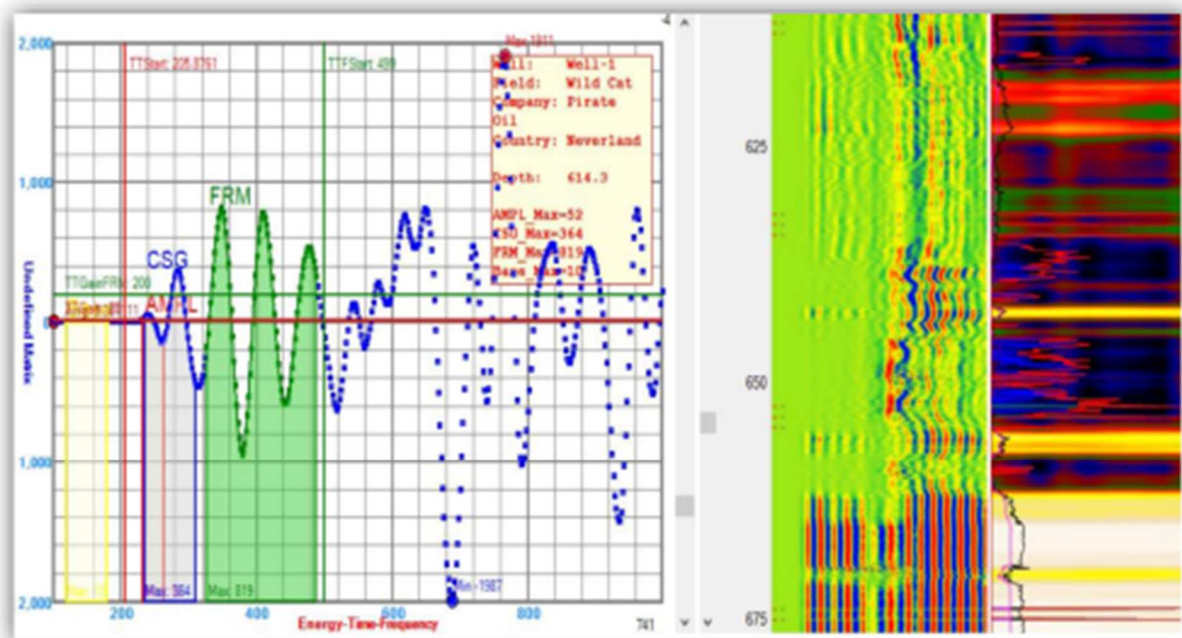


Figure 6 Full waveform with good bonding for casing while in same time also good bonding for formation (634.9 m).

| | | | | | | | | | |
|-------|-------|-------|-------|------|---|---|------------------|------------------|---------------|
| CZ 28 | 431.2 | 435.5 | 4.3 | 0.55 | 3 | 2 | Moderate-Good | Poor | Not Expressed |
| CZ 29 | 435.5 | 439.7 | 4.2 | 0.52 | 3 | 1 | Moderate-Good | Very Poor - None | Not Expressed |
| CZ 30 | 439.7 | 506.1 | 66.35 | 0.39 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 31 | 506.1 | 511.1 | 5.05 | 0.59 | 3 | 1 | Moderate-Good | Very Poor - None | Not Expressed |
| CZ 32 | 511.1 | 513.8 | 2.7 | 0.36 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 33 | 513.8 | 516.7 | 2.85 | 0.31 | 1 | 1 | Very Poor - None | Very Poor - None | Not Expressed |
| CZ 34 | 516.7 | 529.7 | 13.05 | 0.39 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 35 | 529.7 | 534.6 | 4.9 | 0.5 | 3 | 1 | Moderate-Good | Very Poor - None | Weak |
| CZ 36 | 534.6 | 542.8 | 8.2 | 0.66 | 3 | 2 | Moderate-Good | Poor | Weak |
| CZ 37 | 542.8 | 548.6 | 5.8 | 0.37 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 38 | 548.6 | 552.9 | 4.3 | 0.6 | 3 | 1 | Moderate-Good | Very Poor - None | Weak |
| CZ 39 | 552.9 | 558.6 | 5.7 | 0.37 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 40 | 558.6 | 560.7 | 2.1 | 0.56 | 3 | 1 | Moderate-Good | Very Poor - None | Weak |
| CZ 41 | 560.7 | 564.4 | 3.7 | 0.43 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 42 | 564.4 | 566.5 | 2.1 | 0.64 | 3 | 2 | Moderate-Good | Poor | Weak |
| CZ 43 | 566.5 | 572.9 | 6.4 | 0.35 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 44 | 572.9 | 575.5 | 2.6 | 0.27 | 1 | 1 | Very Poor - None | Very Poor - None | Not Expressed |
| CZ 45 | 575.5 | 581.8 | 6.25 | 0.41 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 46 | 581.8 | 586.4 | 4.65 | 0.53 | 3 | 1 | Moderate-Good | Very Poor - None | Weak |
| CZ 47 | 586.4 | 601.7 | 15.3 | 0.43 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 48 | 601.7 | 612.2 | 10.45 | 0.7 | 3 | 2 | Moderate-Good | Poor | Weak |
| CZ 49 | 612.2 | 617.4 | 5.2 | 0.84 | 4 | 3 | Very Good | Moderate-Good | Not Expressed |
| CZ 50 | 617.4 | 623.9 | 6.55 | 0.46 | 2 | 1 | Poor | Very Poor - None | Weak |
| CZ 51 | 623.9 | 635.1 | 11.2 | 0.7 | 3 | 2 | Moderate-Good | Poor | Weak |
| CZ 52 | 635.1 | 654.8 | 19.65 | 0.84 | 4 | 3 | Very Good | Moderate-Good | Not Expressed |
| CZ 53 | 654.8 | 711.4 | 56.65 | 0.19 | 1 | 1 | Very Poor - None | Very Poor - None | Not Expressed |
| CZ 54 | 711.4 | 720.9 | 9.5 | 0.31 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 55 | 720.9 | 723.3 | 2.4 | 0.61 | 3 | 1 | Moderate-Good | Very Poor - None | Not Expressed |
| CZ 56 | 723.3 | 728.9 | 5.6 | 0.43 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 57 | 728.9 | 732.1 | 3.2 | 0.59 | 3 | 2 | Moderate-Good | Poor | Not Expressed |
| CZ 58 | 732.1 | 734.2 | 2.1 | 0.46 | 2 | 1 | Poor | Very Poor - None | Not Expressed |
| CZ 59 | 734.2 | 737.8 | 3.6 | 0.26 | 1 | 1 | Very Poor - None | Very Poor - None | Not Expressed |

