

ARRAY SONIC EVALUATION TOOL

PURPOSE:

The ASET provides quality broadband compressional Measurement (in both hard and soft rock environments) in cased holes and provides analysis of the zone isolation achieved by cementing services. The most common application for the ASET tool is to identify 2 shallow, gas-bearing zones and better evaluation of Coal Bed Methane.

ADVANTAGES:

- Ability to run CBL/CCL/GR/CNL/Sonic in one string.
- Monopole Sonic specifically designed to be run from a cased hole truck for a cased hole environment.
- Field copy generated day of operation and placed on dataportal for client the next morning.
- More timely and affordable method for information evaluation and cement bond analysis.



GENERAL INFORMATION

Temperature:	300° F	Pressure:	20,000 psi
Diameter:	3 1/8"	Length:	20.4 ft.
Tool Weight:	271 lbs., 123 kg	Supply Voltage:	120 VDC
Power/Current:	135 mA (+/- 5)	Receivers:	Piezoelectric crystals
Measure Points:	3ft Amp: 90.2"	Borehole Environment:	Brine
	5ft VDL: 102.2"		Oil
	GR: 209.7"		Fresh Water Drilling
	CCL: 228.8"		Mud
		Max. Casing:	9.625"

Array Receivers (RX1 through RX8): 72.22" to 93.22" in 3" intervals

ASET

Array Sonic
Evaluation Tool


DESCRIPTION

The ASET is a two transmitter, eight receiver design. The CBL has 3' - 5' spacing while the monopole has 6" receiver spacing. The tool provides monopole slowness, sonic amplitude and a bond log. Waveforms are digitally recorded for future processing.

SPECIFICATIONS

Pressure	20,000 psi	1,379 bar
Temperature	302°F	150°C
Weight	228 lbs.	103.5 kg.
Length	19.78 ft.	6.03 m
MAX. O.D.	3.125 in	7.94 cm
Vertical Resolution	3.5 ft.	1,07 m
Depth of Investigation	1.5 in	3.8 cm
Measurement Range	40 — 220 μ sec/ft.	131 — 722 μ sec/m
Borehole Range	4.5-9.625 in	11.4-24.45 cm
transmitters	Monopole	CBL
Frequency	7 kHz	17 kHz
Max Logging Speed	66 ft./min	20 m/min
Receivers	8	Piezoelectric
Receiver Spacing	6 in	0.153m

REPEATABILITY

Slowness	$\pm 2 \mu$ sec/ft.	$\pm 6.5 \mu$ sec/m
Amplitude	$\pm 5 \%$	

COMBINABLE WITH

The ASET is functional on the Warrior acquisition system. The ASET is usually combined with a compensated neutron.

REMARKS

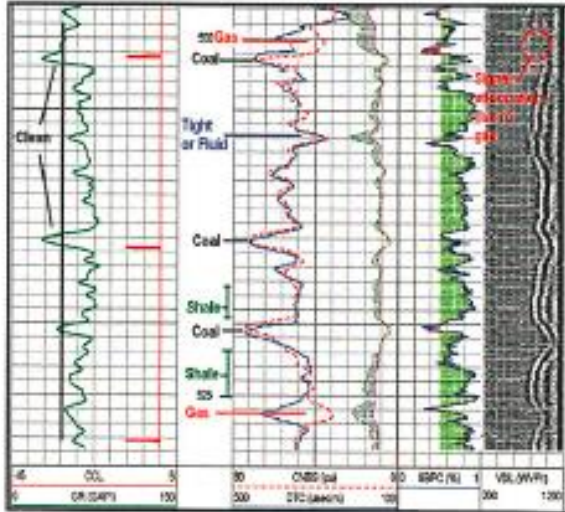
Centralizers should be run above and below the ASET for centralization. ASETware is needed to process the waveforms to generate the slowness data

LIMITS

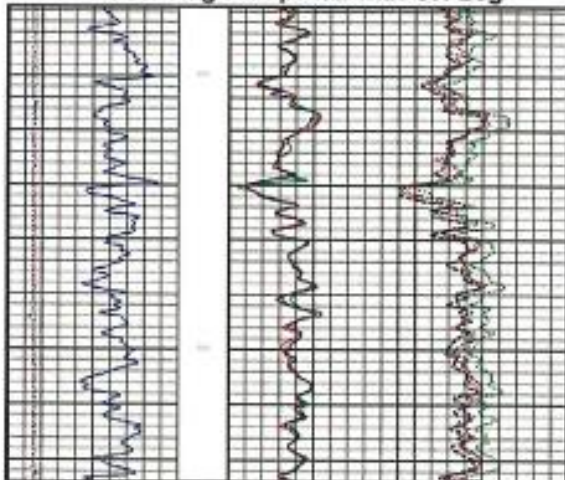
Can be run in Open or Cased Fluid-filled holes.
ASET cannot generate a compressional slowness in formations with poor or no cement bond.

ARRAY SONIC EVALUATION TOOL

ASET Log



ASET Log Compared with OH Log



Blue - OH Sonic/ Compensated Neutron
 Red - ASET/CNL in Open Hole
 Green - ASET/CNL in Cased Hole

Sensor	Offset (ft)	Schematic	Description	Len. (ft)	OD (in)	Wt. (lb)	
CHO	4.40		CHO-TITAN(T) Titan 1-7/16 Cable head	1.00	1.44	2.20	
CSHT	2.40		CENT-CSS (CSS-T) Computer Series 3 TI Cable	2.75	2.44	15.80	
CCL	0.00		CCL-CCL-ARRAY (ARRAY-CCL01) ARRAY COLLAR LOCATOR	1.24	3.11	11.82	
GR	-1.00		GR-GR-ARRAY (ARRAY-GR01) TUCKER-ARRAY GR	6.02	3.11	17.94	
WFS6	-6.40			ARRAY-ARRAY-SONIC (ARRAY-01) TUCKER-ARRAY SONIC	12.40	3.11	187.20
WFS7	-6.90						
WFS8	-7.40						
WFS9	-7.94						
WFS4	-8.40						
WFS3	-8.90						
WFS2	-9.40						
WFS1	-9.91						
WFSF1	-10.37			CENT-CSS (CSS-B) Computer Series 3 TI Cable	2.75	2.44	15.80
WFSF2	-11.52						
SHOUL	-18.36		TITAN Shoulder Joint	1.31	1.68	4.41	
CHASC	-21.71	CNT-CSS-CNT (CSS-102B) CSS 1 1/16 Compensated Neutron	6.50	1.69	8.61		
CHASC	-28.24						
MCAL	-28.48						
CHASC	-28.65						

Offset: Tucker Array Sonic
 Total Length: 33.57 ft
 Total Weight: 259.27 lb
 O.D.: 3.11 in