

**COMMON SONIC DERIVED POROSITY CORRECTION FOR CHANGE IN
MATRIX VELOCITY/TRAVEL TIME ***

$$\phi_s = \frac{\Delta t - \Delta t_{ma}}{\Delta t_f - \Delta t_{ma}}$$

$$(V_f = 5400' / \text{sec})$$

$$(\Delta t_f = 185 \mu\text{s} / \text{ft})$$

ASSUMED MATRIX VELOCITY (FT/SEC)

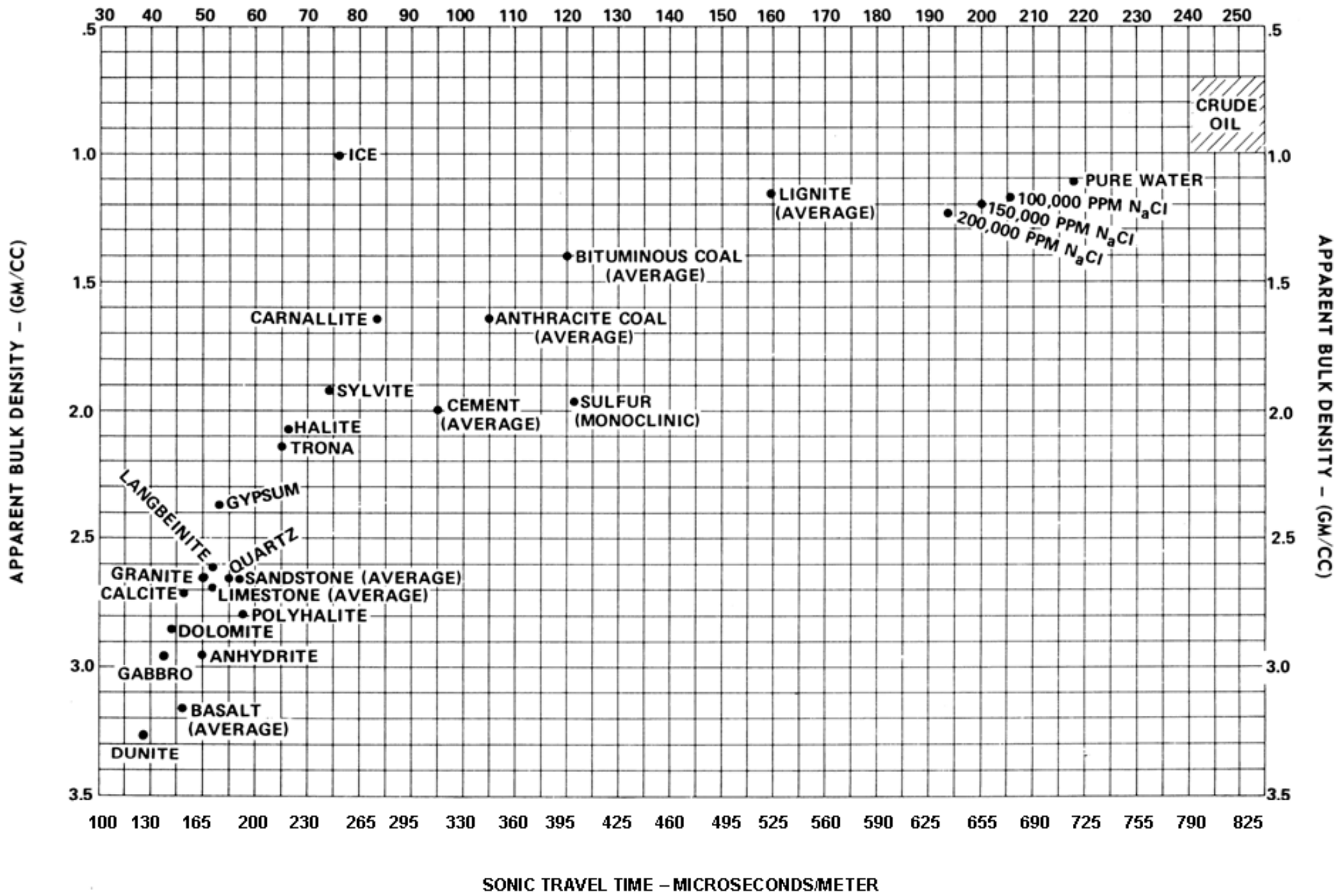
		(Dolomite)	(Calcite)	(Anhydrite)	(Gypsum)	(Quartz)	(Halite)	(Sulphur)
		23,000	22,000	20,000	19,000	18,000	15,000	8,200
TRAVEL TIME		(43.5 μ s)	(45.5 μ s)	(50 μ s)	(52.6 μ s)	(55.5 μ s)	(66.7 μ s)	(122 μ s)
ACTUAL MATRIX VELOCITY (FT/SEC)	23,000 (43.5 μ s)	0	+1.4	+4.6	+6.4	+8.5	+16.4	+55.5
	22,000 (45.5 μ s)	-1.4	0	+3.2	+5.1	+7.2	+15.3	+54.8
	20,000 (50 μ s)	-4.6	-3.2	0	+1.9	+4.1	+12.4	+53.3
	19,000 (52.6 μ s)	-6.4	-5.1	-1.9	0	+2.2	+10.6	+52.4
	18,000 (55.5 μ s)	-8.5	-7.2	-4.1	-2.2	0	+ 8.6	+51.4
	15,000 (66.7 μ s)	-16.4	-15.3	-12.4	-10.6	-8.6	0	+46.7
	8,200 (122 μ s)	-55.5	-54.8	-53.3	-52.4	-51.4	-46.7	0

* This table gives the error values at the zero porosity level. For other porosities these values should be multiplied by $\frac{(100 - \phi\%)}{100}$.

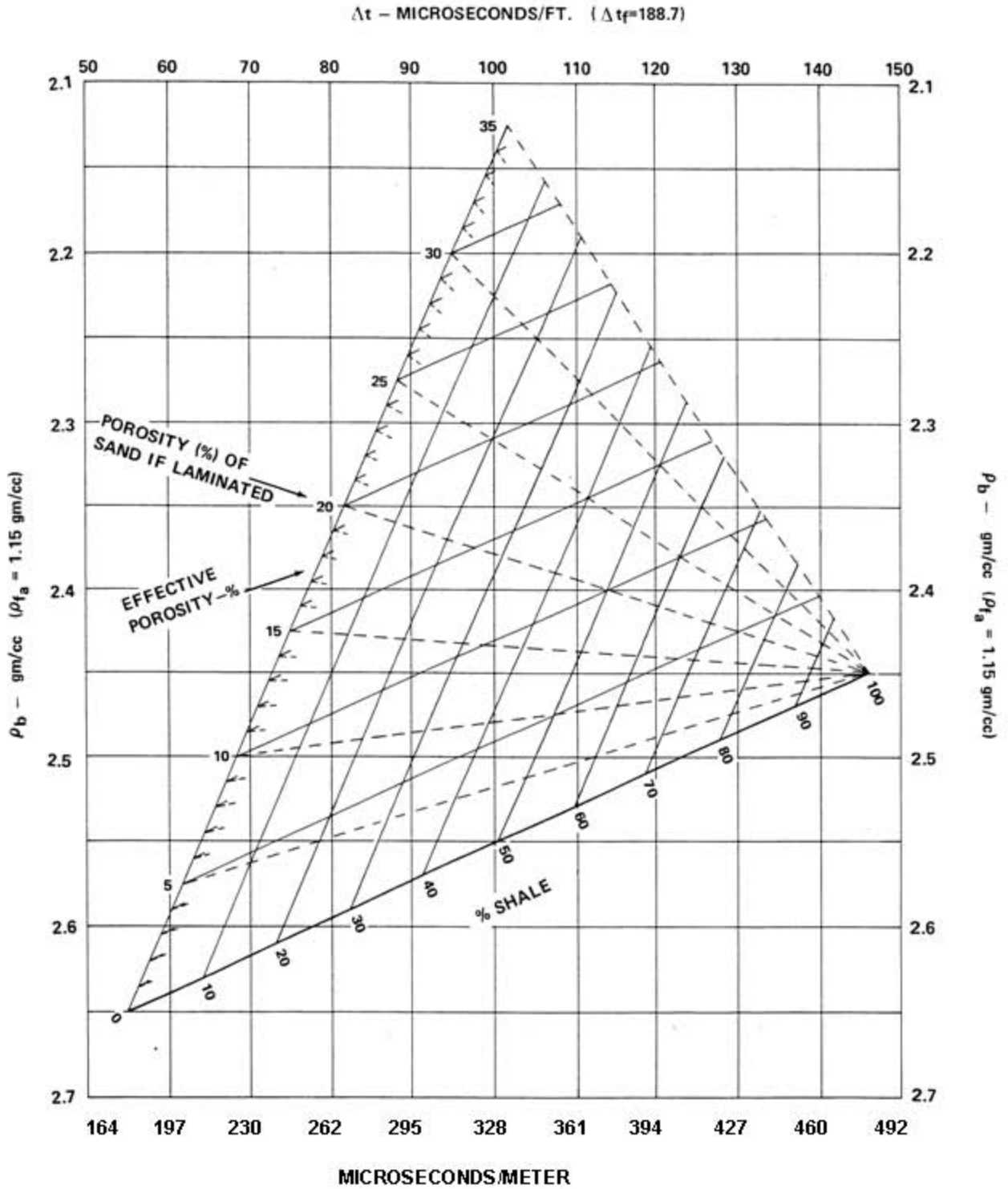
SONIC - DENSITY CROSS PLOT (LITHOLOGY)

Density Log Calibration to $Z'/A=0.5$

SONIC TRAVEL TIME - MICROSECONDS/FOOT

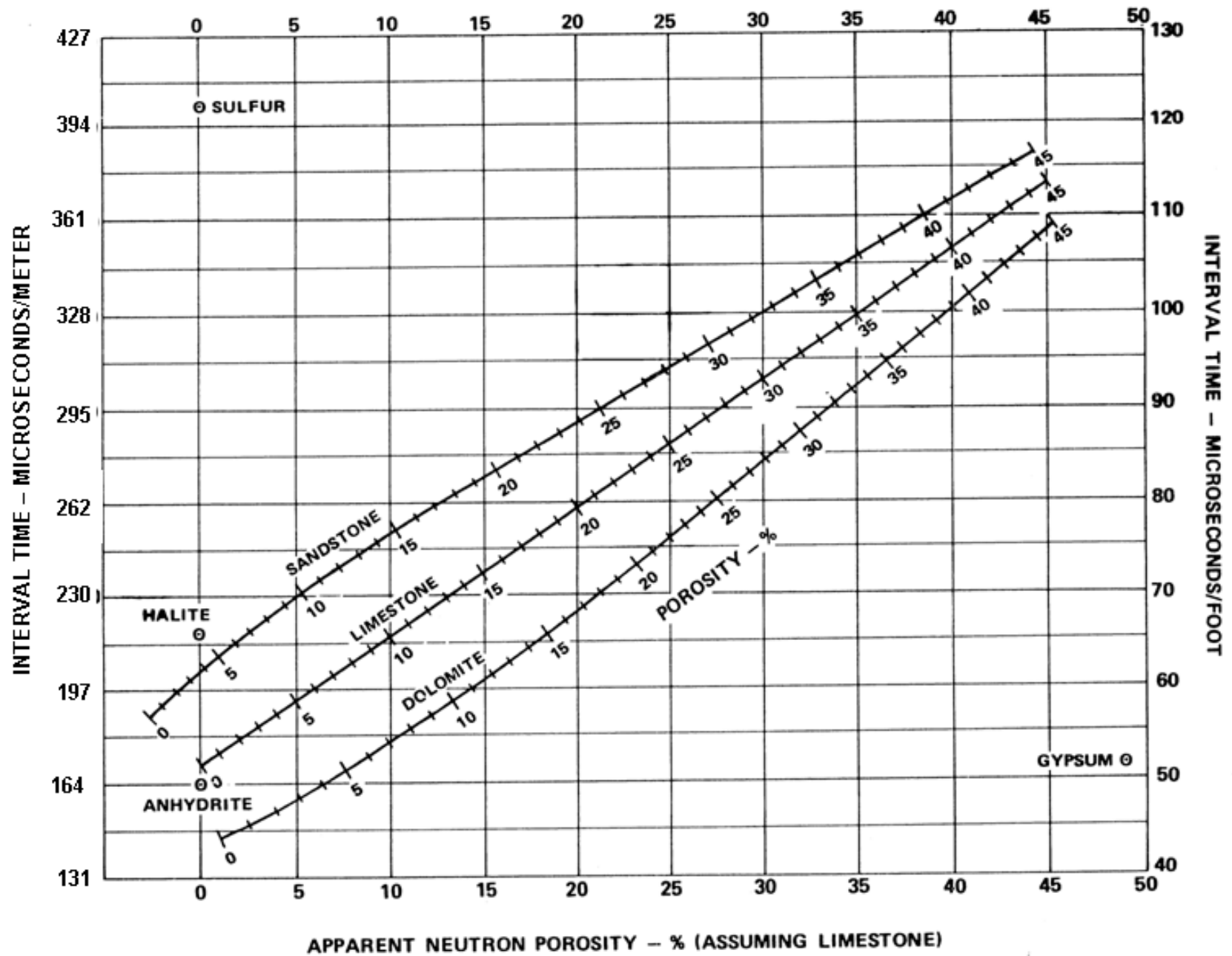


SONIC DENSITY CROSS PLOT FOR SHALE CONTENT



SONIC - NEUTRON CROSS PLOT
 ($V_p = 5,300'$ /sec, Hydrogen Index of Pore Fluid=1)

APPARENT NEUTRON POROSITY - % (ASSUMING LIMESTONE)



SONIC - DENSITY CROSS PLOT (COMMON)

$\rho_{fa} = 1.24 \text{ gm/cc}, V_f = 5300' / \text{sec}$

(Density Log Calibration to $Z/A=0.5$)

INTERVAL TIME - MICROSECONDS/FOOT

