

Well Identification:

API#	AREA	BLOCK	OPERATOR	WELL NAME	
55141000040000	BEAUFORT SEA	890	TENNECO OIL	OCS Y-0943 AURORA ST00BP00	
LATITUDE	LONGITUDE	KB	WATER DEPTH	GEO DATUM	ZONE
70° 6' 32.451"	-142° 47' 15.77"	108	-66	NAD83	10

Overview

The Aurora 1 was spud as an exploratory well on November 2nd, 1987 and located in the Beaufort Sea off the North Slope. The operator reported no commercial hydrocarbons were discovered at this location, and was plugged and abandoned. The comprehensive analytical data collection program included well logging and rotary sidewall coring provided by Schlumberger and drill cutting samples collected by Baroid. Collected samples were analyzed by Core Laboratories, and MicroPaleo Consultants for lithology, fluid saturation, pore volume, and hydrocarbon source generation.

Geologic Intervals used for Analysis:

Age/Period	Stratigraphy	Top	Source	Comments
Miocene	Canning	270		Aurora Well Report.pdf
Oligocene		1650		
Eocene		2550		
Paleocene		7360		
Cretaceous	Hue Shale	15480		
	Pebble Shale	16000		
	Kemik	16400		
	Kingak	16620		
Jurassic		17473		

Logging Runs and Parameters:

LOGGED INTERVAL	TOP ft	BASE ft	TEMP degF	BITSIZE in	MWIN ppg	RM ohmm	WIRELINE RUNS												
							RUN#	GR	DLL	DIL	NUC	SON	VSP	DIP	MICRO	SGR	SP	TEMP	RFT
1	860	3037	62	12.25	10.5	1.92	1	X		X					X				X
							2	X				X							X
							3	X			X								X
2	2989	9476	160	12.25	12.1	0.787	1	X		X					X				X
							2	X				X							X
							3	X			X					X			X
							4							X					X
							5												X
							6						X						
3	9400	14292	238	12.25	13	1.18	1	X		X		X			X		X		X
							2	X			X								X
							3	X											X
							4							X					X
							5												X
							6						X						X
4	14240	16793	260	8.5	16	0.841	1	X		X		X			X		X		X
							2	X				X							X
							3	X			X								X
							4												X
							5							X					X
							6						X						X
5	14760	18312	320	5.875	16.7	0.63	1	X		X		X			X		X		X
							2	X			X								X
							3												X
							4							X					X
							5						X						X

Cored Intervals and Sample Analysis:

TOP ft	BASE ft	WHOLE CORE		TOP ft	BASE ft	SWS CORE	
		ft	ROUTINE SCAL			#REC	ROUTINE SCAL
9634	9674	40	8	3442	6438	25	
				10856	14191	6	
				14340	16800	185	

Log Discussion:

The Aurora 1 well was drilled and logged with water-based drilling fluid containing Barite weighting material to total depth. The well was sidetracked 2 times. Subsequent borehole sections were drilled with additional Barite to increase the borehole fluid pressure overbalance. All borehole sections required environmental corrections for hole size, temperature, pressure, and mud weight additives.

Environmental Corrections:

The Schlumberger 2000 Edition chartbook was used to correct the logs for borehole size, temperature, pressure, and drilling mud additives. The Gamma Ray log was corrected using chart GR-1. Compensated Neutron log was corrected using Por-14c and Por -14d. Dual Laterolog Resistivity logs were corrected using Rcor-2c and invasion corrected using Rint-9b. Dual Induction logs were corrected using Rcor-4a and invasion corrected using Rint-10.

Minor caliper enlargements were observed in various sections of the well, in cases where the borehole caliper readings were above the correction charts, the maximum chart correction was applied, however these corrections under estimate the true formation measurement.

The bulk density measurement was the most environmentally affected log in the dataset, where the density log readings measured drilling fluid when the caliper reading exceed 16 inches. Repair of the density log utilized a Gardner et al. (1974) sonic to density transform.

Observations Logged Interval 1

Observed some significant caliper readings where density log was affected, the logged interval showed the bulk density required editing using the Gardner¹ density transform. Sonic log data was compared to the Faust⁴ velocity transform to correct anomalies in borehole washouts. Logged intervals where the bulk density was not present the delta-t sonic was used as the porosity model input to the final computed results.

References

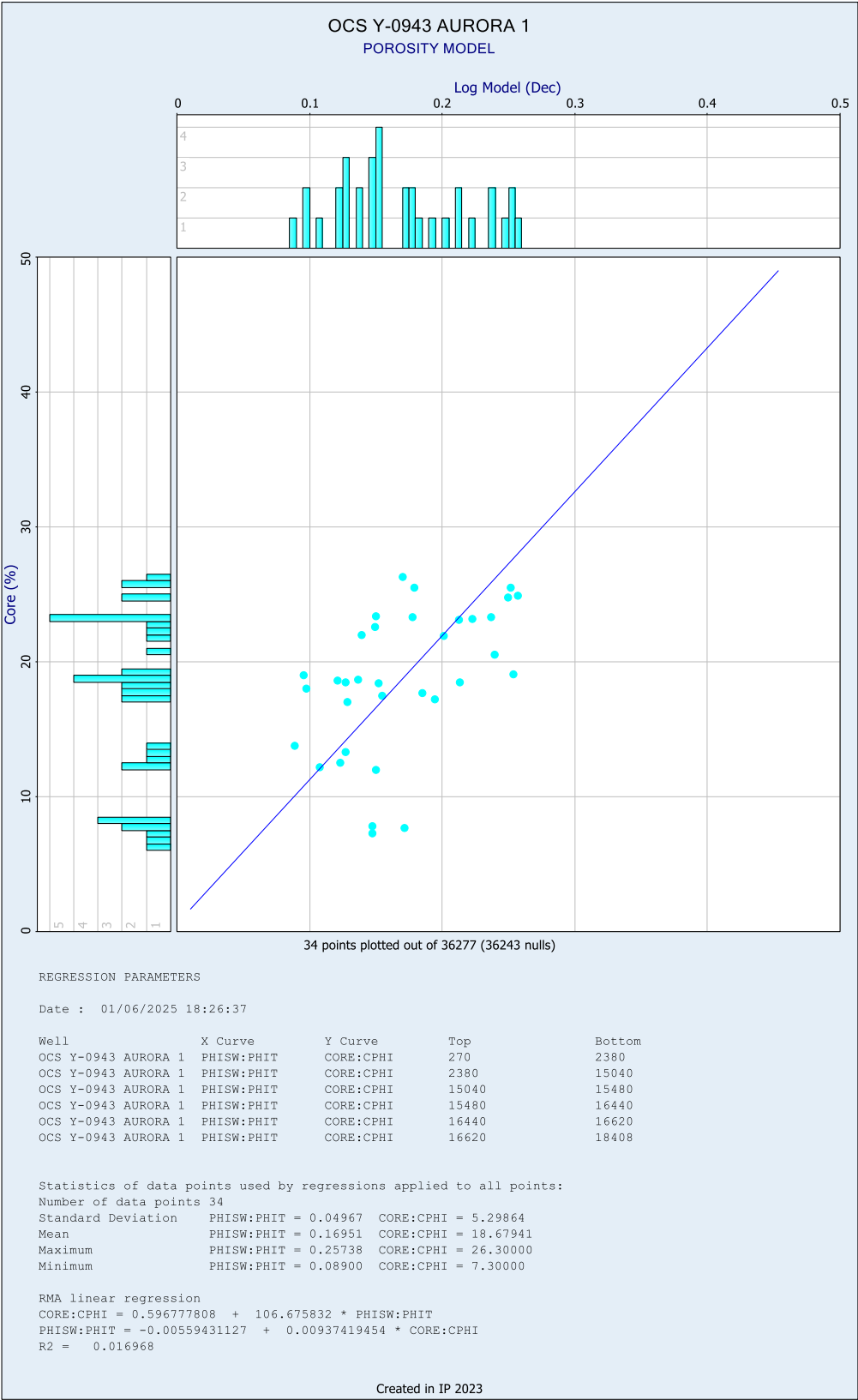
1. Gardner et al., 1974, Formation velocity and density—the diagnostic basics for stratigraphic traps Geophysics, 39 (6) (1974), pp. 770-780
2. Graton, L. C., and H. J. Fraser, 1935, Systematic packing of spheres with particular reference to porosity and permeability: Journal of Geology, v. 43, p. 785–909, DOI: 10.1086/jg.1935.43.issue-8
3. Carmichael, R.S. ed. 1982. Handbook of Physical Properties of Rocks, Vol. 2, 1-228. Boca Raton, Florida: CRC Press Inc.
4. L. Y. Faust, "A Velocity Function Including Lithologic Variation," Geophysics, Vol. 18, No. 2, 1953, pp. 271-288.

Summation Report:

RESERVOIR SUMMARY											
Zone	Zone Name	Top	Bottom	Gross	Net	N/G	Av Phi	Av Sw	Av Vcl	Phi*H	PhiSo*H
1	ORIGINAL BOREHOLE	174	15407	15233	2205	0.145	0.255	0.518	0.433	562.25	271.21
2	SIDETRACK 1	15407	16400	993	0	0	---	---	---	---	---
3	SIDETRACK 2	16400	18408	2008	0	0	---	---	---	---	---

Reservoir summary cut off values used were porosity greater than 20% (PHIE > 0.2), shale volume less than 40% (VSHALE < 0.4), and water saturation less than 50% (SW < 0.5).

Core versus Log Porosity Crossplot:



Summary Plot:

