

Well Identification:

API#	AREA	BLOCK	OPERATOR	WELL NAME	
55219000050000	AFOGNAK	2	MARATHON OIL COMPANY	OCS Y-0168 COHO 2 ST00BP00	
LATITUDE	LONGITUDE	KB	WATER DEPTH	GEO DATUM	ZONE
58° 58' 41.5"	-152° 54' 51.2"	50	542	NAD83	5

Overview

The Coho 2 was spud as an exploratory well on April 29th, 1979 and located in the Cook Inlet. 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 Geochem Laboratories. Collected samples were analyzed by Core Laboratories for lithology, pore volume, and hydrocarbon source generation.

Geologic Intervals used for Analysis:

Age/Period	Stratigraphy	Top	Source	Comments
Oligocene	HMCK	2865	COK Picks GF.xls	
Eocene	WFLD	3338	COK Picks GF.xls	
Cretaceous	BTU-SDLM	4049	COK Picks GF.xls	
	KYGK	4633	COK Picks GF.xls	
	KYGK_Mid	5928	COK Picks GF.xls	

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	1359	2756	109	12.25	8.8	1.59	1	X		X								X	
							2	X				X							
							3	X			X								
2	2718	7039	116	12.25	10.2	1.36	1	X		X								X	
							2	X				X							
							3	X			X								
							4	X						X					
							5	X				X							
3	7027	8012	115	8.5	11.1	1.3	1	X		X					X			X	
							2	X				X							

Cored Intervals and Sample Analysis:

TOP ft	BASE ft	WHOLE CORE ft	ROUTINE SCAL	TOP ft	BASE ft	SWS CORE #REC	ROUTINE SCAL
				2776	3518	40	11

Log Discussion:

The Coho 2 well was drilled and logged with water-based drilling fluid containing Barite weighting material. 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. The section below 7027 ft was not logged with nuclear tools, and porosity is estimated using the sonic log.

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.

Significant 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 high caliper readings deeper than 3000 ft measured depth and 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

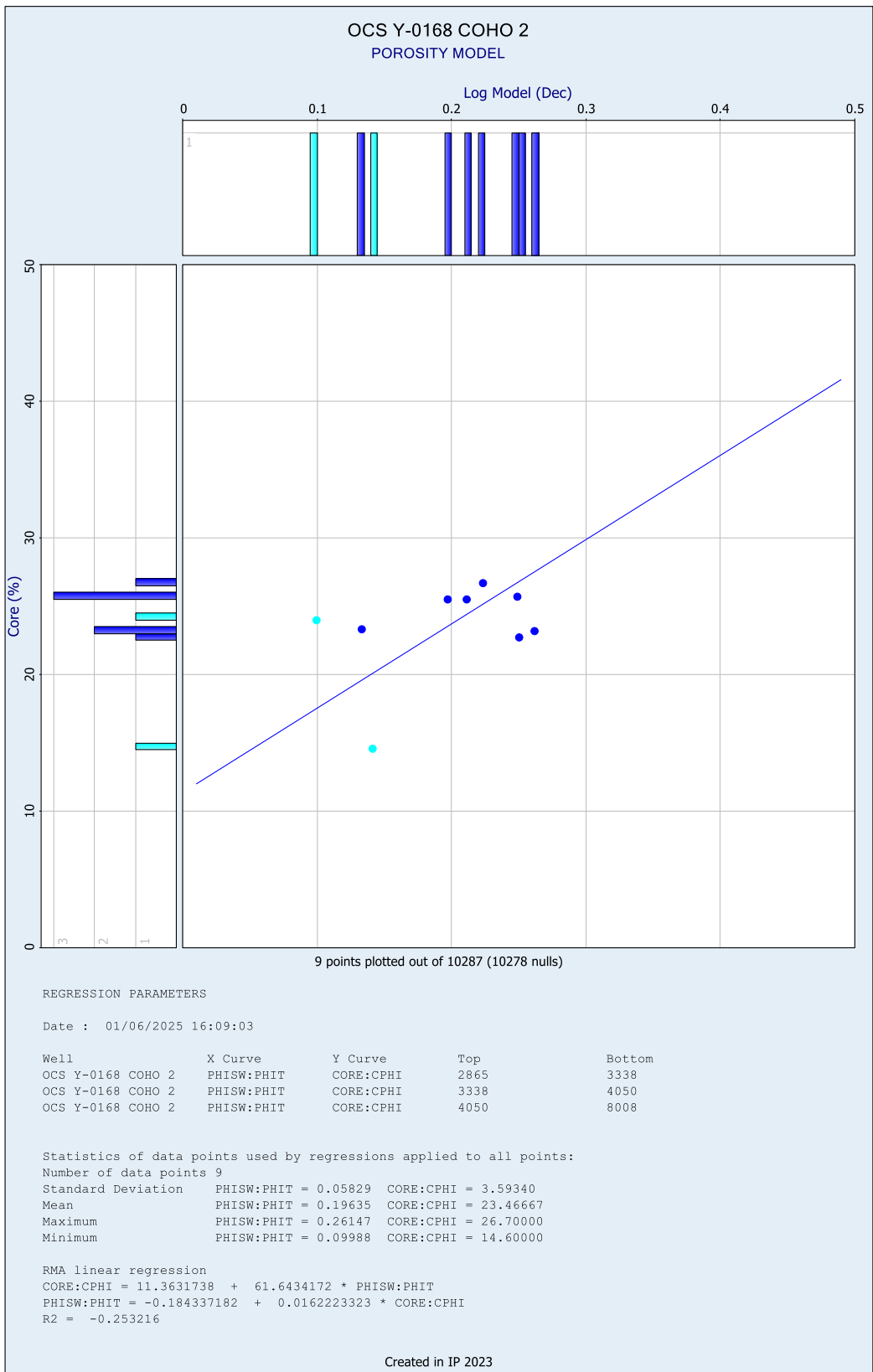
1. Gardner et al., 1974, Formation velocity and density—the diagnostic basics for stratigraphic traps Geophysics, 39 (6) (1974), pp. 770-780
2. Graton, L. C., and H. J. Fraser, 1935, Systematic packing of spheres with particular reference to porosity and permeability: Journal of Geology, v. 43, p. 785–909, 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	592	8008	7416	728	0.1	0.257	0.783	0.443	186.93	40.58	

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:



Scale : 1 : 10000

OCS Y-0168 COHO 2

08_IPJ550V (22) DEPTH (0FT - 8008FT) 01/06/2025 16:13

The well log displays the following data series:

- GR (GAPI):** Gamma Ray Index, scale 0 to 200.
- GRC (GAPI):** Gamma Ray Correction, scale 0 to 200.
- TEMP:** Temperature, scale 0 to 300 (degF).
- CALI:** Caliper, scale 30 to 0 (FT).
- TVDSS (FT):** True Vertical Depth Subsea, scale 0 to 7000.
- RESD (OHMM):** Resistivity, scale 0.2 to 20.
- RESM (OHMM):** Resistivity, scale 0.2 to 20.
- RESS (OHMM):** Resistivity, scale 0.2 to 20.
- NPHISC (DEC):** Neutron Porosity Index, scale 0.6 to 0.
- DENS (G/C3):** Density, scale 1.65 to 2.65.
- DTC (US/FT):** Sonic Log, scale 240 to 40.
- DT_FAUST (us/Rt):** Sonic Log, scale 240 to 40.
- SW (Dec):** Water Saturation, scale 0 to 1.
- PHIT (Dec):** Porosity, scale 0.6 to 0.
- PHIE (Dec):** Porosity, scale 0.6 to 0.
- BVW (Dec):** Bulk Volume Water, scale 0.6 to 0.
- VSHALE (Dec):** Volume Shale, scale 0 to 1.
- CPHI (%):** Clay Percentage, scale 60 to 0.
- Pressure Data:** OBPRESS (psi), FRACPRESS (psi), ECDPRESS (psi), MUDPRESS (psi), HYDPRESS (psi), FFPRESS (psi).
- Lithology:** CLAY, SILT, SAND, HYDROCARBONS, WATER, COAL.
- Formation Names:** Oligocene, Eocene, Cretaceous.

The plot also includes a section for the ORIGINAL BORE-HOLE and a section for the WELLBORE.