

Well Identification:

API#	AREA	BLOCK	OPERATOR	WELL NAME	
55220000030000	SELDOVIA	318	Marathon Oil Company	OCS Y-0086 GUPPY 1 ST00BP00	
LATITUDE	LONGITUDE	KB	WATER DEPTH	GEO DATUM	ZONE
59° 42' 30.5"	-152° 9' 28.9"	51	-108	NAD83	5

Overview

The Guppy 1 was spud as an exploratory well on July 21st, 1978 and located in the Cook Inlet. The operator reported no commercial hydrocarbons were discovered at this location, the well was plugged and abandoned. The comprehensive analytical data collection program included well logging and rotary sidewall coring provided by Schlumberger, whole coring, and drill cutting samples collected by Anderson and Warren. Collected samples were analyzed by Core Laboratories for lithology, fluid saturation, pore volume, and hydrocarbon source generation.

Geologic Intervals used for Analysis:

Age/Period	Stratigraphy	Top	Source	Comments
Oligocene	HMCK	3966	COK Picks GF.xls	
Eocene	WFLD	4319	COK Picks GF.xls	
Cretaceous	BTU-SDLM	5005	COK Picks GF.xls	
	KYGK	5789	COK Picks GF.xls	
	KYGK_Mid	7513	COK Picks GF.xls	
	KYGK_Lwr	8688	COK Picks GF.xls	
	PDMR	9318	COK Picks GF.xls	
	MKU_HRND	9794	COK Picks GF.xls	
	SKVK	10092	COK Picks GF.xls	
Jurassic	NKNK_PMR	10640	COK Picks GF.xls	
	NKNK_SGHB	11400	COK Picks GF.xls	
	NKNK_mkr	11957	COK Picks GF.xls	
	NKNK_CHSK	12862	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	694	2548	85	12.25	9.4	1.36	1	X		X								X	
							2	X				X							
							3	X			X								
							4	X					X						
2	2548	6978	121	12.25	10.1	1.58	1	X		X								X	
							2	X				X							
							3	X			X								
							4	X					X						
3	6946	12106	181	8.5	14.4	0.92	1	X		X								X	
							2	X				X							
							3	X			X								
							4												
							5	X					X						
4	11900	13282	186	8.5	14.3	1.37	1	X	X						X			X	
							2	X		X								X	
							3	X				X							
							4	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
9416	9431	15	15	3120	7002	45	7
13260	13278	18	6		12471	34	
					13315	21	

Log Discussion:

The Guppy 1 well was drilled and logged with water-based drilling fluid containing Barite weighting material to total depth. 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.

Significant caliper enlargements were observed in 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 in the shallower section, however the logged interval deeper than 8000 feet measured depth showed the borehole was more affected 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

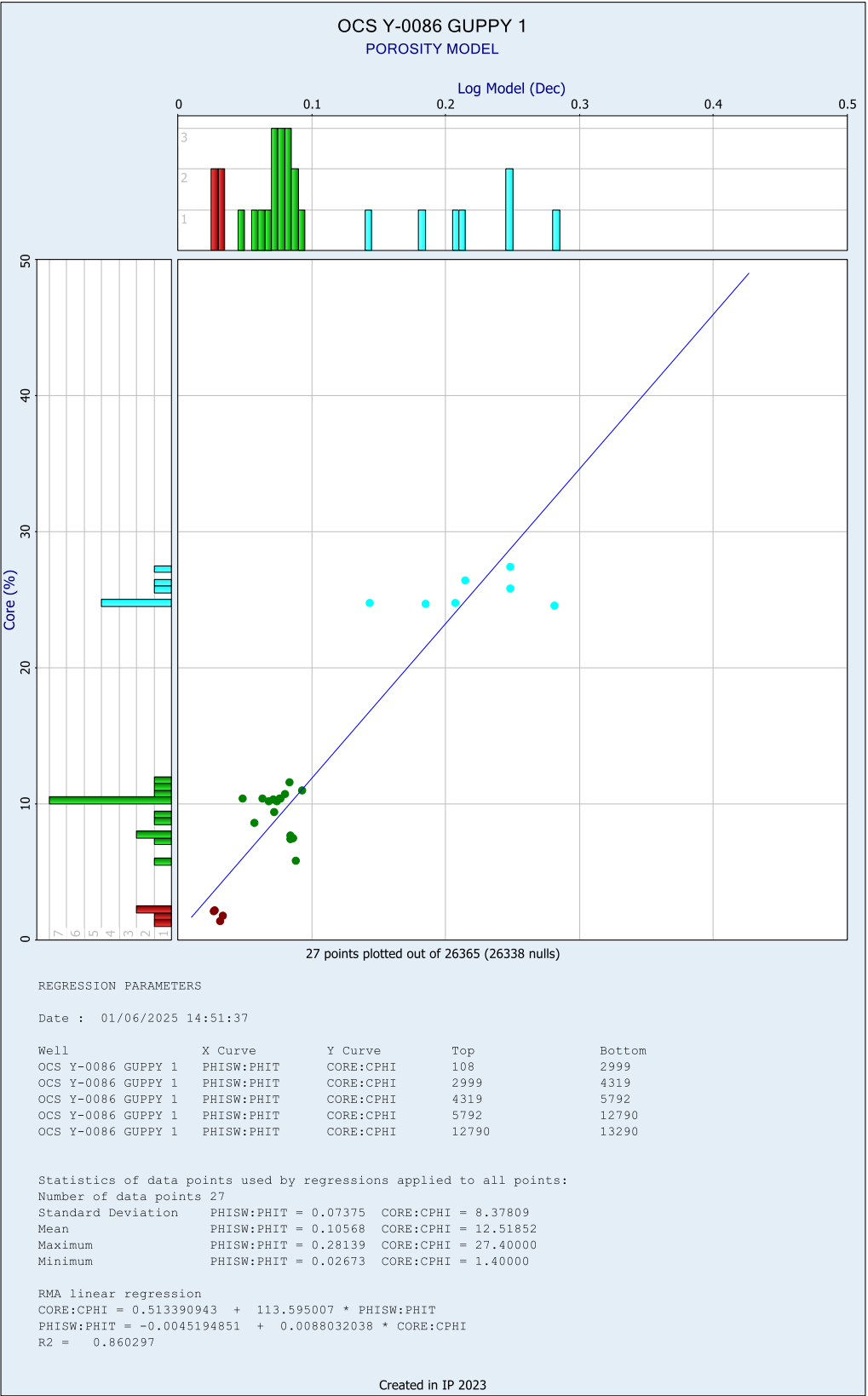
1. Gardner et al., 1974, Formation velocity and density—the diagnostic basics for stratigraphic traps Geophysics, 39 (6) (1974), pp. 770-780
2. Graton, L. C., and H. J. Fraser, 1935, Systematic packing of spheres with particular reference to porosity and permeability: Journal of Geology, v. 43, p. 785–909, 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	108	13290	13182	846.5	0.064	0.253	0.782	0.451	214.16	46.76

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:

