

### Well Identification:

API#	AREA	BLOCK	OPERATOR	WELL NAME	
55250000010000	ILIAMNA	572	ARCO Alaska Inc.	OCS Y-0161 HAWK 1	ST00BP00
LATITUDE	LONGITUDE	KB	WATER DEPTH	GEO DATUM	ZONE
59° 28' 52.61"	-153° 1' 50.85	101	-234	NAD83	5

### Overview

The Hawk 1 was spud as an exploratory well on July 15<sup>th</sup>, 1979 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 BLP. Collected samples were analyzed by Core Laboratories, Petroleum Services for lithology, fluid saturation, pore volume, and hydrocarbon source generation.

### Geologic Intervals used for Analysis:

Age/Period	Stratigraphy	Top	Source	Comments
Cretaceous	KY GK_Lwr	640	COK Picks GF.xls	
Jurassic	PDMR	1095	COK Picks GF.xls	
	MKU_HRND	1227	COK Picks GF.xls	
	SKVK	2630	COK Picks GF.xls	
	NKNK_PMR	3576	COK Picks GF.xls	
	NKNK_SGHB	4175	COK Picks GF.xls	
	NKNK_mkr	4618	COK Picks GF.xls	
	NKNK_CHSK	5614	COK Picks GF.xls	
	CNTN	11386	COK Picks GF.xls	
	TCRK	12076	COK Picks GF.xls	
	CFLS	12372	COK Picks GF.xls	
	FZCK	12581	COK Picks GF.xls	
	GKIM	12894	COK Picks GF.xls	
	RDGC	13086	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	411	1259	80	12.25	9.2	1.44	1	X		X					X		X		
							2	X				X							
							3	X			X								
2	1240	4630	110	12.25	9.1	1.07	1	X		X					X		X		
							2	X				X							
							3	X			X								
3	4634	12558	185	12.25	9.9	0.87	1	X		X					X		X		
							2	X				X							
							3	X			X								
							4	X			X								
							5	X				X							
							6	X										X	
							7	X						X					
4	12572	14953	231	8.5	10.9	0.85	1	X		X		X			X				
							2	X			X								
							3	X				X							
							4	X						X					
							5												X
							6	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
2076	2093	19	13	5186	14828	89	14
8344	8373	30	15				
12598	12626	27	5				
14421	14435	30					
14946	14972	27					

### Log Discussion:

The Hawk 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 deeper 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 throughout the entire well and required editing using the Gardner<sup>1</sup> density transform. Sonic log data was compared to the Faust<sup>4</sup> 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**

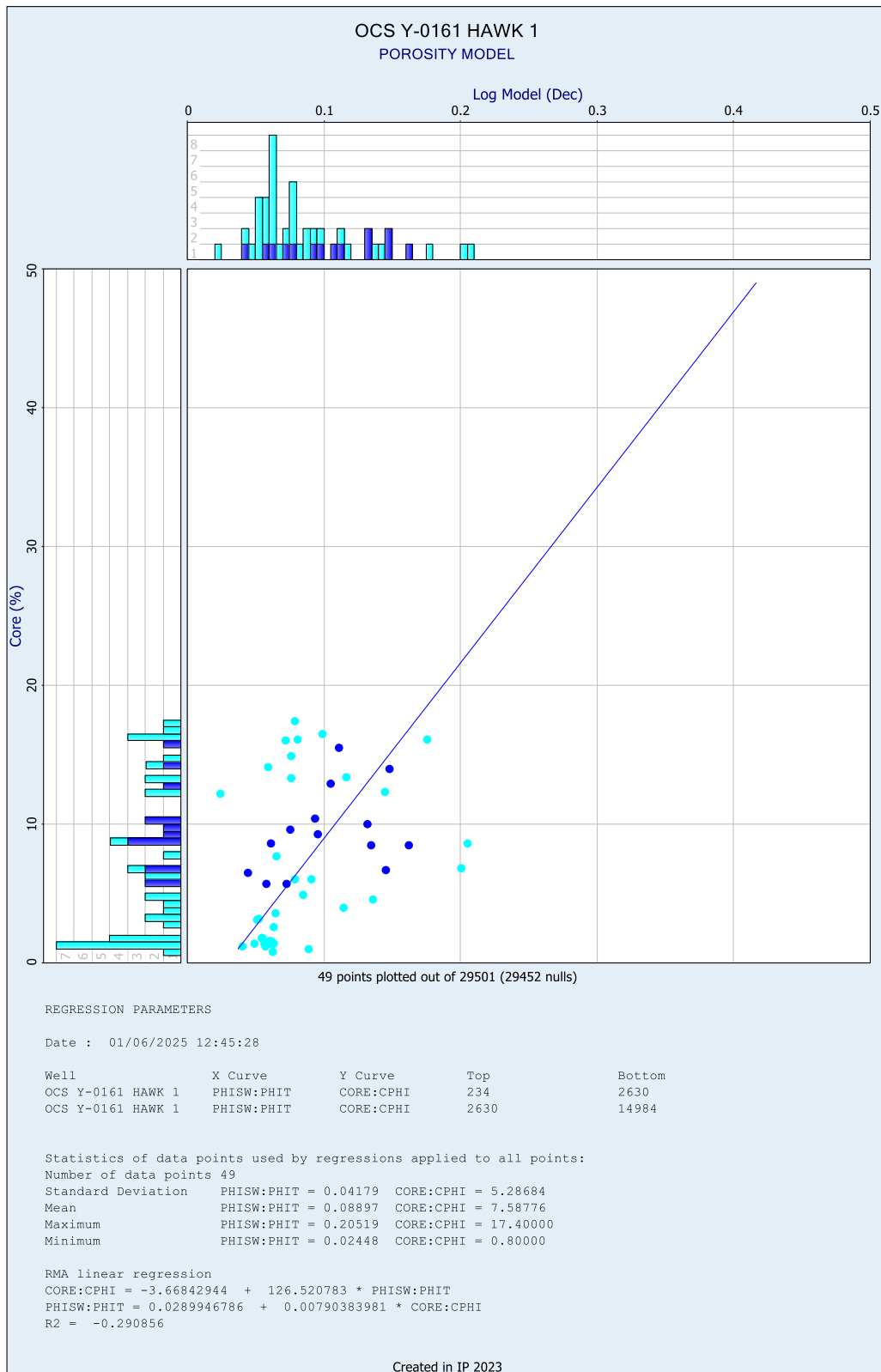
1. Gardner et al., 1974, Formation velocity and density—the diagnostic basics for stratigraphic traps Geophysics, 39 (6) (1974), pp. 770-780
2. Graton, L. C., and H. J. Fraser, 1935, Systematic packing of spheres with particular reference to porosity and permeability: Journal of Geology, v. 43, p. 785–909, 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	234	14984	14750	188.5	0.013	0.304	0.669	0.365	57.27	18.96

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:

