

### Well Identification:

API#	AREA	BLOCK	OPERATOR	WELL NAME	
55220000070001	SELDOVIA		Phillips Petroleum Company	OCS Y-0124 S ARCH 1A ST00BP00	
LATITUDE	LONGITUDE	KB	WATER DEPTH	GEO DATUM	ZONE
59° 21' 36.7704"	-152° 23' 11.9"	79	-247	NAD83	5

### Overview

The South Arch 1A was spud as an exploratory well on October 20<sup>th</sup>, 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 Borst and Giddings. 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
Cretaceous	BTU-SDLM	1395	COK Picks GF.xls	
	KYGK_Mid	2087	COK Picks GF.xls	
	KYGK_Lwr	3188	COK Picks GF.xls	
	PDMR	4112	COK Picks GF.xls	
	MKU_HRND	4367	COK Picks GF.xls	
Jurassic	NKNK_PMR	5915	COK Picks GF.xls	
	NKNK_SGHB	6890	COK Picks GF.xls	
	NKNK_mkr	7106	COK Picks GF.xls	
	NKNK_CHSK	7675	COK Picks GF.xls	
	CNTN	9546	COK Picks GF.xls	
	TCRK	9793	COK Picks GF.xls	
	CFLS	10174	COK Picks GF.xls	
	FZCK	10344	COK Picks GF.xls	
	GIKM	10447	COK Picks GF.xls	
	RDGC	10608	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
1	1382	10402	143	12.25	11.4	1.05	1	X		X								X
							2	X			X							
							3	X				X						
							4							X				
2	10375	11304	158	8.5	17	1.5	1	X		X								
							2	X			X							
							3	X				X						
							4	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
7085	7112	27		5878	10705	24	
11294	11314	20	16				

### Log Discussion:

The South Arch 1A 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 and bulk density required editing using the Gardner<sup>1</sup> density transform. Nuclear logging in the upper section was aborted due to hole conditions. 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.

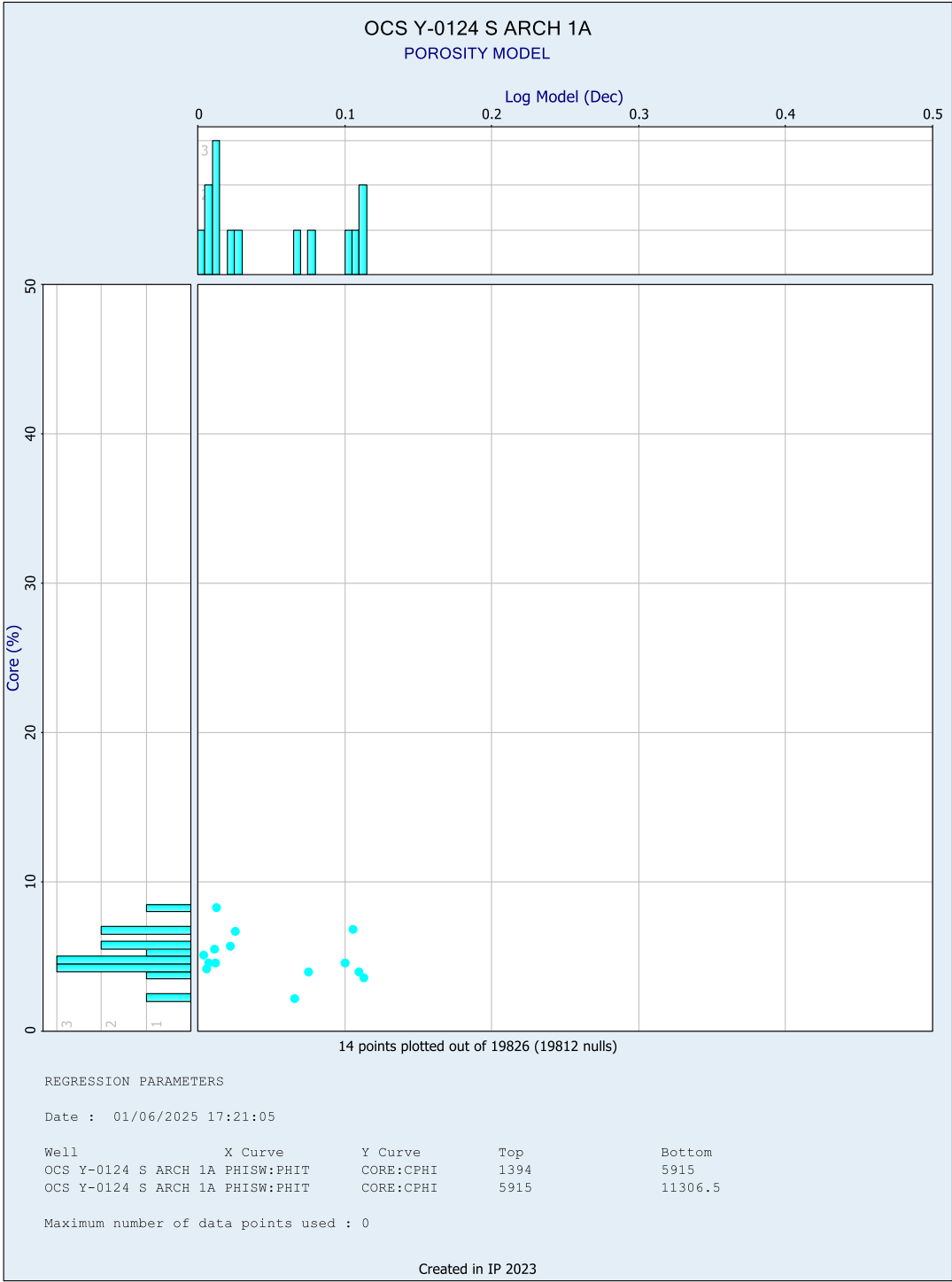
**Summation Report:**

RESERVOIR SUMMARY											
Zone	Zone Name	Top	Bottom	Gross	Net	N/G	Av Phi	Av Sw	Av Vcl	Phi*H	PhiSo*H
1	ORIGINAL BOREHOLE	248	11306.5	11058.5	56	0.005	0.24	0.835	0.477	13.46	2.22

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:**

Insufficient data for regression



## Summary Plot:

