3310 Bankhead Highway Midland, Texas 79701

(432) 218-6625

List of Laboratory Services and Fees,

Effective: January 1, 2020

3310 Bankhead Highway Midland Texas 79701 (432) 218-6625

Pritchard Analytical Laboratories, Inc. (PAL) is a Texas Corporation founded in November of 2016. After a brief intermission from February, 2017 to March 31, 2019, PAL reopened on April 1, 2019, as a full service, one stop laboratory that specializes in oilfield related analyses, including, but not limited to:

Produced Water Analysis
Scale-Deposit Analysis
Production Chemical Evaluation
Compositional Crude Oil Analysis
Compositional Natural Gas Analysis
Hydrogen Sulfide Surveys
Single Stage Separator Flash Studies

Analysis and analytical services are our only business at PAL. We offer the best service available to our clients through faster response time and competitive prices (all of our analyses are performed on site, not shipped to another facility). When you use PAL for your analytical needs, you can rest assured that all of your samples are analyzed and the data reported without any predetermined bias. PAL uses industry approved analytical procedures (GPA, NACE, API, or ASTM Standard Methods) with true state of the art analytical instruments. While using standardized analytical procedures are critical, PAL is eager to work with you to help develop analytical protocol designed for your special projects, or to help provide customized analysis for research projects.

This price schedule lists most of the more common services available, however, it does not list all of the analysis and services that PAL can provide. Special testing and services not listed in this schedule are available on request and we welcome the opportunity to discuss your analytical needs.

We believe that you will find our service rates very reasonable and competitive. We welcome the opportunity to discuss your analytical needs and provide quotes for volume or contractual work. Please do not hesitate to call if you should have any questions concerning the analytical procedures used, the fees charged, or need further assistance. We are looking forward to working with you in the future.

PAL is owned and operated by James R. Pritchard. James grew up working in his parents' lab (Caprock Laboratories, Inc.) and has over 20 years of experience in petroleum analysis and laboratory services. James is dedicated to carrying on the tradition of excellent service and accurate analyses provided to the petroleum industry by the Pritchard family.

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Schedule of Services and Fees

Wet Chemistry, Individual Parameters

Analyte	Reference	Price, US\$
Alkalinity	API RP 45	25.00
Barium	API RP 45	25.00
Carbonate	API RP 45	25.00
Calcium	API RP 45	25.00
Chloride	API RP 45	25.00 .
Chlorine	Hach Method	35.00
Chromium, Hexavalent	Hach Method	35.00
Chromium, Total	Atomic Absorption	30.00
Iron	API RP 45	25.00
Magnesium	API RP 45	25.00
Total Petroleum Hydrocarbons, Oil & Grease	EPA 418.1	60.00
Oxygen, Dissolved	API RP 45, DO Meter	50.00
pH	API RP 45, pH Meter	25.00
Phosphorus, Phosphate		
Total Phosphates by Digestion	API RP 45	40.00
Ortho Phosphates	API RP 45	30.00
Phosphate Calibration Curve/Chemical	API RP 45	75.00
Resistivity,		•
Brine Water	API RP 45	25.00
Drilling Mud Filtrate	Bariod Resistivity Meter	50.00
Drilling Mud	Bariod Resistivity Meter	40.00
Solids,		
Dissolved, By Evaporation	API RP 45	30.00
Dissolved, by TDS Meter	Bariod Resistivity Meter	25.00
Dissolved, by Total Water Analysis	API RP 45	80.00
Suspended, Membrane Filter	API RP 45	40.00
Specific Conductance, Brine water	Bariod Resistivity Meter	25.00

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Schedule of Services and Fees

Wet Chemistry, Individual Parameters, Continued

Analyte	Reference	Price, US\$	
Barium	Atomic Absorption	30.00	
Calcium	Atomic Absorption	30.00	
Chromium	Atomic Absorption	30.00	
	Atomic Absorption	30.00	
Iron	Atomic Absorption	30.00	
Aqueous Matrix	•		
Hydrocarbon Matrix	Atomic Absorption	40.00	
Magnesium	Atomic Absorption	30.00	
Manganese	Atomic Absorption	30.00	
Nickel			
Aqueous Matrix	Atomic Absorption	30.00	
Hydrocarbon Matrix	Atomic Absorption	40.00	
Potassium	Atomic Absorption	30.00	
Sodium	Atomic Absorption	30.00	
Strontium	Atomic Absorption	30.00	
Magnesium	Atomic Absorption	30.00	
Vanadium			
Aqueous Matrix	Atomic Absorption	35.00	
Hydrocarbon Matrix	Atomic Absorption	45.00	
Wet Chemistry, Water & Produced Brine Analysis			
Routine Major Mineral Analysis, Includes	API RP 45	80.00	
Calcium, Magnesium, Sodium (calculated)			
Carbonate, Bicarbonate, Sulfate, Chloride,			
Sulfide as H ₂ S, pH, Resistivity (calculated)			
Specific Gravity, Scaling Tendencies, CaSO₄			
and CaCO ₃ , and API Water Patterns			

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Schedule of Services and Fees

Wet Chemistry, Water & Produced Brine Analysis, Continued

Analyte	Reference	Price, US\$
Injection Water Quality Survey*		
Dissolved Oxygen	API RP 45, D O Meter	50.00
Filter Rate, 0.45 micron Filter	Millipore Filter Rate	60.00
Composition of Filterable Solids	Propriety	50.00
Oil in Water	API RP 45	30.00
Oil in Water, Calibration Curve**	API RP 45	75.00
Total Aerobic Bacteria	Serial Dilution	50.00
Sulfate Reducing Bacteria	Serial Dilution	50.00
Acid Reducing Bacteria	Serial Dilution	50.00
Routine Water Analysis	API RP 45	80.00
	Individual Total	495.00
	Package Discounted Total	425.00
Time, In Field Study, Portal to Portal, Analyst*		85.00
Time, In Field Study, Portal to Portal, Safety Backup*		60.00
Mileage, In Field Study, Portal to Portal*		1.50
* Time and mileage charges are required for in field st	udies.	
Scale and Deposit Analysis	Propriety	90.00
Analysis includes visual description, odor, water		
and hydrocarbon content. Also includes rate of		
reaction to 15% Hydrochloric acid, major mineral		
content, and theoretical recombination. All efforts		
are taken to identify at least 90% of the composition	on.	i

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Schedule of Services and Fees

Production Chemical Analysis and Evaluation

Analyte	Reference	Price, US\$
Paraffin Chemicals, Inhibitors and Dispersants		
Hot Water Dispersion/Chemical Concentration	Proprietary	60.00
"Cold Spot" Analysis/Analysis Blank	Proprietary	70.00
"Cold Spot" Analysis/Chemical Concentration	Proprietary	80.00
Scale Inhibitors		
Calcium Carbonate/Chemical Concentration	NACE TM-03-74	70.00
Calcium Sulfate/Chemical Concentration	NACE TM-03-74	70.00
Combination/Chemical Concentration	NACE TM-03-74	120.00
Corrosion Wheel Test		
Chemical Effectiveness Test/Analysis Blank	NACE	60.00
Chemical Effectiveness Test/Constant Contact	NACE	60.00
Chemical Effectiveness Test/Pre-Filmed	NACE	75.00
Residual Amines		
Aqueous Solution	Chloroform Extraction	60.00
Crude Oil Solution	Chloroform Extraction	60.00
Natural Gas	Chloroform Extraction	75.00
Residual Polymer		
Polymer Flocculation Test	Proprietary	50.00
Poly Acrylic Acid	Hach Method	75.00
Mild Steel Coupon Service		
Pre Installation Weight	Analytical Balance	15.00
Post Installation Cleaning and Weight	Analytical Balance	30.00
Time, In Field Study, Portal to Portal, Analyst*		85.00
Time, In Field Study, Portal to Portal, Safety Backup*		60.00
Mileage, In Field Study, Portal to Portal*	•	1.50

^{*} Time and mileage charges are required for in field fluid sample collections.

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Schedule of Services and Fees

Chromatographic Analysis

Analyte	Reference	Price, US\$
Natural Gas Analysis Through Hexanes (C6 [†])	GPA 2261	30.00
Includes compositional analysis for hydrocarbons		
Methane through Hexanes⁺, Nitrogen, and Carbon		÷
Dioxide. Also includes calculated GPM, Specific		
Gravity and Heating Value (BTU)		
Natural Gas Analysis with Molesieve	GPA 2261	60.00
Includes all above plus Oxygen content		
Natural Gas Analysis Through Undecanes (C10 ⁺)	GPA 2286	150.00
Includes compositional analysis for hydrocarbons		
Methane through Undecanes⁺, Nitrogen, and Carbon		
Dioxide. Also includes Benzene, Toluene Ethyl		
Benzene, Xylenes, and 2,2,4-Trimethylpentane		
NGL Analysis Through Hexanes (C6 ⁺)	GPA 2165	50.00
Includes compositional analysis for hydrocarbons		
Methane through Hexanes [†] , Nitrogen, and Carbon		
Dioxide. Also includes calculated Mole %, Liquid		
Volume %, and Weight %		
NGL Analysis Through Heneicosanes (C21 ⁺)	GPA 2186	190.00
Includes compositional analysis for hydrocarbons		
Methane through Heneicosanes⁺, Nitrogen,		
Carbon Dioxide, calculated Mole %, Liquid		
Volume %, Weight %, Benzene, Toluene, Ethyl		
Benzene, Xylenes, and 2,2,4-Trimethylpentane		

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Schedule of Services and Fees

Chromatographic Analysis, Continued

Analyte	Reference	Price, US\$
Crude Oil Analysis Through Hexanes (C6 ⁺) Includes compositional analysis for hydrocarbons Methane through Hexanes ⁺ , Nitrogen, and Carbon Dioxide. Also includes calculated Mole %, Liquid Volume %, and Weight %	GPA 2103	100.00
Crude Oil Analysis Through Heneicosanes (C21 ⁺) Includes compositional analysis for hydrocarbons Methane through Heneicosanes ⁺ , Nitrogen, Carbon Dioxide, calculated Mole %, Liquid Volume %, Weight %, Benzene, Toluene, Ethyl Benzene, Xylenes, and 2,2,4-Trimethylpentane	GPA 2186M	200.00
Crude Oil Analysis Through Pentatetracontanes (C45 [†]) Includes compositional analysis for hydrocarbons Methane through Pentatetracontanes [†] , Nitrogen, Carbon Dioxide, calculated Mole %, Liquid Volume %, Weight %, Benzene, Toluene, Ethyl Benzene, Xylenes, and 2,2,4-Trimethylpentane	GPA 2186M/ASTM D2887	450.00
Glycol Compositional Analysis Includes percent EG, DEG, and TEG	FID GC	150.00
Simulated Crude Oil Distillation Includes graphical and tabular data of fraction recovered/temperature.	ASTM D2887	250.00

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Schedule of Services and Fees

Chromatographic Analysis, Single Stage Separator Flash

Analyte	Reference	Price, US\$
Single Stage Separator Flash	Proprietary	200.00
Natural Gas Analysis Through Undecanes (C10 ⁺) Includes compositional analysis for hydrocarbons Methane through Undecanes ⁺ , Nitrogen, and Carbon Dioxide. Also includes Benzene, Toluene Ethyl Benzene, Xylenes, and 2,2,4-Trimethylpentane	GPA 2286	150.00
Gravity, API and Specific	ASTM D287	25.00
Reid Vapor Pressure	ASTM D6337	40.00
Extended Crude Oil Analysis, Pressurized Oil Includes compositional analysis for hydrocarbons Methane through Heneicosanes [†] , Nitrogen, Carbon Dioxide, calculated Mole %, Liquid Volume %, Weight %, Benzene, Toluene, Ethyl Benzene, Xylenes, and 2,2,4-Trimethylpentane	GPA 2186M	200.00
Extended Crude Oil Analysis, Stock Tank Oil Includes compositional analysis for hydrocarbons Methane through Heneicosanes [†] , Nitrogen, Carbon Dioxide, calculated Mole %, Liquid Volume %, Weight %, Benzene, Toluene, Ethyl Benzene, Xylenes, and 2,2,4-Trimethylpentane	GPA 2186M	200.00
Single Stage Separator Flash Study Package/Sample		815.00

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Schedule of Services and Fees

Additional Gas Analysis

Reference	Price, US\$
Trace Oxygen Meter	
	60.00
	80.00
Molesieve Analysis	40.00
Oxygen Stain Tube	40.00
USBM Method	
	70.00
	70.00
	120.00
Stain Tube Method	40.00
•	
Tutweiler Method	35.00
H ₂ S Stain Tube	40.00
ASTM D3246	100.00
	Molesieve Analysis Oxygen Stain Tube USBM Method Stain Tube Method Tutweiler Method H ₂ S Stain Tube

^{*} While laboratory analyses are possible, however, on location analysis should be performed whenever possible. Time and mileage charges are in addition for all on location analyses.

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Schedule of Services and Fees

Gas Plant Production Chemical Analysis (Glycol/Amines)

Analyte	Reference	Price, US\$
Glycol Analysis, Lean or Rich	Proprietary	275.00
Includes visual description, pH, Specific Gravity		
Total Petroleum Hydrocarbons, Chlorides, Iron,		
Hydrogen Sulfide, Filterable Solids, Percent Water		
and Foaming Tendency.		
Glycol Analysis, Both Lean and Rich	Proprietary	500.00
Includes both Lean and Rich Glycols		ets.
Amine Analysis, Lean or Rich	Proprietary	315.00
Includes visual description, pH, Specific Gravity		
Total Petroleum Hydrocarbons, Chlorides, Iron,		
Hydrogen Sulfide, Filterable Solids, Percent Water,		
Carbon Dioxide, and Foaming Tendency.		
Amine Analysis, Both Lean and Rich	Proprietary	580.00
Includes both Lean and Rich Amines		
Glycol Compositional Analysis	FID GC	150.00
Includes percent EG, DEG, and TEG		
General Petroleum Analysis,	Individual Paramete	ers
Acid Number (TAN), Potentiometric Titration	ASTM D664	90.00
Acid Number (TAN), Color Indicator Titration	ASTM D974	80.00
Ash Content	ASTM D482	70.00
Asphaltenes	UOP 46M	50.00

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General Petroleum Analysis, Individual Parameters, Continued

Analyte	Reference	Price, US\$
Asphaltic Resins	UOP 46M	50.00
Basic Sediment and Water	ASTM D1796	35.00
BTU of Crude and Fuel Oils	Bomb Calorimeter	150.00
Carbon Residue, Conradson	ASTM D189	80.00
Cetane Number, Calculated	ASTM D976	90.00
Includes Distillation by ASTM D86		
Chloride, Organic in Crude Oil	ASTM D4929-B	100.00
Chloride, Inorganic in Crude Oil	UOP 22	50.00
Cloud Point	ASTM D2500	50.00
Cloud/Pour Point	ASTM D97	75.00
Color, Saybolt Colorimeter	ASTM D1500	60.00
Copper Corrosion Strip	ASTM D130	50.00
Distillation, Petroleum	ASTM D86	80.00
Distillation, Petroleum, Simulated	ASTM D2887	250.00
Flash Point, Cleveland Open Cup	ASTM D92	50.00
Flash/Fire Point, Cleveland Open Cup	ASTM D92	60.00
Gravity, API Hydrometer	ASTM D287	25.00
Gravity, Specific Hydrometer	ASTM D1298	25.00
Hydrogen Sulfide in Crude Oil, Dissolved	UOP 163	70.00
Hydrogen Sulfide in Crude Oil, Vapors	ASTM D5705	45.00
Paraffin in Crude Oil	UOP 46	60.00
Sediment in Crude Oil by Extraction	ASTM D473	60.00
Total Petroleum Hydrocarbons	EPA 418-1	60.00
Total Petroleum Hydrocarbons	TNRCC 1005	85.00
Vapor Pressure	ASTM D6377	40.00
Vapor Pressure, Reid, Under 26 psia	ASTM D323	50.00
Vapor Pressure, Reid, Over 26 psia	ASTM D323	50.00

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General Petroleum Analysis, Individual Parameters, Continued

Analyte	Reference	Price, US\$
Viscosity,		
Kinematic, centiStokes, centiPoise @ Temperature	ASTM D445	50.00
Saybolt Fural Seconds, SFS	ASTM D2161	60.00
Saybolt Universal Seconds, SUS	ASTM D2161	60.00
Weight Percent Sulfur	ASTM D4294	60.00
Water by Distillation	ASTM D95	60.00
Water by Karl Fischer Titration	ASTM D1744	85.00
Miscellaneous S	Services	
Analyst, Laboratory Time	Hourly Rate	85.00
Analyst, On Location Sampling/Analysis*	Hourly Rate	85.00
Safety Backup, On Location Sampling/Analysis*	Hourly Rate	60.00
Overnight Per Deim	Overnight Trip	350.00
Mileage*	Per Mile	1.50
* Based on time/mileage from portal to portal		

^{*} Based on time/mileage from portal to portal

Mileage rates are based on a fuel cost ceiling of 2.75 US \$ and may be adjusted as necessary.

Sample Equipment and Containers

300 cc Sample Cylinders		
Stainless Steel Cylinder, DOT Rated 1800 psig	Rental Weekly	15.00
Stainless Steel Cylinder, DOT Rated 3500 psig	Rental Weekly	30.00
Stainless Steel Cylinder, DOT Rated 1800 psig	Replacement	275.00
Stainless Steel Cylinder, DOT Rated 3500 psig	Replacement	425.00
500 cc Sample Cylinders		
Stainless Steel Cylinder, DOT Rated 1800 psig	Rental Weekly	15.00
Stainless Steel Cylinder, DOT Rated 3500 psig	Rental Weekly	25.00
Stainless Steel Cylinder, DOT Rated 1800 psig	Replacement	350.00
Stainless Steel Cylinder, DOT Rated 3500 psig	Replacement	475.00

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Sample Equipment and Containers, Continued

Analyte	Reference	Price, US \$
Teflon Lined Cylinders		
300 cc SS Cylinder, DOT Rated 1800 psig	Rental Weekly	25.00
500 cc SS Cylinder, DOT Rated 1800 psig	Rental Weekly	40.00
300 cc SS Cylinder, DOT Rated 1800 psig	Replacement	400.00
500 cc SS Cylinder, DOT Rated 1800 psig	Replacement	500.00
Floating Piston Cylinders		
300 cc SS Cylinder, DOT Rated 1800 psig	Rental Weekly	30.00
500 cc SS Cylinder, DOT Rated 1800 psig	Rental Weekly	50.00
300 cc SS Cylinder, DOT Rated 1800 psig	Replacement	700.00
500 cc SS Cylinder, DOT Rated 1800 psig	Replacement	800.00

Cylinder rental rates apply only when the cylinders are kept by the client for an extended period time, or, are not returned to this facility for analyses. The rental rates will not be collected when the cylinders are returned to PAL for analysis in a reasonable time frame. Cylinder replacement will be charged and collected for any cylinder not returned to PAL for any reason.

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Juil	IDIC	UU	HLUI		

R _x Bottles	Individual	0.75
R _x Bottles	Case of 48	35.00
500 mL Plastic Bottle	Individual	1.00
500 mL Plastic Bottle	Case of 168	170.00
1,000 mL Plastic Bottle	Individual	1.50
1,000 mL Plastic Bottle	Case of 165	250.00
500 mL Tin Can	Individual	3.00
500 mL Tin Can	Case of 225	700.00
1,000 mL Tin Can	Individual	5.00
1,000 mL Tin Can	Case of 120	600.00

Sample containers are provided as a courtesy when they are returned to PAL with a sample for analysis.

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Schedule of Services and Fees

General Terms and Conditions

Basic Agreement:

Pritchard Analytical Laboratories, Inc., herein referred to as PAL, shall furnish the equipment and personnel necessary to perform the services as requested by the customer and documented on the sales order or contract agreement.

Warranty:

Pal will use its' best efforts to furnish customers with accurate information and analyses that are part of and incident to the service provided. However, PAL cannot and does not warranty the accuracy or correctness of such information and analyses and further makes no warranties, either expressed or implied, including but not limited to the implied warranty of merchantability or fitness for a particular purpose, with respect to services rendered. These analyses, opinions or interpretations provided are based on observations and materials supplied by the customer to whom, and for whose exclusive confidential use, any report is made.

Sampling Equipment:

Sample cylinders and appropriate sample containers will be furnished at no charge when requested by a customer provided that the container is returned to PAL containing a sample for analysis. The customer shall accept full responsibility for returning all such containers. Any other use of sample cylinder or containers is unauthorized and will be interpreted as either rental or purchase, whichever is applicable, and will be charged as outlined in the current price schedule.

On Location Analyses and Services:

Hourly personnel and mileage charges commence upon leaving and end on returning to the laboratory and will be charged as outlined by the current price schedule. If on location work requires a technician or analyst to remain overnight from the Midland, Texas laboratory, a base (per diem) charge as outlined in the current price schedule will be charged to cover incidental expenses.

Taxes:

Any taxes assessed on, or which use as a base of calculation, the charges made for or cash received with respect to PAL's products or services shall be in addition to the prices stated in the published price schedule or quoted to the customer.

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Schedule of Services and Fees

General Terms and Conditions

Payment Terms:

Terms for payment are net cash within thirty (30) days from the invoice date, in accordance with any payment instructions included on the invoice. For any amount unpaid at the end of thirty days, PAL reserves the right to collect, and the customer agrees to pay, interest at the rate of 18% per annum. If unpaid amounts are collected through a third party agency, legal proceedings, or by an attorney, the customer shall pay reasonable collection costs and attorney's fees. On project that exceed thirty days duration, PAL reserves the right to issue progress billing.