

FracRAT With PowerLog Achieves Optimum Frac Design

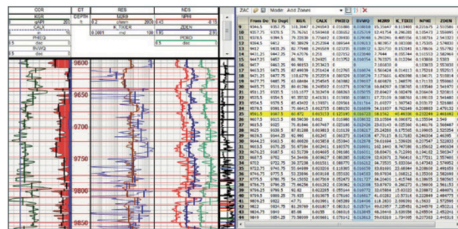
FracRAT is an add-on module to **PowerLog**[®] used to generate rock and fluid properties required by frac simulation software.

FracRAT takes petrophysical curve data from **PowerLog** and uses empirical and deterministic algorithms that have been field tested by Baker Hughes Pressure Pumping for over 20 years, to output the formatted rock and fluid properties for immediate loading into major frac simulation packages like MFrac and FracPro.

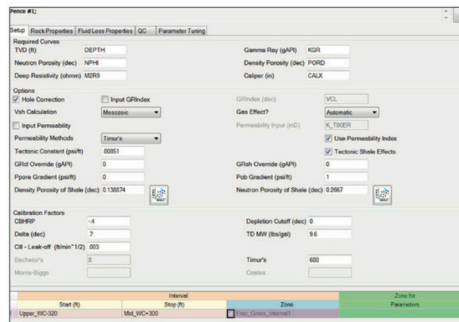
PowerLog and **FracRAT** provide the completion engineer with a full toolkit to create multiple frac scenarios for optimum frac results. In fact, by eliminating manual calculations and spreadsheets, the multiple frac scenarios derived by the combination of petrophysical analysis and geomechanical data are modeled with increased accuracy in hours instead of days.

The PowerLog Advantage

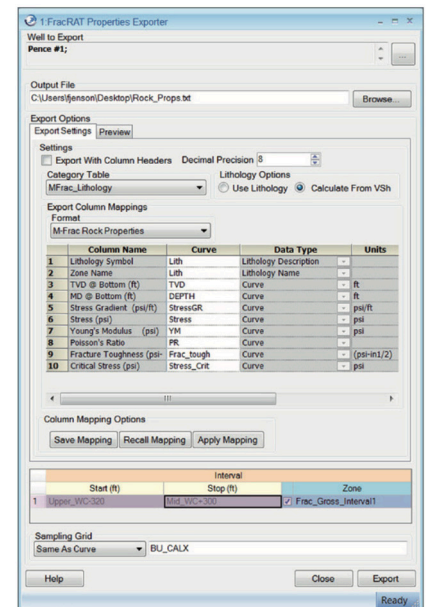
PowerLog is the industry- standard petrophysical interpretation package known for its functionality and ease of use. **FracRAT** follows this tradition of easy to learn, easy to use and easy to remember interfaces. The user friendly interface, coupled with a commercial database, allows for rapid archival and retrieval of all interpretations and models. The **FracRAT** module makes **PowerLog** a complete petrophysical toolkit by providing all the petrophysical and geomechanical functionality an engineer requires to maximize his effectiveness when designing either traditional or unconventional well completions.



PowerLog prepares curve data for FracRAT.



Workflow oriented interface in FracRAT.



Exporter tool generates formatted rock and fluid properties.

	Lithology Symbol	Zone Name	TVD @ Bottom (ft)	MD @ Bottom (ft)	Stress Gradient (p)	Stress (psi)	Young's Modulus	Poisson's Ratio	Fracture Toughness	Critical Stress (psi)
1	4 8421631 16777215	Clean Sand	9142	9142	0.59455553	5435.42662473	3761364.37692271	0.18654511	580.40671687	0
2	1 8388863 16777215	Silty-Sand	9155.25	9155.25	0.61566617	5636.57773077	3243087.95550471	0.21138964	684.46194285	0
3	2 16711935 1677721	V-Silty Sand	9169.25	9169.25	0.60627831	5559.11735284	3484864.27067326	0.19942216	772.26722667	0
4	3 16744703 1677721	Shly-Sand	9180	9180	0.63457089	5825.36075749	2879760.16860883	0.23084165	979.78920159	0
5	7 12615935 1677721	V-Sdy Shale	9187.5	9187.5	0.66218806	6083.85276468	2400294.24906842	0.25992872	1082.36347463	0
6	3 16744703 1677721	Shly-Sand	9192.25	9192.25	0.63837929	5868.14198507	2792906.68611784	0.23579237	887.46260425	0
7	3 16744703 1677721	Shly-Sand	9203	9203	0.69848219	6428.13155827	1892707.37558971	0.29674073	940.62410931	0
8	3 16744703 1677721	Shly-Sand	9210.5	9210.5	0.67011508	6172.09497393	2267854.82403151	0.26882961	973.92207639	0
9	3 16744703 1677721	Shly-Sand	9218.25	9218.25	0.68080707	6275.84980436	2111583.18818381	0.27992649	913.62227298	0
10	2 16711935 1677721	V-Silty Sand	9224.5	9224.5	0.6435884	5936.7811911	2683129.88181763	0.24223739	791.44416016	0
11	9 16744576 1677721	Sandy Shale	9235.25	9235.25	0.68385827	6315.60205567	2091094.66606307	0.28143379	1136.26635354	0
12	3 16744703 1677721	Shly-Sand	9239.75	9239.75	0.66296173	6125.60061461	2367411.77639495	0.26209872	888.55787944	0
13	1 8388863 16777215	Silty-Sand	9244.25	9244.25	0.65846141	6086.98184959	2421766.10039043	0.25852537	733.33328123	0
14	8 16711680 1677721	Silty-Shale	9249	9249	0.68755296	6359.17730774	2058257.4323783	0.28387667	1311.61642984	0
15	7 12615935 1677721	V-Sdy Shale	9253.5	9253.5	0.68450591	6334.07539697	2073047.82264625	0.28277218	1030.47518348	0
16	3 16744703 1677721	Shly-Sand	9259	9259	0.6998493	6479.90464074	1877939.94260501	0.29793617	954.19186989	0
17	7 12615935 1677721	V-Sdy Shale	9263.25	9263.25	0.67596038	6261.58998288	2192724.88239677	0.27407919	1067.18885086	0
18	9 16744576 1677721	Sandy Shale	9269.25	9269.25	0.65971762	6115.08759374	2452564.94711676	0.25653079	1197.35509972	0
19	9 16744576 1677721	Sandy Shale	9273.75	9273.75	0.68312147	6335.09775316	2102288.79968862	0.28060867	1151.55164906	0
20	9 16744576 1677721	Sandy Shale	9276.25	9276.25	0.68275035	6333.36296228	2108746.82899053	0.28013439	1167.90519945	0
21	8 16711680 1677721	Silty-Shale	9279.75	9279.75	0.69782064	6475.60111363	1930407.56952211	0.29372612	1312.92221114	0
22	9 16744576 1677721	Sandy Shale	9289	9289	0.69205123	6428.46386767	1985348.57625273	0.2894251	1128.64625419	0
23	3 16744703 1677721	Shly-Sand	9294	9294	0.66410101	6172.15482172	2358324.57818998	0.26270294	969.94794946	0
24	3 16744703 1677721	Shly-Sand	9295.75	9295.75	0.67012731	6229.33590724	2267571.82930202	0.2688491	972.90173577	0
25	7 12615935 1677721	V-Sdy Shale	9299	9299	0.68602603	6379.3560774	2056523.46971461	0.28400661	1067.72941663	0
26	9 16744576 1677721	Sandy Shale	9302	9302	0.69478176	6462.85991351	1953976.09693713	0.29186798	1154.05423439	0
27	7 12615935 1677721	V-Sdy Shale	9305.75	9305.75	0.69936394	6508.10595722	1888121.63631366	0.29711105	1012.13682862	0

Rock properties (and fluid properties) can be saved as text files for archiving.

Key Features

- Generates rock and fluid properties either deterministically or empirically
- Provides a tool for formatting these properties for direct input into any frac simulation software
- Includes Crossplots to aid in selecting input parameters
- Ensures modeled frac parameters exactly match borehole test results with parameter tuning tool
- User friendly interface

A Better, Faster, More Complete Workflow Within GeoSoftware

FracRAT is part of **PowerLog**[®] and shares a Common Data Model with the **Jason**[®] software, ensuring real-time collaboration among team members.

The GeoSoftware environment provides an integrated framework for delivery of multi-user seamless cross-product workflows.

Operating System Requirements:

Windows[®] (64 bit) - XP SP3, Vista[™], Windows[®] 7.

Recommended Minimum Hardware:

8 Gbytes of RAM.

Interoperability:

FracRAT is available for current versions of **PowerLog** and integrates with Jason Workbench and **EarthModel FT**.