

**Paleozoic Reservoirs, Assessment Unit 20190302**  
**Assessment Results Summary**

[MMBO, million barrels of oil. BCFG, billion cubic feet of gas. MMBNGL, million barrels of natural gas liquids. MFS, minimum field size assessed (MMBO or BCFG). Prob., probability (including both geologic and accessibility probabilities) of at least one field equal to or greater than the MFS. Results shown are fully risked estimates. For gas fields, all liquids are included under the NGL (natural gas liquids) category. F95 represents a 95 percent chance of at least the amount tabulated. Other fractiles are defined similarly. Fractiles are additive under the assumption of perfect positive correlation. Shading indicates not applicable]

Field Type	MFS	Prob. (0-1)	Undiscovered Resources												Largest Undiscovered Field (MMBO or BCFG)			
			Oil (MMBO)				Gas (BCFG)				NGL (MMBNGL)				F95	F50	F5	Mean
			F95	F50	F5	Mean	F95	F50	F5	Mean	F95	F50	F5	Mean				
Oil Fields	10	1.00	2,107	11,112	31,523	13,235	5,966	32,241	98,255	39,739	338	1,887	6,117	2,384	560	2,928	12,880	4,234
Gas Fields	60						72,455	262,035	564,141	284,154	5,423	20,364	48,272	22,751	11,764	41,108	102,659	47,103
Total		1.00	2,107	11,112	31,523	13,235	78,420	294,275	662,396	323,892	5,761	22,251	54,389	25,135				

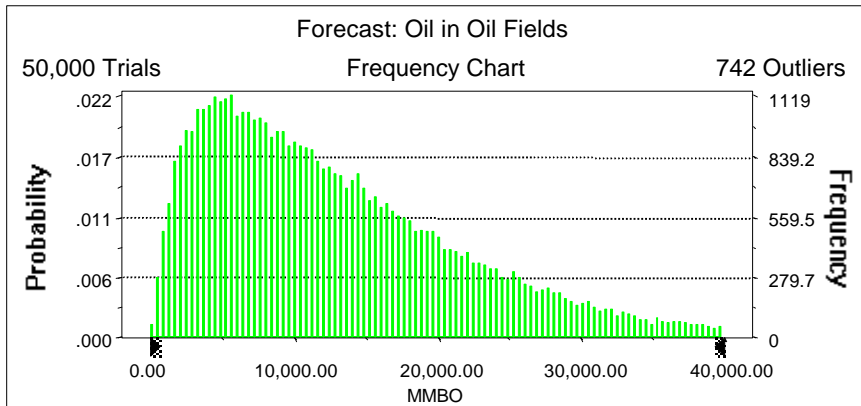
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Oil in Oil Fields

Summary:

Display range is from 0.00 to 40,000.00 MMBO  
Entire range is from 130.87 to 73,900.62 MMBO  
After 50,000 trials, the standard error of the mean is 42.19

Statistics:	Value
Trials	50000
Mean	13,234.91
Median	11,111.51
Mode	---
Standard Deviation	9,432.98
Variance	88,981,160.15
Skewness	1.17
Kurtosis	4.59
Coefficient of Variability	0.71
Range Minimum	130.87
Range Maximum	73,900.62
Range Width	73,769.75
Mean Standard Error	42.19



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Oil in Oil Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBO</u>
100%	130.87
95%	2,106.78
90%	3,175.76
85%	4,114.97
80%	5,019.59
75%	5,937.69
70%	6,894.04
65%	7,882.16
60%	8,918.96
55%	9,993.97
50%	11,111.51
45%	12,333.41
40%	13,636.77
35%	15,025.15
30%	16,604.31
25%	18,356.32
20%	20,393.80
15%	22,947.56
10%	26,240.82
5%	31,523.06
0%	73,900.62

End of Forecast

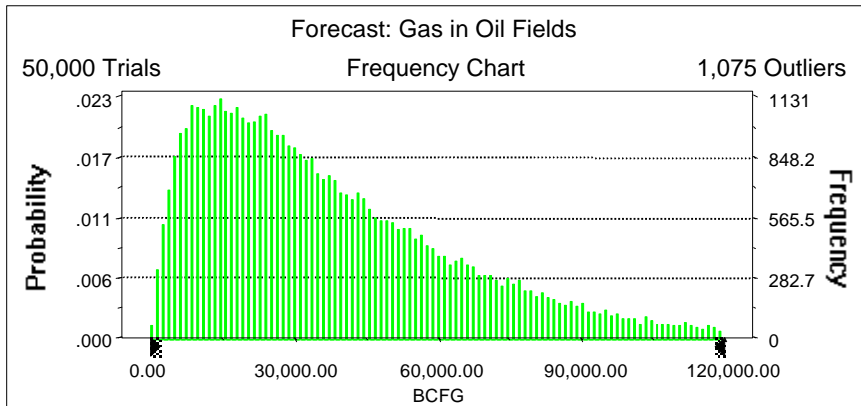
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Gas in Oil Fields

Summary:

Display range is from 0.00 to 120,000.00 BCFG  
Entire range is from 290.82 to 282,180.09 BCFG  
After 50,000 trials, the standard error of the mean is 134.76

Statistics:	Value
Trials	50000
Mean	39,738.57
Median	32,240.95
Mode	---
Standard Deviation	30,134.01
Variance	908,058,379.81
Skewness	1.43
Kurtosis	5.89
Coefficient of Variability	0.76
Range Minimum	290.82
Range Maximum	282,180.09
Range Width	281,889.27
Mean Standard Error	134.76



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Gas in Oil Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>BCFG</u>
100%	290.82
95%	5,965.65
90%	8,987.52
85%	11,678.69
80%	14,463.64
75%	17,233.32
70%	20,008.81
65%	22,904.86
60%	25,805.43
55%	28,876.60
50%	32,240.95
45%	35,852.62
40%	39,866.20
35%	44,245.08
30%	49,191.50
25%	54,707.91
20%	61,249.90
15%	69,393.88
10%	80,271.53
5%	98,254.54
0%	282,180.09

End of Forecast

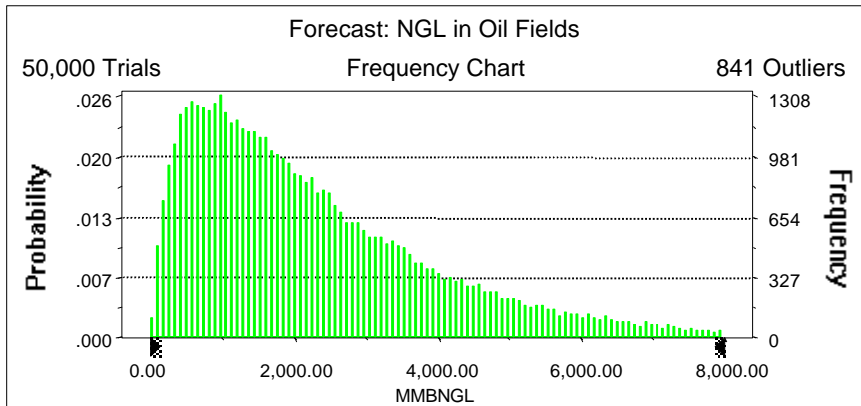
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: NGL in Oil Fields

Summary:

Display range is from 0.00 to 8,000.00 MMBNGL  
Entire range is from 16.18 to 18,621.16 MMBNGL  
After 50,000 trials, the standard error of the mean is 8.53

Statistics:	Value
Trials	50000
Mean	2,384.11
Median	1,887.11
Mode	---
Standard Deviation	1,907.99
Variance	3,640,437.95
Skewness	1.66
Kurtosis	7.22
Coefficient of Variability	0.80
Range Minimum	16.18
Range Maximum	18,621.16
Range Width	18,604.98
Mean Standard Error	8.53



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: NGL in Oil Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBNGL</u>
100%	16.18
95%	338.04
90%	509.80
85%	669.07
80%	830.74
75%	988.62
70%	1,148.56
65%	1,321.12
60%	1,500.38
55%	1,684.96
50%	1,887.11
45%	2,106.50
40%	2,343.30
35%	2,600.91
30%	2,908.30
25%	3,259.61
20%	3,655.54
15%	4,193.15
10%	4,908.51
5%	6,116.82
0%	18,621.16

End of Forecast

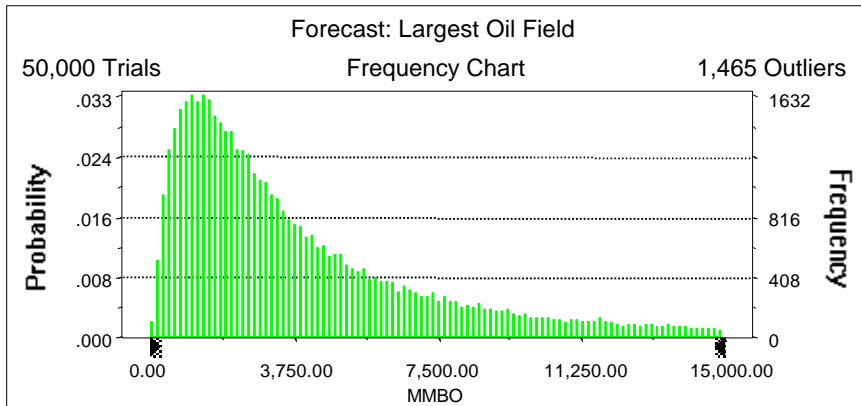
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Largest Oil Field

Summary:

Display range is from 0.00 to 15,000.00 MMBO  
Entire range is from 28.71 to 19,998.49 MMBO  
After 50,000 trials, the standard error of the mean is 17.29

Statistics:	Value
Trials	50000
Mean	4,233.98
Median	2,928.12
Mode	---
Standard Deviation	3,865.78
Variance	14,944,247.79
Skewness	1.66
Kurtosis	5.60
Coefficient of Variability	0.91
Range Minimum	28.71
Range Maximum	19,998.49
Range Width	19,969.78
Mean Standard Error	17.29





20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Largest Oil Field (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBO</u>
100%	28.71
95%	560.13
90%	825.64
85%	1,057.75
80%	1,289.55
75%	1,522.33
70%	1,763.18
65%	2,020.29
60%	2,302.87
55%	2,596.64
50%	2,928.12
45%	3,301.63
40%	3,729.02
35%	4,242.55
30%	4,852.62
25%	5,604.45
20%	6,563.92
15%	7,831.59
10%	9,671.67
5%	12,880.41
0%	19,998.49

End of Forecast

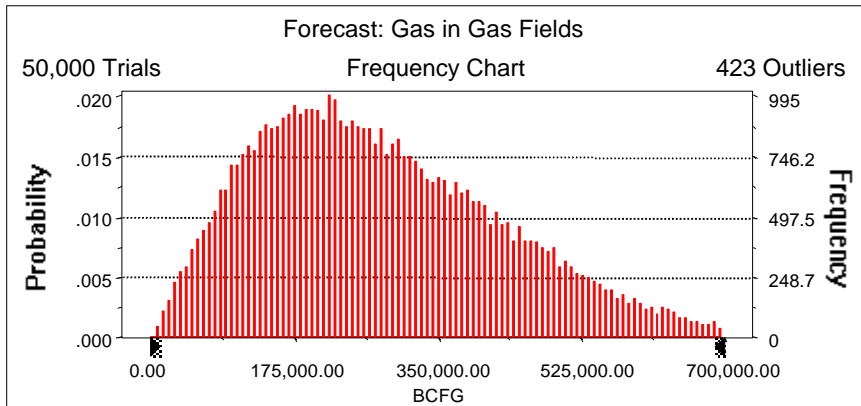
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**Paleozoic Reservoirs**  
**Monte Carlo Results**

**Forecast: Gas in Gas Fields**

Summary:

Display range is from 0.00 to 700,000.00 BCFG  
 Entire range is from 3,835.43 to 1,154,094.26 BCFG  
 After 50,000 trials, the standard error of the mean is 681.48

Statistics:	<u>Value</u>
Trials	50000
Mean	284,153.75
Median	262,034.55
Mode	---
Standard Deviation	152,383.68
Variance	23,220,786,524.99
Skewness	0.64
Kurtosis	3.08
Coefficient of Variability	0.54
Range Minimum	3,835.43
Range Maximum	1,154,094.26
Range Width	1,150,258.83
Mean Standard Error	681.48



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Gas in Gas Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>BCFG</u>
100%	3,835.43
95%	72,454.52
90%	102,541.64
85%	125,995.08
80%	147,194.01
75%	167,102.04
70%	185,933.72
65%	204,463.63
60%	223,164.41
55%	242,109.36
50%	262,034.55
45%	283,228.25
40%	305,002.49
35%	328,310.27
30%	354,783.46
25%	383,229.68
20%	414,211.42
15%	451,192.62
10%	496,309.63
5%	564,141.16
0%	1,154,094.26

End of Forecast

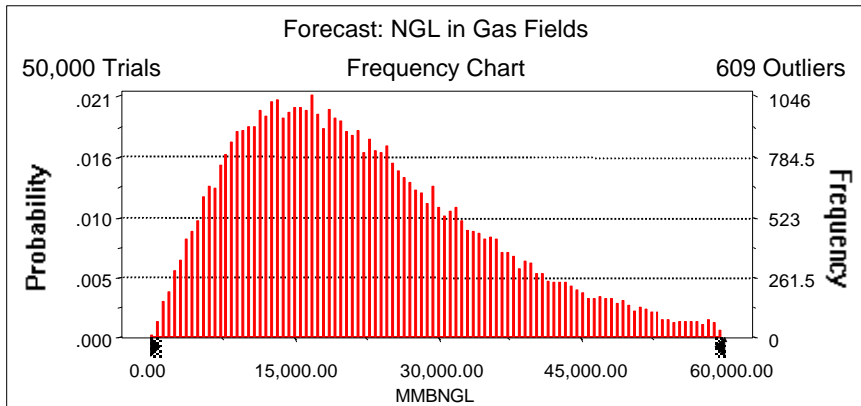
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: NGL in Gas Fields

Summary:

Display range is from 0.00 to 60,000.00 MMBNGL  
Entire range is from 274.80 to 117,299.27 MMBNGL  
After 50,000 trials, the standard error of the mean is 59.59

Statistics:	Value
Trials	50000
Mean	22,750.80
Median	20,363.55
Mode	---
Standard Deviation	13,325.39
Variance	177,565,976.83
Skewness	0.94
Kurtosis	3.97
Coefficient of Variability	0.59
Range Minimum	274.80
Range Maximum	117,299.27
Range Width	117,024.47
Mean Standard Error	59.59



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: NGL in Gas Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBNGL</u>
100%	274.80
95%	5,422.75
90%	7,701.19
85%	9,505.16
80%	11,165.75
75%	12,709.04
70%	14,212.08
65%	15,715.04
60%	17,219.61
55%	18,786.47
50%	20,363.55
45%	22,047.32
40%	23,867.94
35%	25,771.27
30%	27,947.01
25%	30,432.53
20%	33,226.69
15%	36,590.19
10%	41,179.02
5%	48,271.87
0%	117,299.27

End of Forecast

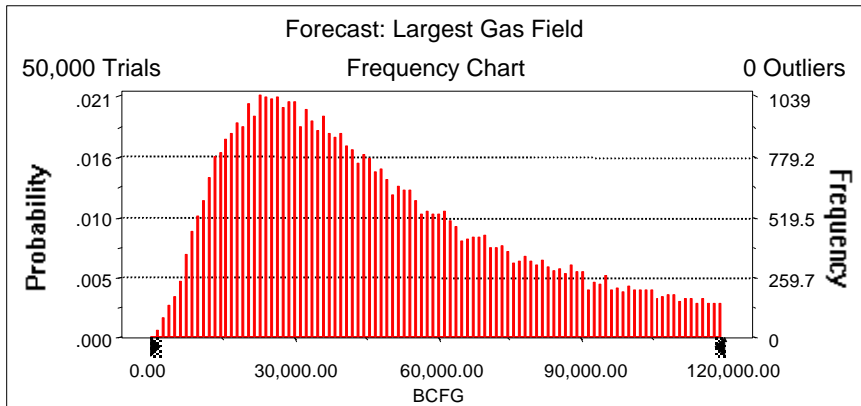
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

**Forecast: Largest Gas Field**

Summary:

Display range is from 0.00 to 120,000.00 BCFG  
Entire range is from 817.44 to 119,998.20 BCFG  
After 50,000 trials, the standard error of the mean is 123.59

Statistics:	Value
Trials	50000
Mean	47,103.13
Median	41,108.42
Mode	---
Standard Deviation	27,634.66
Variance	763,674,688.60
Skewness	0.71
Kurtosis	2.67
Coefficient of Variability	0.59
Range Minimum	817.44
Range Maximum	119,998.20
Range Width	119,180.76
Mean Standard Error	123.59



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Forecast: Largest Gas Field (cont'd)

Percentiles:

<u>Percentile</u>	<u>BCFG</u>
100%	817.44
95%	11,763.82
90%	15,773.76
85%	19,191.49
80%	22,313.86
75%	25,268.56
70%	28,181.32
65%	31,164.68
60%	34,378.98
55%	37,622.23
50%	41,108.42
45%	44,872.62
40%	48,909.57
35%	53,531.65
30%	58,740.04
25%	64,475.72
20%	71,412.79
15%	79,740.02
10%	89,529.79
5%	102,658.90
0%	119,998.20

End of Forecast

20190302  
Paleozoic Reservoirs  
Monte Carlo Results

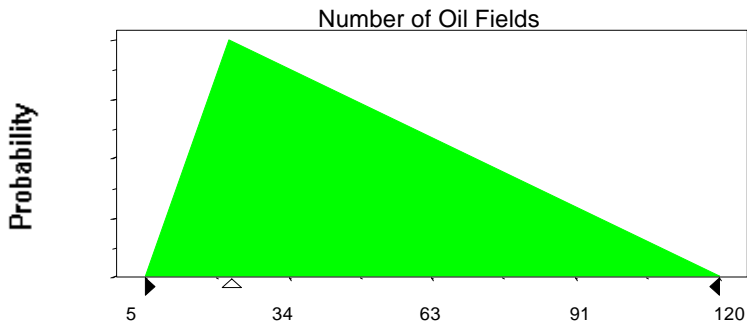
Assumptions

**Assumption: Number of Oil Fields**

Triangular distribution with parameters:

Minimum	5
Likeliest	22
Maximum	120

Selected range is from 5 to 120  
Mean value in simulation was 49



**Assumption: Sizes of Oil Fields**

Lognormal distribution with parameters:

Mean	302.18
Standard Deviation	2,262.70

Shifted parameters

312.18
2,262.70

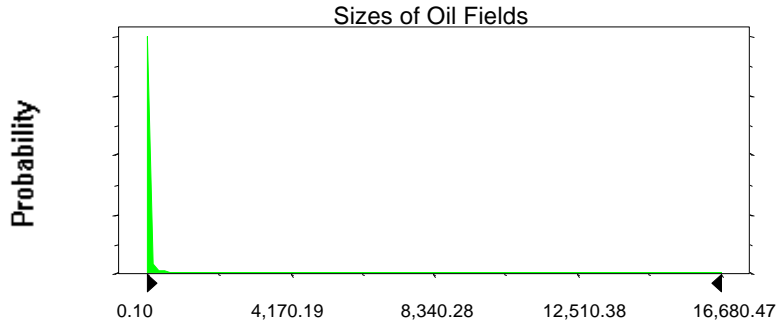
Selected range is from 0.00 to 19,990.00  
Mean value in simulation was 258.54

10.00 to 20,000.00  
268.54



20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Assumption: Sizes of Oil Fields (cont'd)



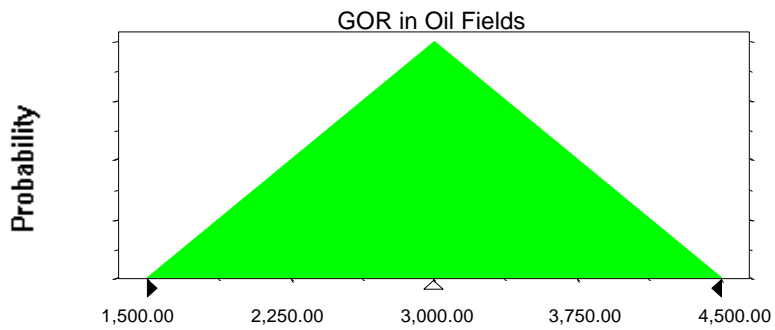
Assumption: GOR in Oil Fields

Triangular distribution with parameters:

Minimum	1,500.00
Likeliest	3,000.00
Maximum	4,500.00

Selected range is from 1,500.00 to 4,500.00

Mean value in simulation was 2,999.77



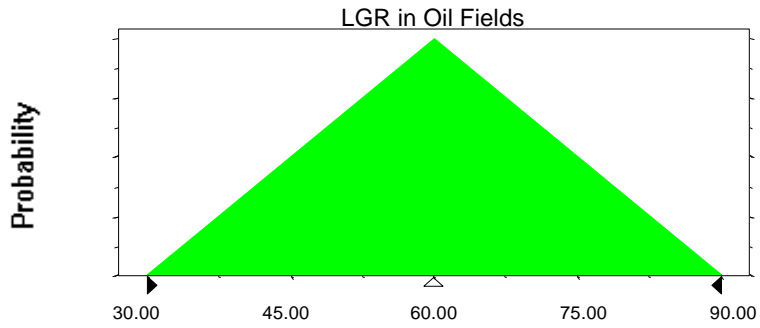
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

**Assumption: LGR in Oil Fields**

Triangular distribution with parameters:

Minimum	30.00
Likeliest	60.00
Maximum	90.00

Selected range is from 30.00 to 90.00  
Mean value in simulation was 60.00



**Assumption: Number of Gas Fields**

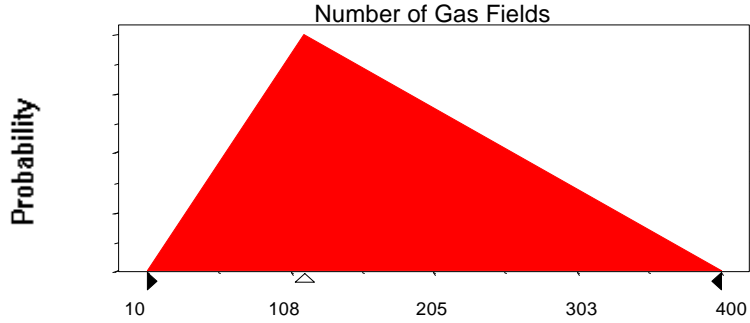
Triangular distribution with parameters:

Minimum	10
Likeliest	117
Maximum	400

Selected range is from 10 to 400  
Mean value in simulation was 175

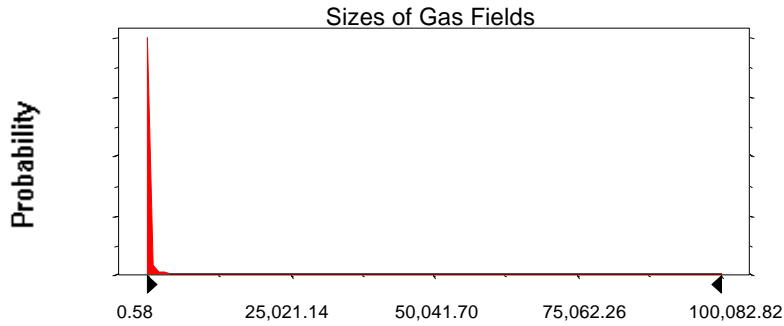
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

Assumption: Number of Gas Fields (cont'd)



Assumption: Sizes of Gas Fields

Lognormal distribution with parameters:		Shifted parameters	
Mean	1,813.07		1,873.07
Standard Deviation	13,576.21		13,576.21
Selected range is from 0.00 to 119,940.00		60.00 to 120,000.00	
Mean value in simulation was 1,542.98		1,602.98	



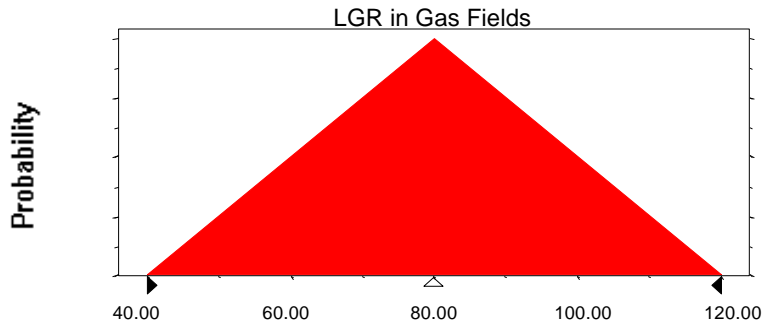
20190302  
Paleozoic Reservoirs  
Monte Carlo Results

**Assumption: LGR in Gas Fields**

Triangular distribution with parameters:

Minimum	40.00
Likeliest	80.00
Maximum	120.00

Selected range is from 40.00 to 120.00  
Mean value in simulation was 80.03



End of Assumptions

Simulation started on 12/30/99 at 11:19:56  
Simulation stopped on 12/30/99 at 13:11:08