

**Central Arch Horst-Block Anticlinal Oil and Gas, Assessment Unit 20210101**  
**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	20	1.00	7,301	18,596	32,829	19,190	10,587	27,514	51,123	28,756	586	1,599	3,281	1,723	830	1,927	4,185	2,141
Gas Fields	120						79,478	199,003	333,005	201,631	6,238	15,742	27,327	16,138	8,557	20,215	42,897	22,212
Total		1.00	7,301	18,596	32,829	19,190	90,066	226,517	384,128	230,387	6,824	17,341	30,608	17,861				

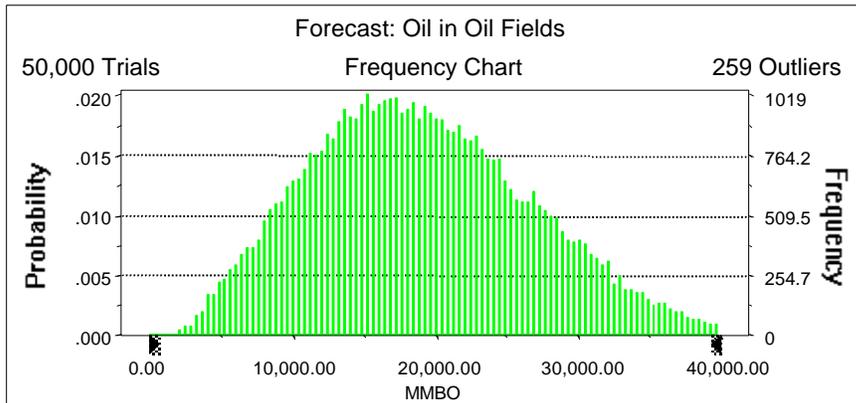
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**Monte Carlo Results**

**Forecast: Oil in Oil Fields**

Summary:

Display range is from 0.00 to 40,000.00 MMBO  
Entire range is from 1,307.95 to 52,901.33 MMBO  
After 50,000 trials, the standard error of the mean is 34.76

Statistics:	Value
Trials	50000
Mean	19,189.57
Median	18,596.34
Mode	---
Standard Deviation	7,773.06
Variance	60,420,537.95
Skewness	0.35
Kurtosis	2.73
Coefficient of Variability	0.41
Range Minimum	1,307.95
Range Maximum	52,901.33
Range Width	51,593.38
Mean Standard Error	34.76



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Forecast: Oil in Oil Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBO</u>
100%	1,307.95
95%	7,301.29
90%	9,378.54
85%	10,928.38
80%	12,262.36
75%	13,446.29
70%	14,515.84
65%	15,536.41
60%	16,568.71
55%	17,568.55
50%	18,596.34
45%	19,666.05
40%	20,750.06
35%	21,889.61
30%	23,073.95
25%	24,396.06
20%	25,922.89
15%	27,702.71
10%	29,836.11
5%	32,828.94
0%	52,901.33

End of Forecast

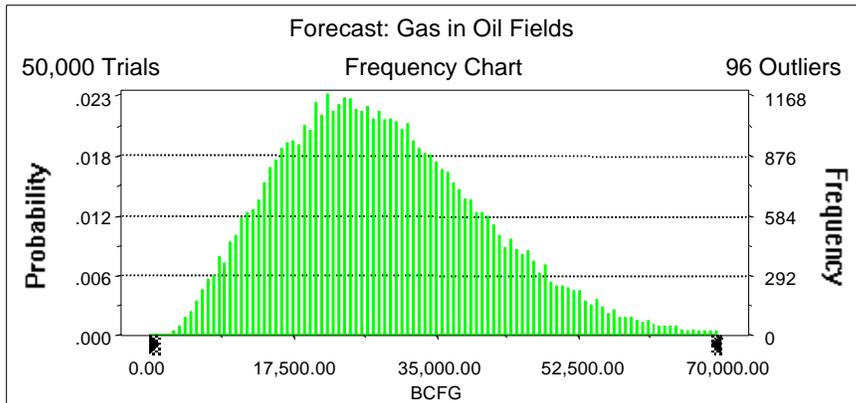
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**Forecast: Gas in Oil Fields**

Summary:

Display range is from 0.00 to 70,000.00 BCFG  
Entire range is from 1,893.30 to 101,392.52 BCFG  
After 50,000 trials, the standard error of the mean is 55.37

Statistics:	<u>Value</u>
Trials	50000
Mean	28,756.22
Median	27,513.79
Mode	---
Standard Deviation	12,381.55
Variance	153,302,716.96
Skewness	0.54
Kurtosis	3.12
Coefficient of Variability	0.43
Range Minimum	1,893.30
Range Maximum	101,392.52
Range Width	99,499.22
Mean Standard Error	55.37



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Forecast: Gas in Oil Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>BCFG</u>
100%	1,893.30
95%	10,587.42
90%	13,576.02
85%	15,889.20
80%	17,803.40
75%	19,591.92
70%	21,246.92
65%	22,812.16
60%	24,347.62
55%	25,909.16
50%	27,513.79
45%	29,166.88
40%	30,835.45
35%	32,603.10
30%	34,532.64
25%	36,628.76
20%	39,060.05
15%	41,926.14
10%	45,569.09
5%	51,123.09
0%	101,392.52

End of Forecast

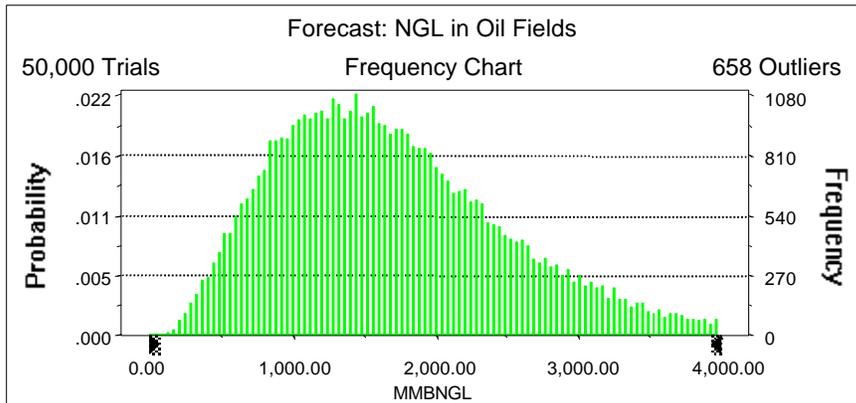
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**Forecast: NGL in Oil Fields**

Summary:

Display range is from 0.00 to 4,000.00 MMBNGL  
Entire range is from 71.14 to 6,709.14 MMBNGL  
After 50,000 trials, the standard error of the mean is 3.74

Statistics:	Value
Trials	50000
Mean	1,723.18
Median	1,598.89
Mode	---
Standard Deviation	836.12
Variance	699,091.72
Skewness	0.84
Kurtosis	3.85
Coefficient of Variability	0.49
Range Minimum	71.14
Range Maximum	6,709.14
Range Width	6,638.00
Mean Standard Error	3.74



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Forecast: NGL in Oil Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBNGL</u>
100%	71.14
95%	586.47
90%	756.01
85%	885.38
80%	999.43
75%	1,103.18
70%	1,204.68
65%	1,303.39
60%	1,402.47
55%	1,498.37
50%	1,598.89
45%	1,705.68
40%	1,814.04
35%	1,931.06
30%	2,058.36
25%	2,208.23
20%	2,375.38
15%	2,588.50
10%	2,865.69
5%	3,281.02
0%	6,709.14

End of Forecast

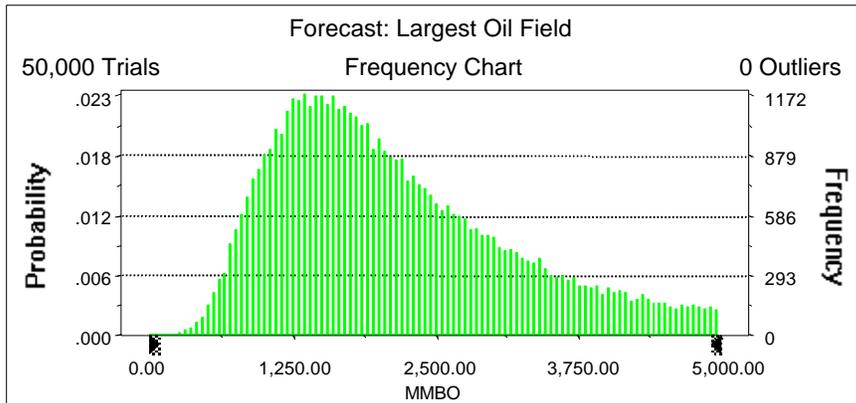
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**Forecast: Largest Oil Field**

Summary:

Display range is from 0.00 to 5,000.00 MMBO  
Entire range is from 200.20 to 4,999.32 MMBO  
After 50,000 trials, the standard error of the mean is 4.53

Statistics:	<u>Value</u>
Trials	50000
Mean	2,140.57
Median	1,927.44
Mode	---
Standard Deviation	1,012.44
Variance	1,025,042.14
Skewness	0.76
Kurtosis	2.92
Coefficient of Variability	0.47
Range Minimum	200.20
Range Maximum	4,999.32
Range Width	4,799.12
Mean Standard Error	4.53



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Forecast: Largest Oil Field (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBO</u>
100%	200.20
95%	829.69
90%	1,001.51
85%	1,137.33
80%	1,257.43
75%	1,365.75
70%	1,475.12
65%	1,582.22
60%	1,693.78
55%	1,808.11
50%	1,927.44
45%	2,060.62
40%	2,204.19
35%	2,362.26
30%	2,542.15
25%	2,749.79
20%	2,989.78
15%	3,279.63
10%	3,657.37
5%	4,184.81
0%	4,999.32

End of Forecast

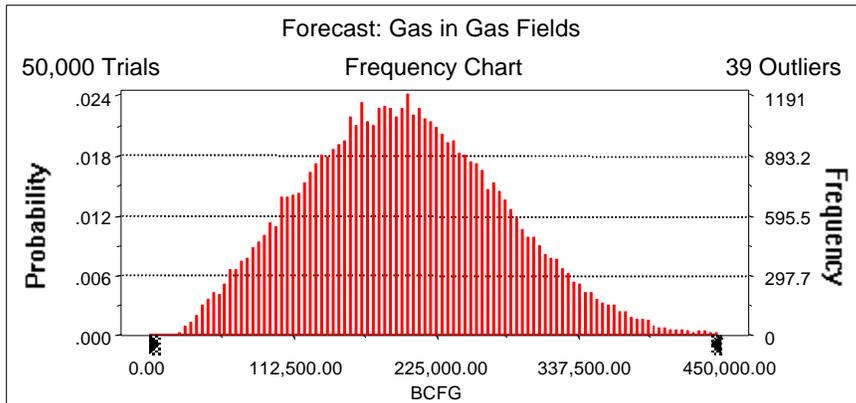
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**Forecast: Gas in Gas Fields**

Summary:

Display range is from 0.00 to 450,000.00 BCFG  
 Entire range is from 19,821.31 to 513,010.70 BCFG  
 After 50,000 trials, the standard error of the mean is 343.56

Statistics:	<u>Value</u>
Trials	50000
Mean	201,630.98
Median	199,003.11
Mode	---
Standard Deviation	76,822.42
Variance	5,901,683,493.25
Skewness	0.24
Kurtosis	2.73
Coefficient of Variability	0.38
Range Minimum	19,821.31
Range Maximum	513,010.70
Range Width	493,189.39
Mean Standard Error	343.56



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Forecast: Gas in Gas Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>BCFG</u>
100%	19,821.31
95%	79,478.44
90%	102,354.13
85%	118,969.91
80%	133,359.97
75%	146,074.34
70%	157,855.00
65%	168,383.49
60%	178,828.69
55%	188,777.51
50%	199,003.11
45%	208,813.56
40%	218,975.69
35%	229,724.54
30%	241,423.86
25%	253,786.71
20%	267,525.65
15%	283,420.70
10%	303,778.90
5%	333,005.36
0%	513,010.70

End of Forecast

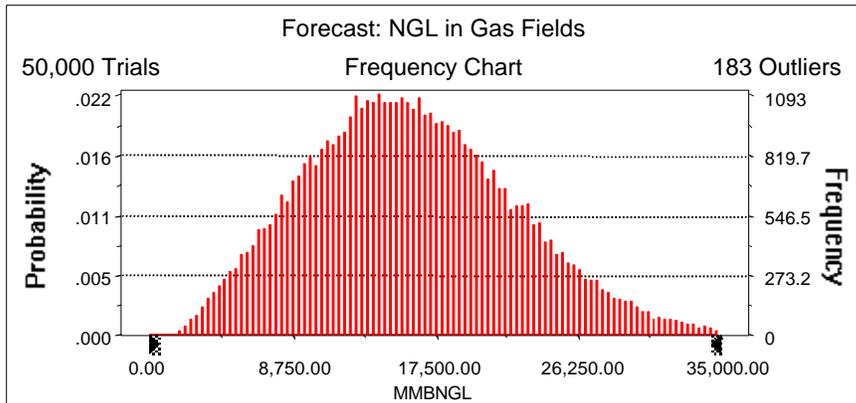
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**Forecast: NGL in Gas Fields**

Summary:

Display range is from 0.00 to 35,000.00 MMBNGL  
Entire range is from 1,318.76 to 47,539.93 MMBNGL  
After 50,000 trials, the standard error of the mean is 28.61

Statistics:	Value
Trials	50000
Mean	16,137.69
Median	15,742.30
Mode	---
Standard Deviation	6,397.43
Variance	40,927,062.57
Skewness	0.37
Kurtosis	2.93
Coefficient of Variability	0.40
Range Minimum	1,318.76
Range Maximum	47,539.93
Range Width	46,221.17
Mean Standard Error	28.61



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Forecast: NGL in Gas Fields (cont'd)

Percentiles:

<u>Percentile</u>	<u>MMBNGL</u>
100%	1,318.76
95%	6,237.92
90%	8,039.45
85%	9,362.70
80%	10,487.35
75%	11,505.27
70%	12,444.07
65%	13,280.34
60%	14,103.36
55%	14,928.19
50%	15,742.30
45%	16,581.37
40%	17,435.23
35%	18,340.60
30%	19,280.73
25%	20,321.03
20%	21,492.31
15%	22,919.15
10%	24,631.79
5%	27,326.92
0%	47,539.93

End of Forecast

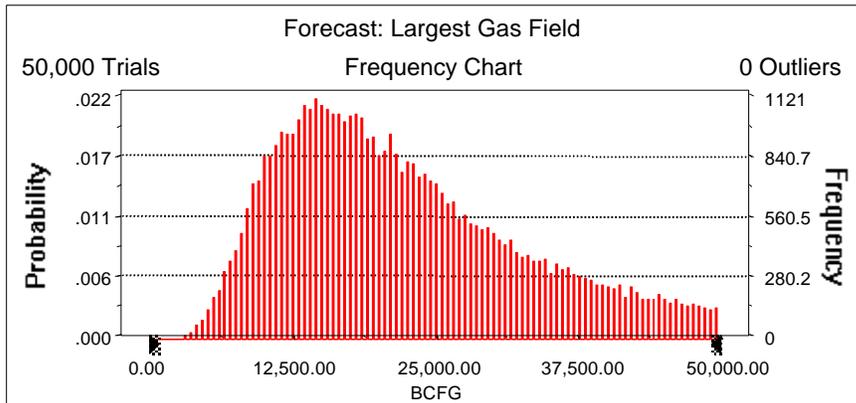
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**Forecast: Largest Gas Field**

Summary:

Display range is from 0.00 to 50,000.00 BCFG  
 Entire range is from 2,345.77 to 49,990.27 BCFG  
 After 50,000 trials, the standard error of the mean is 46.45

Statistics:	<u>Value</u>
Trials	50000
Mean	22,212.02
Median	20,215.32
Mode	---
Standard Deviation	10,387.41
Variance	107,898,238.73
Skewness	0.67
Kurtosis	2.72
Coefficient of Variability	0.47
Range Minimum	2,345.77
Range Maximum	49,990.27
Range Width	47,644.49
Mean Standard Error	46.45



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Forecast: Largest Gas Field (cont'd)

Percentiles:

<u>Percentile</u>	<u>BCFG</u>
100%	2,345.77
95%	8,557.20
90%	10,290.60
85%	11,690.91
80%	12,993.92
75%	14,184.06
70%	15,307.53
65%	16,470.72
60%	17,668.58
55%	18,881.50
50%	20,215.32
45%	21,580.39
40%	23,109.00
35%	24,715.22
30%	26,531.51
25%	28,692.60
20%	31,159.01
15%	34,212.54
10%	37,941.61
5%	42,897.36
0%	49,990.27

End of Forecast

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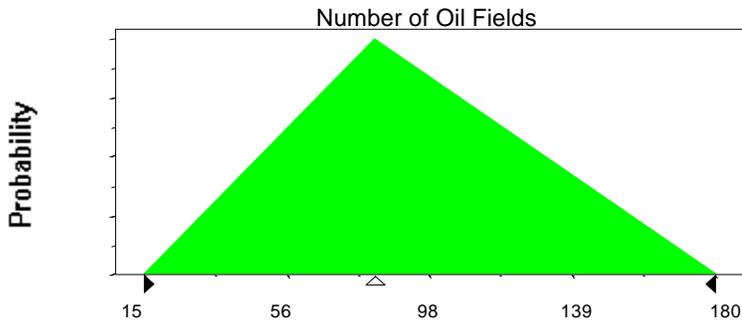
Assumptions

**Assumption: Number of Oil Fields**

Triangular distribution with parameters:

Minimum	15
Likeliest	82
Maximum	180

Selected range is from 15 to 180  
Mean value in simulation was 92

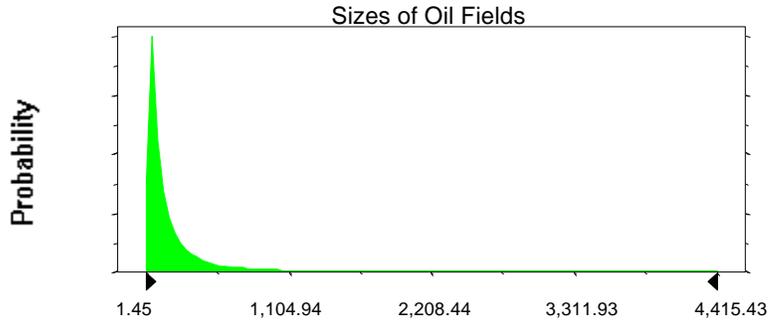


**Assumption: Sizes of Oil Fields**

Lognormal distribution with parameters:		Shifted parameters
Mean	195.53	215.53
Standard Deviation	436.09	436.09
Selected range is from 0.00 to 4,980.00		20.00 to 5,000.00
Mean value in simulation was 186.81		206.81

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Assumption: Sizes of Oil Fields (cont'd)



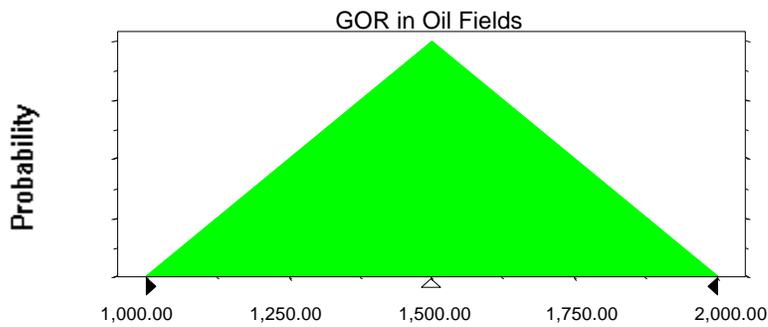
Assumption: GOR in Oil Fields

Triangular distribution with parameters:

Minimum	1,000.00
Likeliest	1,500.00
Maximum	2,000.00

Selected range is from 1,000.00 to 2,000.00

Mean value in simulation was 1,498.79



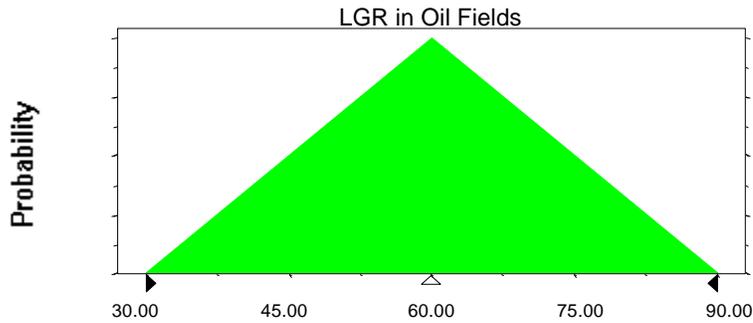
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**Assumption: LGR in Oil Fields**

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 59.92



**Assumption: Number of Gas Fields**

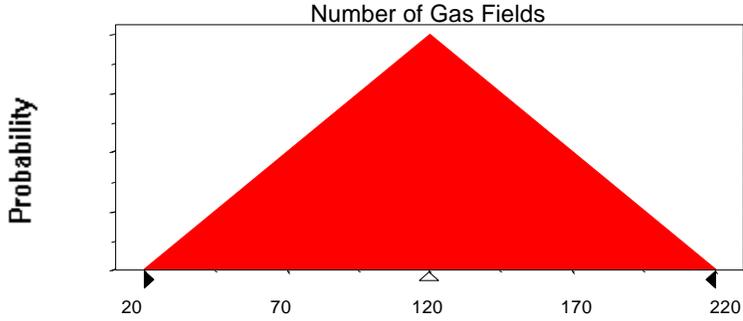
Triangular distribution with parameters:

Minimum	20
Likeliest	120
Maximum	220

Selected range is from 20 to 220  
Mean value in simulation was 120

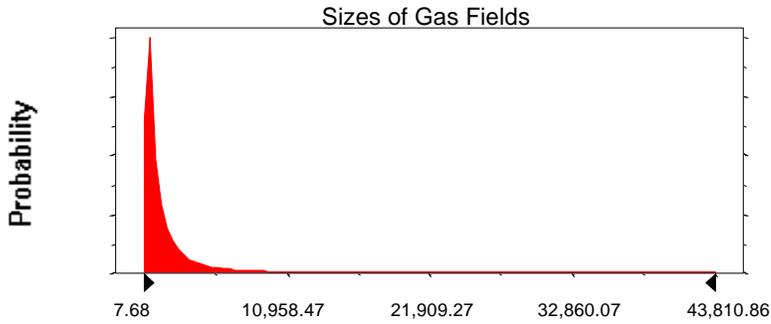
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Assumption: Number of Gas Fields (cont'd)



Assumption: Sizes of Gas Fields

Lognormal distribution with parameters:	Shifted parameters	
Mean	1,639.33	1,759.33
Standard Deviation	4,333.75	4,333.75
Selected range is from 0.00 to 49,880.00	120.00 to 50,000.00	
Mean value in simulation was 1,559.43	1,679.43	



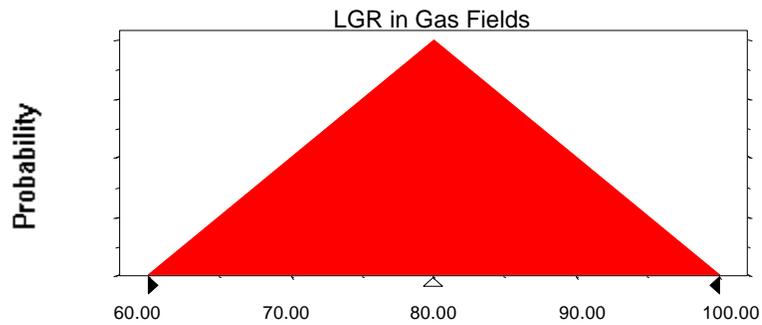
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**Assumption: LGR in Gas Fields**

Triangular distribution with parameters:

Minimum	60.00
Likeliest	80.00
Maximum	100.00

Selected range is from 60.00 to 100.00  
Mean value in simulation was 80.04



End of Assumptions

Simulation started on 5/27/99 at 15:00:35  
Simulation stopped on 5/27/99 at 16:28:30