Ghaba-Makarem Combined Structural, Assessment Unit 20140101
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	5	1.00	221	684	1,450	743	639	2,032	4,491	2,230	47	150	344	167	34	93	254	111
Gas Fields	30						2,202	7,392	15,186	7,882	75	256	544	276	560	1,626	4,903	2,006
Total		1.00	221	684	1,450	743	2,841	9,425	19,677	10,112	122	406	888	443				

Forecast: Oil in Oil Fields

Summary:
Display range is from 0.00 to 1,750.00 MMBO
Entire range is from 47.15 to 2,789.41 MMBO
After 50,000 trials, the standard error of the mean is 1.71

Statistics:	Value
Trials	50000
Mean	742.84
Median	684.36
Mode	---
Standard Deviation	382.03
Variance	145,946.72
Skewness	0.62
Kurtosis	2.89
Coefficient of Variability	0.51
Range Minimum	47.15
Range Maximum	2,789.41
Range Width	2,742.26
Mean Standard Error	1.71
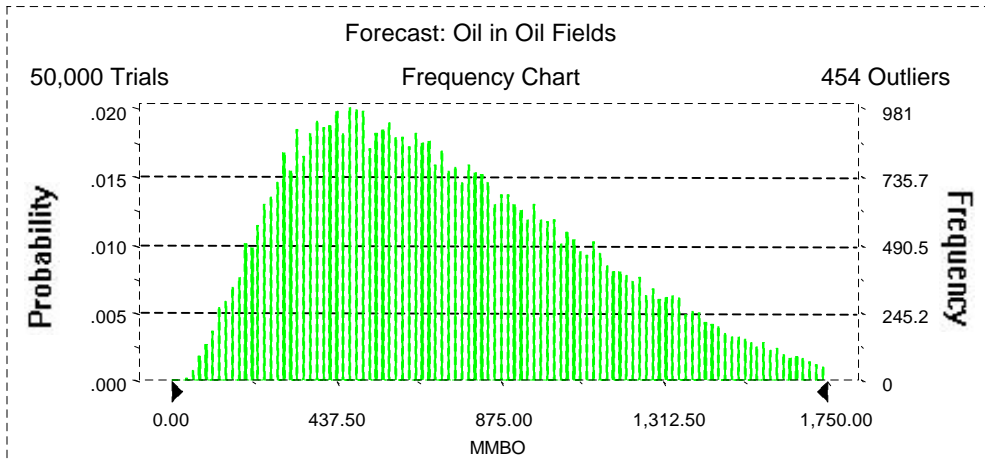
Forecast: Oil in Oil Fields

50,000 Trials   Frequency Chart   454 Outliers

Forecast: Oil in Oil Fields (cont'd)

Percentiles:

Percentile	MMBO
100%	47.15
95%	220.64
90%	291.06
85%	345.56
80%	395.62
75%	442.83
70%	488.94
65%	535.64
60%	584.52
55%	633.83
50%	684.36
45%	737.85
40%	796.10
35%	855.33
30%	922.28
25%	994.55
20%	1,074.80
15%	1,169.15
10%	1,287.22
5%	1,449.84
0%	2,789.41

End of Forecast

Forecast: Gas in Oil Fields

Summary:
    Display range is from 0.00 to 5,500.00 BCFG
    Entire range is from 104.40 to 8,398.99 BCFG
    After 50,000 trials, the standard error of the mean is 5.35

Statistics:	Value
Trials	50000
Mean	2,230.28
Median	2,032.36
Mode	---
Standard Deviation	1,196.44
Variance	1,431,469.82
Skewness	0.76
Kurtosis	3.29
Coefficient of Variability	0.54
Range Minimum	104.40
Range Maximum	8,398.99
Range Width	8,294.58
Mean Standard Error	5.35
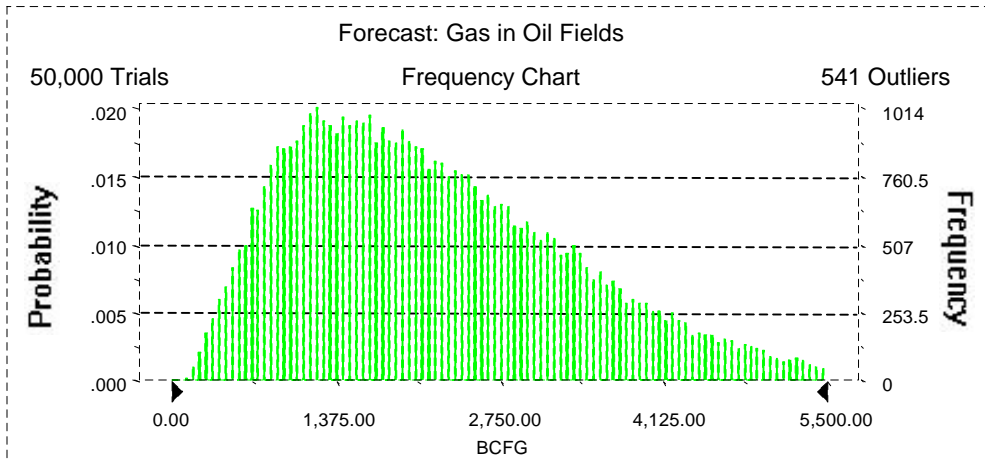
Forecast: Gas in Oil Fields

50,000 Trials   Frequency Chart   541 Outliers

Forecast: Gas in Oil Fields (cont'd)

Percentiles:

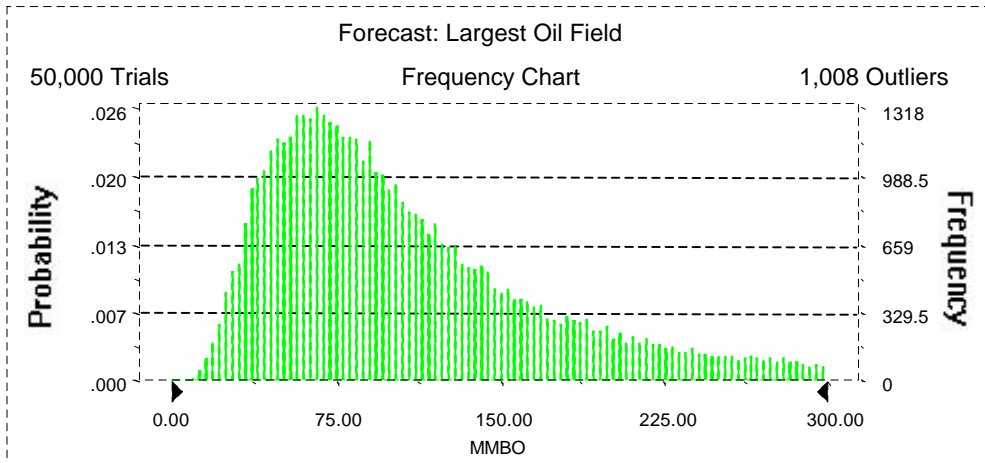| Percentile	BCFG
100%	104.40
95%	639.24
90%	847.66
85%	1,007.45
80%	1,159.31
75%	1,297.19
70%	1,442.53
65%	1,587.06
60%	1,727.76
55%	1,880.35
50%	2,032.36
45%	2,195.53
40%	2,368.27
35%	2,548.97
30%	2,750.96
25%	2,976.72
20%	3,225.75
15%	3,515.26
10%	3,907.37
5%	4,490.94
0%	8,398.99

End of Forecast

Ghaba-Makarem Combined Structural
Monte Carlo Results

Forecast: NGL in Oil Fields

Summary:
Display range is from 0.00 to 450.00 MMBNGL
Entire range is from 6.26 to 667.49 MMBNGL
After 50,000 trials, the standard error of the mean is 0.42

Statistics:	Value
Trials	50000
Mean	167.20
Median	150.25
Mode	---
Standard Deviation	93.29
Variance	8,703.52
Skewness	0.89
Kurtosis	3.68
Coefficient of Variability	0.56
Range Minimum	6.26
Range Maximum	667.49
Range Width	661.23
Mean Standard Error	0.42

Forecast: NGL in Oil Fields

Forecast: NGL in Oil Fields (cont'd)

Percentiles:

Percentile	MMBNGL
100%	6.26
95%	46.51
90%	61.79
85%	73.73
80%	84.74
75%	95.54
70%	106.13
65%	116.92
60%	127.43
55%	138.59
50%	150.25
45%	162.25
40%	175.53
35%	190.04
30%	205.40
25%	222.82
20%	242.30
15%	266.38
10%	296.98
5%	344.17
0%	667.49

End of Forecast

Forecast: Largest Oil Field

Summary:
  Display range is from 0.00 to 300.00 MMBO
  Entire range is from 8.73 to 350.00 MMBO
  After 50,000 trials, the standard error of the mean is 0.30

Statistics:	Value
Trials	50000
Mean	110.60
Median	92.68
Mode	---
Standard Deviation	67.00
Variance	4,489.01
Skewness	1.22
Kurtosis	4.18
Coefficient of Variability	0.61
Range Minimum	8.73
Range Maximum	350.00
Range Width	341.27
Mean Standard Error	0.30

Forecast: Largest Oil Field

Forecast: Largest Oil Field (cont'd)

Percentiles:

Percentile	MMBO
100%	8.73
95%	34.42
90%	42.53
85%	49.42
80%	55.81
75%	61.81
70%	67.66
65%	73.38
60%	79.59
55%	85.97
50%	92.68
45%	100.26
40%	108.50
35%	118.06
30%	128.87
25%	141.79
20%	157.69
15%	179.19
10%	207.52
5%	254.05
0%	350.00

End of Forecast

Forecast: Gas in Gas Fields

Summary:
Display range is from 0.00 to 20,000.00 BCFG
Entire range is from 217.23 to 33,369.41 BCFG
After 50,000 trials, the standard error of the mean is 17.92

Statistics:	Value
Trials	50000
Mean	7,881.69
Median	7,392.25
Mode	---
Standard Deviation	4,006.77
Variance	16,054,179.14
Skewness	0.72
Kurtosis	3.62
Coefficient of Variability	0.51
Range Minimum	217.23
Range Maximum	33,369.41
Range Width	33,152.18
Mean Standard Error	17.92
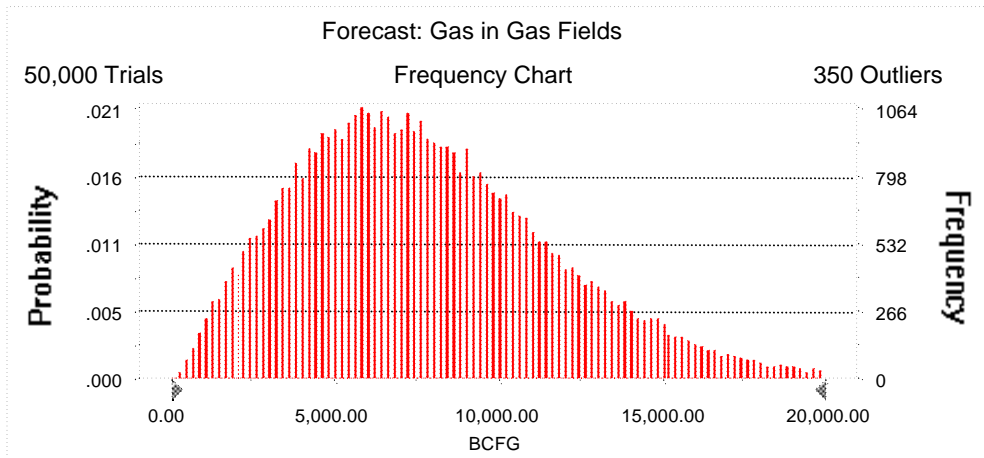
Forecast: Gas in Gas Fields

Forecast: Gas in Gas Fields (cont'd)

Percentiles:

Percentile	BCFG
100%	217.23
95%	2,202.08
90%	3,094.82
85%	3,791.51
80%	4,384.30
75%	4,920.87
70%	5,432.83
65%	5,915.23
60%	6,406.35
55%	6,896.13
50%	7,392.25
45%	7,898.03
40%	8,448.81
35%	9,018.71
30%	9,613.55
25%	10,297.38
20%	11,069.90
15%	12,025.21
10%	13,283.84
5%	15,186.17
0%	33,369.41

End of Forecast

Forecast: NGL in Gas Fields

Summary:
  Display range is from 0.00 to 700.00 MMBNGL
  Entire range is from 5.83 to 1,342.97 MMBNGL
  After 50,000 trials, the standard error of the mean is 0.65

Statistics:	Value
Trials	50000
Mean	275.78
Median	255.51
Mode	---
Standard Deviation	144.73
Variance	20,945.93
Skewness	0.82
Kurtosis	3.89
Coefficient of Variability	0.52
Range Minimum	5.83
Range Maximum	1,342.97
Range Width	1,337.14
Mean Standard Error	0.65
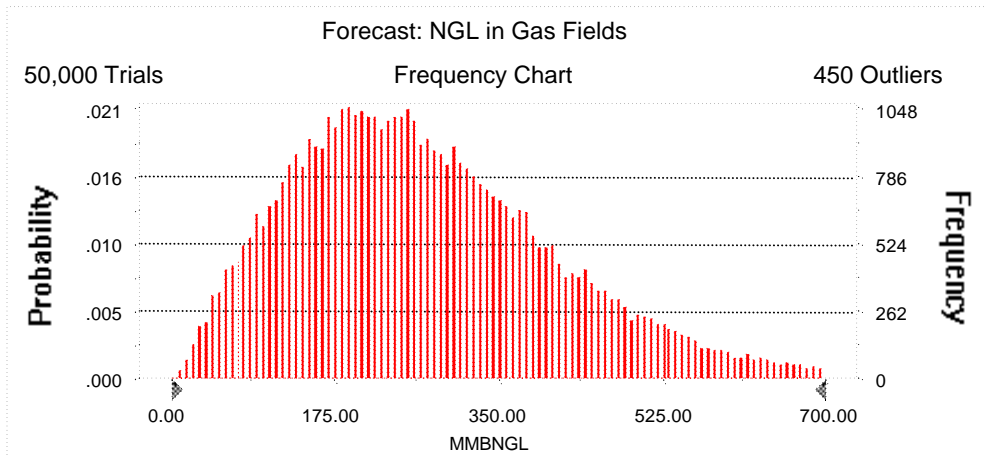
Forecast: NGL in Gas Fields

Forecast: NGL in Gas Fields (cont'd)

Percentiles:

Percentile	MMBNGL
100%	5.83
95%	75.24
90%	105.78
85%	129.93
80%	150.23
75%	169.65
70%	187.00
65%	203.77
60%	221.12
55%	238.42
50%	255.51
45%	273.82
40%	293.52
35%	313.55
30%	336.06
25%	360.92
20%	388.65
15%	424.09
10%	470.65
5%	543.74
0%	1,342.97

End of Forecast

Ghaba-Makarem Combined Structural
Monte Carlo Results

Forecast: Largest Gas Field

Summary:
  Display range is from 0.00 to 6,000.00 BCFG
  Entire range is from 90.06 to 7,986.96 BCFG
  After 50,000 trials, the standard error of the mean is 6.09

Statistics:	Value
Trials	50000
Mean	2,006.47
Median	1,626.40
Mode	---
Standard Deviation	1,362.50
Variance	1,856,405.00
Skewness	1.58
Kurtosis	5.74
Coefficient of Variability	0.68
Range Minimum	90.06
Range Maximum	7,986.96
Range Width	7,896.90
Mean Standard Error	6.09

Forecast: Largest Gas Field

Forecast: Largest Gas Field (cont'd)

Percentiles:

Percentile	BCFG
100%	90.06
95%	559.74
90%	714.84
85%	839.05
80%	949.83
75%	1,054.32
70%	1,161.24
65%	1,268.85
60%	1,378.57
55%	1,495.68
50%	1,626.40
45%	1,766.85
40%	1,920.16
35%	2,095.44
30%	2,300.58
25%	2,536.98
20%	2,844.69
15%	3,259.46
10%	3,834.30
5%	4,903.45
0%	7,986.96

End of Forecast

Assumptions

Assumption: Number of Oil Fields

Triangular distribution with parameters:
Minimum	5
Likeliest	24
Maximum	100

Selected range is from 5 to 100
Mean value in simulation was 43

Number of Oil Fields
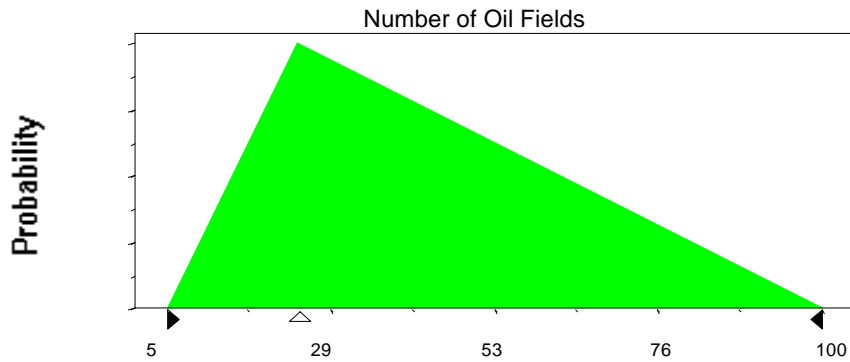
Assumption: Sizes of Oil Fields

Lognormal distribution with parameters: Shifted parameters
Mean	12.78	17.78
Standard Deviation	30.09	30.09

Selected range is from 0.00 to 345.00   5.00 to 350.00
Mean value in simulation was 12.45   17.45

Assumption: Sizes of Oil Fields (cont'd)

Sizes of Oil Fields
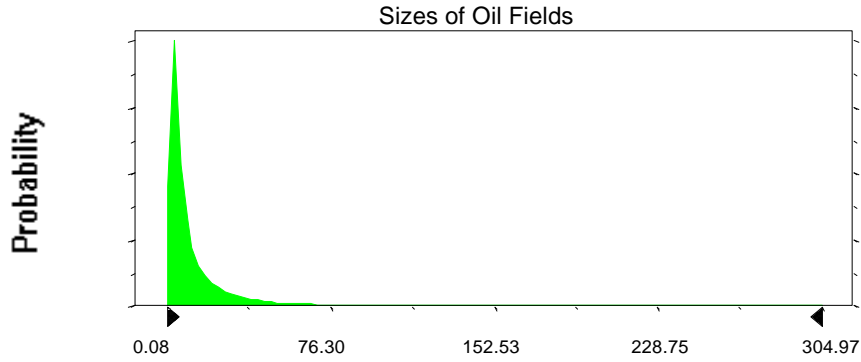
Assumption: GOR in Oil Fields

Triangular distribution with parameters:
Minimum	2,000.00
Likeliest	3,000.00
Maximum	4,000.00

Selected range is from 2,000.00 to 4,000.00
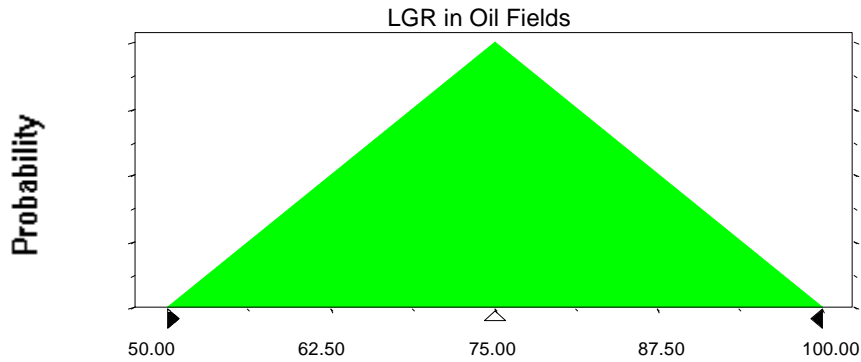Mean value in simulation was 3,001.92
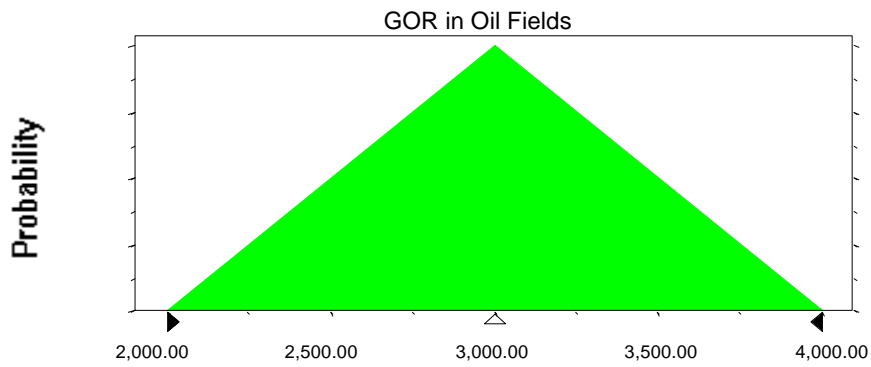
GOR in Oil Fields

Assumption: LGR in Oil Fields

Triangular distribution with parameters:
Minimum	50.00
Likeliest	75.00
Maximum	100.00

Selected range is from 50.00 to 100.00
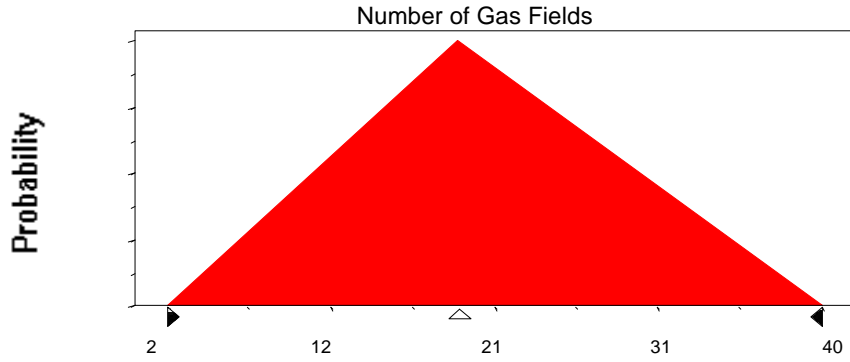Mean value in simulation was 74.95

LGR in Oil Fields

Assumption: Number of Gas Fields

Triangular distribution with parameters:
Minimum	2
Likeliest	19
Maximum	40

Selected range is from 2 to 40
Mean value in simulation was 20

Assumption: Number of Gas Fields (cont'd)

Number of Gas Fields

Assumption: Sizes of Gas Fields

Lognormal distribution with parameters:		Shifted parameters	
Mean	369.09		399.09
Standard Deviation	711.29		711.29

Selected range is from 0.00 to 7,970.00   30.00 to 8,000.00
Mean value in simulation was 362.15   392.15

Sizes of Gas Fields
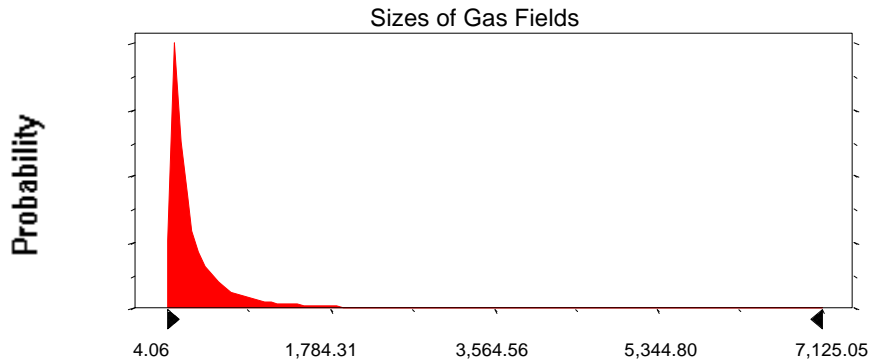
Assumption: LGR in Gas Fields

Triangular distribution with parameters:

Minimum	25.00
Likeliest	35.00
Maximum	45.00

Selected range is from 25.00 to 45.00
Mean value in simulation was 34.99

LGR in Gas Fields
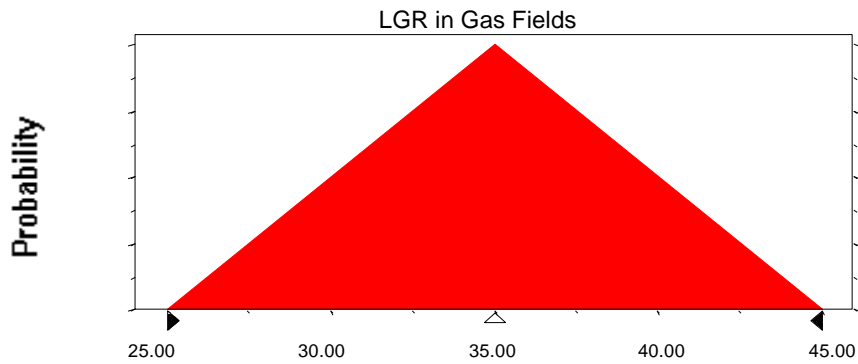
End of Assumptions

Simulation started on 12/8/98 at 17:35:23
Simulation stopped on 12/8/98 at 18:09:51