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## Permian Reefs/Thrust Folds, Assessment Unit 10150201
## 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 | 3 | 1.00 | 14 | 38 | 81 | 42 | 11 | 31 | 69 | 34 | 1 | 2 | 4 | 2 | 6 | 13 | 36 | 16 |
| Gas Fields | 18 | | | | | | 629 | 1,468 | 2,544 | 1,513 | 37 | 87 | 159 | 91 | 113 | 252 | 647 | 297 |
| Total | | 1.00 | 14 | 38 | 81 | 42 | 640 | 1,499 | 2,613 | 1,547 | 37 | 89 | 164 | 93 | | | | |

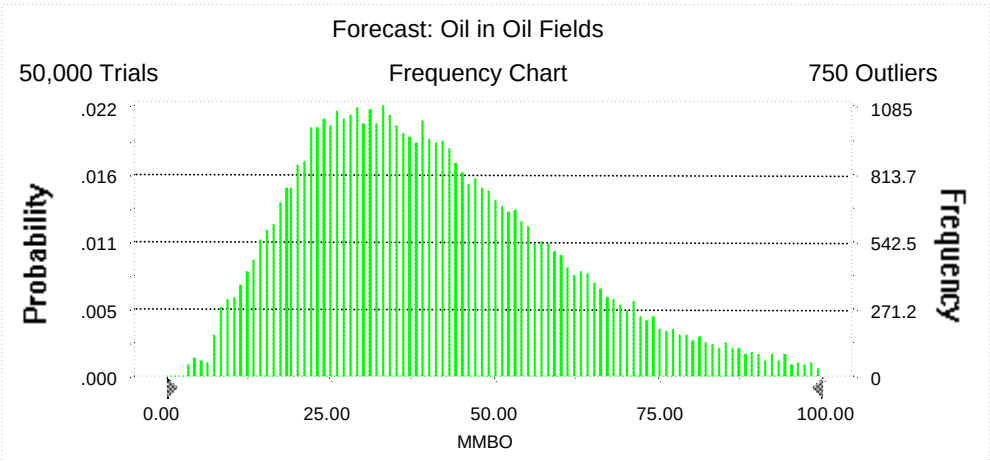
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

## Forecast: Oil in Oil Fields

Summary:

Display range is from 0.00 to 100.00 MMBO
Entire range is from 3.13 to 185.43 MMBO
After 50,000 trials, the standard error of the mean is 0.09

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 41.62 |
| Median | 38.25 |
| Mode | --- |
| Standard Deviation | 21.09 |
| Variance | 444.86 |
| Skewness | 1.01 |
| Kurtosis | 4.57 |
| Coefficient of Variability | 0.51 |
| Range Minimum | 3.13 |
| Range Maximum | 185.43 |
| Range Width | 182.30 |
| Mean Standard Error | 0.09 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Oil in Oil Fields (cont'd)**

Percentiles:

| Percentile | MMBO |
|---|---|
| 100% | 3.13 |
| 95% | 13.81 |
| 90% | 17.93 |
| 85% | 21.09 |
| 80% | 23.68 |
| 75% | 26.14 |
| 70% | 28.53 |
| 65% | 30.92 |
| 60% | 33.30 |
| 55% | 35.69 |
| 50% | 38.25 |
| 45% | 40.81 |
| 40% | 43.47 |
| 35% | 46.43 |
| 30% | 49.69 |
| 25% | 53.34 |
| 20% | 57.53 |
| 15% | 62.70 |
| 10% | 69.64 |
| 5% | 81.18 |
| 0% | 185.43 |

End of Forecast

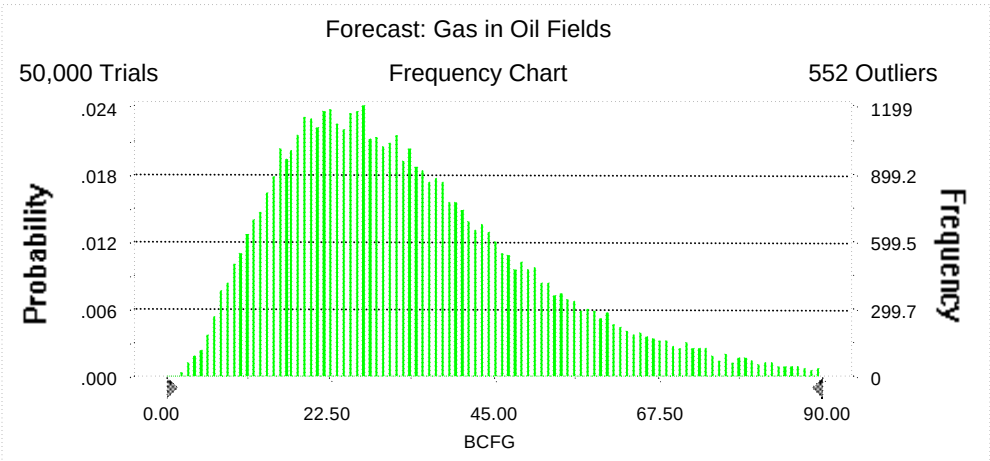
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

## Forecast: Gas in Oil Fields

Summary:

Display range is from 0.00 to 90.00 BCFG
Entire range is from 2.05 to 180.32 BCFG
After 50,000 trials, the standard error of the mean is 0.08

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 33.90 |
| Median | 30.53 |
| Mode | --- |
| Standard Deviation | 18.40 |
| Variance | 338.38 |
| Skewness | 1.20 |
| Kurtosis | 5.38 |
| Coefficient of Variability | 0.54 |
| Range Minimum | 2.05 |
| Range Maximum | 180.32 |
| Range Width | 178.27 |
| Mean Standard Error | 0.08 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Gas in Oil Fields (cont'd)**

Percentiles:

| Percentile | BCFG |
|---|---|
| 100% | 2.05 |
| 95% | 10.61 |
| 90% | 13.87 |
| 85% | 16.32 |
| 80% | 18.56 |
| 75% | 20.51 |
| 70% | 22.50 |
| 65% | 24.43 |
| 60% | 26.43 |
| 55% | 28.34 |
| 50% | 30.53 |
| 45% | 32.66 |
| 40% | 35.01 |
| 35% | 37.54 |
| 30% | 40.31 |
| 25% | 43.57 |
| 20% | 47.26 |
| 15% | 51.96 |
| 10% | 58.37 |
| 5% | 68.83 |
| 0% | 180.32 |

End of Forecast

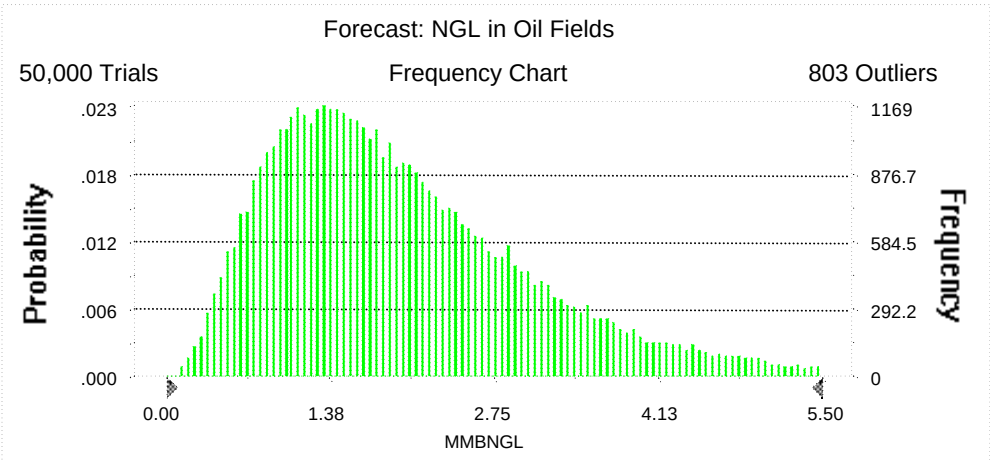
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: NGL in Oil Fields**

Summary:

Display range is from 0.00 to 5.50 MMBNGL
Entire range is from 0.10 to 14.63 MMBNGL
After 50,000 trials, the standard error of the mean is 0.01

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 2.03 |
| Median | 1.78 |
| Mode | --- |
| Standard Deviation | 1.20 |
| Variance | 1.44 |
| Skewness | 1.44 |
| Kurtosis | 6.62 |
| Coefficient of Variability | 0.59 |
| Range Minimum | 0.10 |
| Range Maximum | 14.63 |
| Range Width | 14.53 |
| Mean Standard Error | 0.01 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: NGL in Oil Fields (cont'd)**

Percentiles:

| Percentile | MMBNGL |
|---|---|
| 100% | 0.10 |
| 95% | 0.60 |
| 90% | 0.78 |
| 85% | 0.92 |
| 80% | 1.05 |
| 75% | 1.17 |
| 70% | 1.29 |
| 65% | 1.41 |
| 60% | 1.53 |
| 55% | 1.66 |
| 50% | 1.78 |
| 45% | 1.92 |
| 40% | 2.07 |
| 35% | 2.23 |
| 30% | 2.42 |
| 25% | 2.62 |
| 20% | 2.88 |
| 15% | 3.18 |
| 10% | 3.59 |
| 5% | 4.32 |
| 0% | 14.63 |

End of Forecast

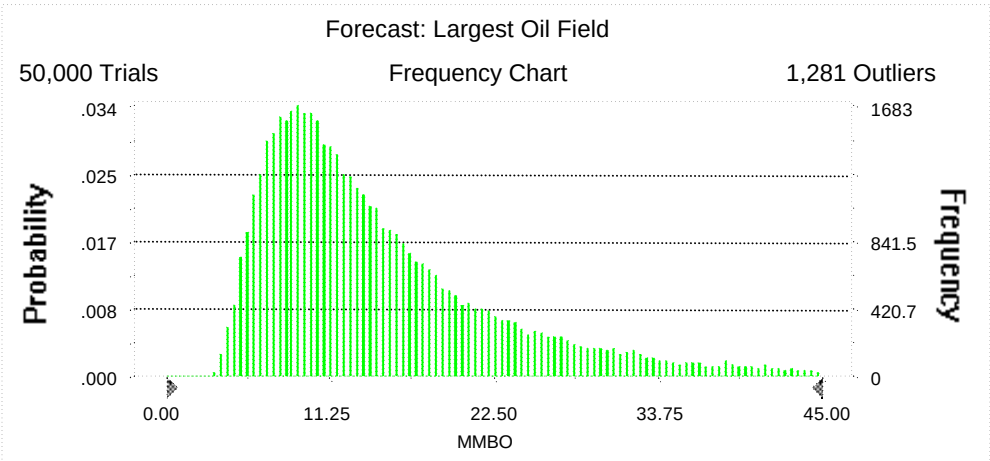
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Largest Oil Field**

Summary:

Display range is from 0.00 to 45.00 MMBO
Entire range is from 3.13 to 79.98 MMBO
After 50,000 trials, the standard error of the mean is 0.05

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 15.67 |
| Median | 12.64 |
| Mode | --- |
| Standard Deviation | 10.35 |
| Variance | 107.18 |
| Skewness | 2.19 |
| Kurtosis | 9.49 |
| Coefficient of Variability | 0.66 |
| Range Minimum | 3.13 |
| Range Maximum | 79.98 |
| Range Width | 76.85 |
| Mean Standard Error | 0.05 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Largest Oil Field (cont'd)**

Percentiles:

| Percentile | MMBO |
|---|---|
| 100% | 3.13 |
| 95% | 5.81 |
| 90% | 6.75 |
| 85% | 7.51 |
| 80% | 8.21 |
| 75% | 8.91 |
| 70% | 9.57 |
| 65% | 10.27 |
| 60% | 11.00 |
| 55% | 11.78 |
| 50% | 12.64 |
| 45% | 13.57 |
| 40% | 14.61 |
| 35% | 15.81 |
| 30% | 17.17 |
| 25% | 18.84 |
| 20% | 21.06 |
| 15% | 23.96 |
| 10% | 28.18 |
| 5% | 36.25 |
| 0% | 79.98 |

End of Forecast

**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

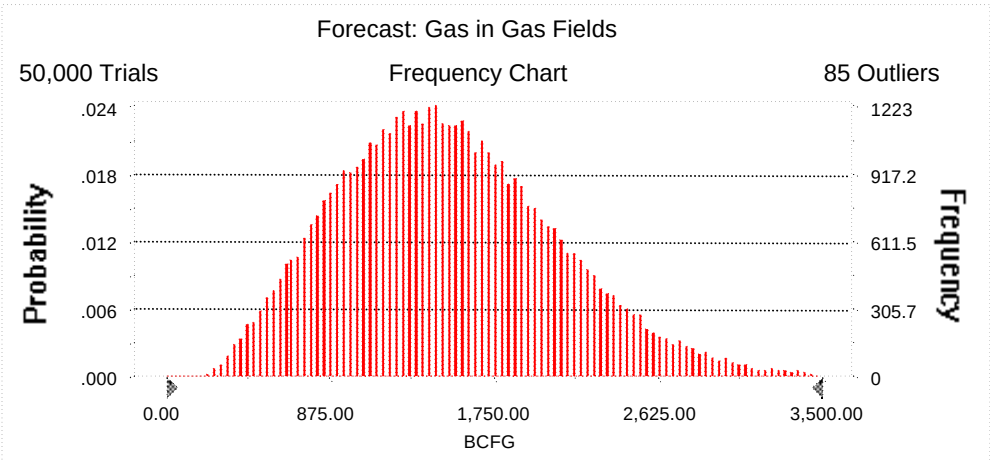
**Forecast: Gas in Gas Fields**

Summary:

Display range is from 0.00 to 3,500.00 BCFG
Entire range is from 147.10 to 5,143.45 BCFG
After 50,000 trials, the standard error of the mean is 2.62

Statistics:

| | Value |
|---|---|
| Trials | 50000 |
| Mean | 1,513.47 |
| Median | 1,468.28 |
| Mode | --- |
| Standard Deviation | 585.19 |
| Variance | 342,444.81 |
| Skewness | 0.47 |
| Kurtosis | 3.13 |
| Coefficient of Variability | 0.39 |
| Range Minimum | 147.10 |
| Range Maximum | 5,143.45 |
| Range Width | 4,996.35 |
| Mean Standard Error | 2.62 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Gas in Gas Fields (cont'd)**

Percentiles:

| Percentile | BCFG |
|---|---|
| 100% | 147.10 |
| 95% | 629.44 |
| 90% | 784.39 |
| 85% | 898.75 |
| 80% | 996.77 |
| 75% | 1,087.77 |
| 70% | 1,169.58 |
| 65% | 1,247.52 |
| 60% | 1,321.22 |
| 55% | 1,396.76 |
| 50% | 1,468.28 |
| 45% | 1,544.62 |
| 40% | 1,620.95 |
| 35% | 1,704.10 |
| 30% | 1,791.98 |
| 25% | 1,887.53 |
| 20% | 1,998.35 |
| 15% | 2,126.47 |
| 10% | 2,289.68 |
| 5% | 2,543.85 |
| 0% | 5,143.45 |

End of Forecast

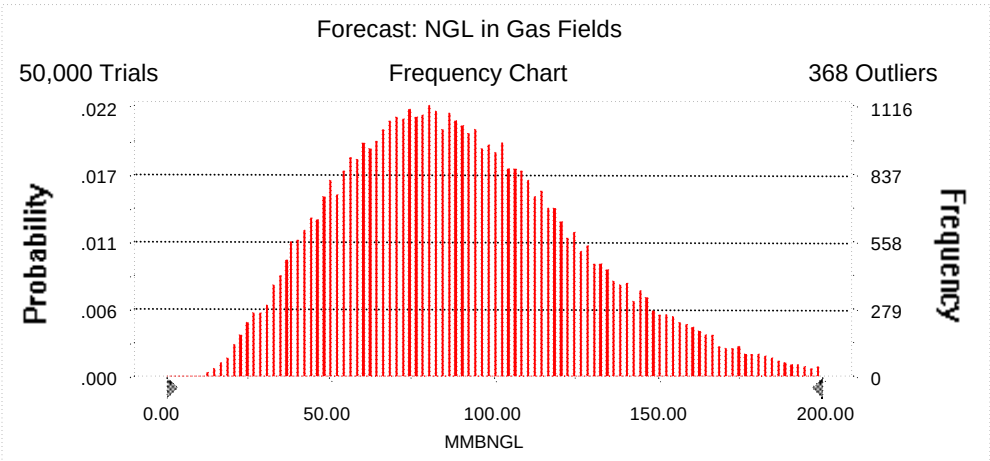
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: NGL in Gas Fields**

Summary:

Display range is from 0.00 to 200.00 MMBNGL
Entire range is from 9.02 to 328.54 MMBNGL
After 50,000 trials, the standard error of the mean is 0.17

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 90.93 |
| Median | 87.04 |
| Mode | --- |
| Standard Deviation | 37.60 |
| Variance | 1,413.97 |
| Skewness | 0.64 |
| Kurtosis | 3.51 |
| Coefficient of Variability | 0.41 |
| Range Minimum | 9.02 |
| Range Maximum | 328.54 |
| Range Width | 319.52 |
| Mean Standard Error | 0.17 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: NGL in Gas Fields (cont'd)**

Percentiles:

| Percentile | MMBNGL |
|---|---|
| 100% | 9.02 |
| 95% | 36.54 |
| 90% | 45.29 |
| 85% | 52.14 |
| 80% | 58.12 |
| 75% | 63.42 |
| 70% | 68.44 |
| 65% | 73.21 |
| 60% | 77.78 |
| 55% | 82.35 |
| 50% | 87.04 |
| 45% | 91.76 |
| 40% | 96.76 |
| 35% | 102.08 |
| 30% | 107.64 |
| 25% | 113.89 |
| 20% | 120.96 |
| 15% | 129.69 |
| 10% | 141.49 |
| 5% | 159.26 |
| 0% | 328.54 |

End of Forecast

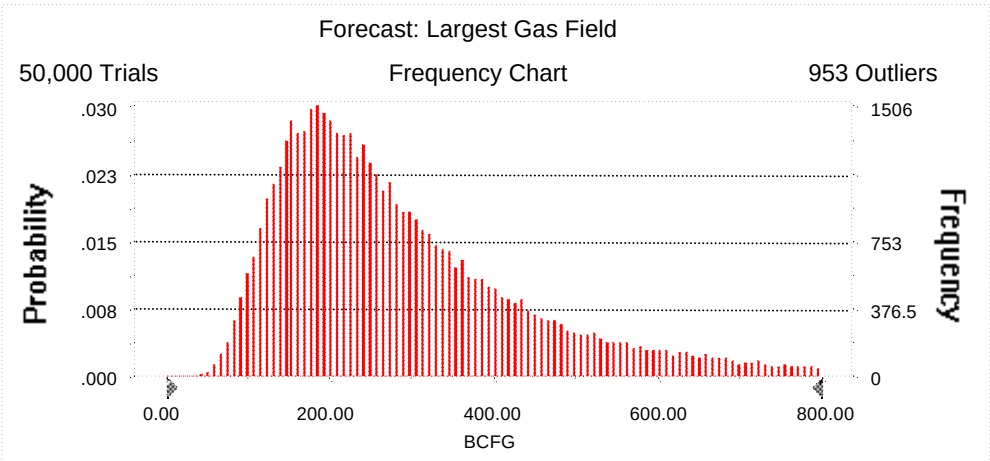
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Largest Gas Field**

Summary:

Display range is from 0.00 to 800.00 BCFG
Entire range is from 35.87 to 999.55 BCFG
After 50,000 trials, the standard error of the mean is 0.75

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 296.58 |
| Median | 251.82 |
| Mode | --- |
| Standard Deviation | 167.05 |
| Variance | 27,904.39 |
| Skewness | 1.45 |
| Kurtosis | 5.27 |
| Coefficient of Variability | 0.56 |
| Range Minimum | 35.87 |
| Range Maximum | 999.55 |
| Range Width | 963.68 |
| Mean Standard Error | 0.75 |



**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Forecast: Largest Gas Field (cont'd)**

Percentiles:

| Percentile | BCFG |
|---|---|
| 100% | 35.87 |
| 95% | 112.55 |
| 90% | 133.58 |
| 85% | 149.95 |
| 80% | 164.53 |
| 75% | 178.73 |
| 70% | 192.14 |
| 65% | 205.94 |
| 60% | 220.61 |
| 55% | 235.66 |
| 50% | 251.82 |
| 45% | 269.92 |
| 40% | 289.31 |
| 35% | 311.46 |
| 30% | 337.06 |
| 25% | 367.11 |
| 20% | 404.36 |
| 15% | 452.65 |
| 10% | 524.84 |
| 5% | 646.56 |
| 0% | 999.55 |

End of Forecast

**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

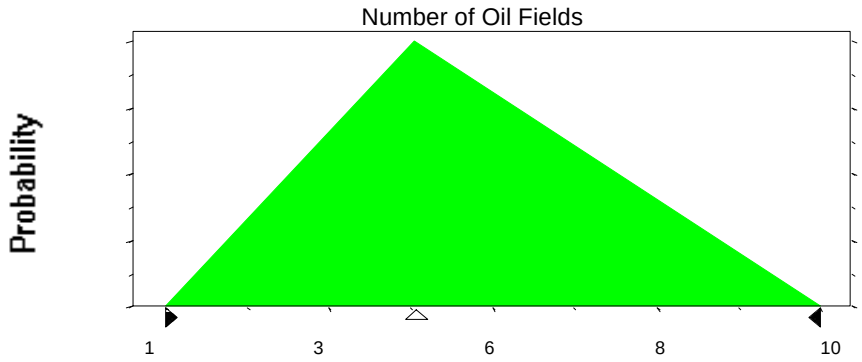
## Assumptions

### Assumption: Number of Oil Fields

Triangular distribution with parameters:

| | |
|---|---|
| Minimum | 1 |
| Likeliest | 4 |
| Maximum | 10 |

Selected range is from 1 to 10
Mean value in simulation was 5



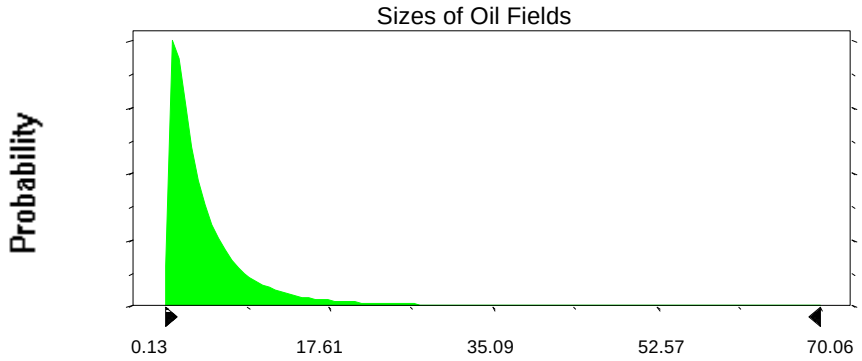

### Assumption: Sizes of Oil Fields

| Lognormal distribution with parameters: | | Shifted parameters |
|---|---|---|
| Mean | 5.21 | 8.21 |
| Standard Deviation | 7.39 | 7.39 |

| | |
|---|---|
| Selected range is from 0.00 to 77.00 | 3.00 to 80.00 |
| Mean value in simulation was 5.10 | 8.1 |

**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Assumption: Sizes of Oil Fields (cont'd)**

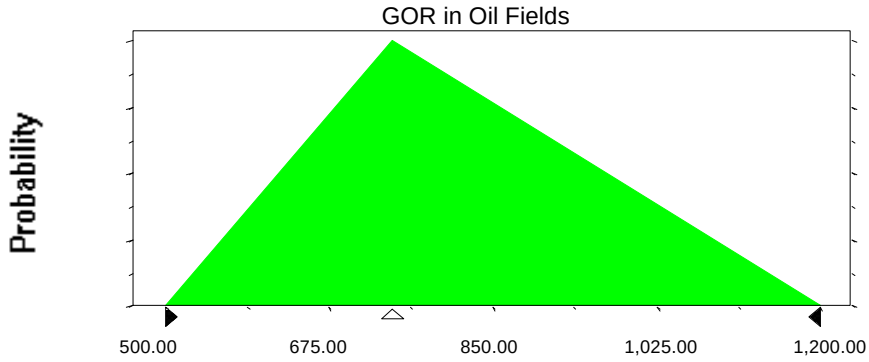



**Assumption: GOR in Oil Fields**

Triangular distribution with parameters:

| | |
|---|---|
| Minimum | 500.00 |
| Likeliest | 742.86 |
| Maximum | 1,200.00 |

Selected range is from 500.00 to 1,200.00
Mean value in simulation was 814.96



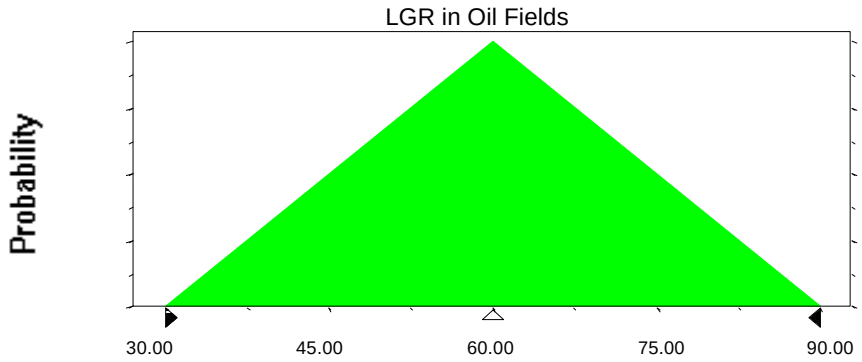
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**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 60.07




**Assumption: Number of Gas Fields**

Triangular distribution with parameters:

| | |
|---|---|
| Minimum | 5 |
| Likeliest | 20 |
| Maximum | 35 |

Selected range is from 5 to 35
Mean value in simulation was 20

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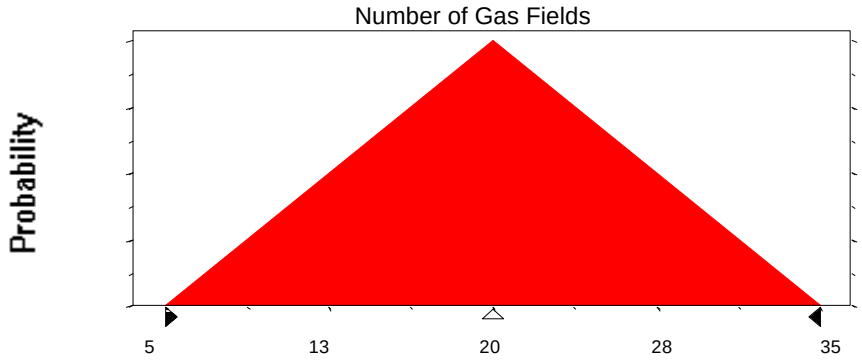
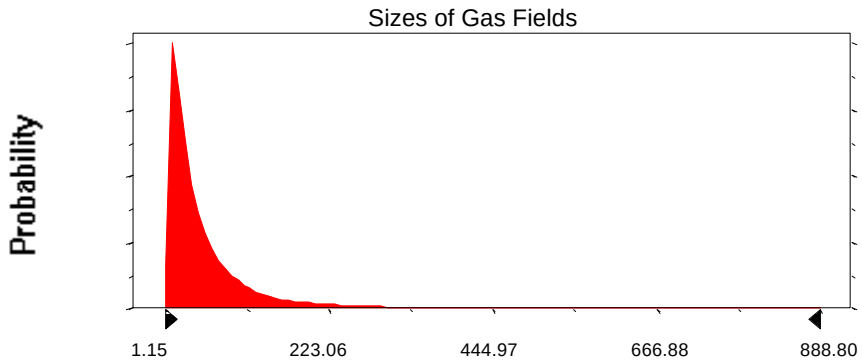
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Assumption: Number of Gas Fields (cont'd)**




**Assumption: Sizes of Gas Fields**

| Lognormal distribution with parameters: | | Shifted parameters |
|---|---|---|
| Mean | 59.12 | 77.12 |
| Standard Deviation | 91.85 | 91.85 |
| Selected range is from 0.00 to 982.00 | | 18.00 to 1,000.00 |
| Mean value in simulation was 58.05 | | 76.05 |



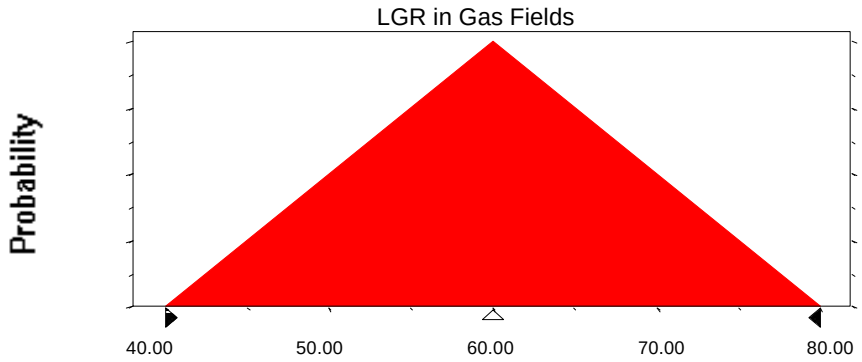
**10150201**
**Permian Reefs/Thrust Folds**
**Monte Carlo Results**

**Assumption: LGR in Gas Fields**

Triangular distribution with parameters:

| | |
|---|---|
| Minimum | 40.00 |
| Likeliest | 60.00 |
| Maximum | 80.00 |

Selected range is from 40.00 to 80.00
Mean value in simulation was 60.07




End of Assumptions

Simulation started on 6/14/99 at 17:21:12
Simulation stopped on 6/14/99 at 17:39:36