

**Second White Specks-Cardium Oil and Gas, Assessment Unit 52430602**  
**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 | 1   | 1.00        | 14                     | 34  | 61 | 36   | 6          | 15  | 30    | 16   | 0            | 1   | 2  | 1    | 2   | 4   | 11 | 5    |
| Gas Fields | 3   |             |                        |     |    |      | 365        | 787 | 1,385 | 824  | 10           | 23  | 45 | 25   | 22  | 45  | 88 | 48   |
| Total      |     | 1.00        | 14                     | 34  | 61 | 36   | 371        | 802 | 1,415 | 840  | 10           | 24  | 47 | 26   |   |     |    |      |

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**Second White Specks-Cardium Oil and Gas**  
**Monte Carlo Results**

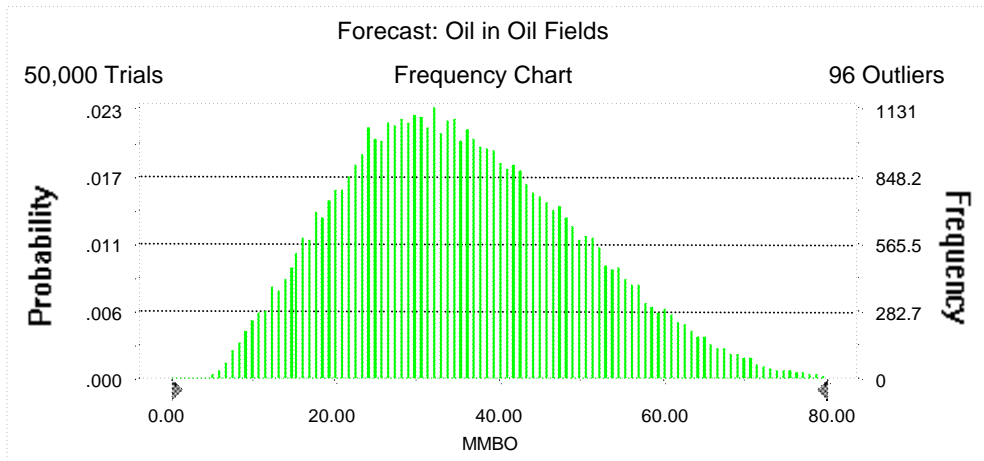
**Forecast: Oil in Oil Fields**

Summary:

Display range is from 0.00 to 80.00 MMBO  
Entire range is from 3.73 to 98.40 MMBO  
After 50,000 trials, the standard error of the mean is 0.06

Statistics:

|                            | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 35.66        |
| Median                     | 34.43        |
| Mode                       | ---          |
| Standard Deviation         | 14.21        |
| Variance                   | 201.84       |
| Skewness                   | 0.40         |
| Kurtosis                   | 2.78         |
| Coefficient of Variability | 0.40         |
| Range Minimum              | 3.73         |
| Range Maximum              | 98.40        |
| Range Width                | 94.67        |
| Mean Standard Error        | 0.06         |



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

Percentiles:

| <u>Percentile</u> | <u>MMBO</u> |
|-------------------|-------------|
| 100%              | 3.73        |
| 95%               | 14.23       |
| 90%               | 17.91       |
| 85%               | 20.64       |
| 80%               | 23.03       |
| 75%               | 25.06       |
| 70%               | 27.03       |
| 65%               | 28.86       |
| 60%               | 30.71       |
| 55%               | 32.56       |
| 50%               | 34.43       |
| 45%               | 36.35       |
| 40%               | 38.34       |
| 35%               | 40.45       |
| 30%               | 42.72       |
| 25%               | 45.21       |
| 20%               | 47.95       |
| 15%               | 51.15       |
| 10%               | 55.06       |
| 5%                | 60.94       |
| 0%                | 98.40       |

End of Forecast

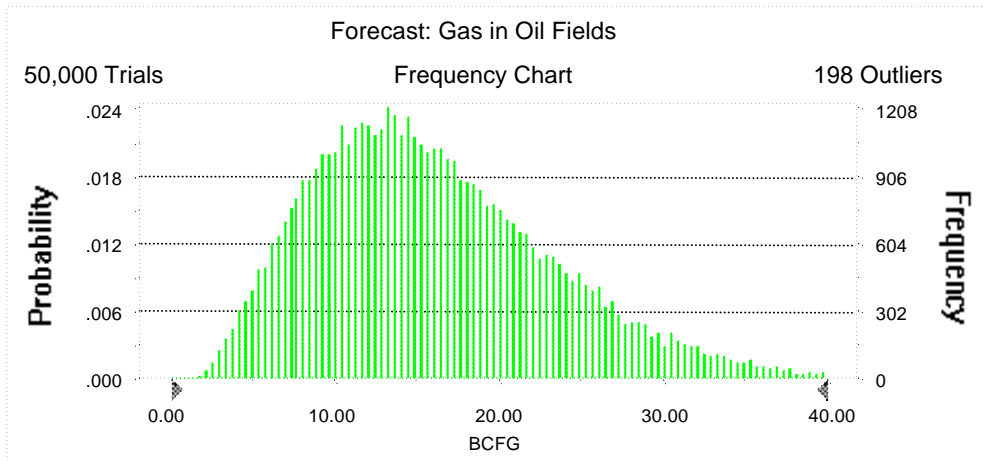
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**Monte Carlo Results**

**Forecast: Gas in Oil Fields**

Summary:

Display range is from 0.00 to 40.00 BCFG  
Entire range is from 1.41 to 58.48 BCFG  
After 50,000 trials, the standard error of the mean is 0.03

| Statistics:                | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 16.06        |
| Median                     | 15.04        |
| Mode                       | ---          |
| Standard Deviation         | 7.34         |
| Variance                   | 53.85        |
| Skewness                   | 0.72         |
| Kurtosis                   | 3.47         |
| Coefficient of Variability | 0.46         |
| Range Minimum              | 1.41         |
| Range Maximum              | 58.48        |
| Range Width                | 57.07        |
| Mean Standard Error        | 0.03         |



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

Percentiles:

| <u>Percentile</u> | <u>BCFG</u> |
|-------------------|-------------|
| 100%              | 1.41        |
| 95%               | 5.83        |
| 90%               | 7.40        |
| 85%               | 8.58        |
| 80%               | 9.63        |
| 75%               | 10.60       |
| 70%               | 11.51       |
| 65%               | 12.39       |
| 60%               | 13.30       |
| 55%               | 14.14       |
| 50%               | 15.04       |
| 45%               | 16.00       |
| 40%               | 16.98       |
| 35%               | 18.04       |
| 30%               | 19.21       |
| 25%               | 20.52       |
| 20%               | 22.01       |
| 15%               | 23.81       |
| 10%               | 26.09       |
| 5%                | 29.69       |
| 0%                | 58.48       |

End of Forecast

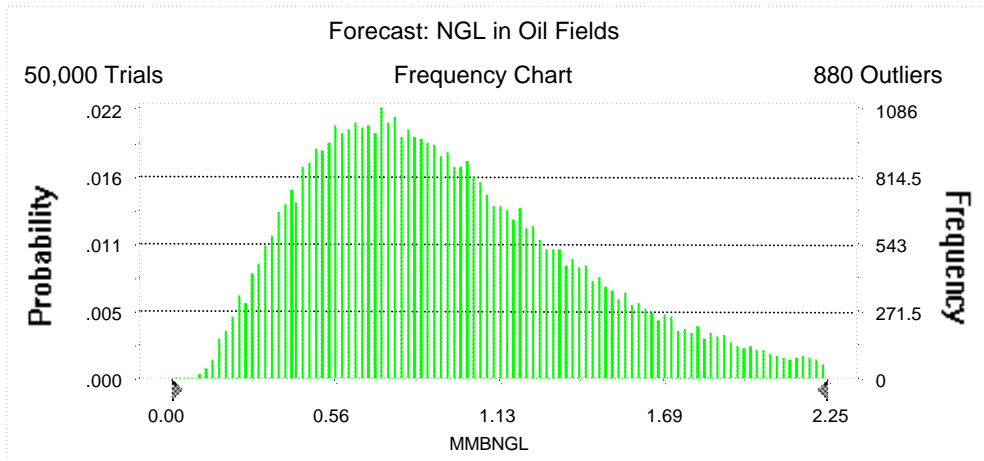
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**Monte Carlo Results**

**Forecast: NGL in Oil Fields**

Summary:

Display range is from 0.00 to 2.25 MMBNGL  
Entire range is from 0.07 to 4.15 MMBNGL  
After 50,000 trials, the standard error of the mean is 0.00

| Statistics:                | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 0.96         |
| Median                     | 0.88         |
| Mode                       | ---          |
| Standard Deviation         | 0.49         |
| Variance                   | 0.24         |
| Skewness                   | 0.97         |
| Kurtosis                   | 4.19         |
| Coefficient of Variability | 0.51         |
| Range Minimum              | 0.07         |
| Range Maximum              | 4.15         |
| Range Width                | 4.08         |
| Mean Standard Error        | 0.00         |



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

Percentiles:

| <u>Percentile</u> | <u>MMBNGL</u> |
|-------------------|---------------|
| 100%              | 0.07          |
| 95%               | 0.32          |
| 90%               | 0.41          |
| 85%               | 0.48          |
| 80%               | 0.54          |
| 75%               | 0.60          |
| 70%               | 0.66          |
| 65%               | 0.71          |
| 60%               | 0.77          |
| 55%               | 0.82          |
| 50%               | 0.88          |
| 45%               | 0.94          |
| 40%               | 1.01          |
| 35%               | 1.07          |
| 30%               | 1.15          |
| 25%               | 1.24          |
| 20%               | 1.34          |
| 15%               | 1.47          |
| 10%               | 1.63          |
| 5%                | 1.90          |
| 0%                | 4.15          |

End of Forecast

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**Second White Specks-Cardium Oil and Gas**  
**Monte Carlo Results**

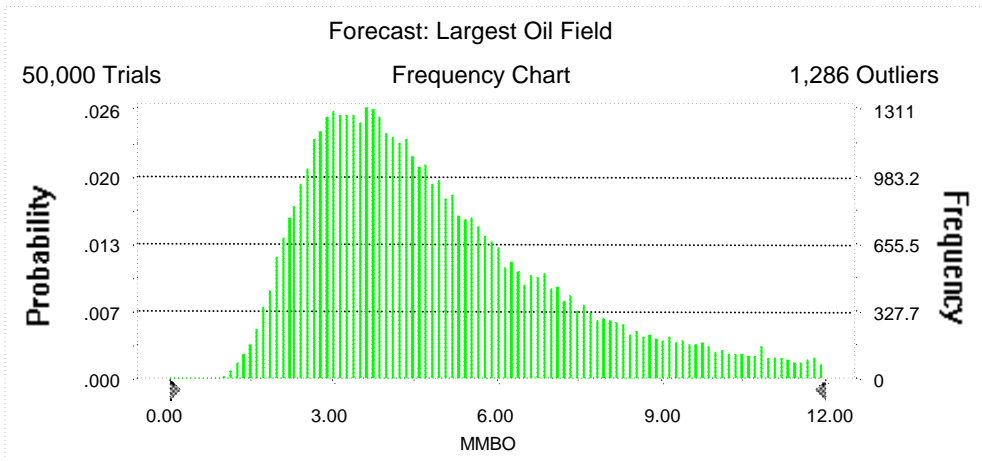
**Forecast: Largest Oil Field**

Summary:

Display range is from 0.00 to 12.00 MMBO  
 Entire range is from 0.86 to 14.99 MMBO  
 After 50,000 trials, the standard error of the mean is 0.01

Statistics:

|                            | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 5.10         |
| Median                     | 4.45         |
| Mode                       | ---          |
| Standard Deviation         | 2.58         |
| Variance                   | 6.65         |
| Skewness                   | 1.27         |
| Kurtosis                   | 4.54         |
| Coefficient of Variability | 0.51         |
| Range Minimum              | 0.86         |
| Range Maximum              | 14.99        |
| Range Width                | 14.13        |
| Mean Standard Error        | 0.01         |





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**Monte Carlo Results**

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

Percentiles:

| <u>Percentile</u> | <u>MMBO</u> |
|-------------------|-------------|
| 100%              | 0.86        |
| 95%               | 2.12        |
| 90%               | 2.48        |
| 85%               | 2.76        |
| 80%               | 3.01        |
| 75%               | 3.24        |
| 70%               | 3.47        |
| 65%               | 3.71        |
| 60%               | 3.94        |
| 55%               | 4.19        |
| 50%               | 4.45        |
| 45%               | 4.74        |
| 40%               | 5.05        |
| 35%               | 5.40        |
| 30%               | 5.80        |
| 25%               | 6.28        |
| 20%               | 6.88        |
| 15%               | 7.61        |
| 10%               | 8.72        |
| 5%                | 10.54       |
| 0%                | 14.99       |

End of Forecast

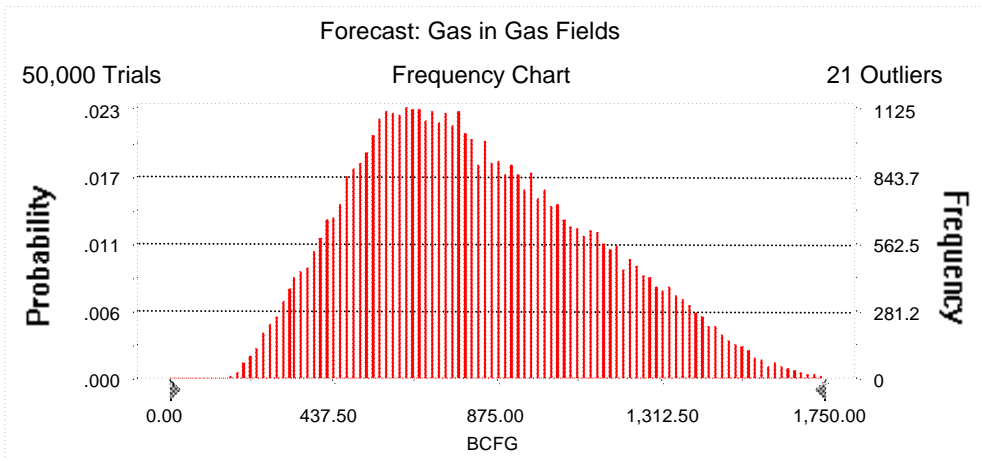
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**Forecast: Gas in Gas Fields**

Summary:

Display range is from 0.00 to 1,750.00 BCFG  
 Entire range is from 153.03 to 1,893.03 BCFG  
 After 50,000 trials, the standard error of the mean is 1.39

| Statistics:                | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 824.31       |
| Median                     | 786.65       |
| Mode                       | ---          |
| Standard Deviation         | 310.53       |
| Variance                   | 96,429.93    |
| Skewness                   | 0.39         |
| Kurtosis                   | 2.52         |
| Coefficient of Variability | 0.38         |
| Range Minimum              | 153.03       |
| Range Maximum              | 1,893.03     |
| Range Width                | 1,740.00     |
| Mean Standard Error        | 1.39         |



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**Second White Specks-Cardium Oil and Gas**  
**Monte Carlo Results**

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

Percentiles:

| <u>Percentile</u> | <u>BCFG</u> |
|-------------------|-------------|
| 100%              | 153.03      |
| 95%               | 364.74      |
| 90%               | 442.43      |
| 85%               | 499.41      |
| 80%               | 546.99      |
| 75%               | 587.37      |
| 70%               | 627.44      |
| 65%               | 666.07      |
| 60%               | 706.19      |
| 55%               | 746.61      |
| 50%               | 786.65      |
| 45%               | 831.29      |
| 40%               | 877.65      |
| 35%               | 927.58      |
| 30%               | 980.33      |
| 25%               | 1,039.09    |
| 20%               | 1,105.30    |
| 15%               | 1,179.13    |
| 10%               | 1,267.81    |
| 5%                | 1,385.02    |
| 0%                | 1,893.03    |

End of Forecast

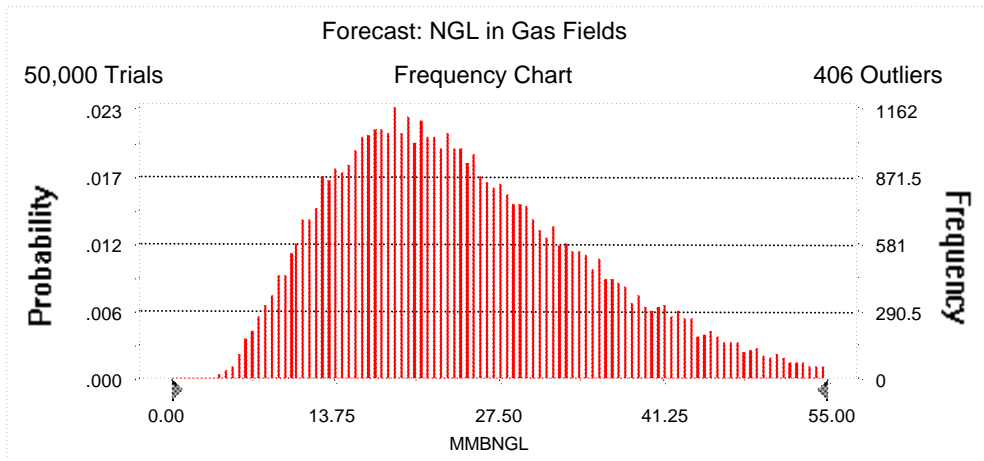
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**Monte Carlo Results**

**Forecast: NGL in Gas Fields**

Summary:

Display range is from 0.00 to 55.00 MMBNGL  
Entire range is from 2.99 to 72.14 MMBNGL  
After 50,000 trials, the standard error of the mean is 0.05

| Statistics:                | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 24.73        |
| Median                     | 23.15        |
| Mode                       | ---          |
| Standard Deviation         | 10.71        |
| Variance                   | 114.68       |
| Skewness                   | 0.69         |
| Kurtosis                   | 3.22         |
| Coefficient of Variability | 0.43         |
| Range Minimum              | 2.99         |
| Range Maximum              | 72.14        |
| Range Width                | 69.15        |
| Mean Standard Error        | 0.05         |



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**Monte Carlo Results**

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

Percentiles:

| <u>Percentile</u> | <u>MMBNGL</u> |
|-------------------|---------------|
| 100%              | 2.99          |
| 95%               | 9.95          |
| 90%               | 12.14         |
| 85%               | 13.81         |
| 80%               | 15.34         |
| 75%               | 16.71         |
| 70%               | 17.99         |
| 65%               | 19.23         |
| 60%               | 20.50         |
| 55%               | 21.81         |
| 50%               | 23.15         |
| 45%               | 24.50         |
| 40%               | 25.96         |
| 35%               | 27.59         |
| 30%               | 29.34         |
| 25%               | 31.32         |
| 20%               | 33.58         |
| 15%               | 36.23         |
| 10%               | 39.77         |
| 5%                | 44.83         |
| 0%                | 72.14         |

End of Forecast

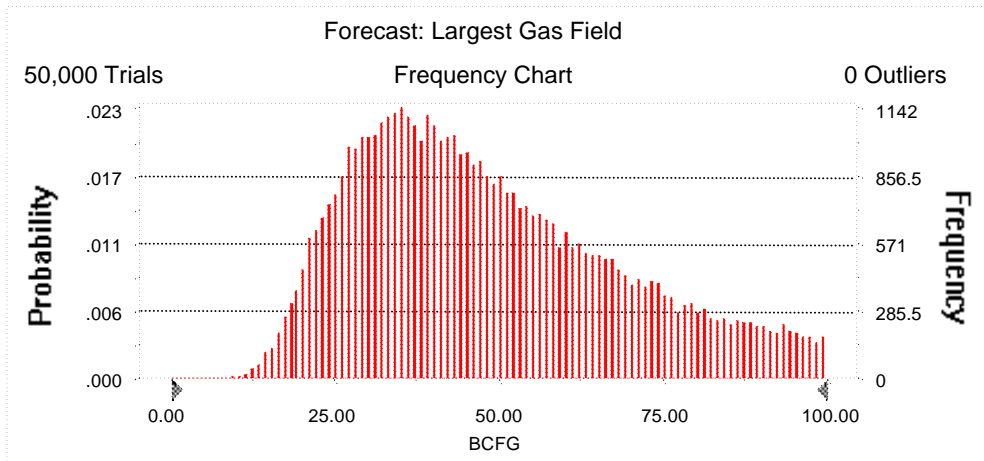
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**Monte Carlo Results**

**Forecast: Largest Gas Field**

Summary:

Display range is from 0.00 to 100.00 BCFG  
 Entire range is from 9.27 to 99.99 BCFG  
 After 50,000 trials, the standard error of the mean is 0.09

| Statistics:                | <u>Value</u> |
|----------------------------|--------------|
| Trials                     | 50000        |
| Mean                       | 48.50        |
| Median                     | 44.87        |
| Mode                       | ---          |
| Standard Deviation         | 19.81        |
| Variance                   | 392.45       |
| Skewness                   | 0.61         |
| Kurtosis                   | 2.62         |
| Coefficient of Variability | 0.41         |
| Range Minimum              | 9.27         |
| Range Maximum              | 99.99        |
| Range Width                | 90.72        |
| Mean Standard Error        | 0.09         |



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**Monte Carlo Results**

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

Percentiles:

| <u>Percentile</u> | <u>BCFG</u> |
|-------------------|-------------|
| 100%              | 9.27        |
| 95%               | 21.84       |
| 90%               | 25.45       |
| 85%               | 28.27       |
| 80%               | 30.75       |
| 75%               | 33.11       |
| 70%               | 35.34       |
| 65%               | 37.64       |
| 60%               | 39.97       |
| 55%               | 42.41       |
| 50%               | 44.87       |
| 45%               | 47.58       |
| 40%               | 50.53       |
| 35%               | 53.71       |
| 30%               | 57.23       |
| 25%               | 61.29       |
| 20%               | 65.94       |
| 15%               | 71.39       |
| 10%               | 78.27       |
| 5%                | 87.55       |
| 0%                | 99.99       |

End of Forecast

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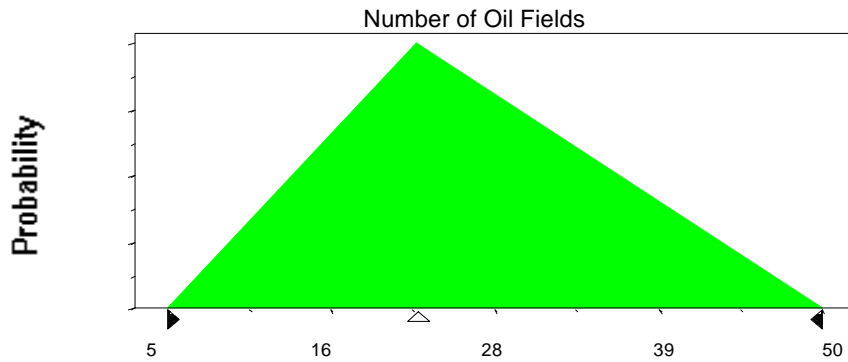
**Assumptions**

**Assumption: Number of Oil Fields**

Triangular distribution with parameters:

|           |    |
|-----------|----|
| Minimum   | 5  |
| Likeliest | 22 |
| Maximum   | 50 |

Selected range is from 5 to 50  
Mean value in simulation was 26



**Assumption: Sizes of Oil Fields**

Lognormal distribution with parameters:

|                    |      |
|--------------------|------|
| Mean               | 0.91 |
| Standard Deviation | 1.37 |

Shifted parameters

|      |
|------|
| 1.41 |
| 1.37 |

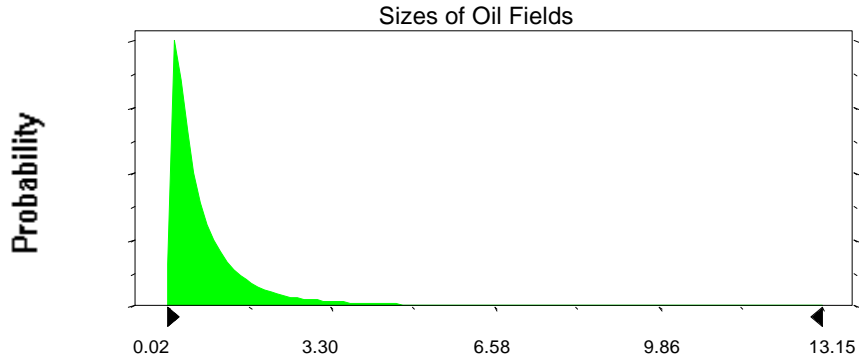
Selected range is from 0.00 to 14.50  
Mean value in simulation was 0.90

0.50 to 15.00  
1.4



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Assumption: Sizes of Oil Fields (cont'd)



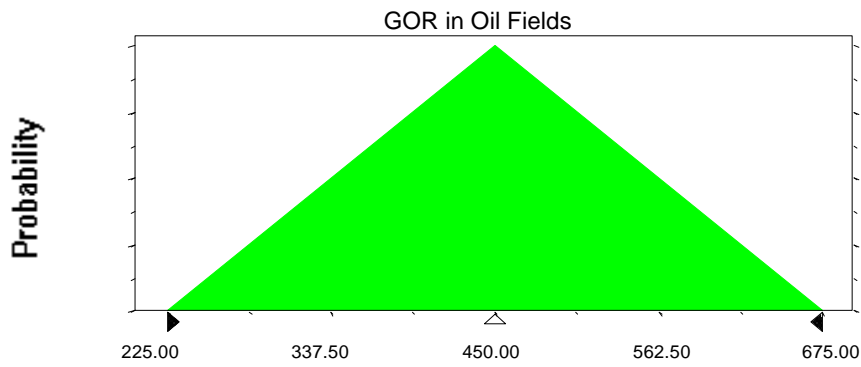
Assumption: GOR in Oil Fields

Triangular distribution with parameters:

|           |        |
|-----------|--------|
| Minimum   | 225.00 |
| Likeliest | 450.00 |
| Maximum   | 675.00 |

Selected range is from 225.00 to 675.00

Mean value in simulation was 450.14



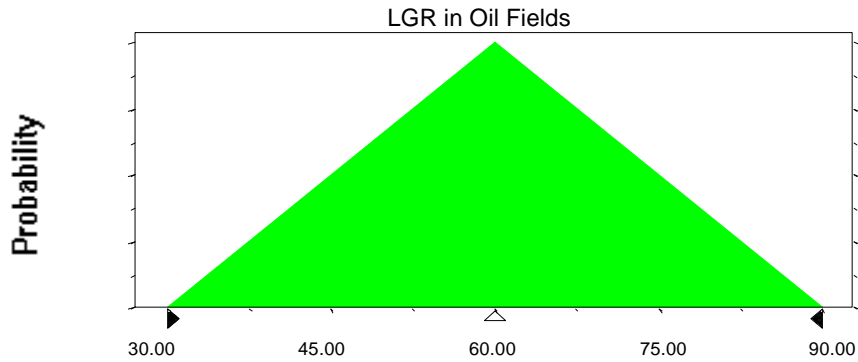
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**Assumption: LGR in Oil Fields**

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 60.08



**Assumption: Number of Gas Fields**

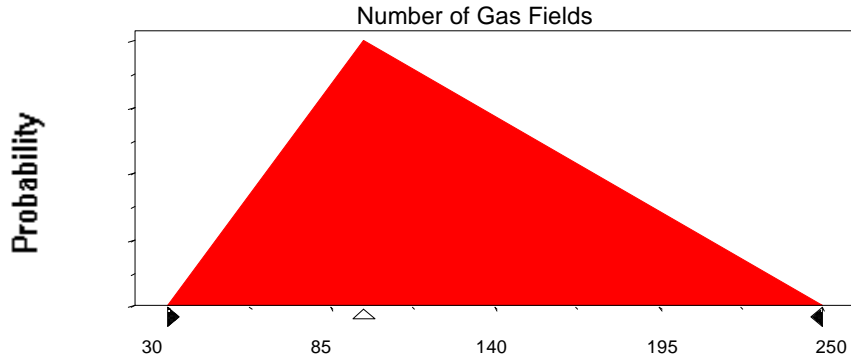
Triangular distribution with parameters:

|           |     |
|-----------|-----|
| Minimum   | 30  |
| Likeliest | 96  |
| Maximum   | 250 |

Selected range is from 30 to 250  
Mean value in simulation was 125

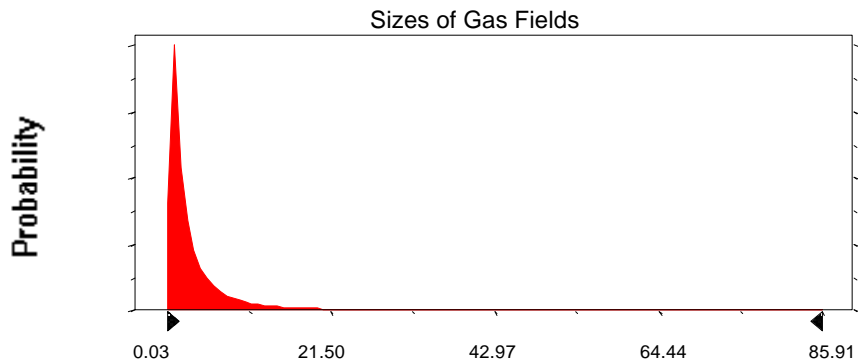
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**Assumption: Number of Gas Fields (cont'd)**



**Assumption: Sizes of Gas Fields**

|   |      |                    |
|---|------|--------------------|
| Lognormal distribution with parameters: |      | Shifted parameters |
| Mean                                    | 3.73 | 6.73               |
| Standard Deviation                      | 8.48 | 8.48               |
| Selected range is from 0.00 to 97.00    |      | 3.00 to 100.00     |
| Mean value in simulation was 3.60       |      | 6.6                |



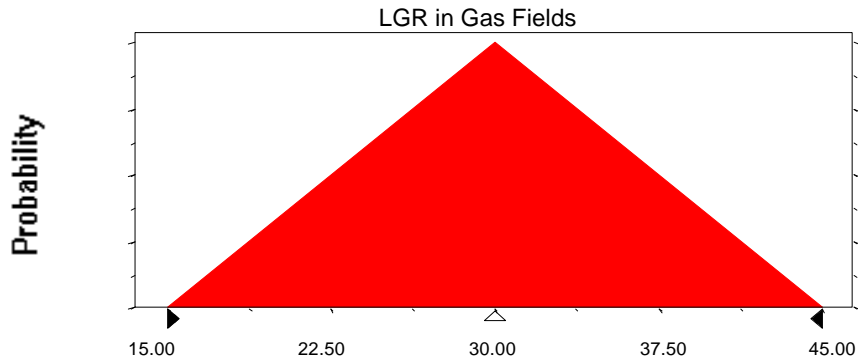
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**Assumption: LGR in Gas Fields**

Triangular distribution with parameters:

|           |       |
|-----------|-------|
| Minimum   | 15.00 |
| Likeliest | 30.00 |
| Maximum   | 45.00 |

Selected range is from 15.00 to 45.00  
Mean value in simulation was 30.01



End of Assumptions

Simulation started on 11/2/99 at 13:52:44  
Simulation stopped on 11/2/99 at 15:01:27