## Jurassic Reservoirs in Northwest Desert Anticlines, Assessment Unit 20190201
## 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 | 2,446 | 9,525 | 22,560 | 10,633 | 5,048 | 20,366 | 52,450 | 23,451 | 283 | 1,189 | 3,281 | 1,405 | 561 | 2,010 | 6,775 | 2,581 |
| Gas Fields | 60 | | | | | | 6,264 | 20,642 | 45,831 | 22,608 | 257 | 879 | 2,121 | 994 | 1,601 | 5,102 | 17,479 | 6,635 |
| Total | | 1.00 | 2,446 | 9,525 | 22,560 | 10,633 | 11,313 | 41,008 | 98,281 | 46,058 | 540 | 2,069 | 5,402 | 2,399 | | | | |

**Forecast:  Oil in Oil Fields**

Summary:
    Display range is from 0.00 to 27,500.00 MMBO
    Entire range is from 232.75 to 61,362.37 MMBO
    After 50,000 trials, the standard error of the mean is 28.26

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 10,632.86 |
| Median | 9,524.79 |
| Mode | --- |
| Standard Deviation | 6,319.43 |
| Variance | 39,935,177.06 |
| Skewness | 0.90 |
| Kurtosis | 3.85 |
| Coefficient of Variability | 0.59 |
| Range Minimum | 232.75 |
| Range Maximum | 61,362.37 |
| Range Width | 61,129.62 |
| Mean Standard Error | 28.26 |



Forecast: Oil in Oil Fields

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

Percentiles:

| Percentile | MMBO |
|---|---|
| 100% | 232.75 |
| 95% | 2,446.13 |
| 90% | 3,444.92 |
| 85% | 4,259.76 |
| 80% | 5,015.84 |
| 75% | 5,741.25 |
| 70% | 6,483.69 |
| 65% | 7,201.06 |
| 60% | 7,930.11 |
| 55% | 8,693.59 |
| 50% | 9,524.79 |
| 45% | 10,349.57 |
| 40% | 11,253.45 |
| 35% | 12,216.10 |
| 30% | 13,281.39 |
| 25% | 14,427.81 |
| 20% | 15,757.57 |
| 15% | 17,327.60 |
| 10% | 19,319.32 |
| 5% | 22,559.85 |
| 0% | 61,362.37 |

End of Forecast

**Forecast:  Gas in Oil Fields**

Summary:
    Display range is from 0.00 to 70,000.00 BCFG
    Entire range is from 357.81 to 159,356.91 BCFG
    After 50,000 trials, the standard error of the mean is 67.30

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 23,450.69 |
| Median | 20,366.10 |
| Mode | --- |
| Standard Deviation | 15,049.83 |
| Variance | 226,497,501.88 |
| Skewness | 1.15 |
| Kurtosis | 4.77 |
| Coefficient of Variability | 0.64 |
| Range Minimum | 357.81 |
| Range Maximum | 159,356.91 |
| Range Width | 158,999.10 |
| Mean Standard Error | 67.30 |
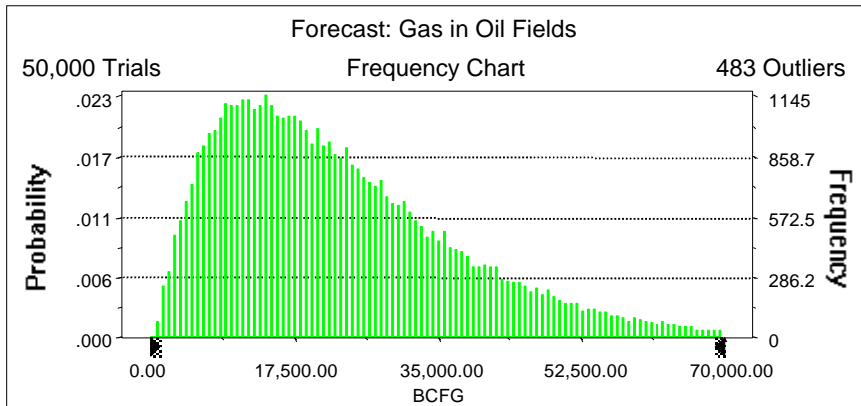


Forecast: Gas in Oil Fields
50,000 Trials — Frequency Chart — 483 Outliers

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

Percentiles:

| Percentile | BCFG |
|---|---|
| 100% | 357.81 |
| 95% | 5,048.28 |
| 90% | 7,121.79 |
| 85% | 8,888.47 |
| 80% | 10,482.44 |
| 75% | 12,084.33 |
| 70% | 13,643.01 |
| 65% | 15,214.26 |
| 60% | 16,885.45 |
| 55% | 18,556.41 |
| 50% | 20,366.10 |
| 45% | 22,229.74 |
| 40% | 24,232.82 |
| 35% | 26,401.93 |
| 30% | 28,809.76 |
| 25% | 31,559.12 |
| 20% | 34,837.56 |
| 15% | 38,732.02 |
| 10% | 44,148.97 |
| 5% | 52,450.06 |
| 0% | 159,356.91 |

End of Forecast

**Forecast:  NGL in Oil Fields**

Summary:
    Display range is from 0.00 to 4,000.00 MMBNGL
    Entire range is from 16.96 to 10,193.40 MMBNGL
    After 50,000 trials, the standard error of the mean is 4.30

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 1,405.01 |
| Median | 1,189.22 |
| Mode | --- |
| Standard Deviation | 962.04 |
| Variance | 925,529.03 |
| Skewness | 1.37 |
| Kurtosis | 5.81 |
| Coefficient of Variability | 0.68 |
| Range Minimum | 16.96 |
| Range Maximum | 10,193.40 |
| Range Width | 10,176.44 |
| Mean Standard Error | 4.30 |
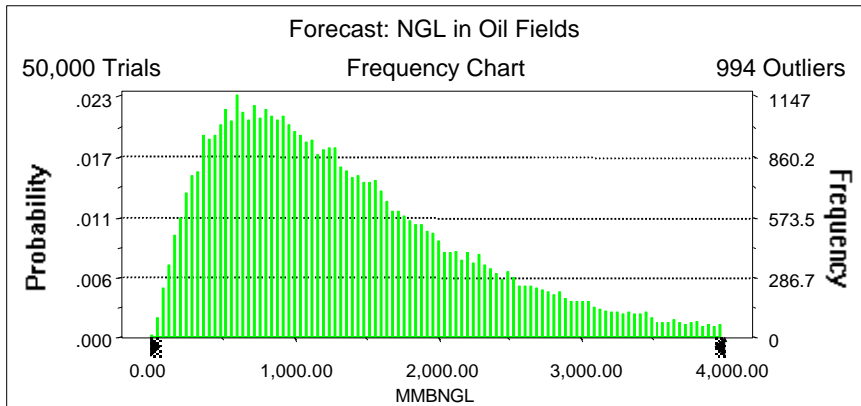


Forecast: NGL in Oil Fields

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

Percentiles:

| Percentile | MMBNGL |
|---|---|
| 100% | 16.96 |
| 95% | 282.79 |
| 90% | 402.42 |
| 85% | 505.68 |
| 80% | 601.01 |
| 75% | 693.04 |
| 70% | 787.09 |
| 65% | 880.17 |
| 60% | 976.39 |
| 55% | 1,079.19 |
| 50% | 1,189.22 |
| 45% | 1,299.86 |
| 40% | 1,424.31 |
| 35% | 1,558.74 |
| 30% | 1,706.93 |
| 25% | 1,881.87 |
| 20% | 2,092.51 |
| 15% | 2,350.90 |
| 10% | 2,707.94 |
| 5% | 3,280.75 |
| 0% | 10,193.40 |

End of Forecast

**Forecast: Largest Oil Field**

Summary:
    Display range is from 0.00 to 8,000.00 MMBO
    Entire range is from 68.54 to 9,999.02 MMBO
    After 50,000 trials, the standard error of the mean is 8.58

| Statistics: | Value |
|---|---:|
| Trials | 50000 |
| Mean | 2,580.61 |
| Median | 2,010.26 |
| Mode | --- |
| Standard Deviation | 1,918.91 |
| Variance | 3,682,198.38 |
| Skewness | 1.44 |
| Kurtosis | 4.90 |
| Coefficient of Variability | 0.74 |
| Range Minimum | 68.54 |
| Range Maximum | 9,999.02 |
| Range Width | 9,930.48 |
| Mean Standard Error | 8.58 |
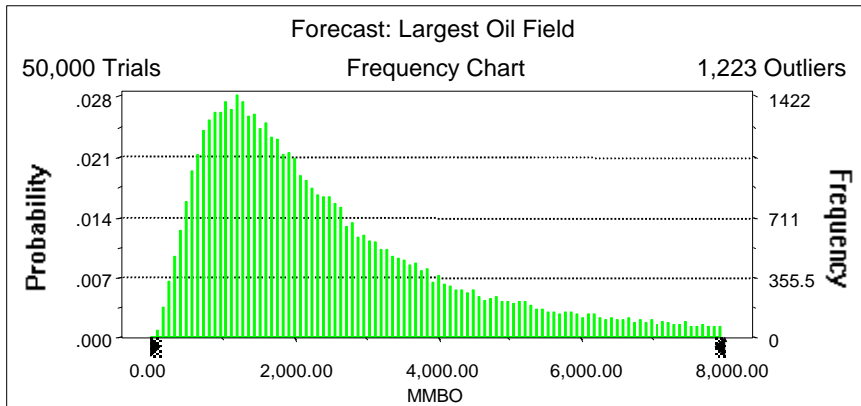
Forecast: Largest Oil Field

50,000 Trials      Frequency Chart      1,223 Outliers

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

Percentiles:

| Percentile | MMBO |
|---|---|
| 100% | 68.54 |
| 95% | 561.30 |
| 90% | 751.60 |
| 85% | 907.54 |
| 80% | 1,057.40 |
| 75% | 1,204.04 |
| 70% | 1,347.55 |
| 65% | 1,498.47 |
| 60% | 1,659.24 |
| 55% | 1,826.79 |
| 50% | 2,010.26 |
| 45% | 2,215.88 |
| 40% | 2,451.00 |
| 35% | 2,700.92 |
| 30% | 3,008.70 |
| 25% | 3,375.94 |
| 20% | 3,821.80 |
| 15% | 4,434.49 |
| 10% | 5,308.24 |
| 5% | 6,775.04 |
| 0% | 9,999.02 |

End of Forecast

**Forecast: Gas in Gas Fields**

Summary:
   Display range is from 0.00 to 55,000.00 BCFG
   Entire range is from 540.79 to 147,037.72 BCFG
   After 50,000 trials, the standard error of the mean is 55.39

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 22,607.62 |
| Median | 20,641.95 |
| Mode | --- |
| Standard Deviation | 12,386.10 |
| Variance | 153,415,410.37 |
| Skewness | 0.99 |
| Kurtosis | 4.56 |
| Coefficient of Variability | 0.55 |
| Range Minimum | 540.79 |
| Range Maximum | 147,037.72 |
| Range Width | 146,496.93 |
| Mean Standard Error | 55.39 |
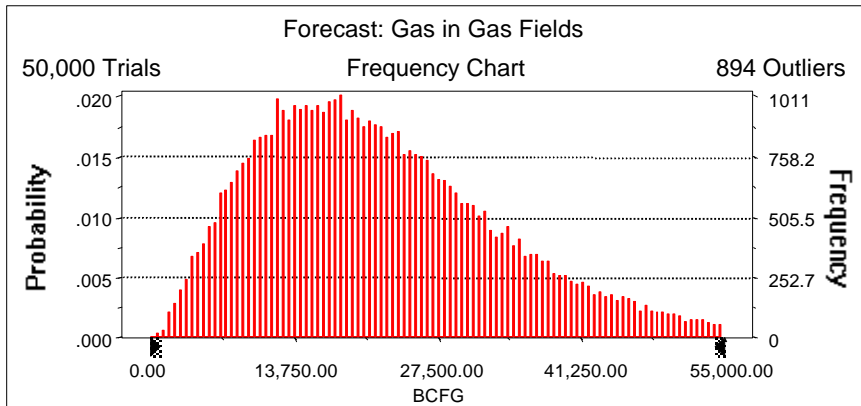
Forecast: Gas in Gas Fields

50,000 Trials          Frequency Chart          894 Outliers

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

Percentiles:

| Percentile | BCFG |
|---|---|
| 100% | 540.79 |
| 95% | 6,264.49 |
| 90% | 8,537.81 |
| 85% | 10,345.41 |
| 80% | 11,986.76 |
| 75% | 13,436.70 |
| 70% | 14,872.99 |
| 65% | 16,296.16 |
| 60% | 17,720.08 |
| 55% | 19,143.09 |
| 50% | 20,641.95 |
| 45% | 22,168.45 |
| 40% | 23,789.99 |
| 35% | 25,531.97 |
| 30% | 27,407.03 |
| 25% | 29,524.11 |
| 20% | 32,023.52 |
| 15% | 35,092.75 |
| 10% | 39,188.00 |
| 5% | 45,831.02 |
| 0% | 147,037.72 |

End of Forecast

**Forecast: NGL in Gas Fields**

Summary:
　　Display range is from 0.00 to 2,750.00 MMBNGL
　　Entire range is from 23.52 to 5,615.01 MMBNGL
　　After 50,000 trials, the standard error of the mean is 2.64

| Statistics: | Value |
|---|---|
| Trials | 50000 |
| Mean | 993.84 |
| Median | 879.49 |
| Mode | --- |
| Standard Deviation | 589.97 |
| Variance | 348,067.54 |
| Skewness | 1.22 |
| Kurtosis | 5.40 |
| Coefficient of Variability | 0.59 |
| Range Minimum | 23.52 |
| Range Maximum | 5,615.01 |
| Range Width | 5,591.49 |
| Mean Standard Error | 2.64 |
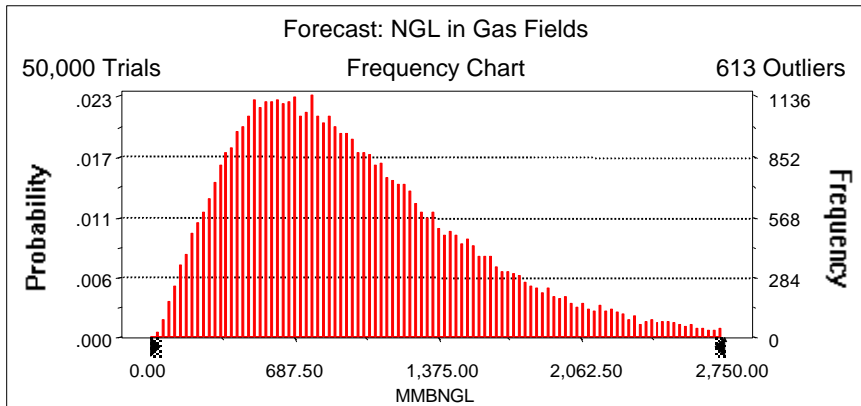
Forecast: NGL in Gas Fields

| 50,000 Trials | Frequency Chart | 613 Outliers |
|---|---|---|

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

Percentiles:

| Percentile | MMBNGL |
|---|---|
| 100% | 23.52 |
| 95% | 256.73 |
| 90% | 353.99 |
| 85% | 431.49 |
| 80% | 499.29 |
| 75% | 561.55 |
| 70% | 623.25 |
| 65% | 686.00 |
| 60% | 749.24 |
| 55% | 811.72 |
| 50% | 879.49 |
| 45% | 950.64 |
| 40% | 1,026.36 |
| 35% | 1,108.09 |
| 30% | 1,199.87 |
| 25% | 1,302.38 |
| 20% | 1,425.88 |
| 15% | 1,575.42 |
| 10% | 1,777.68 |
| 5% | 2,121.10 |
| 0% | 5,615.01 |

End of Forecast

**Forecast:  Largest Gas Field**

Summary:
    Display range is from 0.00 to 20,000.00 BCFG
    Entire range is from 239.39 to 29,981.09 BCFG
    After 50,000 trials, the standard error of the mean is 22.77

| Statistics: | Value |
|---|---:|
| Trials | 50000 |
| Mean | 6,635.20 |
| Median | 5,101.95 |
| Mode | --- |
| Standard Deviation | 5,090.68 |
| Variance | 25,915,016.42 |
| Skewness | 1.78 |
| Kurtosis | 6.52 |
| Coefficient of Variability | 0.77 |
| Range Minimum | 239.39 |
| Range Maximum | 29,981.09 |
| Range Width | 29,741.70 |
| Mean Standard Error | 22.77 |
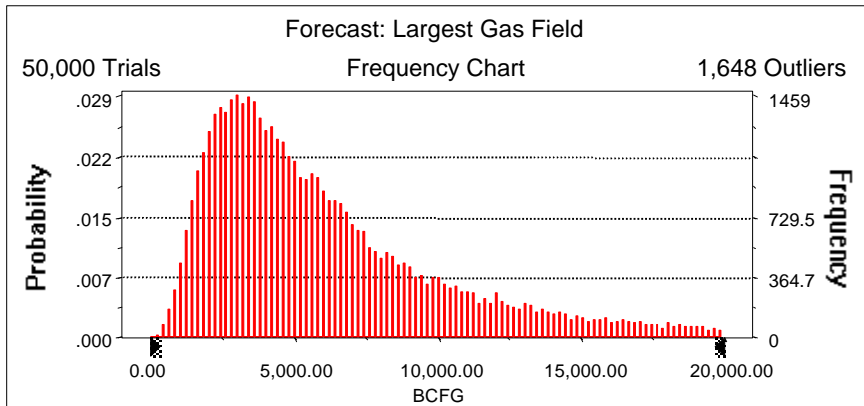


Forecast: Largest Gas Field

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

Percentiles:

| Percentile | BCFG |
|---|---|
| 100% | 239.39 |
| 95% | 1,601.19 |
| 90% | 2,069.84 |
| 85% | 2,442.42 |
| 80% | 2,808.10 |
| 75% | 3,150.72 |
| 70% | 3,502.45 |
| 65% | 3,857.93 |
| 60% | 4,244.52 |
| 55% | 4,651.52 |
| 50% | 5,101.95 |
| 45% | 5,613.04 |
| 40% | 6,139.44 |
| 35% | 6,747.04 |
| 30% | 7,457.29 |
| 25% | 8,384.34 |
| 20% | 9,546.11 |
| 15% | 11,085.72 |
| 10% | 13,343.91 |
| 5% | 17,478.58 |
| 0% | 29,981.09 |

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
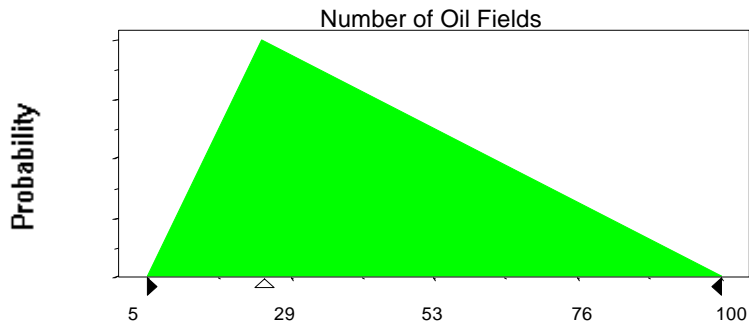
**Assumption:  Sizes of Oil Fields**

| Lognormal distribution with parameters: | | Shifted parameters | |
|---|---|---|---|
| Mean | 253.97 | | 263.97 |
| Standard Deviation | 885.78 | | 885.78 |

Selected range is from 0.00 to 9,990.00          10.00 to 10,000.00
Mean value in simulation was 234.11                        244.11

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



Sizes of Oil Fields
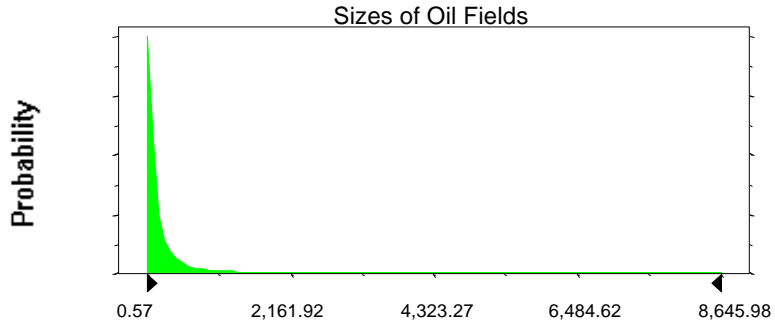
**Assumption:  GOR in Oil Fields**

Triangular distribution with parameters:
| | |
|---|---|
| Minimum | 1,100.00 |
| Likeliest | 2,200.00 |
| Maximum | 3,300.00 |

Selected range is from 1,100.00 to 3,300.00
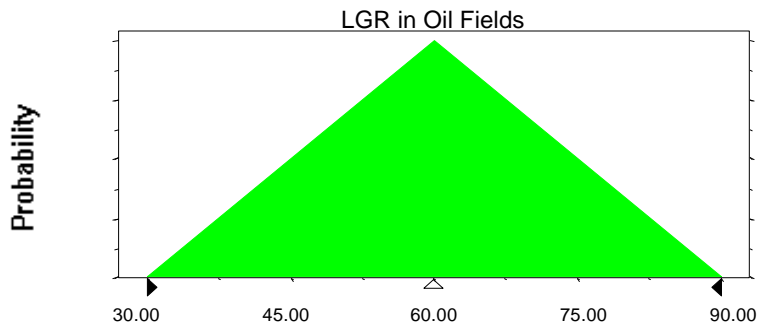Mean value in simulation was 2,203.61
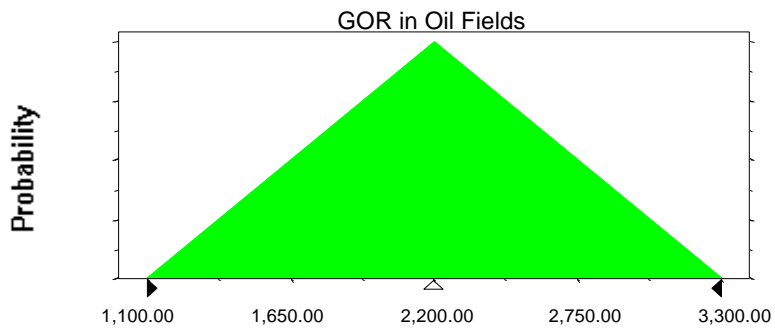


GOR in Oil Fields

**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
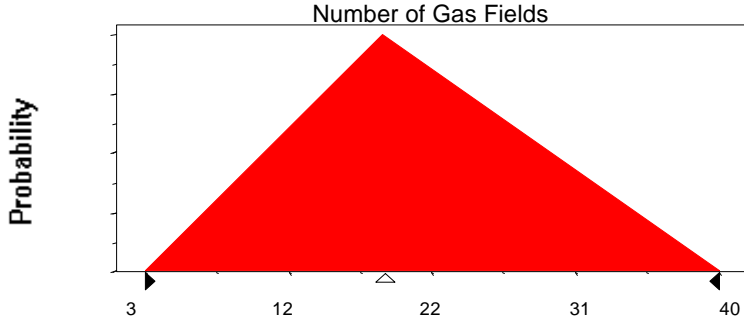Mean value in simulation was 59.96



LGR in Oil Fields

**Assumption:  Number of Gas Fields**

Triangular distribution with parameters:
| | |
|---|---|
| Minimum | 3 |
| Likeliest | 18 |
| Maximum | 40 |

Selected range is from 3 to 40
Mean value in simulation was 20

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

### Number of Gas Fields



| | | | | |
|---|---|---|---|---|
| 3 | 12 | 22 | 31 | 40 |

**Assumption:  Sizes of Gas Fields**

| Lognormal distribution with parameters: | | Shifted parameters | |
|---|---|---|---|
| Mean | 1,089.60 | | 1,149.60 |
| Standard Deviation | 2,608.32 | | 2,608.32 |

Selected range is from 0.00 to 29,940.00           60.00 to 30,000.00
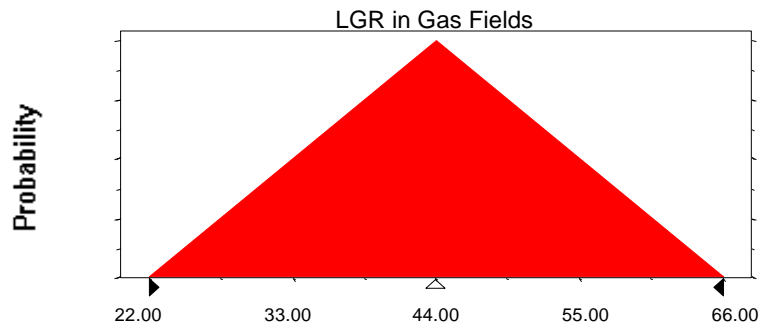Mean value in simulation was 1,044.68                     1,104.68
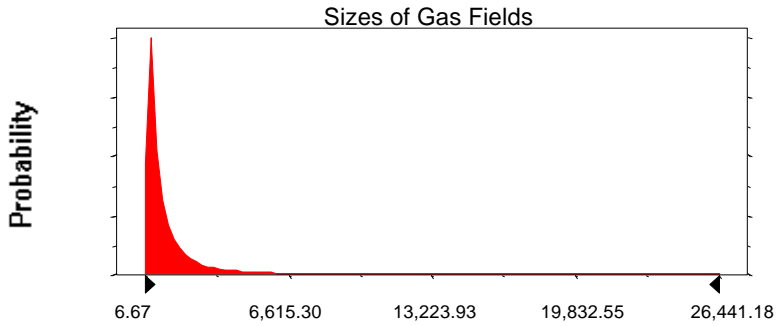
### Sizes of Gas Fields



| 6.67 | 6,615.30 | 13,223.93 | 19,832.55 | 26,441.18 |
|---|---|---|---|---|

**Assumption:  LGR in Gas Fields**

Triangular distribution with parameters:
| | |
|---|---|
| Minimum | 22.00 |
| Likeliest | 44.00 |
| Maximum | 66.00 |

Selected range is from 22.00 to 66.00
Mean value in simulation was 44.02

LGR in Gas Fields



End of Assumptions

Simulation started on 12/28/99 at 15:55:04
Simulation stopped on 12/28/99 at 16:29:25