



**NORTHEAST BRITISH COLUMBIA
NATURAL GAS DISCOVERIES
OF THE DECADE 1990 - 1999**

Kenneth J. Drummond

Northeast British Columbia Gas Discoveries 1990 - 1999

In the 1990's 568 gas pools (non-associated, associated and solution) were discovered with gas-in-place of 8,282 Bcf, and initial marketable gas reserves of 5,234 Bcf. The gas pools discovered in the 1990's represent 38% of the total number of pools discovered and contain 23% of the marketable gas. The first 40 pools by initial marketable gas are listed in table 1. Non-associated gas accounts for 94% of the initial marketable gas in 87% of the pools. A statistical summary of the pools, including reservoir characteristics, is presented in table 2.

The largest gas pool discovery of the 1990's is Helmet North Jean Marie A discovered in 1990 with initial established marketable gas reserves of 338.5 Bcf., followed by Maxhamish Lake Chinkeh A, discovered in 1991, with initial marketable gas of 283.0 Bcf. The top 20 pools ranked by marketable gas contain 2,017 Bcf, which is 38.5% of the total discovered in the decade. For the top 20 pools 976 Bcf (48%) has been produced as of December 31, 1999. The largest number of pools, 89, was discovered in 1994. The largest volumes of gas were discovered in the years 1991 and 1994.

The Northern Plains had the largest number of discoveries, 245 pools with 1,756 Bcf of marketable gas, followed by the Peace River Arch, with 190 pools, and 1,292 Bcf. Excluding the Liard Basin which had only one discovery, Maxhamish Lake Chinkeh A, with 283 Bcf marketable gas, the largest average pool size was 30.7 Bcf in the Grizzly Foothills. The overall average pool size for the 1990's is 9.2 Bcf, marketable gas.

Historical trends for Northeast British Columbia gas pools by decade show the mean, median and 95th percentile values are all decreasing. However the rate of decrease is becoming less in recent decades, and the next decade should be only slightly lower than current values. The median pool size has had a slight increase in the last two decades. For the period, 1990 to 1999, the average pool size is 9.2 Bcf, and the median is 3.2 Bcf. The 95th percentile is 33.7 Bcf., that is 5% of the pools discovered in the 1990's larger than 33.7 Bcf, and the trends suggest the next decade could be very similar.

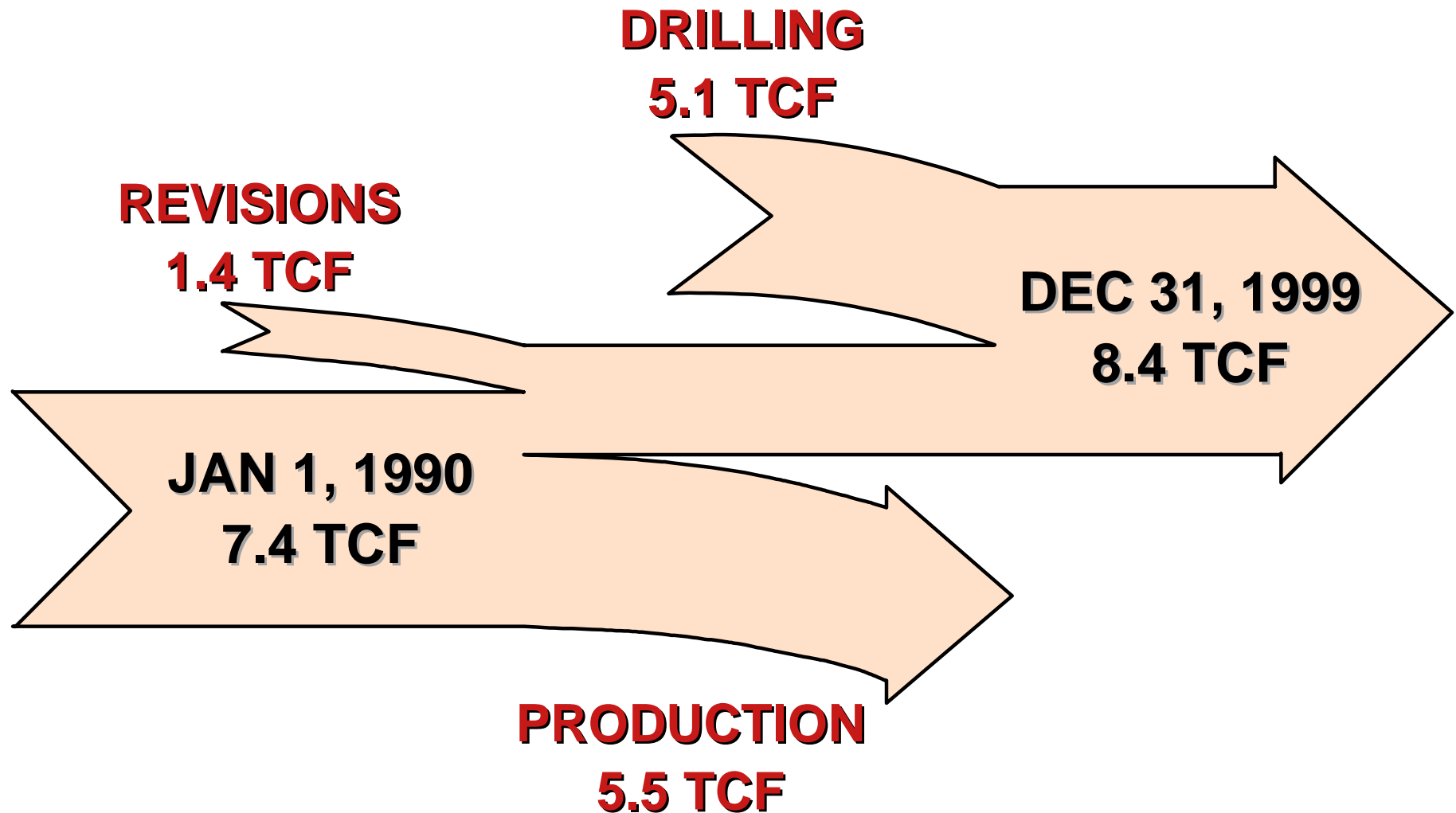
The pool size distribution, number and marketable gas, is shown in figure 4. There are a total of 18 pools greater than 20 Bcf (3.2% of the total), with 1,924 Bcf (36.8%) of marketable gas. There are 90 pools (16%), with less than 1 Bcf of marketable gas. The most commonly occurring pool size class (mode) is the range 2 to 5 Bcf, with 30% of the pools. The largest volume of gas is in the 20 to 50 Bcf range, with 19% of the initial marketable gas.

References

British Columbia Oil and Gas Commission, 2002, Hydrocarbon and By-Product Reserves in British Columbia, 2001, and Gas Pool Reserves Database

BRITISH COLUMBIA SUMMARY 1990 - 1999

REMAINING MARKETABLE GAS RESERVES



NORTHEAST BRITISH COLUMBIA GAS POOLS DISCOVERED 1990 - 1999

(BC OIL GAS COMMISSION December 31, 2001)

| | | |
|---|---------|-----------|
| Year of first discovery | 1990 | |
| Original Gas-in-Place | 8,281.6 | BCF |
| Raw Recoverable Gas | 6,393.0 | BCF |
| Initial Marketable Gas | 5,803.2 | BCF |
| Raw Gas Recovery Factor (% of GIP) | 77.2% | |
| Marketable Gas Recovery Factor (% of GIP) | 70.1% | |
| Largest Pool (Gas-in-Place) | 422.9 | BCF |
| Largest Pool (Recoverable) | 354.3 | BCF |
| Largest Pool (Marketable) | 568.0 | BCF |
| Smallest Pool (Recoverable) | 0.046 | BCF |
| Smallest Pool (Marketable) | 0.039 | BCF |
| Number of Pools | 568 | |
| Average Pool Size (Gas-in-Place) | 14.6 | BCF |
| Average Pool Size (Recoverable) | 11.3 | BCF |
| Average Pool Size (Marketable) | 10.2 | BCF |
| Total Productive Pool Area | 850,603 | Acres |
| Largest Productive Pool Area | 90,574 | Acres |
| Smallest Productive Pool Area | 3 | Acres |
| Average Productive Pool Area | 1,783 | Acres |
| Ave. Rec. Mcf/Ac-Ft | 409.8 | MCF/Ac-Ft |
| Maximum Pay | 310 | Feet |
| Minimum Pay | 1.6 | Feet |
| Average Pay | 33.1 | Feet |
| Maximum Porosity | 0.265 | |
| Minimum Porosity | 0.008 | |
| Average Porosity | 0.125 | |
| Maximum Gas Saturation | 0.966 | |
| Minimum Gas Saturation | 0.300 | |
| Average Gas Saturation | 0.758 | |
| Deepest Pool Depth | 16,066 | Feet |
| Shallowest Pool Depth | 1,339 | Feet |
| Average Depth | 5,035 | Feet |
| Average Gas Density | 0.669 | |
| Average Pressure | 1,858.7 | Psi |
| Average Temperature | 143.6 | °F |
| Gas In Place Mcf/Prod. Acre | 9,736 | MCF/Acre |
| Rec. Gas Mcf/ Prod. Acre | 7,516 | MCF/Acre |
| Average Liquids Recovery | 23.4 | B/MMCF |
| Maximum 'Z' Factor | 1.219 | |
| Minimum 'Z' Factor | 0.439 | |
| Average 'Z' Factor | 0.870 | |

| GAS POOLS 1990 - 1999 (TOP 50) | | RANKED BY MARKETABLE GAS | | | | | | |
|--------------------------------|--|--------------------------|-----------|-------------|------------|---------------|---------------|----------|
| RANK | FIELD POOL NAME | Year of Discov. | GIP (Bcf) | Recov (Bcf) | Mkt. (Bcf) | Cum Mkt (Bcf) | Rem Mkt (Bcf) | Gas Type |
| 1 | HELMET NORTH JEAN MARIE A | 1990 | 393.66 | 354.30 | 338.46 | 234.82 | 103.64 | NAS |
| 2 | MAXHAMISH LAKE CHINKEH A | 1991 | 422.86 | 317.14 | 282.96 | 63.11 | 219.85 | NAS |
| 3 | MURRAY BALDONNEL/U. CHARLIE LAKE A | 1994 | 299.98 | 269.98 | 190.96 | 87.14 | 103.81 | NAS |
| 4 | BUICK CREEK BLUESKY C | 1992 | 178.95 | 152.11 | 129.79 | 78.55 | 51.24 | NAS |
| 5 | SIKANNI DEBOLT H | 1993 | 119.28 | 95.42 | 91.89 | 82.12 | 9.77 | NAS |
| 6 | RING BLUESKY-GETHING-MONTNEY E | 1996 | 112.35 | 89.88 | 85.05 | 2.24 | 82.81 | NAS |
| 7 | BRAZION PARDONET-BALDONNEL B | 1994 | 104.98 | 94.48 | 79.67 | 54.29 | 25.38 | NAS |
| 8 | SIERRA JEAN MARIE A | 1999 | 104.84 | 94.36 | 79.40 | 5.80 | 73.60 | NAS |
| 9 | BURNT RIVER PARDONET-BALDONNEL A | 1994 | 103.02 | 92.71 | 79.29 | 37.44 | 41.85 | NAS |
| 10 | BRAZION PARDONET-BALDONNEL A | 1991 | 104.14 | 93.73 | 77.00 | 29.65 | 47.35 | NAS |
| 11 | EKWAN JEAN MARIE A | 1995 | 107.63 | 86.11 | 75.73 | 3.96 | 71.77 | NAS |
| 12 | BULLMOOSE WEST PARDONET-BALDONNEL D | 1992 | 96.24 | 86.62 | 66.78 | 44.08 | 22.70 | NAS |
| 13 | BULLMOOSE WEST PARDONET-BALDONNEL C | 1991 | 95.86 | 86.27 | 65.20 | 56.06 | 9.15 | NAS |
| 14 | BOULDER PARDONET-BALDONNEL B | 1994 | 94.74 | 75.79 | 62.88 | 35.86 | 27.02 | NAS |
| 15 | SUKUNKA PARDONET-BALDONNEL M | 1993 | 106.15 | 74.31 | 59.05 | 58.65 | 0.40 | NAS |
| 16 | BULLMOOSE BALDONNEL C | 1991 | 115.14 | 103.63 | 55.32 | 0.08 | 55.24 | NAS |
| 17 | MURRAY BALDONNEL B | 1997 | 87.13 | 78.41 | 54.40 | 18.98 | 35.41 | NAS |
| 18 | SUKUNKA PARDONET-BALDONNEL L | 1992 | 99.38 | 74.54 | 50.28 | 45.89 | 4.39 | NAS |
| 19 | SIERRA PINE POINT F | 1991 | 76.03 | 64.62 | 46.44 | 32.13 | 14.31 | NAS |
| 20 | BLUEBERRY HALFWAY B | 1999 | 64.14 | 57.72 | 46.07 | 4.93 | 41.15 | NAS |
| 21 | GRAHAM BALDONNEL D | 1993 | 51.67 | 46.50 | 44.34 | 10.71 | 33.63 | NAS |
| 22 | OTHER DEBOLT A-051-H/094-B-10 | 1997 | 50.16 | 45.14 | 40.92 | 2.32 | 38.61 | NAS |
| 23 | AITKEN CREEK NORTH BLUESKY A | 1991 | 50.07 | 45.07 | 38.32 | 24.19 | 14.13 | NAS |
| 24 | GRAHAM BALDONNEL A | 1992 | 79.57 | 39.78 | 37.79 | 22.84 | 14.95 | NAS |
| 25 | STODDART WEST DOIG E | 1996 | 94.76 | 52.65 | 37.60 | 18.23 | 19.38 | ASN |
| 26 | MONIAS HALFWAY T | 1999 | 48.39 | 43.55 | 37.14 | 1.41 | 35.73 | NAS |
| 27 | SEXTET SLAVE POINT D | 1996 | 49.41 | 44.47 | 35.99 | 14.01 | 21.98 | NAS |
| 28 | KAHNTAH RIVER MONTNEY A | 1994 | 38.18 | 34.36 | 33.92 | 18.46 | 15.46 | NAS |
| 29 | CHINCHAGA RIVER BLUESKY-GETH-DETR A | 1994 | 43.95 | 35.16 | 33.83 | 16.91 | 16.92 | NAS |
| 30 | SUKUNKA PARDONET-BALDONNEL P | 1994 | 60.85 | 54.76 | 33.54 | 32.13 | 1.41 | NAS |
| 31 | PEGGO-PESH JEAN MARIE B | 1997 | 37.72 | 33.95 | 32.36 | 3.10 | 29.26 | NAS |
| 32 | SWAN LAKE MONTNEY A | 1997 | 38.34 | 34.50 | 31.64 | 0.81 | 30.83 | NAS |
| 33 | KLUA PINE POINT L | 1999 | 47.06 | 37.65 | 30.51 | 2.02 | 28.50 | NAS |
| 34 | OTHER DEBOLT B-085-E/094-G-02 | 1994 | 39.26 | 31.40 | 30.25 | 18.50 | 11.74 | NAS |
| 35 | SUKUNKA PARDONET-BALDONNEL H | 1991 | 64.96 | 45.47 | 29.56 | 5.51 | 24.06 | NAS |
| 36 | PICKELL NOTIKEWIN A | 1997 | 37.47 | 33.72 | 29.45 | 5.50 | 23.96 | NAS |
| 37 | CLARKE LAKE PINE POINT C | 1993 | 50.22 | 35.16 | 27.89 | 5.62 | 22.27 | NAS |
| 38 | HIGHHAT MOUNTAIN PARD-BALDONNEL C | 1996 | 51.49 | 41.20 | 27.69 | 1.68 | 26.01 | NAS |
| 39 | CHINCHAGA RIVER L. CHARLIE LAKE/MONT A | 1994 | 31.70 | 28.53 | 27.46 | 24.15 | 3.31 | NAS |
| 40 | INGA HALFWAY E | 1990 | 46.44 | 37.15 | 26.11 | 5.78 | 20.34 | NAS |
| 41 | SIKANNI DEBOLT I | 1994 | 44.96 | 26.97 | 26.00 | 8.53 | 17.47 | NAS |
| 42 | RIGEL EAST GETHING A | 1990 | 34.63 | 31.02 | 25.82 | 22.36 | 3.46 | ASN |
| 43 | BUICK CREEK LOWER HALFWAY C | 1990 | 52.45 | 34.54 | 25.71 | 13.98 | 11.73 | ASN |
| 44 | GWILLIM PARDONET-BALDONNEL B | 1991 | 44.05 | 39.65 | 24.77 | 0.00 | 24.77 | NAS |
| 45 | GRAHAM BALDONNEL C | 1995 | 28.14 | 25.32 | 23.99 | 0.01 | 23.98 | NAS |
| 46 | BUBBLES NORTH HALFWAY C | 1999 | 31.67 | 28.50 | 22.40 | 2.32 | 20.08 | NAS |
| 47 | MONIAS HALFWAY U | 1999 | 28.15 | 25.34 | 21.40 | 0.36 | 21.04 | NAS |
| 48 | SIERRA PINE POINT G | 1993 | 36.31 | 29.05 | 21.39 | 16.09 | 5.30 | NAS |
| 49 | CHINCHAGA RIVER SLAVE POINT A | 1996 | 33.73 | 21.92 | 21.22 | 3.17 | 18.05 | NAS |
| 50 | BULLMOOSE PARDONET-BALDONNEL A | 1996 | 42.24 | 33.79 | 20.88 | 3.31 | 17.57 | NAS |

**NORTHEAST BRITISH COLUMBIA
GAS POOLS DISCOVERED 1990 - 1999
DESCRIPTIVE STATISTICS (as of December 31, 2001)**

| | <i>AREA</i> | <i>PAY</i> | <i>POR</i> | <i>SW</i> | <i>SG</i> | <i>PRESS</i> | <i>TEMP</i> |
|--------------------|-------------|------------|------------|-----------|-----------|--------------|-------------|
| Mean | 1,783 | 33.08 | 0.125 | 0.242 | 0.758 | 1,858.7 | 143.6 |
| Median | 694 | 14.40 | 0.124 | 0.220 | 0.780 | 1,494.0 | 134.3 |
| Standard Deviation | 6,978 | 48.98 | 0.052 | 0.124 | 0.124 | 1,032.0 | 35.0 |
| Sample Variance | 48,697,138 | 2,398.84 | 0.003 | 0.015 | 0.015 | 1,065,126 | 1,225.9 |
| Kurtosis | 93.93 | 10.77 | -0.612 | -0.40 | -0.40 | 3.63 | 2.71 |
| Skewness | 9.24 | 3.07 | 0.094 | 0.53 | -0.53 | 1.73 | 1.63 |
| Range | 90,571 | 308.40 | 0.257 | 0.666 | 0.666 | 7,366.6 | 217.8 |
| Minimum | 3 | 1.60 | 0.008 | 0.034 | 0.300 | 316.5 | 55.1 |
| Maximum | 90,574 | 310.00 | 0.265 | 0.700 | 0.966 | 7,683.1 | 272.9 |
| Sum | 850,603 | | | | | | |
| Count | 477 | 549 | 552 | 553 | 553 | 568 | 568 |
| 95th Percentile | 3,200 | 132.9 | 0.211 | 0.463 | 0.920 | 4,094.0 | 234.5 |
| 75th Percentile | 734 | 34.2 | 0.163 | 0.337 | 0.857 | 2,315.8 | 151.0 |
| 25th Percentile | 652 | 7.9 | 0.085 | 0.143 | 0.663 | 1,157.2 | 125.3 |
| 5th Percentile | 224 | 3.7 | 0.042 | 0.080 | 0.537 | 848.9 | 107.3 |

| | <i>H2S</i> | <i>CO2</i> | <i>OTHGAS</i> | <i>LIQSREC</i> | <i>CALCSL</i> | <i>C3LOSS</i> | <i>DENSITY</i> |
|--------------------|------------|------------|---------------|----------------|---------------|---------------|----------------|
| Mean | 0.019 | 0.027 | 0.06 | 23.40 | 0.09 | 0.03 | 0.669 |
| Median | 0.000 | 0.012 | 0.02 | 22.60 | 0.07 | 0.03 | 0.663 |
| Standard Deviation | 0.044 | 0.040 | 0.08 | 20.70 | 0.07 | 0.03 | 0.097 |
| Sample Variance | 0.002 | 0.002 | 0.01 | 428.44 | 0.01 | 0.00 | 0.009 |
| Kurtosis | 11.81 | 10.37 | 6.59 | 6.37 | 5.84 | 6.43 | 10.81 |
| Skewness | 3.22 | 2.97 | 2.48 | 1.72 | 2.23 | 1.72 | -1.05 |
| Range | 0.303 | 0.290 | 0.48 | 164.92 | 0.47 | 0.23 | 1.094 |
| Minimum | 0.000 | 0.000 | 0.00 | 0.00 | 0.01 | 0.00 | 0.001 |
| Maximum | 0.303 | 0.290 | 0.48 | 164.92 | 0.48 | 0.23 | 1.095 |
| Count | 568 | 568 | 568 | 568 | 568 | 568 | 522 |
| 95th Percentile | 0.120 | 0.119 | 0.24 | 60.21 | 0.25 | 0.08 | 0.832 |
| 75th Percentile | 0.015 | 0.024 | 0.06 | 33.70 | 0.10 | 0.05 | 0.692 |
| 25th Percentile | 0.000 | 0.007 | 0.01 | 5.98 | 0.05 | 0.01 | 0.628 |
| 5th Percentile | 0.000 | 0.001 | 0.01 | 0.00 | 0.02 | 0.00 | 0.562 |

| | <i>Z</i> | <i>GIP_BCF</i> | <i>RRG_BCF</i> | <i>IMG_BCF</i> | <i>GRF_REC</i> | <i>GRF_MG</i> | <i>MFD</i> |
|--------------------|----------|----------------|----------------|----------------|----------------|---------------|------------|
| Mean | 0.870 | 14.580 | 11.255 | 10.181 | 0.774 | 0.646 | 5,034.5 |
| Median | 0.870 | 5.119 | 3.804 | 3.221 | 0.800 | 0.691 | 4,171.0 |
| Standard Deviation | 0.059 | 33.500 | 27.903 | 33.416 | 0.184 | 0.171 | 1,990.8 |
| Sample Variance | 0.004 | 1,122.217 | 778.550 | 1,116.656 | 0.034 | 0.029 | 3,963,361 |
| Kurtosis | 11.599 | 77.454 | 79.399 | 161.479 | 5.31 | 2.89 | 2.85 |
| Skewness | -1.130 | 7.635 | 7.842 | 11.365 | -2.29 | -1.66 | 1.52 |
| Range | 0.780 | 422.763 | 354.252 | 567.961 | 0.898 | 0.885 | 14,726.7 |
| Minimum | 0.439 | 0.097 | 0.046 | 0.039 | 0.008 | 0.007 | 1,339.3 |
| Maximum | 1.219 | 422.859 | 354.298 | 568.000 | 0.906 | 0.892 | 16,066.0 |
| Sum | | 8,281.59 | 6,393.02 | 5,803.16 | | | |
| Count | 539 | 568 | 568 | 570 | 568 | 568 | 568 |
| 95th Percentile | 0.946 | 51.05 | 40.70 | 33.88 | 0.900 | 0.824 | 8,953.1 |
| 75th Percentile | 0.893 | 12.72 | 9.50 | 8.01 | 0.900 | 0.762 | 6,140.2 |
| 25th Percentile | 0.852 | 2.57 | 1.84 | 1.54 | 0.800 | 0.610 | 3,691.1 |
| 5th Percentile | 0.786 | 0.75 | 0.41 | 0.36 | 0.348 | 0.285 | 3,237.9 |

**NORTHEAST BRITISH COLUMBIA
GAS POOLS DISCOVERED 1990 - 1999**

SUMMARY OF H2S CONTENT

| CODE | % H2S | POOLS | RAW GAS BCF | % POOLS | % RAW GAS |
|------|---------------|-------|-------------|---------|-----------|
| 0 | 0 | 312 | 2,639.4 | 54.9% | 31.9% |
| 1 | .01 - .09% | 37 | 1,219.2 | 6.5% | 14.7% |
| 2 | .1 - 1.99% | 94 | 1,122.6 | 16.5% | 13.6% |
| 3 | 2.0 - 9.99% | 86 | 1,756.9 | 15.1% | 21.2% |
| 4 | 10.0 - 19.99% | 33 | 1,235.0 | 5.8% | 14.9% |
| 5 | 20.0 - 29.99% | 5 | 261.8 | 0.9% | 3.2% |
| 6 | 30.0% or More | 1 | 46.7 | 0.2% | 0.6% |
| | TOTAL | 568 | 8,281.6 | 100.0% | 100.0% |
| | H2S > 10% | 39 | 1,543.5 | 6.9% | 18.6% |

SUMMARY OF CO2 CONTENT

| CODE | % CO2 | POOLS | RAW GAS BCF | % POOLS | % RAW GAS |
|------|---------------|-------|-------------|---------|-----------|
| 0 | 0 | 6 | 33.1 | 1.1% | 0.4% |
| 1 | .01 - .09% | 0 | 0.0 | 0.0% | 0.0% |
| 2 | .1 - 1.99% | 348 | 4,009.5 | 66.5% | 50.6% |
| 3 | 2.0 - 9.99% | 132 | 2,256.0 | 25.2% | 28.5% |
| 4 | 10.0 - 19.99% | 37 | 1,618.4 | 7.1% | 20.4% |
| | TOTAL | 523 | 7,917.0 | 100.0% | 100.0% |
| | CO2 > 2% | 169 | 3,874.3 | 32.3% | 48.9% |

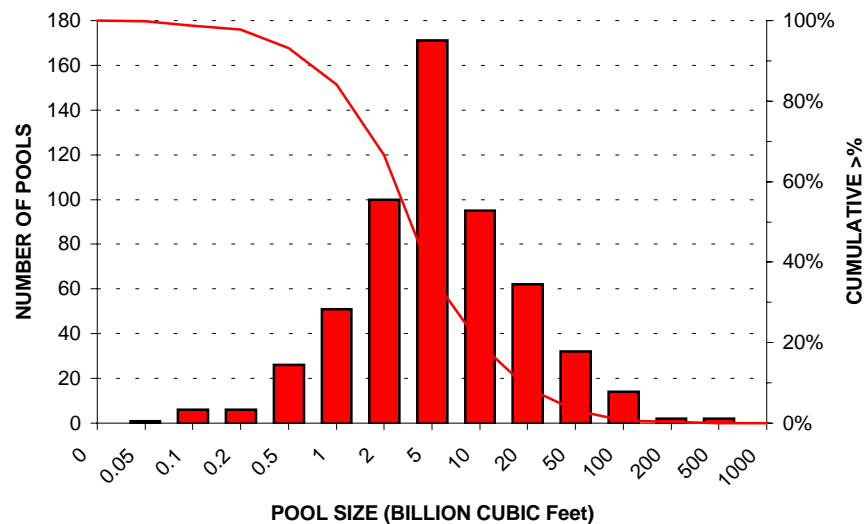
NORTHEAST BRITISH COLUMBIA GAS POOLS DISCOVERED 1990 - 1999

POOL SIZE DISTRIBUTION INITIAL MARKETABLE GAS (Billion Cubic Feet)

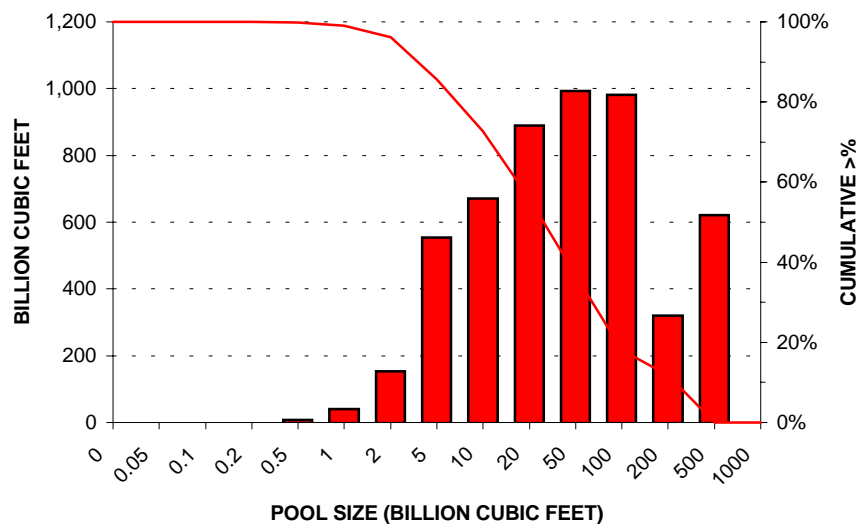
| Size Bcf | No. of Pools | IMG Bcf | % of Pools | Cum % Pools | % of IMG | Cum % IMG |
|--------------|--------------|----------------|------------|-------------|----------|-----------|
| 0 | 0 | 0.0 | 0.0% | 100.0% | 0.0% | 100.0% |
| 0.05 | 1 | 0.0 | 0.2% | 99.8% | 0.0% | 100.0% |
| 0.1 | 6 | 0.5 | 1.1% | 98.8% | 0.0% | 100.0% |
| 0.2 | 6 | 0.9 | 1.1% | 97.7% | 0.0% | 100.0% |
| 0.5 | 26 | 8.6 | 4.6% | 93.1% | 0.2% | 99.8% |
| 1 | 51 | 40.2 | 9.0% | 84.2% | 0.8% | 99.0% |
| 2 | 100 | 152.4 | 17.6% | 66.5% | 2.9% | 96.1% |
| 5 | 171 | 553.6 | 30.1% | 36.4% | 10.6% | 85.6% |
| 10 | 95 | 671.3 | 16.7% | 19.7% | 12.8% | 72.7% |
| 20 | 62 | 890.2 | 10.9% | 8.8% | 17.0% | 55.7% |
| 50 | 32 | 992.4 | 5.6% | 3.2% | 19.0% | 36.8% |
| 100 | 14 | 981.9 | 2.5% | 0.7% | 18.8% | 18.0% |
| 200 | 2 | 320.7 | 0.4% | 0.4% | 6.1% | 11.9% |
| 500 | 2 | 621.4 | 0.4% | 0.0% | 11.9% | 0.0% |
| 1000 | 0 | 0.0 | 0.0% | 0.0% | 0.0% | 0.0% |
| 2000 | 0 | 0.0 | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 568 | 5,234.2 | | | | |

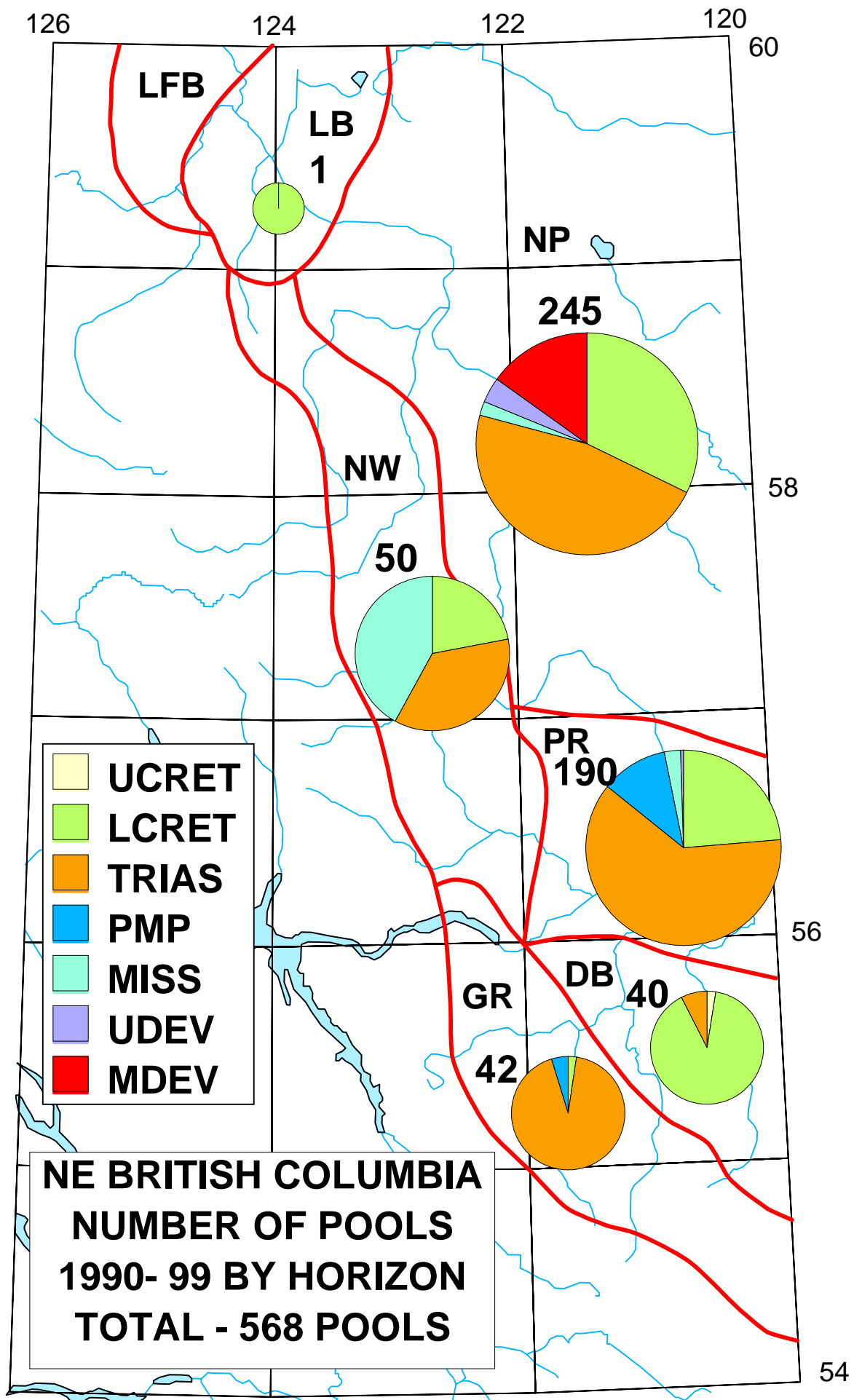
Total Number of Pools 568
 Initial Marketable Gas 5,234
 Largest Pool 568
 Mean Pool Size 10.2
 Median Pool Size 3.2
 95th Percentile 33.9
 75th Percentile 8.0
 25th Percentile 1.5

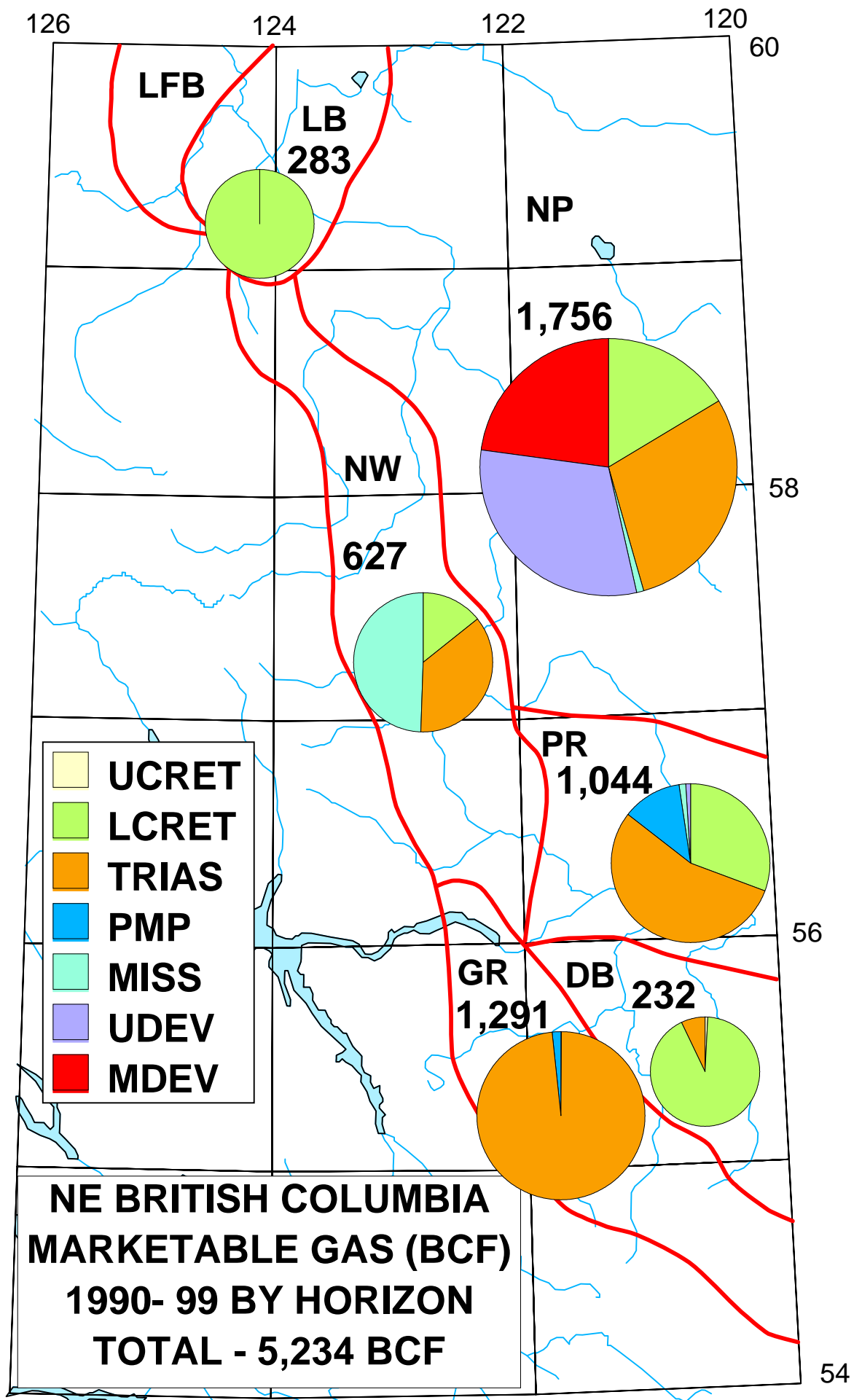
POOL SIZE DISTRIBUTION - NUMBER

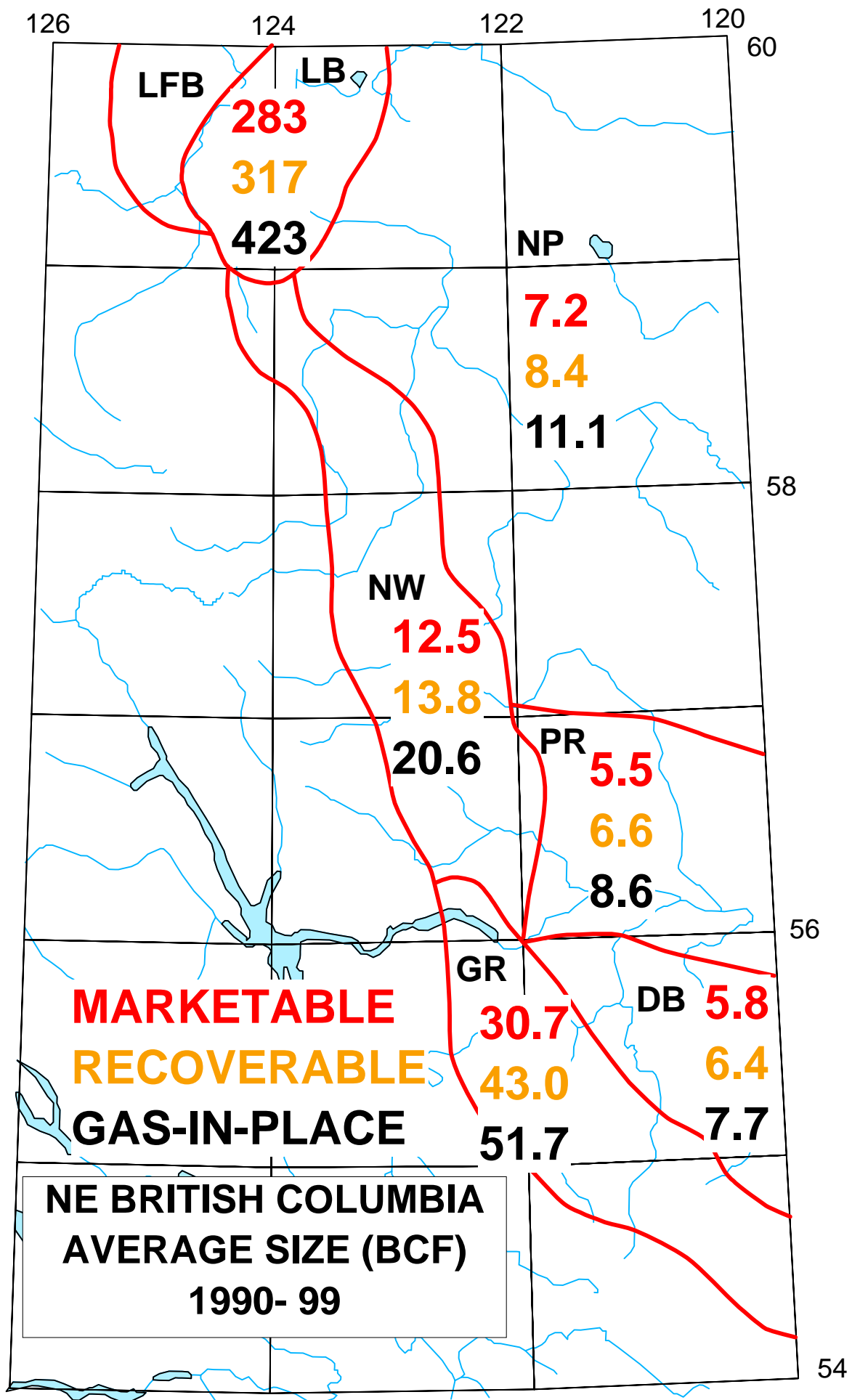


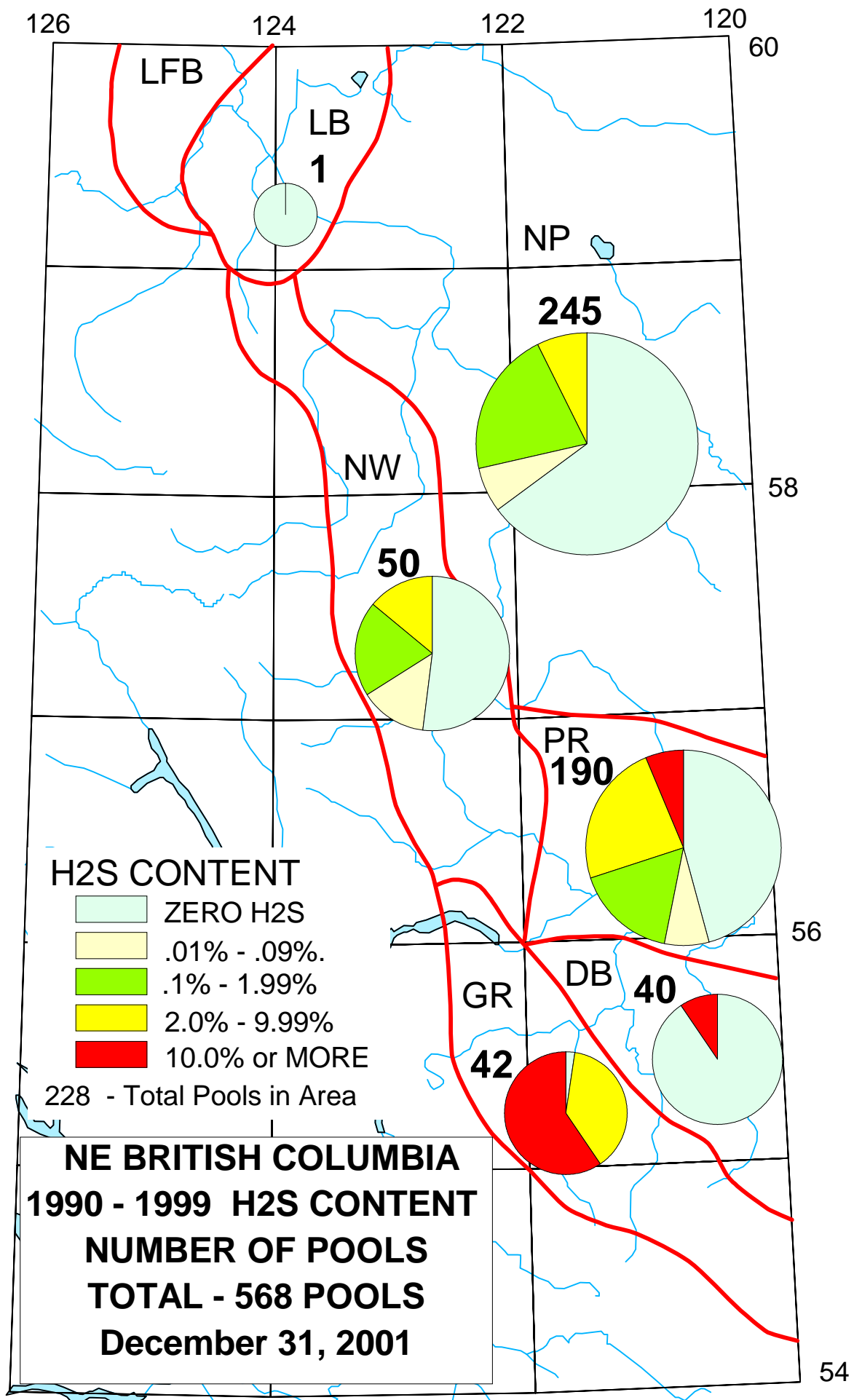
POOL SIZE DISTRIBUTION MARKETABLE GAS

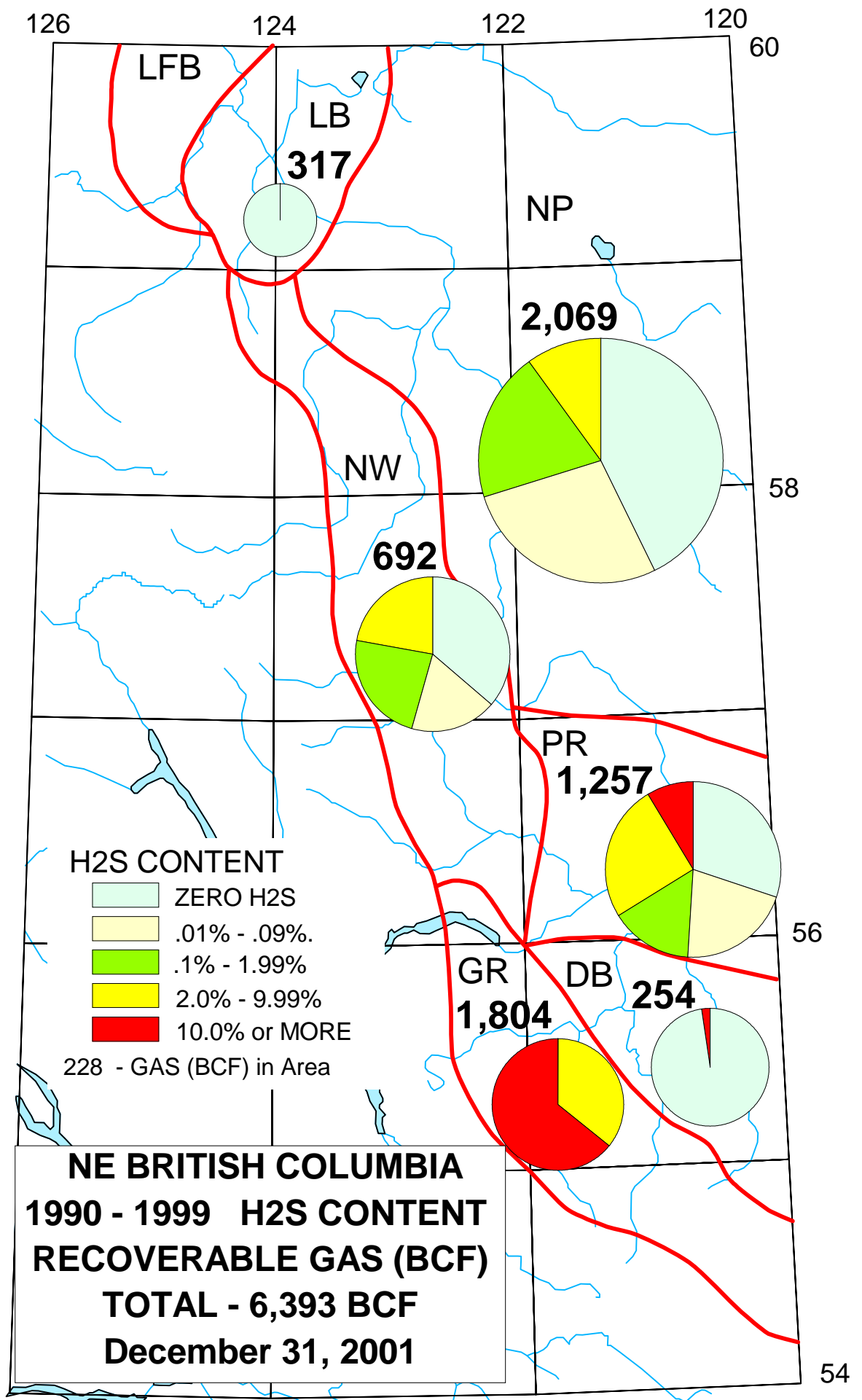




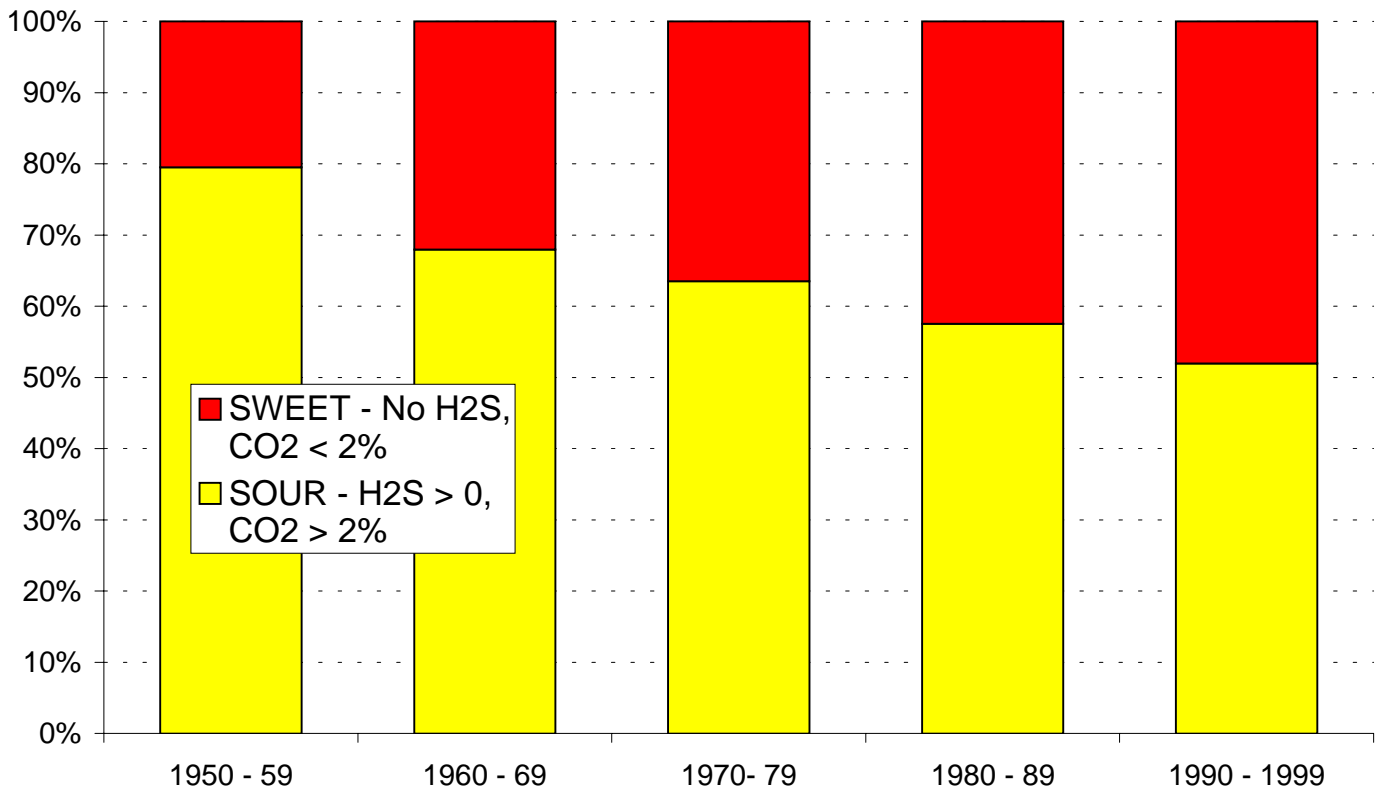




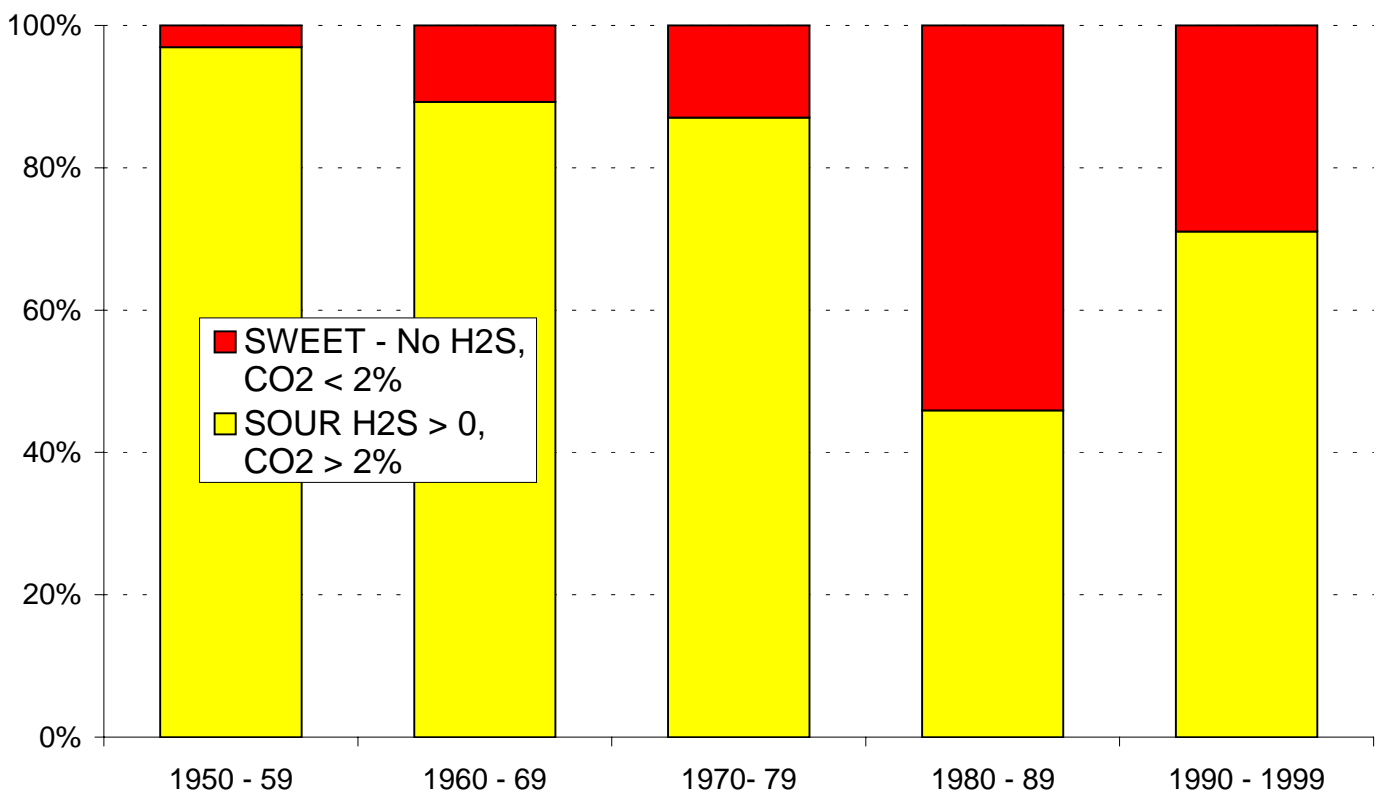




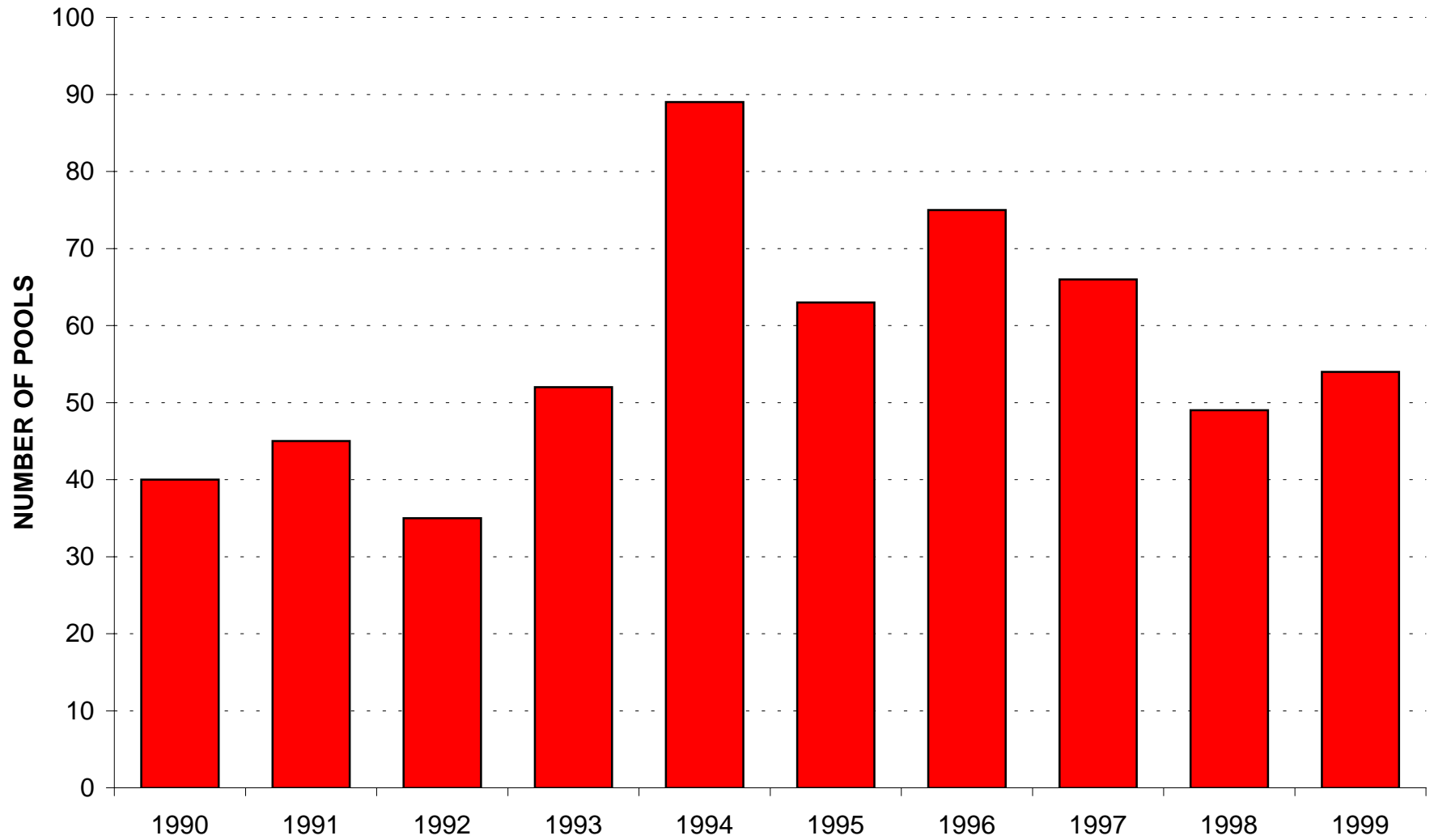
BRITISH COLUMBIA GAS POOLS BY DECADE SWEET vs SOUR - NUMBER OF POOLS



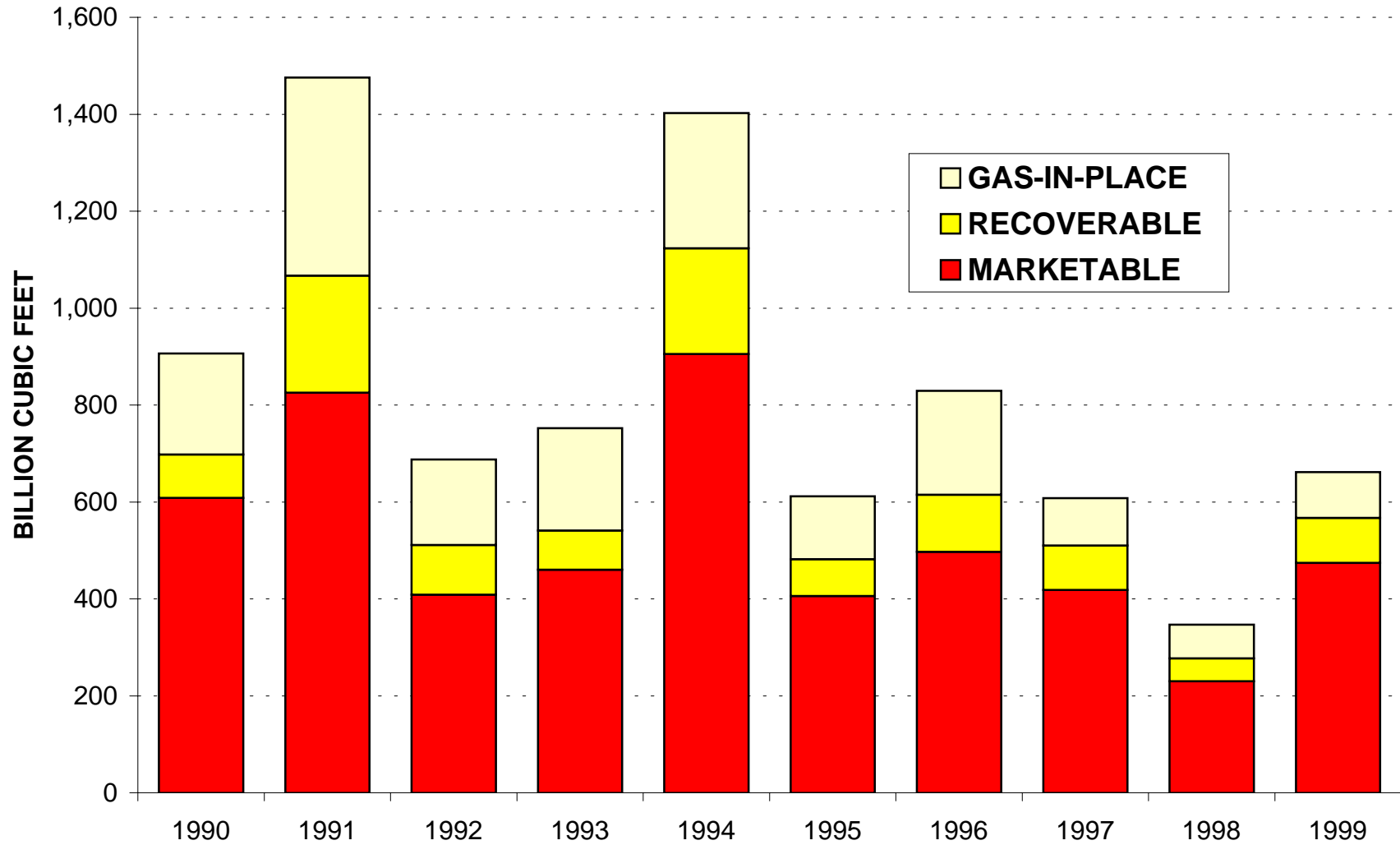
BRITISH COLUMBIA GAS POOLS BY DECADE SWEET vs SOUR - RECOVERABLE GAS



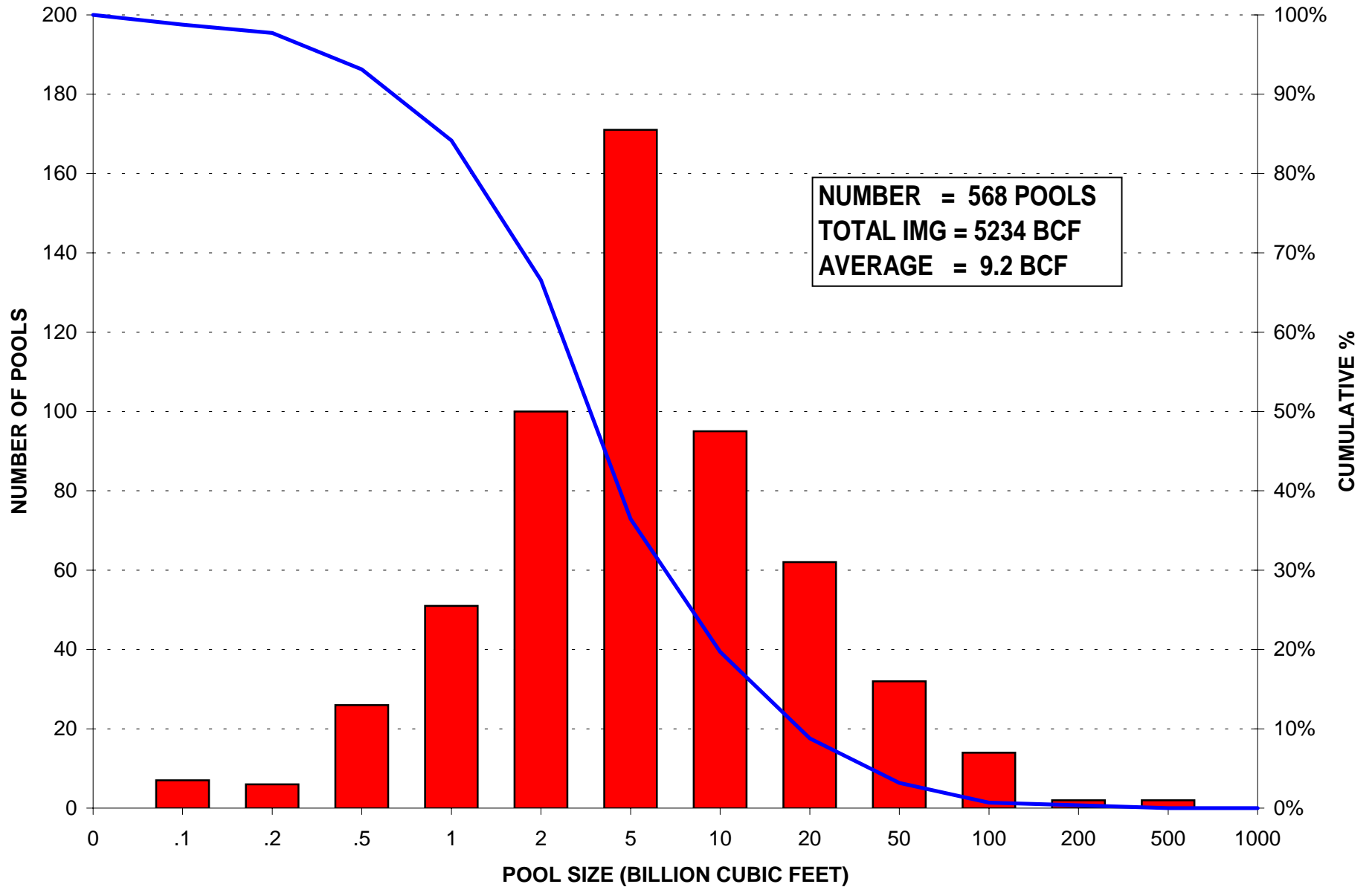
NUMBER OF GAS POOLS BY YEAR OF DISCOVERY



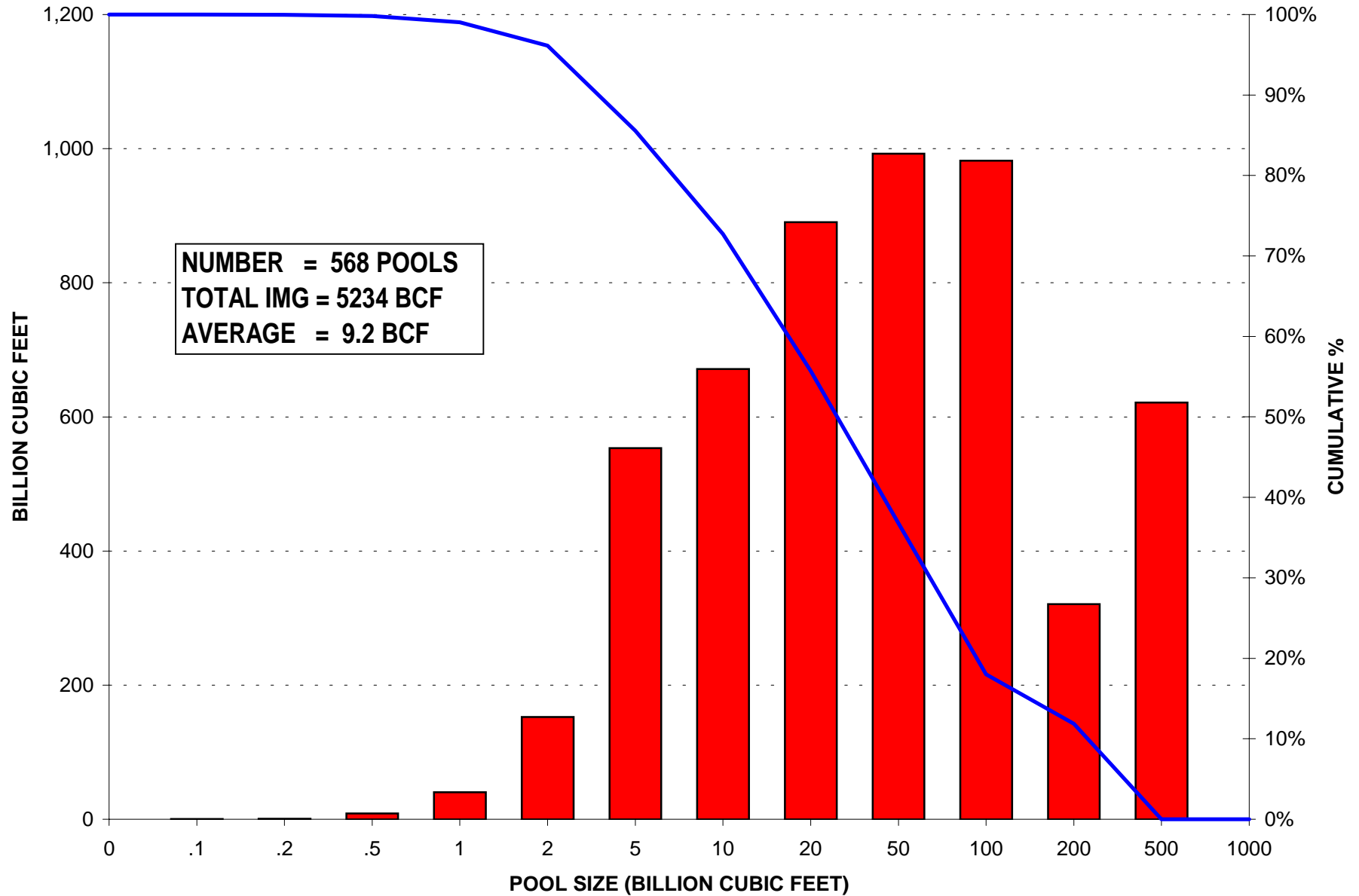
GAS VOLUMES BY YEAR OF DISCOVERY



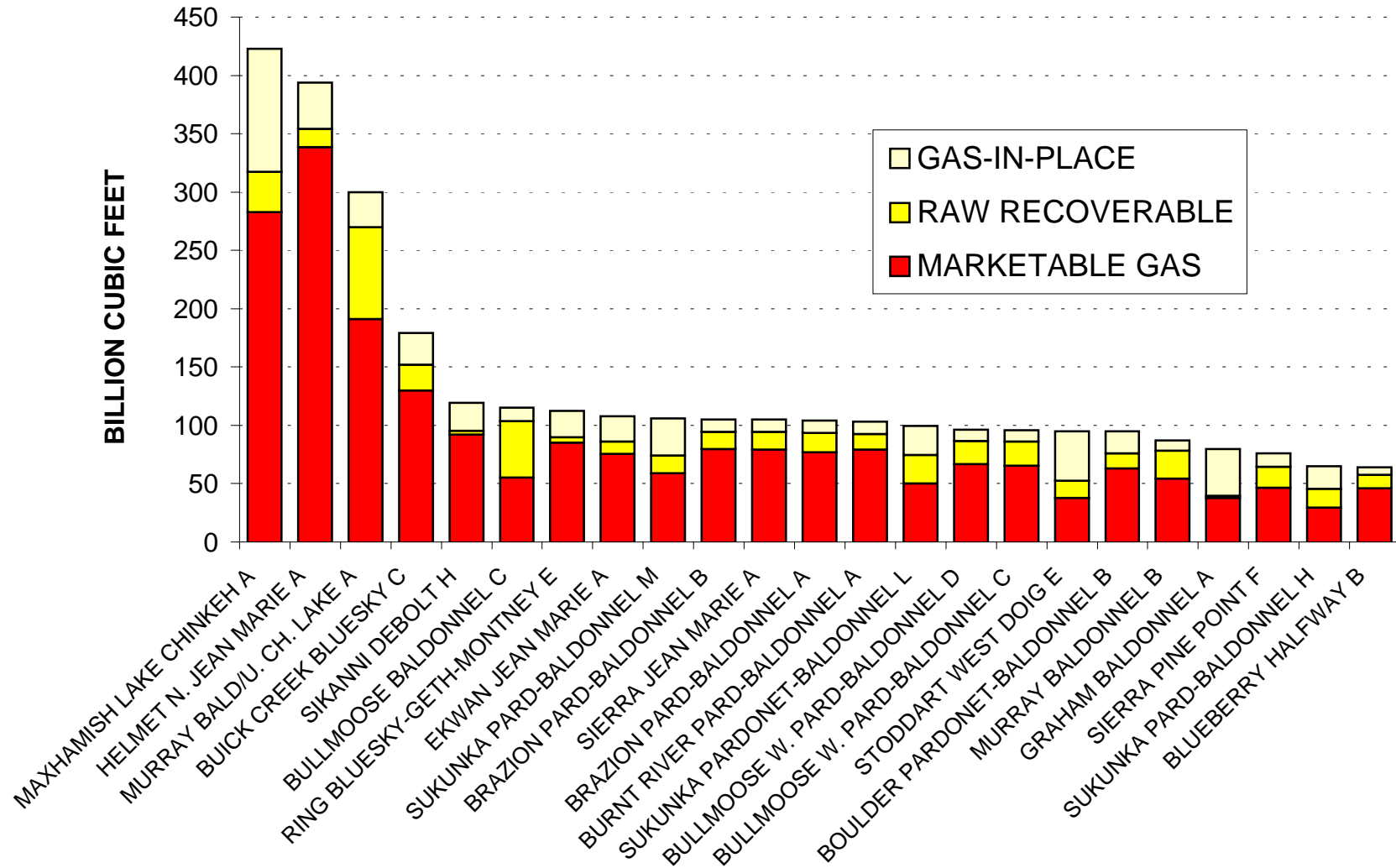
**BRITISH COLUMBIA MARKETABLE GAS POOL SIZE DISTRIBUTION
DISCOVERED 1990 - 1999**



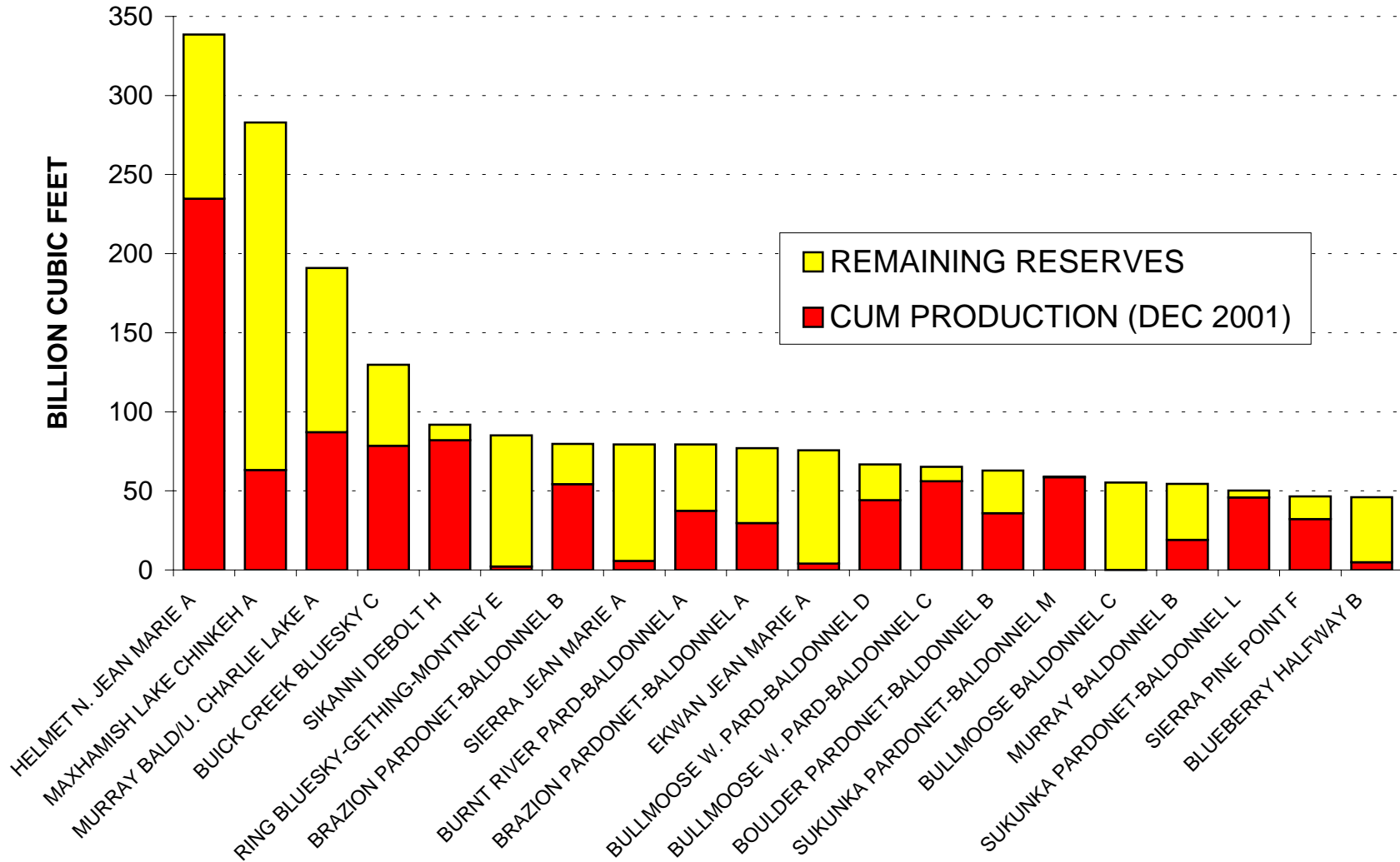
BRITISH COLUMBIA MARKETABLE GAS POOL SIZE DISTRIBUTION DISCOVERED 1990 - 1999



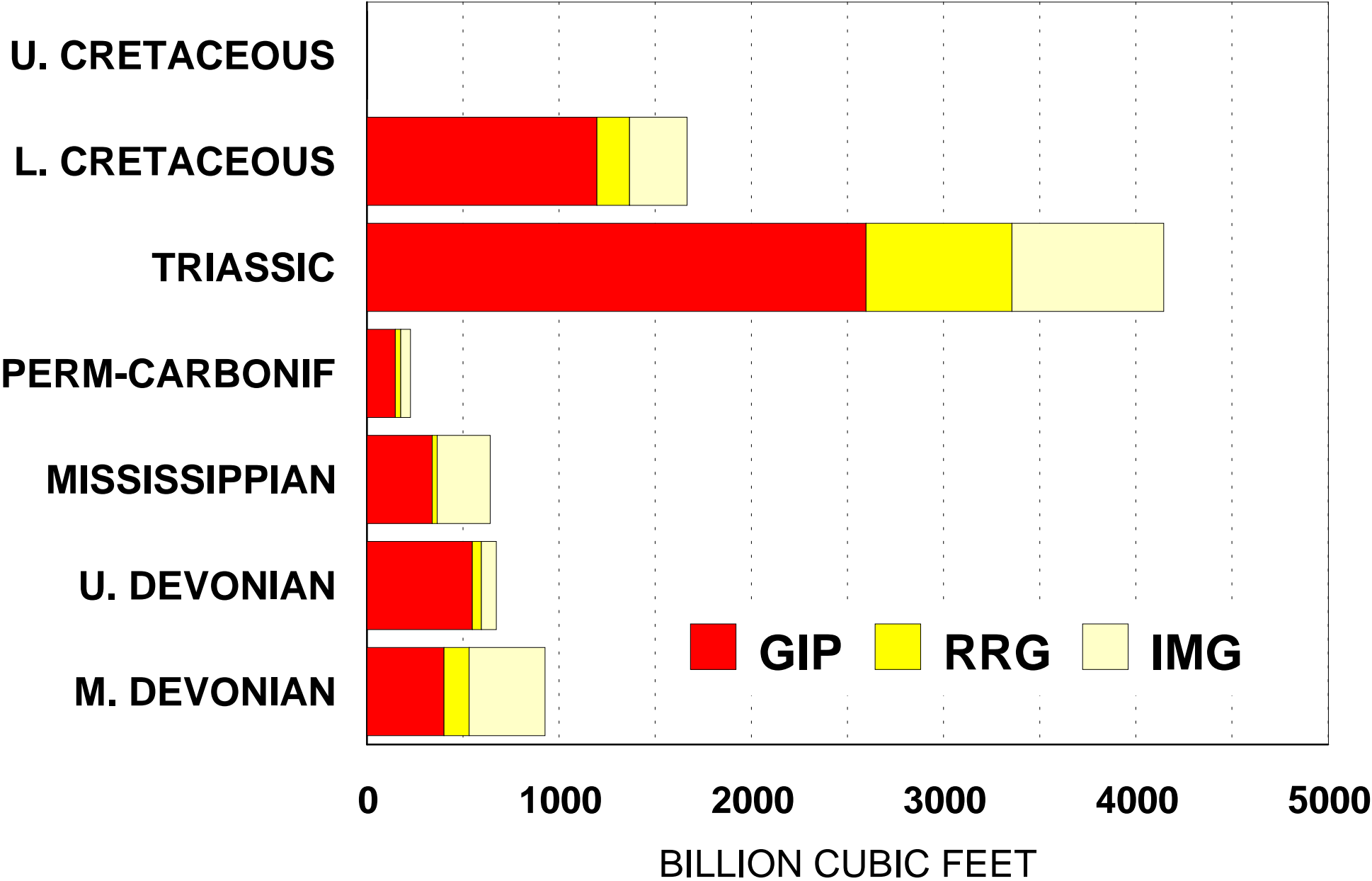
TOP 20 GAS POOLS BY GAS-IN-PLACE



TOP 20 GAS POOLS BY MARKETABLE GAS

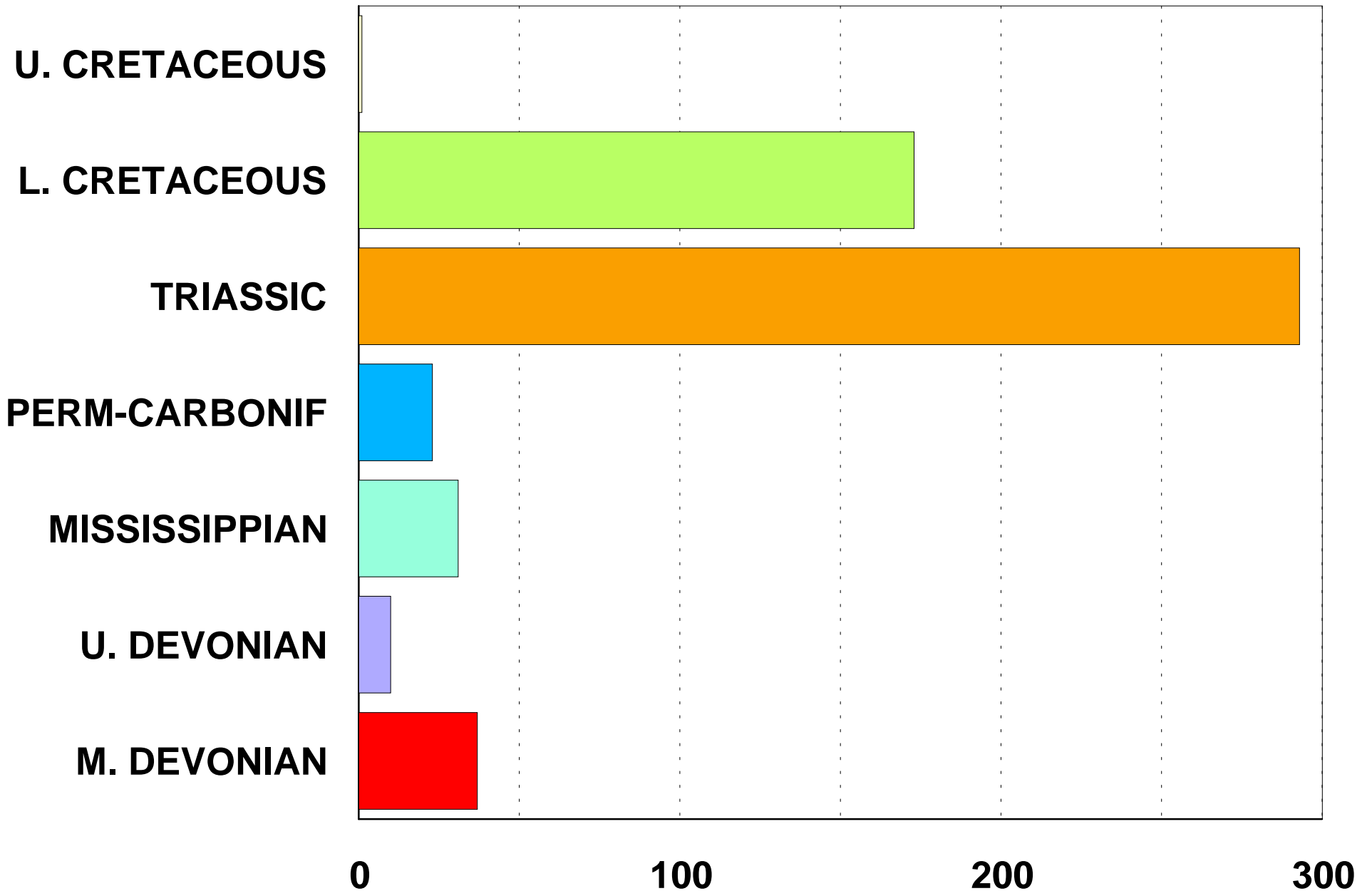


N.E. BRITISH COLUMBIA 1990 - 1999 GAS BY STRATIGRAPHIC HORIZON

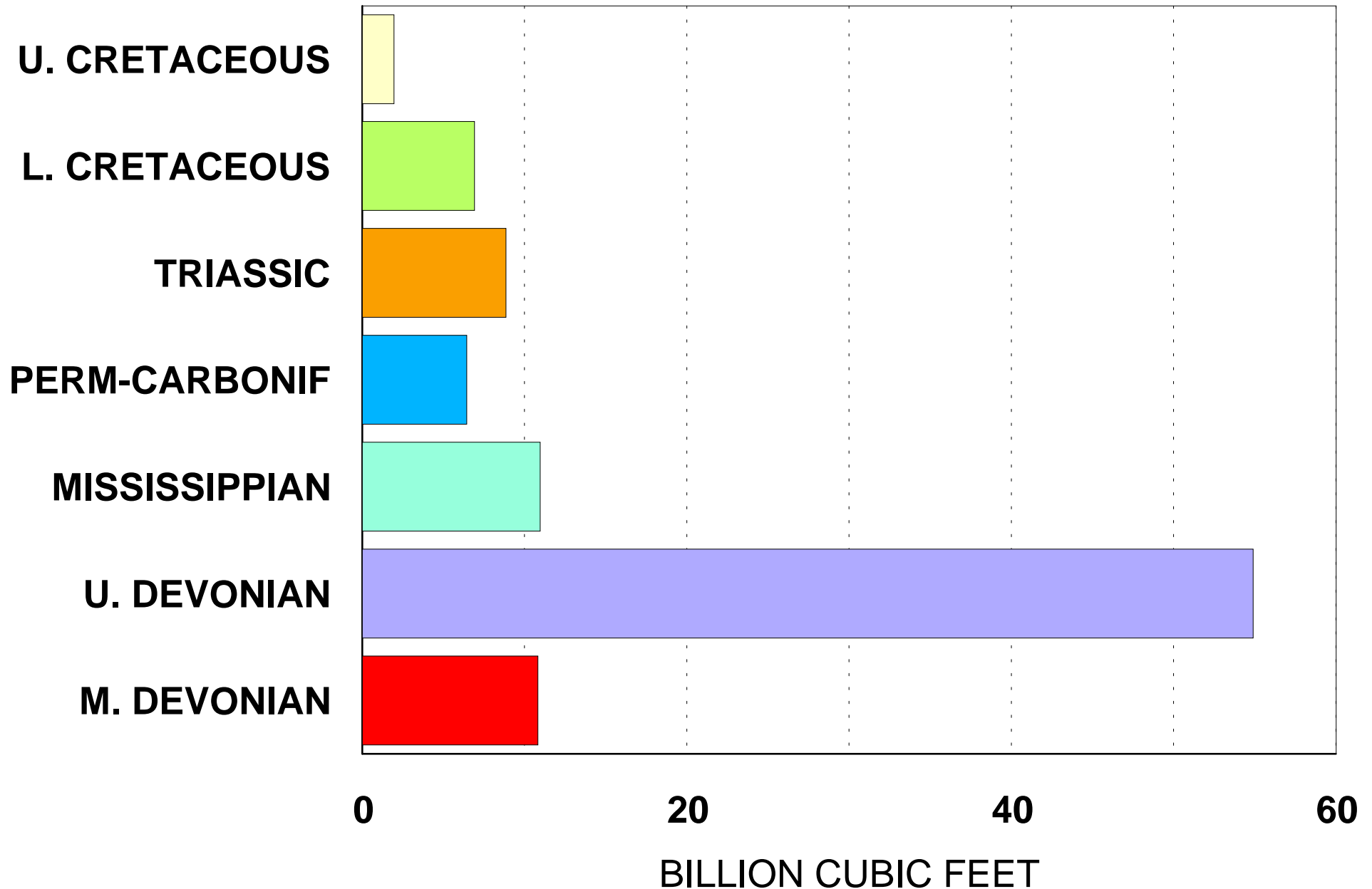


N.E. BRITISH COLUMBIA 1990 - 1999

NUMBER BY STRATIGRAPHIC HORIZON

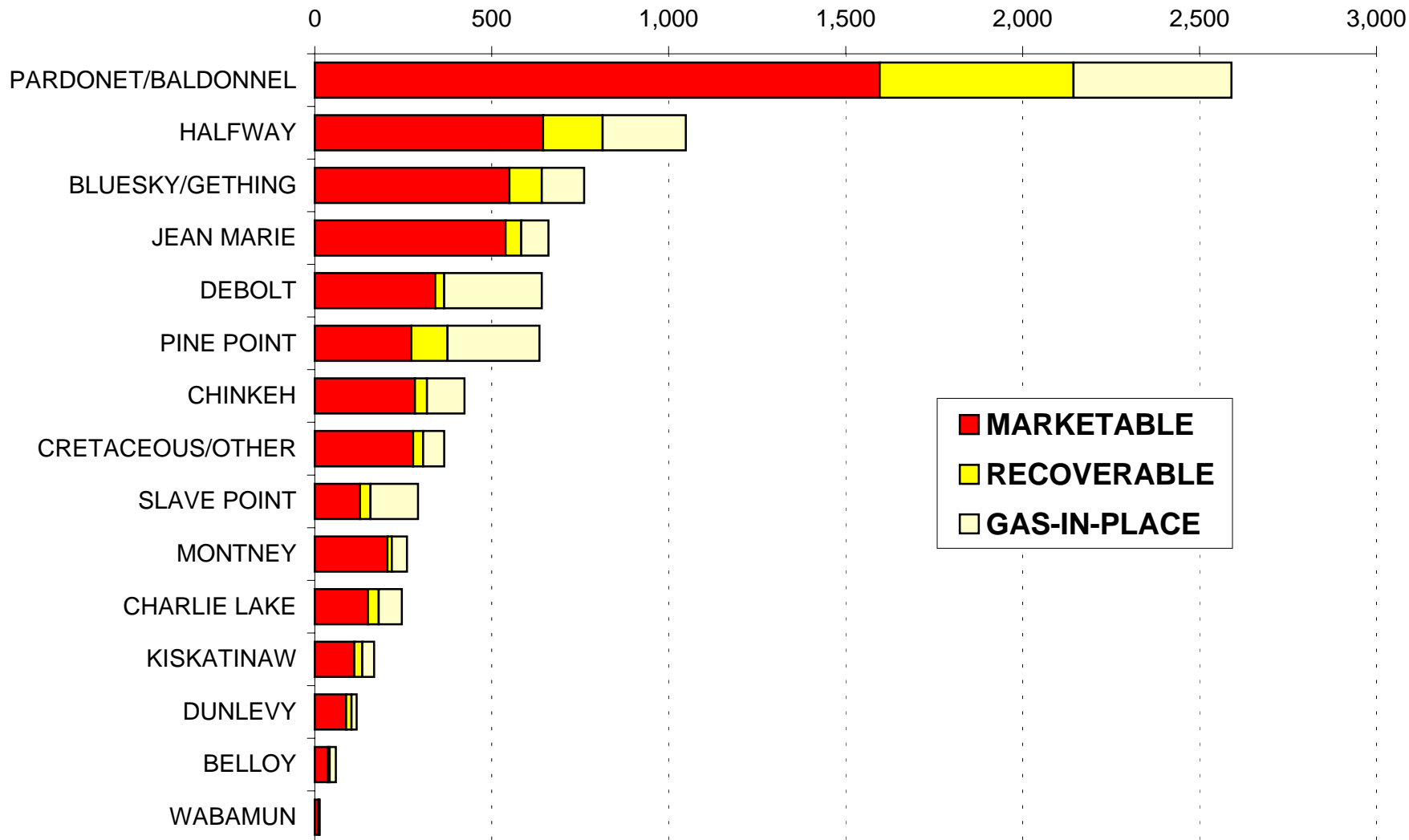


N.E. BRITISH COLUMBIA 1990 - 1999 AVERAGE SIZE (MARKETABLE) BY HORIZON

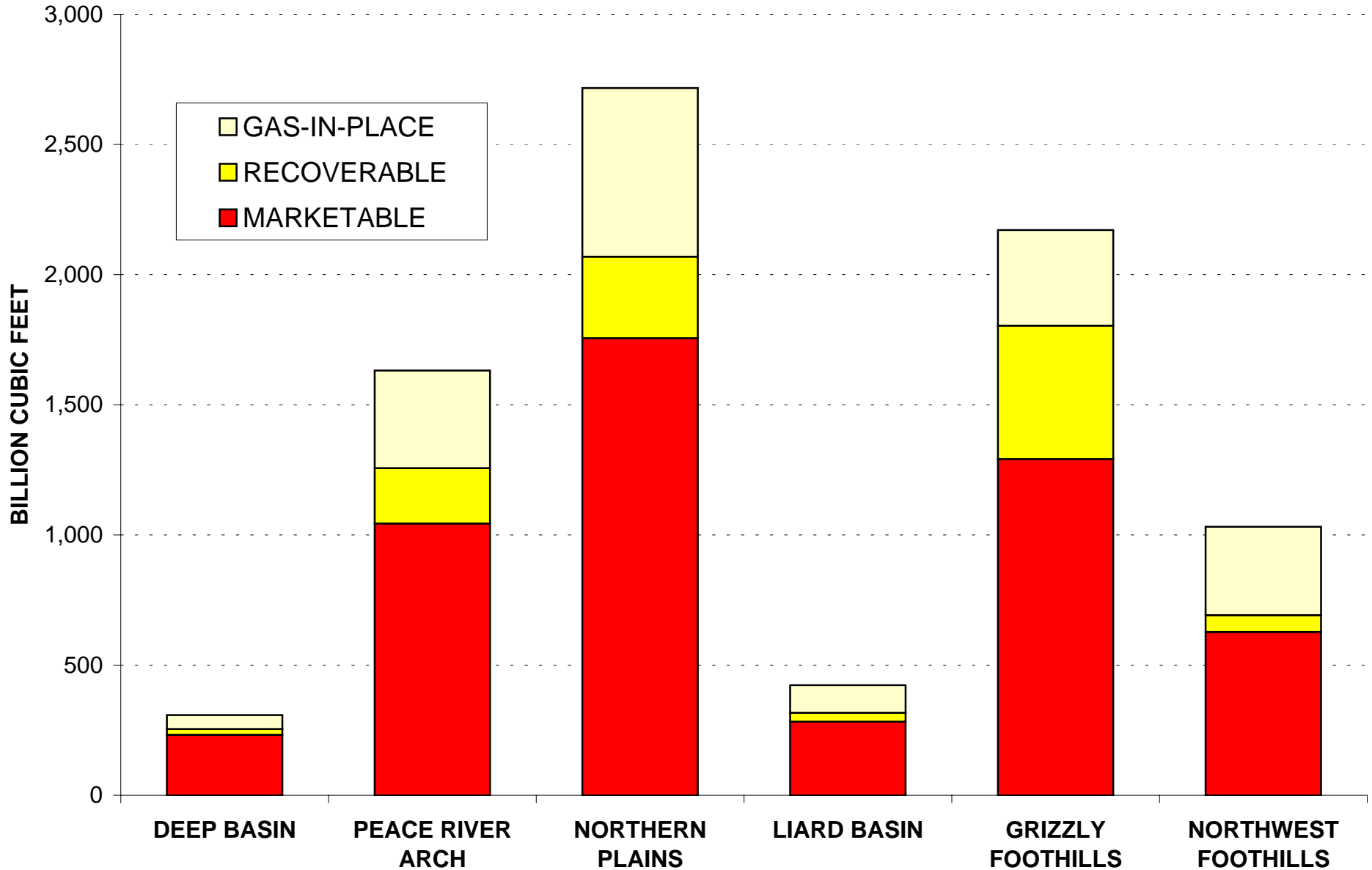


NORTHEAST BRITISH COLUMBIA DISCOVERED GAS BY STRATIGRAPHIC FORMATION 1990 - 1999

BILLION CUBIC FEET



NE BRITISH COLUMBIA GAS DISCOVERIES 1990 - 1999 BY AREA



**DISTRIBUTION OF NATURAL GAS (BCF) BY STRUCTURAL AREA
NE BRITISH COLUMBIA - DISCOVERED 1990 -1999**

| AREA | NUMBER | GAS-IN-PLACE | RECOVERABLE | MARKETABLE |
|---------------------|------------|----------------|----------------|----------------|
| DEEP BASIN | 40 | 308.1 | 254.4 | 232.4 |
| PEACE RIVER ARCH | 190 | 1,631.5 | 1,256.8 | 1,044.3 |
| NORTHERN PLAINS | 245 | 2,716.6 | 2,068.8 | 1,755.7 |
| LIARD BASIN | 1 | 422.9 | 317.1 | 283.0 |
| GRIZZLY FOOTHILLS | 42 | 2,171.1 | 1,804.1 | 1,291.5 |
| NORTHWEST FOOTHILLS | 50 | 1,031.5 | 691.8 | 627.4 |
| TOTAL | 568 | 8,281.6 | 6,393.0 | 5,234.2 |

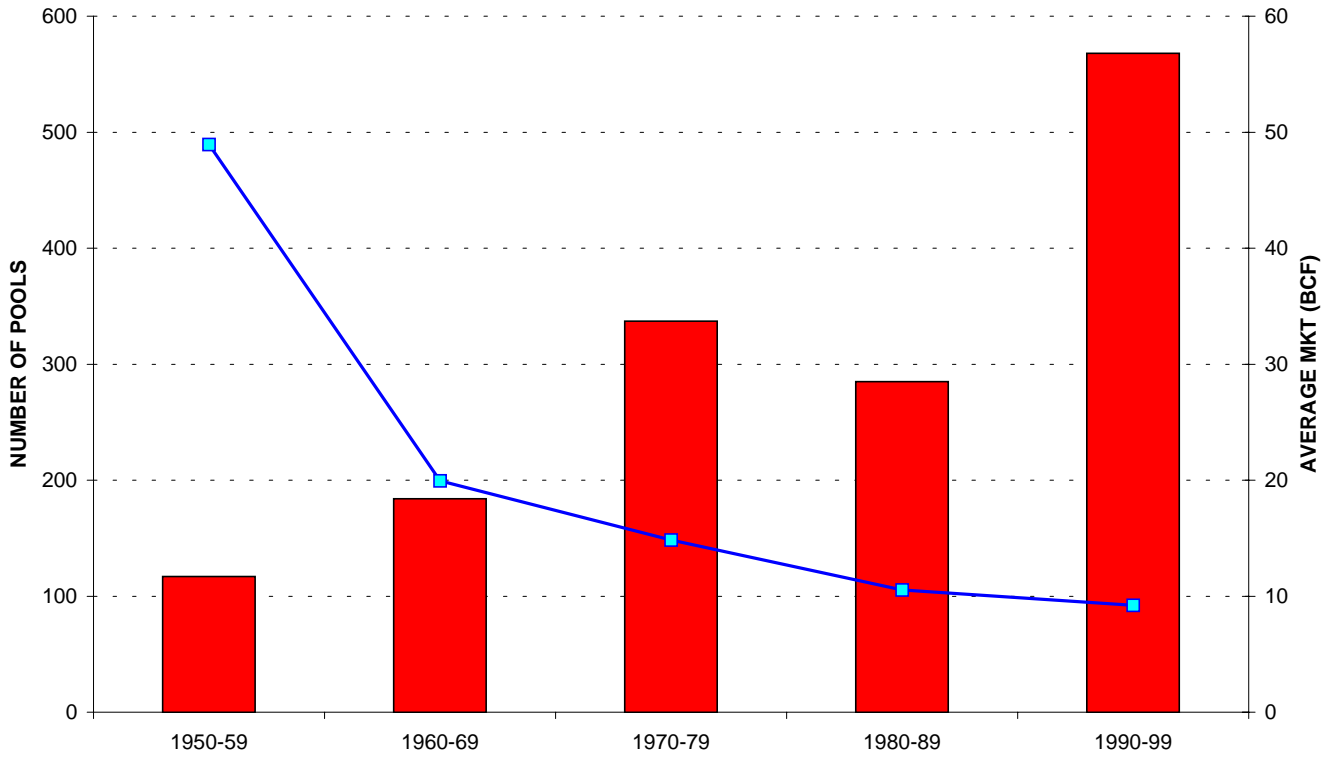
PERCENTAGE DISTRIBUTION

| AREA | NUMBER | GAS-IN-PLACE | RECOVERABLE | MARKETABLE |
|---------------------|-------------|--------------|-------------|-------------|
| DEEP BASIN | 7.0% | 3.7% | 4.0% | 4.4% |
| PEACE RIVER ARCH | 33.5% | 19.7% | 19.7% | 20.0% |
| NORTHERN PLAINS | 43.1% | 32.8% | 32.4% | 33.5% |
| LIARD BASIN | 0.2% | 5.1% | 5.0% | 5.4% |
| GRIZZLY FOOTHILLS | 7.4% | 26.2% | 28.2% | 24.7% |
| NORTHWEST FOOTHILLS | 8.8% | 12.5% | 10.8% | 12.0% |
| TOTAL | 100% | 100% | 100% | 100% |

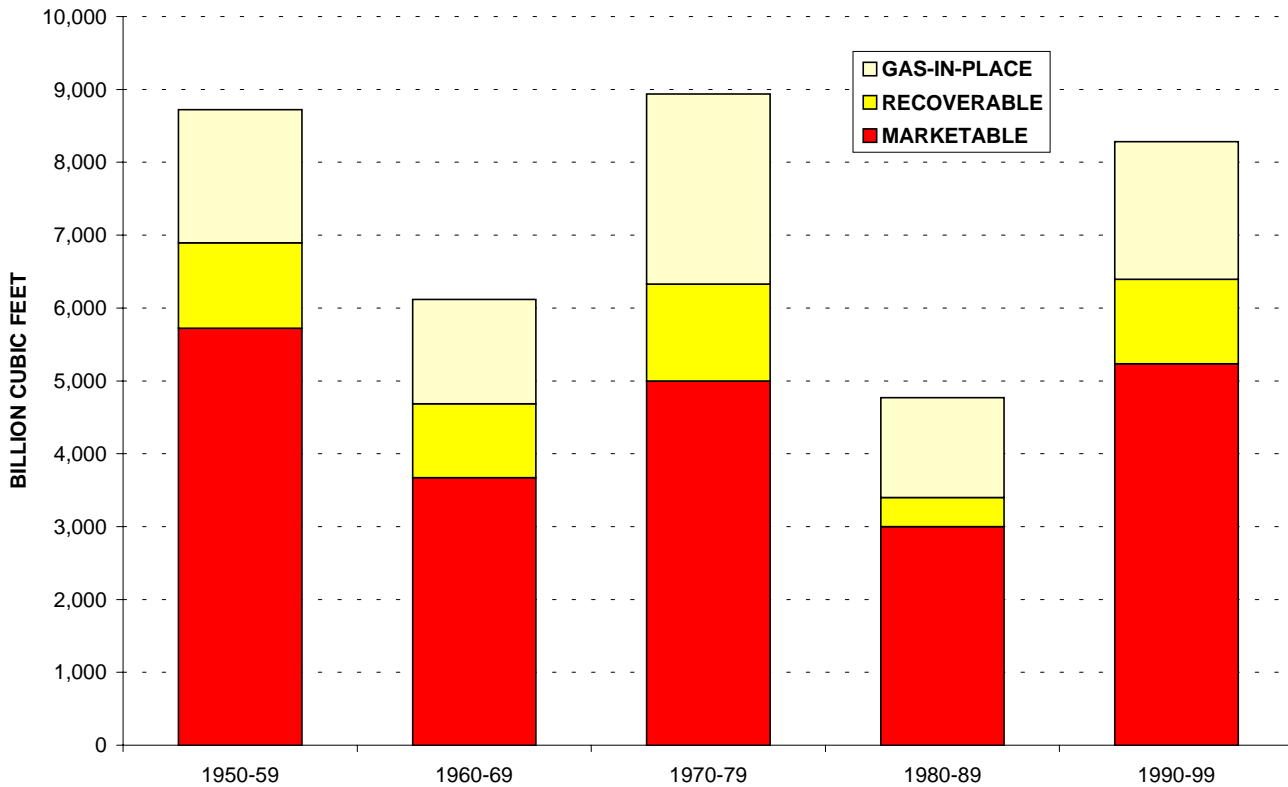
AVERAGE SIZE (BCF)

| AREA | NUMBER | GAS-IN-PLACE | RECOVERABLE | MARKETABLE |
|---------------------|------------|--------------|-------------|------------|
| DEEP BASIN | 40 | 7.7 | 6.4 | 5.8 |
| PEACE RIVER ARCH | 190 | 8.6 | 6.6 | 5.5 |
| NORTHERN PLAINS | 245 | 11.1 | 8.4 | 7.2 |
| LIARD BASIN | 1 | 422.9 | 317.1 | 283.0 |
| GRIZZLY FOOTHILLS | 42 | 51.7 | 43.0 | 30.7 |
| NORTHWEST FOOTHILLS | 50 | 20.6 | 13.8 | 12.5 |
| TOTAL | 568 | 14.6 | 11.3 | 9.2 |

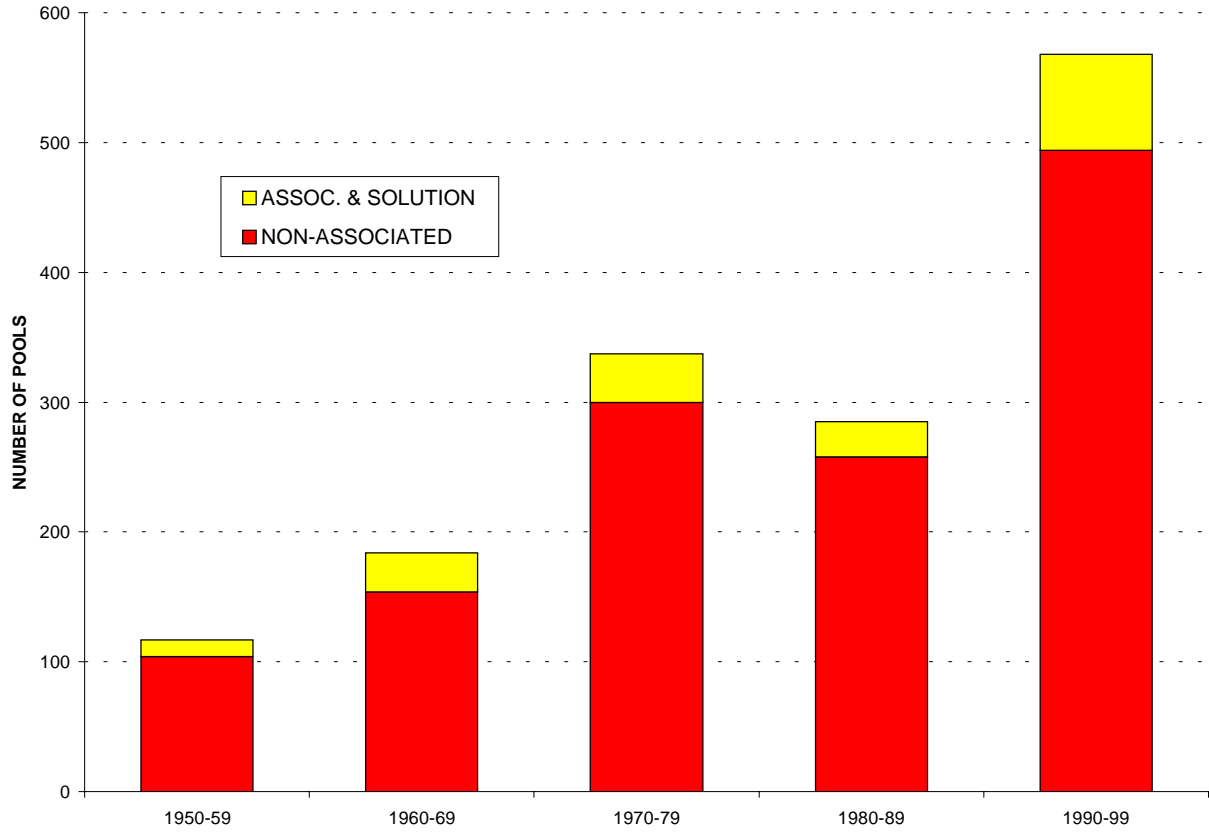
**NORTHEAST BRITISH COLUMBIA - NUMBER OF POOLS
AND AVERAGE SIZE (MARKETABLE) BY DECADE DISCOVERED**



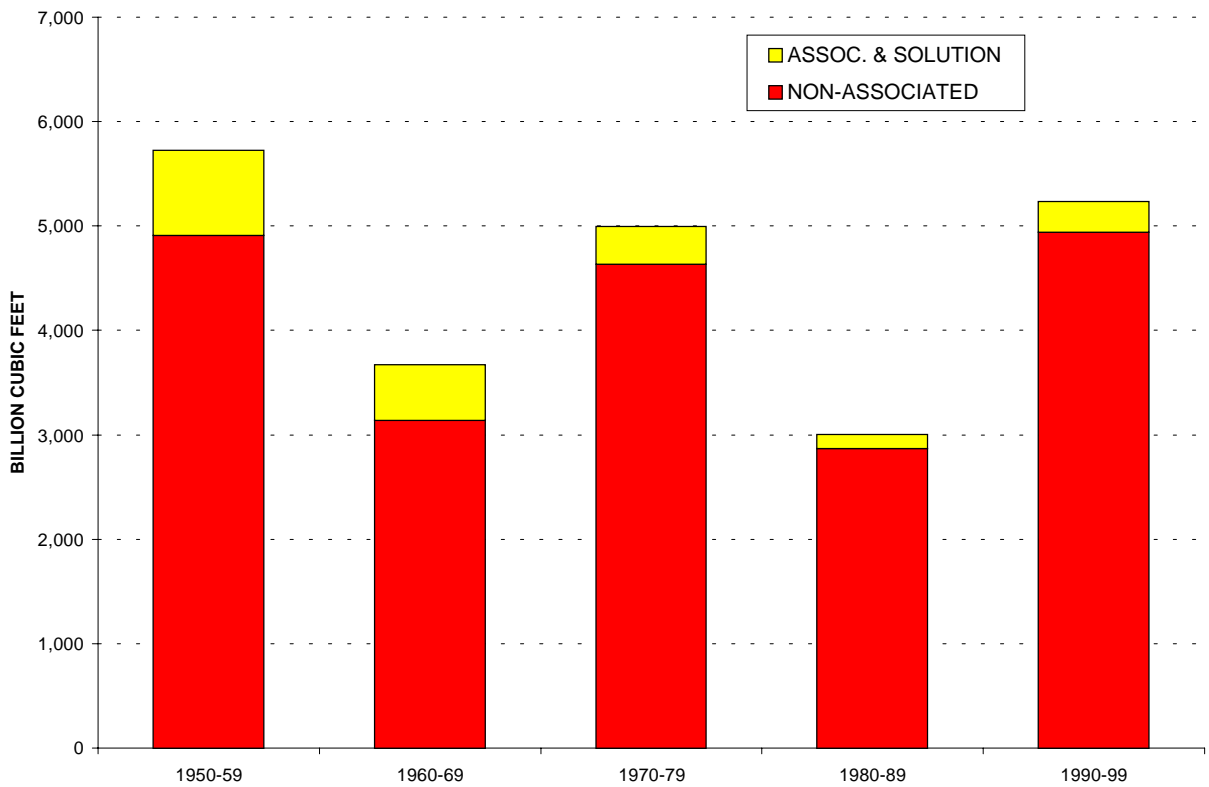
**NORTHEAST BRITISH COLUMBIA
GAS DISCOVERED BY DECADE**



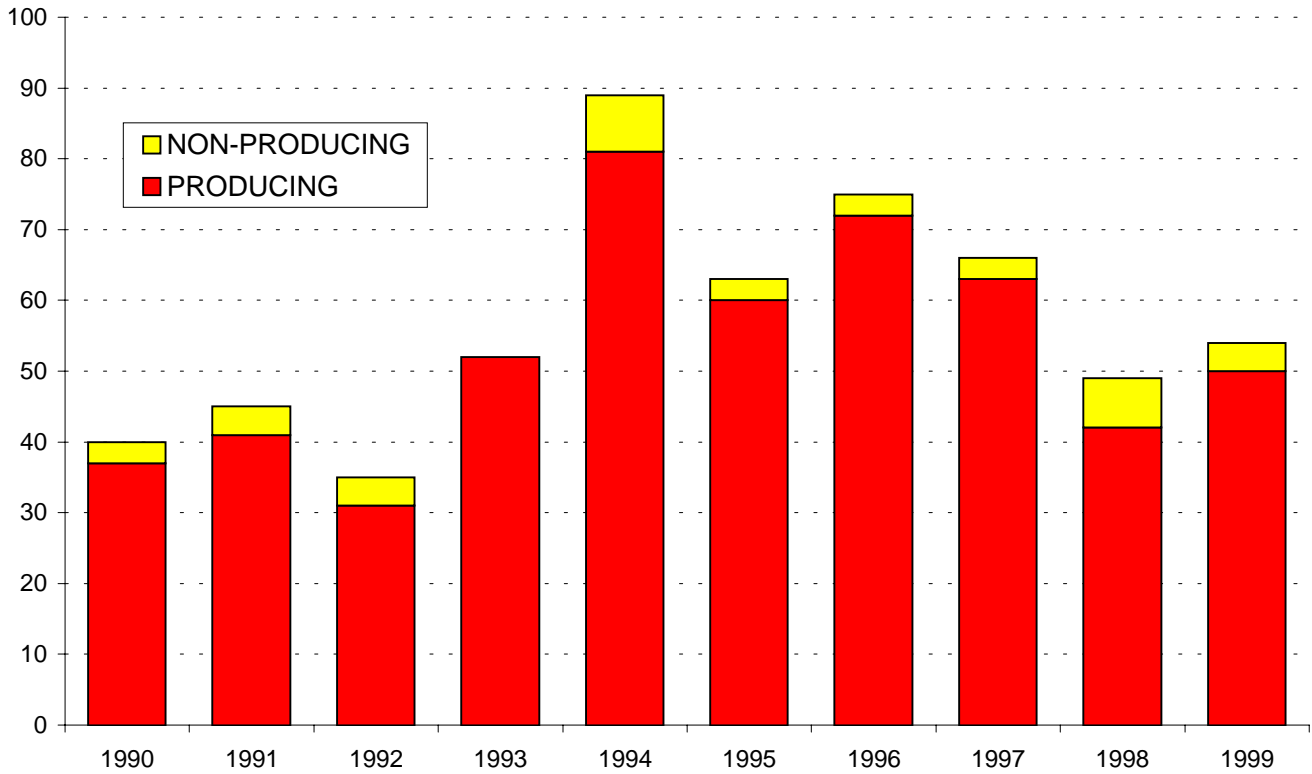
BRITISH COLUMBIA NUMBER OF DISCOVERED GAS POOLS BY DECADE



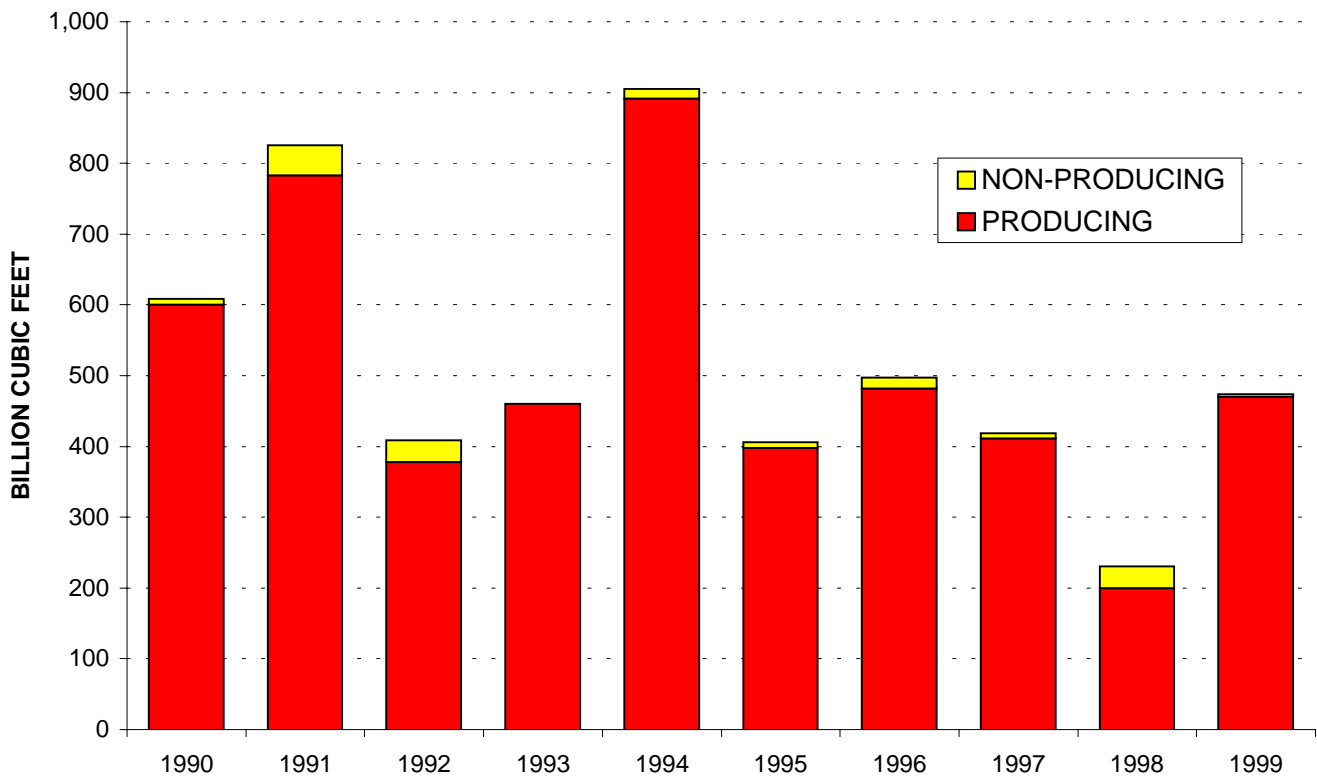
INITIAL MARKETABLE GAS BY DECADE



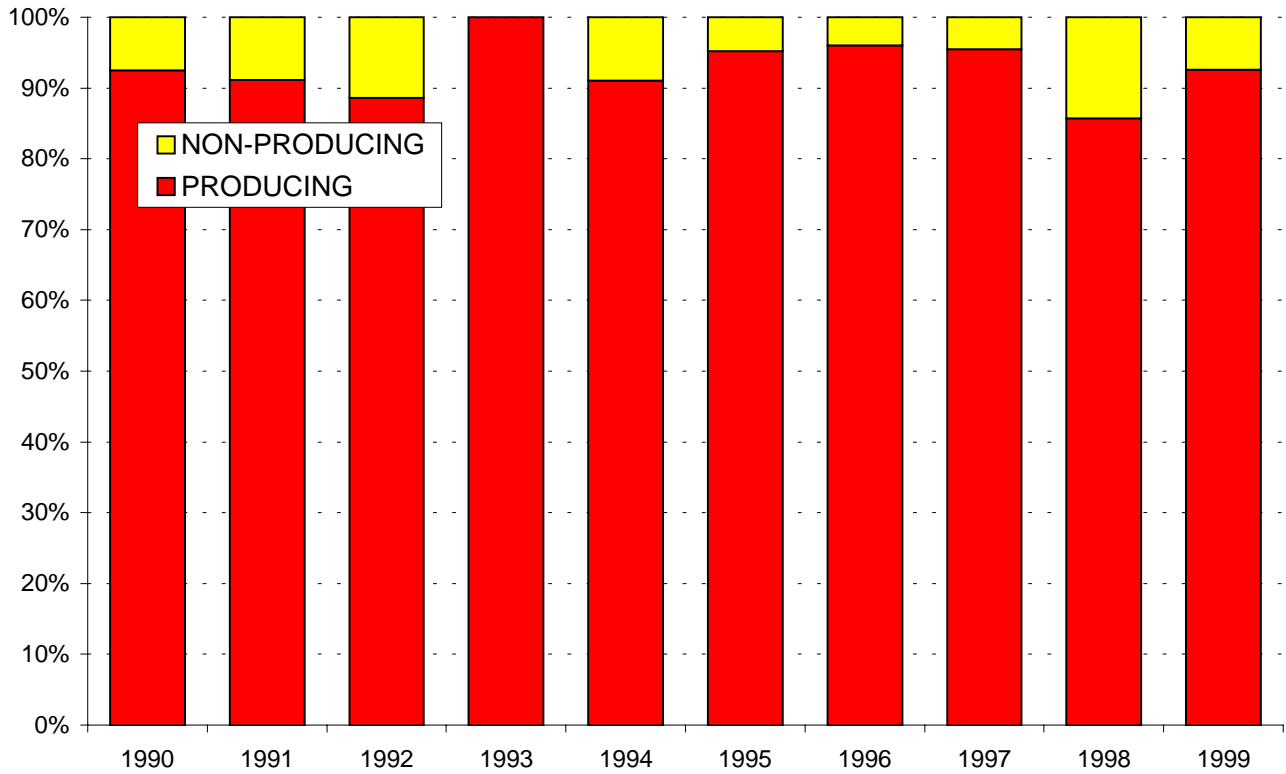
**NORTHEAST BRITISH COLUMBIA NUMBER BY YEAR OF DISCOVERY
PRODUCING / NON-PRODUCING POOLS (DEC. 31, 2001)**



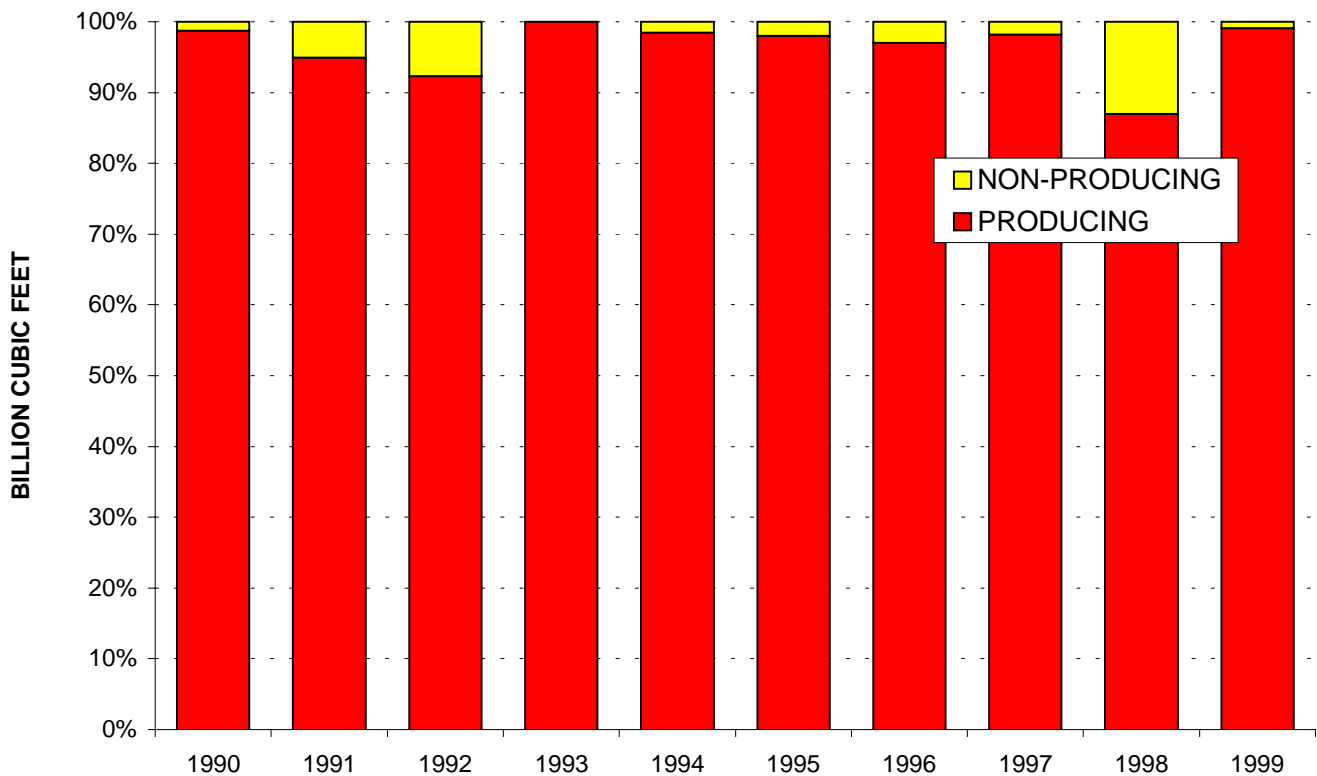
**NORTHEAST BRITISH COLUMBIA MARKETABLE GAS
PRODUCING / NON-PRODUCING POOLS (DEC 31, 2001)**



**NORTHEAST BRITISH COLUMBIA NUMBER BY YEAR OF DISCOVERY
PERCENT PRODUCING / NON-PRODUCING POOLS (DEC. 31, 2001)**

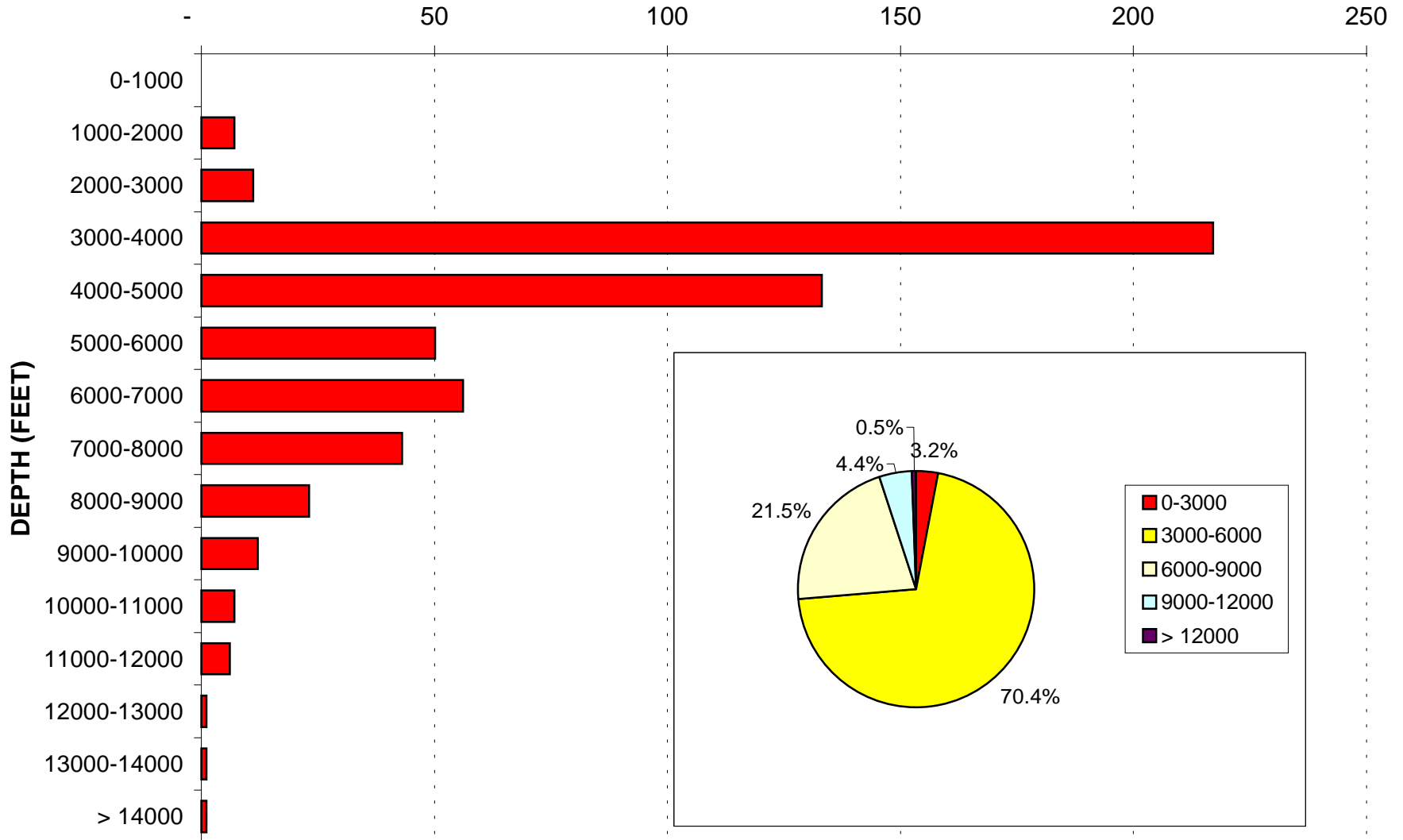


**NORTHEAST BRITISH COLUMBIA MARKETABLE GAS
PERCENT PRODUCING / NON-PRODUCING POOLS (DEC 31, 2001)**



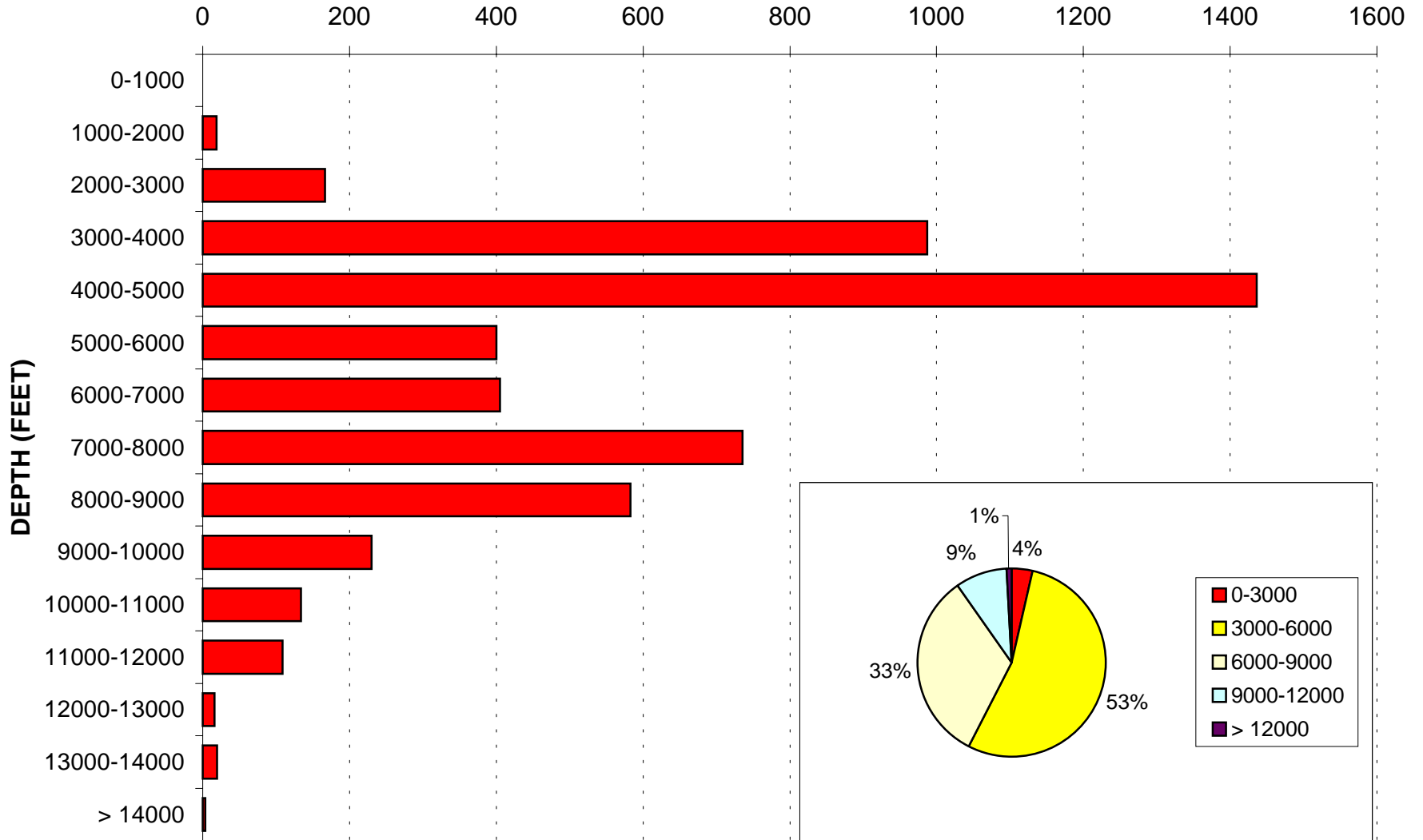
BRITISH COLUMBIA GAS DISCOVERIES - BY DEPTH CLASS

NUMBER OF POOLS



BRITISH COLUMBIA GAS DISCOVERIES - BY DEPTH CLASS

INITIAL MARKETABLE GAS (BILLION CUBIC FEET)



ALBERTA GAS DISCOVERIES - POOL SIZE vs DEPTH

AVERAGE POOL SIZE BY DEPTH CLASS (BCF)

