



**NORTHEAST BRITISH COLUMBIA  
NATURAL GAS  
HISTORICAL DISCOVERY TRENDS  
JANUARY 1990 TO DECEMBER 31, 2002**

**CSPG - CHOA - CWLS**

**2004 Joint Conference**

**Kenneth J. Drummond**

# Northeast British Columbia Natural Gas Discoveries 1990 – 2002

Kenneth J. Drummond  
Drummond Consulting, Calgary, Alberta  
[ken@drummondconsulting.com](mailto:ken@drummondconsulting.com)

In the period 1990-2003, 727 gas pools (non-associated, associated and solution) were discovered with gas-in-place of 11,061 Bcf, and initial marketable gas reserves of 7,249 Bcf. The gas pools discovered in this period represent 45% of the total number of pools discovered and contain 30% of the marketable gas. Non-associated gas accounts for 96% of the initial marketable gas in 88% of the pools.

The largest gas pool discovery for 1990-2002 is Ladyfern Slave Point A discovered in 2000 with initial established marketable gas reserves of 532 Bcf, followed by Helmet North Jean Marie A, discovered in 1990, with initial marketable gas of 338 Bcf. The top 20 pools ranked by marketable gas contain 3,082 Bcf, which is 42.5% of the total discovered in the period. For the top 20 pools 1,536 Bcf (51.3%) has been produced as of December 31, 2002. The largest number of pools, 87, was discovered in 1994. The largest volumes of gas were discovered in the years 1994 and 2000.

The Northern Plains had the largest number of discoveries, 311 pools with 2,670 Bcf of marketable gas, followed by the Peace River Arch, with 237 pools, and 1,186 Bcf. Excluding the Liard Basin which is dominated by, Maxhamish Lake Chinkeh A, with 284 Bcf of marketable gas, the largest average pool size was 34.0 Bcf in the Grizzly Foothills.

Historical trends for Northeast British Columbia gas pools by decade show the mean, median and 95<sup>th</sup> 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 2002, the average pool size is 10.0 Bcf, and the median is 2.8 Bcf. The 95<sup>th</sup> percentile is 35.4 Bcf, that is 5% of the pools discovered are larger than 35.4 Bcf, and the trends suggest the next several years could be very similar.

The pool size distribution shows a total of 66 pools greater than 20 Bcf (9.1% of the total), with 4,581 Bcf (63.2%) of marketable gas. There are 150 pools (20.6%), with less than 1 Bcf of marketable gas. The most commonly occurring pool size class (mode) is the range 2 to 5 Bcf, with 28% of the pools. The largest volume of gas is in the 20 to 50 Bcf range, with 18% of the initial marketable gas.

## References

British Columbia Oil and Gas Commission, 2003, Hydrocarbon and By-Product Reserves in British Columbia, 2002.

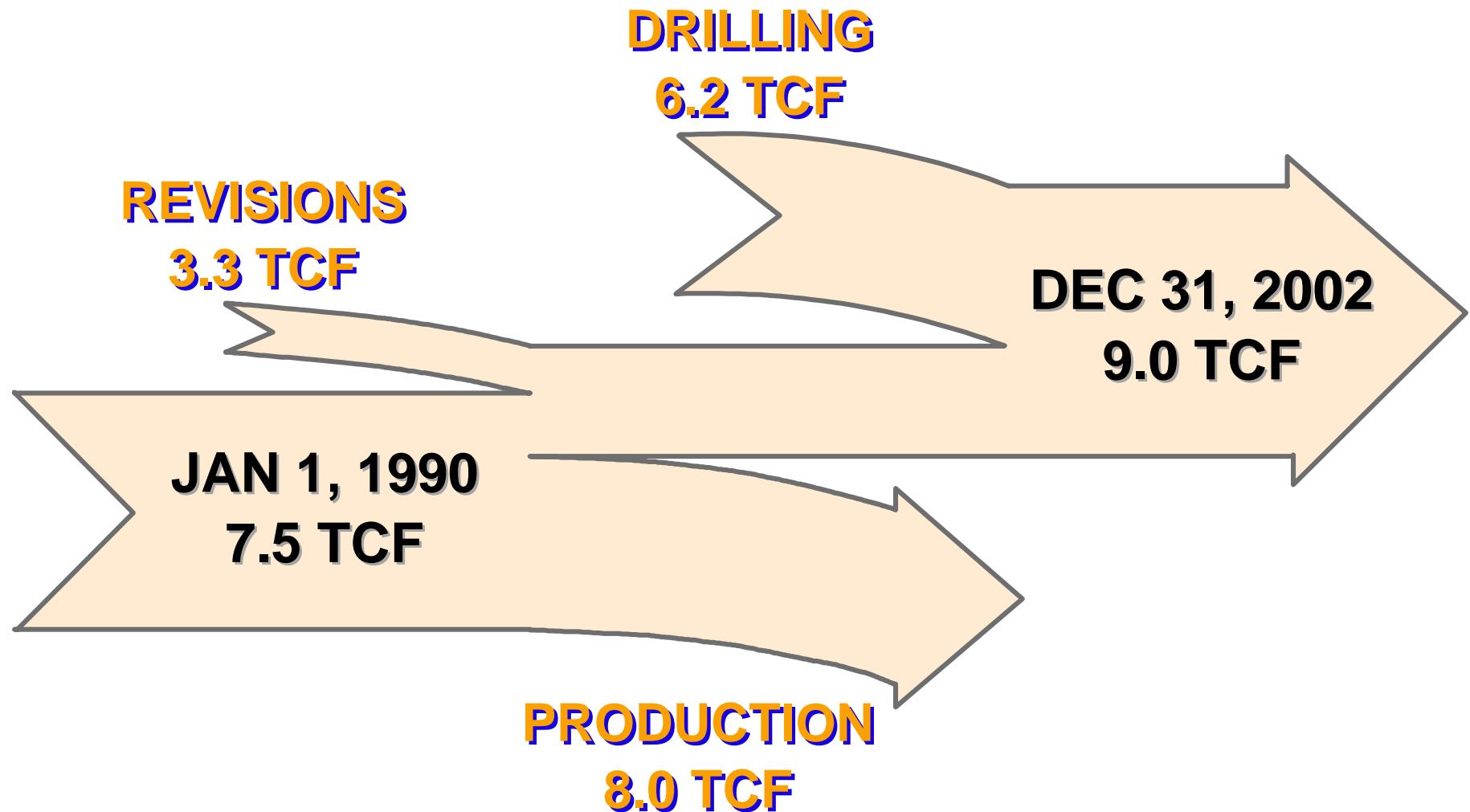
British Columbia Oil and Gas Commission, 2002 Gas Pool Reserves Database.

**NORTHEAST BRITISH COLUMBIA**  
**GAS POOLS DISCOVERED 1990 - 2002**  
(BC OIL GAS COMMISSION December 31, 2002)

Year of first discovery	1990	
Original Gas-in-Place	11,061.4	BCF
Raw Recoverable Gas	8,764.1	BCF
Initial Marketable Gas	7,248.6	BCF
Raw Gas Recovery Factor (% of GIP)	79.2%	
Marketable Gas Recovery Factor (% of GIP)	65.5%	
Largest Pool (Gas-in-Place)	689.9	BCF
Largest Pool (Recoverable)	620.9	BCF
Largest Pool (Marketable)	532.4	BCF
Smallest Pool (Recoverable)	0.003	BCF
Smallest Pool (Marketable)	0.003	BCF
Number of Pools	727	
Average Pool Size (Gas-in-Place)	15.2	BCF
Average Pool Size (Recoverable)	12.1	BCF
Average Pool Size (Marketable)	10.0	BCF
Total Productive Pool Area	992,551	Acres
Largest Productive Pool Area	90,574	Acres
Smallest Productive Pool Area	65	Acres
Average Productive Pool Area	1,674	Acres
Ave. Rec. Mcf/Ac-Ft	460.2	MCF/AC-FT
Maximum Pay	310	Feet
Minimum Pay	1.6	Feet
Average Pay	30.5	Feet
Maximum Porosity	0.265	
Minimum Porosity	0.008	
Average Porosity	0.121	
Maximum Gas Saturation	0.985	
Minimum Gas Saturation	0.300	
Average Gas Saturation	0.750	
Deepest Pool Depth	17,083	Feet
Shallowest Pool Depth	1,020	Feet
Average Depth	5,434	Feet
Maximum Gas Density	1.095	
Minimum Gas Density	0.005	
Average Gas Density	0.668	
Average Pressure	1,884.4	Psi
Average Temperature	144.4	°F
Gas In Place Mcf/Prod. Acre	11,144	MCF/Acre
Rec. Gas Mcf/ Prod. Acre	8,830	MCF/Acre
Average Liquids Recovery	23.0	B/MMCF
Maximum 'Z' Factor	1.219	
Minimum 'Z' Factor	0.563	
Average 'Z' Factor	0.875	

# BRITISH COLUMBIA SUMMARY 1990 - 2002

## REMAINING MARKETABLE GAS RESERVES



GAS POOLS 1990 - 2002 (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	LADYFERN SLAVE POINT A	2000	689.9	620.9	532.4	253.0	279.4	NAS
2	HELMET NORTH JEAN MARIE A	1990	393.7	354.3	336.7	249.0	87.6	NAS
3	JEDNEY BALD/U CHARLIE LAKE A	1998	454.2	403.7	330.7	289.8	40.9	NAS
4	MAXHAMISH LAKE CHINKEH A	1991	422.9	317.1	284.4	81.7	202.7	NAS
5	GRIZZLY SOUTH BALDONNEL B	2000	276.5	248.9	219.6	18.0	201.6	NAS
6	MURRAY BALD/U CHARLIE LAKE A	1994	300.0	270.0	191.4	102.5	88.9	NAS
7	CHINCHAGA RIVER L CHARLIE LAKE/MONTNEY A	1994	157.0	141.3	136.0	29.9	106.2	NAS
8	BUICK CREEK BLUESKY C	1993	178.9	152.1	130.4	86.1	44.4	NAS
9	SIKANNI DEBOLT H	1993	119.3	101.4	100.1	90.2	9.9	NAS
10	RING BLUESKY-GETH-MONTNEY E	1996	112.3	89.9	84.7	0.1	84.6	NAS
11	BRAZION PARDONET-BALDONNEL B	1994	105.0	94.5	80.1	55.6	24.5	NAS
12	SIERRA JEAN MARIE A	1999	104.8	94.4	79.7	8.4	71.3	NAS
13	DAWSON CREEK MONTNEY A	2000	91.4	82.3	79.6	0.8	78.8	NAS
14	BURNT RIVER PARDONET-BALDONNEL A	1994	103.0	92.7	79.5	38.1	41.4	NAS
15	EKWAN JEAN MARIE A	1995	107.6	86.1	76.1	5.6	70.5	NAS
16	SUKUNKA PARDONET-BALDONNEL M	1993	109.4	93.0	74.1	61.2	12.9	NAS
17	MURRAY BALDONNEL E	1997	110.8	99.7	71.2	21.9	49.3	NAS
18	BULLMOOSE WEST PARDONET-BALDONNEL D	1992	96.2	86.6	67.0	45.6	21.3	NAS
19	BULLMOOSE WEST PARDONET-BALDONNEL C	1991	95.9	86.3	65.4	57.9	7.5	NAS
20	BOULDER PARDONET-BALDONNEL B	1994	94.7	75.8	63.0	40.9	22.2	NAS
21	BULLMOOSE BALDONNEL C	1991	115.1	103.6	55.5	3.2	52.3	NAS
22	MURRAY BALDONNEL B	1997	87.1	78.4	55.0	21.2	33.8	NAS
23	SUKUNKA PARDONET-BALDONNEL P	1994	116.1	87.1	53.5	35.0	18.5	NAS
24	SUKUNKA PARDONET-BALDONNEL L	1992	99.4	74.5	50.4	48.1	2.3	NAS
25	LADYFERN SLAVE POINT B	2001	60.1	54.1	47.0	21.1	25.9	NAS
26	SIERRA PINE POINT F	1991	76.0	64.6	46.7	33.5	13.3	NAS
27	BLUEBERRY HALFWAY B	1999	64.1	57.7	45.4	6.8	38.6	NAS
28	AITKEN CREEK NORTH BLUESKY A	1991	50.1	45.1	42.8	28.7	14.1	NAS
29	GRAHAM BALDONNEL D	1993	51.7	46.5	42.3	11.2	31.1	NAS
30	OJAY TAYLOR FLAT C	2001	54.8	49.3	41.6	0.0	41.6	NAS
31	OTHER DEBOLT A-051-H/094-B-10	1997	50.2	45.1	39.0	2.4	36.5	NAS
32	LAPRISE CREEK BALD/U CHARLIE LAKE D	2000	53.6	48.3	38.6	1.2	37.4	NAS
33	STODDART WEST DOIG E	1996	94.8	52.7	37.8	19.5	18.3	ASN
34	BRAZION PARDONET-BALDONNEL A	1991	50.9	45.8	37.7	31.0	6.7	NAS
35	MONIAS HALFWAY T	1999	48.4	43.5	37.4	2.7	34.7	NAS
36	SEXTET SLAVE POINT D	1996	49.4	44.5	36.2	18.9	17.3	NAS
37	GRAHAM BALDONNEL A	1992	79.6	39.8	36.0	24.6	11.4	NAS
38	KAHNTAH RIVER MONTNEY A	1994	38.2	34.4	33.9	19.7	14.3	NAS
39	CHINCHAGA RIVER BLUESKY-GETH-DETRITAL A	1994	44.0	35.2	33.9	20.0	13.9	NAS
40	RIGEL EAST GETHING A	1990	44.3	39.8	33.3	23.5	9.8	ASN
41	SWAN LAKE MONTNEY A	1997	38.3	34.5	32.6	1.1	31.5	NAS
42	PEGGO-PESH JEAN MARIE B	1997	37.7	33.9	32.2	5.3	26.9	NAS
43	OTHER DEBOLT B-085-E/094-G-02	1994	39.3	31.4	31.0	20.7	10.4	NAS
44	KLUA PINE POINT L	1999	47.1	37.6	30.7	2.2	28.5	NAS
45	SUKUNKA PARDONET-BALDONNEL H	1991	65.0	45.5	29.7	6.0	23.7	NAS
46	CLARKE LAKE PINE POINT C	1993	50.2	35.2	28.1	5.7	22.4	NAS
47	HIGHHAT MOUNTAIN PARDONET-BALDONNEL C	1996	51.5	41.2	27.8	2.5	25.3	NAS
48	PICKELL NOTIKEWIN A	1997	37.5	33.7	27.5	10.9	16.6	NAS
49	SIKANNI DEBOLT I	1994	45.0	27.0	26.7	8.7	17.9	NAS
50	BUICK CREEK SLAVE POINT B	2002	33.4	30.1	26.3	5.5	20.8	NAS

**NORTHEAST BRITISH COLUMBIA  
GAS POOLS DISCOVERED 1990 - 2002  
DESCRIPTIVE STATISTICS (as of December 31, 2002)**

	<i>AREA</i>	<i>PAY</i>	<i>POR</i>	<i>SW</i>	<i>SG</i>	<i>PRESS</i>	<i>TEMP</i>
Mean	1,674	30.50	0.121	0.250	0.750	1,884.4	144.4
Median	697	14.10	0.120	0.240	0.760	1,522.5	134.3
Standard Deviation	6,356	45.12	0.050	0.127	0.127	1,072.2	36.5
Sample Variance	40,394,119	2,035.70	0.003	0.016	0.016	1,149,543	1,331.8
Kurtosis	110.97	12.98	-0.467	-0.42	-0.42	3.00	2.64
Skewness	9.96	3.31	0.228	0.47	-0.47	1.65	1.55
Range	90,509	308.40	0.257	0.685	0.685	7,472.5	237.6
Minimum	65	1.60	0.008	0.015	0.300	210.6	55.1
Maximum	90,574	310.00	0.265	0.700	0.985	7,683.1	292.7
Sum	992,551						
Count	593	694	698	699	699	727	727
95th Percentile	3,152	123.2	0.207	0.474	0.920	4,244.5	235.1
75th Percentile	736	30.2	0.157	0.343	0.854	2,304.7	152.3
25th Percentile	652	7.9	0.082	0.147	0.658	1,166.6	125.3
5th Percentile	215	3.6	0.042	0.080	0.526	846.8	105.5

	<i>H2S</i>	<i>CO2</i>	<i>OTHGAS</i>	<i>LIQSREC</i>	<i>CALCSL</i>	<i>C3LOSS</i>	<i>DENSITY</i>
Mean	0.018	0.027	0.06	22.98	0.09	0.03	0.668
Median	0.000	0.013	0.03	22.43	0.07	0.03	0.659
Standard Deviation	0.041	0.039	0.07	20.71	0.07	0.03	0.092
Sample Variance	0.002	0.002	0.01	428.72	0.00	0.00	0.008
Kurtosis	15.70	10.00	7.70	6.71	6.48	6.81	10.60
Skewness	3.60	2.91	2.59	1.81	2.31	1.82	-0.78
Range	0.345	0.290	0.48	164.92	0.47	0.23	1.090
Minimum	0.000	0.000	0.00	0.00	0.01	0.00	0.005
Maximum	0.345	0.290	0.48	164.92	0.48	0.23	1.095
Sum							
Count	727	727	727	727	727	727	688
95th Percentile	0.106	0.116	0.22	57.18	0.23	0.08	0.836
75th Percentile	0.014	0.026	0.06	32.57	0.10	0.05	0.692
25th Percentile	0.000	0.007	0.02	6.03	0.05	0.01	0.624
5th Percentile	0.000	0.001	0.01	0.00	0.03	0.00	0.574

	<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	0.875	15.215	12.055	9.971	0.761	0.638	5,434.3
Median	0.870	4.537	3.301	2.792	0.800	0.691	4,626.7
Standard Deviation	0.055	44.178	38.455	32.836	0.204	0.184	2,258.4
Sample Variance	0.003	1,951.691	1,478.816	1,078.194	0.042	0.034	5,100,152
Kurtosis	6.674	108.588	119.078	123.514	3.91	2.34	3.37
Skewness	0.044	9.212	9.662	9.926	-2.10	-1.61	1.56
Range	0.656	689.842	620.931	532.386	0.899	0.883	16,062.6
Minimum	0.563	0.085	0.003	0.003	0.007	0.006	1,020.4
Maximum	1.219	689.927	620.935	532.389	0.906	0.889	17,083.0
Sum		11,061.36	8,764.14	7,248.59			
Count	689	727	727	727	727	727	726
95th Percentile	0.958	51.31	42.93	35.41	0.900	0.840	10,016.5
75th Percentile	0.898	11.36	8.28	7.05	0.900	0.757	6,549.9
25th Percentile	0.852	2.20	1.53	1.27	0.800	0.602	3,855.4
5th Percentile	0.795	0.62	0.32	0.27	0.250	0.201	3,355.3

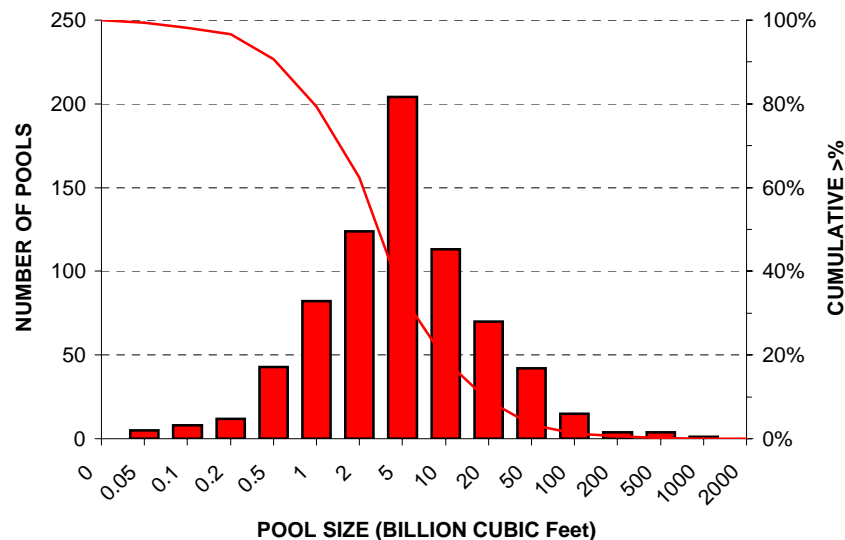
## NORTHEAST BRITISH COLUMBIA GAS POOLS DISCOVERED 1990 - 2002

### POOL SIZE DISTRIBUTION INITIAL MARKETABLE GAS (Billion Cubic Feet)

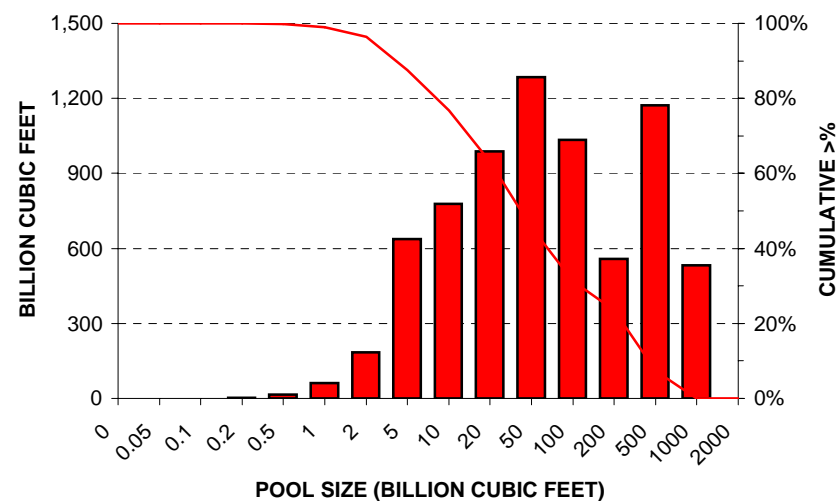
Size Bcf	No. of Pools	IMG Bcf	% of Pools	Cum % Pools	% of IMG	Cum % IMG
0	0	0.0	0.0%	100.0%	0.0%	100.0%
0.05	5	0.2	0.7%	99.3%	0.0%	100.0%
0.1	8	0.5	1.1%	98.2%	0.0%	100.0%
0.2	12	1.9	1.7%	96.6%	0.0%	100.0%
0.5	43	14.3	5.9%	90.6%	0.2%	99.8%
1	82	62.1	11.3%	79.4%	0.9%	98.9%
2	124	185.0	17.1%	62.3%	2.6%	96.4%
5	204	638.2	28.1%	34.3%	8.8%	87.6%
10	113	778.1	15.5%	18.7%	10.7%	76.8%
20	70	987.7	9.6%	9.1%	13.6%	63.2%
50	42	1,284.1	5.8%	3.3%	17.7%	45.5%
100	15	1,034.9	2.1%	1.2%	14.3%	31.2%
200	4	557.9	0.6%	0.7%	7.7%	23.5%
500	4	1,171.3	0.6%	0.1%	16.2%	7.3%
1000	1	532.4	0.1%	0.0%	7.3%	0.0%
2000	0	0.0	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>727</b>	<b>7,248.6</b>				

Total Number of Pools	727
Initial Marketable Gas	7,249
Largest Pool	532
Mean Pool Size	10.0
Median Pool Size	2.8
95th Percentile	35.4
75th Percentile	7.0
25th Percentile	1.3

### POOL SIZE DISTRIBUTION - NUMBER



### POOL SIZE DISTRIBUTION MARKETABLE GAS



## NORTHEAST BRITISH COLUMBIA GAS POOLS DISCOVERED 1990 - 2002

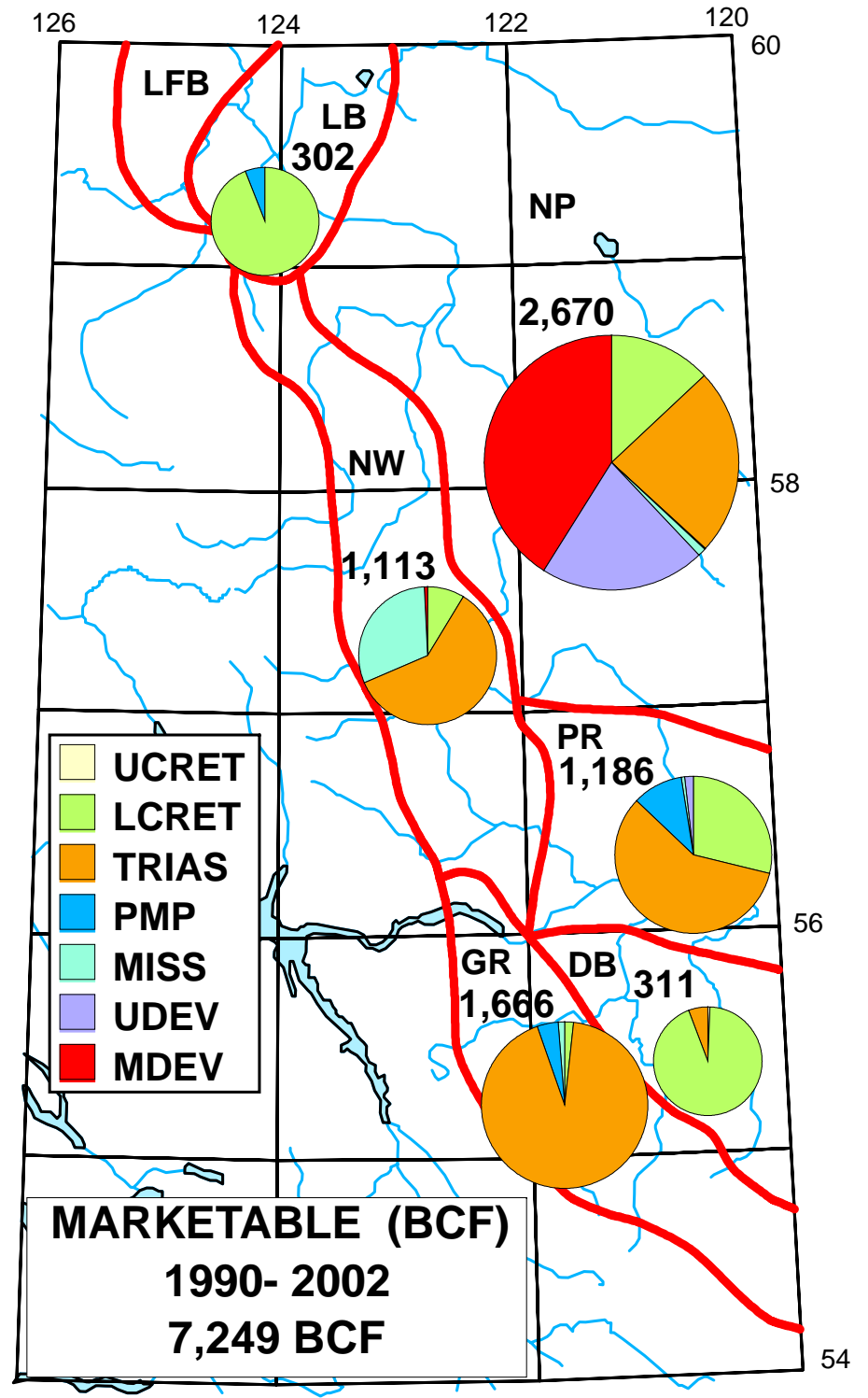
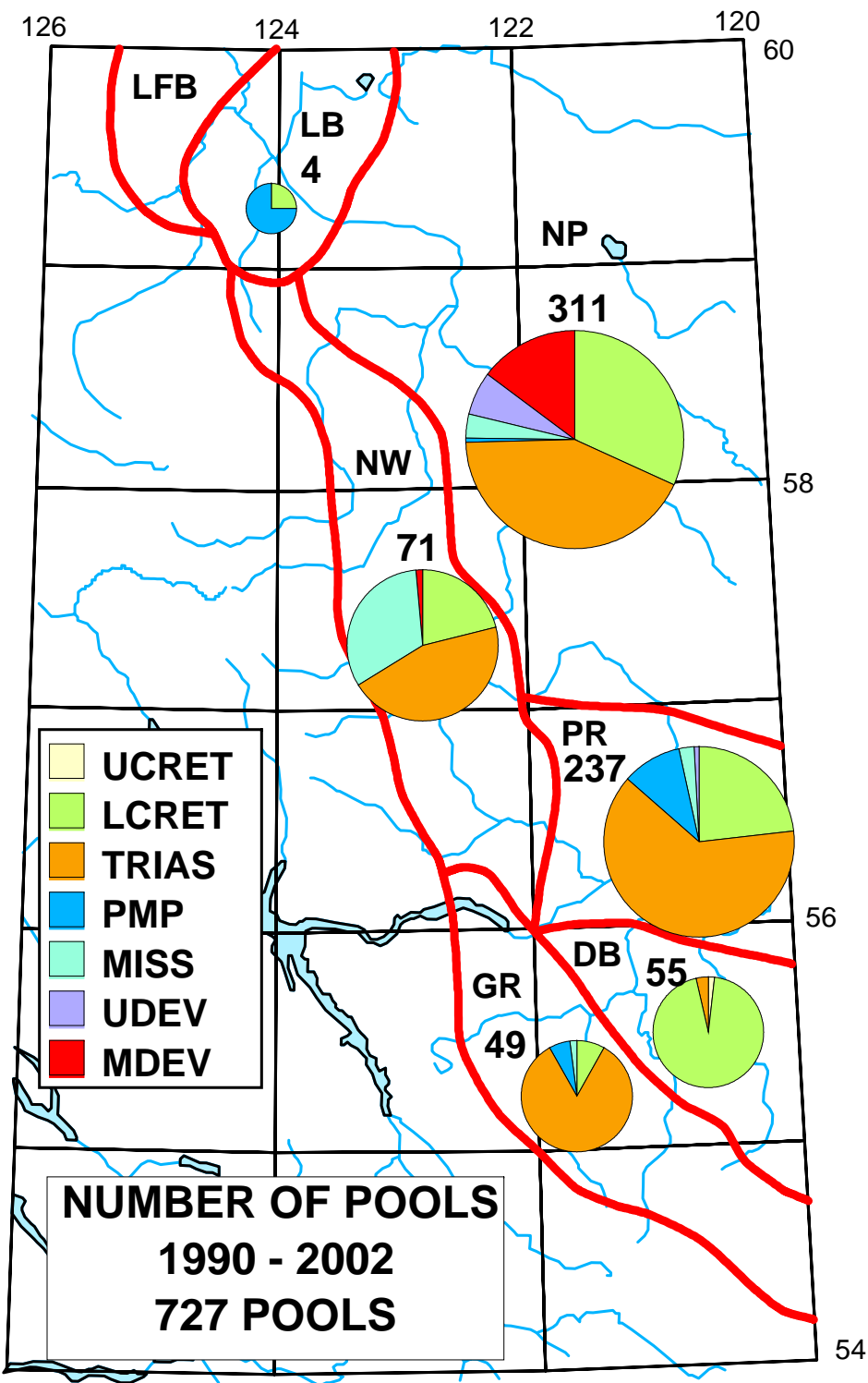
### SUMMARY OF H2S CONTENT

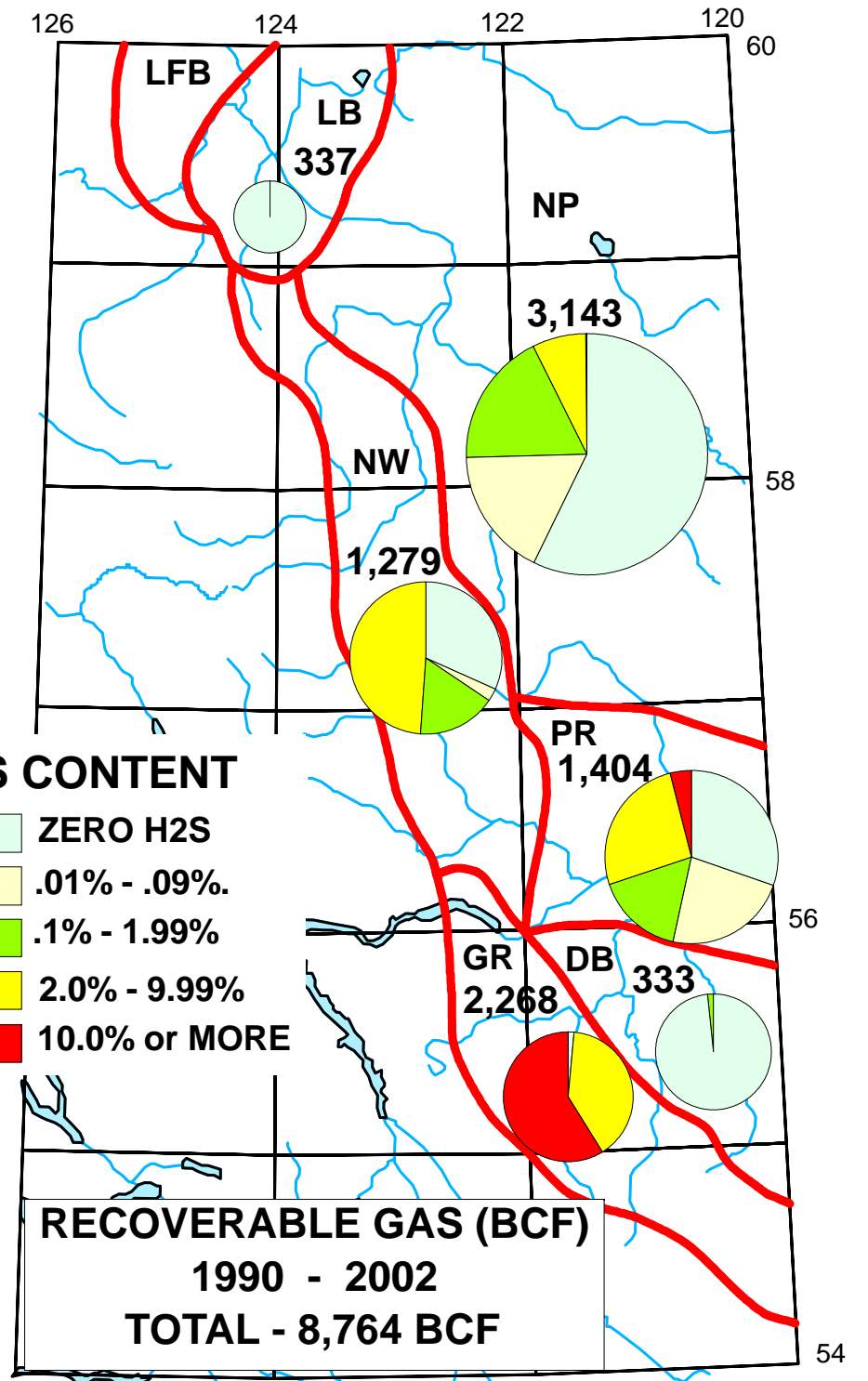
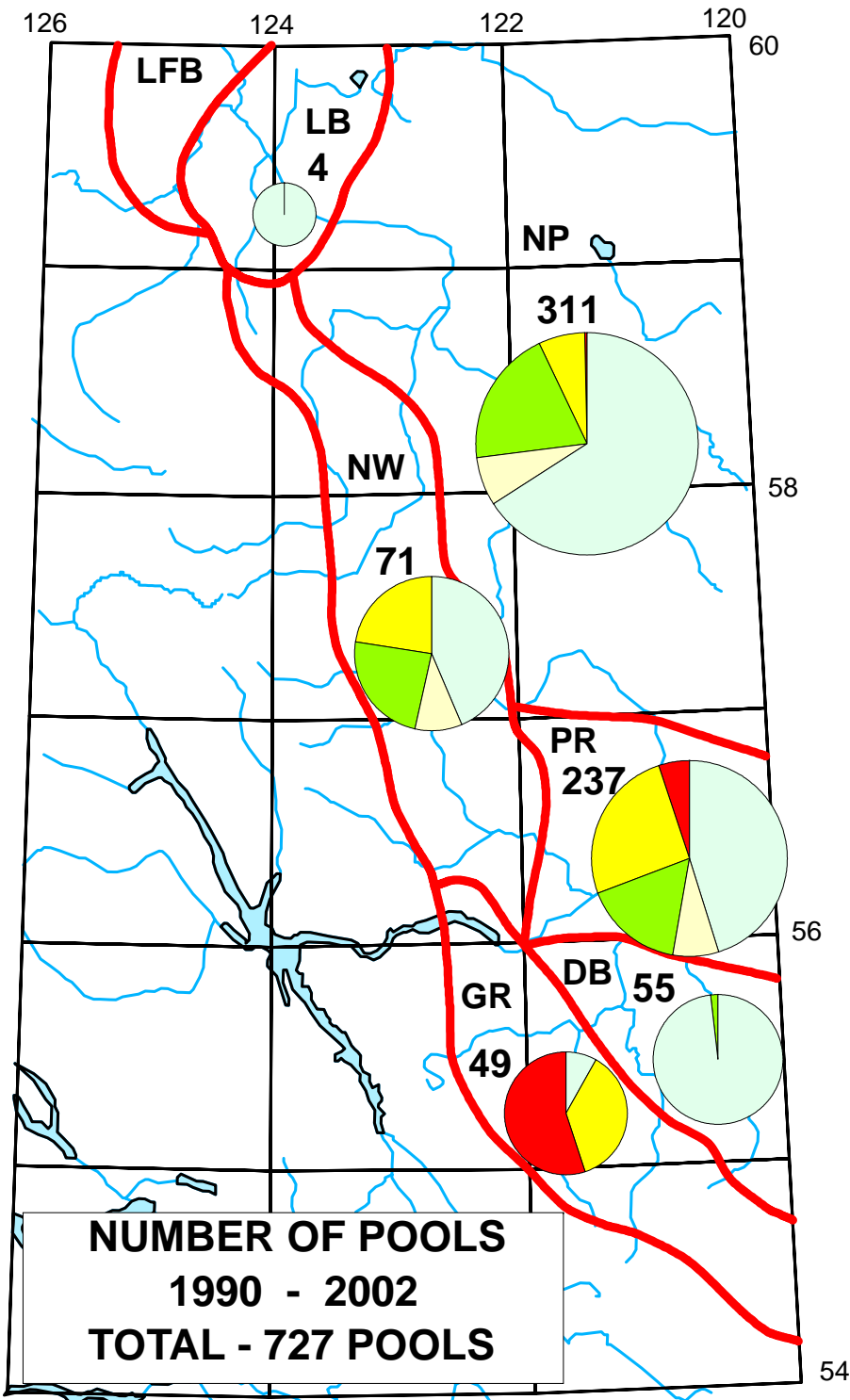
CODE	% H2S	POOLS	RAW GAS BCF	% POOLS	% RAW GAS
0	0	312	2,639.4	54.3%	31.6%
1	.01 - .09%	37	1,219.2	6.4%	14.6%
2	.1 - 1.99%	94	1,122.6	16.3%	13.4%
3	2.0 - 9.99%	86	1,756.9	15.0%	21.0%
4	10.0 - 19.99%	33	1,235.0	5.7%	14.8%
5	20.0 - 29.99%	5	261.8	0.9%	3.1%
6	30.0% or More	1	46.7	0.2%	0.6%
	TOTAL	568	8,281.6	98.8%	99.0%

### SUMMARY OF CO2 CONTENT

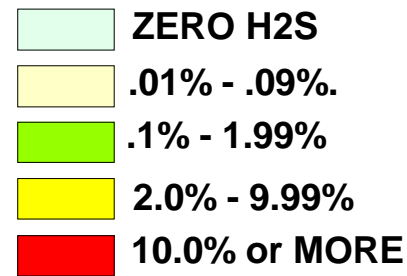
CODE	% CO2	POOLS	RAW GAS BCF	% POOLS	% RAW GAS
0	0	6	33.1	1.1%	0.4%
1	.01 - .09%	0	0.0	0.0%	0.0%
2	.1 - 1.99%	348	4,009.5	66.5%	50.6%
3	2.0 - 9.99%	132	2,256.0	25.2%	28.5%
4	10.0 - 19.99%	37	1,618.4	7.1%	20.4%
	TOTAL	523	7,917.0	100.0%	100.0%
	H2S > 10%	39	1,543.5	6.8%	18.5%







**H2S CONTENT**



**DISTRIBUTION OF NATURAL GAS (BCF) BY STRUCTURAL AREA  
NE BRITISH COLUMBIA - DISCOVERED 1990 -2002**

AREA	NUMBER	GAS-IN-PLACE	RECOVERABLE	MARKETABLE
DEEP BASIN	55	406.2	332.6	311.1
PEACE RIVER ARCH	237	1,870.7	1,403.9	1,185.8
NORTHERN PLAINS	311	3,938.6	3,143.4	2,670.2
LIARD BASIN	4	445.3	337.3	302.5
GRIZZLY FOOTHILLS	49	2,708.9	2,267.8	1,665.9
NORTHWEST FOOTHILLS	71	1,691.6	1,279.1	1,113.1
<b>TOTAL</b>	<b>727</b>	<b>11,061.4</b>	<b>8,764.1</b>	<b>7,248.6</b>

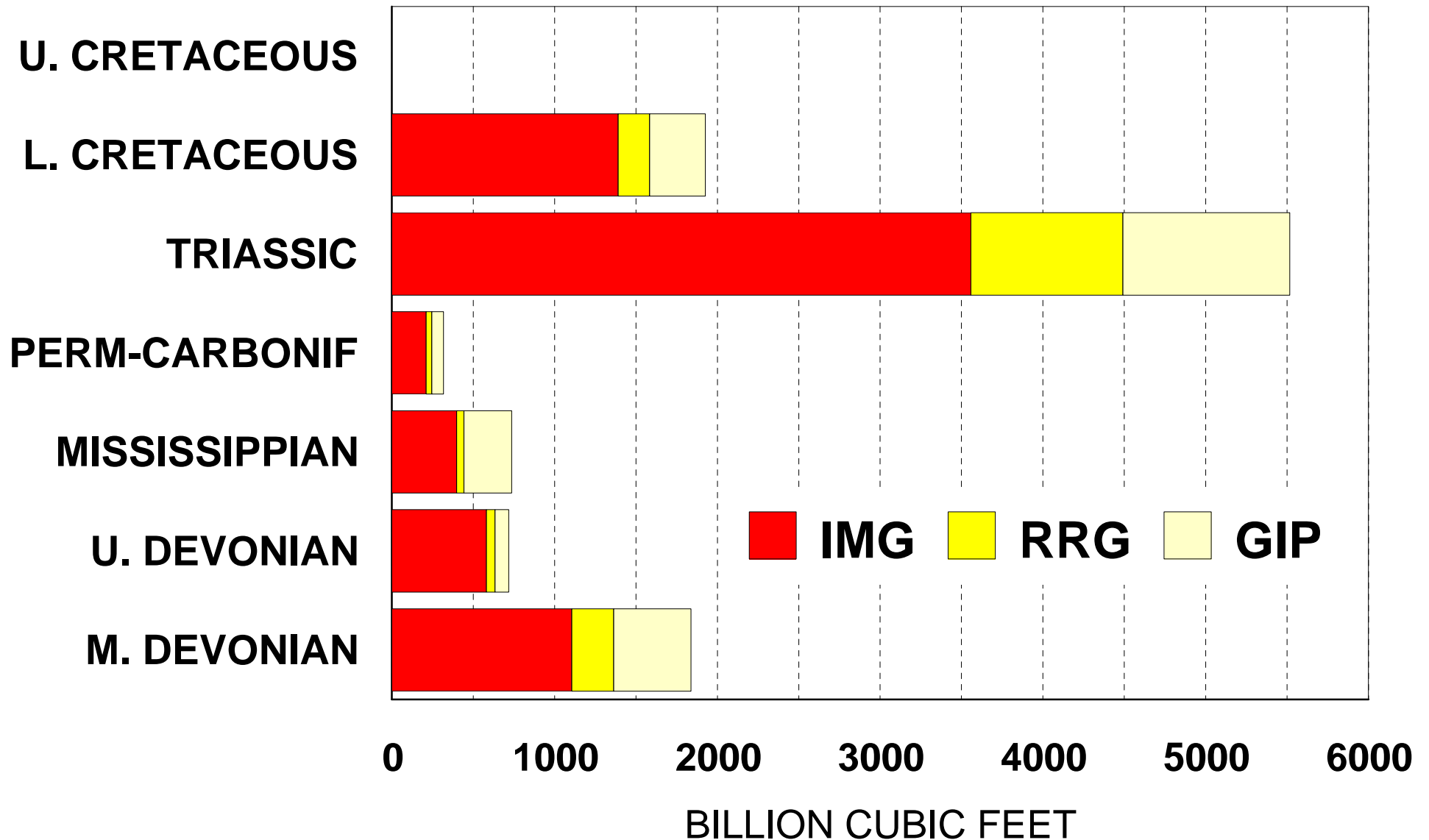
**PERCENTAGE DISTRIBUTION**

AREA	NUMBER	GAS-IN-PLACE	RECOVERABLE	MARKETABLE
DEEP BASIN	7.6%	3.7%	3.8%	4.3%
PEACE RIVER ARCH	32.6%	16.9%	16.0%	16.4%
NORTHERN PLAINS	42.8%	35.6%	35.9%	36.8%
LIARD BASIN	0.6%	4.0%	3.8%	4.2%
GRIZZLY FOOTHILLS	6.7%	24.5%	25.9%	23.0%
NORTHWEST FOOTHILLS	9.8%	15.3%	14.6%	15.4%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

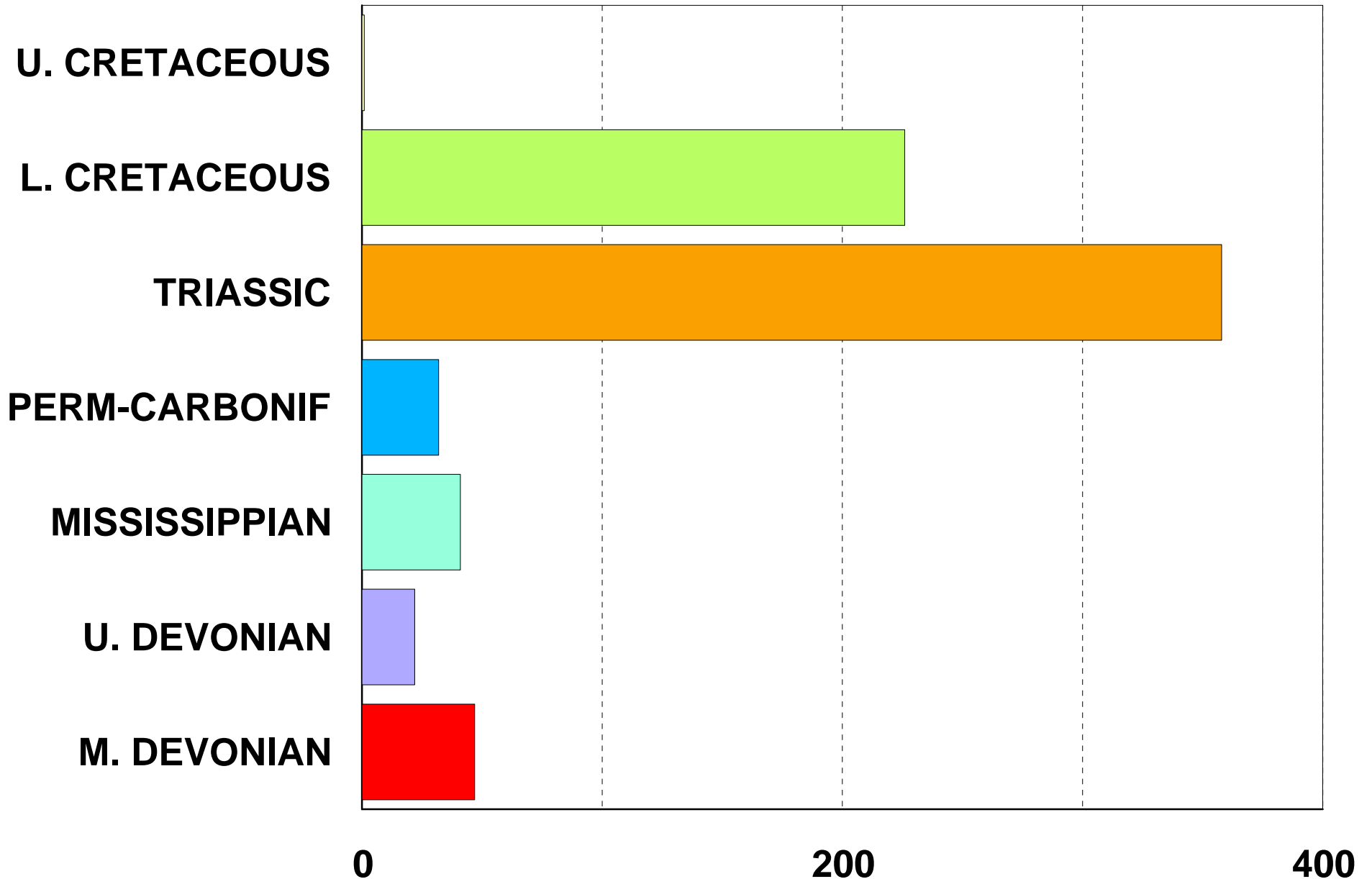
**AVERAGE SIZE (BCF)**

AREA	NUMBER	GAS-IN-PLACE	RECOVERABLE	MARKETABLE
DEEP BASIN	55	7.4	6.0	5.7
PEACE RIVER ARCH	237	7.9	5.9	5.0
NORTHERN PLAINS	311	12.7	10.1	8.6
LIARD BASIN	4	111.3	84.3	75.6
GRIZZLY FOOTHILLS	49	55.3	46.3	34.0
NORTHWEST FOOTHILLS	71	23.8	18.0	15.7
<b>TOTAL</b>	<b>727</b>	<b>15.2</b>	<b>12.1</b>	<b>10.0</b>

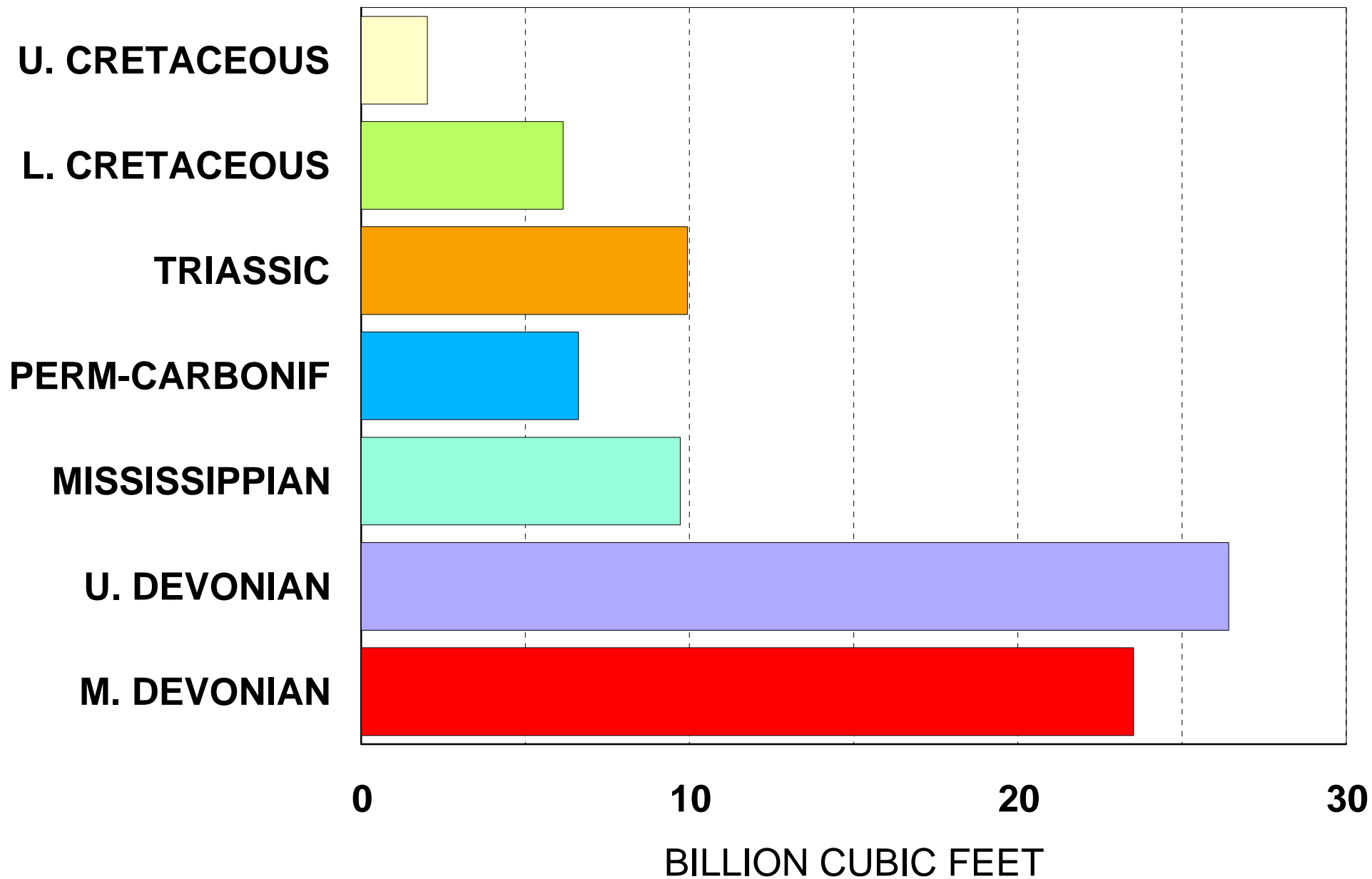
# N.E. BRITISH COLUMBIA 1990 - 2002 GAS BY STRATIGRAPHIC HORIZON



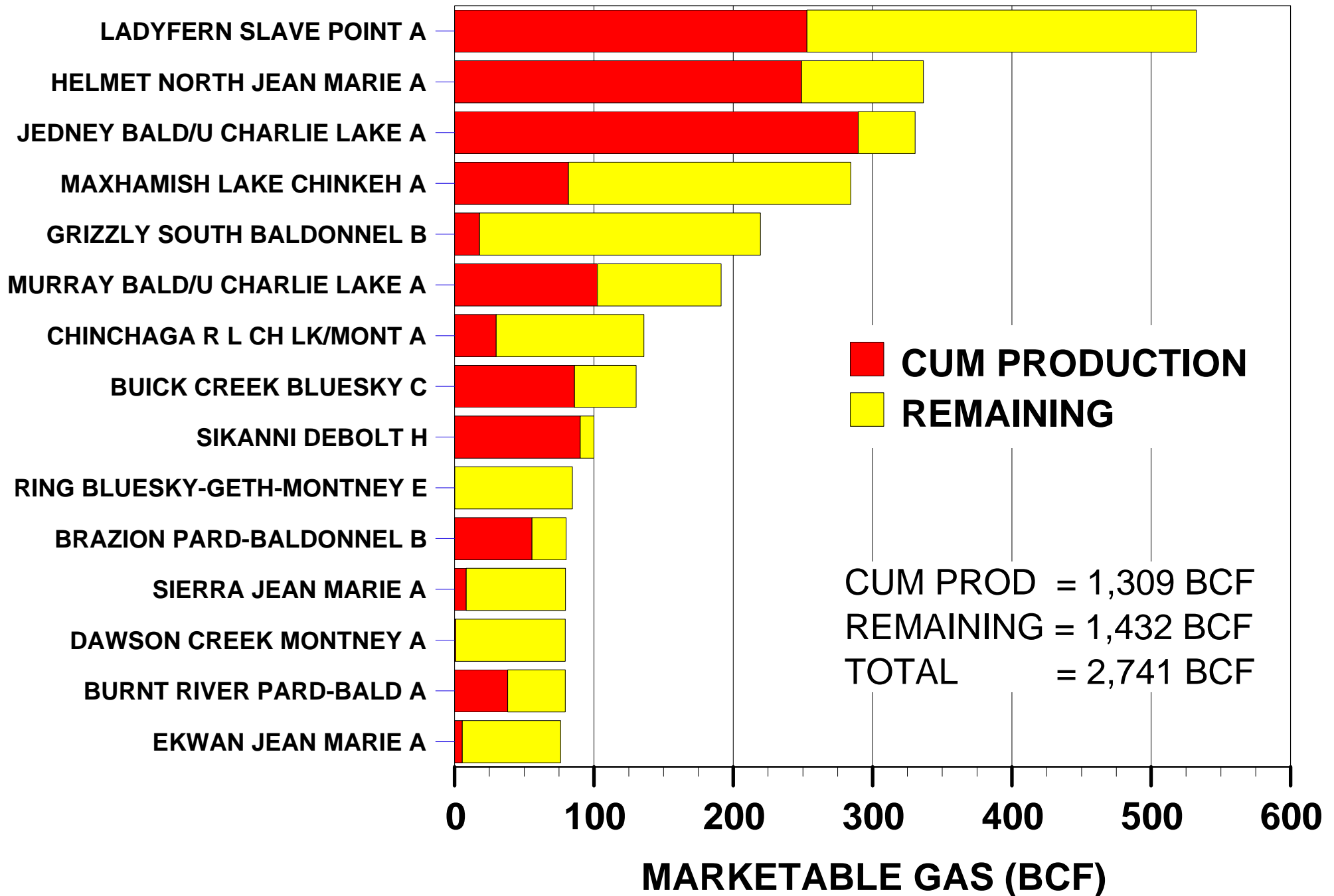
# N.E. BRITISH COLUMBIA 1990 - 2002 NUMBER BY STRATIGRAPHIC HORIZON



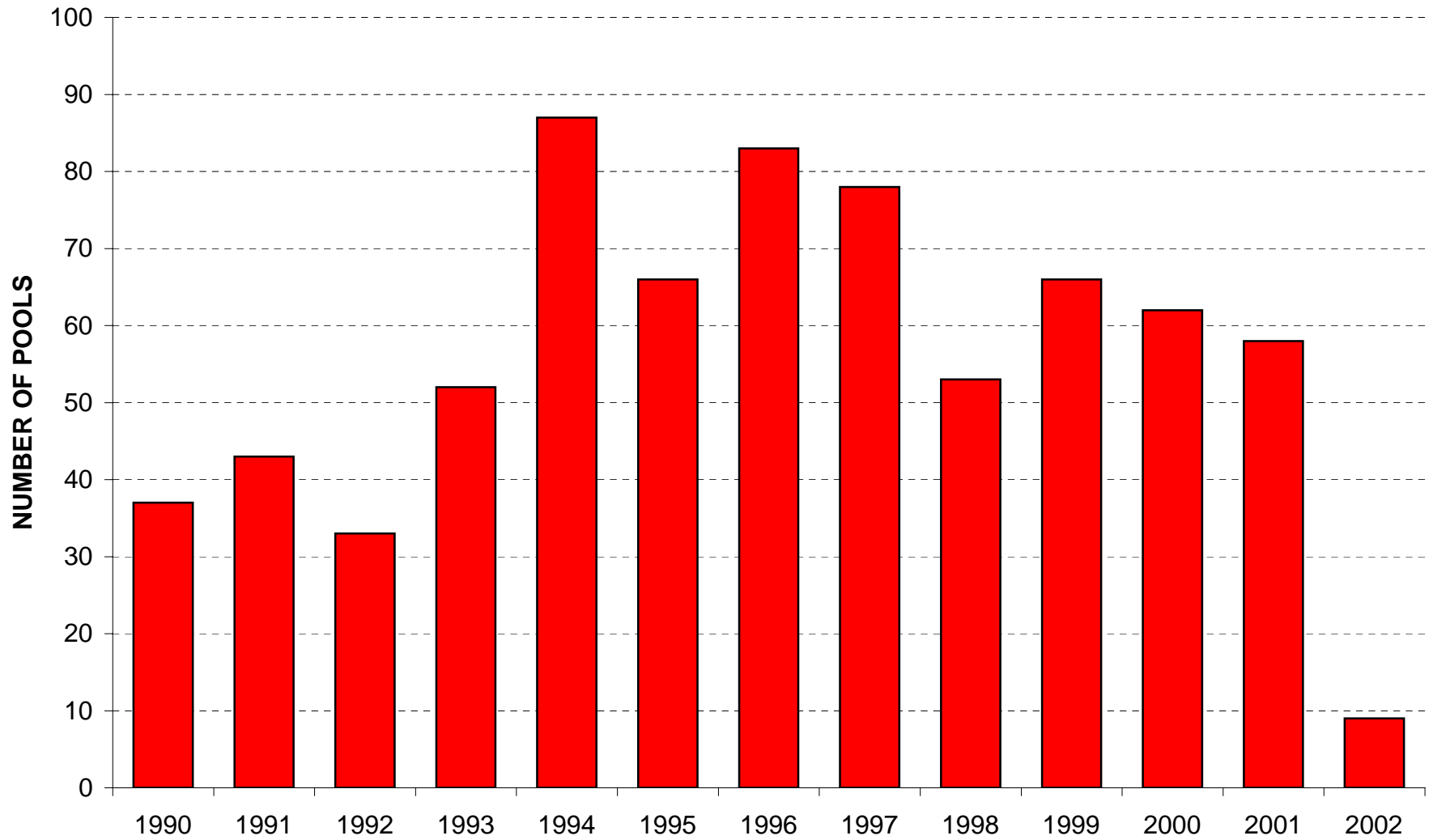
# N.E. BRITISH COLUMBIA 1990 - 2002 AVERAGE SIZE (MARKETABLE) BY HORIZON



# B.C. - TOP 15 GAS POOLS 1990 - 2002

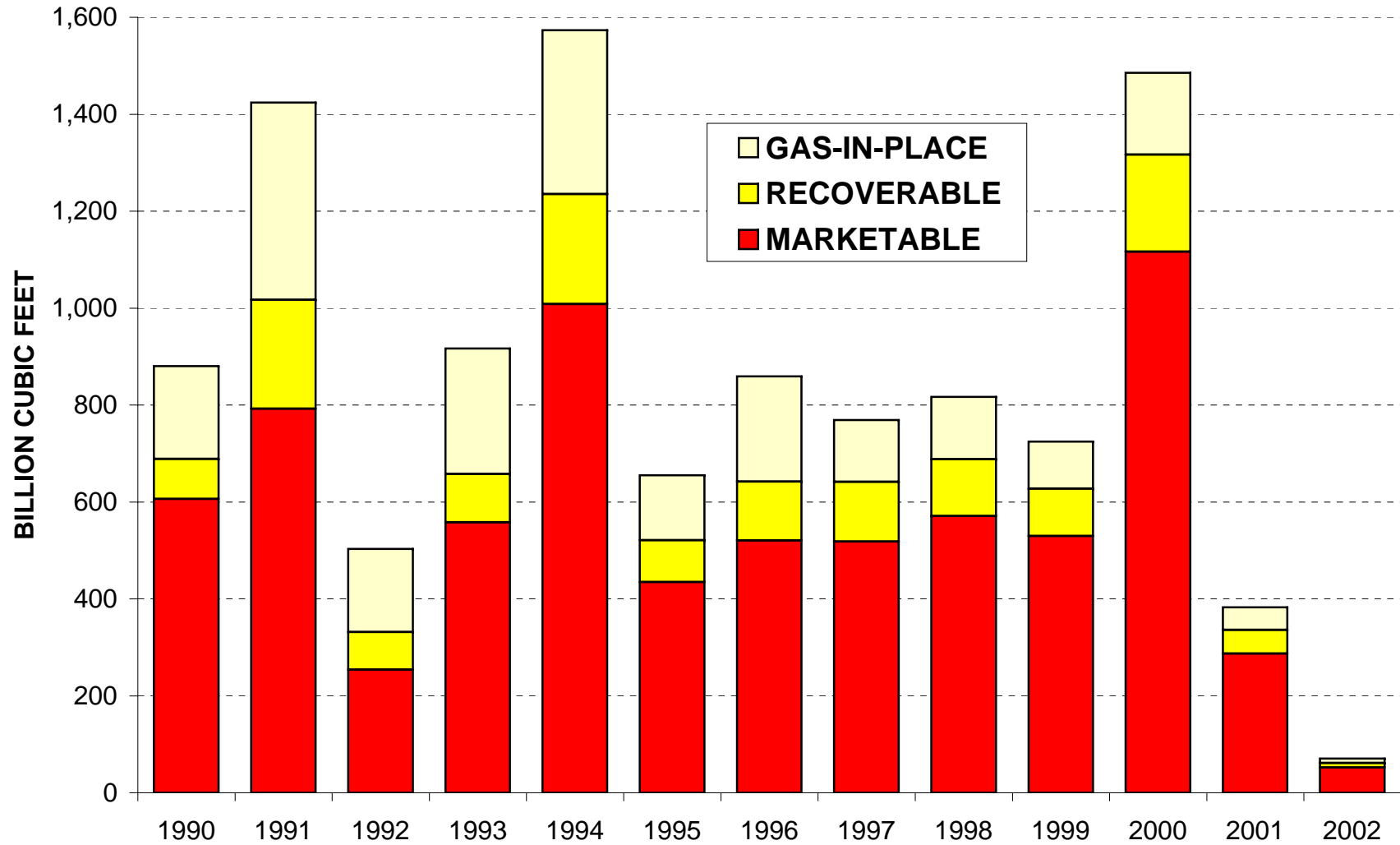


# NUMBER OF GAS POOLS BY YEAR OF DISCOVERY

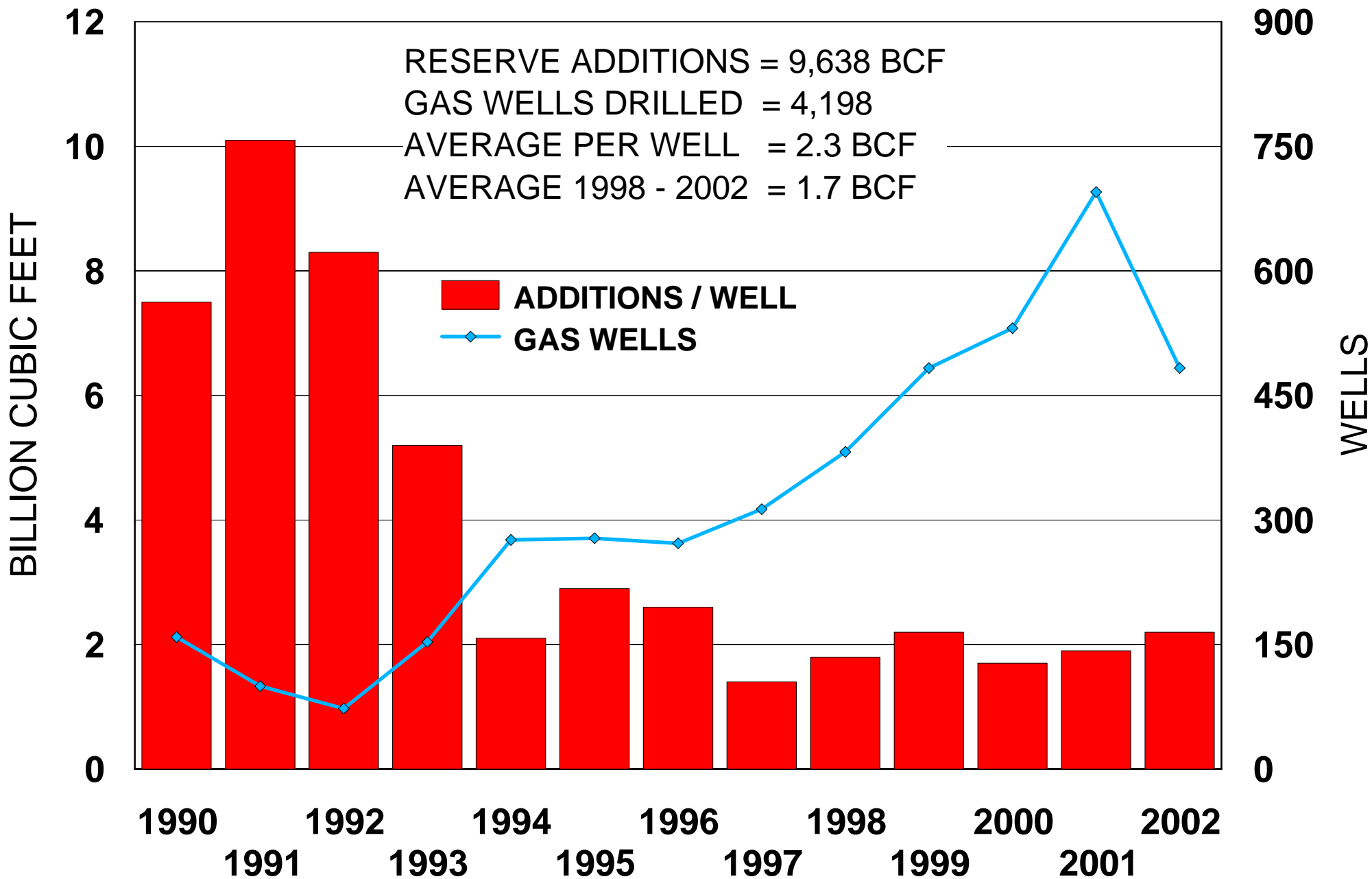




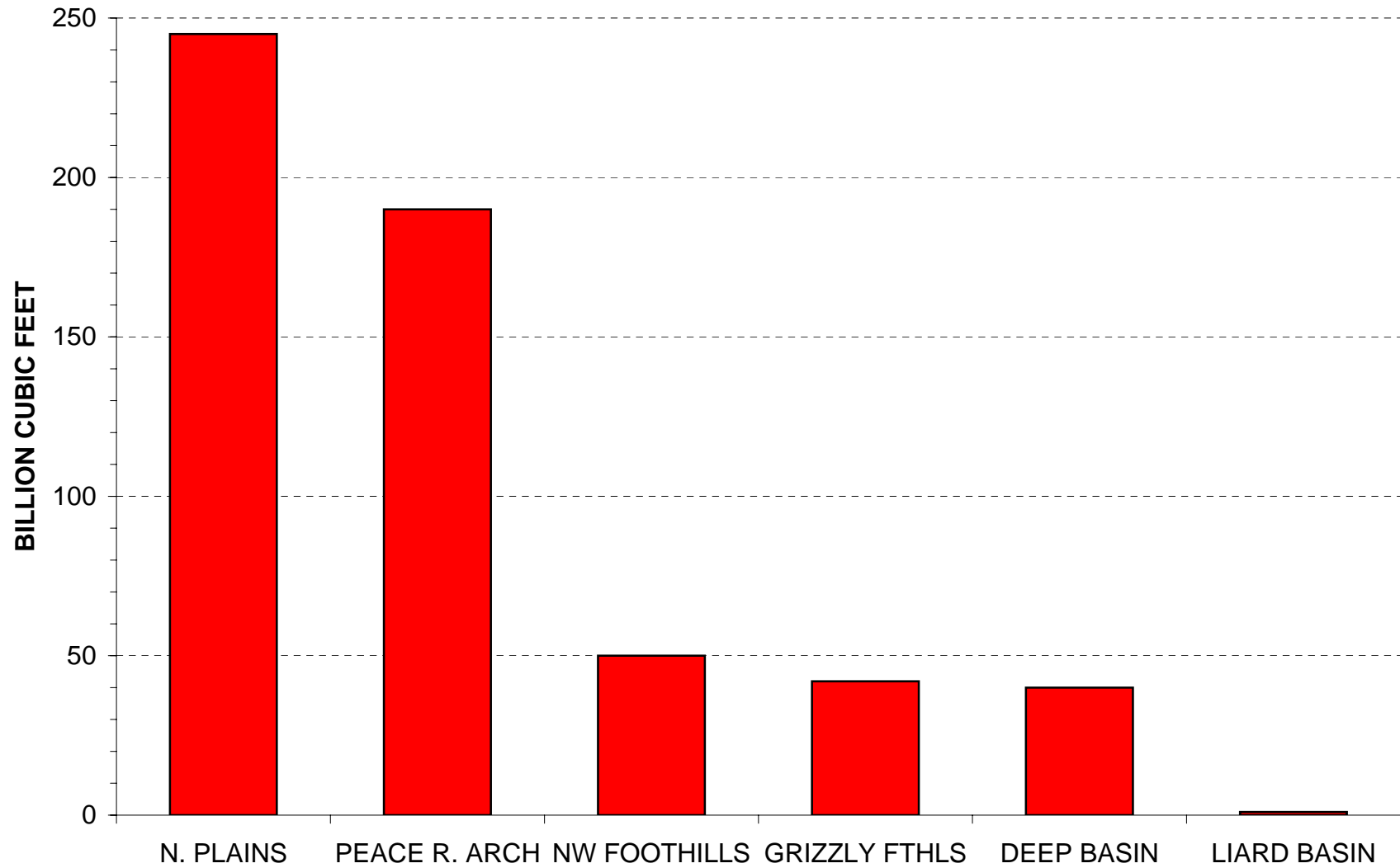
# GAS VOLUMES BY YEAR OF DISCOVERY



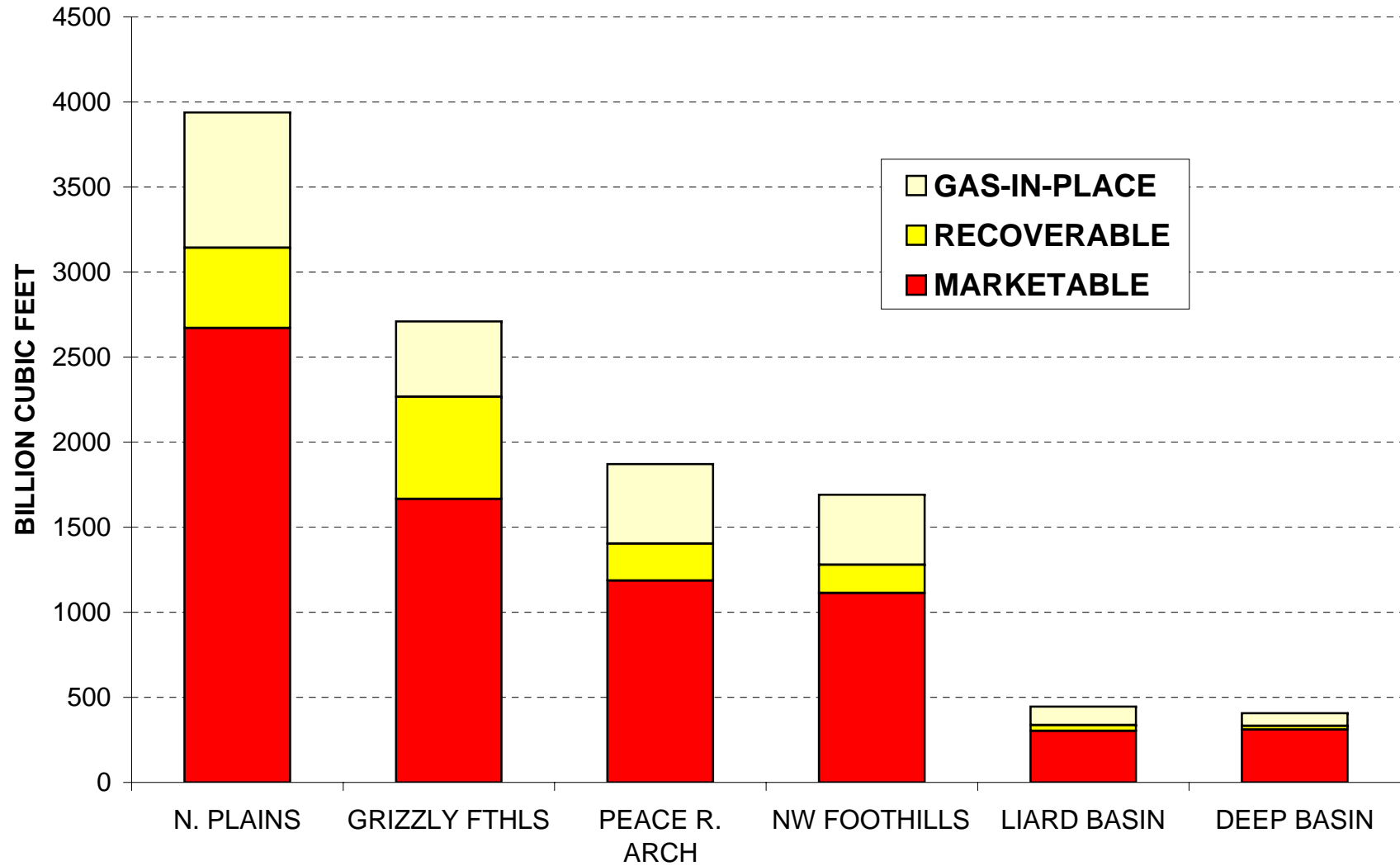
# NORTHEAST BRITISH COLUMBIA - MARKETABLE GAS RESERVE ADDITIONS PER GAS WELL DRILLED



## NUMBER OF GAS POOLS BY STRUCTURAL AREA 1990 - 2002

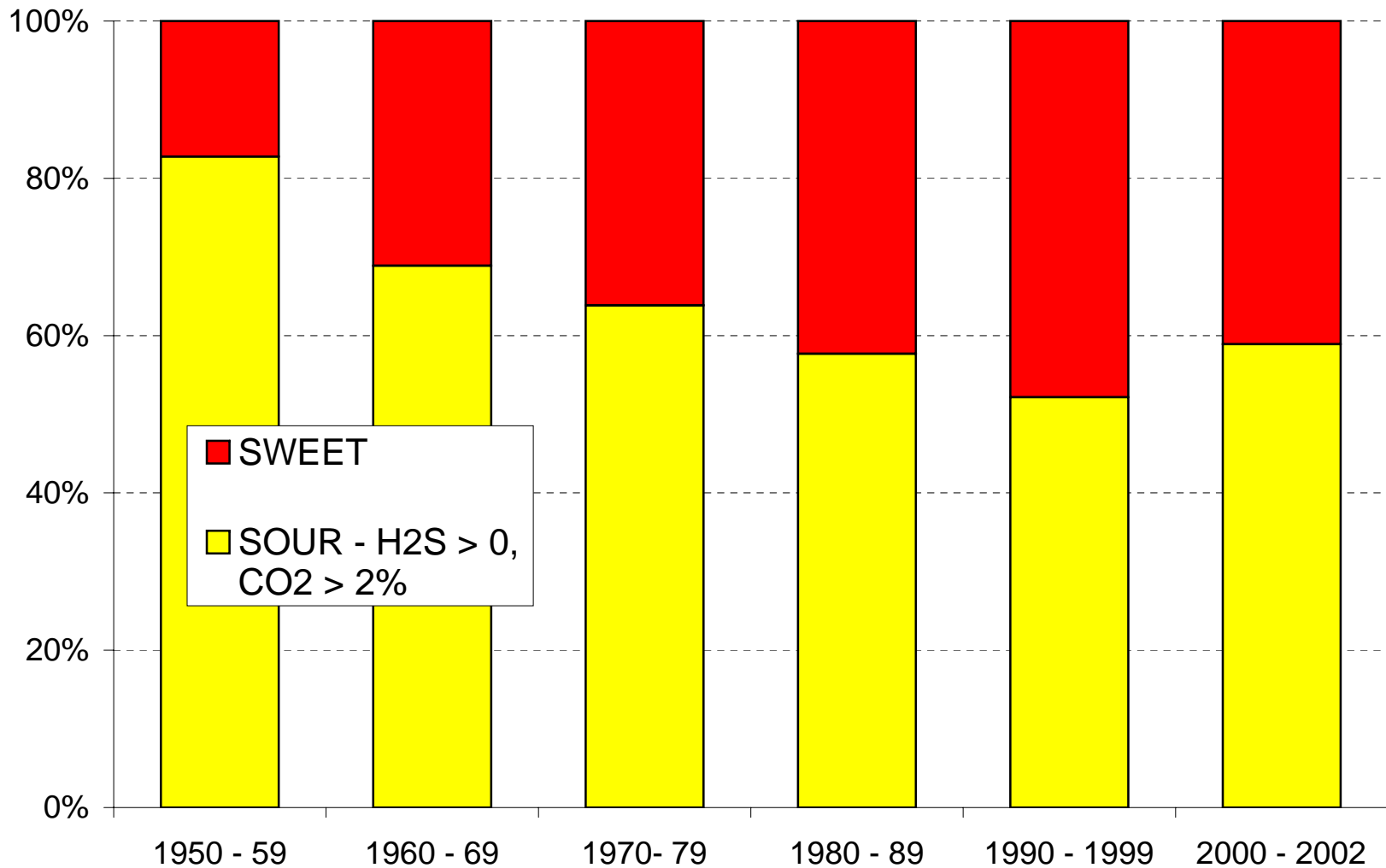


## GAS DISCOVERED BY STRUCTURAL AREA 1990 - 2002



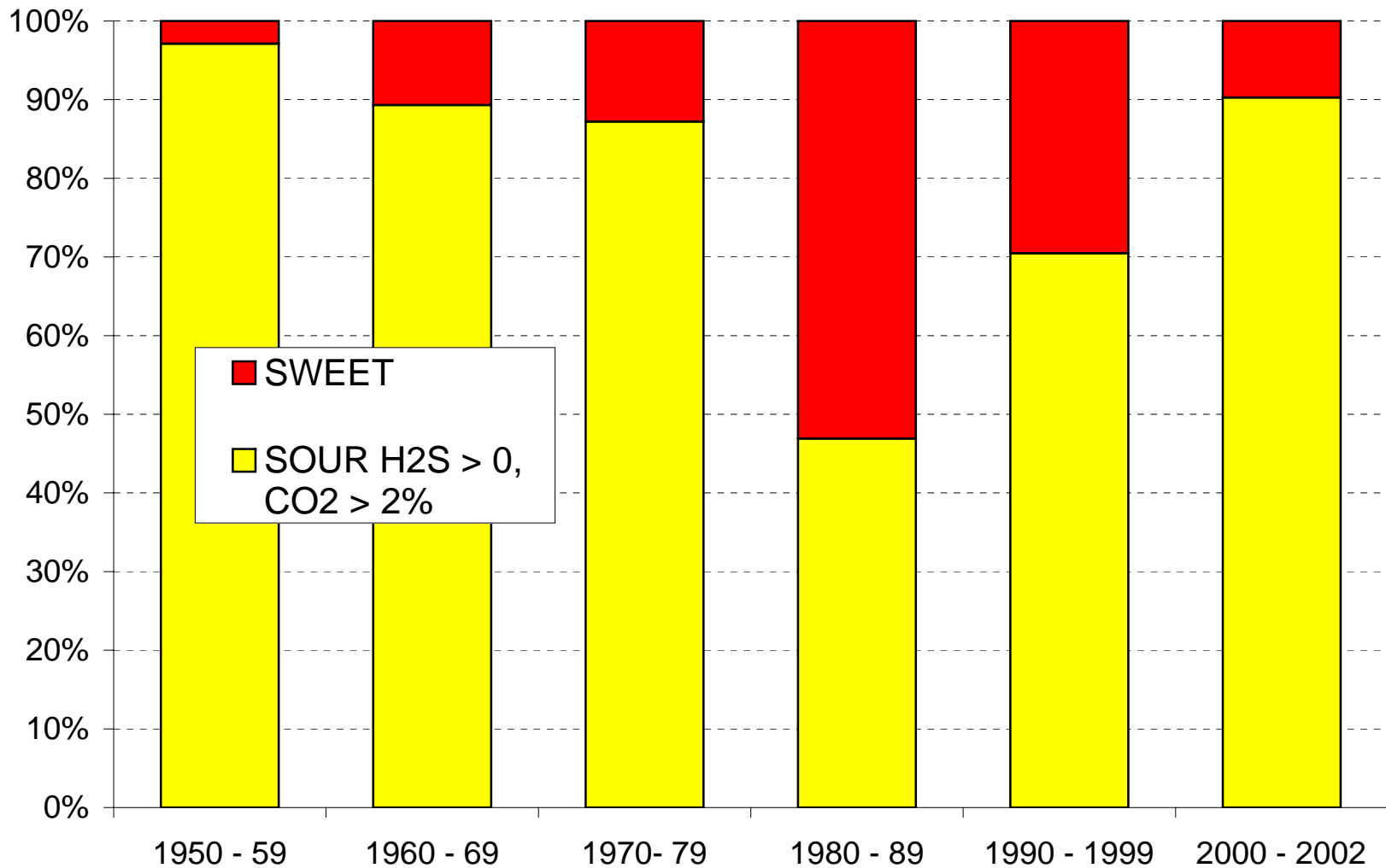
# BRITISH COLUMBIA GAS POOLS BY DECADE

## SWEET vs SOUR - NUMBER OF POOLS

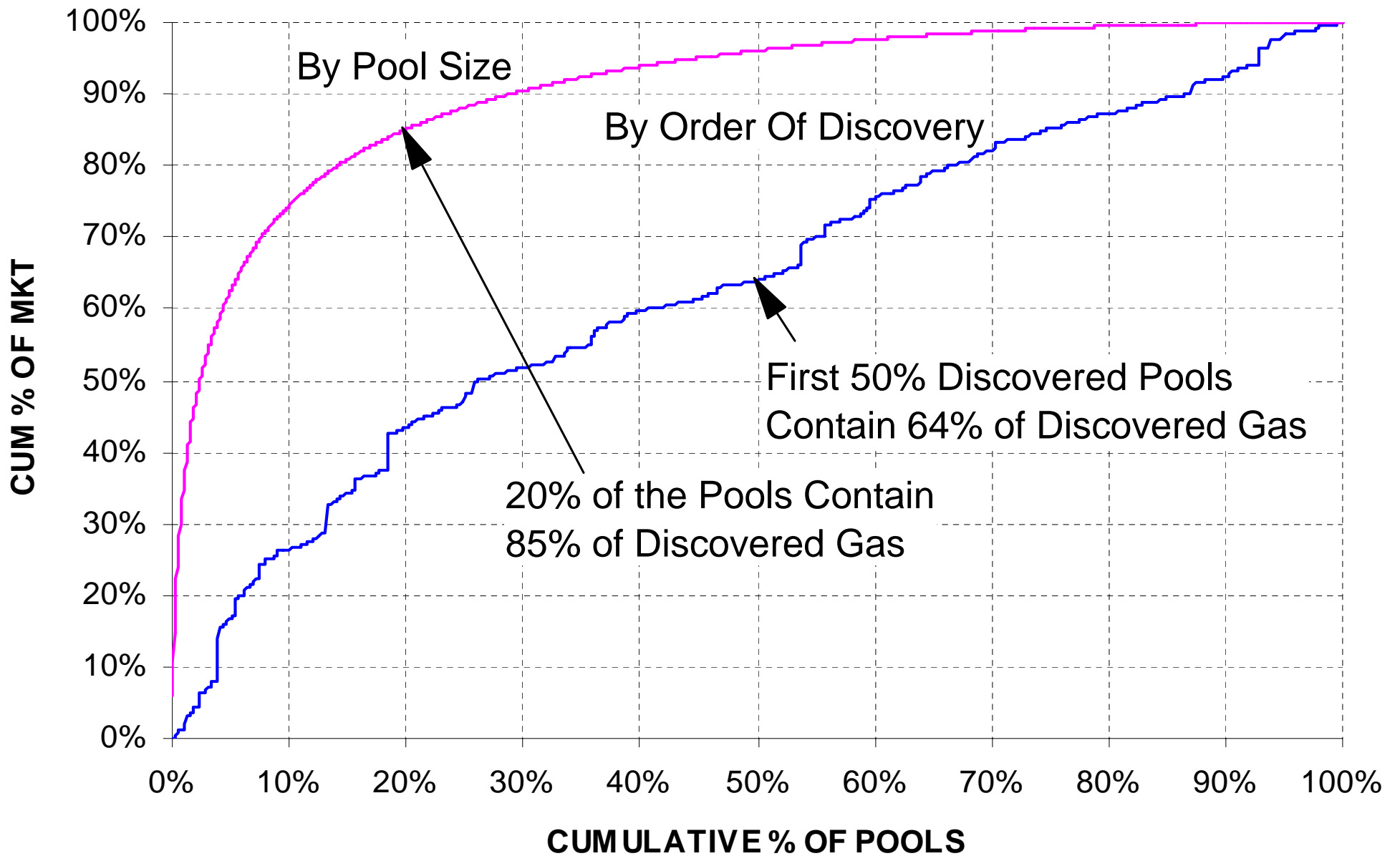


# BRITISH COLUMBIA GAS POOLS BY DECADE

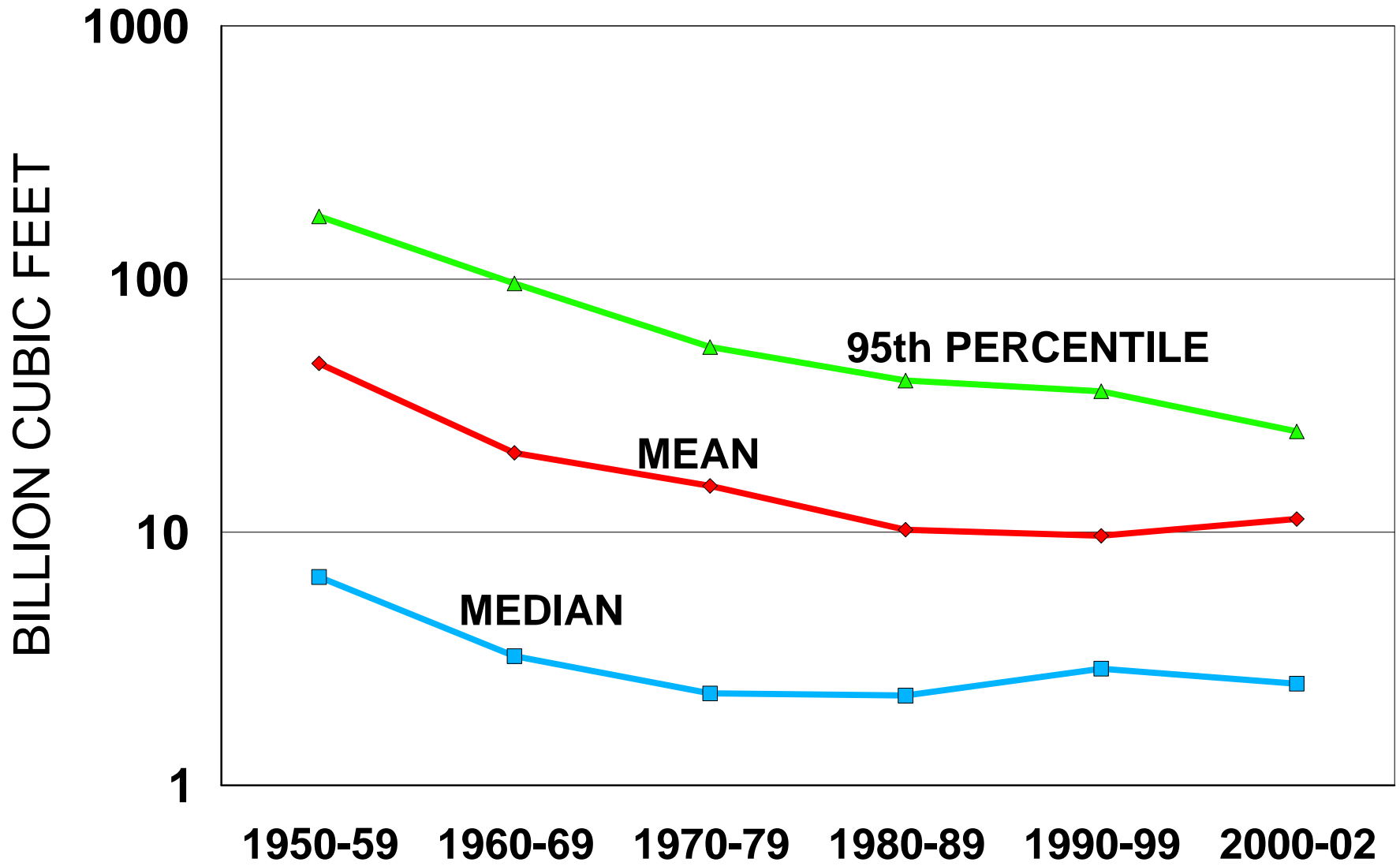
## SWEET vs SOUR - RECOVERABLE GAS



# BRITISH COLUMBIA - CUMULATIVE PERCENT MARKETABLE GAS vs NUMBER OF POOLS

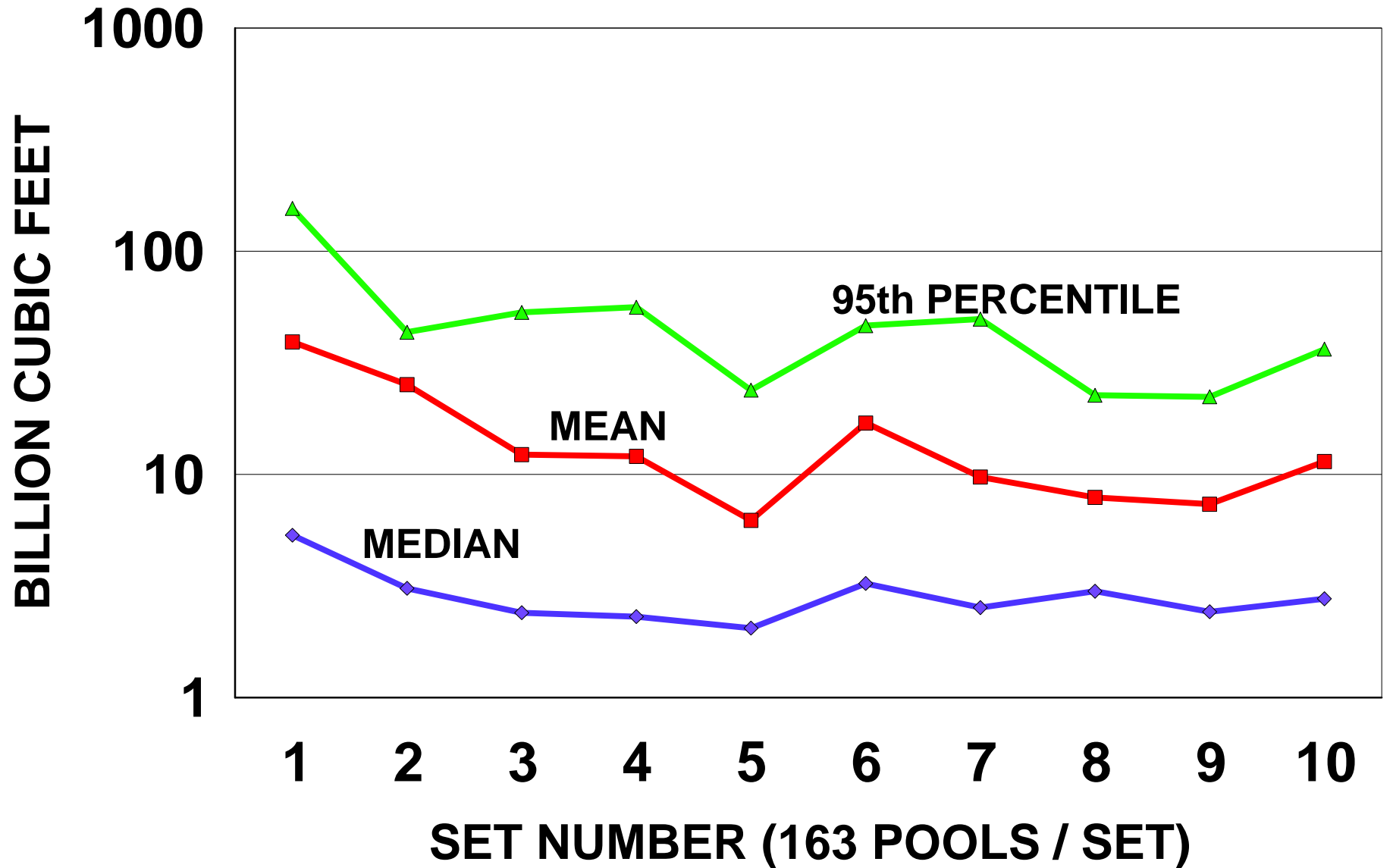


# B.C.- INITIAL MARKETABLE GAS POOL SIZE BY DECADE DISCOVERED

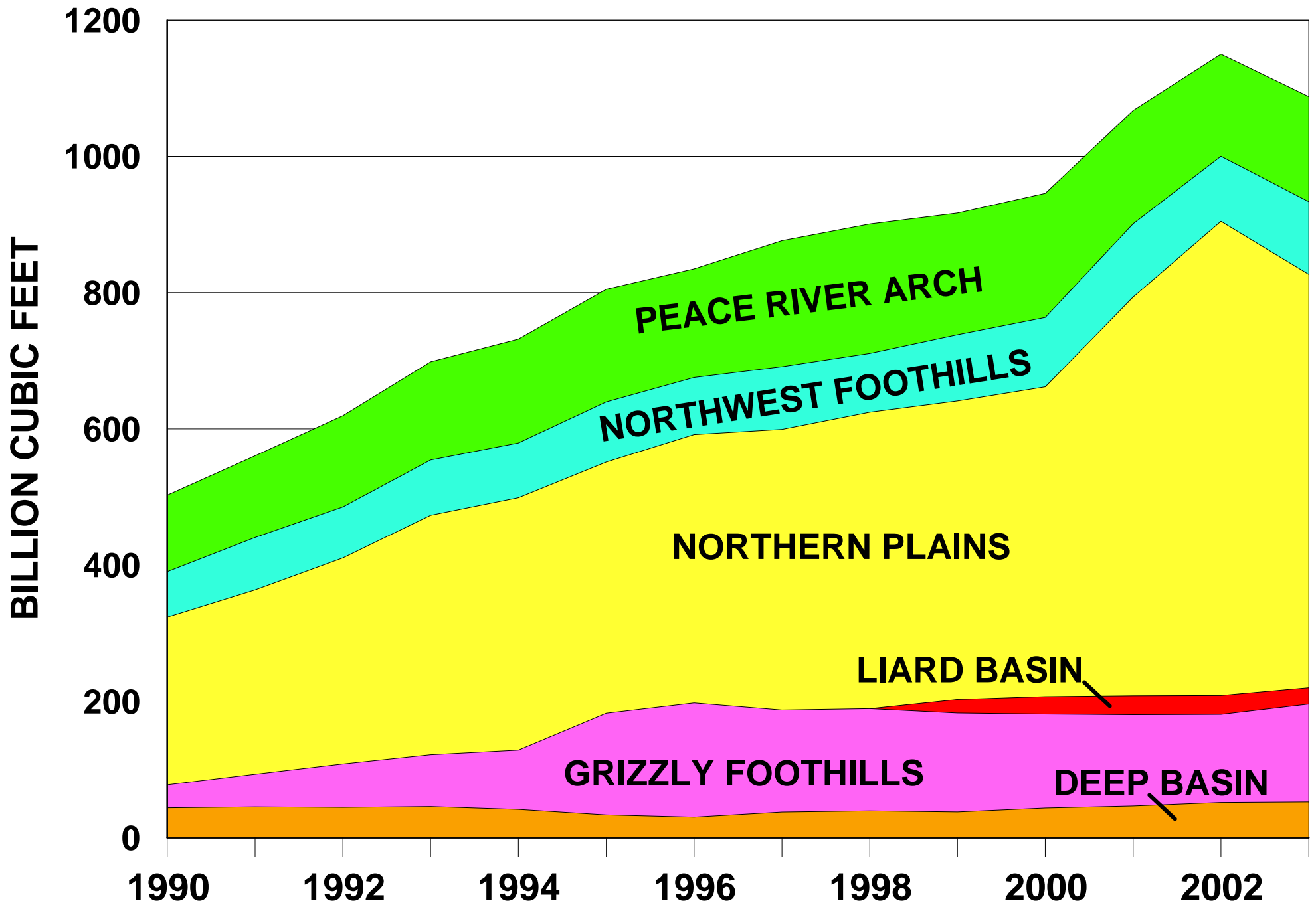




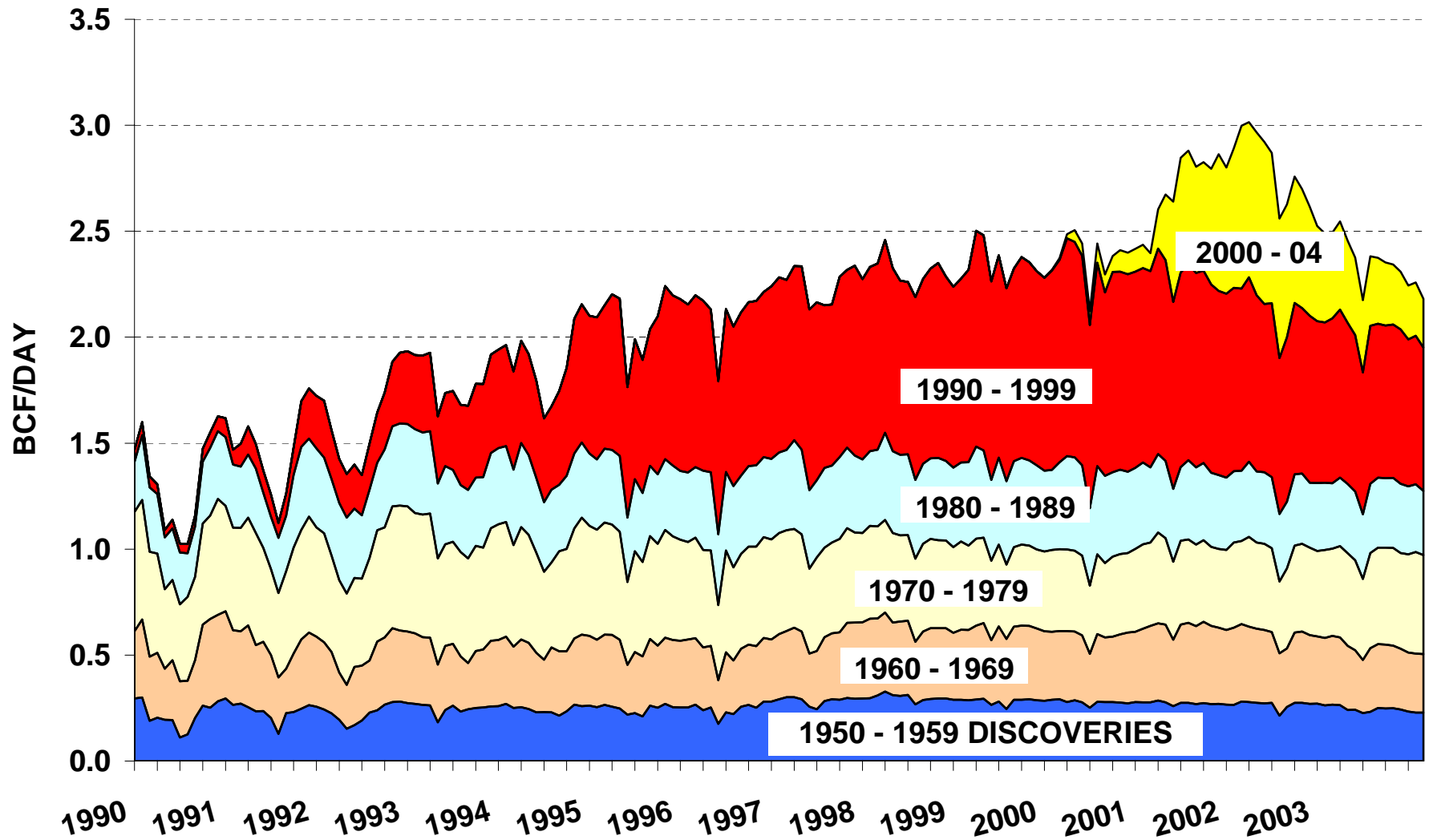
# B.C. INITIAL MARKETABLE GAS POOL SIZES IN SETS BY DISCOVERY SEQUENCE



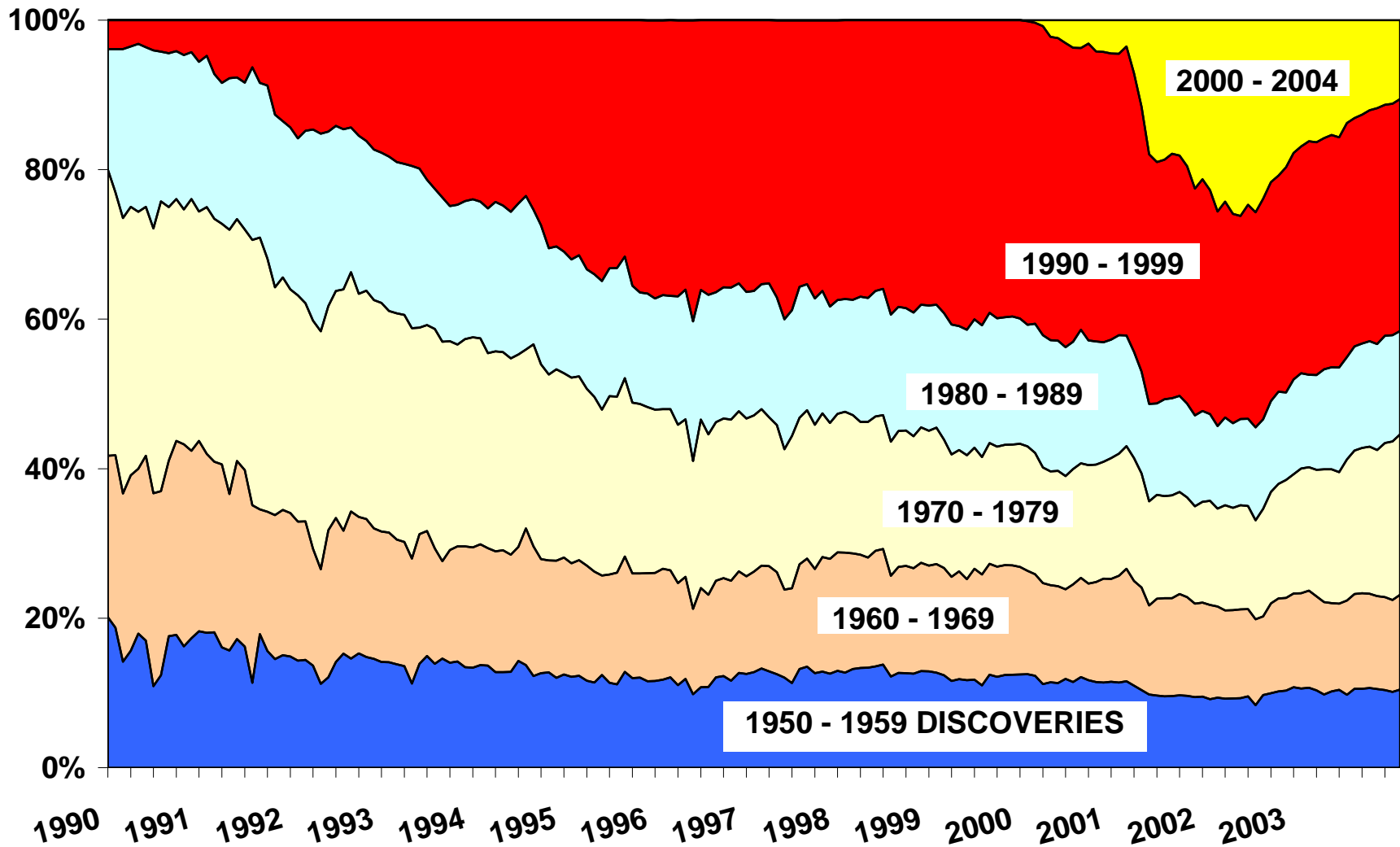
# BRITISH COLUMBIA GAS PRODUCTION BY STRUCTURAL AREA



# BRITISH COLUMBIA MONTHLY GAS PRODUCTION BY DECADE OF DISCOVERY

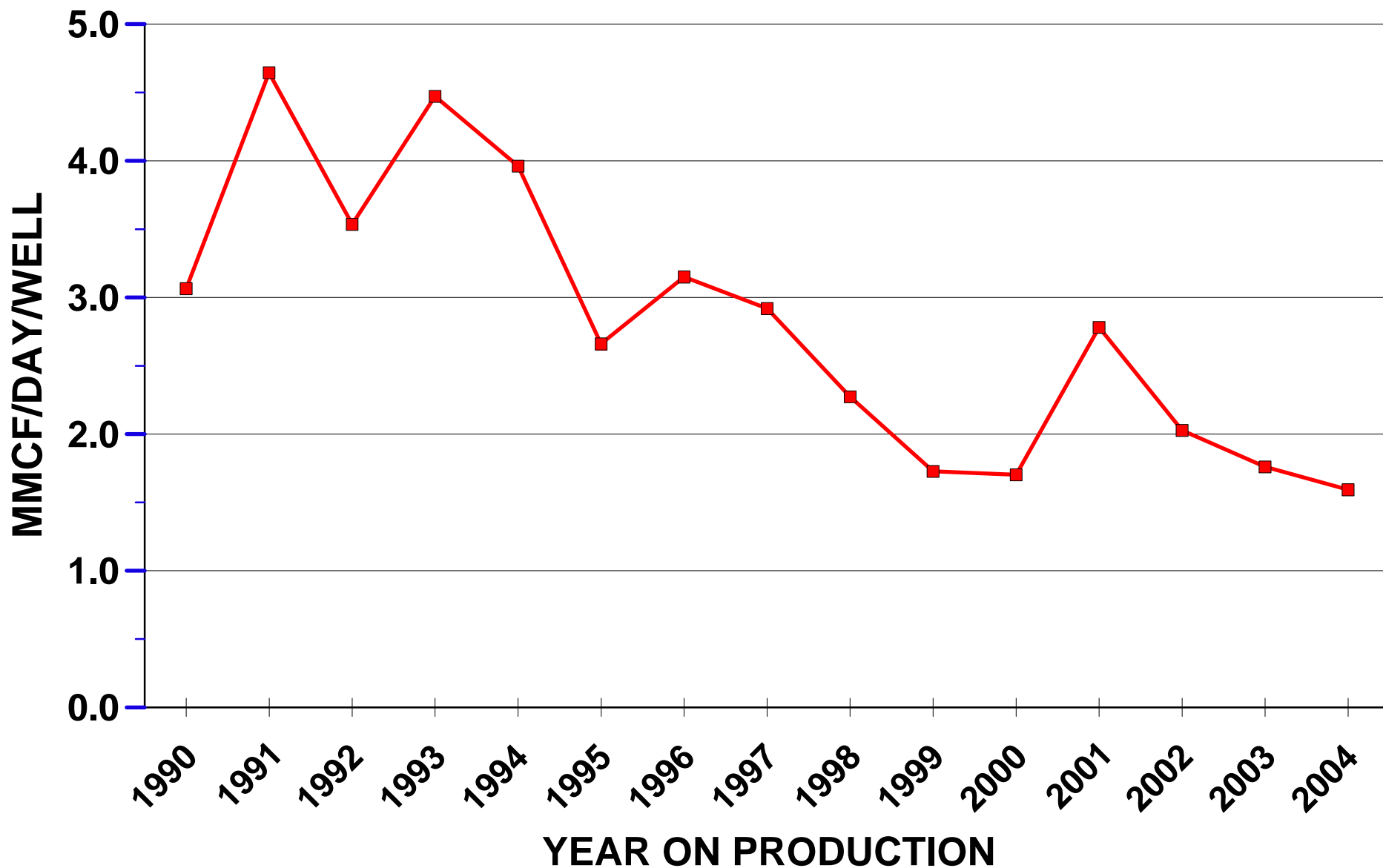


# BRITISH COLUMBIA MONTHLY GAS PRODUCTION PERCENTAGE BY DECADE OF DISCOVERY

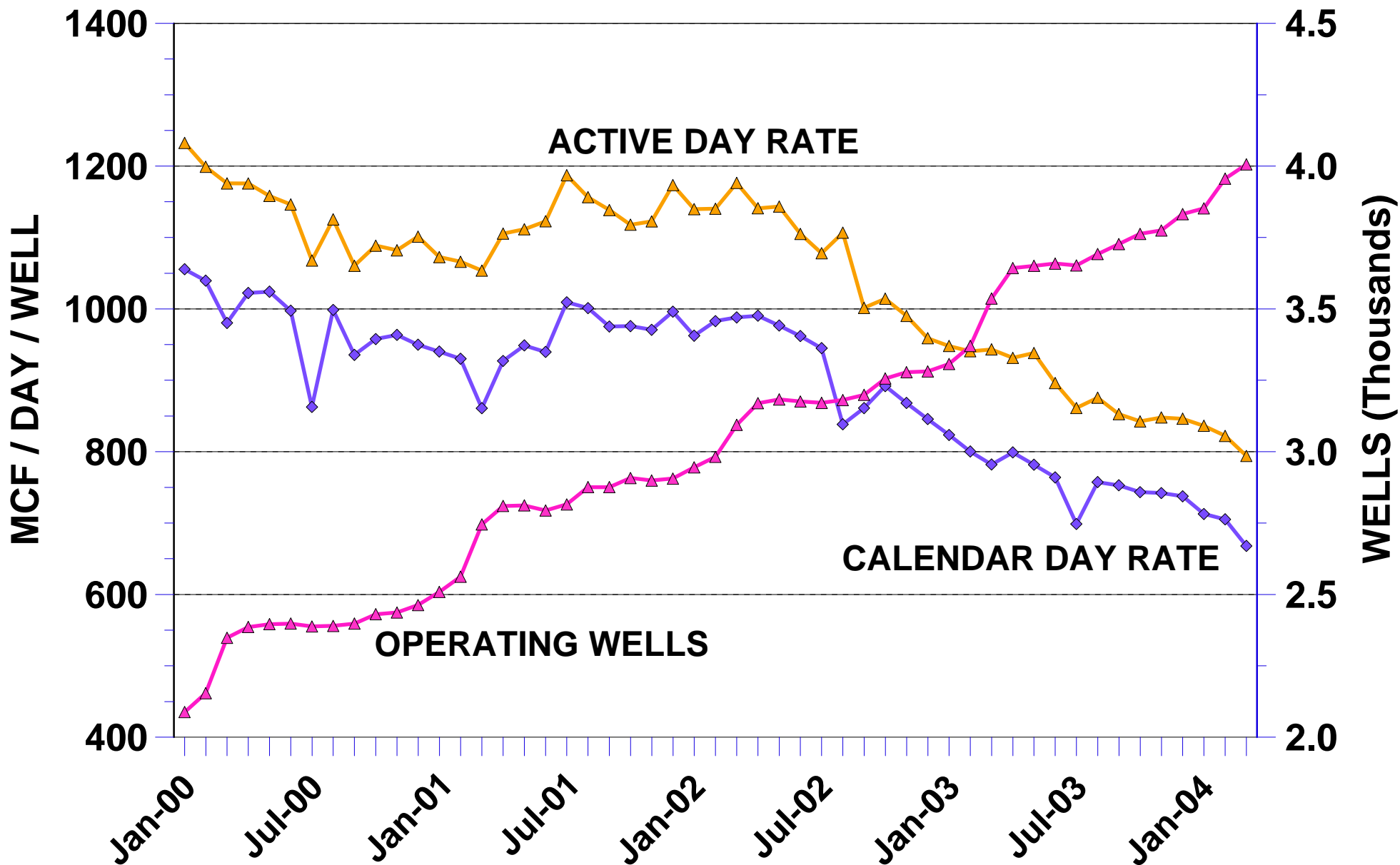




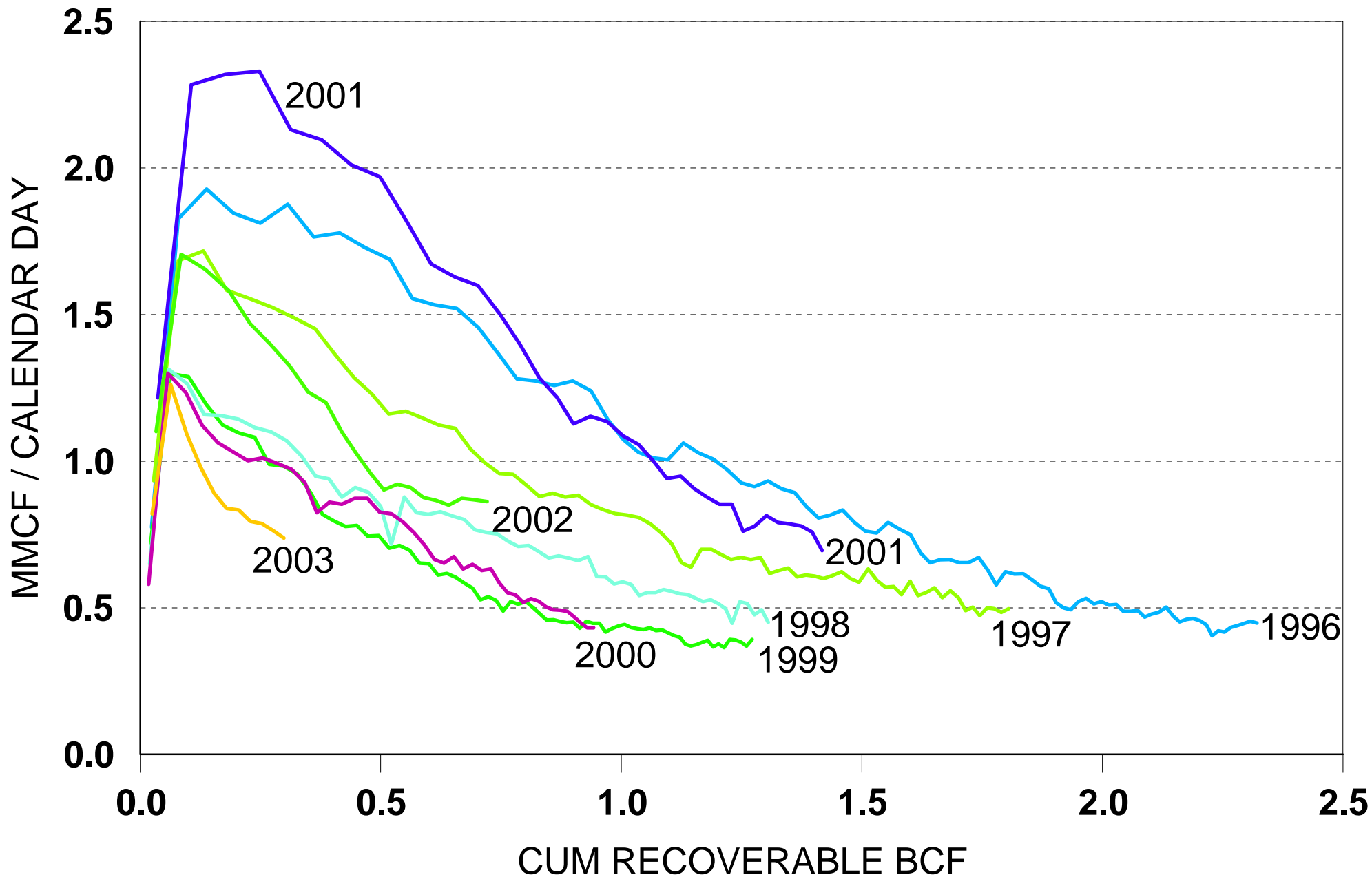
# B.C. INITIAL GAS WELL PRODUCTIVITY AVERAGE ACTIVE DAY RATE - FIRST 3 MONTHS



# BRITISH COLUMBIA GAS WELLS AVERAGE PRODUCING WELL RATE

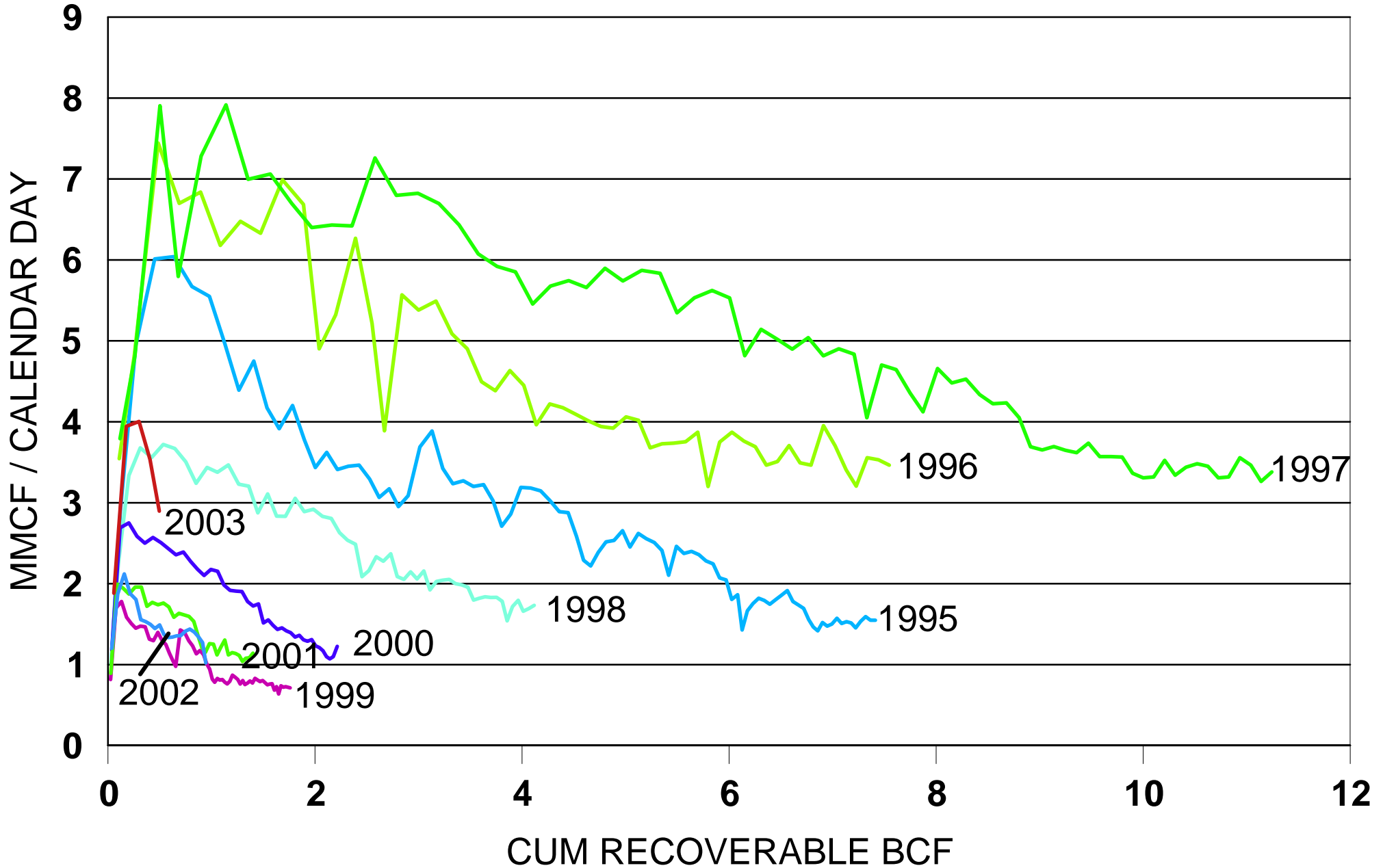


# BRITISH COLUMBIA PLAINS GAS WELL PERFORMANCE BY YEAR CONNECTED





# BRITISH COLUMBIA FOOTHILLS GAS WELL PERFORMANCE BY YEAR CONNECTED

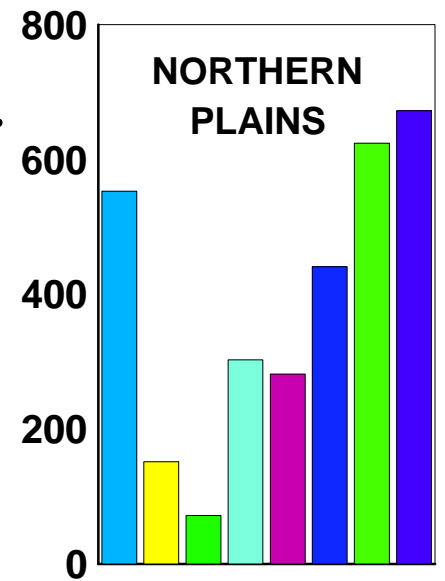
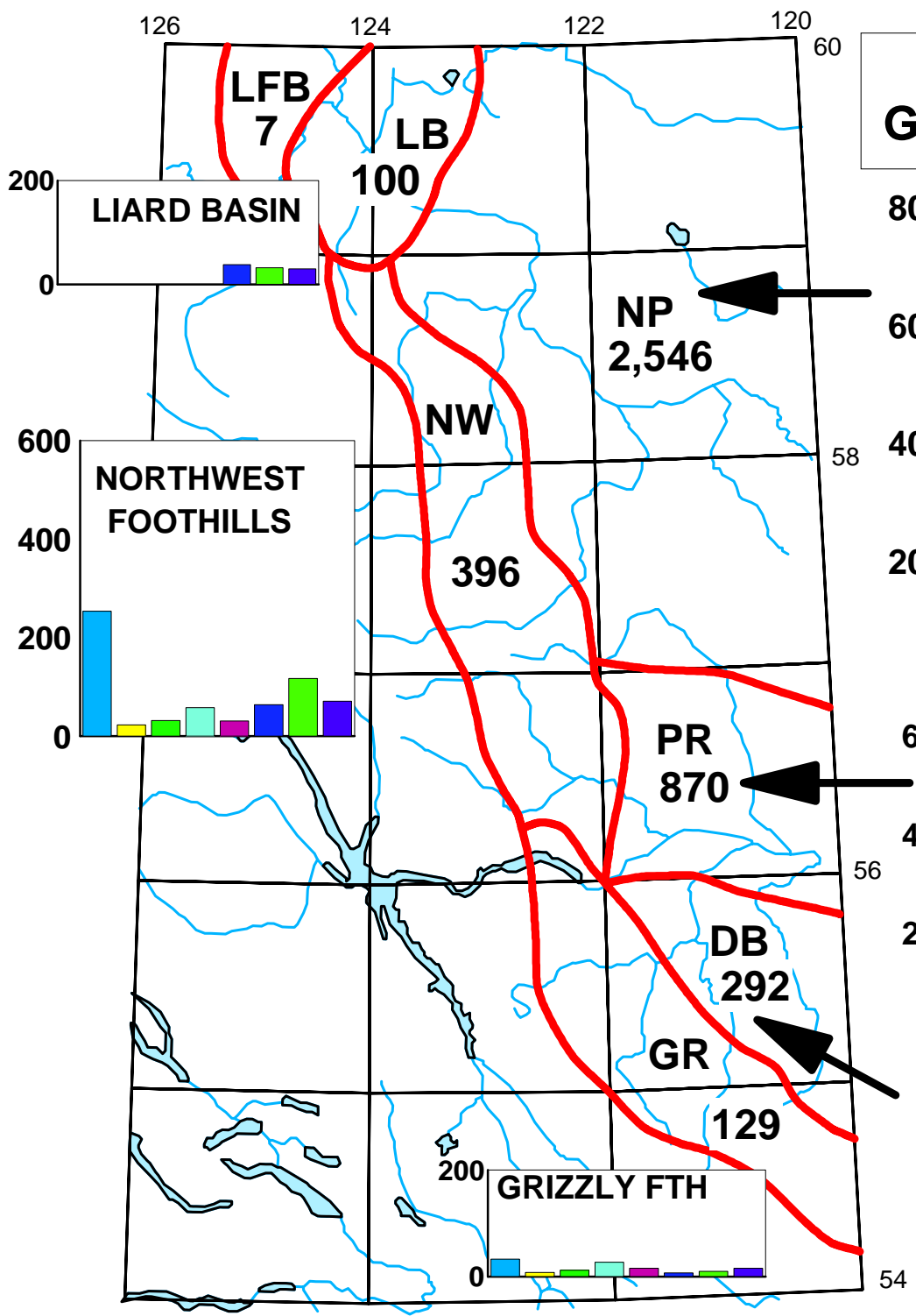


# BRITISH COLUMBIA GAS POOLS

## PRE-1990 vs 1990-2002

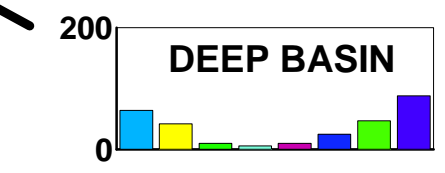
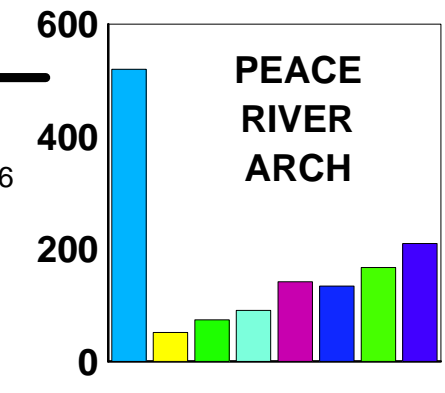
	PRE-1990	1990-2002
<b>RECOVERY FACTORS (% Of GIP)</b>		
<b>RECOVERABLE</b>	<b>74.4%</b>	<b>79.2%</b>
<b>MARKETABLE</b>	<b>60.7%</b>	<b>65.5%</b>
<b>MARKETABLE GAS (BCF)</b>		
<b>AVERAGE POOL SIZE</b>	<b>18.8</b>	<b>10.0</b>
<b>MEDIAN POOL SIZE</b>	<b>2.7</b>	<b>2.8</b>
<b>95th PERCENTILE</b>	<b>62.9</b>	<b>35.4</b>
<b>AVERAGE DEPTH (FEET)</b>	<b>5,391</b>	<b>5,434</b>
<b>AVERAGE RECOVERABLE (MCF/AC-FT)</b>	<b>945</b>	<b>460</b>
<b>% POOLS WITH H<sub>2</sub>S &gt; 10%</b>	<b>3.9%</b>	<b>5.5%</b>
<b>% RECOVERABLE GAS H<sub>2</sub>S &gt; 10%</b>	<b>4.0%</b>	<b>15.9%</b>
<b>AVERAGE H<sub>2</sub>S CONTENT</b>	<b>2.0%</b>	<b>3.9%</b>

# NE BRITISH COLUMBIA GAS WELL CONNECTIONS



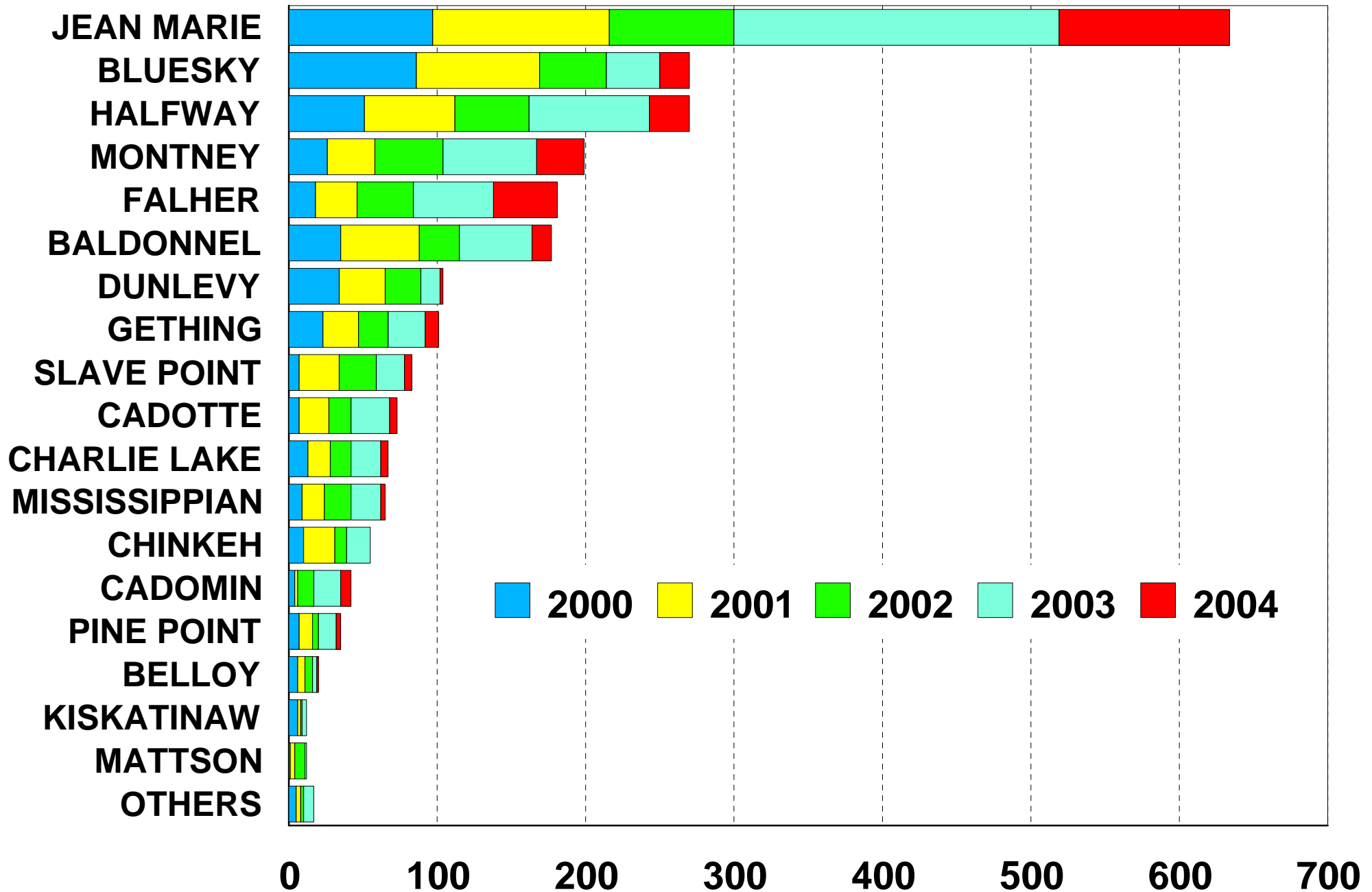
PRE-1990  
1,431 (25%)

1990-2003  
4,236 (75%)



- 2002-03
- 2000-01
- 1998-99
- 1996-97
- 1994-95
- 1992-93
- 1990-91
- pre-1990

# NORTHEAST BRITISH COLUMBIA GAS WELLS BY YEAR CONNECTED / STRATIGRAPHIC HORIZON



# CONCLUSIONS

- ▶ **HISTORICAL TRENDS IN RESERVES ADDITIONS FOR THE PERIOD 1990 TO 2002 ARE REMARKEABLY CONSTANT.**
- ▶ **OVERALL DISCOVERY TRENDS SUGGEST NORTHEAST BRITISH COLUMBIA EXPLORATION IS RELATIVELY IMMATURE.**
- ▶ **A LITTLE OVER HALF OF BRITISH COLUMBIA'S ULTIMATE GAS RESOURCE REMAINS TO BE DISCOVERED.**
- ▶ **B.C. GAS PRODUCTION WILL REMAIN FAIRLY CONSTANT FOR THE NEXT DECADE AS RESOURCE ADDITIONS SHOULD BE ABLE TO SUSTAIN PRODUCTION LEVELS.**