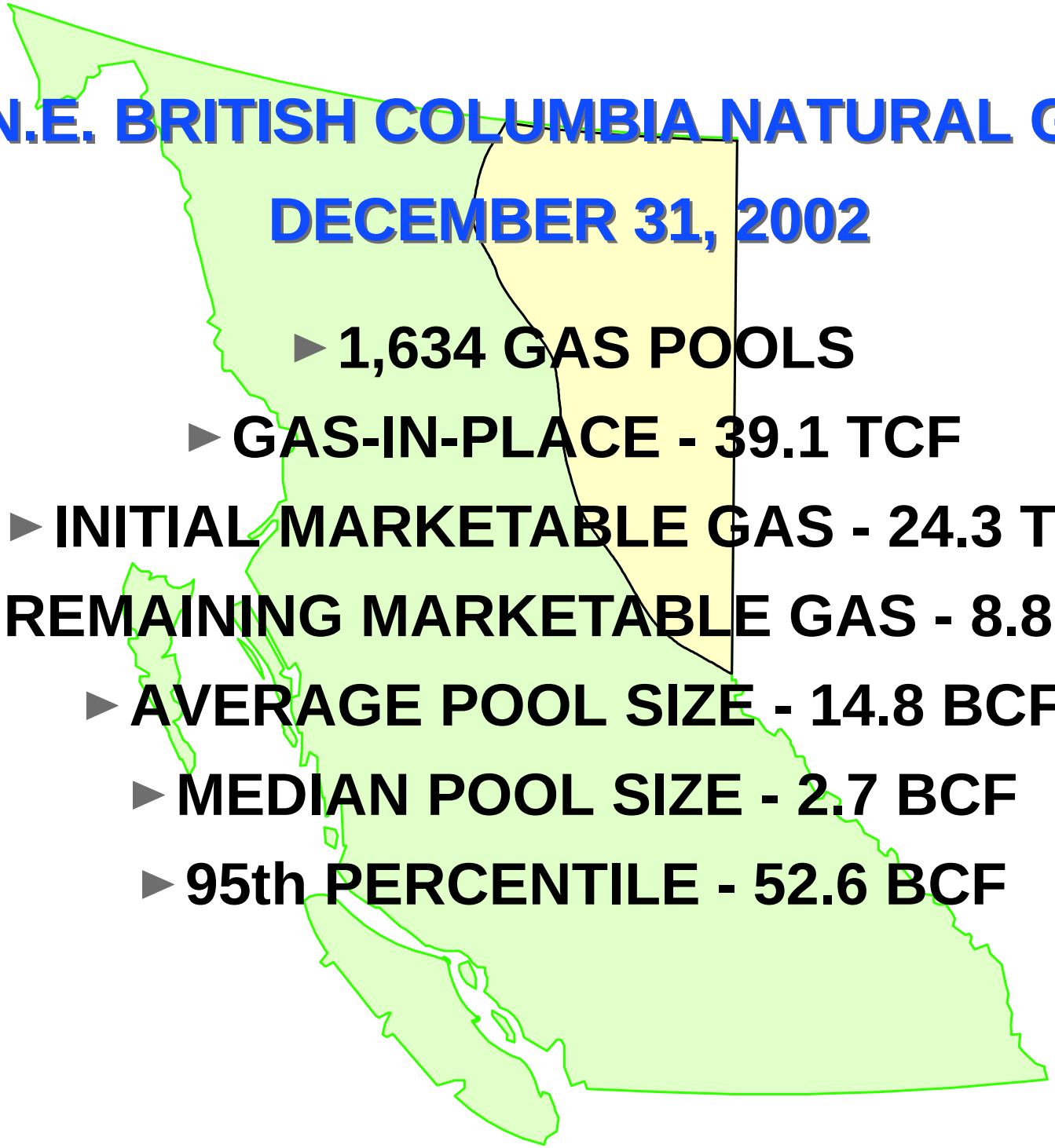
NORTHEAST BRITISH COLUMBIA
NATURAL GAS
HISTORICAL DISCOVERY TRENDS
JANUARY 1990 TO DECEMBER 31,2002

CSPG - CHOA - CWLS
2004 Joint Conference

Drummond Consulting

K. J. Drummond

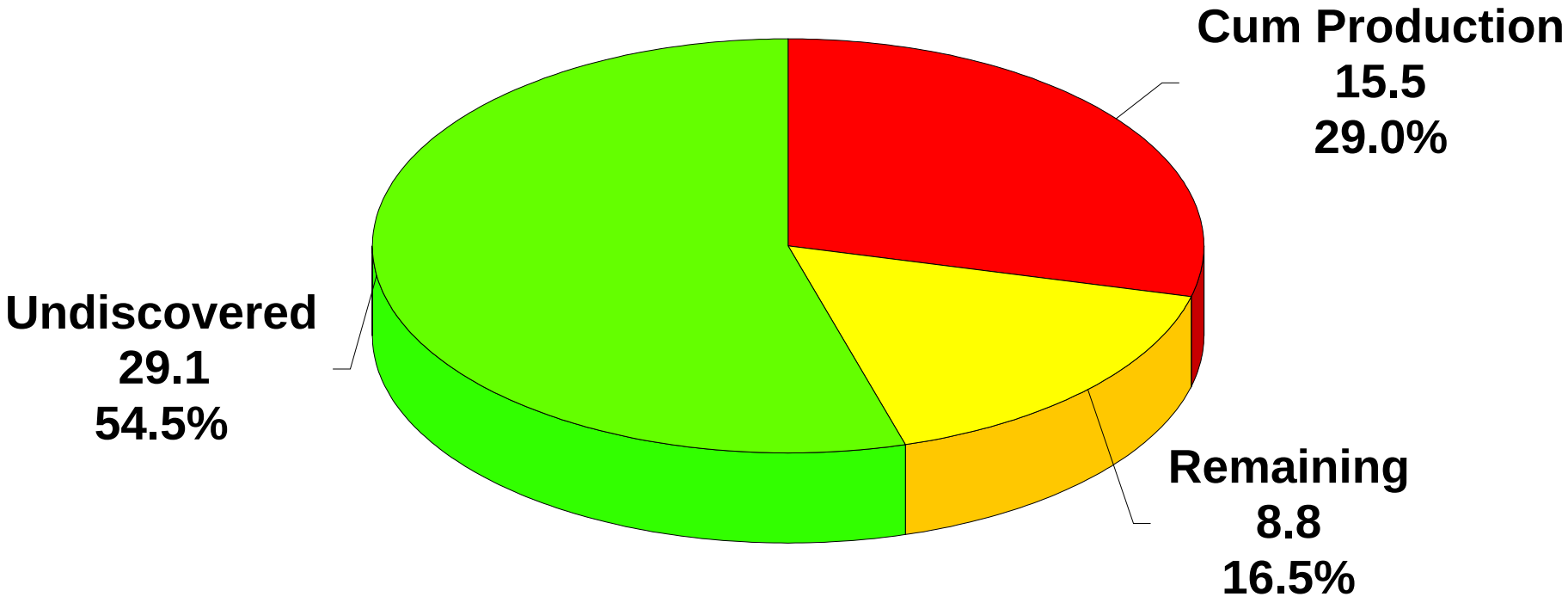


N.E. BRITISH COLUMBIA NATURAL GAS

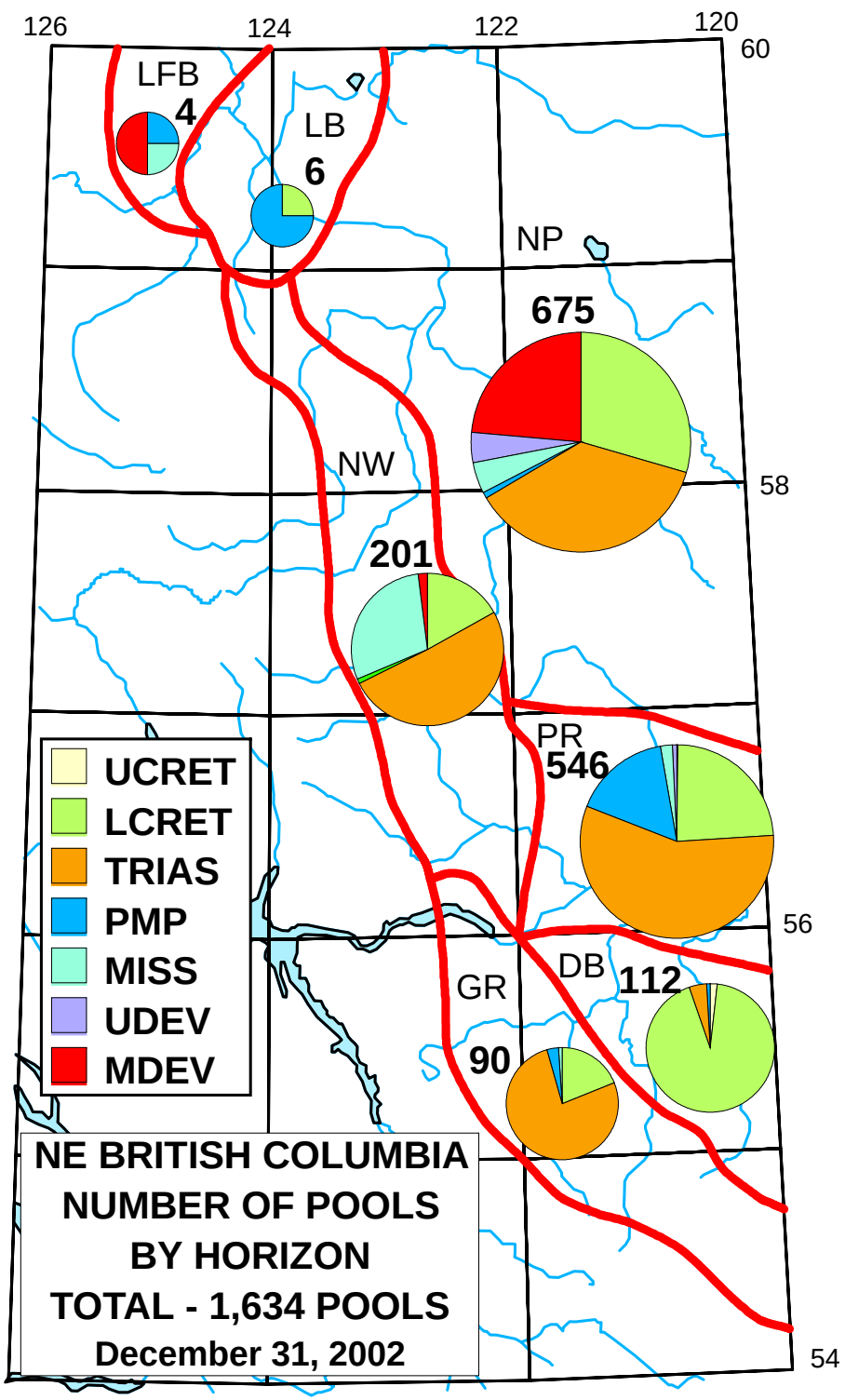
DECEMBER 31, 2002

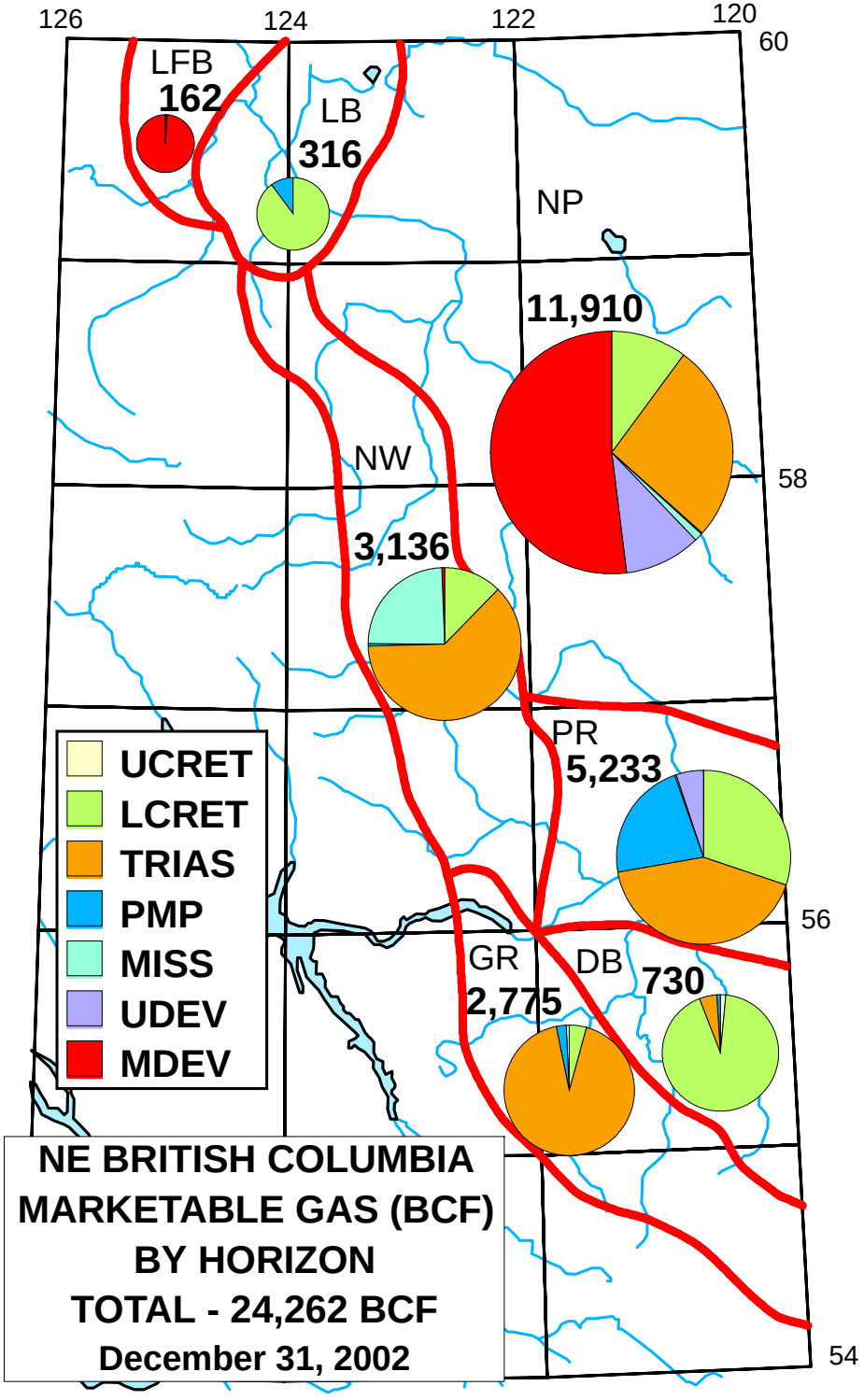
- 1,634 GAS POOLS
- GAS-IN-PLACE - 39.1 TCF
- INITIAL MARKETABLE GAS - 24.3 TCF
- REMAINING MARKETABLE GAS - 8.8 TCF
- AVERAGE POOL SIZE - 14.8 BCF
- MEDIAN POOL SIZE - 2.7 BCF
- 95th PERCENTILE - 52.6 BCF

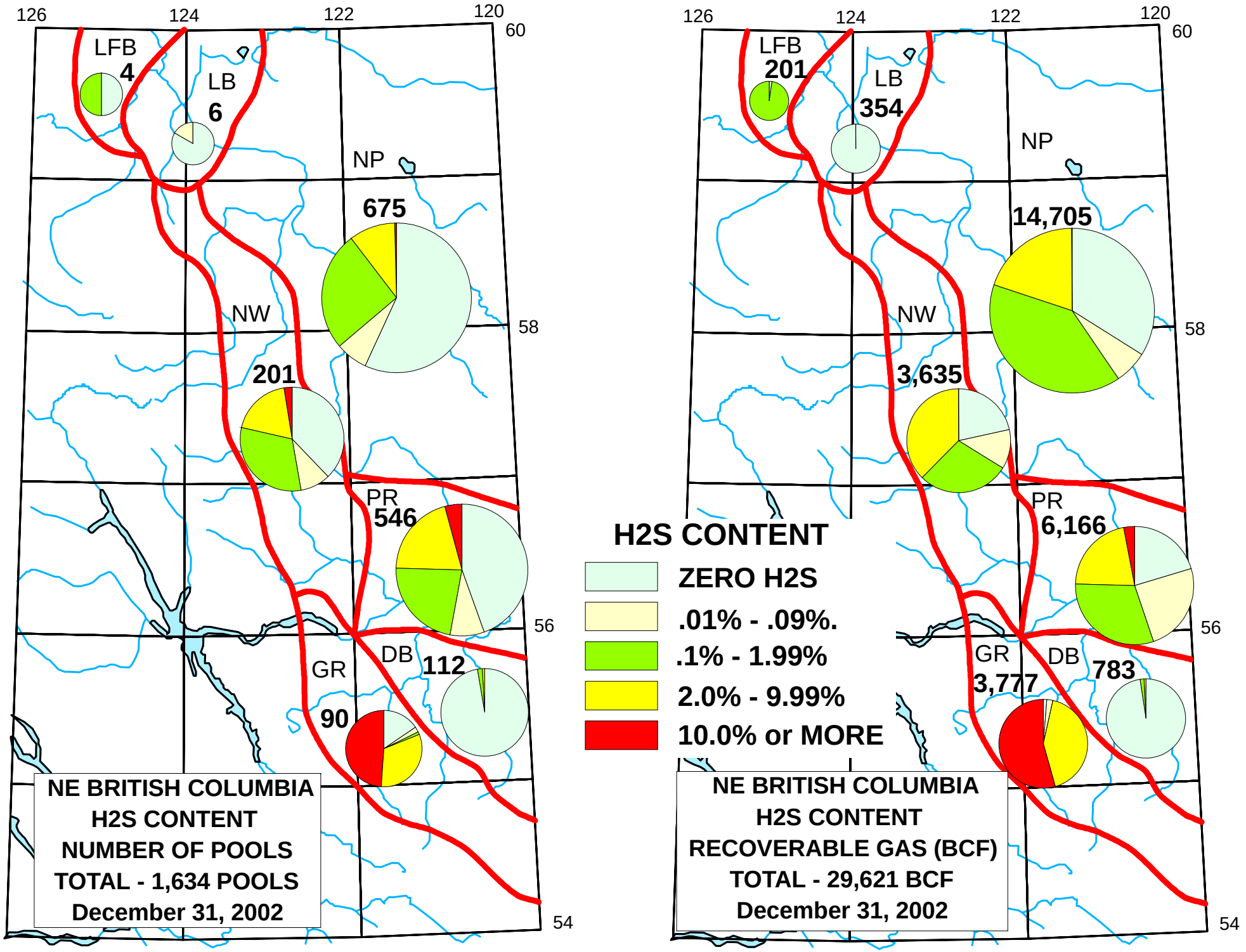
NORTHEAST BRITISH COLUMBIA
ULTIMATE MARKETABLE GAS
(Trillion Cubic Feet)



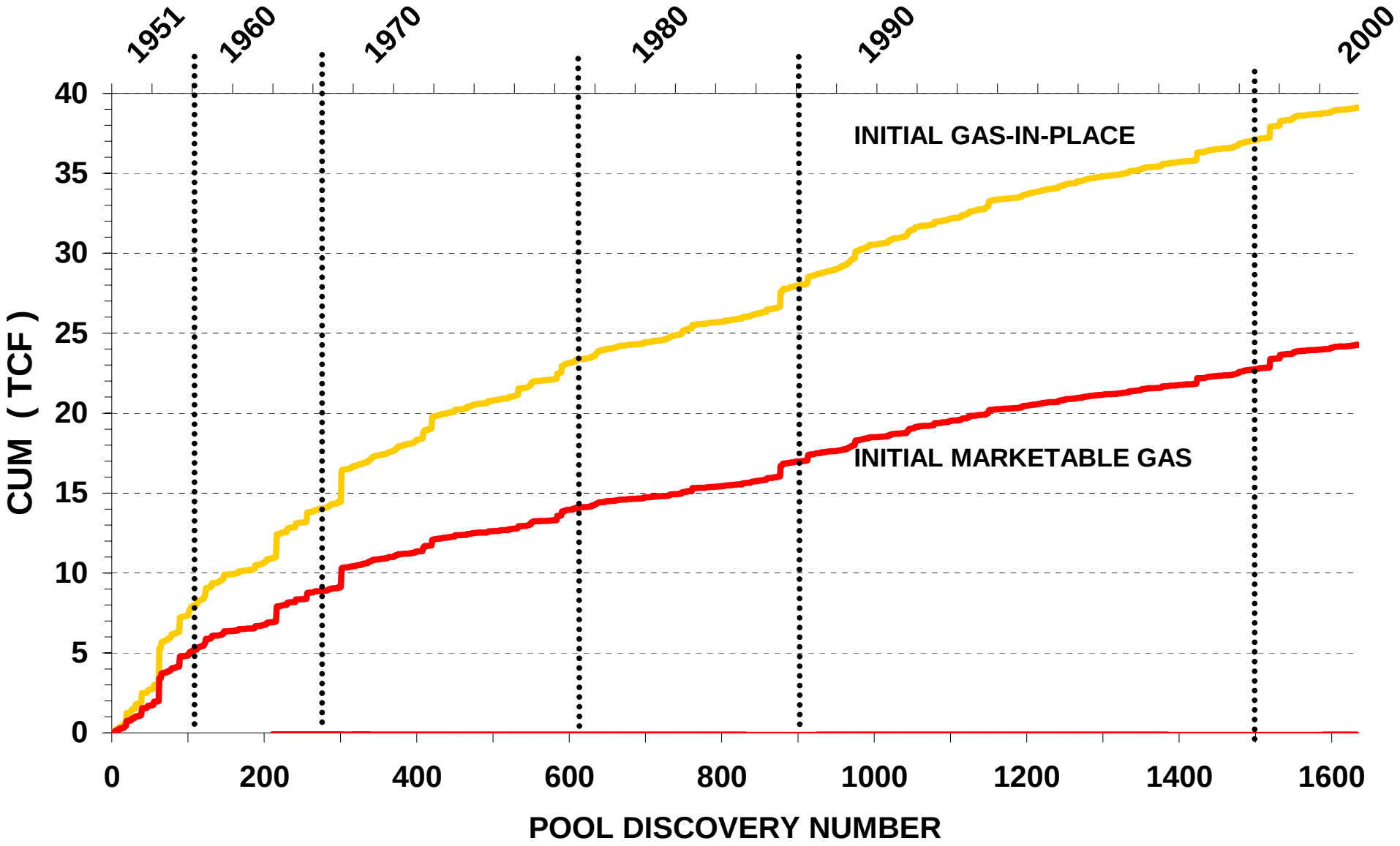
Total: 53.4


126
124
122
120
60
58
56
54
LFB
4
LB
6
NP
675
NW
201
PR
546
GR
90
DB
112
UCRET
LCRET
TRIAS
PMP
MISS
UDEV
MDEV
NE BRITISH COLUMBIA
NUMBER OF POOLS
BY HORIZON
TOTAL - 1,634 POOLS
December 31, 2002

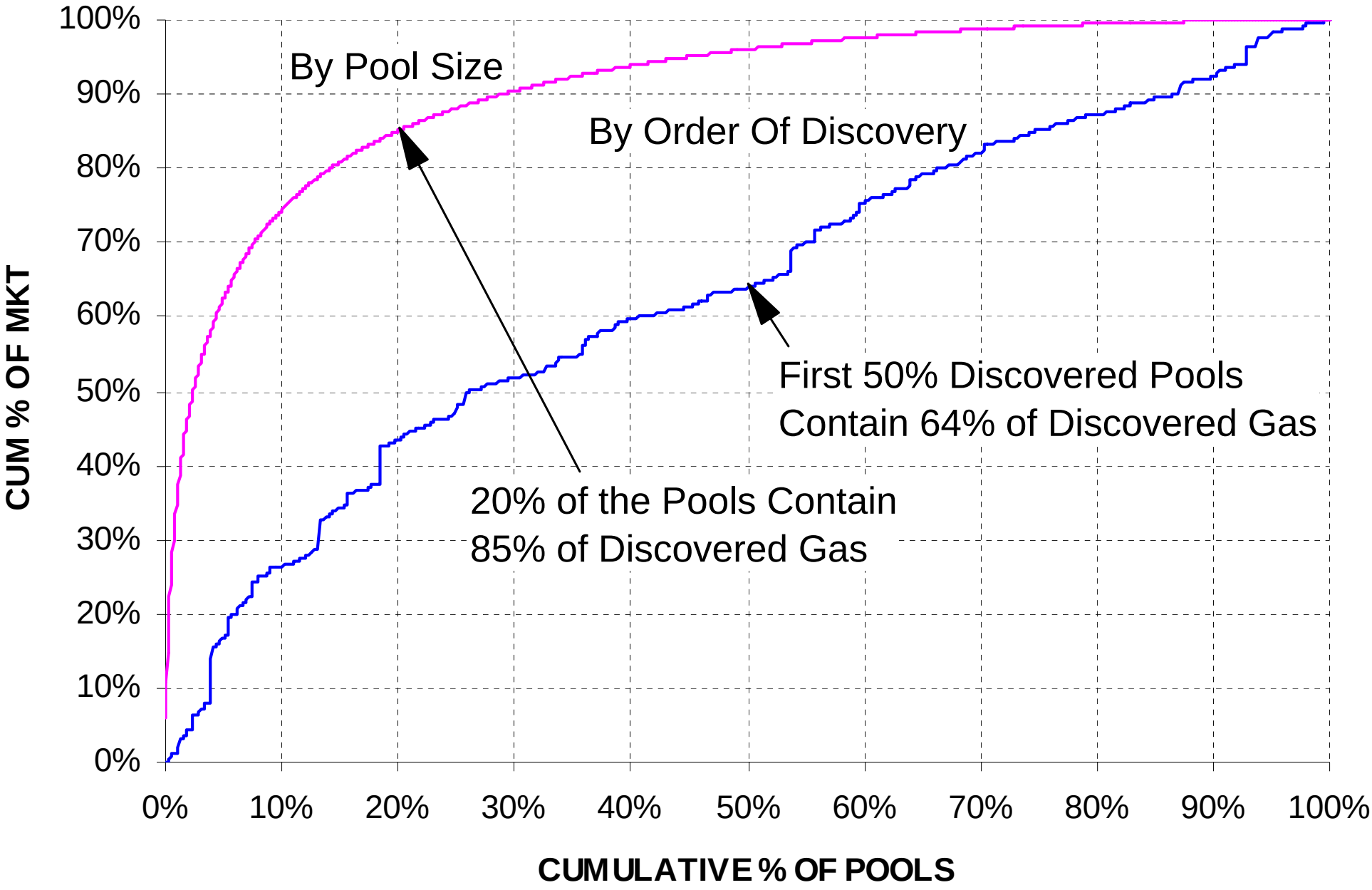

126
124
122
120
60
58
56
54
LFB
162
LB
316
NP
11,910
NW
3,136
PR
5,233
GR
2,775
DB
730
UCRET
LCRET
TRIAS
PMP
MISS
UDEV
MDEV
NE BRITISH COLUMBIA
MARKETABLE GAS (BCF)
BY HORIZON
TOTAL - 24,262 BCF
December 31, 2002


126
124
122
120
60
58
56
54
LFB
4
LB
6
NP
675
NW
201
PR
546
GR
90
DB
112
NE BRITISH COLUMBIA
H2S CONTENT
NUMBER OF POOLS
TOTAL - 1,634 POOLS
December 31, 2002
H2S CONTENT
ZERO H2S
.01% - .09%.
.1% - 1.99%
2.0% - 9.99%
10.0% or MORE
LFB
201
LB
354
NP
14,705
NW
3,635
PR
6,166
GR
3,777
DB
783
NE BRITISH COLUMBIA
H2S CONTENT
RECOVERABLE GAS (BCF)
TOTAL - 29,621 BCF
December 31, 2002

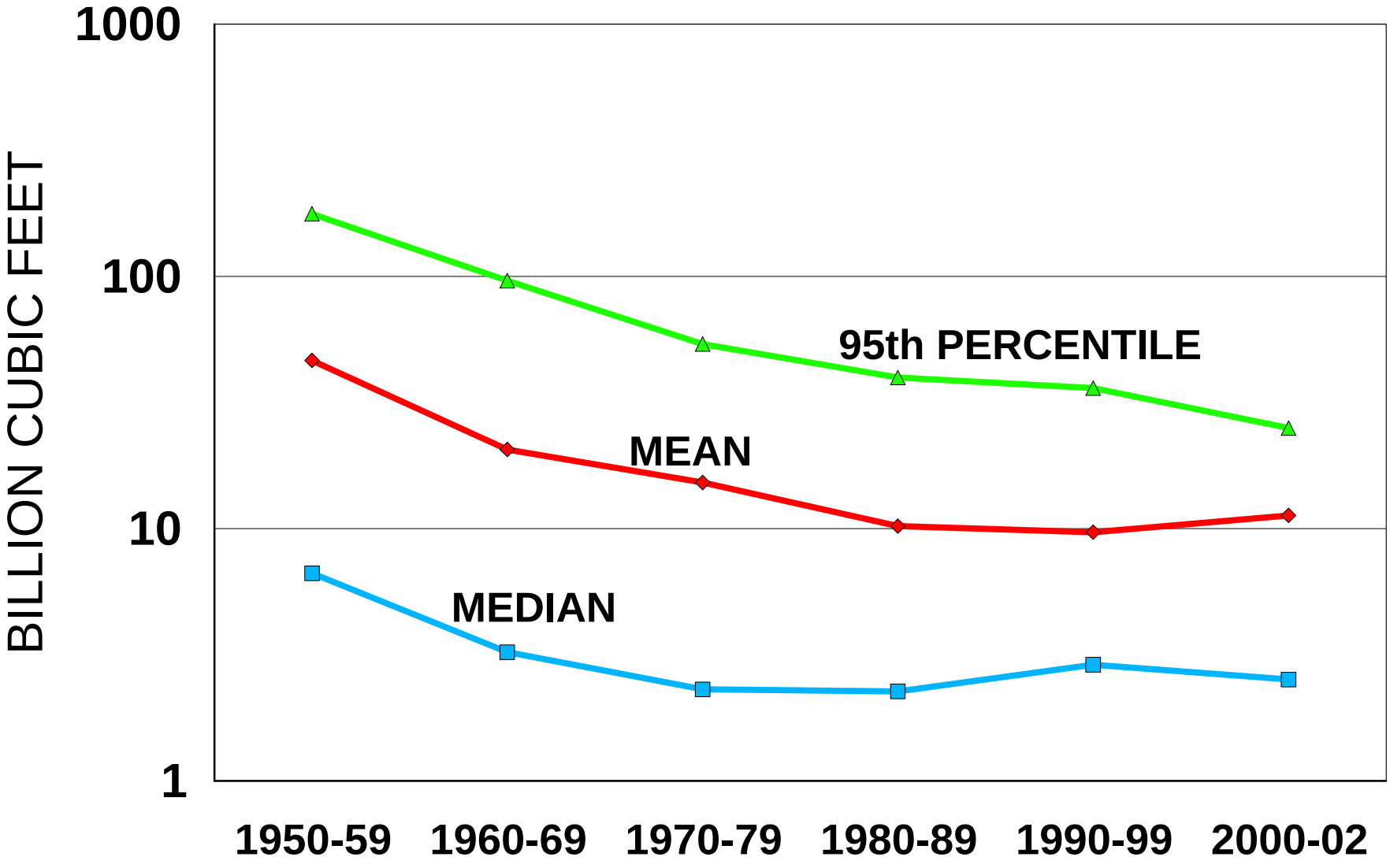
BRITISH COLUMBIA CUM GAS DISCOVERY PLOT



BRITISH COLUMBIA - CUMULATIVE PERCENT MARKETABLE GAS vs NUMBER OF POOLS

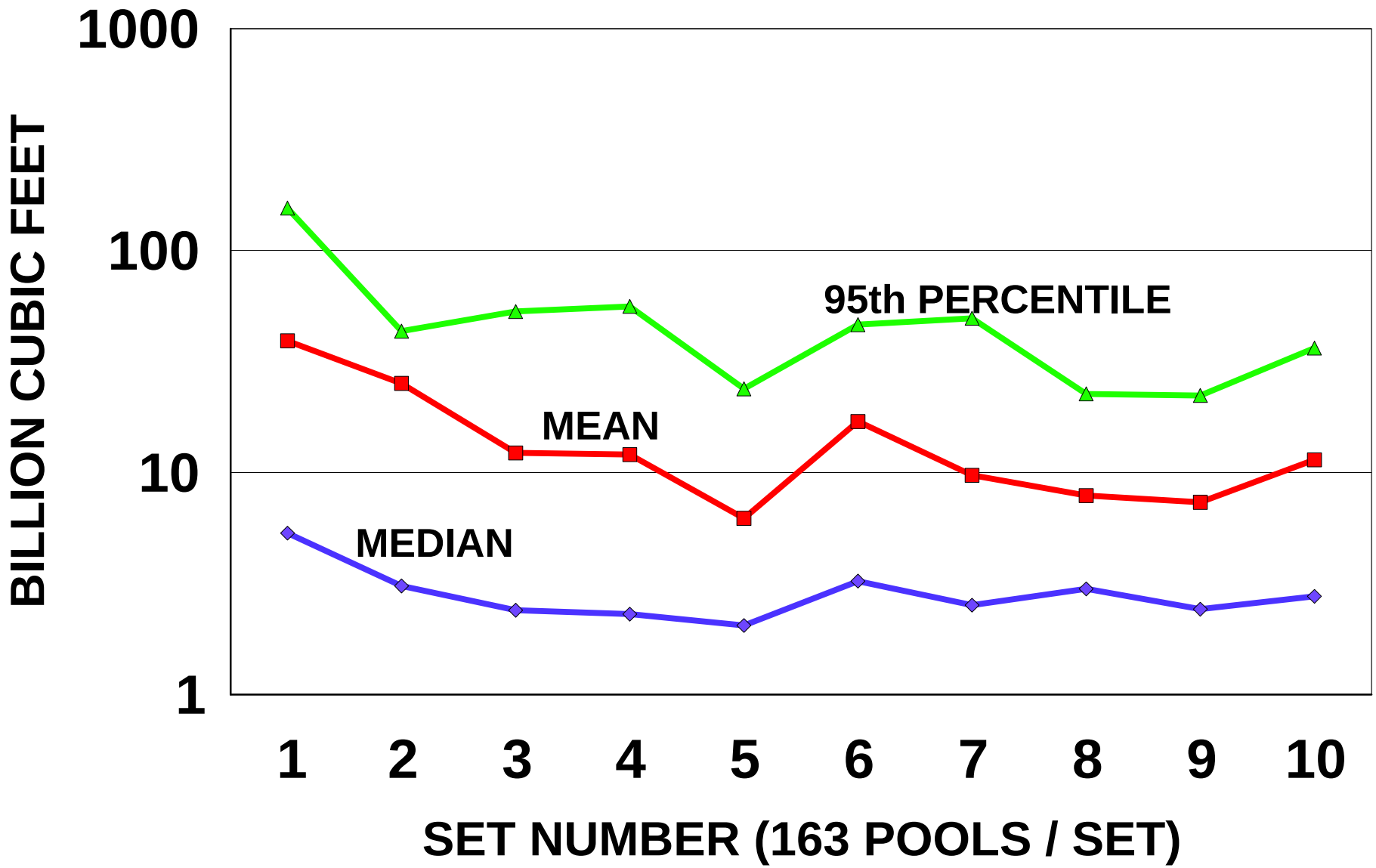


B.C.- INITIAL MARKETABLE GAS
POOL SIZE BY DECADE DISCOVERED

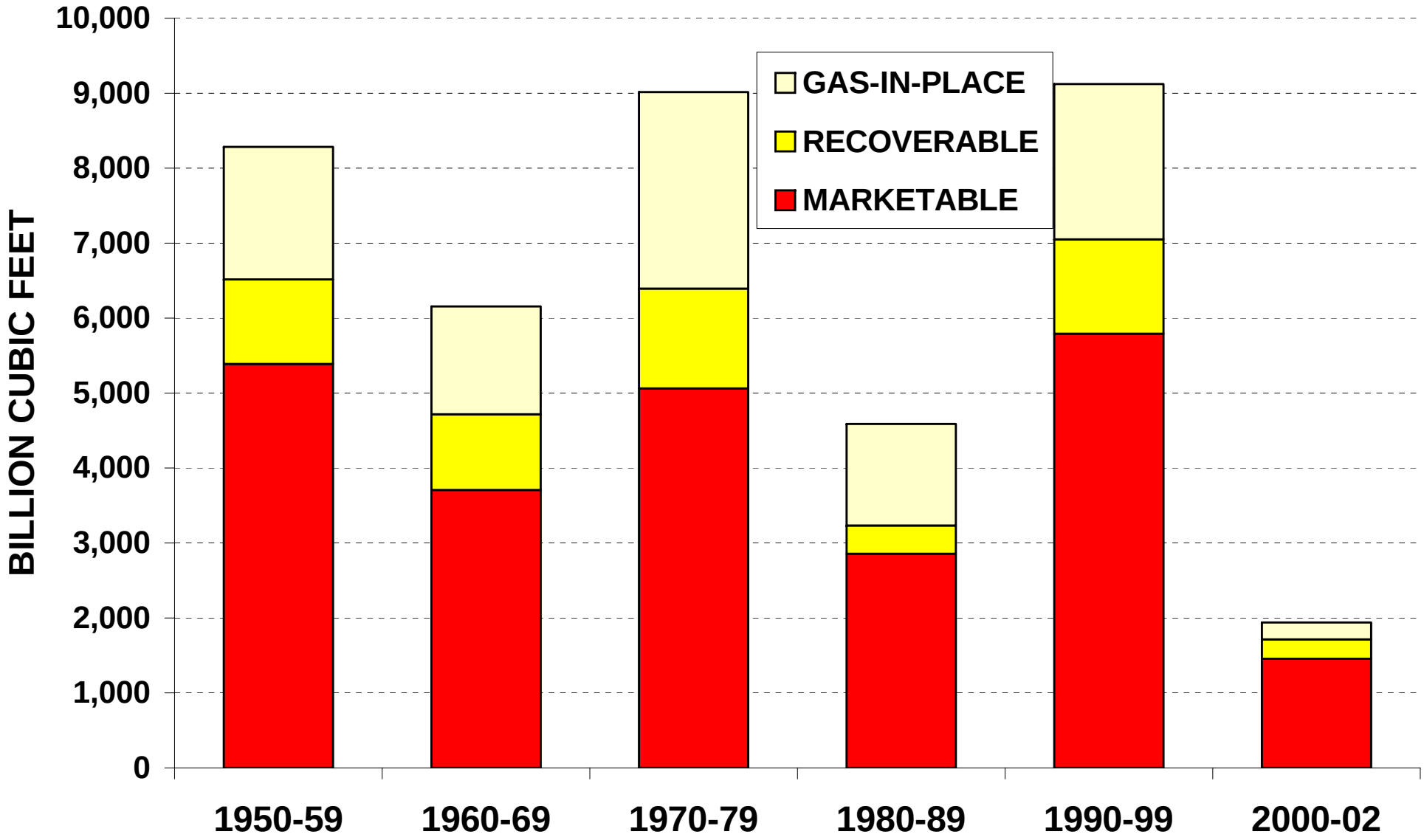


B.C. INITIAL MARKETABLE GAS

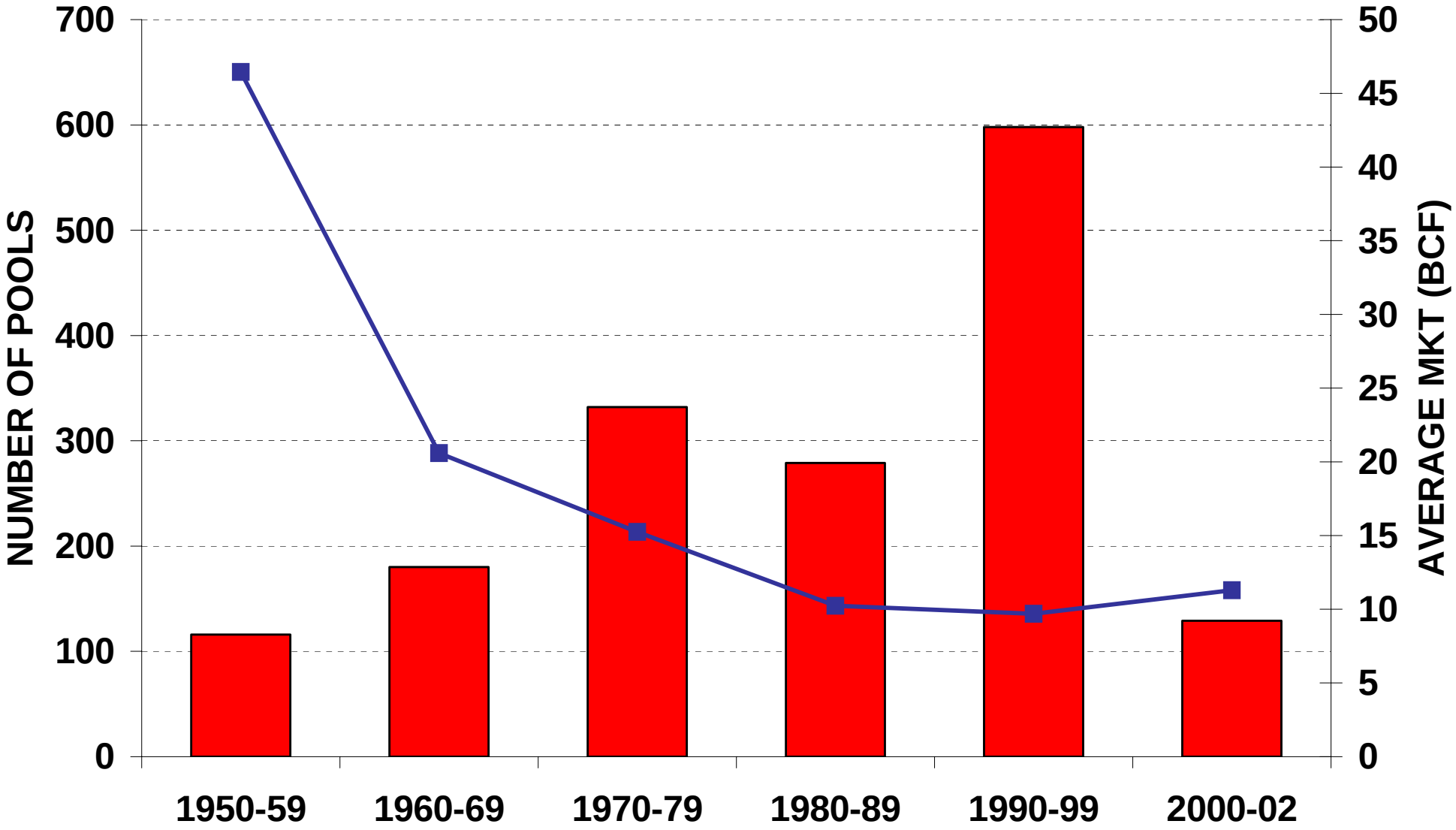
POOL SIZES IN SETS BY DISCOVERY SEQUENCE

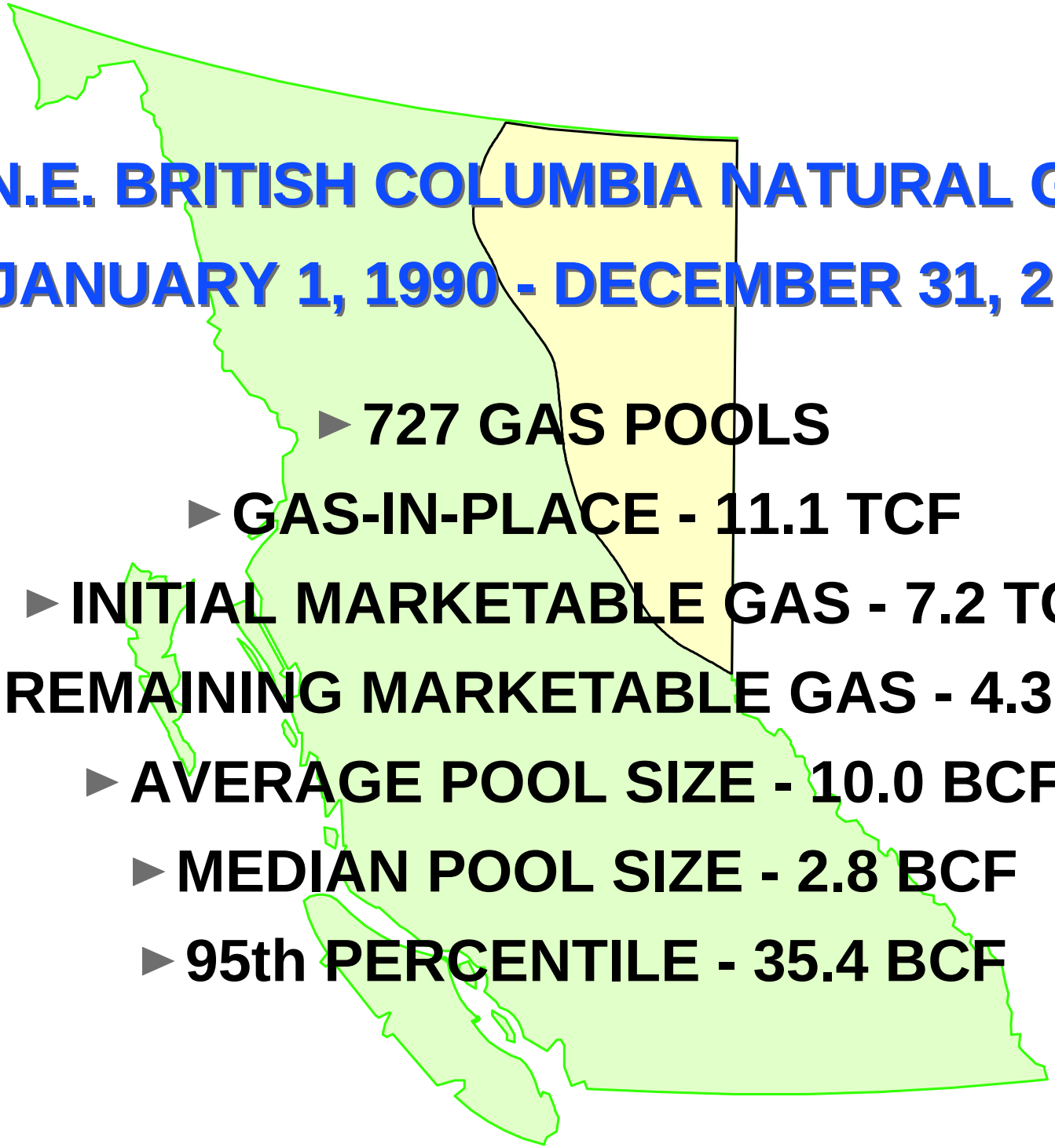


NORTHEAST BRITISH COLUMBIA
GAS DISCOVERED BY DECADE



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

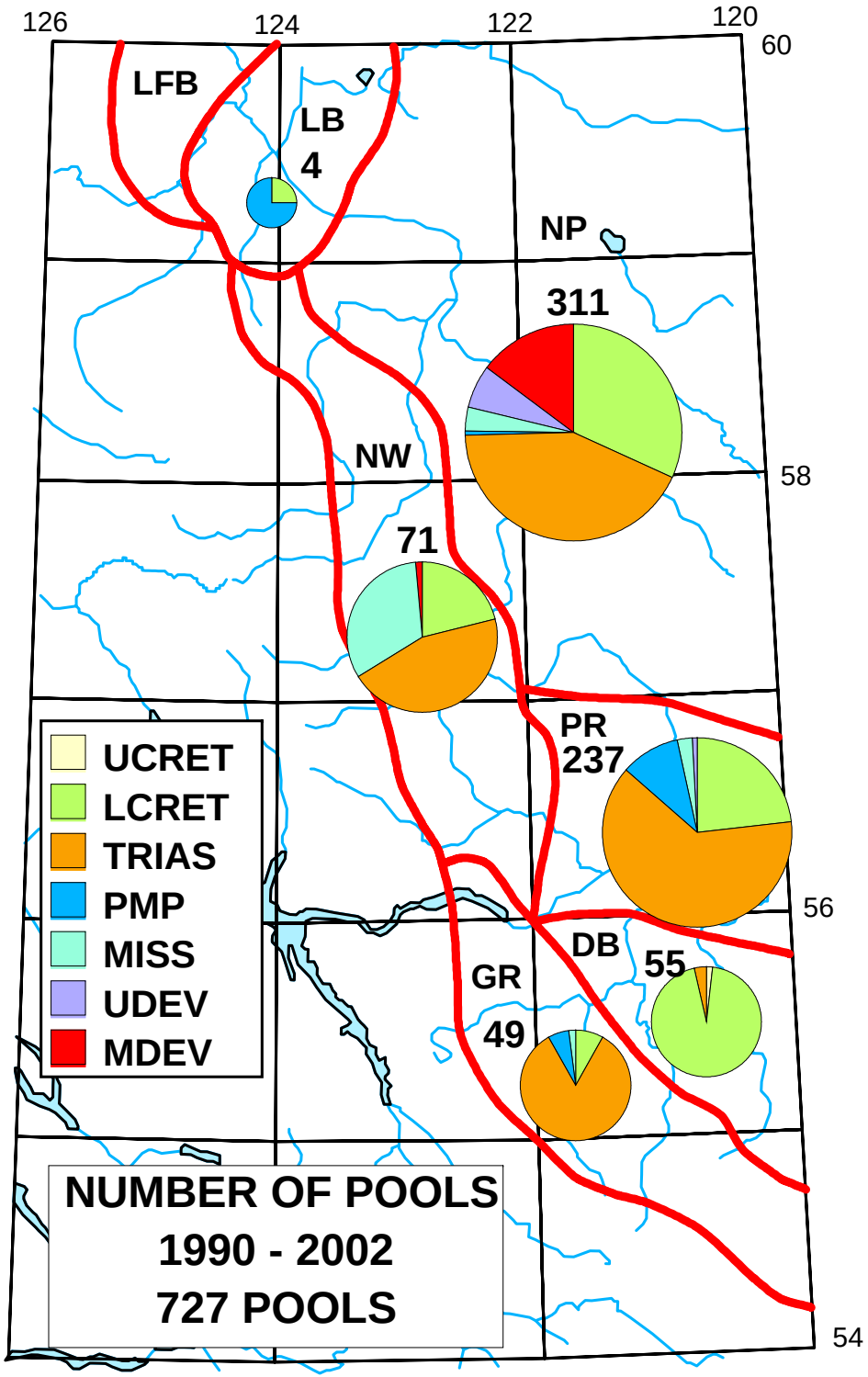


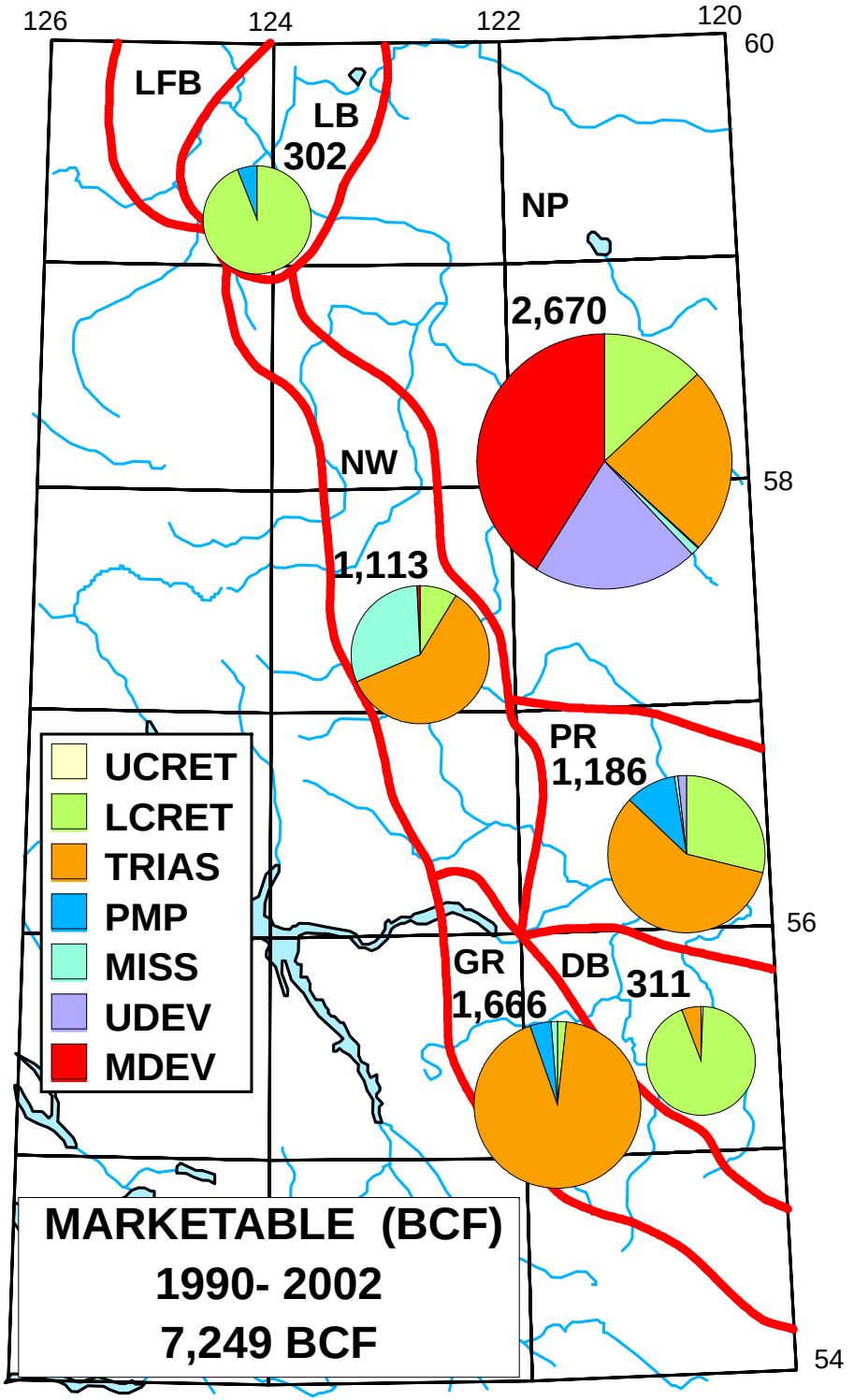


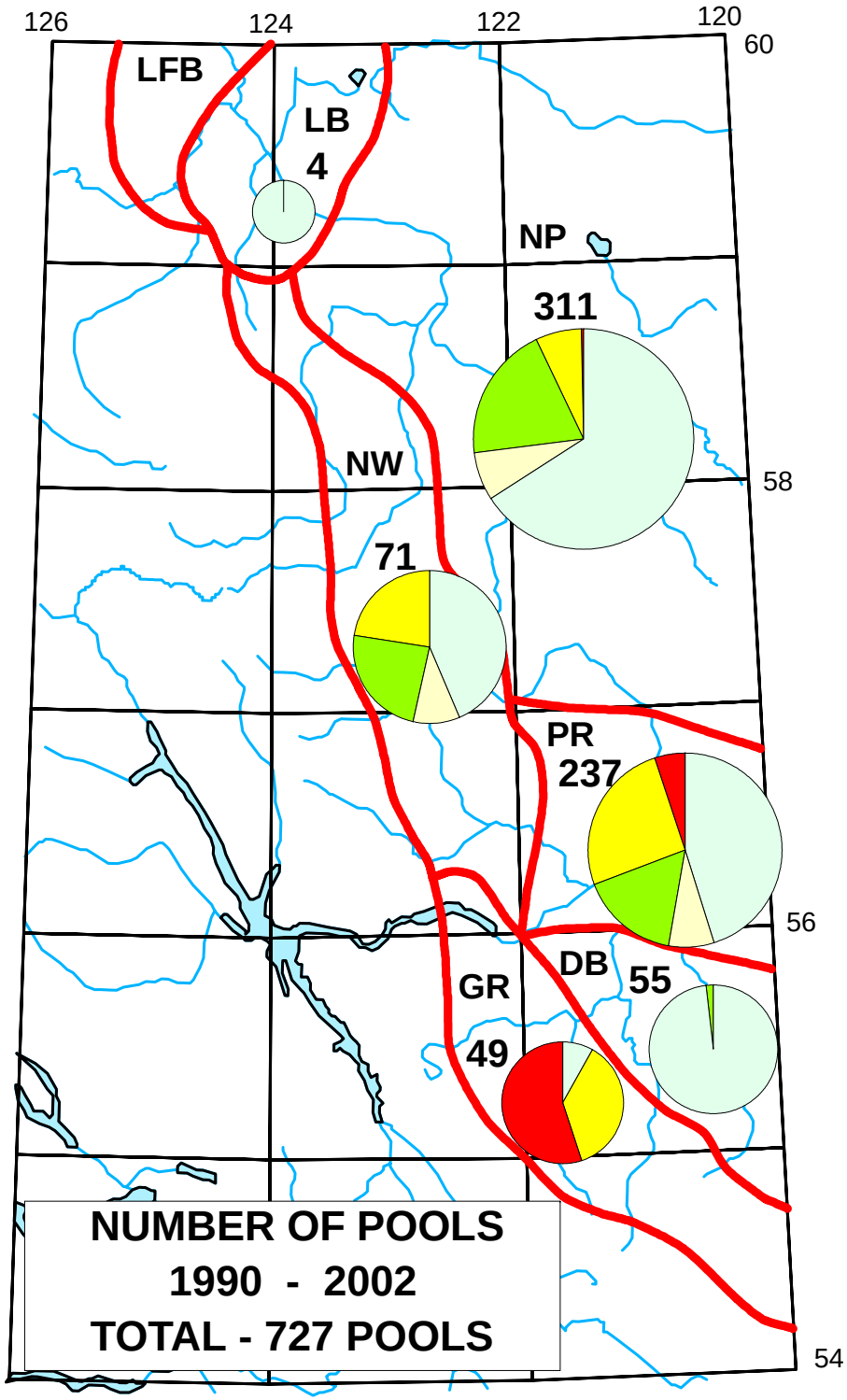
N.E. BRITISH COLUMBIA NATURAL GAS

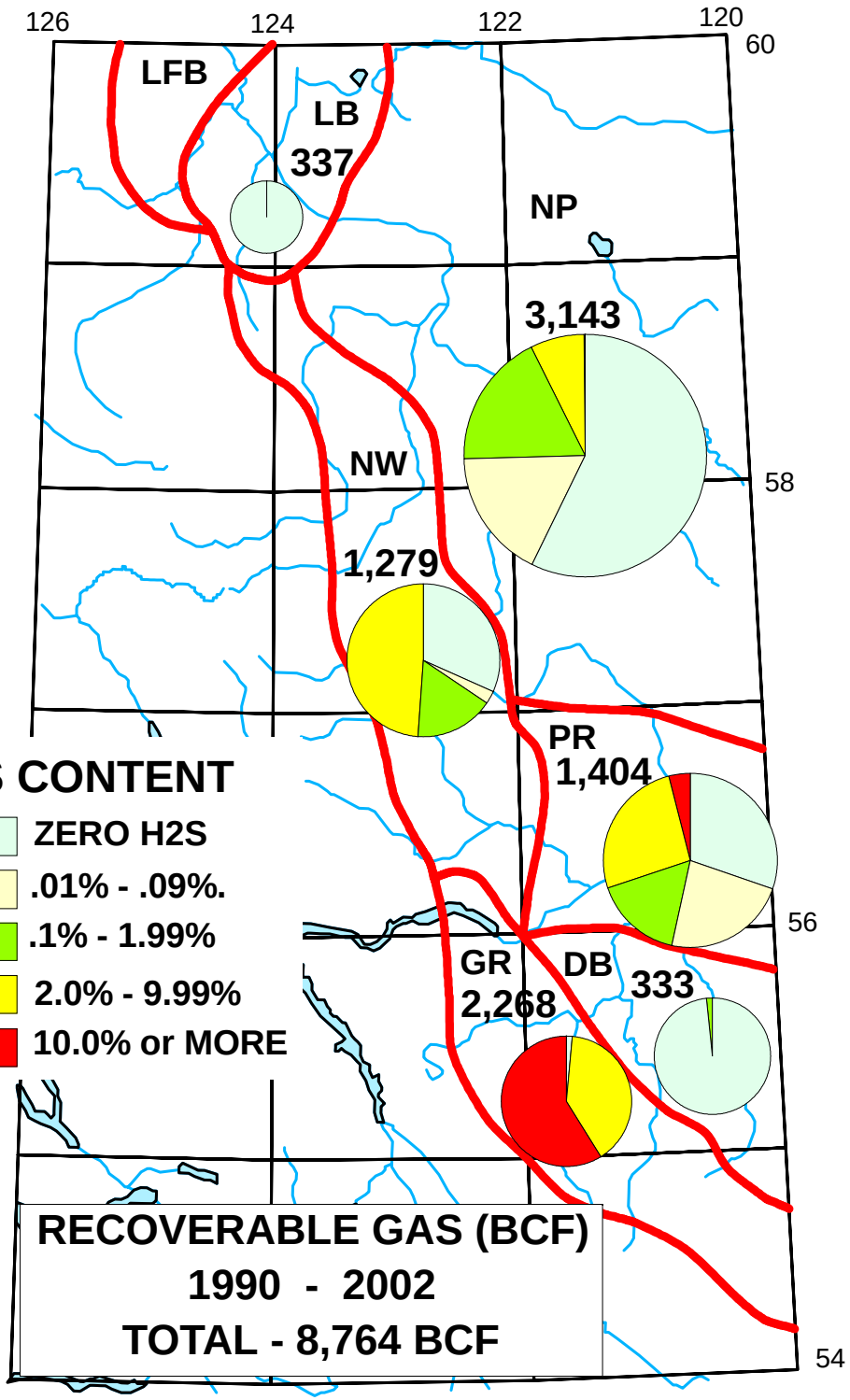
JANUARY 1, 1990 - DECEMBER 31, 2002

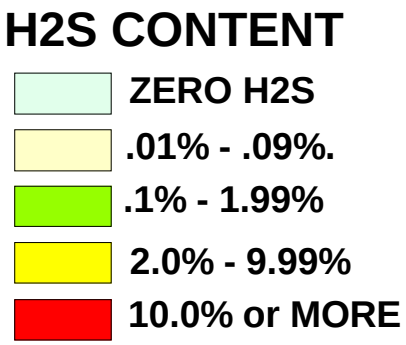
- 727 GAS POOLS
- GAS-IN-PLACE - 11.1 TCF
- INITIAL MARKETABLE GAS - 7.2 TCF
- REMAINING MARKETABLE GAS - 4.3 TCF
- AVERAGE POOL SIZE - 10.0 BCF
- MEDIAN POOL SIZE - 2.8 BCF
- 95th PERCENTILE - 35.4 BCF


126
124
122
120
60
58
56
54
LFB
LB
4
NP
311
NW
71
PR
237
DB
55
GR
49
UCRET
LCRET
TRIAS
PMP
MISS
UDEV
MDEV
NUMBER OF POOLS
1990 - 2002
727 POOLS

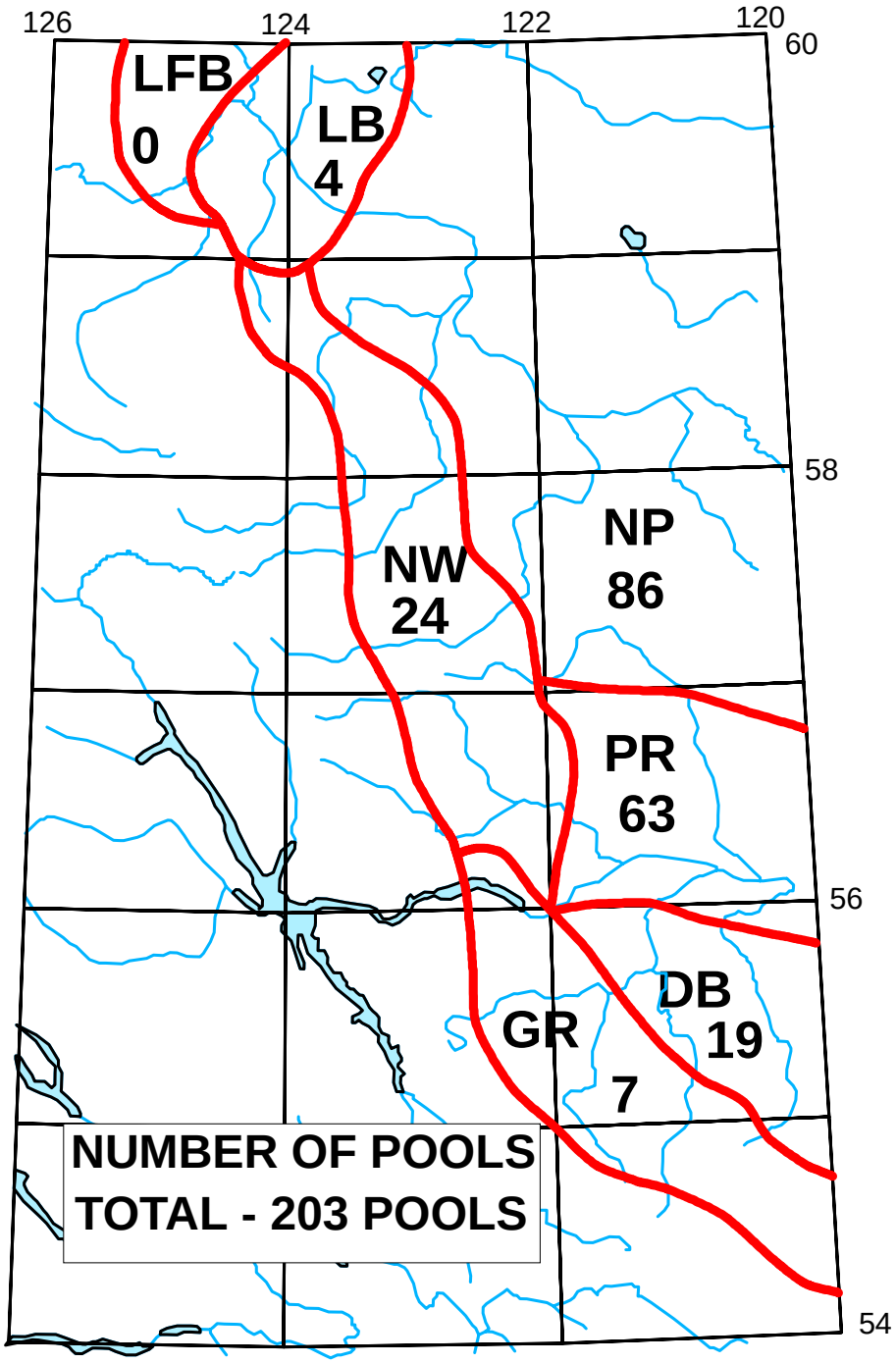

126
124
122
120
60
58
56
54
LFB
LB
302
NP
2,670
NW
1,113
PR
1,186
GR
1,666
DB
311
UCRET
LCRET
TRIAS
PMP
MISS
UDEV
MDEV
MARKETABLE (BCF)
1990- 2002
7,249 BCF

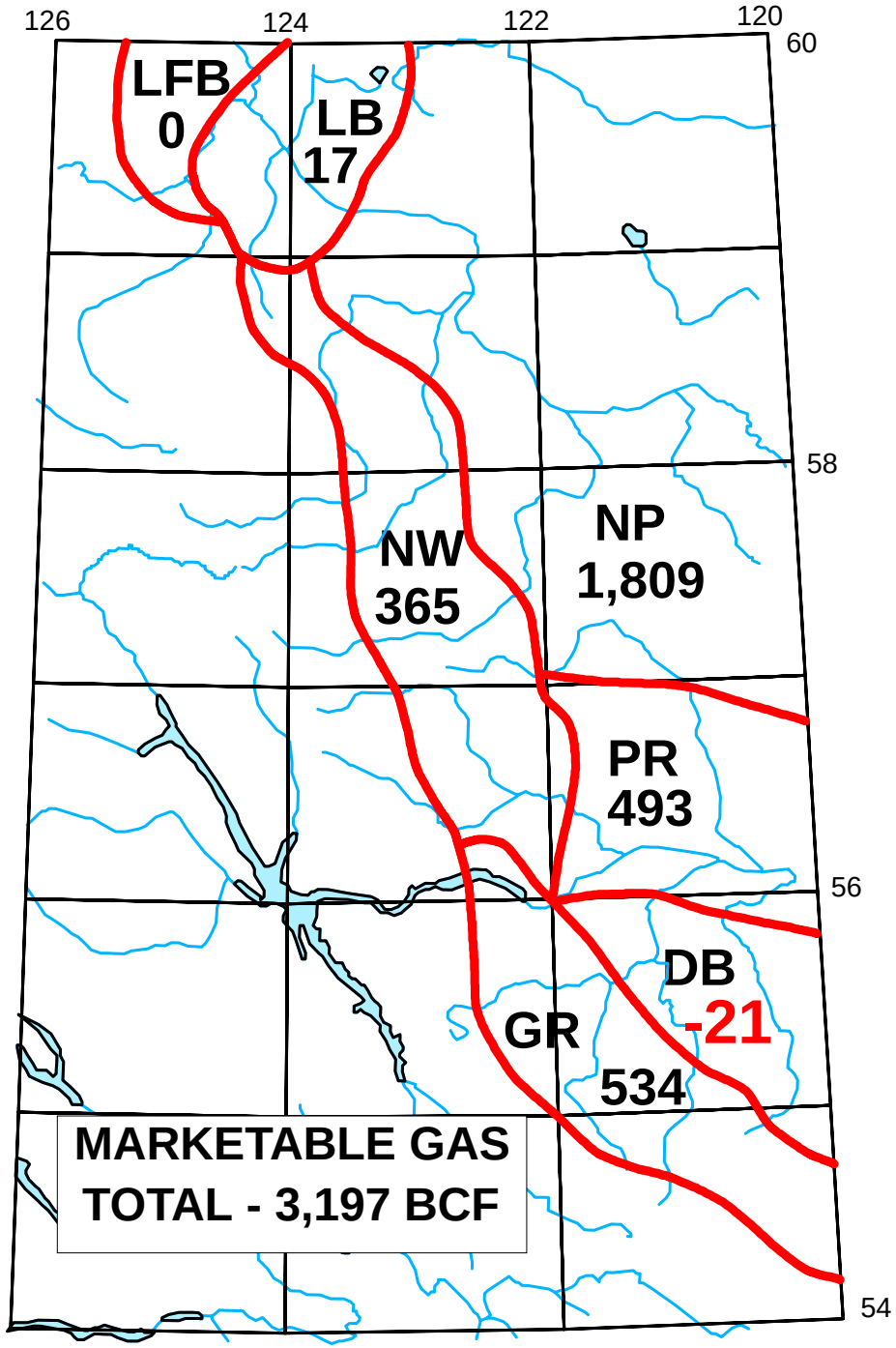

126
124
122
120
60
58
56
54
LFB
LB
4
NP
311
NW
71
PR
237
GR
49
DB
55
NUMBER OF POOLS
1990 - 2002
TOTAL - 727 POOLS


126
124
122
120
60
58
56
54
LFB
LB
337
NP
3,143
NW
1,279
PR
1,404
GR
2,268
DB
333
RECOVERABLE GAS (BCF)
1990 - 2002
TOTAL - 8,764 BCF

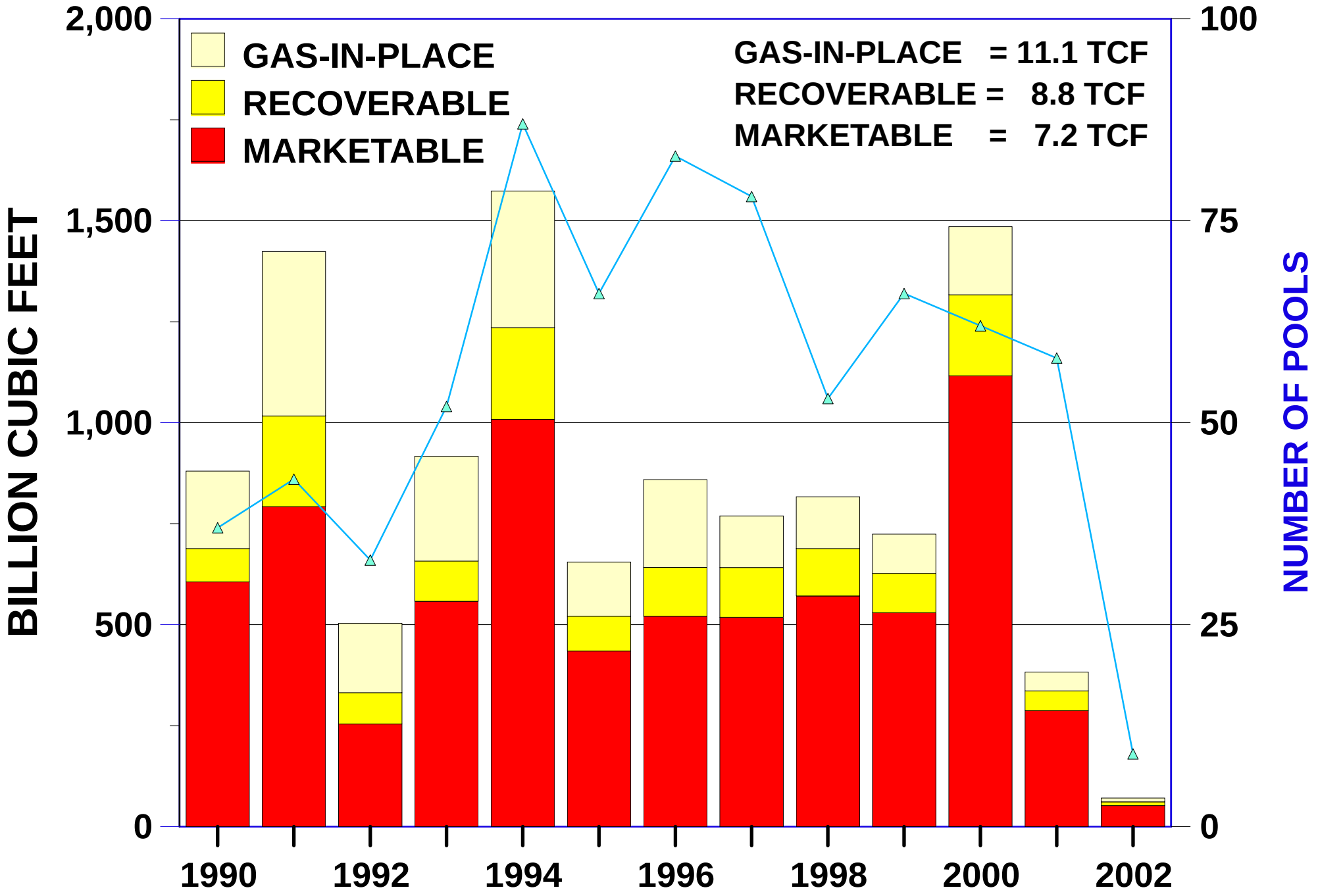

H2S CONTENT
ZERO H2S
.01% - .09%.
.1% - 1.99%
2.0% - 9.99%
10.0% or MORE

B.C. CHANGES JAN,2000 - DEC,2002

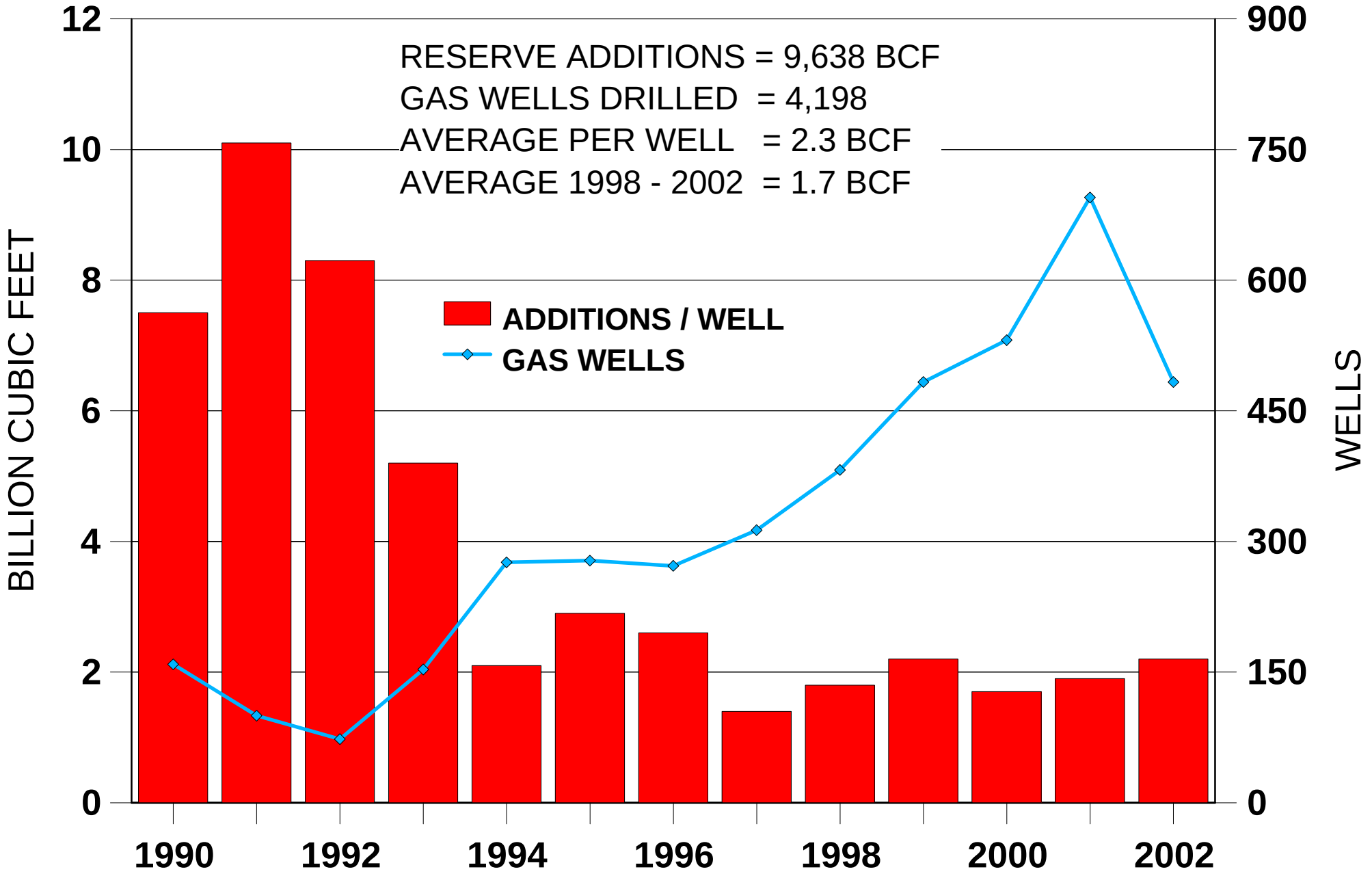




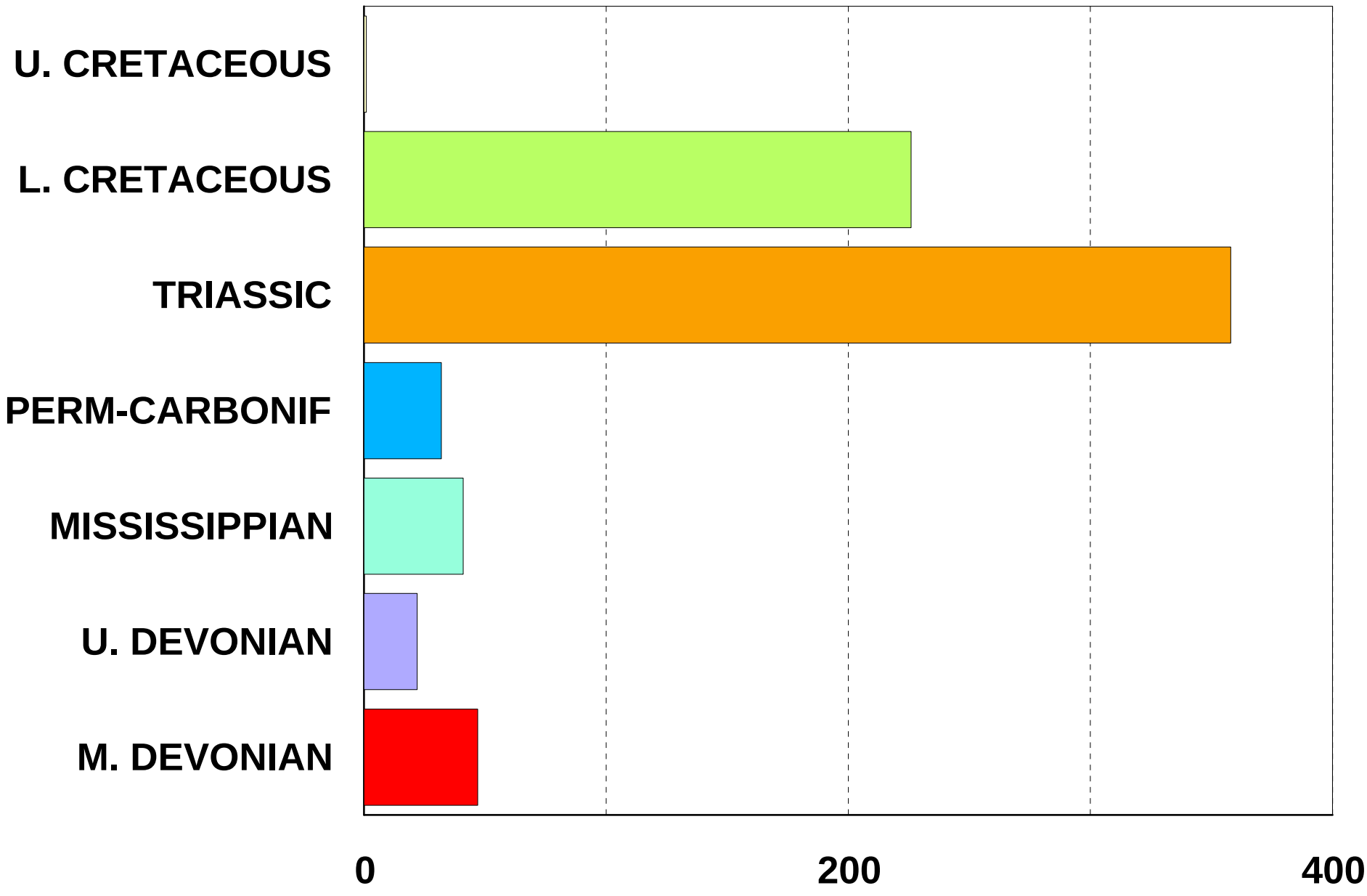
B.C. GAS BY YEAR OF DISCOVERY



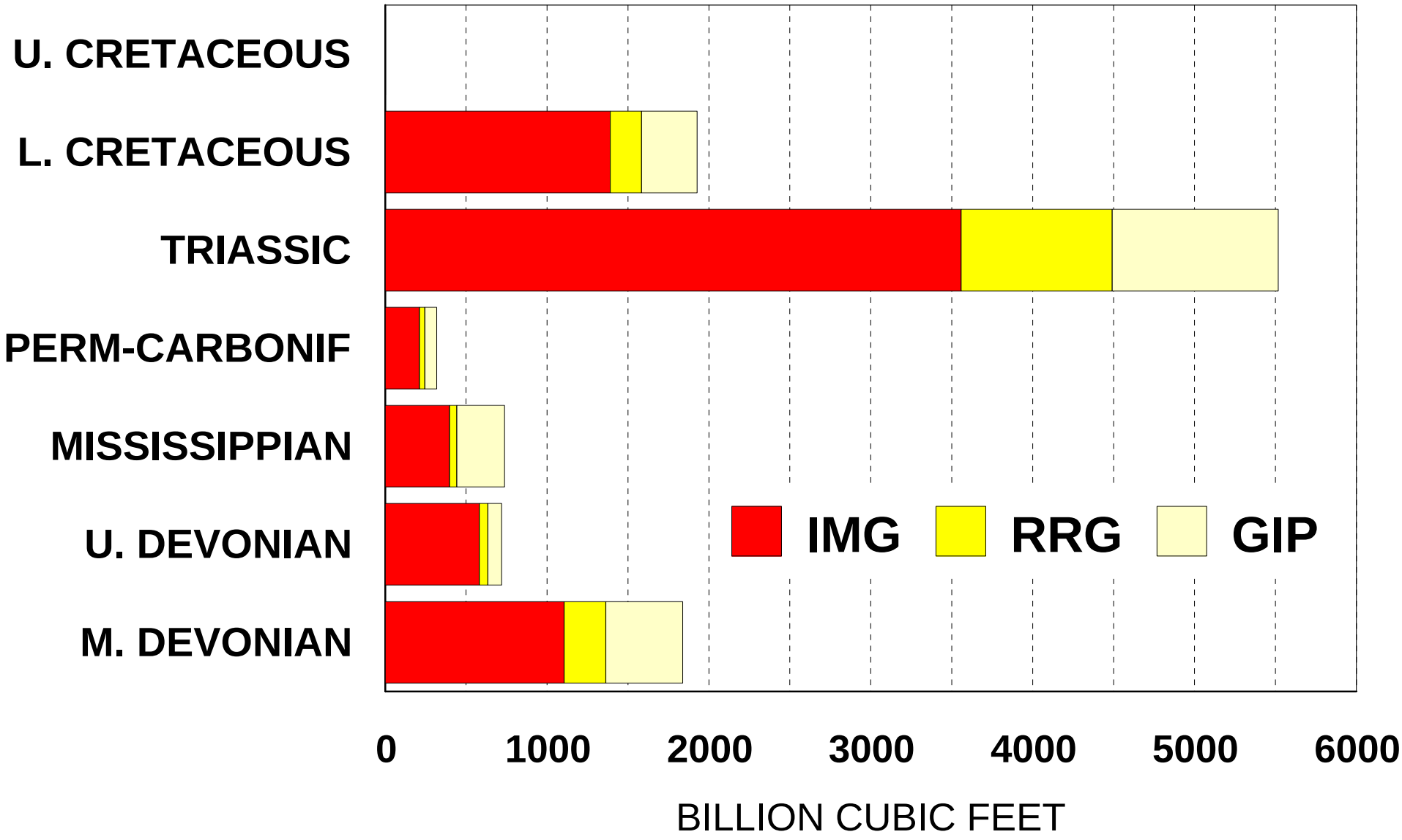
NORTHEAST BRITISH COLUMBIA - MARKETABLE GAS RESERVE ADDITIONS PER GAS WELL DRILLED



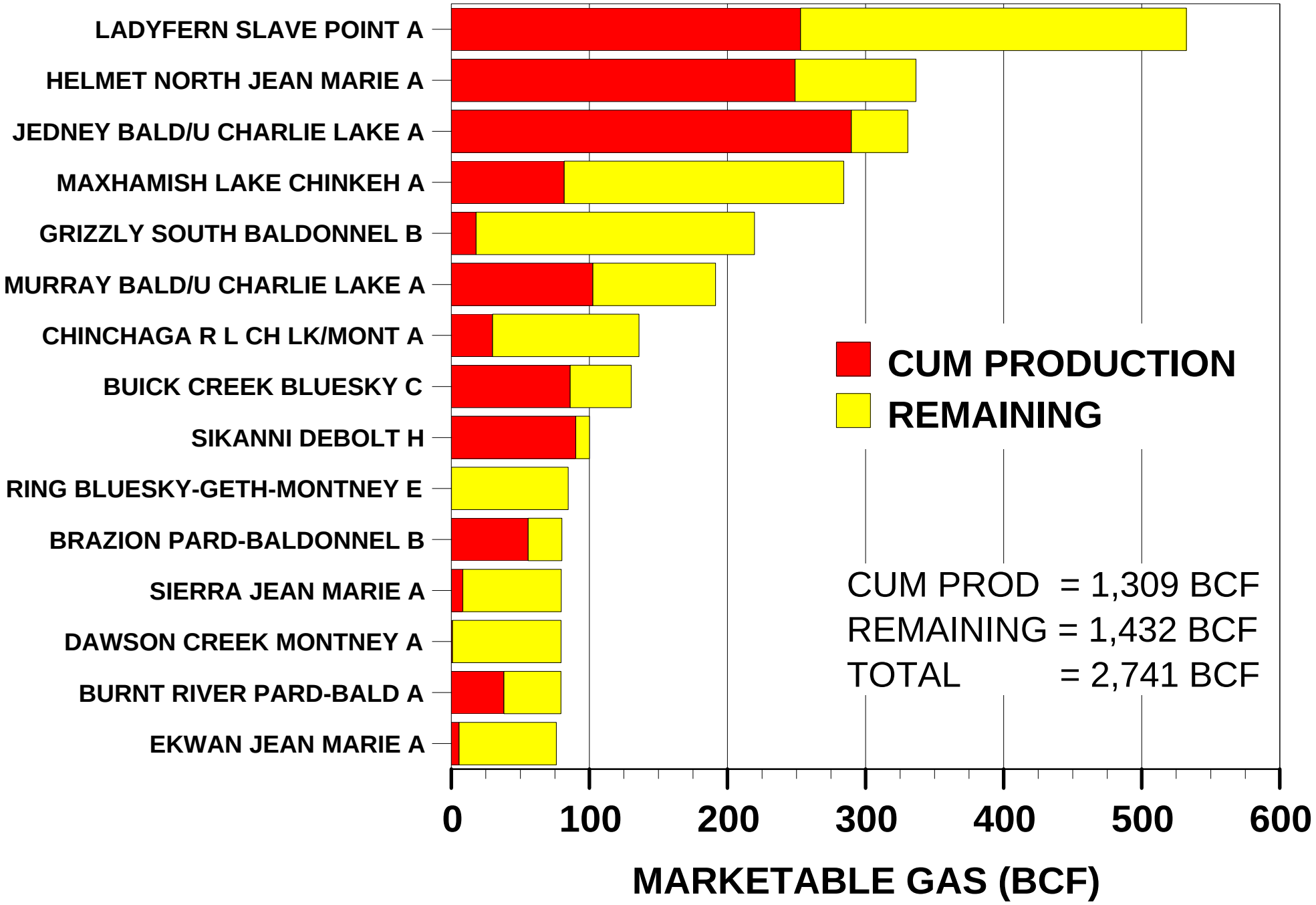
N.E. BRITISH COLUMBIA 1990 - 2002
NUMBER BY STRATIGRAPHIC HORIZON

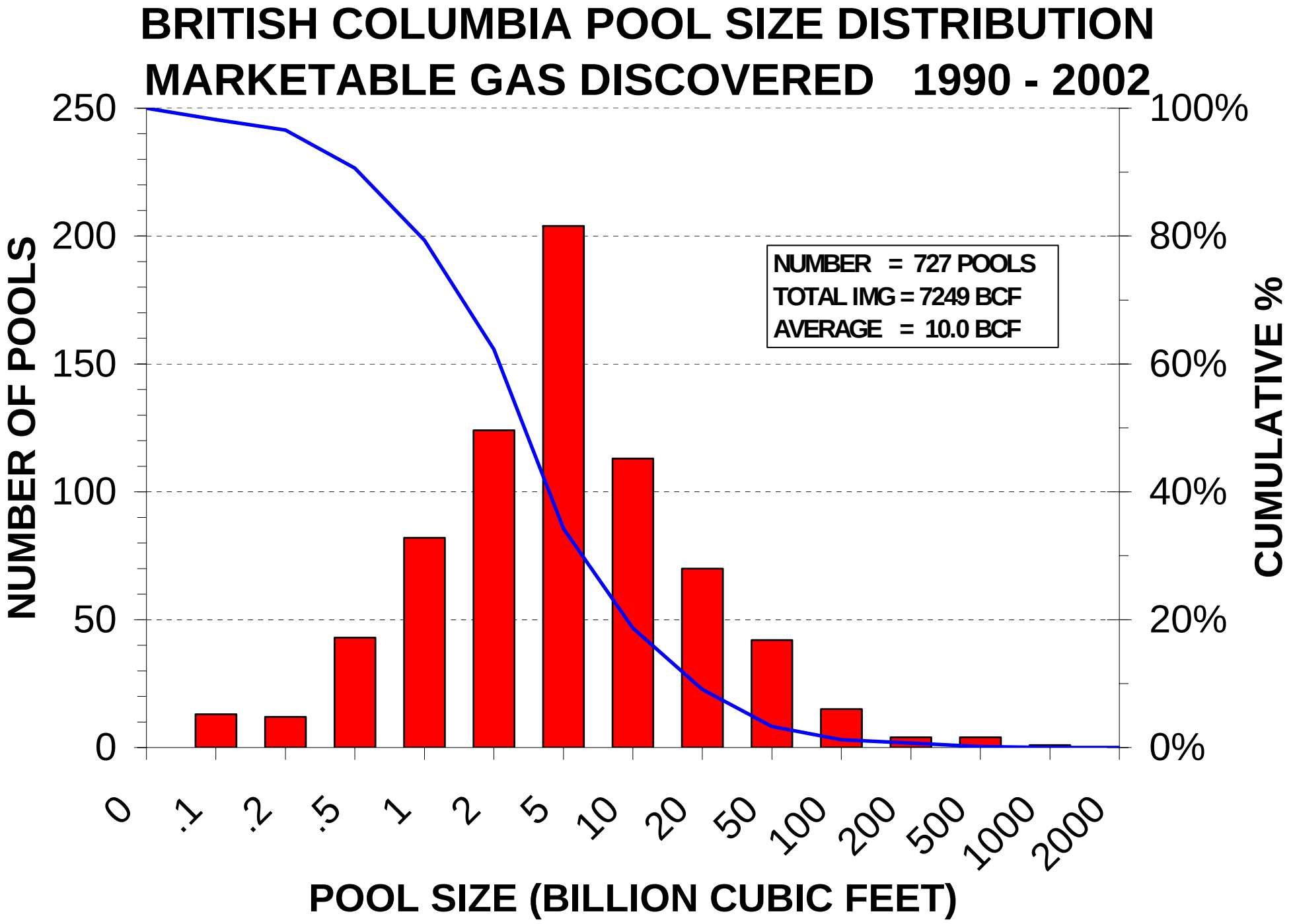


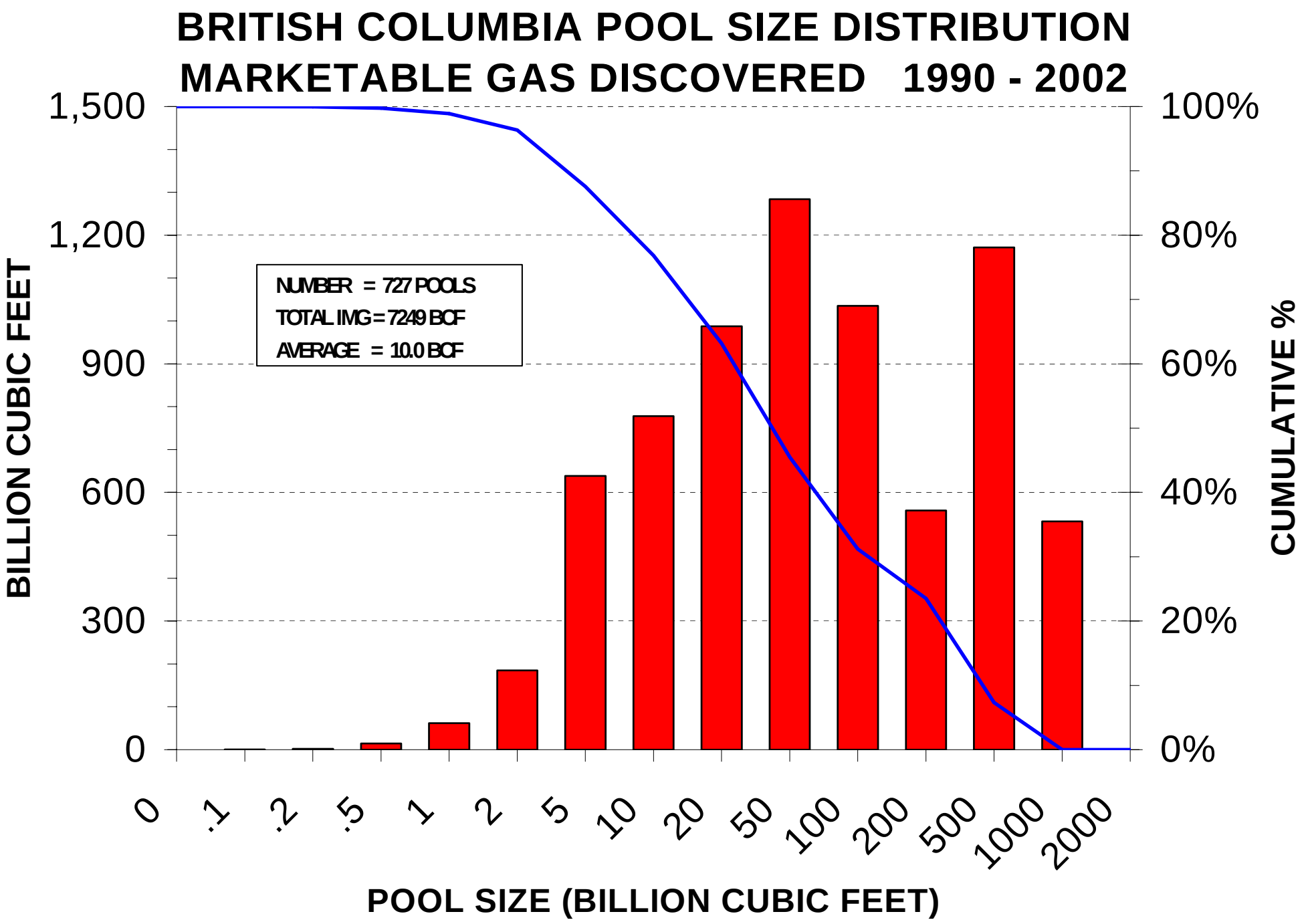
N.E. BRITISH COLUMBIA 1990 - 2002
GAS BY STRATIGRAPHIC HORIZON



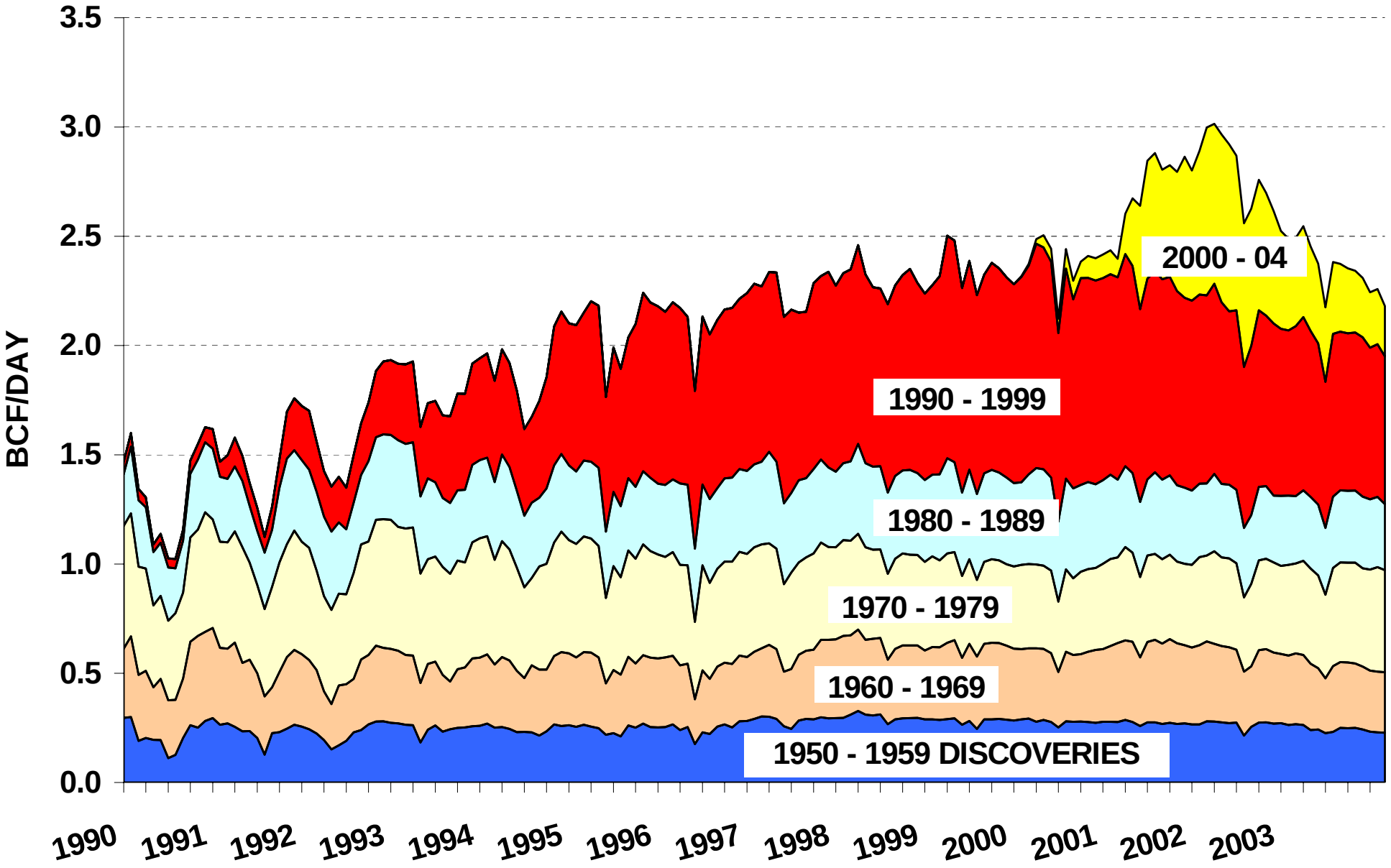
B.C. - TOP 15 GAS POOLS 1990 - 2002



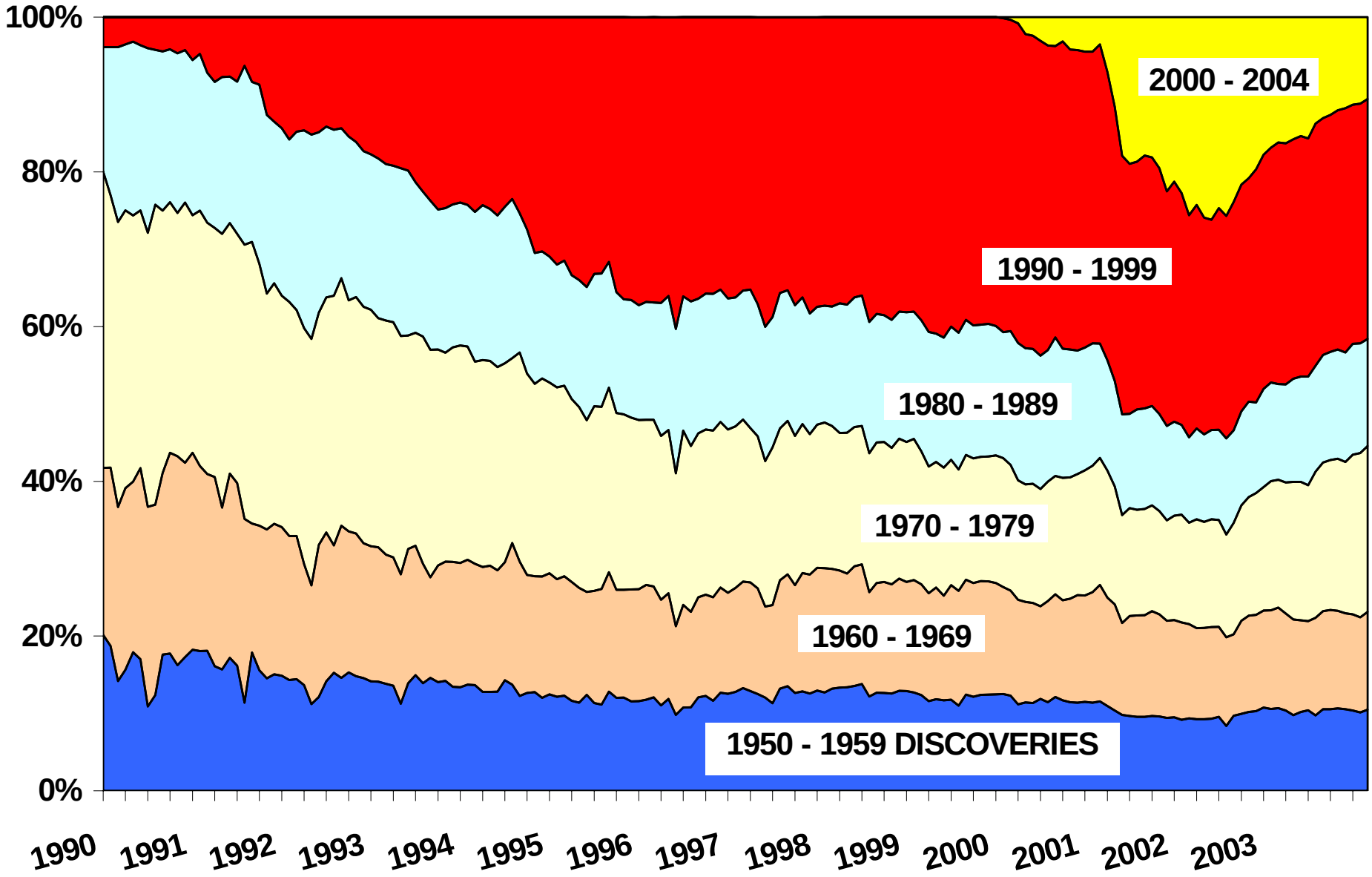

BRITISH COLUMBIA POOL SIZE DISTRIBUTION
MARKETABLE GAS DISCOVERED 1990 - 2002
NUMBER OF POOLS
CUMULATIVE %
NUMBER = 727 POOLS
TOTAL IMG = 7249 BCF
AVERAGE = 10.0 BCF
250
200
150
100
50
0
100%
80%
60%
40%
20%
0%
0
.1
.2
.5
1
2
5
10
20
50
100
200
500
1000
2000
POOL SIZE (BILLION CUBIC FEET)


BRITISH COLUMBIA POOL SIZE DISTRIBUTION
MARKETABLE GAS DISCOVERED 1990 - 2002
NUMBER = 727 POOLS
TOTAL IMG = 7249 BCF
AVERAGE = 10.0 BCF
BILLION CUBIC FEET
CUMULATIVE %
1,500
1,200
900
600
300
0
100%
80%
60%
40%
20%
0%
0
.1
.2
.5
1
2
5
10
20
50
100
200
500
1000
2000
POOL SIZE (BILLION CUBIC FEET)

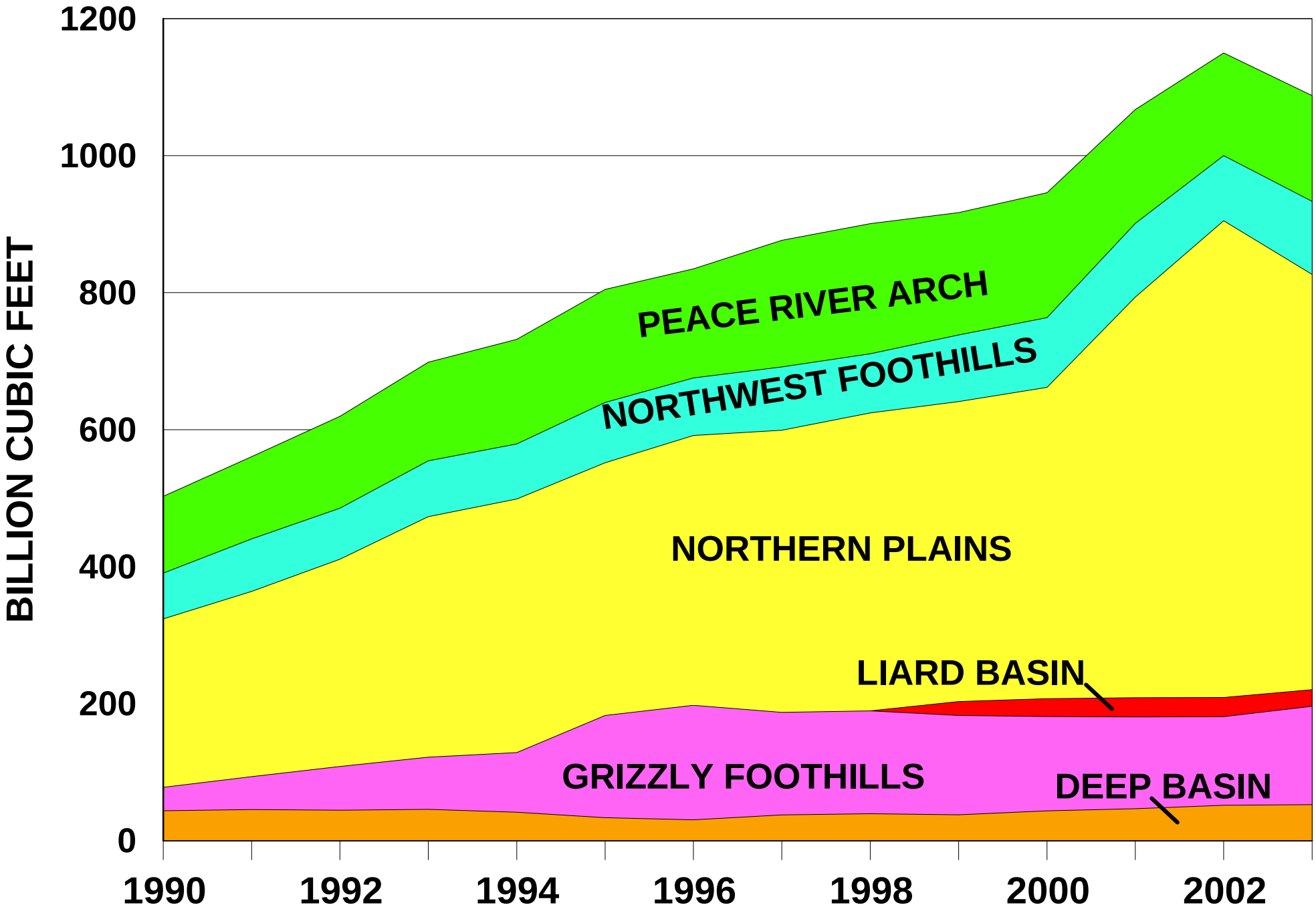
BRITISH COLUMBIA MONTHLY GAS PRODUCTION
BY DECADE OF DISCOVERY



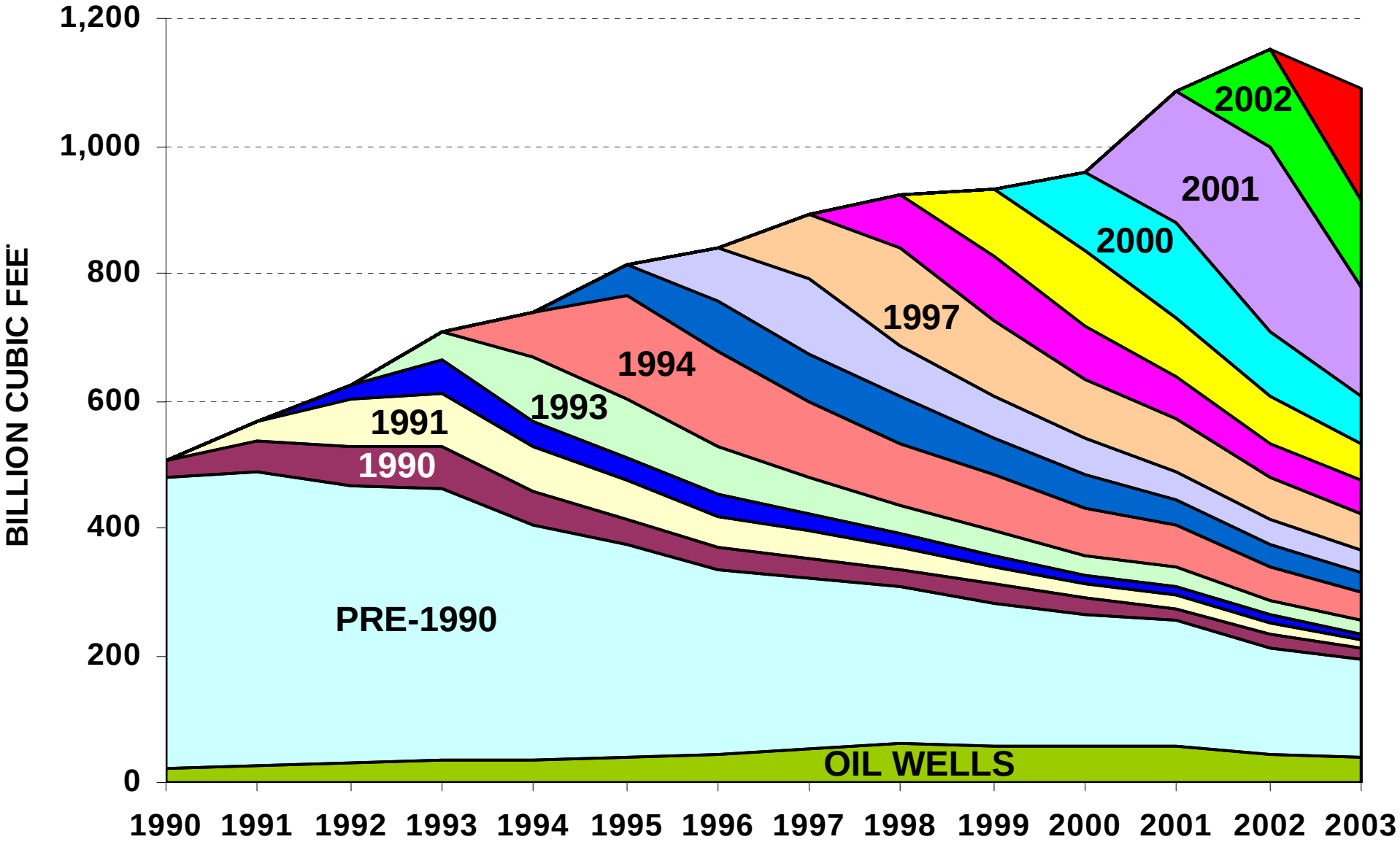
BRITISH COLUMBIA MONTHLY GAS PRODUCTION
PERCENTAGE BY DECADE OF DISCOVERY

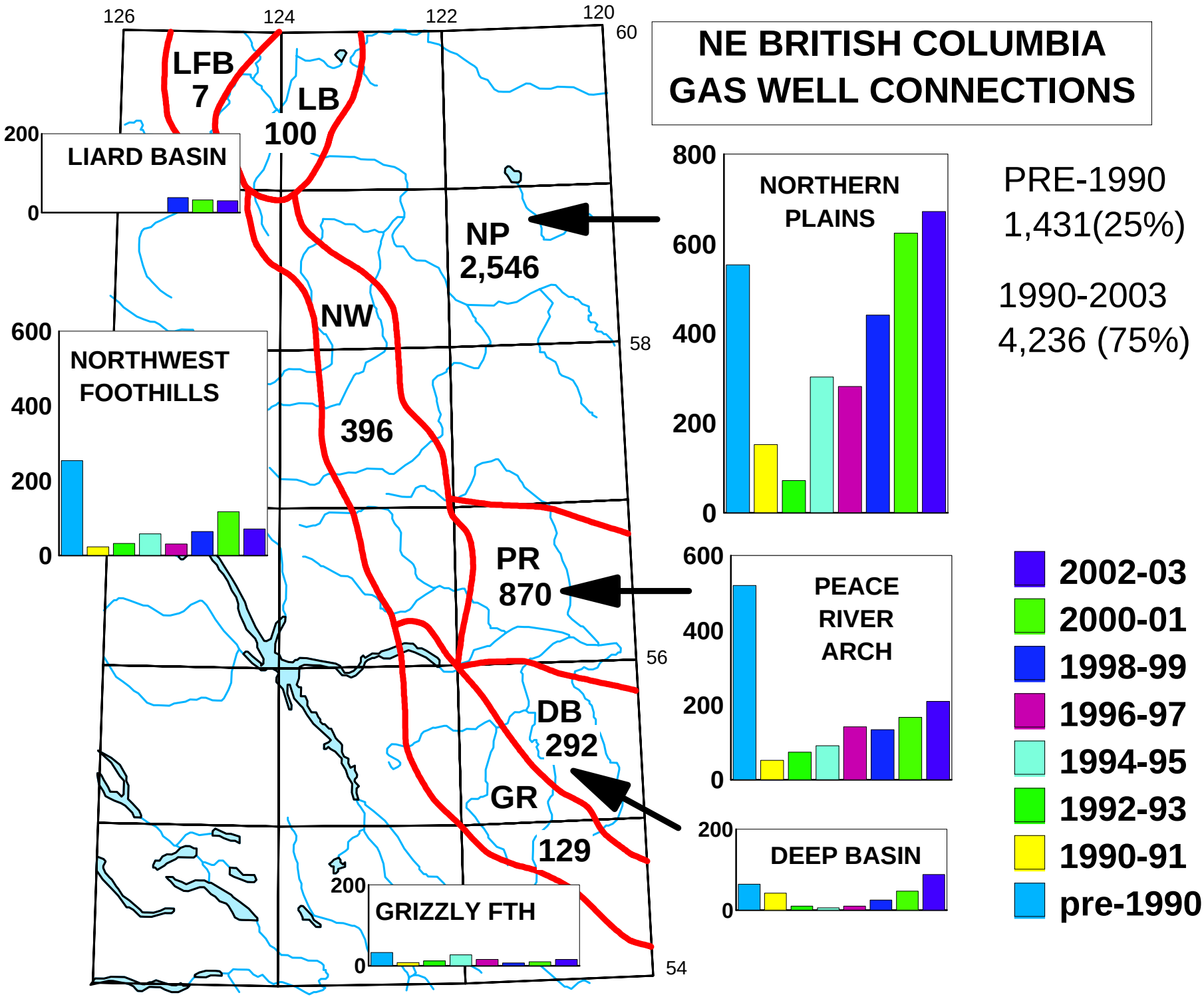


BRITISH COLUMBIA GAS PRODUCTION BY STRUCTURAL AREA

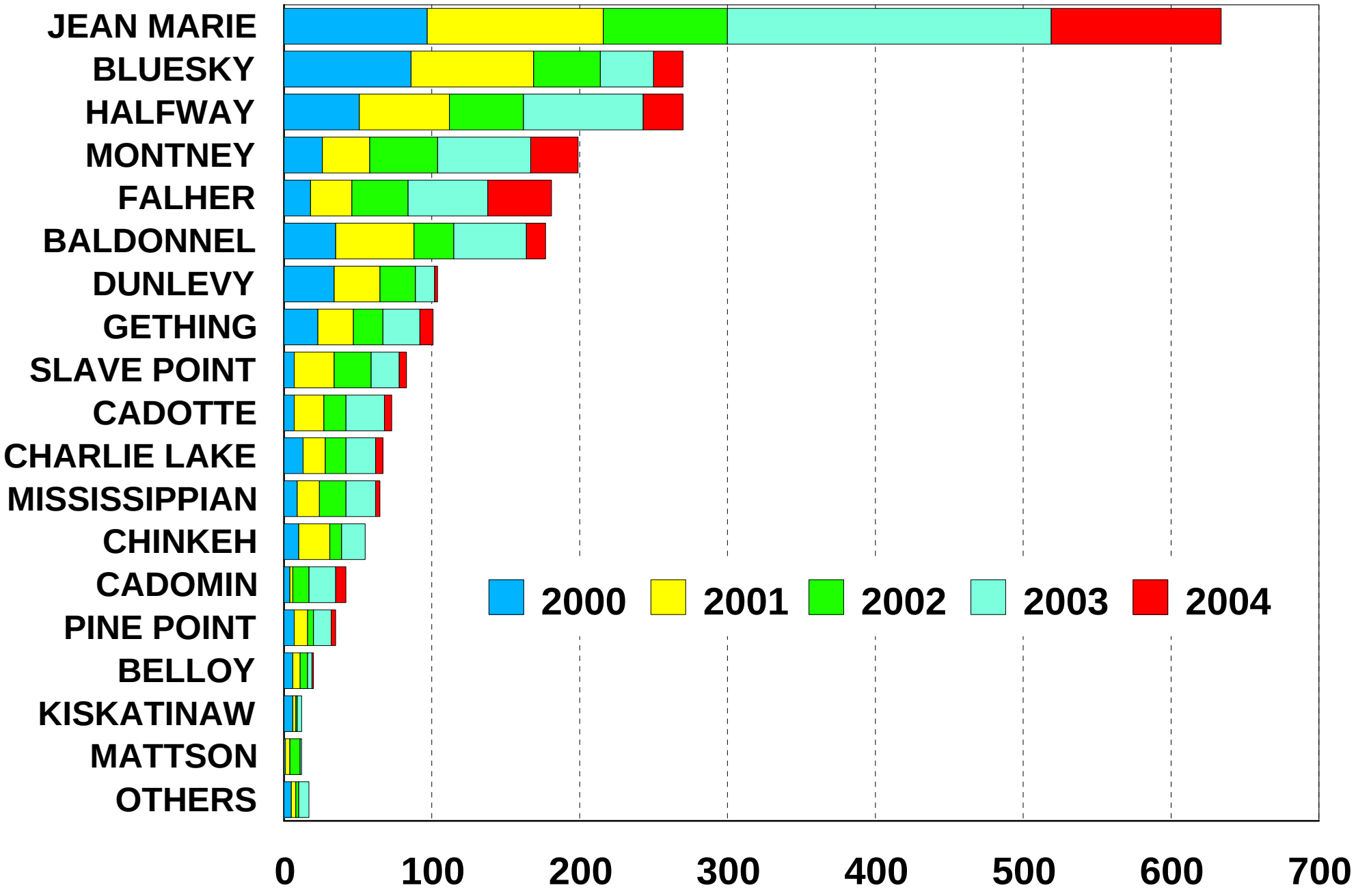


BRITISH COLUMBIA GAS PRODUCTION BY CONNECTION YEAR

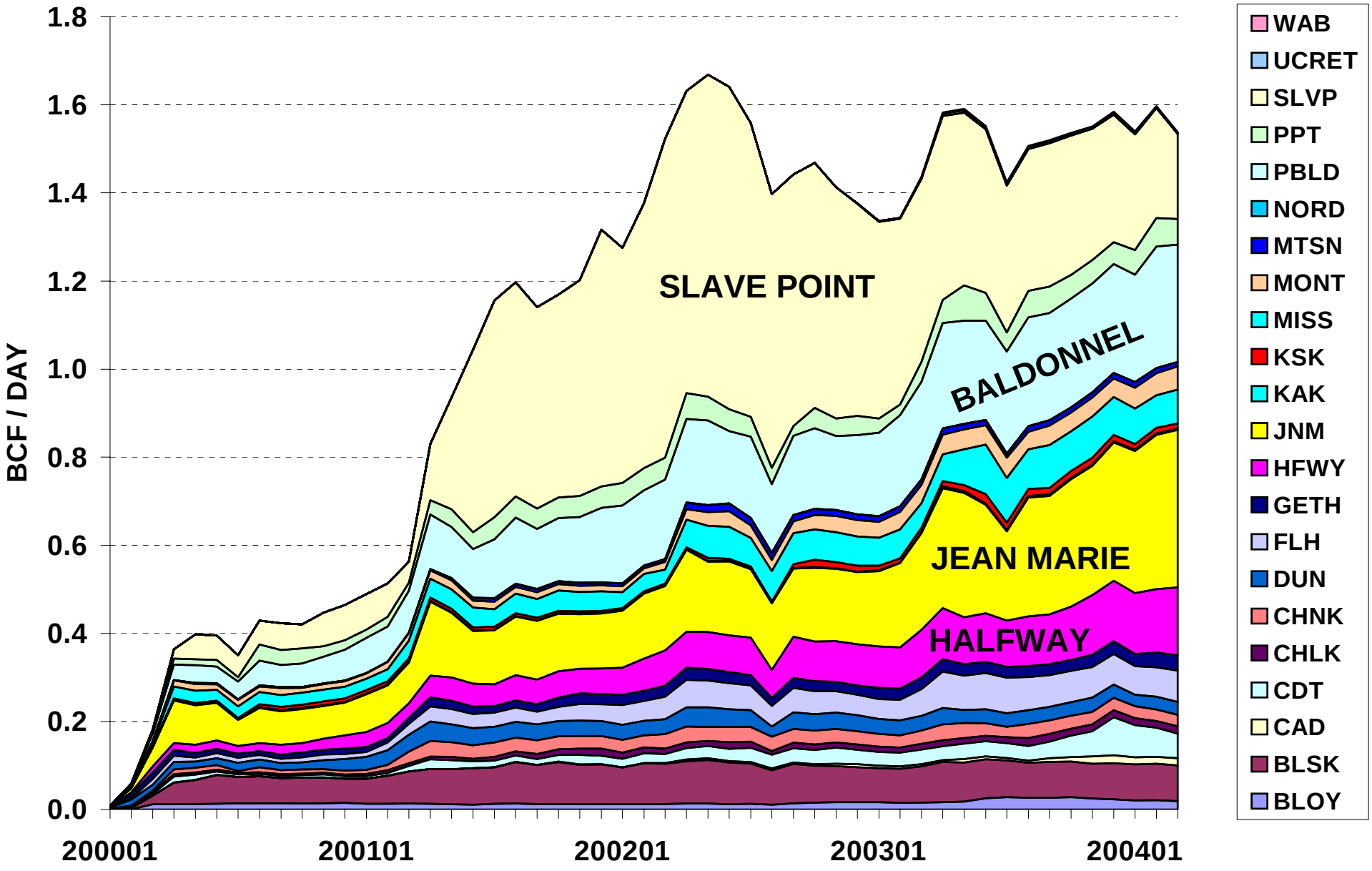



NE BRITISH COLUMBIA
GAS WELL CONNECTIONS
126
124
122
120
60
58
56
54
LFB
7
LB
100
LIARD BASIN
200
0
NP
2,546
NW
396
NORTHWEST
FOOTHILLS
600
400
200
0
PR
870
DB
292
GR
129
GRIZZLY FTH
NORTHERN
PLAINS
800
600
400
200
0
PEACE
RIVER
ARCH
DEEP BASIN
PRE-1990
1,431(25%)
1990-2003
4,236 (75%)
2002-03
2000-01
1998-99
1996-97
1994-95
1992-93
1990-91
pre-1990

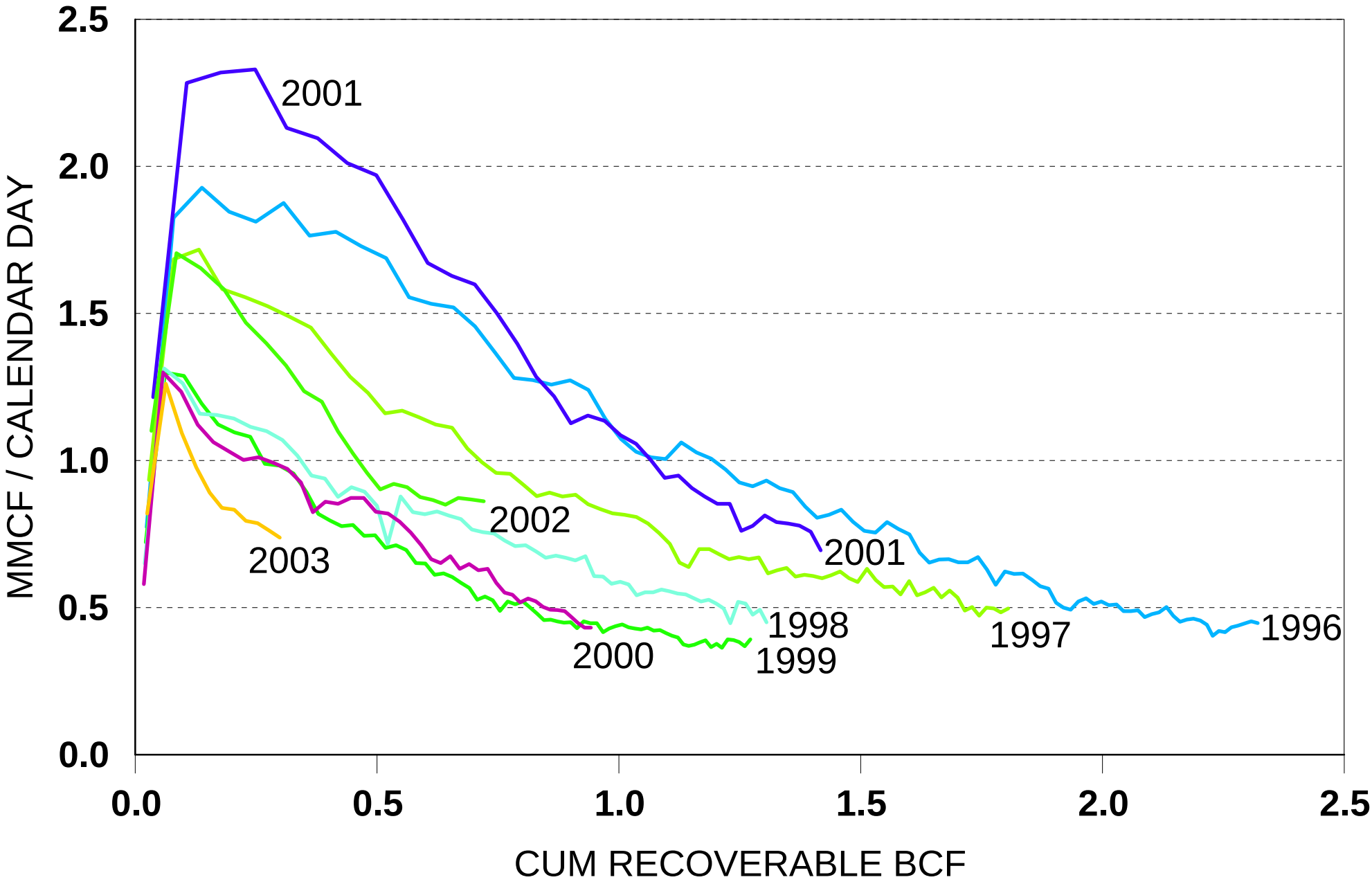
NORTHEAST BRITISH COLUMBIA GAS WELLS
BY YEAR CONNECTED / STRATIGRAPHIC HORIZON



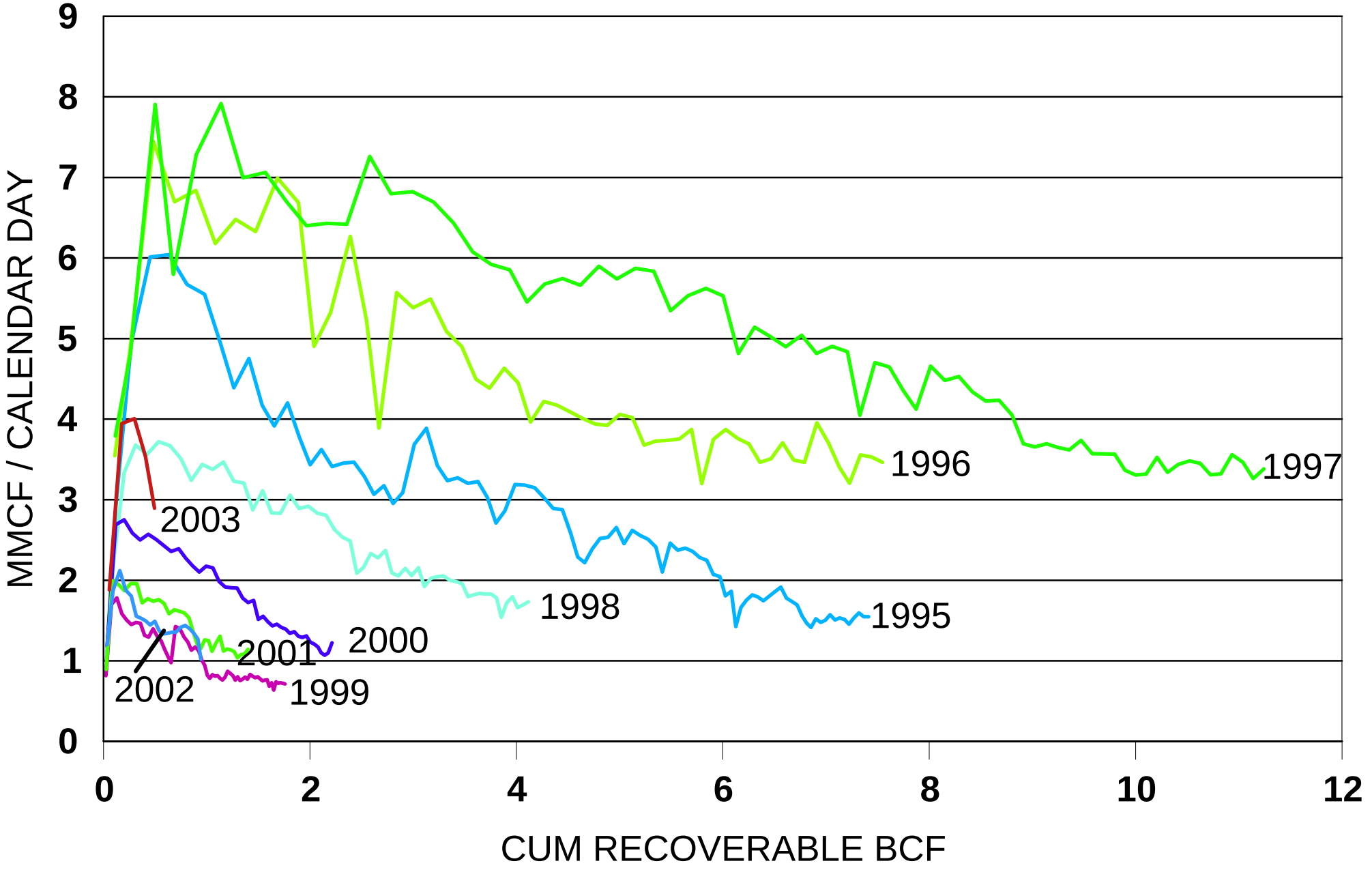
NE BRITISH COLUMBIA PRODUCTION FROM 2000 - 2004 GAS WELL CONNECTIONS



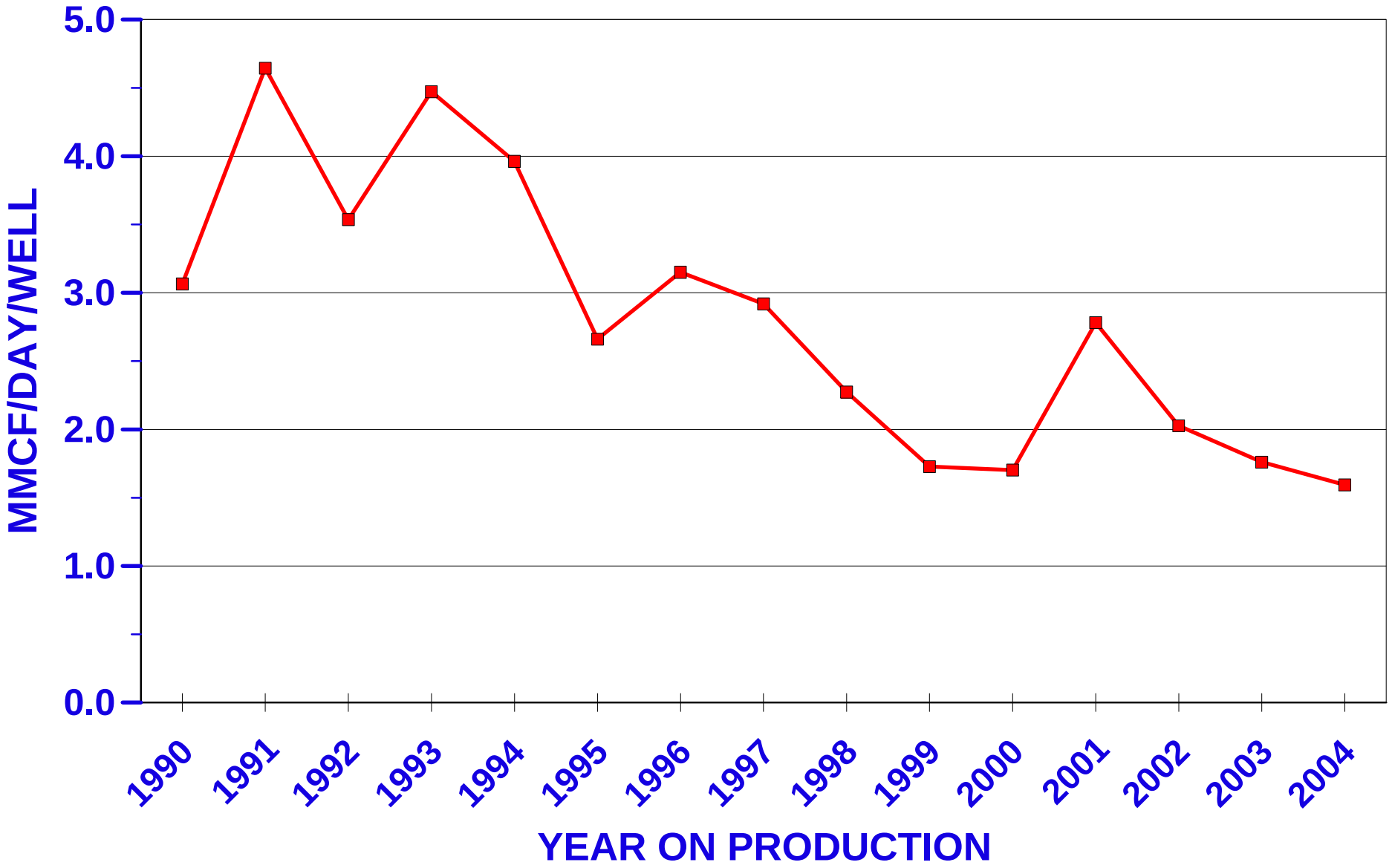
BRITISH COLUMBIA PLAINS
GAS WELL PERFORMANCE BY YEAR CONNECTED



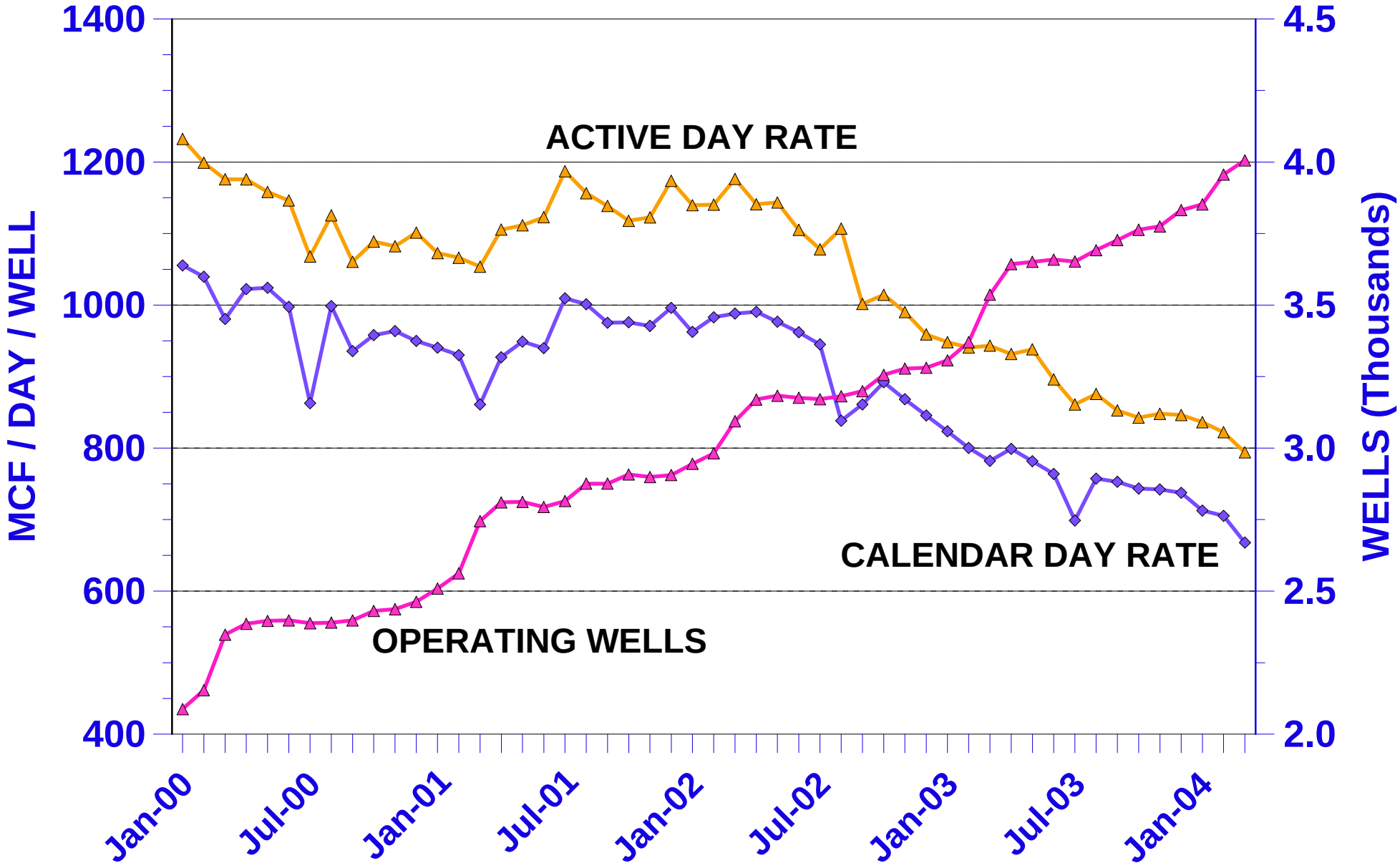
BRITISH COLUMBIA FOOTHILLS
GAS WELL PERFORMANCE BY YEAR CONNECTED



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



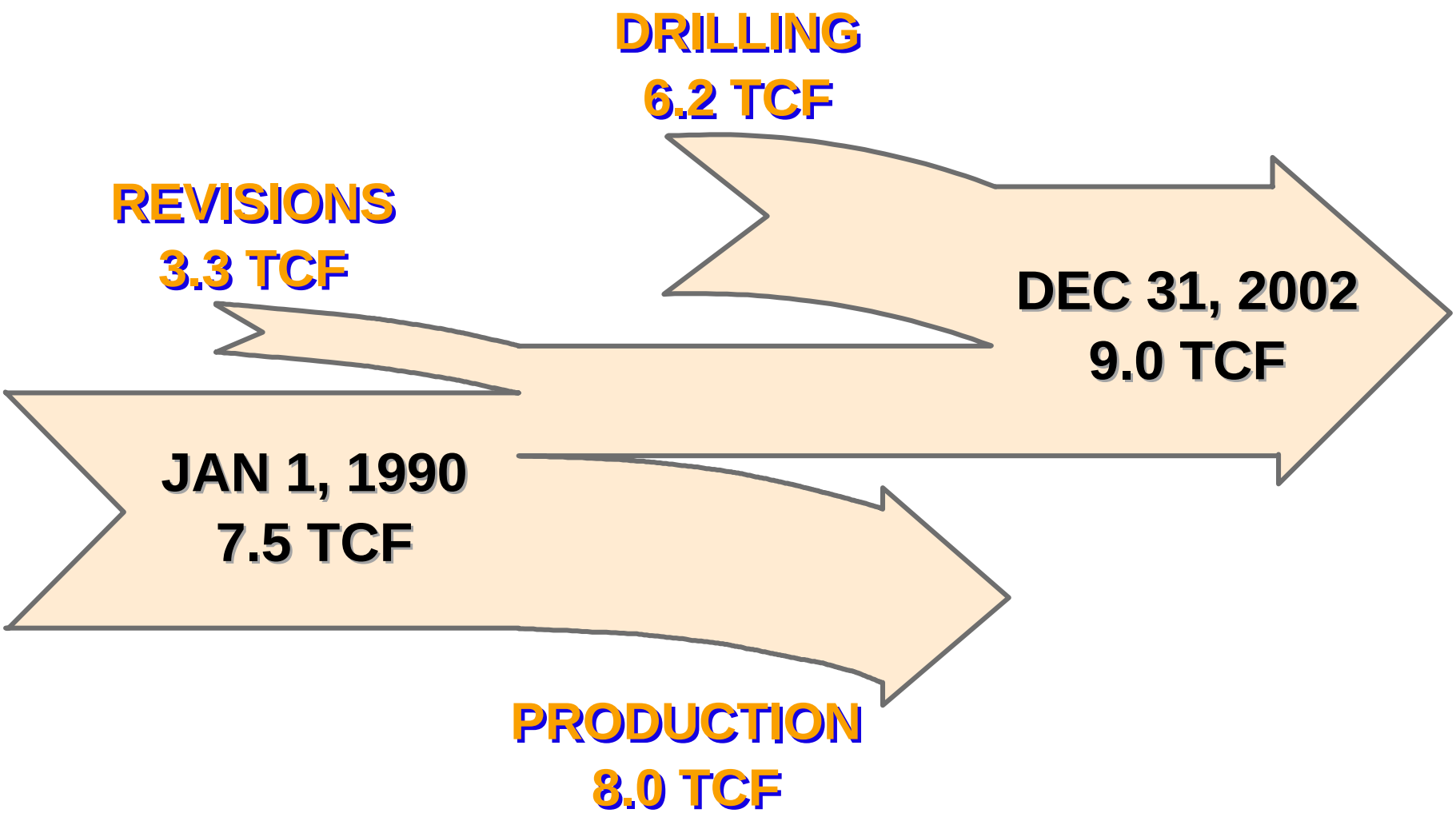
BRITISH COLUMBIA GAS WELLS
AVERAGE PRODUCING WELL RATE



BRITISH COLUMBIA GAS POOLS
PRE-1990 vs 1990-2002

	PRE-1990	1990-2002
RECOVERY FACTORS (% Of GIP)		
RECOVERABLE	74.4%	79.2%
MARKETABLE	60.7%	65.5%
MARKETABLE GAS (BCF)		
AVERAGE POOL SIZE	18.8	10.0
MEDIAN POOL SIZE	2.7	2.8
95th PERCENTILE	62.9	35.4
AVERAGE DEPTH (FEET)	5,391	5,434
AVERAGE RECOVERABLE (MCF/AC-FT)	945	460
% POOLS WITH H2S > 10%	3.9%	5.5%
% RECOVERABLE GAS H2S > 10%	4.0%	15.9%
AVERAGE H2S CONTENT	2.0%	3.9%

BRITISH COLUMBIA SUMMARY 1990 - 2002
REMAINING MARKETABLE GAS RESERVES



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.