Hydrocarbon and By-Product Reserves in British Columbia

September 1, 2010

BC Oil & Gas COMMISSION

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SUMMARY

This report presents estimates of British Columbia's oil, natural gas and associated by-product reserves as of December 31, 2009. The estimates have been prepared by the BC Oil and Gas Commission (Commission) utilizing the most currently available geologic and reservoir interpretations. The reserve estimates represent established reserves and are based on accepted geological and engineering practices.

British Columbia's Remaining Established Reserves as of December 31, 2009, together with a comparison of the December 31, 2008 reserves, are summarized below.

Remaining Established Reserves

		2008	2009
OIL		18.5 10^6 m^3 (116.3 MMSTB)	19.3 10^6 m^3 (121.5 MMSTB)
GAS			
	Total, raw	605.3 10^9 m^3 (21.5 TCF)	657.9 10^9 m^3 (23.4 TCF)
	Total, marketable	496.6 10^9 m^3 (17.6 TCF)	540.5 10^9 m^3 (19.2 TCF)
	Unconnected Gas		
	Raw	19.2 10^9 m^3 (0.680 TCF)	20.1 10^9 m^3 (0.714 TCF)
	Marketable	14.8 10^9 m^3 (0.525 TCF)	16.2 10^9 m^3 (0.576 TCF)
BY-PRODUCTS			
	LPG	25.2 10^6 m^3 (158.7 MMSTB)	26.7 10^6 m^3 (168.0 MMSTB)
	Pentanes+	9.8 10^6 m^3 (61.7 MMSTB)	10.3 10^6 m^3 (64.8 MMSTB)
	Sulphur	14.1 10^6 tonnes (13.9 MMLT)	14.9 10^6 tonnes (14.7 MMLT)

DISCUSSION

A. Oil Reserves

The province's oil production for the 2009 calendar year was 1 219 10^3 m^3, 9.1 per cent less than the production volume for the previous year marking the ninth year in a row of flat or decreasing annual production. Thirty-one oil wells (Fig. 3) were drilled during 2009, more than double the 13 oil wells drilled last year. The increase in drilling was a contributing factor to the remaining oil reserves at December 31, 2009 increasing to 19.3 10^6 m^3 from 18.5 10^6 m^3 in 2008.

A decrease in oil production combined with an increase in remaining reserves have resulted in an increase in the remaining reserves to production ratio (R/P ratio), increasing from 13.8 years in 2008 to 15.8 years in 2009 (Figures 1 and 2).

The largest positive revision resulted from a performance review of the Boundary Lake oil pool in the Boundary Lake area. This revision accounted for 1.5 10^6 m^3 or 83 per cent of the total revisions in 2009. Overall changes to oil reserves due to revisions in 2009 yielded an increase of 1.8 10^6 m^3.

Drilling activity resulted in three new oil pools being discovered—Maxhamish Lake-Chinkeh A, Oak-Boundary Lake B, and Boundary Lake-Halfway M. The largest single increase was the Boundary Lake-Halfway M pool containing three wells and carrying an initial reserve estimated at 40.9 10^3 m^3. Overall drilling activity added initial reserves of 288.6 10^3 m^3, an increase from the previous year's bookings of 162.0 10^3 m^3. The increase in oil drilling during 2009 increased the reserves added per well drilled value to 66.3 10^3 m^3 (Figure 3).

British Columbia's oil fields continue to be dominated by secondary recovery schemes. Waterflood pools account for approximately 50 per cent of remaining oil reserves (Table VII) with Hay River and Boundary Lake still being the dominant contributors.

Gas injection is currently occurring in three pools (Table VIII) and contributes about one per cent to the provincial remaining reserves.

Figure 1: Historical Remaining Oil Reserves Versus R/P Ratio

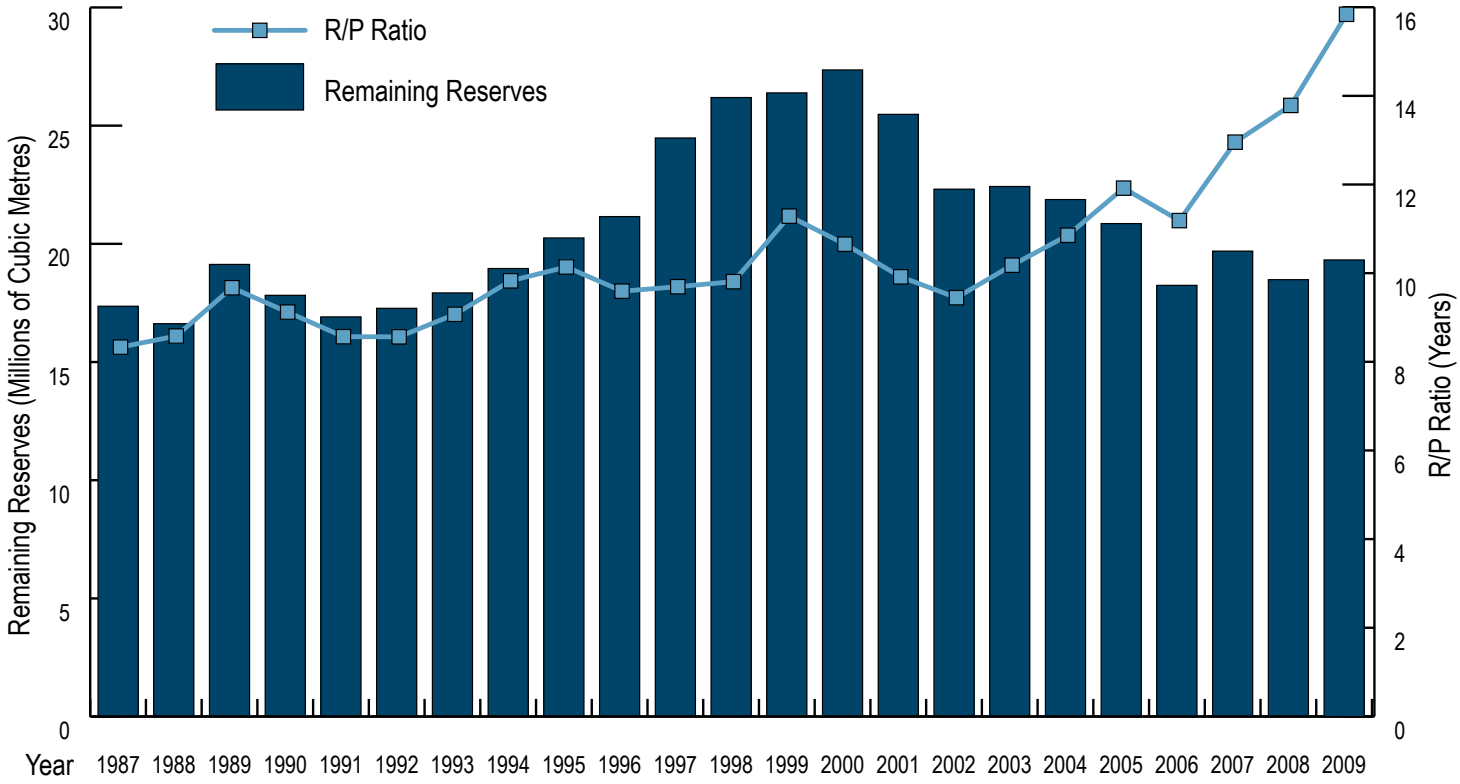


Figure 2: Historical Remaining Oil Reserves Versus Annual Production

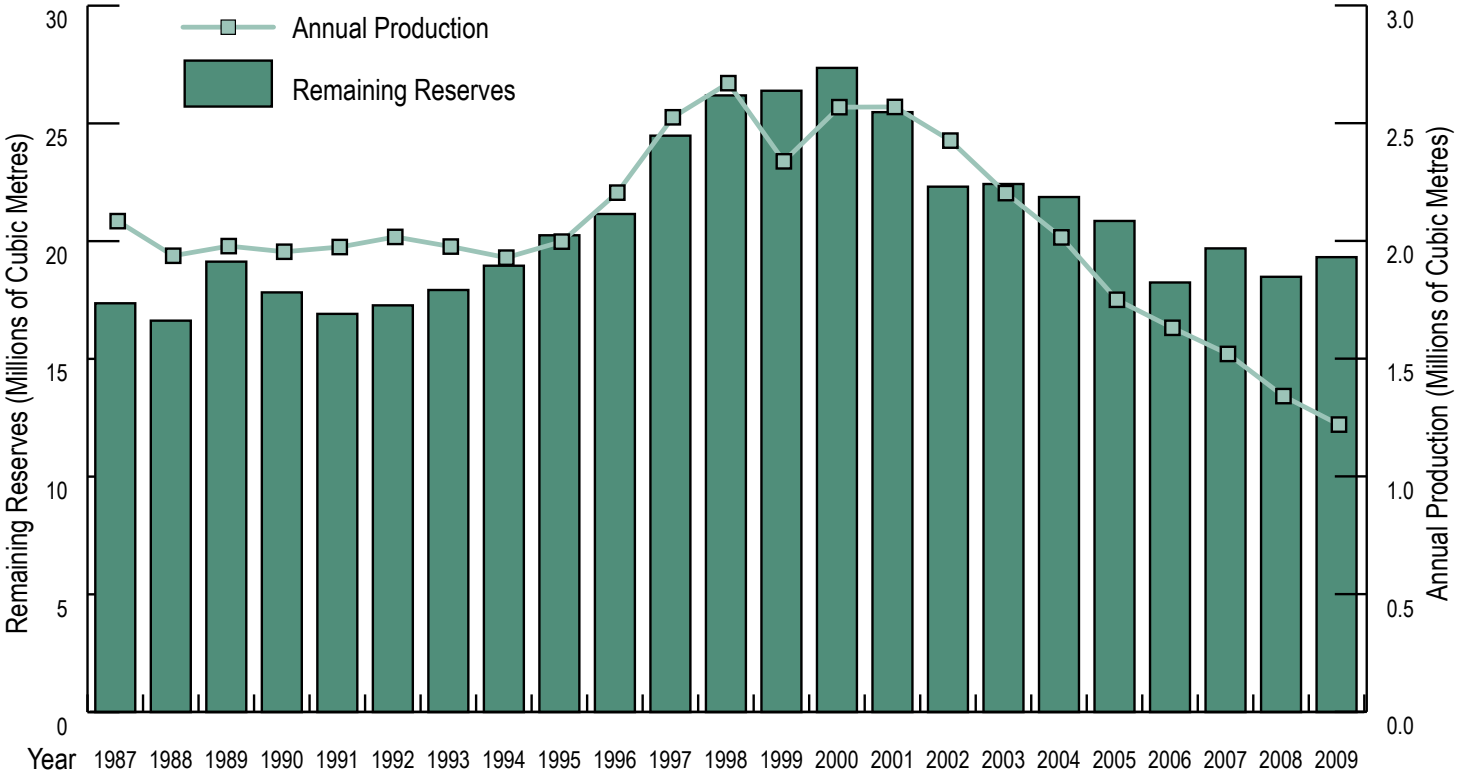
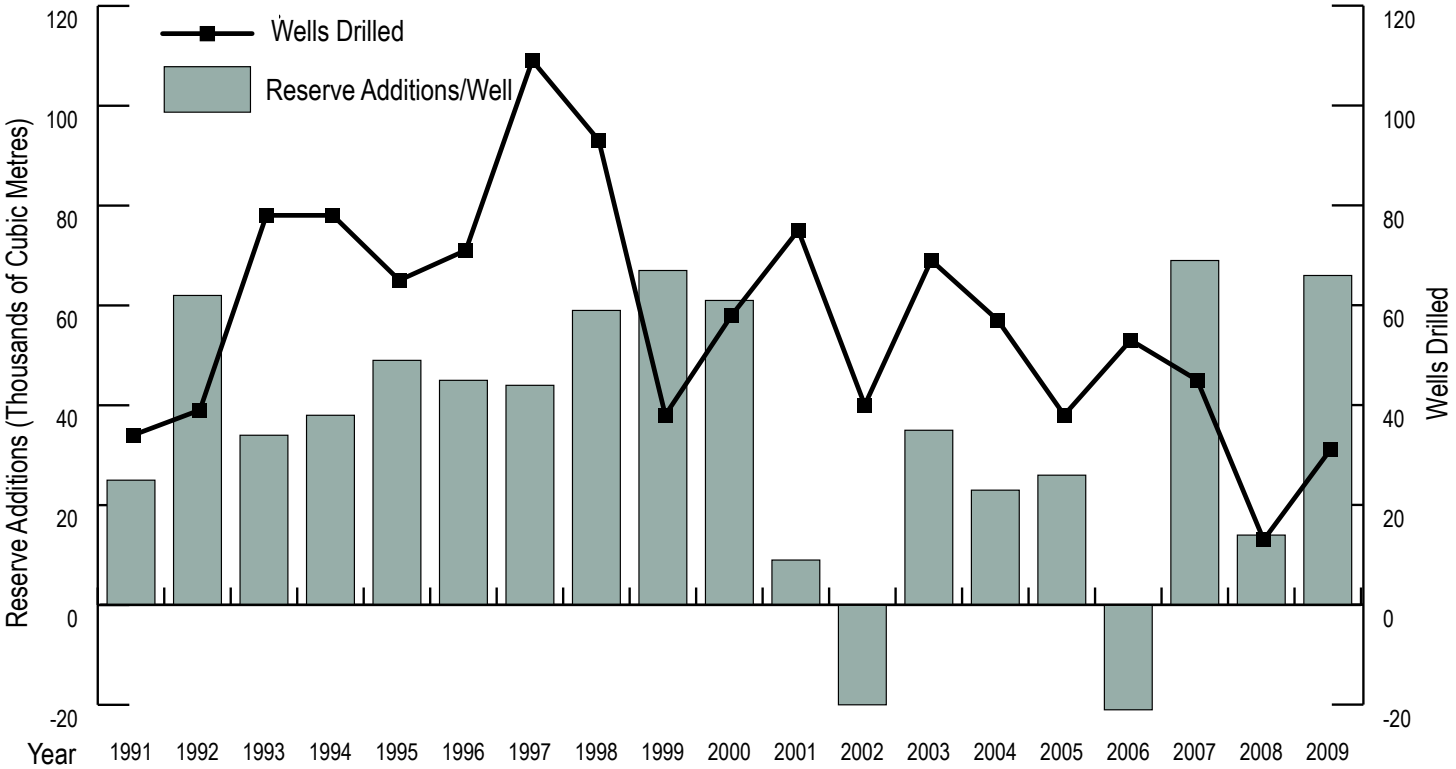


Figure 3: Oil Reserves - Reserve Additions Per Well Drilled



B. Gas Reserves

The Province's established remaining reserves of raw natural gas were 657.9 10^9 m^3 as at December 31, 2009. For the ninth year in a row these figures represent the highest level of established gas reserves in the province's history. The 2009 year-end raw gas reserves represent an 8.7 per cent increase over the 2008 year-end reserves.

Raw natural gas production for the year, as reported in this publication, was 30.8 10^9 m^3, a slight increase over the preceding year's published production. The raw gas production for the year 2009 as reported by the Mineral, Oil and Gas Revenue Branch of the Ministry of Finance was 33.0 10^9 m^3, a slight decrease over last year's reported production. The discrepancy in reported raw gas production between agencies is due to the fact that the Commission only reports raw natural gas production for wells associated with gas pools that have been assigned established reserves. Due to industry activity during 2009, the provincial natural gas production and reserves are understated by approximately seven per cent, a slight improvement from 2008.

The industry's exploration and development activities in British Columbia added 86.5 10^9 m^3 of raw gas reserves, a decrease of 45 per cent from the 2008 additions. Continued steady production combined with an overall increase in reserves resulted in a slight increase in the reserves to production (R/P) ratio, increasing from 20.0 in 2008 to 21.3 in 2009 (Fig. 5, 6).

Continued exploration and development activity in the regional Heritage-Montney A gas pool resulted in initial raw gas reserve additions of 68 633.0 10^6 m^3. The original gas in place for the Heritage-Montney A pool continues to be calculated volumetrically incorporating an uncertainty factor for undeveloped lands surrounding this area.

As a thick, regionally charged formation, the Montney tight gas play continues to be one of the most active gas plays in B.C. The regional Heritage-Montney A pool has expanded on its periphery with exploratory stratigraphic and horizontal test wells, particularly along its western limit. In tandem with this assessment activity, several localized areas within the regional Heritage field have continued to see focused development with multiwell pads targeting both upper and lower Montney. On the far west edge of the play trend, significant exploration and development has also occurred in the Altares, Town and Graham areas with the designation of several new pools. As a result of all this activity gas production from the unconventional Montney trend as of December 2009 is 12.7 10^6 m^3/d (450 mmcf/d) and accounts for over 13 per cent of total gas production.

Other significant additions resulting from drilling and discovery of new pools include the Monias-Montney C, Town-Montney A, and Ojay-Nikanassin Y pools resulting in initial reserves of 5 946.3 10^6 m^3, 4 365.1 10^6 m^3, and 4 217.8 10^6 m^3 respectively.

The Horn River Basin unconventional gas play continued to gain momentum in 2009. The granting of numerous experimental schemes has resulted in considerable multi-well pad drilling activity with suggestions of commercial viability of the area. Production from the Horn River basin is currently just under five per cent of total provincial gas production. Future reporting will include initial reserves estimates for the Horn River Shales (Muswka-Otter Park and Evie Formations).

Recoverable reserve additions per new well drilled increased to 244 10^6 m^3 from 216 10^6 m^3 in 2008 (not 345 10^6 m^3 as reported in the 2008 report) . Figure 7 provides a historical perspective on the reserves findings.

C. By-Product Reserves

Established remaining reserves of liquefied petroleum gases (LPG) increased for the fourth year to 26.7 10^6 m^3, as compared to 25.2 10^6 m^3 at year-end 2008. Established remaining reserves of pentanes plus (C5+) increased for the second year to 10.3 10^6 m^3 from 9.8 10^6 m^3. Established remaining reserves of sulphur increased to 14.9 10^6t from 14.1 10^6t in 2008. Figure 4 shows the distribution of sour gas (H_2S %) throughout Northeast British Columbia.

For gas pools on production, the by-products reserves are estimated on the basis of the yield from raw gas reserves achieved at the plant to which the gas is delivered. For pools yet to be connected to a plant, the yields are estimated based on gas composition and capacity of the plant to which the pool is expected to be connected.

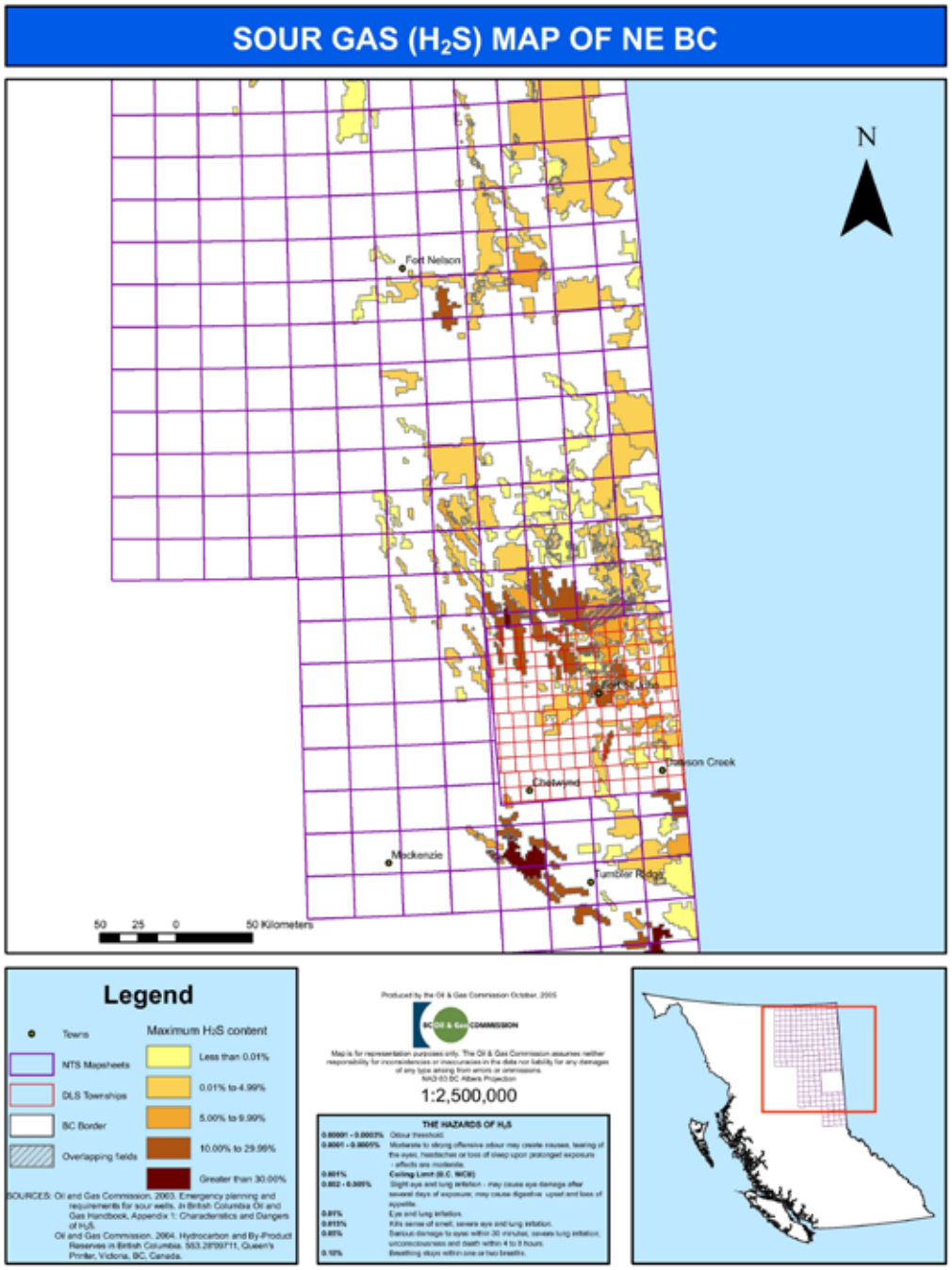


Figure 5: Historical Remaining Gas Reserves Versus R/P Ratio

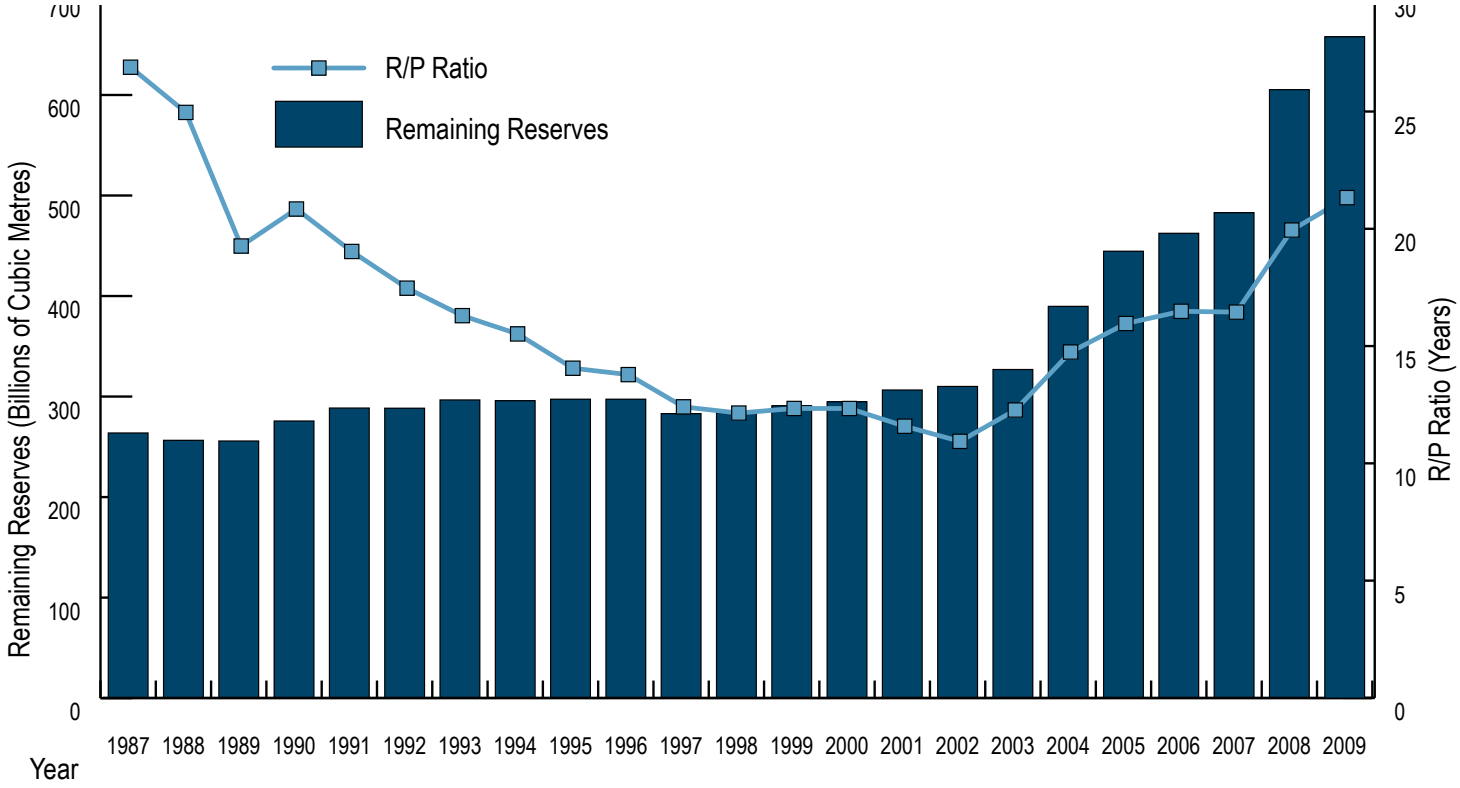


Figure 6: Historical Remaining Gas Reserves Versus Annual Production

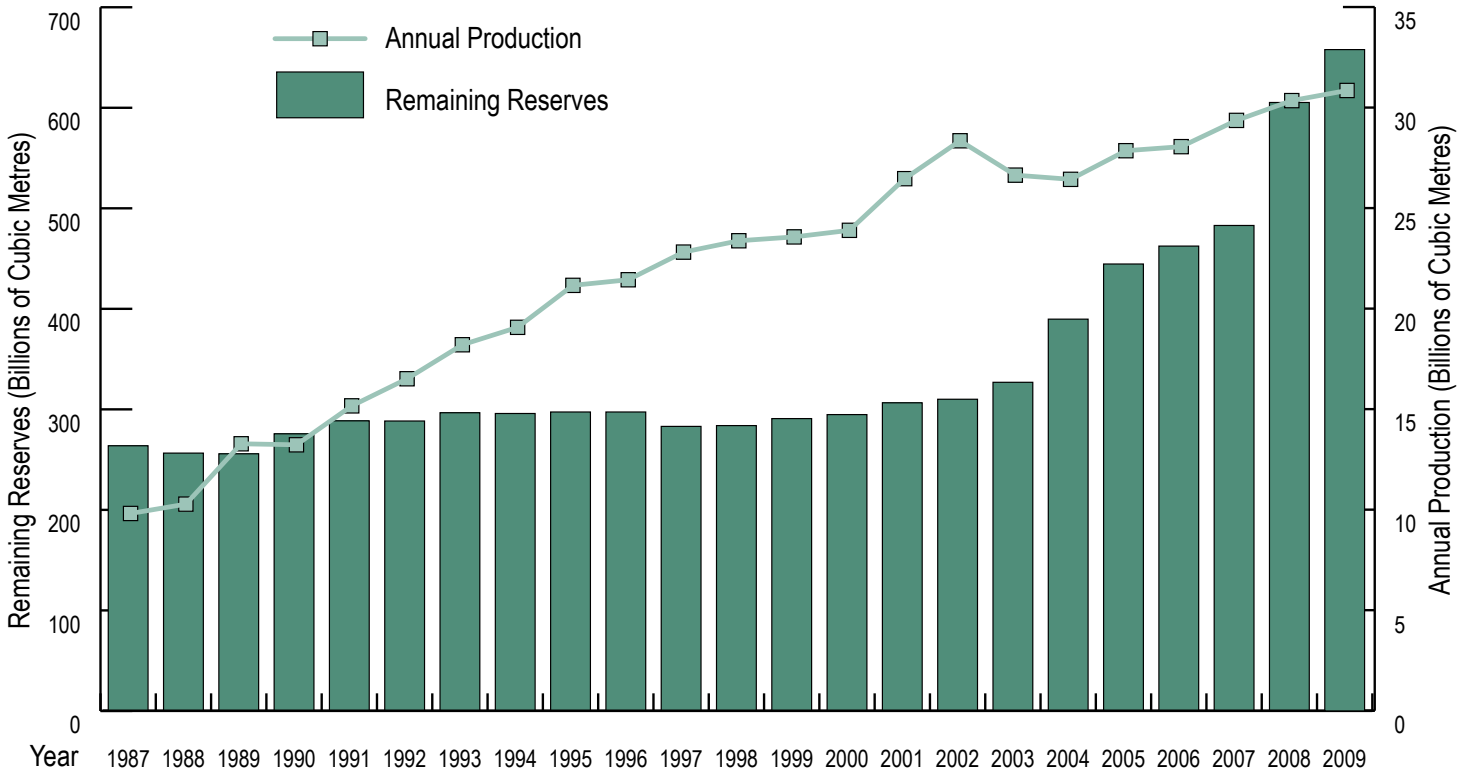
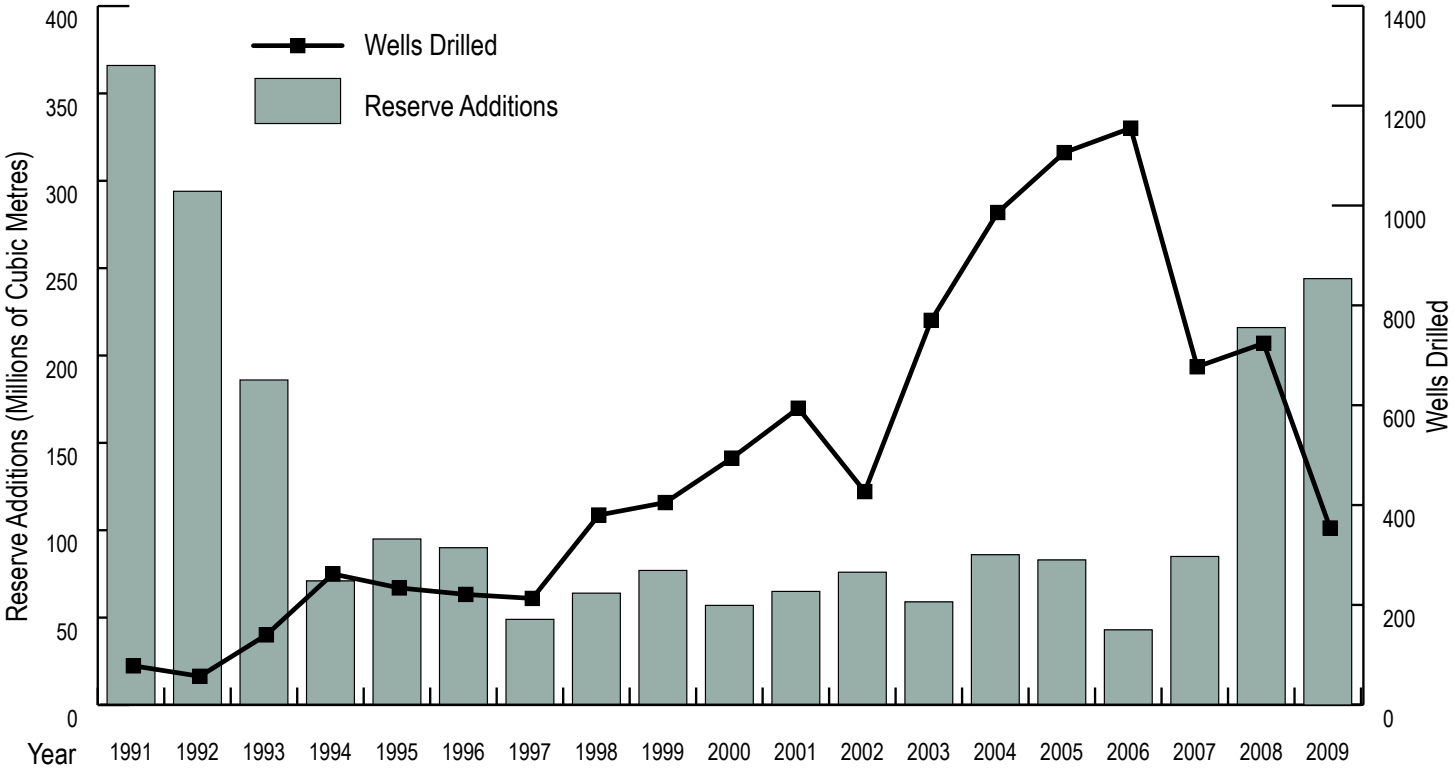


Figure 7: Gas Reserves - Reserve Additions Per Well Drilled



D. Additional Information

The Hydrocarbon and By-Product Reserves in British Columbia statistical information will continue to be offered to industry through the website at http://www.ogc.gov.bc.ca/publications/reports.aspx

For details on content, contact Glynis Farr, Engineering Division, BC Oil and Gas Commission at 250-419-4427 or email Glynis.Farr@gov.bc.ca.

ESTABLISHED HYDROCARBON RESERVES

December 31, 2009 (SI Units)
Table I

	Oil [1] ($10^3 m^3$)	Raw Gas [1] ($10^6 m^3$)	Marketable Gas [2] ($10^6 m^3$)
Initial Reserves, Current Estimate	131,172	1,415,172	1,142,351
Drilling 2009	+289	+30,331	
Revisions 2009	+1,766	+56,133	
Production 2009	-1,219	-30,846	
Cumulative Production Dec. 31, 2009	-111,861	-757,291	-601,894
Remaining Reserves Estimate Dec. 31, 2009	19,315	657,881	540,452

[1] Crude Oil and Raw Gas figures are taken from current and previous Hydrocarbon Reserves Reports. Any discrepancies in balancing are attributed to system rounding and production history reconciliation.

[2] Marketable Gas figures are estimates of gas available to the transmission line after removal of acid gases and a percentage of liquid hydrocarbons.

NOTE: Gas volumes measured at 101.325 kPa and 15°C.

December 31, 2009 (Imperial Units)
Table II

	Oil [1] (MSTB)	Raw Gas [1] (BCF)	Marketable Gas [2] (BCF)
Initial Reserves, Current Estimate	825,452	50,230	40,546
Drilling 2009	+1,818	+1,077	
Revisions 2009	+11,113	+1,992	
Production 2009	-7,671	-1,095	
Cumulative Production Dec. 31, 2009	-703,930	-26,879	-21,364
Remaining Reserves Estimate Dec. 31, 2009	121,547	23,351	19,183

[1] Crude Oil and Raw Gas figures are taken from current and previous Hydrocarbon Reserves Reports. Any discrepancies in balancing are attributed to system rounding and production history reconciliation.

[2] Marketable Gas figures are estimates of gas available to the transmission line after removal of acid gases and a percentage of liquid hydrocarbons. Oil figures are in units of thousands of stock tank barrels (MSTB) and gas figures are in billions of cubic feet (BCF).

Marketable Gas figures will no longer be recorded for changes taking place during the year due to the numerous shrinkage factors involved.

NOTE: Gas volumes measured at 14.65 psi and 60°F.

Historical Record of Established Reserves[1] (10^3 m^3)
Table III

Year	Initial Reserve Current Estimate	Yearly Drilling	Yearly Revisions	Yearly Other	Production in Year	Cumulative Production at Year-End	Remaining Reserves at Year-End
1977	72,841	4,159	(84)		2,201	46,318	26,523
1978	77,826	2,650	2,376		2,004	48,280	29,546
1979	78,882	427	629		2,140	50,397	28,485
1980	80,043	234	927		2,002	52,399	27,644
1981	79,968	143	(218)		2,060	54,459	25,509
1982	80,760	126	666		2,095	56,554	24,206
1983	82,149	661	727		2,079	58,634	23,515
1984	79,551	781	(3,378)		2,113	60,747	18,805
1985	82,887	1,767	1,569		1,944	62,691	20,196
1986	83,501	456	144		2,010	64,701	18,786
1987	84,201	631	68		2,084	66,793	17,361
1988	85,839	1,238	(50)		1,937	68,759	16,623
1989	89,899	2,306	2,402		1,978	70,737	19,129
1990	90,650	569	181		1,954	72,714	17,823
1991	91,606	233	630		1,974	74,689	16,911
1992	94,030	823	1,596		2,017	76,750	17,273
1993	96,663	803	1,830		1,976	78,726	17,925
1994	99,619	1,477	1,482		1,929	80,664	18,956
1995	102,823	2,887	290		1,997	82,658	20,167
1996	106,009	1,306	1,878		2,205	84,856	21,153
1997	110,765	3,199	1,561		2,525	87,401	23,364
1998	116,294	815	4,717		2,670	90,105	26,189
1999	118,840	345	2,201		2,338	92,453	26,388
2000	122,363	504	3,018		2,568	95,031	27,357
2001	123,048	106	582		2,569	97,591	25,478
2002	122,245	427	(1,233)		2,426	99,977	22,313
2003	124,660	424	1,990		2,203	102,234	22,426
2004	125,953	154	947	188	2,015	104,104	21,873
2005	126,941	247	636	110	1,750	106,086	20,857
2006	125,845	222	(1,322)		1,631	107,603	18,244
2007	128,971	266	2,859		1,520	109,283	19,692
2008	129,117	162	25		1,341	110,632	18,485
2009	131,172	289	1,766		1,219	111,861	19,315

[1] These values are taken from previously published ministry reserve estimates. This compilation is provided for historical value and to aid in statistical analysis only. Values shown for any given year may not balance due to changes in production and estimates over time.

Historical Record of Established Reserves[1] ($10^6 m^3$)
Table III

Year	Initial Reserve Current Estimate	Yearly Drilling	Yearly Revisions	Yearly Other	Production in Year	Cumulative Production at Year-End	Remaining Reserves at Year-End
1977	376,960	18,119	(14,107)		11,039	143,958	233,002
1978	399,535	21,190	1,386		9,943	153,900	245,635
1979	424,805	26,142	(872)		11,394	165,294	259,511
1980	462,596	28,909	8,882		8,968	174,262	288,334
1981	478,689	13,842	2,251		8,293	182,555	296,134
1982	488,316	7,765	1,862		7,995	190,550	297,766
1983	490,733	2,550	(133)		7,845	198,395	292,338
1984	496,703	1,798	4,172		8,264	206,659	290,044
1985	505,233	2,707	5,823		8,799	215,458	289,775
1986	501,468	4,822	(8,463)		8,506	223,964	277,628
1987	497,466	1,986	(5,940)		9,810	233,794	263,777
1988	500,738	6,083	(1,661)		10,275	244,249	256,483
1989	513,662	12,193	(2)		13,276	257,862	255,782
1990	547,058	27,683	5,888		13,226	271,344	275,685
1991	574,575	24,708	3,812		15,162	285,965	288,582
1992	591,356	6,377	10,404		16,510	302,916	288,408
1993	617,379	22,901	3,122		18,202	321,090	296,246
1994	635,774	22,004	(3,301)		19,069	339,861	295,885
1995	657,931	21,065	1,051		21,157	361,106	296,825
1996	677,769	16,083	3,852		21,435	382,332	295,437
1997	688,202	12,835	(2,394)		22,811	405,157	283,045
1998	712,677	9,957	14,502		23,375	428,822	283,855
1999	743,816	13,279	17,824		23,566	453,000	290,816
2000	772,221	13,832	14,571		23,894	477,381	294,800
2001	811,146	7,199	31,690		26,463	504,620	306,526
2002	843,612	19,004	13,462		28,348	533,548	310,064
2003	889,488	19,317	26,282		26,639	562,560	326,928
2004	973,771	6,412	65,149	12,897	26,430	584,033	389,738
2005	1,065,288	8,974	63,268	19,104	27,854	620,696	444,592
2006	1,114,562	15,356	33,912		28,056	652,137	462,425
2007	1,172,136	21,468	36,109		29,362	689,209	482,927
2008	1,328,729	6,559	150,167		30,346	722,769	605,280
2009	1,415,172	30,331	56,133		30,846	757,291	657,881

[1] These values are taken from previously published ministry reserve estimates. This compilation is provided for historical value and to aid in statistical analysis only. Values shown for any given year may not balance due to changes in production and estimates over time.

Historical Record of Established Reserves[1] (10^6 m^3)
Table III

Year	Initial Reserve Current Estimate	Cumulative Production at Year-End	Remaining Reserves at Year-End
1977	325,942	126,656	199,286
1978	326,322	126,149	200,173
1979	349,043	136,528	212,515
1980	378,729	143,863	234,866
1981	391,505	150,612	240,893
1982	399,838	157,139	242,699
1983	402,045	163,423	238,622
1984	406,812	170,079	236,773
1985	414,129	177,165	236,964
1986	411,126	184,145	227,029
1987	408,537	192,159	216,401
1988	411,481	201,035	210,831
1989	421,889	211,796	210,082
1990	454,839	224,417	230,398
1991	476,812	236,652	240,140
1992	490,101	250,924	239,175
1993	510,709	266,140	244,545
1994	527,008	282,709	244,283
1995	543,839	298,685	244,997
1996	557,864	315,057	242,807
1997	559,021	328,485	228,746
1998	573,848	344,764	229,084
1999	604,784	368,110	236,674
2000	626,935	386,689	240,210
2001	663,119	410,970	252,149
2002	690,225	435,363	254,889
2003	711,309	451,416	259,860
2004	784,063	466,698	317,365
2005	854,873	492,072	362,801
2006	899,215	519,139	380,076
2007	940,128	545,900	394,228
2008	1,071,000	573,296	496,622
2009	1,142,351	601,894	540,452

[1] These values are taken from previously published ministry reserve estimates. This compilation is provided for historical value and to aid in statistical analysis only. Values shown for any given year may not balance due to changes in production and estimates over time.

Established Oil Reserve Changes ($10^3 m^3$)
Table IV

Field	Pool	Amount of I.R. Change ($10^3 m^3$)	Reason for Change
REVISION 2009			
Boundary Lake	Boundary Lake A	+ 1533	Performance review
Inga	Inga A	+ 265	Performance review
Rigel	Cecil I	+ 118	Performance review
	* Others	- 150	
	SUBTOTAL REVISIONS	+ 1766	
DRILLING 2009			
Birch	Baldonnel C	+ 215	New drilling
Boundary Lake	Halfway M	+ 41	New drilling
	* Others	+ 33	
	SUBTOTAL DRILLING	+ 289	
TOTAL		+ 2055	

*Others – includes all additional changes both positive and negative

Established Raw Gas Reserve Changes ($10^6 m^3$)
Table V

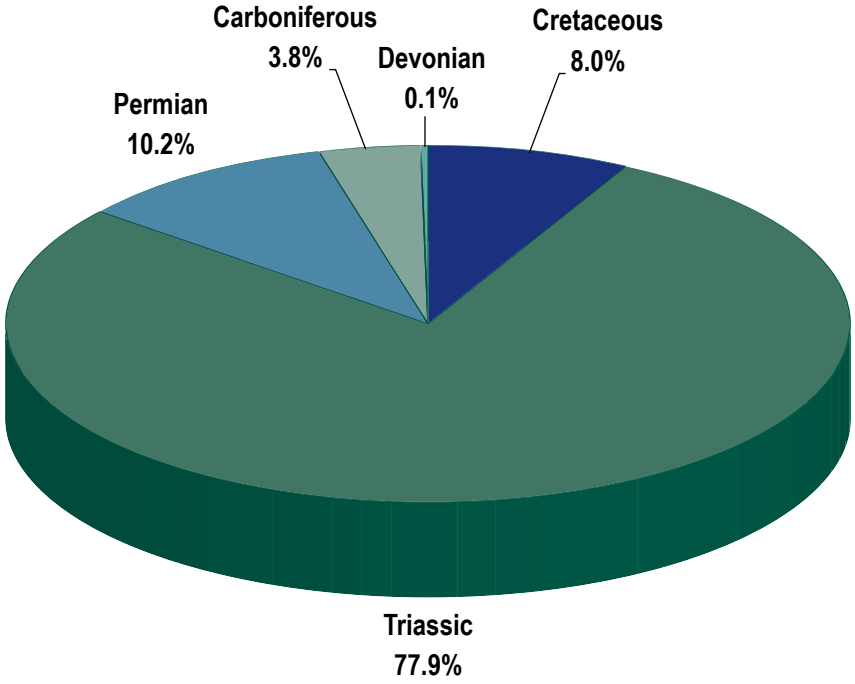
Field	Pool	Amount of I.R. Change ($10^6 m^3$)	Reason for Change
REVISION 2008			
Regional Heritage	Montney A	+ 68,633	Performance Review
Ojay	Baldonnel B	+ 3,735	Mapping Revised
Sierra	Pine Point B	+ 3,407	Performance Review
Wolverine	Pardonet-Baldonnel B	+ 2,184	Performance Review
Federal	Debolt C	+ 2,145	Performance Review
Ladyfern	Slave Point A	- 3,534	CAPP Review
Ring	Bluesky-Geth-Montney E	- 1,805	Performance Review
	*Others	- 18,632	
	SUBTOTAL REVISIONS	**+ 56,133**	
DRILLING 2009			
Monias	Montney C	+ 5,946	New drilling
Town	Montney A	+ 4,365	New drilling
Ojay	Nikanassin Y	+ 4,218	New drilling
Altares	Montney A	+ 3,226	
	*Others	+ 12,575	
	**SUBTOTAL DRILLING	**+ 30,330**	
TOTAL		**+ 86,463**	

*Others – includes all additional changes both positive and negative

FIGURE 8 RESERVES BY GEOLOGICAL PERIOD

Initial Oil Reserves

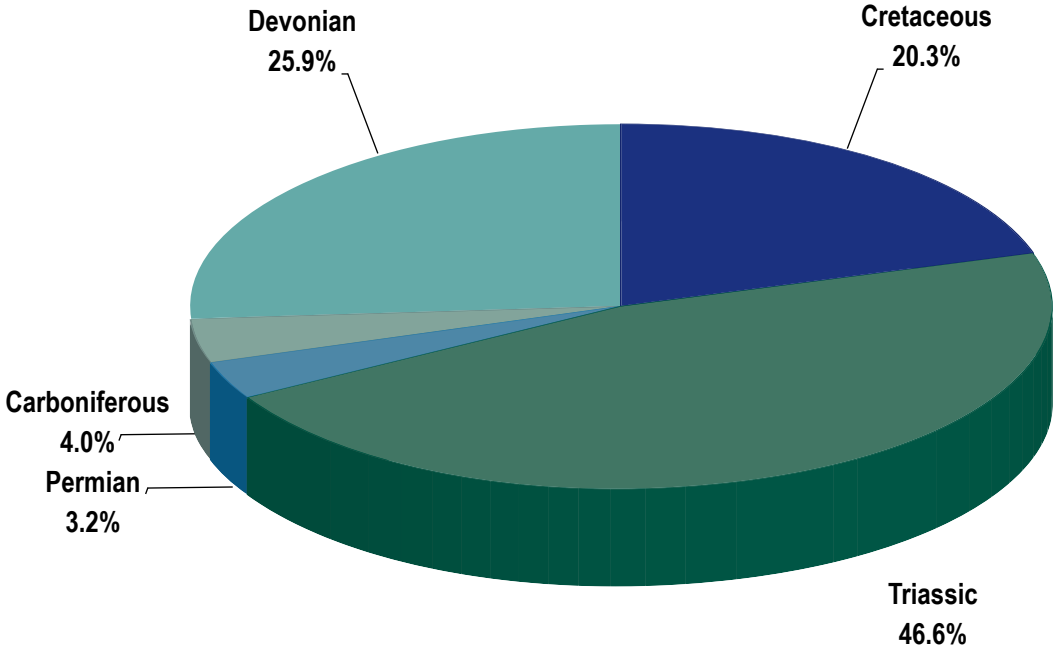
as of December 31, 2009



Total: 131.2 Million Cubic Metres

Initial Raw Gas Reserves

as of December 31, 2009



Total: 1412.0 Billion Cubic Metres

Initial Recoverable Oil Reserves by Geological Period ($10^6 m^3$)
Table VI(a)

CRETACEOUS	
Doe Creek	0.009
Bluesky	7.615
Bluesky/Gething	0.004
Gething	2.164
Cadomin	0.015
Chinkeh	0.010
Dunlevy	0.681
Lower Dunlevy	0.047
SUBTOTAL	**10.545**

TRIASSIC	
Nordegg Baldonnel	0.019
Baldonnel	1.480
Charlie Lake	0.016
Siphon	0.494
Cecil	6.630
Flatrock	0.027
Boundary Lake	39.083
Coplin	0.287
Septimus	0.001
Mica	0.339
Blueberry	0.009
Inga	7.287
North Pine	1.654
Bear Flat	0.345
Wilder	0.003
Pingel	0.012
“A” Marker/Base of Lime	0.077
Artex	2.323
Halfway	35.405
Lower Halfway	4.221
Doig	2.295
Lower Charlie Lake/Montney	0.071
Montney	0.088
SUBTOTAL	**102.167**

Initial Recoverable Oil Reserves by Geological Period ($10^6 m^3$)
Table VI(a)

PERMIAN	
Belloy	10.381
Belloy-Kiskatinaw	2.941
SUBTOTAL	**13.322**

CARBONIFEROUS	
Taylor Flat	0.011
Kiskatinaw	0.022
Debolt	3.943
Shunda	0.056
Pekisko	0.888
Banff	0.052
SUBTOTAL	**4.972**

DEVONIAN	
Jean Marie	0.161
SUBTOTAL	**0.161**
TOTAL	**131.168**

*Totals may not match Table III due to rounding

Initial Recoverable Raw Gas Reserves by Geological Period (10^9 m^3)
Table VI(b)

CRETACEOUS	
Quaternary	0.015
Cardium Sand	0.037
Doe Creek	0.564
Dunvegan	0.079
Paddy	4.580
Cadotte	15.554
Peace River	0.172
Spirit River	0.028
Notikewin	25.563
Falher	0.437
Falher A	5.272
Falher B	3.948
Falher C	3.956
Falher D	0.695
Falher G	0.056
Bluesky	39.258
Basal Bluesky	1.228
Bluesky Gething	13.001
Bluesky-Gething-Detrital	1.590
Detrital	0.108
Gething	24.161
Lower Gething	0.316
Basal Gething	0.259
Gething Baldonnel	0.356
Cadomin	56.549
Chinkeh	6.910
Nikanassin	24.469
Dunlevy	57.403
Lower Dunlevy	0.064
Nordegg	0.176
SUBTOTAL	**286.804**

Initial Recoverable Raw Gas Reserves by Geological Period ($10^9 m^3$)
Table VI(b)

TRIASSIC	
Nordegg/Baldonnel	1.899
Pardonet	0.496
Pardonet/Baldonnel	66.498
Baldonnel	97.542
Baldonnel/Upper Charlie Lake	58.326
Charlie Lake	3.238
Siphon	1.156
Cecil	3.487
Nancy	0.116
First Green Marker	0.017
Second Brown Marker	0.027
Boundary Lake	5.756
Basal Boundary	0.073
Yellow Marker	0.036
Coplin	3.114
Kobes	0.160
Blueberry	0.202
Inga	5.806
North Pine	4.577
Bear Flat	0.761
Pingel	0.097
Tea Creek Member	0.065
Trutch Creek	0.075
Limestone A Bed	0.052
“A” Marker/Base of Lime	1.856
Lower Charlie Lake Sands	0.190
Artex	2.333
Artex Halfway	0.913
Upper Halfway	0.509
Halfway	116.833
Lower Halfway	4.311
Doig	19.802
Doig Phosphate Beds	0.213
Bluesky/Gething/Montney	29.500
Lower Charlie Lake/Montney	3.335
Doig Phosphate-Montney	0.006
Montney	224.670
SUBTOTAL	**658.047**

Initial Recoverable Raw Gas Reserves by Geological Period ($10^9 m^3$)
Table VI(b)

PERMIAN	
Belloy	32.532
Fantasque	0.111
Lower Belloy	0.827
Belcourt	0.390
Belcourt-Taylor Flat	10.035
Belloy/Kiskatinaw	0.949
SUBTOTAL	**44.844**

CARBONIFEROUS	
Taylor Flat	6.965
Mississippian	0.150
Mattson	2.467
Kiskatinaw	2.187
Lower Kiskatinaw	1.526
Basal Kiskatinaw	3.839
Golata	0.199
Upper Debolt	0.242
Debolt	36.426
Lower Debolt	0.143
Elkton	0.590
Shunda	0.866
Pekisko	0.057
Banff	0.391
SUBTOTAL	**56.047**

Initial Recoverable Raw Gas Reserves by Geological Period ($10^9 m^3$)
Table VI(b)

DEVONIAN	
Kotcho	0.279
Wabamun	9.135
Kakisa	1.555
Jean Marie	97.116
Horn River	0.245
Muskwa-Otter Park-Slave Point	0.010
Middle Devonian	0.061
Slave Point	117.934
Sulphur Point	2.222
Nahanni	5.484
Nahanni-Headless	0.125
Pine Point	132.091
SUBTOTAL	**366.257**
TOTAL	**1411.999**

*Totals may not match Table III due to rounding

Oil Pools Under Waterflood ($10^3 m^3$)
Table VII

Field	Pool	Initial Reserves ($10^3 m^3$)	Remaining Reserves ($10^3 m^3$)
Beatton River	Halfway A	1,617	1
Beatton River	Halfway G	470	51
Beatton River West	Bluesky A (Unit 1)	943	16
Beavertail	Halfway B	91	5
Beavertail	Halfway H	182	25
Birch	Baldonnel C	215	69
Boundary Lake	Boundary A	38,534	3,235
Bubbles North	Coplin A	58	24
Buick Creek West	Dunlevy N	14	9
Crush	Halfway A + B	566	13
Currant	Halfway D (Unit 1)	24	16
Desan	Pekisko	784	213
Eagle	Belloy-Kiskatinaw	2,772	363
Eagle West	Belloy A (Unit 1)	6,569	412
Elm	Gething B	169	46
Hay River	Bluesky	6,207	3,038
Inga	Inga A (Unit 1, 2, 4, 5)	7,217	464
Lapp	Halfway C	457	38
Lapp	Halfway D	166	27
Milligan Creek	Halfway A (Unit 1, 2)	7,440	71
Muskrat	Boundary Lake A	401	136
Muskrat	Lower Halfway A	116	12
Oak	Cecil B	127	31
Oak	Cecil C	363	90
Oak	Cecil E	631	49
Oak	Cecil I	267	54
Owl	Cecil A	353	46
Peejay	Halfway (Unit 1, 2, 3 + CNRL)	10,579	179
Peejay West	Halfway A	525	119
Red Creek	Doig C	218	74
Rigel	Cecil B	576	25
Rigel	Cecil G	490	87
Rigel	Cecil H	910	61
Rigel	Cecil I	858	144
Rigel	Halfway C (Archean + Unit 1)	515	27

Oil Pools Under Waterflood ($10^3 m^3$)
Table VII

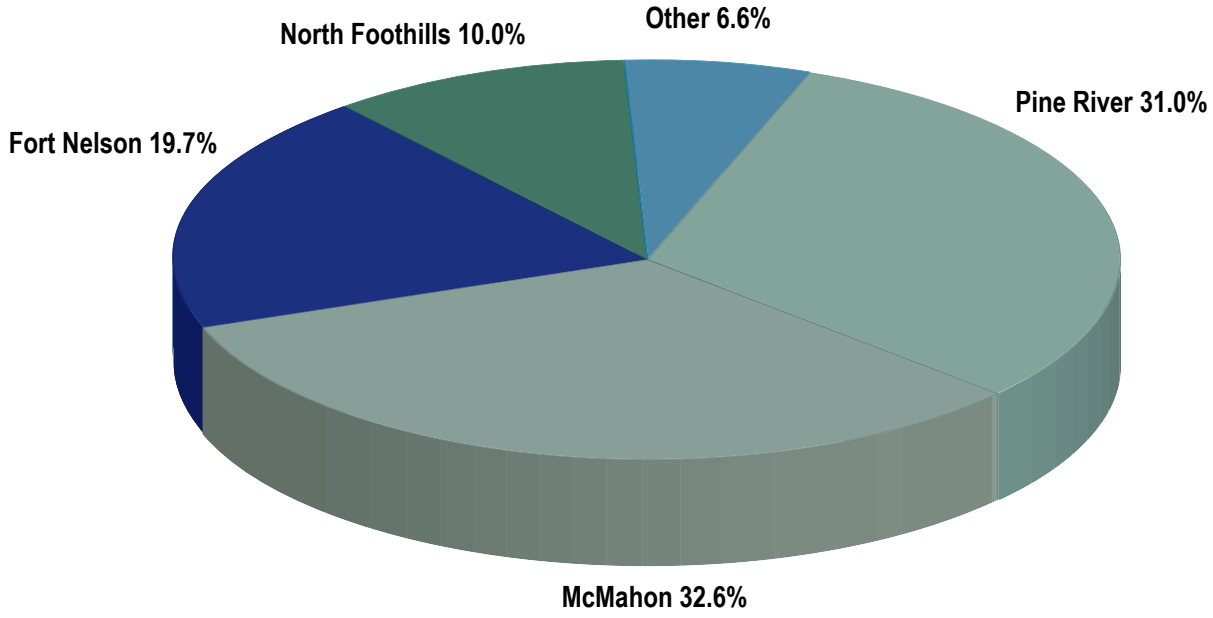
Field	Pool	Initial Reserves ($10^3 m^3$)	Remaining Reserves ($10^3 m^3$)
Rigel	Halfway Z	21	14
Squirrel	North Pine C	413	5
Stoddart West	Bear Flat D	155	7
Stoddart West (partial)	Belloy C (Anderson)	1,446	141
Stoddart West	North Pine D	38	18
Sunset Prairie	Cecil A	353	25
Sunset Prairie	Cecil C	147	32
Sunset Prairie	Cecil D	152	51
Two Rivers	Siphon A	274	90
Weasel	Halfway (Unit 1, 2)	3,439	158
Wildmint	Halfway A (Unit 1)	1,554	18
TOTAL		**99,416**	**9,829**
% OF TOTAL BRITISH COLUMBIA RESERVES		**75.8**	**50.9**

Oil Pools Under Gas Injection ($10^3 m^3$)
Table VIII

Field	Pool	Initial Reserves ($10^3 m^3$)	Remaining Reserves ($10^3 m^3$)
Bulrush	Halfway A	369	63
Cecil Lake	Cecil D	357	54
Stoddart West (partial) [1]	Belloy C (Phillips)	425	54
TOTAL		**1,151**	**171**
% OF TOTAL BRITISH COLUMBIA RESERVES		**.88**	**.89**

[1] This pool has implemented one gas-injection scheme (Phillips Project) in addition to the waterflood scheme (Anderson Project).

Figure 9: Unconnected Gas Reserves by Plant Area
Remaining Reserves (Raw)



Total: 20.1 Billion Cubic Metres
as of December 31, 2009

Unconnected Gas Reserves by Plant Area (10^9 m^3)
Table IX

Plant Name	Initial Remaining Raw Gas (10^9 m^3)
[1] Pine River (c-85-D/93-P-12)	6.2
McMahon (5-31-82-17)	6.6
Fort Nelson (b-84-G/94-J-10)	4.0
[2] North Foothills	2.0
Other	1.3
TOTAL	**20.1**

* Totals may not add up due to rounding
[1] Includes BRC Elmworth (4-8-70-11-W6) and Burlington Noel (b-59-D/093-P-8).
[2] Includes WGSI Buckinghorse (a-81-H/094-G-6), Anadarko Cypress (b-99-C/094-B-16) and WEI Sikanni (b-41-I/094-G-3).

Table X

Project Type	Description
CONC	Concurrent Production
EOR	Enhanced Oil Recovery
GEPG	Good Engineering Practice - Gas
GEPO	Good Engineering Practice - Oil
PMGI	Pressure Maintenance - Gas Injection
PMWF	Pressure Maintenance - Water Flood
UNIT	Unitization

For a complete project/unit cross-reference listing, please visit www.ogc.gov.bc.ca

Definitions: SI Units

British Columbia's reserves of oil, natural gas liquids and sulphur are presented in the International System of Units (SI). The provincial totals and a few other major totals are shown in both SI units and the Imperial equivalents in the various tables. Conversion factors used in calculating the Imperial equivalents are listed below:

1 cubic metre of gas *(101.325 kilopascals and 15° Celsius)*	=	35.493 73 cubic feet of gas *(14.65 psia and 60° Fahrenheit)*
1 cubic metre of ethane *(equilibrium pressure and 15° Celsius)*	=	6.330 0 Canadian barrels of ethane *(equilibrium pressure and 60° Fahrenheit)*
1 cubic metre of propane *(equilibrium pressure and 15° Celsius)*	=	6.300 0 Canadian barrels of propane *(equilibrium pressure and 60° Fahrenheit)*
1 cubic metre of butanes *(equilibrium pressure and 15° Celsius)*	=	6.296 8 Canadian barrels of butanes *(equilibrium pressure and 60° Fahrenheit)*
1 cubic metre of oil or pentanes plus *(equilibrium pressure and 15° Celsius)*	=	6.292 9 Canadian barrels of oil or pentanes plus *(equilibrium pressure and 60° Fahrenheit)*
1 cubic metre of water *(equilibrium pressure and 15° Celsius)*	=	6.290 1 Canadian barrels of water *(equilibrium pressure and 60° Fahrenheit)*
1 tonne	=	0.984 206 4 (U.K.) long tons (2240 pounds)
1 tonne	=	1.102 311 short tons (2000 pounds)
1 kilojoule	=	0.948 213 3 British thermal units (Btu as defined in the federal *Gas Inspection Act* [60°- 61° Fahrenheit])

DEFINITIONS

Reserves Terminology

Original Gas and Original Oil in Place
The volume of oil, or raw natural gas calculated or interpreted to exist in a reservoir before any volume has been produced.

Established Reserves
Those reserves recoverable under current technology and present and anticipated economic conditions, specifically proved by drilling, testing, or production; plus that judgement portion of contiguous recoverable reserves that are interpreted from geological, geophysical, or similar information, with reasonable certainty to exist.

Initial Reserves
Established reserves prior to the deduction of any production.

Remaining Reserves
Initial established reserves less cumulative production.

Definitions of Other Terms

Area
The area used to determine the adjusted bulk rock volume of the oil, or gas-bearing reservoir, usually the area of the zero isopach or the assigned area of a pool or deposit.

Butane
In addition to its normal scientific meaning, a mixture mainly of butanes which ordinarily may contain some propane or pentanes plus.

Compressibility Factor
A correction factor for non-ideal gas determined for gas from a pool at its initial reservoir pressure and temperature and, where necessary, including factors to correct for acid gases.

Condensate
A mixture mainly of pentanes and heavier hydrocarbons that may be contaminated with sulphur compounds, that is recovered or is recoverable at a well from an underground reservoir and that may be gaseous in its virgin reservoir state but is liquid at the conditions under which its volume is measured or estimated.

Density
The mass or amount of matter per unit volume.

Density, Relative (Raw Gas)
The density, relative to air, of raw gas upon discovery, determined by an analysis of a gas sample representative of a pool under atmospheric conditions.

Definitions of Other Terms

Discovery Year
The year in which the well that discovered the oil or gas pool finished drilling.

Formation Volume Factor
The volume occupied by one cubic metre of oil and dissolved gas at reservoir pressure and temperature, divided by the volume occupied by the oil measured at standard conditions.

Gas (Non-associated)
Gas that is not in communication in a reservoir with an accumulation of liquid hydrocarbons at initial reservoir conditions.

Gas Cap (Associated)
Gas in a free state in communication in a reservoir with crude oil, under initial reservoir conditions.

Gas (Solution)
Gas that is dissolved in oil under reservoir conditions and evolves as a result of pressure and temperature changes.

Gas (Raw)
A mixture containing methane, other paraffinic hydrocarbons, nitrogen, carbon dioxide, hydrogen sulphide, helium, and minor impurities, or some of them, which is recovered or is recoverable at a well from an underground reservoir and which is gaseous at the conditions under which its volume is measured or estimated.

Gas (Marketable)
A mixture mainly of methane originating from raw gas, if necessary, through the processing of the raw gas for the removal or partial removal of some constituents, and which meets specifications for use as a domestic, commercial, or industrial fuel or as an industrial raw material.

Gas-Oil Ratio (Initial Solution)
The volume of gas (in thousand cubic metres, measured under standard conditions) contained in one stock-tank cubic metre of oil under initial reservoir conditions.

Gross Heating Value (of dry gas)
The heat liberated by burning moisture-free gas at standard conditions and condensing the water vapour to a liquid state.

Liquid Petroleum Gases (LPG)
A hydrocarbon mixture comprised primarily of propane and butanes. Some ethanes may be present.

Mean Formation Depth
The approximate average depth below kelly bushing of the mid-point of an oil or gas productive zone for the wells in a pool.

Definitions of Other Terms

Methane
In addition to its normal scientific meaning, a mixture mainly of methane which ordinarily may contain some ethane, nitrogen, helium or carbon dioxide.

Natural Gas Liquids
Propane, butanes, or pentanes plus, or a combination of them, obtained from the processing of raw gas or condensate.

Oil
A mixture mainly of pentanes and heavier hydrocarbons that may be contaminated with sulphur compounds, that is recovered or is recoverable at a well from an underground reservoir, and that is liquid at the conditions under which its volume is measured or estimated, and includes all other hydrocarbon mixtures so recovered or recoverable except raw gas or condensate.

Pay Thickness (Average)
The bulk rock volume of a reservoir of oil or gas, divided by its area.

Pentanes Plus
A mixture mainly of pentanes and heavier hydrocarbons which ordinarily may contain some butanes and which is obtained from the processing of raw gas, condensate, or oil.

Pool
A natural underground reservoir containing or appearing to contain an accumulation of liquid hydrocarbons or gas or both separated or appearing to be separated from any other such accumulation.

Porosity
The effective pore space of the rock volume determined from core analysis and well log data, measured as a fraction of rock volume.

Pressure (Initial)
The reservoir pressure at the reference elevation of a pool upon discovery.

Project/Units
A scheme by which a pool or part of a pool is produced by a method approved by the Oil and Gas Commission.

Propane
In addition to its normal scientific meaning, a mixture mainly of propane, which ordinarily may contain some ethane or butanes.

Recovery
Recovery of oil, gas or natural gas liquids by natural depletion processes or by the implementation of an artificially improved depletion process over a part or the whole of a pool, measured as a volume or a fraction of the in-place hydrocarbons so recovered.

Saturation (Water)
The fraction of pore space in the reservoir rock occupied by water upon discovery.

Definitions of Other Terms

Surface Loss
A summation of the fractions of recoverable gas that are removed as acid gas and liquid hydrocarbons, used as lease or plant fuel, or flared.

Temperature
The initial reservoir temperature upon discovery at the reference elevation of a pool.

Unconnected Reserves
Gas reserves which have not been tied-in to gathering facilities and therefore do not contribute to the provincial supply without further investment.

Underbalanced Drilling
A technique in which the hydrostatic pressure in the circulating downhole fluid system is maintained at some pressure less than the pressure of the target formation.

Zone
Any stratum or any sequence of strata that is designated by the BC Oil and Gas Commission as a zone.

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The Hydrocarbon and By-Product Reserves in British Columbia statistical information will continue to be offered to industry through the website at **http://www.ogc.gov.bc.ca/resourceconservationapp.asp**. In an effort to reduce paper waste, hardcopies are not available.