

Table 1

Field	Discovered reserves and resources - Offshore Newfoundland and Labrador				
	Oil	Gas	NGL		
	10 ⁹ m ³	10 ⁹ m ³	10 ⁹ m ³	10 ⁹ m ³	10 ⁹ m ³
Hibernia	140.5	884	38.7	1375	23
Terra Nova	64.6	406	7.6	289	2.2
Hebron	51.6	325	-	-	-
Whiterose	45	283	78.7	2722	15.3
West Ben Nevis	5.4	34	-	-	-
Mara	3.6	23	-	-	-
Ben Nevis	8.7	55	8.9	315	4.7
North Ben Nevis	2.9	18	3.3	116	0.7
Springdale	2.2	14	5.7	238	-
Nautilus	2.1	13	-	-	-
King's Cove	1.6	10	-	-	-
South Tempest	1.3	8	-	-	-
East Rankin	1.1	7	-	-	-
Fortune	0.9	6	-	-	-
South Mara	0.6	4	4.1	144	1.2
West Bonne Bay	0.7	-	-	-	-
North Dana	-	-	13.3	472	1.8
Trave	-	-	0.8	30	0.2

Shows

ADOLPHUS 24-41	Jeannie d'Arc Basin
BONNE BAY C-73	Jeannie d'Arc Basin
SOUTH BROOK N-30	Jeannie d'Arc Basin
TERRA NOVA-17	Jeannie d'Arc Basin
TEMPEST	Jeannie d'Arc Basin
BEOTHUK M-05	Jeannie d'Arc Basin
THORVALD P-24	Jeannie d'Arc Basin
SOUTH MERASHEEN K-55	Central Ridge Complex
HERON H-73	Scottian Basin
	S. Whale Subbasin

Note: Source: Canadian-Newfoundland Offshore Petroleum Board.
The data are until March 2003.

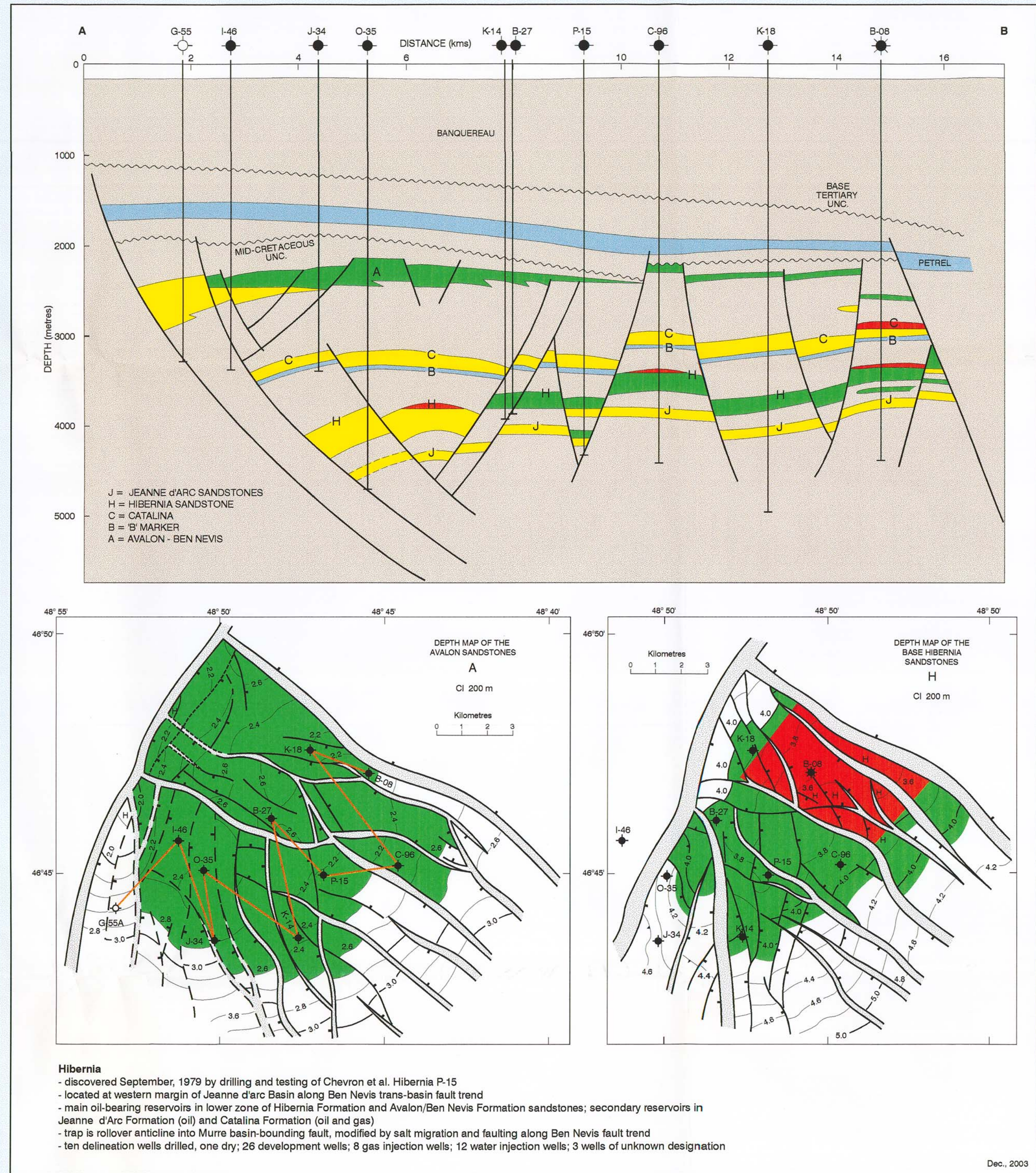


Figure 4

Table 2

Properties of Oil-bearing Reservoirs - Offshore Newfoundland and Labrador													
Field	Wells in field	Water depth	Reservoir formation	Average depth (m)	Net oil pay (m)	Average porosity %	Average permeability (mD)	Oil API density	GOR (m ³ /m ³)	Test rate max (m ³ /day)	Pressure Mpa	Temperature °C	
Hibernia	Total: 69	80	Hibernia	3768	41	16	840	30.2-40.3	216-264	1166	39.5	85	
	10 del		Ben Nevis	2338	23	20	148	29-32.7	79-114	1054	28.8	66	
	26 dev		Catalina	3235	15	15	75	32.5	120	568	34.2	92	
	8 gas inj		Jeannie d'Arc	4124	13	9	8	33.5	87	90	68.5	107	
	12 water inj		Avalon	2672	5	21	441	36.2	125	511	30.3	na	
Terra Nova	3 others		Hibernia stry	3710	6	9	31	35.4	169	663	59.2	na	
	7 del, 17 dev, 2 gas inj, 5 water inj	93	Jeannie d'Arc; Terra Nova Mbr	3346	36	17	950	33.7	126	1400	34.7	96	
			Jeannie d'Arc; Beothuk Mbr										
Hebron	3	94	Jeannie d'Arc	4375	5	12	245	36.1	215	605	47.4	117	
	2 del		Fortune Bay	3850	5	12	520	31.4	101	948	45.5	100	
			Hibernia	2941	31	15	266	28.8	105	418	30.6	72	
			Ben Nevis	1892	36	20	650	19.8	36	177	19.4	49	
Whiterose	9	119	Ben Nevis	3012	25-87	15	56	30.7	110	755	30.7	110	
	8 del		Hibernia	3617	8	15	7	32.6-38.3	133-351	83	49.7	125	
			Rankin	3813	8	12	3	32.8	262	43	71.4	na	
West Ben Nevis	1	96	A Marker	2426	15	20	182	22.8	80	238	24.5	82	
			Ben Nevis	2006	4	16	146	28.1	59	68	20.1	69	
Mara	1	88	Dawson Canyon; Otter Bay Mbr	2406	3	20	258	21.5	72	124	24.3	72	
			Banqueveau; South Mara Mbr	1855	5	27	548	21.6	38	97	18.5	57	
Ben Nevis	2, 1 del	100	Ben Nevis	2420	6+	<15	5	22.3	na	33	25.1	82	
	2, 1 del	100	Ben Nevis	3023	19	17	168	31.5	128	872	30.6	100	
North Ben Nevis	1	99	Ben Nevis	1468	6	33	7280	14.4	24	64	15	54	
	2	64	Ben Nevis	3326	5	12	28	30.8	172	391	53.4	105	
South	1	158	Rankin	4117	7	13	739	42	652	216	74.2	117	
			Rankin; Egret Mbr	2840	4	13	7	39.7	24	55.4	na	na	
Fortune	1	113	Hibernia	3996	7	11	19	36	306	150	39.2	110	
	1	97	Ben Nevis	2954	6	17	-	34.7	244	274.8	29.5	97	
Properties of Gas-bearing Reservoirs													
Field	Wells in field	Water depth	Reservoir formation	Average depth (m)	Net gas pay (m)	Average porosity %	Test rate max (m ³ /day)	Liquid content (m ³ /10 ³ m ³)	Gas gravity	Oil API density	Pressure Mpa	Temperature °C	
Whiterose	9	119	Ben Nevis	3285	18	16	602	178	0.66	45-64	29.9	102	
Hibernia	69	80	South Mara	2351	5	25	894	114	0.61	58	25.5	100	
			Hibernia	3524	23	19	534	927	0.80	53.4	39.8	95	
Springdale	1	99	Catalina	3005	11	13	243	332	0.66	60	33.3	83	
			South Mara	1316	6	30	331	0	0.57	17	12.3	51	
South Mara	1	97	Ben Nevis	2920	27	17	396	247	0.66	57	29.5	97	
	1	138	Hibernia	2344	9	16	496	166	0.66	70	24.1	79	

Note: Source: Canadian-Newfoundland Offshore Petroleum Board.
The data are until March 2003; del= delineation; dev= development; inj= injection.

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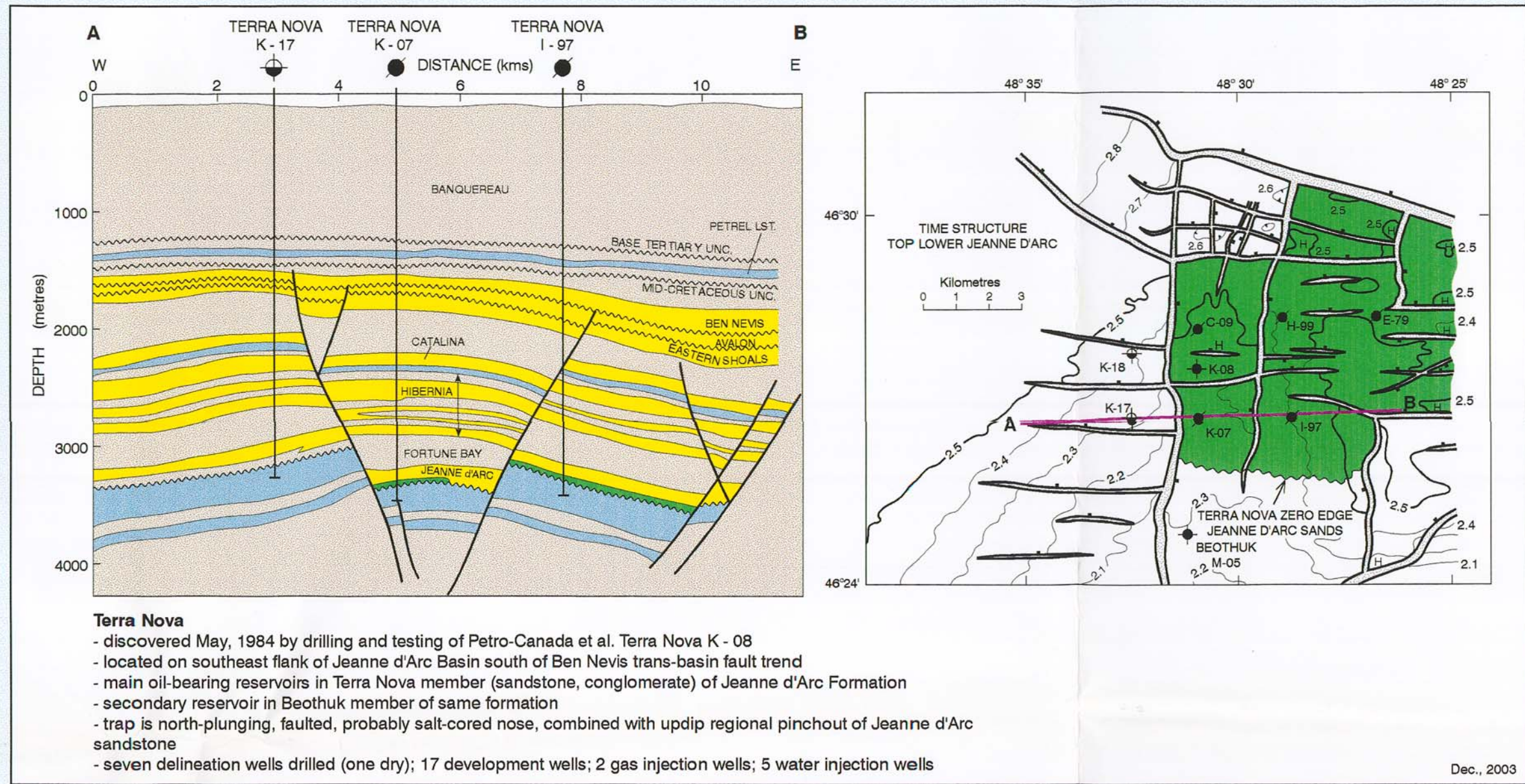


Figure 5

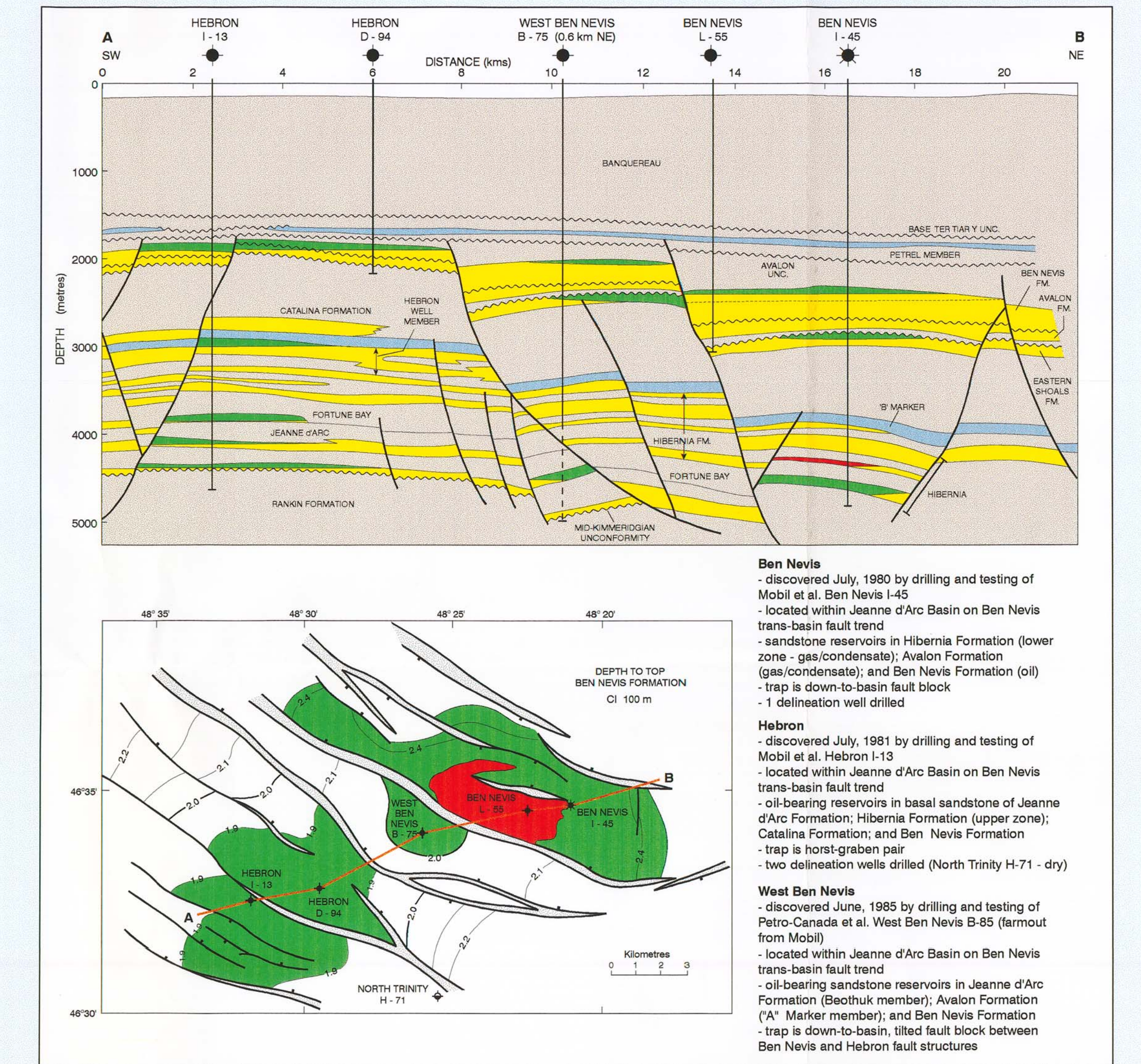


Figure 6

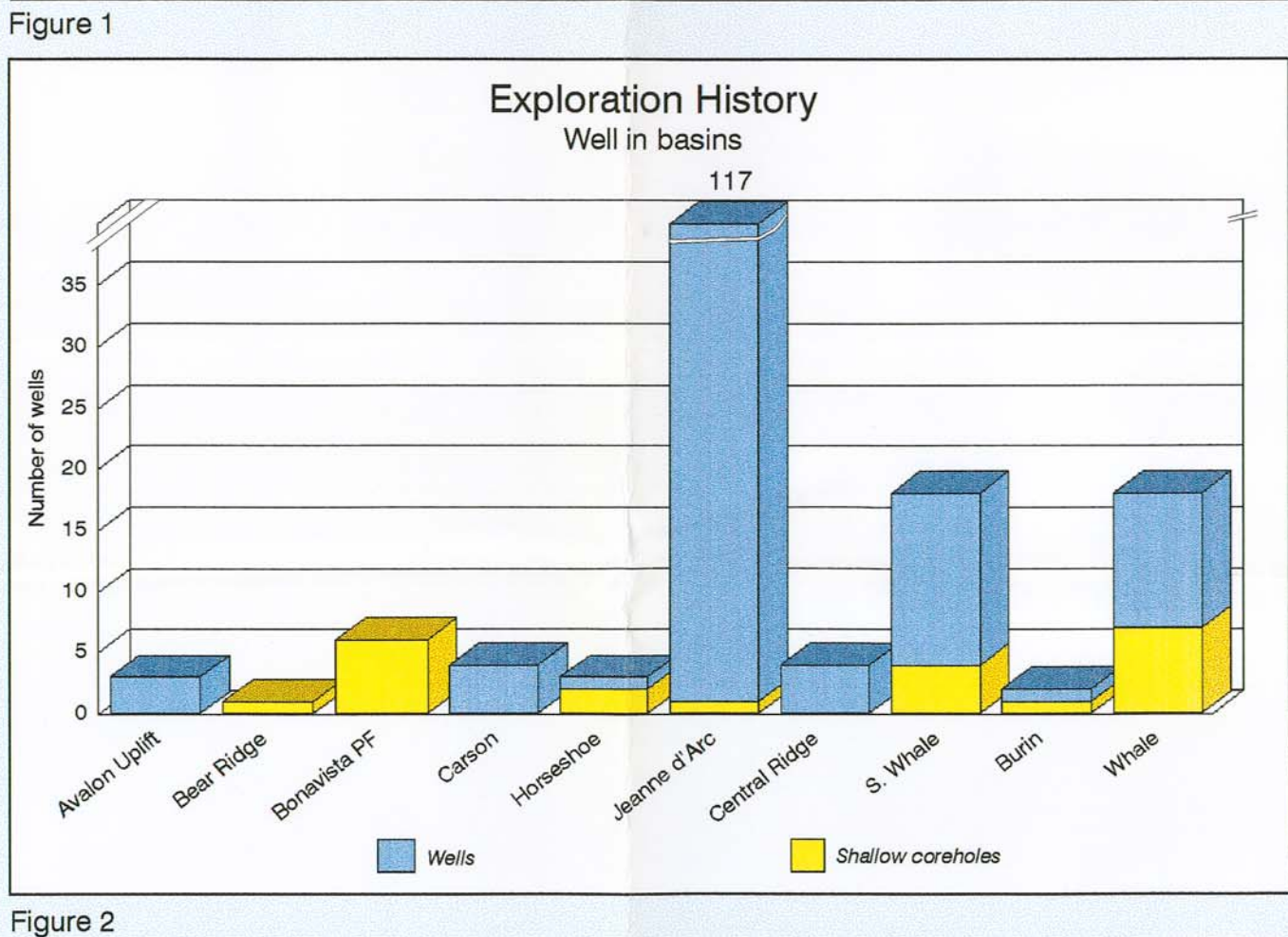
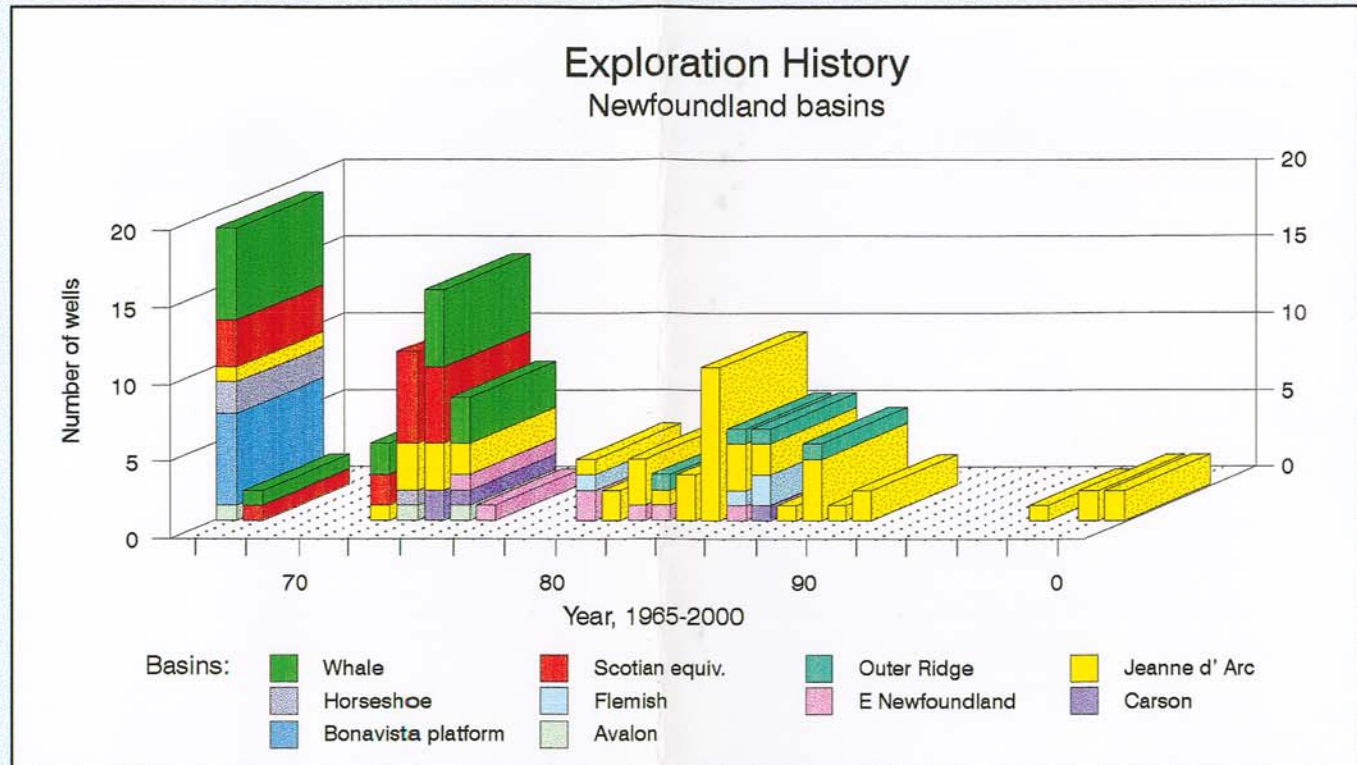


Figure 2

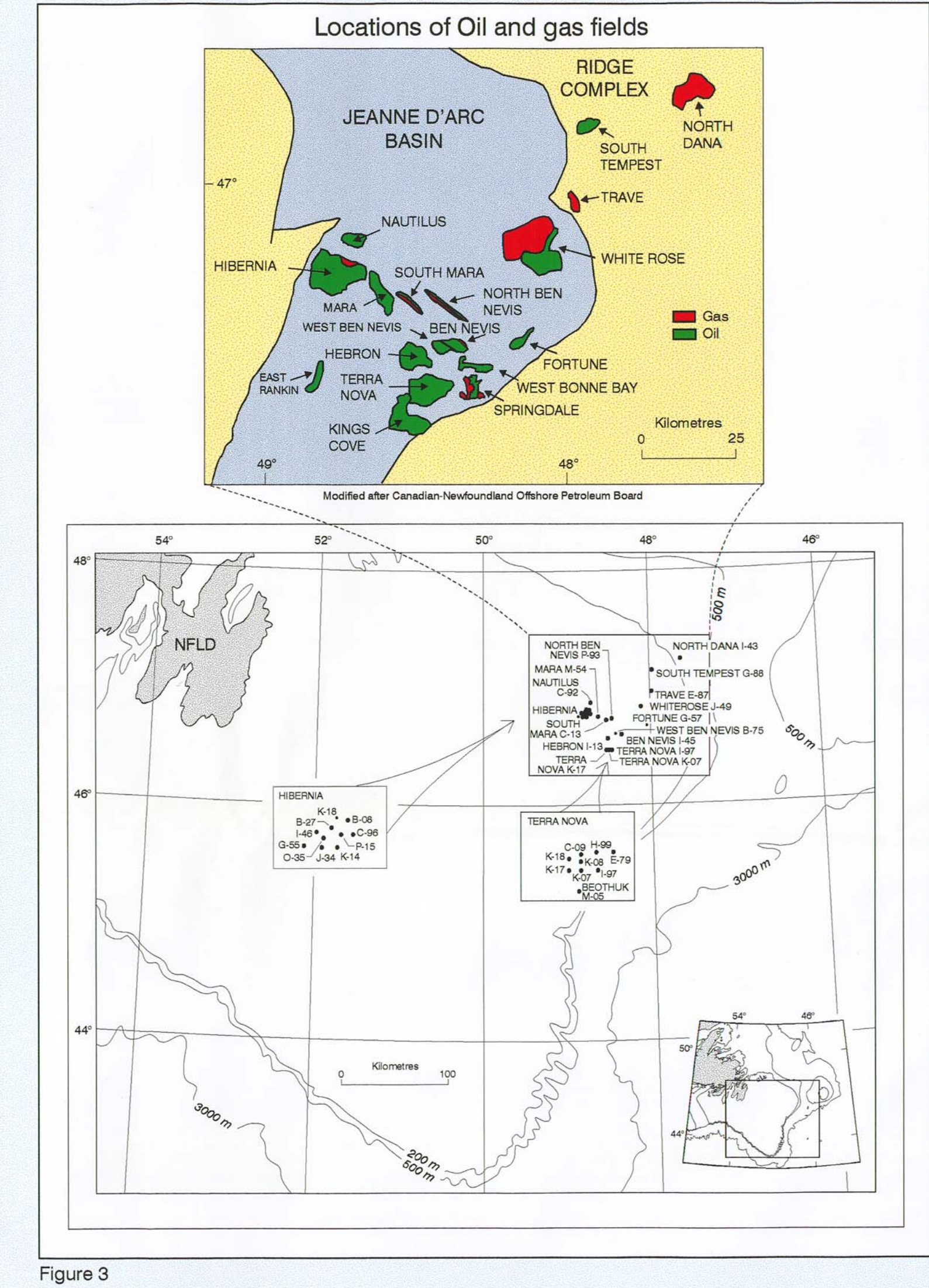


Figure 3

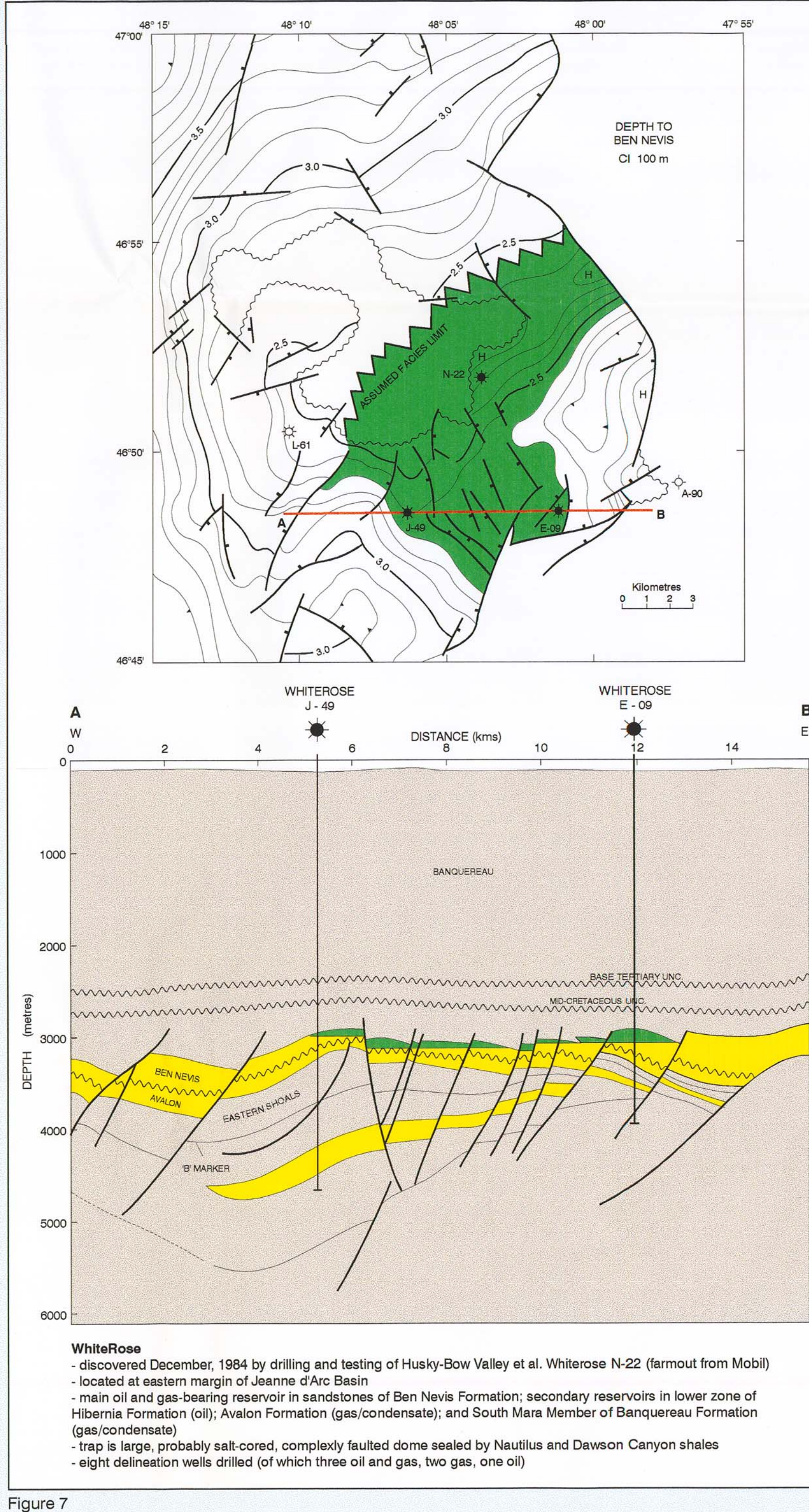


Figure 7

EAST COAST BASIN ATLAS SERIES GRAND BANKS OF NEWFOUNDLAND HYDROCARBONS I

HYDROCARBON PROSPECTS AND FIELDS 1

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HYDROCARBON PROSPECTS ON THE GRAND BANKS

As of March of 2003, 212 wells have been drilled on the Grand Banks with the first well drilled in 1965. There are 23 shallow core holes and another 36 wells are development, delineation, etc. in the Jeannie d'Arc Basin (Fig. 1). Of the remaining 155 exploratory wells, 117 were drilled in the Jeannie d'Arc Basin and 38 in other basins (Fig. 2). A brief description of each of the significant discoveries including their geological setting, productive reservoirs, traps, etc. is provided in the remaining figures on the index sheets Hydrocarbons I and II, and are summarised in Table 1. Reservoir properties are listed in Table 2. The figure numbers and descriptions for the discoveries follow the order in Table 1. An outline of the salient points in the geology is given below.

STRUCTURAL AND TRAPPING STYLES

A host of structural styles are represented by the discoveries of the Jeannie d'Arc Basin. With the exception of Mara (Fig. 6), all of the discoveries are structures created or modified by deformation during Aptian/Albian times, but structural styles are controlled to a great extent by their position within the basin, such as in the basin centre, along basin margins or in association with large basin bounding features.

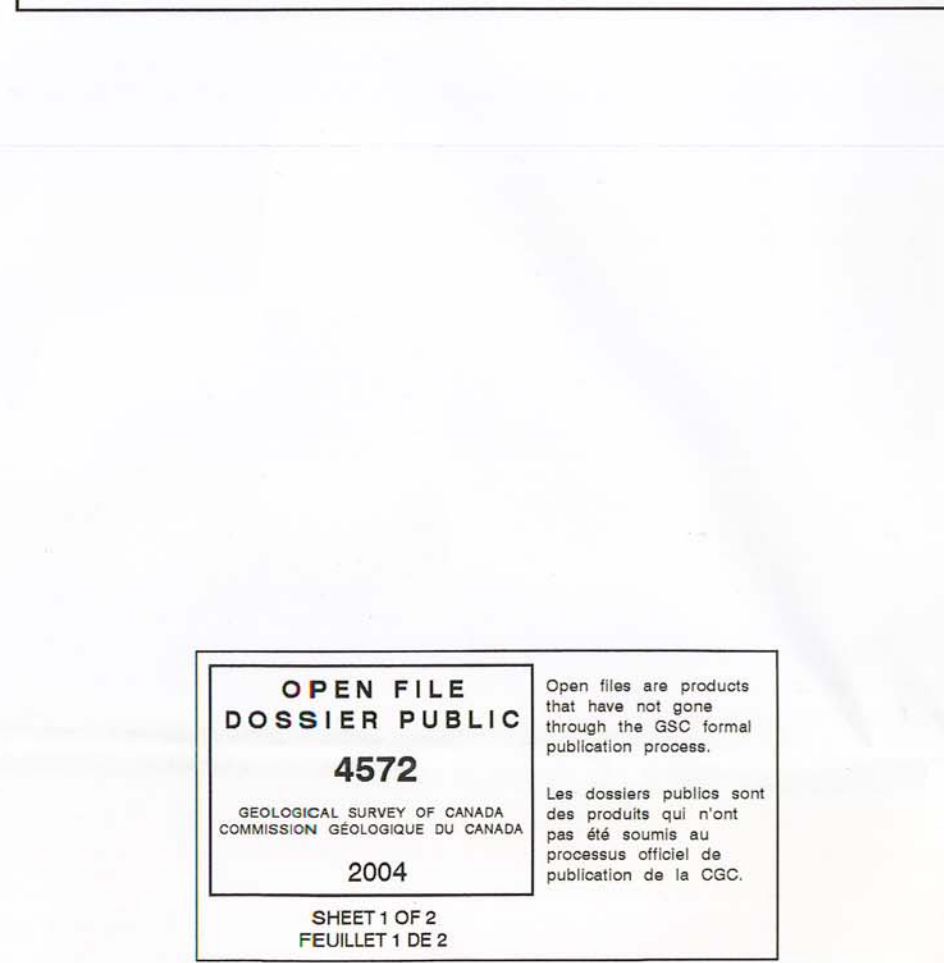
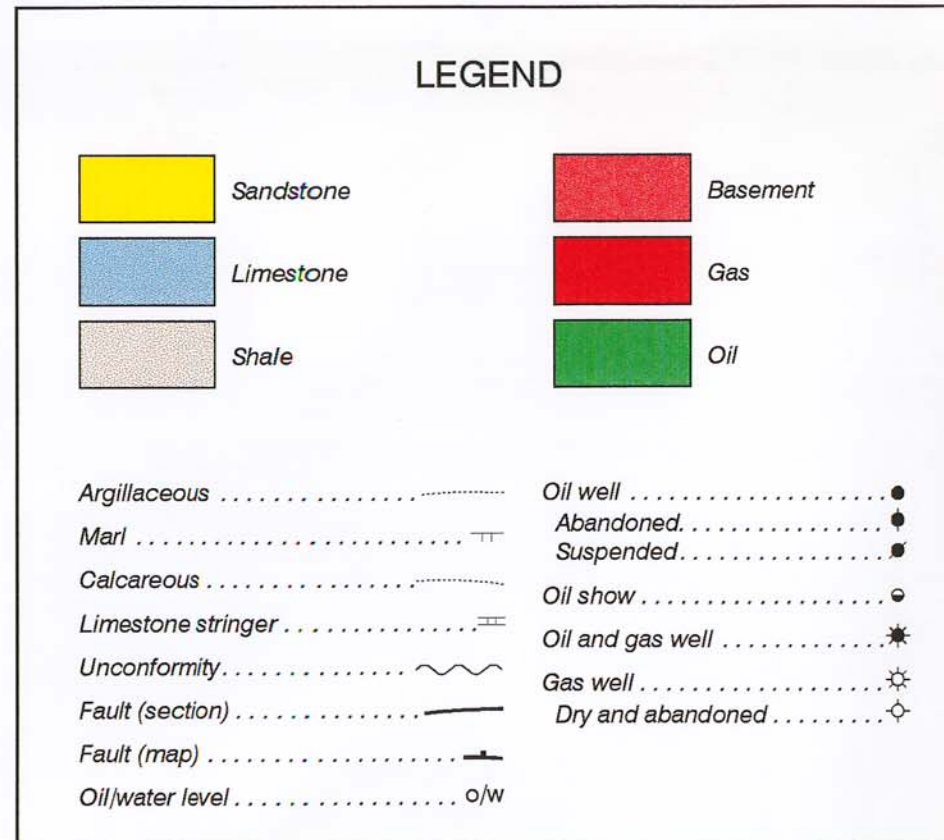
Discoveries in the basin centre include South Mara, North Ben Nevis, Ben Nevis, West Ben Nevis and Hebron. These structures are defined by the NW-SE-trending Trans Basin Fault Trend (Grant et al., 1986 and Erachescu, 1987) of Aptian/Albian age. These faults bound generally long, narrow blocks with closure as typified by North Ben Nevis. Interaction of faults and contemporaneous arching of faulted blocks provides additional components of closure, as seen at Hebron and West Ben Nevis respectively.

(Fig. 5) is a key structure graben at the crest of a north plunging anticline. Oil is trapped within the graben and on the east flank. Lopech mapping indicates that the anticline was formed in Aptian/Albian times when a large block with a fault into the lowermost Rankin carbonates, was tilted to the south. A transpressional structure, located to the south of Terra Nova, indicates synchronous dip-slip movement along faulting to the east caused by erosion. Finally, Late Cretaceous and Tertiary subsidence rates increased northward, giving the first northerly plunge to the structure.

The WhiteRose structure (Fig. 7), on the eastern margin of the Jeannie d'Arc Basin, comprises a broad faulted dome formed by basin subsidence and rollover associated with both salt movement and rollover into the fault-bound Outer Ridge during the Aptian/Albian.

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Sheet 1 of 2
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