

TABLE 4. Variation of organic facies (volume % of maceral affinity association) and their associated petrographic criteria, maturity, kerogen type, and inferred oil/gas potential related to lithology, age, stratigraphy and depositional environment of analyzed sediments from selected Scotian Shelf wells (modified from Mukhopadhyay and Birk, 1989)

Well Name	Depth (m)	Lithology	Formation	Age	Environment	Vitrinite Reflectance (% Ro)					Organic Facies Distribution ²	Oxidation Level (Environment) ³	Organic Input	Kerogen Type ⁴	Oil/Gas Potential ⁵			
						1	2	3	4	5						6		
Louisbourg J-47	1030	sh. grey sh + ss + sil	Banquereau	Late Turonian	outer neritic	0.25	0.03	1	3	14	9	72	1	(mildlyoxic, shallow marine)	terrestrial	III	gas (minor)	
	1575	grey sh with ss + sil	Dawson Canyon	E. - Mid. Cenomanian	inner neritic	0.29	0.03	2	16	23	13	44	2	(mildlyoxic, shallow marine)	terrestrial	III	gas (minor)	
	2145	grey sh + clay with ss	Albian	Albian	inner neritic - marginal marine	0.35	0.04	1	2	16	37	43	2	(mildlyoxic, shallow marine)	IB-III	gas/cond.		
	2695	grey sh + clay with sil	Missisaga	L. Haut. - Barr.	inner neritic - marginal marine + continental	0.45	0.05	1	3	26	21	57	1	(mildlyoxic, shallow marine)	III	minor gas		
	3105	grey sh with grey sh	Barr. - Valang.	E. Haut.	inner neritic - marginal marine + continental	0.52	0.05	1	6	22	33	33	2	(mildlyoxic, shallow marine + detritic)	IB	cond./gas		
	3705	calc. sh + grey sh	Calliovia	Calliovia	outer neritic	0.40	0.04	1	4	30	18	46	1	(mildlyoxic, shallow marine)	IB-III	gas/cond.		
	3825	calc. ss + black sh	Mic Mac	L. Oxfordian - Kimm.	inner neritic to outer neritic	0.75	0.06	3	4	30	16	44	3	(mildlyoxic, shallow marine)	mixed	IB	cond./oil-gas	
	4035	calc. sh + grey sh	Calliovia	Calliovia	outer neritic	0.40	0.04	1	4	30	18	46	1	(mildlyoxic, shallow marine)	IB-III	gas/cond.		
	4411	dark grey shale	Mic Mac	L. Oxfordian - Kimm.	inner neritic to outer neritic	0.75	0.06	3	4	30	16	44	3	(mildlyoxic, shallow marine)	mixed	IB	cond./oil-gas	
	4420	grey sh + sil	Calliovia	Calliovia	outer neritic	0.40	0.04	1	4	30	18	46	1	(mildlyoxic, shallow marine)	IB-III	gas/cond.		
	4830	grey sh + sil	Calliovia	Calliovia	outer neritic	0.40	0.04	1	4	30	18	46	1	(mildlyoxic, shallow marine)	IB-III	gas/cond.		
	5175	green marl with light grey sh	Calliovia	Calliovia	outer neritic	1.22	0.16	2	12	11	35	40	0	(oxic, open marine)	terrestrial	II-IV	non source	
	5437	calc. dark grey sh	Oxfordian	Oxfordian	outer neritic	1.35	0.12	1	8	55	3	31	2	(mildlyoxic, shallow marine)	mixed	IB	cond./oil-gas	
	5446	grey sh	Calliovia	Calliovia	outer neritic	1.22	0.16	2	12	11	35	40	0	(oxic, open marine)	terrestrial	II-IV	non source	
	5455	grey sh	Calliovia	Calliovia	outer neritic	1.22	0.16	2	12	11	35	40	0	(oxic, open marine)	terrestrial	II-IV	non source	
	5580	medium green sil + grey sh	Calliovia	Calliovia	outer neritic	1.81	0.15	0	14	59	3	23	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
	5655	grey sh with minor green sil	Calliovia	Calliovia	outer neritic	1.81	0.15	0	14	59	3	23	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
	5780	grey sh	Calliovia	Calliovia	outer neritic	1.81	0.15	0	14	59	3	23	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
	South Venture O-59	4010	dark grey sh with minor sil	Missisaga	Barr. - Valang.	inner neritic	0.74	0.08	2	3	14	19	60	2	(mildlyoxic, shallow marine)	terrestrial	III	gas
		4130	dark grey sh with minor sil	Calliovia	Calliovia	outer neritic	0.76	0.07	1	1	4	53	40	1	(mildlyoxic, shallow marine)	IB-III	gas/cond.	
4940		black sh	Late Kimm. - Tithonian	Late Kimm. - Tithonian	inner neritic - marginal marine	1.05	0.12	3	26	54	3	12	2	(mildlyoxic, shallow marine)	mixed	IIA-IB	oil/cond.	
4980		black sh with minor sil	Calliovia	Calliovia	outer neritic	1.12	0.10	1	21	67	2	8	1	(mildlyoxic, shallow marine)	IB	cond./gas		
5175		dark grey sh with sil	Calliovia	Calliovia	outer neritic	1.22	0.16	2	3	35	18	39	3	(mildlyoxic, shallow marine)	terrestrial	IB	cond./gas/oil	
5255		grey sh	Calliovia	Calliovia	outer neritic	1.25	0.08	2	54	8	30	1	1	(mildlyoxic, shallow marine)	IB	cond./gas		
5420		grey sh	Oxfordian - Kimm.	Oxfordian - Kimm.	inner neritic - outer neritic - marginal marine	1.45	0.09	2	24	37	3	33	1	(mildlyoxic, shallow marine)	mixed	IIA-IB	gas/cond.	
5590		grey sh with sil	Calliovia	Calliovia	outer neritic	1.78	0.12	3	26	11	34	25	1	(mildlyoxic, shallow marine)	IB	cond./gas		
5700		dark grey sh with calc. sil	Calliovia	Calliovia	outer neritic	1.85	0.13	2	8	22	19	45	3	(mildlyoxic, shallow marine)	IB-III	cond./gas		
5965		calc. dark grey sh	Mic Mac	Mic Mac	outer neritic	2.13	0.11	6	54	7	31	2	2	(mildlyoxic, shallow marine)	IB	cond./gas/oil		
6080		grey sh	Calliovia	Calliovia	outer neritic	2.50	0.11	8	56	9	26	1	1	(mildlyoxic, shallow marine)	IB	cond./gas/oil		
6115		dark grey sh	Calliovia	Calliovia	outer neritic	2.55	0.12	1	46	31	5	16	1	(mildlyoxic, shallow marine)	IB-III	oil/cond.		
6170		dark grey calc. sh	Calliovia	Calliovia	outer neritic	2.42	0.18	1	4	18	11	19	3	(mildlyoxic, shallow marine)	IB	cond./gas/oil		
6340		grey sh	Calliovia	Calliovia	outer neritic	2.75	0.04	1	1	1	1	1	1	(mildlyoxic, shallow marine)	IB	cond./gas/oil		
4560		green marl + grey sh	Valang. - Barr.	Valang. - Barr.	inner neritic - marginal marine - continental	0.82	0.03	2	5	60	17	15	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
4610		grey sh	Calliovia	Calliovia	outer neritic	0.82	0.03	2	5	60	17	15	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
4700		calc. grey sh + green grey sh	Tithonian	Tithonian	inner neritic	0.92	0.06	8	17	45	20	2	2	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
4959		black sh	Calliovia	Calliovia	outer neritic	0.92	0.06	8	17	45	20	2	2	(mildlyoxic, shallow marine)	mixed	IB	cond./gas	
4962		dark grey sh	Calliovia	Calliovia	outer neritic	1.04	0.03	5	6	39	9	35	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas/oil	
5000		grey sh + green calc. sh	Mic Mac	Mic Mac	outer neritic	1.14	0.03	5	6	39	9	35	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas/oil	
5210	grey sh + green calc. sh	Mic Mac	Mic Mac	outer neritic	1.14	0.03	5	6	39	9	35	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas/oil		
5225	grey sh + green calc. sh	Mic Mac	Mic Mac	outer neritic	1.14	0.03	5	6	39	9	35	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas/oil		
5320	grey sh + green calc. sh	Mic Mac	Mic Mac	outer neritic	1.14	0.03	5	6	39	9	35	1	(mildlyoxic, shallow marine)	mixed	IB	cond./gas/oil		
5570	grey sh + calc. sil	Oxfordian - Kimm.	Oxfordian - Kimm.	inner neritic - marginal marine	1.91	0.11	3	25	19	4	2	4	(mildlyoxic, shallow marine)	terrestrial	III	gas		
5620	grey sh + marl	Calliovia	Calliovia	outer neritic	2.08	0.07	2	8	38	10	38	4	(mildlyoxic, shallow marine)	mixed	IB-III	gas/cond.		
5770	calc. grey sh	Calliovia	Calliovia	outer neritic	2.08	0.07	2	8	38	10	38	4	(mildlyoxic, shallow marine)	mixed	IB-III	gas/cond.		
5880	grey sh	Calliovia	Calliovia	outer neritic	2.08	0.07	2	8	38	10	38	4	(mildlyoxic, shallow marine)	mixed	IB-III	gas/cond.		
5820	grey sh	Calliovia	Calliovia	outer neritic	2.08	0.07	2	8	38	10	38	4	(mildlyoxic, shallow marine)	mixed	IB-III	gas/cond.		
5860	calc. grey sh	Calliovia	Calliovia	outer neritic	2.08	0.07	2	8	38	10	38	4	(mildlyoxic, shallow marine)	mixed	IB-III	gas/cond.		
5871	grey sh	Calliovia	Calliovia	outer neritic	2.08	0.07	2	8	38	10	38	4	(mildlyoxic, shallow marine)	mixed	IB-III	gas/cond.		
19175 21427 22627 22727	grey sh	Logan Canyon (Cree)	Albian	shallow marine	0.45	0.04	9.5	47	79	45.1	29.0	3.8	(partially oxidized)	terrestrial	IB-III	cond./gas		
2335	grey and green sh	Dawson Canyon	Dawson Canyon	open shelf, outer neritic	0.50	0.04	3.0	8.8	14.1	38.3	32.6	3.3	(partially oxidized)	mixed	IB	cond./gas		
2705	grey and green sh	Dawson Canyon	Dawson Canyon	open shelf, outer neritic	0.45	0.08	2.5	13.6	9.4	34.9	28.7	10.7		terrestrial	III	gas		
3005	grey-green sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	0.57	0.06	4.0	13.8	37.0	28.7	3.3		mixed	III	gas			
3125	grey-green sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	0.78	0.03	1.6	5.1	11.1	15.6	60.2	6.4		terrestrial	III	gas		
3390	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	0.97	0.06	0.8	4.5	9.4	27.1	49.0	9.8	oxidized	IB-IV	non source			
3830	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	0.94	0.07	5.7	14.2	25.4	15.5	36.0	3.2		mixed	III	gas		
4420	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	0.93	0.12	2.9	7.6	18.5	27.8	6.8	6.8	partially oxidized	terrestrial	mixed	III	gas	
4640	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	1.03	0.13	2.4	10.8	22.2	29.8	31.1	3.7		mixed	III	gas		
4760	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	0.88	0.05	1.3	17.2	3.3	15.8	36.0	31.8	oxidized	marine-mixed	III	gas		
4820	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	1.24	0.05	2.9	7.8	18.7	19.5	27.5	23.1	partially oxidized	IB	cond./gas			
4910	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	1.41	0.07	3.7	21.4	26.7	20.8	22.7	4.7	(anoxic - partial)	mixed	IIA-IB	oil, cond., gas		
5000	grey sh	Shortland shale	Shortland shale	deep water open shelf, outer neritic	1.52	0.03	3.0	26.8	24.4	10.6	28.8	5.8		IB	oil, cond., gas			
7930	dark grey sh	Logan Canyon (Waskapi)	Albian	open + restricted shallow marine	0.51	0.07	5.7	3.7	10.9	49.9	25.5	4.3	(partially oxidized)	terrestrial	III	gas		
8170	grey sh + sil	Logan Canyon (Waskapi)	Albian	open + restricted shallow marine	0.56	0.05	2.1	8.7	15.8	40.6	28.2	4.6		mixed	III	gas		
12,630	grey sh	Missisaga	Missisaga	prodelta	0.65	0.06	1.2	10.0	30.9	31.3	23.6	3.0		IB	cond./gas, oil			
10,850	grey sh	Abenaki (Baccaro)	Abenaki (Baccaro)	shallow marine	0.51	0.06	6.0	12.5	30.2	46.8	4.5		terrestrial	III	gas			
11,030	grey sh	Abenaki (Misaine)	Abenaki (Misaine)	deep marine	0.54	0.11	0.5	11.4	15.9	35.2	30.8	6.2		mixed	III	gas		
11,080	grey sh	Abenaki (Misaine)	Abenaki (Misaine)	deep marine	1.5	0.8	1.5	8.7	12.8	36.4	32.4	8.2		terrestrial	III	gas		
12,330	grey sh	Missisaga	Missisaga	shallow marine	0.51	0.06	0.5	4.5	19.7	54.8	17.0	3.5		terrestrial	III	gas		
7600 7510 8300	grey sh + sil	Missisaga	Barrémien	shallow marine, beach	0.55	0.05	2.6	8.5	26.8	34.8	24.7	2.6	(anoxic - partial)	IB-III	gas/cond.			
5910	grey sh + white sil	Barrémien	Barrémien - Valang.	shallow marine, channel	0.51	0.08	1.6	6.7	38.6	27.7	23.2	2.2		IB	cond./gas			
10,380	grey sh + white sil	Port. - Barrémien	Port. - Barrémien	shallow marine	0.61	0.06	2.2	3.4	32.8	32.2	27.2	2.2		IB	cond./gas			
13,200	grey sh + white sil	Calliovia	Calliovia	shallow marine	0.67	0.05	3.8	24.6	23.6	32.0	12.2	3.8	(oxic - partial)	mixed	IB	gas/cond./oil		
13,800	grey sh + white sil	Calliovia	Calliovia	shallow marine	0.78	0.08	1.5	11.6	7.7	32.9	37.3	9.0	partially oxidized	IB-IV	non source			
13,800	grey sh + white sil	Calliovia	Calliovia	shallow marine	1.6	0.13	1.4	2.6	13.1	14.2	43.7	24.0	oxidized	IV	non source			
13,890	grey sh + white sil	Bathonian	Bathonian	shallow marine	1.02	0.05	0.2	36.7	20.5	13.1	20.5	9.0	totally oxidized	IV	non source			
14,230	grey sh + minor sil	Abenaki (Misaine)	Abenaki (Misaine)	deep marine shelf	1.33	0.07	2.7	10.5	12.8									