A1- Complete vitrinite reflectance data for Golata formation collected from TRANSEURO HZ BEAVER D-A064-K (WA2547) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE*	%Ro_R	SD	N	COMMENTS
1	C-572064	WA2547	6	1914.7	Golata	657/13	2	1.64	0.09	9	Light brown silty shale with minor amount of mostly amorphous kerogen with trace amount of overmature alginite derived vitrinite and pyrobitumen (observed mostly between interagranular pores of siltstone microlithotype) macerals. Micrinite and pyrite are also observed in the matrix.
							4	1.89	0.04	9	
							4	2.09	0.04	10	
							2.2	1.43	0.00	2	
							40	2.31	0.06	7	
							40	2.51	0.08	4	
2	C-572068	WA2547	6	1917.7	Golata	658/13	2	1.72	0.11	11	Light brown shaley siltstone with rare amount of OG consisting mostly amorphous kerogen with trace amount of overmature alginite derived vitrinite and pyrobitumen (observed mostly between interagranular pores of siltstone microlithotype) macerals. Micrinite and pyrite are also observed in the matrix.
							4	2.22	0.17	17	
							2.2	1.42	0.06	4	granular
							2.2	2.73	0.10	2	reworked
							40	3.15	0.07	3	
3	C-572078	WA2547	6	1920.8	Golata	659/13	2	1.69	0.07	13	Light brown silty shale with rare amount of mostly amorphous kerogen with trace amount of overmature alginite derived vitrinite and pyrobitumen macerals. Micrinite and pyrite are also observed in the matrix. Diagenetic calcite are also observed.
							4	1.97	0.10	28	
							4	2.33	0.08	9	
							2.2	1.37	0.10	10	granular
4	C-572089	WA2547	6	1923.8	Golata	660/13	2	1.81	0.06	11	Light brown shale with rare amount of mostly amorphous kerogen with trace amount of overmature alginite derived vitrinite and pyrobitumen macerals. Micrinite and pyrite are also observed in the matrix.
							4	2.07	0.06	21	
							2.2	1.60	0.04	9	
							2.2	2.29	0.03	3	
							2.2	2.79	0.05	4	reworked
							2.2	2.44	0.32	2	

KEY FOR ORGANIC TYPE

2 = Vitrinite
2.1,2.2,2.3 = refers to as reworked populations
3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A2. Complete vitrinite reflectance data for Golata and Besa River/Muskwa formations collected from TRANSEURO BEAVER D-064-K (WA325) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-571599	WA325	1	2535.8	Golata	638/13	2	2.16	0.07	10	Brown organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen. Calcareous microfossil, diagenetic calcite cement.
							21	2.77	0.09	19	
							21	2.47	0.08	12	
							2.2	1.91	0.07	2	granular
							40	3.11	0.11	7	
							40	3.71	0.05	2	
2	C-571594	WA325	1	2537.3	Golata	637/13	2	2.30	0.13	21	Dark brown organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen. Calcareous microfossil, diagenetic calcite cement.
							21	2.71	0.15	18	
							2.2	1.80	0.14	7	
							40	3.26	0.12	4	
3	C-571589	WA325	1	2538.9	Golata	636/13	2	2.51	0.05	12	Dark brown organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen. Calcareous microfossil, diagenetic calcite cement.
							21	2.86	0.11	22	
							2.2	2.15	0.05	4	
							2.2	1.94	0.06	4	granular
							40	3.42	0.10	9	
4	C-571579	WA325	1	2541.9	Golata	635/13	2	2.44	0.09	13	Dark brown organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen. Calcareous microfossil, diagenetic calcite cement.
							21	2.70	0.07	12	
							2.2	2.10	0.10	13	
							2.2	1.69	0.04	2	
							21	3.00	0.04	9	
							40	3.27	0.07	4	
5	C-571569	WA325	1	2545.0	Golata	634/13	2	2.45	0.12	13	Dark brown organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen.
							21	2.84	0.10	7	
							2.2	2.06	0.07	4	
							21	3.19	0.07	4	
							40	3.89	0.00	1	
6	C-571559	WA325	1	2548.0	Golata	633/13	2	2.39	0.13	20	Dark brown organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen.
							21	2.93	0.15	13	
							2.2	2.12	0.01	3	
							2.2	1.88	0.14	5	
							40	3.40	0.00	1	
7	C-571602	WA325	20	2895.5	Banff	640/13	2	2.56	0.09	16	Light brown organically lean silty shale matrix traces of mainly unicellular alginite.
							2.21	2.90	0.09	18	
							2.2	2.05	0.12	8	
							21	3.42	0.10	9	
7	C-571600	WA325	20	2896.1	Banff	639/13	2	2.68	0.17	14	Organically lean shale with rare amount of mostly dark amorphous kerogen lenses, overmature small amorphinite lenses, unicellular alginite derive vitrinite (colotelinite) macerals and isotropic pyrobitumen. Calcareous microfossil, diagenetic calcite cement.
							4	3.16	0.11	11	
							2.2	2.02	0.07	4	
							40	3.70	0.09	7	
8	C-571627	WA325	21	3364.2	Besa River/ Muskwa	643/13	2	3.10	0.11	10	Black shale matrix with mostly dark granular spent amorphous kerogen with trace amount of alginite derived vitrinite and pyrobitumen macerals and trace amount of frambiodal pyrite.
							21	3.62	0.12	7	

							2.2	2.49	0.12	4	granular
							21	4.03	0.05	9	
							40	4.37	0.05	2	
9	C-571615	WA325	21	3368.2	Besa River/ Muskwa	642/13	2	3.09	0.09	5	Black shale matrix with mostly dark granular spent amorphous kerogen with trace amount of alginite derived vitrinite and pyrobitumen macerals and trace amount of frambiodal pyrite.
							21	3.43	0.02	2	
							2.2	2.32	0.07	6	granular
							2.2	2.69	0.07	3	granular
							2.2	1.84	0.00	1	granular
10	C-571603	WA325	21	3371.8	Besa River/ Muskwa	641/13	2	2.99	0.12	12	The host rock consist of diagenitic calcite cement rich black siltstone with dark spent amorphous kerogen and clay observed between intergranular pores. Black shale matrix with mostly dark granular spent amorphous kerogen with trace amount of alginite derived vitrinite and pyrobitumen macerals and trace amount of frambiodal pyrite.
							2.2	3.41	0.12	6	
							2.2	2.60	0.12	6	granular
							2.2	2.24	0.04	3	
							21	3.90	0.05	3	

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3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A3. Complete vitrinite reflectance data for Exhaw, Kotcho and Muskwa formations collected from LTS HZ POPLAR HILLS A-040-G (WA25913) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-572123	WA25913	1	1216.5	Exshaw	678/13	3	1.56	0.05	3	Brown silty shale with rare amount of measurable vitrinite and bitumen macerals. Presence of framboidal pyrite.
							2.2	2.20	0.09	9	
							2.2	2.66	0.12	8	
							40	2.98	0.01	2	
							40	3.44	0.08	3	
2	C-572135	WA25913	1	1220.5	Exshaw	679/13	3	1.54	0.08	2	Pyrite rich carbonate matrix with mostly spent amorphous kerogen displace by micrinite and framboidal pyirite minerals. High amount of conodont like microfossils and other calcareous microfossils.
							2.2	1.25	0.06	2	granular
							2.21	2.45	0.14	8	
							40	3.20	0.03	2	
							40	3.57	0.12	3	
3	C-572148	WA25913	1	1224.4	Exshaw	680/13	2	1.48	0.03	6	Dark brown organic rich shale matrix showing mostly brown amorphous kerogen and rare zooclast derived inertinite macerals. Possible secondary oil migration due to two phase bitumen thermal maturity. Minor amount of fish bones, possibly conodont.
							4	1.81	0.12	10	
							2.2	2.22	0.07	8	
							2.21	2.59	0.19	4	
							40	3.14	0.08	4	
4	C-572158	WA25913	1	1227.8	Exshaw	681/13	2	1.59	0.08	14	Dark brown organic and framboidal rich silty shale matrix showing mostly brown amorphous kerogen and zooclast derived inertinite macerals. Possible secondary oil migration due to two phase bitumen thermal maturity. Minor amount of fish bones, possibly conodont.
							4	1.88	0.06	15	
							2.2	1.28	0.05	5	
							4	2.14	0.06	10	
							2.2	2.67	0.00	1	
5	C-572165	WA25913	1	1233.9	Kotcho	682/13	2	1.63	0.06	9	Organically lean silty shale with rare amount of mostly inertinite maceral and trace amount of unicellular alginite derived vitrinite maceral and corpogelinite maceral.
							4	1.80	0.04	5	
							4	2.14	0.07	7	
							2.2	1.15	0.21	5	
							2.2	2.47	0.14	6	
6	C-572166	WA25913	2	2145.1	Muskwa	676/13	2	1.81	0.09	10	Organically lean siltstone trace amount of measurable vitrinite and bitumen macerals and dark shale matrix showing mostly thin amorphinite lenses and amorphous kerogen. Trace amount of alginite derived vitrinite and pyrobitumen macerals. Conodont.
							21	2.24	0.04	9	
							21	2.08	0.04	9	granular
							2.2	2.49	0.11	15	
							2.2	2.96	0.00	1	
7	C-572168	WA25913	2	2145.75	Muskwa	677/13	2	1.77	0.12	2	dark shale matrix showing mostly thin amorphinite lenses and amorphous kerogen. Trace amount of alginite derived vitrinite and pyrobitumen macerals. Conodont.
							21	2.36	0.10	13	
							21	2.13	0.05	4	
							2.2	2.80	0.19	18	
							40	3.79	0.13	5	

KEY FOR ORGANIC TYPE

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4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A4. Complete citrinite reflectance data for Kotcho formation collected from BP ENERGY GROUP DEER LAKE A-090-I (WA531) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-572109	WA531	1	1658.6	Kotcho	665/13	2	1.78	0.01	2	Cream colored oragnically lean silty shale with trace amount of inertinitic kerogen lenses and alginite derived vitrinite and pyrobitumen macerals and brown long thin amorphous kerogen lenses.
							4	2.16	0.00	1	
							2.4	1.45	0.00	1	
							2.2	2.55	0.09	4	
							2.2	2.88	0.02	2	
2	C-572112	WA531	1	1661.6	Kotcho	666/13	2	1.75	0.11	7	Cream colored oragnically lean silty shale with trace amount of inertinitic kerogen lenses and alginite derived vitrinite and pyrobitumen macerals.
							4	2.06	0.02	5	
							4	2.35	0.10	4	
							2.2	1.27	0.05	3	
3	C-572114	WA531	1	1663.6	Kotcho	667/13		1.69	0.09	6	Cream colored oragnically lean silty shale with trace amount of inertinitic kerogen lenses and alginite derived vitrinite and pyrobitumen macerals and brown long thin amorphous kerogen lenses.
							4	2.01	0.05	4	
							2.2	2.33	0.05	3	
							2.2	1.44	0.04	2	
							2.2	2.72	0.13	3	

KEY FOR ORGANIC TYPE

2 = Vitrinite
2.1,2.2,2.3 = refers to as reworked populations
3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A5. Complete vitrinite reflectance data for Mattson (lower) and Besa River formations collected from TRANSEURO ET AL BEAVER B-036-K (WA21755) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-572115	WA21755	9	1835	Mattson - lower	675/13	2	1.45	0.09	12	Micrinite and framboidal pyrite rich dark brown silty shale showing mostly brown amorphous kerogen with trace amount of small bitumen and alginite derived lenses inclusions.
							4	1.79	0.09	8	
							2.2	2.10	0.11	3	
							2.2	0.99	0.14	6	
							2.2	2.57	0.10	3	phosphatic
2	C-572116	WA21755	8	1838.5	Mattson - lower	674/13	2	1.47	0.06	15	Dark brown organic and framboidal rich silty shale matrix showing mostly brown amorphous kerogen and zooclast derived inertinite macerals. Minor amount of alginite derived vitrinite macerals and isotropic solid bitumen. Traces of diagenetic calcite and replacive dolomite are also observed.
							4	1.68	0.06	12	
							4	1.88	0.04	10	
							2.2	1.29	0.04	5	granular polish
							2.2	2.19	0.09	6	
3	C-572117	WA21755	7	1856	Besa River	673/13	2	1.47	0.06	15	Dark brown shale matrix showing mostly brown amorphous kerogen and zooclast derived inertinite macerals. Minor amount of alginite derived vitrinite macerals and isotropic solid bitumen.
							4	1.69	0.07	15	
							4	1.92	0.04	7	
							2.2	2.16	0.08	2	
4	C-572118	WA21755	6	1882.7	Besa River	672/13	2	1.56	0.09	23	Dark brown shale matrix showing mostly brown amorphous kerogen and zooclast derived inertinite macerals. Minor amount of alginite derived vitrinite macerals and isotropic solid bitumen. Traces of diagenetic calcite and replacive dolomite are also observed.
							4	1.92	0.06	11	
							2.2	1.35	0.06	10	granular
5	C-572119	WA21755	2	1969.2	Besa River	669/13	2	1.66	0.06	10	Light brown silty shale with rare amount of mostly amorphous kerogen and inertinite with trace amount of overmature alginite derived vitrinite and pyrobitumen macerals. Micrinite and pyrite are also observed in the clay rich microlaminite.
							4	1.93	0.06	18	
							4	2.19	0.09	12	
							2.2	2.50	0.03	4	
							2.2	2.93	0.00	1	
6	C-572120	WA21755	4	1995.7	Besa River	671/13	2	1.69	0.09	18	Dark brown shale and silty shale microlithotypes showing mostly brown amorphous kerogen and zooclast derived inertinite macerals. Minor amount of alginite derived vitrinite macerals and isotropic solid bitumen.
							4	1.98	0.11	11	
							4	2.38	0.14	6	
							2.2	1.39	0.09	11	granular
7	C-572121	WA21755	3	2000.7	Besa River	670/13	2	1.74	0.08	8	Light brown silty shale with rare amount of mostly amorphous kerogen and inertinite with trace amount of overmature alginite derived vitrinite and pyrobitumen macerals. Micrinite and pyrite are also observed in the clay rich microlaminite.
							4	1.99	0.09	19	
							4	2.31	0.07	4	
							2.2	1.44	0.04	2	granular
							2.2	2.78	0.00	1	
8	C-572122	WA21755	1	2114	Besa River	668/13	2	1.87	0.07	14	Light brown silty shale with rare amount of mostly amorphous kerogen and inertinite with trace amount of overmature alginite derived vitrinite and pyrobitumen macerals. Micrinite and pyrite are also observed in the clay rich microlaminite.
							21	2.20	0.10	16	
							2.2	1.58	0.09	12	granular
							2.2	2.65	0.00	1	

KEY FOR ORGANIC TYPE

2 = Vitrinite
2.1,2.2,2.3 = refers to as reworked populations
3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A6. Complete vitrinite reflectance data for Kindle, Kindle/Mattson and Besa River/Muskwa formations collected f including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N
1	C-572207	WA038	16	593.7	Kindle	693/13	2	2.81	0.15	19
							21	3.61	0.11	8
							21	3.19	0.07	10
							2	2.26	0.12	4
2	C-572208	WA038	11	631.4	Kindle/Mattson	694/13	2	2.81	0.15	16
							21	3.44	0.14	8
							2	2.33	0.13	7
							21	3.92	0.00	1
3	C-572209	WA038	35	1573.3	Besa River/ Muskwa	695/13	2	3.28	0.07	4
							21	4.33	0.12	13
							21	3.82	0.15	23
							2	2.83	0.12	3
							40	4.72	0.09	5
4	C-572218	WA038	35	1576.0	Besa River/ Muskwa	696/13	2	3.19	0.22	18
							21	3.86	0.14	16
							21	4.31	0.09	4
							2	2.62	0.07	2
							40	4.72	0.00	1
5	C-572226	WA038	35	1578.5	Besa River/ Muskwa	697/13	2	3.21	0.22	13
							21	3.90	0.18	18
							2	2.50	0.17	6
							40	4.62	0.09	8
6	C-572234	WA038	35	1580.9	Besa River/ Muskwa	698/13	2	3.16	0.20	11
							21	4.20	0.09	4
							21	3.74	0.13	6
							2	2.57	0.16	2
							40	4.67	0.08	4

KEY FOR ORGANIC TYPE

2 = Vitrinite

2.1,2.2,2.3 = refers to as reworked populations

3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).

4 = bitumen

21= pyrobitumen

22 = granular pyrobitumen

40 = inertinite

NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the rework

from JOINT VENTURE NO. 1 C-010-E (WA0038) well

COMMENTS
Organic rich calcareous siltstone reservoir rock matrix showing mostly granular secondary migrated pyrobitumen with rare alginite derived vitrinite maceral inclusion. High percentage of calcareous microfossil. Morphology suggest possible oxidation.
poorly polish
Black shale showing mostly dark, long microlaminate of spent amorphous kerogen derived from lamalginite with rare amount of small thin lenses of unicellular alginite derive overmature vitrinite maceral and pyrobitumen lenses. Traces of granular hebamorphinite macerals.
poorly polish
poorly polish
Black shale showing mostly spent amorphous kerogen rare amount of thin long lenses of alginite derive overmature vitrinite maceral and pyrobitumen lenses. Presence of diagenitic calcite minerals with isotropic pyrobitumen inclusion. Trace of radiolaria and conodont microfossils.
poorly polish
corpogillinite
Black shale showing mostly spent amorphous kerogen rare amount of thin long lenses of alginite derive overmature vitrinite maceral and pyrobitumen lenses. Presence of diagenitic calcite minerals with isotropic pyrobitumen inclusion. Trace of radiolaria, conodont and chitinozoan microfossils.
poorly polish
Black shale showing mostly spent amorphous kerogen rare amount of thin long lenses of alginite derive overmature vitrinite maceral and pyrobitumen lenses. Trace of radiolaria, conodont and chitinozoan microfossils.
poorly polish
Black shale showing mostly spent amorphous kerogen with rare amount of small overmature amorphinite lenses, unicellular alginite derived vitrinite maceral and pyrobitumen lenses. Presence of diagenitic calcite minerals with isotropic pyrobitumen inclusion. Trace of conodont microfossils.
poorly polish

ed maceral, they are not quantitative.

A7. Complete vitrinite reflectance data for Muskwa and Otter formations collected from EOG MAXHAMISH D-012-L (WA21643) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-572235	WA21643	1	2956.15	Muskwa	699/13	2	3.34	0.13	8	Dark silty shale showing minor amount of mostly interconnected network of spent amorphous and small amorphinite kerogen, and minor amount of granular pyrobitumen observed between intergranular pores. Morphology suggest possible weathering and brittleness. Scolecodont or conodont microfossils are also observed.
							21	3.77	0.06	4	
							21	2.69	0.13	17	granular and brittle
							21	2.26	0.08	2	granular and brittle
							40	4.35	0.24	5	
2	C-572238	WA21643	4	2966.5	Muskwa	700/13	2	3.40	0.00	1	Dark shale showing minor amount of mostly interconnected network of spent amorphous and small amorphinite kerogen. Minor amount of granular pyrobitumen observed between intergranular pores. Morphology suggest possible weathering and brittleness. Scolecodont or conodont microfossils are also observed.
							21	2.70	0.10	11	granular and brittle
							21	2.34	0.06	10	granular and brittle
3	C-572243	WA21643	9	2971.1	Muskwa	701/13	2	3.19	0.03	2	Dark shale showing minor amount of mostly interconnected network of spent amorphous and small amorphinite kerogen. Minor amount of granular pyrobitumen observed between intergranular pores. Morphology suggest possible weathering and brittleness. Scolecodont or conodont microfossils are also observed.
							21	2.59	0.16	22	granular and brittle
							21	2.17	0.06	6	granular and brittle
							2.2	3.93	0.12	2	
4	C-572247	WA21643	11	2978.7	Otter Park	702/13	2	3.18	0.09	6	Dark brown shale showing minor amount of mostly thin interconnected network of spent amorphous kerogen with small amorphinite inclusions and trace amount of granular and isotropic pyrobitumen macerals. Morphology suggest possible weathering and brittleness. Scolecodont or conodont microfossils are also observed.
							21	2.74	0.11	10	granular and brittle
							21	2.26	0.08	3	granular and brittle
							2.2	3.63	0.00	1	
							40	4.08	0.00	1	

KEY FOR ORGANIC TYPE

2 = Vitrinite

2.1,2.2,2.3 = refers to as reworked populations

3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).

4 = bitumen

21= pyrobitumen

22 = granular pyrobitumen

40 = inertinite

NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A8. Complete vitrinite reflectance data for Besa River/Golata? and Besa River formations collected from IOE DUN

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N
1	C-571628	WA1331	15	3688.8	Besa River/ Golata?	644/13	2	2.49	0.12	4
							21	3.10	0.11	10
							2.21	3.59	0.11	6
							2.21	3.94	0.07	5
							40	4.31	0.28	10
2	C-571638	WA1331	15	3691.9	Besa River/ Golata?	645/13	2	2.15	0.00	1
							21	2.80	0.17	7
							2.1	3.61	0.20	7
							40	4.45	0.30	5
3	C-571649	WA1331	15	3695.2	Besa River/ Golata?	646/13	2	2.30	0.10	6
							21	2.93	0.08	6
							2.2	1.92	0.01	2
							2.21	3.64	0.24	9
							40	4.45	0.00	1
4	C-571660	WA1331	15	3698.6	Besa River/ Golata?	647/13	2	2.24	0.20	13
							21	2.99	0.18	7
							2.2	1.67	0.02	2
							21	3.72	0.16	11
							40	4.48	0.08	2
5	C-571672	WA1331	15	3702.2	Besa River/ Golata?	648/13	2	2.38	0.01	2
							21	2.96	0.19	13
							2.21	3.55	0.17	17
							40	4.32	0.21	14
6	C-571673	WA1331	16	3773.2	Besa River	649/13	2	2.88	0.09	7
							2.2	2.31	0.13	3
							21	3.33	0.06	4
							2.21	3.90	0.18	15
							40	4.49	0.21	8
7	C-571679	WA1331	16	3775.0	Besa River	650/13	2	2.58	0.11	15
							2.2	2.17	0.07	8
							21	3.10	0.11	5
							2.21	3.62	0.17	4
							40	4.26	0.08	3
8	C-571680	WA1331	17	3889.7	Besa River	651/13	2	2.97	0.14	17
							2.2	2.34	0.11	5
							21	3.64	0.15	12
							40	4.59	0.26	7
9	C-571685	WA1331	17	3891.5	Besa River	652/13	2	2.91	0.07	4
							21	3.54	0.19	9
							2.2	2.34	0.16	4
							40	4.40	0.14	8

10	C-571692	WA1331	17	3893.3	Besa River	653/13	2	3.07	0.11	19
							21	3.67	0.23	25
							2.2	2.41	0.22	9
							40	4.07	0.08	7
11	C-571701	WA1331	17	3895.5	Besa River	654/13	2	3.05	0.13	6
							21	3.51	0.05	7
							2.2	2.65	0.03	2
							21	3.96	0.14	8
							40	4.66	0.13	7

KEY FOR ORGANIC TYPE

2 = Vitrinite

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4 = bitumen

21= pyrobitumen

22 = granular pyrobitumen

40 = inertinite

NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworke

NEDIN D-075-E (WA1331) well including qualittative analysis.

COMMENTS
Black siltstone matrix with mostly dark brown spent amorphous kerogen with trace amount of pyrobitumen, vitrinite and inertinite maceral inclusions. All observed between intergranular pores.
Black siltstone matrix with mostly dark brown spent amorphous kerogen with trace amount of pyrobitumen, vitrinite and inertinite maceral inclusions. All observed between intergranular pores.
granular
Black organically rich shale/siltstone matrix showing mostly interconnected network of dark amorphous kerogen and overmature amorphinite lesnes between intergranular pores. Rare amount of granular thin lenses of alginite derived vitrinite and pyrobitumen macerals inclusions. Conodont microfossil are also observed. High percentage of granular phosphatic organic matrix. possible in-situ oxidation.
granular
Black organically rich shale/siltstone matrix showing mostly interconnected network of dark amorphous kerogen and overmature amorphinite lesnes between intergranular pores. Rare amount of granular thin lenses of alginite derived vitrinite and pyrobitumen macerals inclusions. High percentage of granular phosphatic organic matrix. possible in-situ oxidation.
Black organically rich shale/siltstone matrix showing mostly interconnected network of dark amorphous kerogen and overmature amorphinite lesnes between intergranular pores. Rare amount of granular thin lenses of alginite derived vitrinite and pyrobitumen macerals inclusions. High percentage of granular phosphatic organic matrix. possible in-situ oxidation.
granular
Black shale matrix with mostly dark granular spent amorphous kerogen with trace amount of alginite derived vitrinite and pyrobitumen macerals and trace amount of frambiodal pyrite.
granular
Black organically rich silty shale matrix showing mostly interconnected network of dark amorphous kerogen and overmature amorphinite lesnes. Rare amount of granular thin lenses of alginite derived vitrinite and pyrobitumen macerals inclusions. High percentage of granular phosphatic organic matrix. possible in-situ oxidation.
granular
Black organic rich shale matrix showing some amorphous kerogen with overmature amorphinite lesnes. Minor amount of alginite derived vitrinite and pyrobitumen macerals inclusions. Framboidal pyrite and micrinite lenese are also observed in the matrix.
Black organic rich shale matrix showing mostly amorphous kerogen with overmature amorphinite lesnes and minor amount of framboidal pyrite. High amount of amount of alginite derived vitrinite macerals and pyrobitumen macerals inclusions. Framboidal pyrite and micrinite lenese are also observed in the matrix.

Black organic rich shale matrix showing mostly amorphous kerogen with overmature amorphinite lesnes and minor amount of framboidal pyrite. Minor amount of amount of alginite derived vitrinite macerals and pyrobitumen macerals inclusions. Framboidal pyrite and micrinite lenese are also observed in the matrix.
Black shale matrix showing mostly amorphous kerogen with overmature amorphinite lesnes and minor amount of alginite derived vitrinite macerals and rare pyrobitumen inclusions. Framboidal pyrite and micrinite lenese are also observed in the matrix.

d maceral, they are not quantitative.

A9. Complete vitrinite reflectance data for Besa River/Evie and Besa River formations collected from TRANSI qualitative anlysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N
1	C-572181	WA02563	1	3777.8	Besa River/Evie	686/13	2	2.75	0.17	9
							21	3.57	0.26	14
							2.2	2.21	0.14	4
2	C-572184	WA02563	1	3778.7	Besa River/Evie	687/13	2	2.74	0.10	12
							21	3.32	0.18	19
							2.2	2.24	0.00	1
							21	3.87	0.11	4
							21	4.64	0.00	1
3	C-572188	WA02563	1	3779.9	Besa River/Evie	688/13	2	3.05	0.21	13
							21	3.85	0.15	10
							40	4.35	0.23	3
4	C-572192	WA02563	1	3781.2	Besa River/Evie	689/13	2	3.22	0.20	17
							21	3.86	0.07	7
							21	3.04	0.93	8
							40	4.98	0.00	1
5	C-572193	WA02563	2	3781.5	Besa River/Evie	690/13	2	3.10	0.00	1
							21	3.60	0.00	1
6	C-572200	WA02563	2	3783.6	Besa River/Evie	691/13	2	3.10	0.21	14
							21	3.79	0.17	10
							2.2	2.32	0.05	2
							40	4.23	0.02	6
7	C-572206	WA02563	3	3785.4	Besa River/Evie	692/13	2	3.70	0.00	1
							21	3.70	0.00	1
							21	4.10	0.00	1

KEY FOR ORGANIC TYPE

2 = Vitrinite
2.1,2.2,2.3 = refers to as reworked populations
3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the rew

EURO BEAVER B-019-K (WA02563) well including

COMMENTS
Orgnic rich dark shale showing mostly interconnected thin network of spent amorphoues kerogen.
granular
Black shale matrix with mostly dark granular spent amorphous kerogen with trace amount of alginite derived vitrinite and pyrobitumen macerals and trace amount of frambiodal pyrite. The host rock consist of diagenitic calcite cement rich black siltstone with dark spent amorphous kerogen and clay observed between intergranular pores.
small amorphinite
Dark brown shale matrix showing mostly small amorphinite lenses with trace amount of alginite derived overmature vitrinite and pyrobitumen macerals. Minor amount of framboidal pyrite.
Dark brown shale matrix showing mostly small amorphinite lenses with trace amount of alginite derived overmature vitrinite and pyrobitumen macerals. Trace amount of framboidal pyrite.
Dark brown shale matrix showing mostly small amorphinite lenses with trace amount of alginite derived overmature vitrinite and pyrobitumen macerals. Trace amount of framboidal pyrite.
Dark brown shale matrix showing mostly small amorphinite lenses with trace amount of alginite derived overmature vitrinite and pyrobitumen macerals. Trace amount of framboidal pyrite.
Black organic and framboidal pyrite rich shale showing mostly interconnected network of spent amorphous kerogen major amount of thin long lenses of alginite derive vitrinite maceral and pyrobitumen lenses.

vorked maceral, they are not quantitative.

A10. Complete vitrinite reflectance data for Garbutt formation collected from AEC MAXHAMISH B-053-B (WA9950) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-572090	WA9950	1	1260.0	Garbutt	661/13	2	0.65	0.07	27	Light brown organic rich shale with minor amount framboidal pyrite. Major amount of bright yellow to yellow orange fluorescing alginite maceral including some Botryococcus sp.. Some thick long coaly lenses derived from lamalginite. Tasmanites and Leiosphaeridia are also observed.
							4	0.36	0.06	3	
							2.2	0.90	0.05	12	
							2.2	1.13	0.07	8	
2	C-572096	WA9950	1	1266.0	Garbutt	662/13	2	0.68	0.07	27	Light brown organic rich shale and siltstone with diagenetic carbonate matrix showing minor amount framboidal pyrite. Major amount of bright yellow to yellow orange fluorescing alginite maceral including some Botryococcus sp??. Some thick long coaly lenses derived from lamalginite. Tasmanites and Leiosphaeridia are also observed.
							4	0.38	0.00	2	
							2	0.86	0.03	7	gelinite
							2.2	1.00	0.00	2	
							2.2	1.62	0.00	1	
3	C-572101	WA9950	1	1272.0	Garbutt	663/13	2	0.72	0.07	26	Light brown organic rich silty shale matrix showing minor amount framboidal pyrite. Major amount of bright yellow to orange fluorescing alginite maceral. Some thick long coaly lenses derived from lamalginite. Tasmanites and Leiosphaeridia are also observed.
							4	0.45	0.00	2	
							2.2	0.95	0.06	8	
							2.2	1.20	0.04	3	

KEY FOR ORGANIC TYPE

2 = Vitrinite
2.1,2.2,2.3 = refers to as reworked populations
3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A11. Complete vitrinite reflectance data for Garbutt formation collected from HARVEST BAY B-017-H (WA13

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N
1	C-591340	WA13960	1	339.7	Garbutt	462/14	2	0.77	0.07	12
							4	0.59	0.06	21
							4	0.32	0.03	8
							2.2	0.96	0.04	3

KEY FOR ORGANIC TYPE

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2.1,2.2,2.3 = refers to as reworked populations

3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).

4 = bitumen

21= pyrobitumen

22 = granular pyrobitumen

40 = inertinite

NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the rewo

960) well including qualitative analysis.

COMMENTS
Organic rich silty shale consisting mostly of spent and partially spent grey and brown amorphous kerogen with minor amount of framboidal pyrite. High percentage of yellow to reddish brown fluorescing alginite macerals orange to brown fluorescing soluble organics (soluble solid bitumen). Rare amount of vitrinite and reworked inertinite macerals. Traces of dissolve organics are also observed in pore spaces. Possible suppression.
Soluble organic/ weak yellow to reddish fluorescing solid bitumen

rked maceral, they are not quantitative.

A12. Complete vitrinite reflectance data for Garbutt formation collected from EXXON MOBILE N PETITOT D-033-F (WA06468) well .

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-591347	WA6468	1	298.0	Garbutt	460/14	2	0.79	0.06	17	Organic rich shale showing mostly weak yellow to reddish brown fluorescing alginite and solid bitumen macerals.
							4	0.61	0.04	15	0.78
							4	0.47		1	
							2.2	1.37		1	
2	C-591348	WA6468	1	309.0	Garbutt	461/14	2	0.81	0.10	19	Organic rich shale with minor amount of framboidal pyrite. DOM consist mostly weak yellow to reddish brown fluorescing alginite and solid bitumen macerals. Possible suppression.
							4	0.56	0.04	25	0.74
							4	0.33	0.03	4	
							2.2	1.08	0.02	4	
							2.2	1.48	0.09	2	

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4 = bitumen

21= pyrobitumen

22 = granular pyrobitumen

40 = inertinite

NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.

A13. Complete vitrinite reflectance data for Garbutt formation collected from STX MAXHAMISH B-006-C (WA1

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N
1	C-571537	WA18890	3	1476	Garbutt	628/13	2	0.79	0.03	8
							4	0.63	0.08	26
							4	0.38	0.04	7
							2.2	0.98	0.05	2
							2.2	1.40	0.17	3
2	C-571538	WA18890	3	1476.6	Garbutt	629/13	2	0.82	0.07	18
							4	0.66	0.04	21
							4	0.37	0.08	3
							2.2	1.08	0.06	8
							2.2	1.39	0.00	1
3	C-571544	WA18890	3	1481.4	Garbutt	630/13	2	0.93	0.05	14
							4	0.71	0.07	21
							2	1.05	0.03	11
							2.2	1.24	0.06	7
							2.2	1.80	0.00	1
4	C-571551	WA18890	3	1487.7	Garbutt	631/13	2	0.91	0.03	11
							2	0.79	0.04	15
							4	0.64	0.04	10
							2	1.01	0.02	6
							2.2	1.20	0.05	3
5	C-571558	WA18890	3	1494	Garbutt	632/13	2	0.92	0.07	11
							4	0.78	0.02	13
							4	0.64	0.06	9
							2	1.16	0.06	5
							2.2	1.50	0.00	1

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4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworke

8890) well including qualitative analysis.

COMMENTS
Pale creamy brown silty shale matrix minor amount of mostly marine derived liptinite maceral (mainly unicellular alginite) in shaley matrix, Rare sporinite and and inertinite maceral observed in siltstone matrix. Minor amount of framboidal pyrite inclusion observed proximal to amorphous kerogen.
Organic and micrinite rich dark brown shale with minor amount of yellow to orange fluorescing alginite macerals. Large granular isotropic solid bitumen lenses and vitrinite derived from lamalginite. Minor to major amount micrinite and framboidal pyrite.
Organic and framboidal pyirite rich, dark brown shale with major amount of of mostly long thin lenses of lamalginite and alginite derived amorphoius kerogen. Rare amount of yellow orange to reddish fluorescing alginite macerals. Large granular isotropic solid bitumen lenses and vitrinite derived from lamalginite. Major amount micrinite and framboidal pyrite.
Organic and framboidal pyirite rich, dark brown shale with major amount of of mostly long thin lenses of lamalginite and alginite derived amorphoius kerogen. Rare amount of yellow orange to reddish fluorescing alginite macerals. Large granular isotropic solid bitumen lenses and vitrinite derived from unicellular to lamalginite. Major amount micrinite and framboidal pyrite. Traces of HCFI in carbonate minerals.
gelinite
Organic and framboidal pyirite rich, dark brown shale with major amount of of mostly long thin lenses of lamalginite and alginite derived amorphoius kerogen. Rare amount of yellow orange to reddish fluorescing alginite macerals. Large granular isotropic solid bitumen lenses and vitrinite derived from unicellular to lamalginite. Major amount micrinite and framboidal pyrite. Traces of HCFI in carbonate minerals.
gelinite

ed maceral, they are not quantitative.

A14. Complete vitrinite reflectance data for Garbutt formation collected from TSOO A-13-H (WA14517) well including qualitative analysis.

NO.	C #	Name	Core No.	DEPTH (m)	FORMATION	PEL #	ORG_TYPE	%Ro_R	SD	N	COMMENTS
1	C-572169	WA14517	1	1403.2	Garbutt	683/13	2	1.41	0.06	22	Dark brown organic rich silty shale matrix showing mostly brown amorphous kerogen and zooclast derived inertinite macerals. Possible secondary oil migration due to two phase bitumen thermal maturity. Possible post uplift.
							4	1.67	0.08	21	
							4	1.22	0.03	13	possible secondary migration of bitumen
							4	1.01	0.06	6	possible secondary migration of bitumen
							2.40	2.04	0.16	9	
2	C-572174	WA14517	1	1408	Garbutt	684/13	2	1.50	0.09	13	Brown calcareous shale showing traces amount of amorphous kerogen. Rare amount of vitrinite macerals and migrated bitumen inclusions observed in calcite filled pores. Trace amount mica like minerals, possibly biotite?
							4	1.80	0.07	6	
							4	1.23	0.09	8	possible secondary migration of bitumen
							2.40	2.00	0.08	7	
							2.40	2.44	0.15	5	
3	C-572180	WA14517	1	1414.2	Garbutt	685/13	2	1.46	0.09	6	Brown calcareous shale showing traces amount of amorphous kerogen. Rare amount of vitrinite macerals and migrated bitumen inlusions observed in calcite filled pores. High amount mica like minerals, possibly biotite?
							4	1.78	0.10	4	
							4	1.10	0.08	37	possible secondary migration of bitumen
							4	0.88	0.04	4	possible secondary migration of bitumen

KEY FOR ORGANIC TYPE

2 = Vitrinite
2.1,2.2,2.3 = refers to as reworked populations
3 = vitrinite equivalent (04) = 0.618 x %Ro(bitumen) + 0.40 values (Jacob, 1989).
4 = bitumen
21= pyrobitumen
22 = granular pyrobitumen
40 = inertinite
NOTE; Not all allochthonous maceral VR are measured, those measured are for reference only to determine the %Ro of the reworked maceral, they are not quantitative.