

CORE ANALYSIS REPORT
FOR
YUKON GEOLOGICAL SURVEY

WHITEHORSE TROUGH
14-MH-001
YUKON

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIALS SUPPLIED BY THE CLIENT TO WHOM; AND FOR WHOSE EXCLUSIVE AND CONFIDENTIAL USE; THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGEMENT OF CORE LABORATORIES (ALL ERRORS AND OMISSIONS EXCEPTED); BUT CORE LABORATORIES AND ITS OFFICERS AND EMPLOYEES, ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATIONS, AS TO THE PRODUCTIVITY, PROPER OPERATIONS, OR PROFITABLENESS OF ANY OIL, GAS OR MINERAL WELL OR FORMATION IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON. CORE LABORATORIES IS COMMITTED TO CUSTOMER SATISFACTION AND WELCOMES YOUR FEEDBACK. YOU CAN E-MAIL THE GENERAL MANAGER WITH YOUR COMMENTS AT PSCANADA.FEEDBACK@CORELAB.COM

**YUKON GEOLOGICAL SURVEY
WHITEHORSE TROUGH
14-MH-001**

File No. : 15-0088

Field : Formation : Date : 2015-11-02
 Province : YUKON Coring Equip : Analysts : DJD
 License : Coring Fluid : Core Dia :

CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	PERMEABILITY (MAXIMUM) Kair mD	PERMEABILITY (VERTICAL) Kair mD	POROSITY (HELIUM) fraction	BULK DENSITY (kg/m3)	GRAIN DENSITY (kg/m3)	DESCRIPTION
VSPA 1	1.00		0.008	0.010	2720	2750.	
SPA 2	2.00	0.006		0.004	2720	2730.	
VSPA 2	2.00		0.005	0.005	2720	2730.	

CORE ANALYSIS REPORT
FOR
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WHITEHORSE TROUGH
14-MH-010
YUKON

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**YUKON GEOLOGICAL SURVEY
WHITEHORSE TROUGH
14-MH-010**

File No. : 15-0088

Field : Formation : Date : 2015-11-02
 Province : YUKON Coring Equip : Analysts : DJD
 License : Coring Fluid : Core Dia :

CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	PERMEABILITY (MAXIMUM) Kair mD	PERMEABILITY (VERTICAL) Kair mD	POROSITY (HELIUM) fraction	BULK DENSITY (kg/m3)	GRAIN DENSITY (kg/m3)	DESCRIPTION
SPA 1	3.70	0.012		0.035	2650	2750.	
SP 2	4.20	0.05		0.049	2610	2740.	
VSPA 2	4.20		0.022	0.046	2600	2730.	
VSP 3	5.00		0.26	0.055	2500	2640.	
SPA 4	7.50	0.073		0.047	2540	2660.	
VSPA 4	7.50		0.044	0.033	2570	2660.	
SP 5	8.70	0.29		0.042	2570	2680.	
VSP 5	8.70		0.03	0.039	2580	2680.	
SP 6	10.00	0.05		0.027	2570	2640.	
VSPA 6	10.00		0.024	0.023	2600	2660.	

CORE ANALYSIS REPORT
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WHITEHORSE TROUGH
14-MH-013
YUKON

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**YUKON GEOLOGICAL SURVEY
WHITEHORSE TROUGH
14-MH-013**

File No. : 15-0088

Field : Formation : Date : 2015-11-02
 Province : YUKON Coring Equip : Analysts : DJD
 License : Coring Fluid : Core Dia :

CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	PERMEABILITY (MAXIMUM) Kair mD	PERMEABILITY (VERTICAL) Kair mD	POROSITY (HELIUM) fraction	BULK DENSITY (kg/m3)	GRAIN DENSITY (kg/m3)	DESCRIPTION
SP 1	1.20	0.10		0.049	2620	2750.	
VSP 1	1.20		0.09	0.049	2630	2760.	
SPA 2	19.50	0.021		0.045	2640	2760.	
VSPA 2	19.50		0.023	0.054	2610	2760.	
SPA 3	30.50	0.017		0.015	2660	2700.	
VSPA 3	30.50		0.019	0.018	2650	2700.	
SP 4	41.50	0.05		0.028	2600	2680.	
VSP 4	41.50		0.04	0.027	2600	2670.	
SP 5	50.50	0.16		0.036	2640	2740.	
VSP 5	50.50		0.06	0.033	2660	2750.	
SP 6	57.50	0.04		0.033	2700	2790.	
VSP 6	57.50		0.05	0.034	2680	2780.	
SPA 7	63.30	0.017		0.035	2650	2750.	
VSPA 7	63.30		0.014	0.033	2660	2750.	
SP 8	78.00	0.02		0.041	2780	2900.	
VSPA 8	78.00		0.061	0.060	2770	2950.	
SP 9	89.90	0.06		0.056	2620	2770.	
VSP 9	89.90		0.02	0.052	2610	2750.	

CORE ANALYSIS REPORT
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WHITEHORSE TROUGH
14-MH-016
YUKON

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**YUKON GEOLOGICAL SURVEY
WHITEHORSE TROUGH
14-MH-016**

File No. : 15-0088

Field : Formation : Date : 2015-11-02
 Province : YUKON Coring Equip : Analysts : DJD
 License : Coring Fluid : Core Dia :

CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	PERMEABILITY (MAXIMUM) Kair mD	PERMEABILITY (VERTICAL) Kair mD	POROSITY (HELIUM) fraction	BULK DENSITY (kg/m3)	GRAIN DENSITY (kg/m3)	DESCRIPTION
SPA 1	9.00	0.037		0.034	2570	2660.	
VSP 1	9.00		0.01	0.041	2560	2670.	
SP 2	19.80	0.04		0.025	2570	2640.	
VSP 2	19.80		0.04	0.026	2570	2640.	
VSPA 3	36.10		0.021	0.026	2570	2640.	
SPA 4	51.00	0.019		0.009	2640	2660.	
VSPA 4	51.00		0.016	0.008	2640	2660.	
SPA 5	58.00	0.029		0.044	2580	2700.	
VSPA 5	58.00		0.132	0.052	2540	2680.	
SPA 6	64.90	0.052		0.046	2510	2630.	
VSP 6	64.90		0.04	0.043	2530	2640.	

CORE ANALYSIS REPORT
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WHITEHORSE TROUGH
15-MH-94/37
YUKON

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**YUKON GEOLOGICAL SURVEY
WHITEHORSE TROUGH
15-MH-94/37**

File No. : 15-0088

Field :	Formation	Date :	2015-11-02
Province : YUKON	Coring Equip	Analysts :	DJD
License :	Coring Fluid	Core Dia :	

CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	SAMPLE LENGTH m	PERMEABILITY			POROSITY (HELIUM) fraction	BULK DENSITY kg/m3	GRAIN DENSITY kg/m3	COMMENTS	
			(MAXIMUM) Kair mD	(90 DEG) Kair mD	(VERTICAL) Kair mD					
FDA	1	114.35	0.05	*	0.005	*	0.017	3170	3230	frac
FD	2	125.35	0.09	0.06	0.06	<0.01	0.016	2580	2630	
VSP	3	138.33				0.03	0.019	2620	2670	
FD	4	148.90	0.06	0.07	0.05	0.01	0.019	2580	2620	
SPA	5	153.00		0.038			0.041	2550	2660	
FDA	6	159.01	0.05	*	0.059	*	0.047	2510	2630	frac
FD	7	168.80	0.09	3.73	3.23	3.16	0.100	2370	2630	
VSPA	8	188.21				0.282	0.066	2440	2610	
FD	9	193.30	0.08	3.75	2.81	0.58	0.061	2460	2620	
FD	10	198.54	0.10	0.18	0.15	0.08	0.059	2470	2630	
VSP	11	201.09				0.03	0.047	2520	2650	

CORE ANALYSIS REPORT
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WHITEHORSE TROUGH
15-MH-97/63
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**YUKON GEOLOGICAL SURVEY
WHITEHORSE TROUGH
15-MH-97/63**

File No. : 15-0088

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Province : YUKON
License :

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Coring Equip
Coring Fluid

Date : 2015-11-02
Analysts : DJD
Core Dia :

CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	SAMPLE LENGTH m	PERMEABILITY			POROSITY (HELIUM) fraction	BULK DENSITY kg/m3	GRAIN DENSITY kg/m3	COMMENTS	
			(MAXIMUM) Kair mD	(90 DEG) Kair mD	(VERTICAL) Kair mD					
FD	1	47.60	0.08	0.72	0.67	0.15	0.061	2490	2650	
VSP	2	67.00				0.11	0.054	2490	2630	
FD	3	72.49	0.07	1.73	1.17	0.27	0.084	2400	2610	
FD	4	77.10	0.10	0.42	0.41	0.05	0.058	2460	2610	
FD	5	88.40	0.06	0.11	0.08	0.02	0.060	2490	2640	
FD	6	106.00	0.07	0.28	0.24	0.06	0.053	2470	2610	
FD	7	114.00	0.05	0.33	0.32	0.09	0.072	2500	2690	
VSPA	8	127.20				0.013	0.017	2540	2580	
FD	9	142.10	0.08	*	0.05	0.06	0.035	2570	2670	vfrac
VSP	10	147.06				0.22	0.055	2500	2650	
FD	11	151.10	0.06	*	0.03	*	0.070	2440	2620	frac
VSPA	12	152.90				0.021	0.019	2560	2610	
FD	13	164.40	0.06	<0.01	<0.01	<0.01	0.032	2560	2650	
FD	14	188.45	0.07	0.01	0.01	<0.01	0.018	2600	2650	
FD	15	193.40	0.06	0.04	0.03	<0.01	0.029	2560	2630	
FD	16	205.00	0.12	<0.01	<0.01	<0.01	0.017	2610	2650	
FD	17	209.25	0.07	0.01	<0.01	<0.01	0.026	2560	2620	
FD	18	217.53	0.08	0.08	0.08	0.01	0.057	2500	2650	
FD	19	221.60	0.06	0.04	0.04	<0.01	0.028	2710	2780	
SPA	20	226.05		0.003			0.011	2940	2970	
VSPA	20	226.05				0.003	0.007	3120	3140	

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15-MH-97/63**

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Date : 2015-11-02
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CORE ANALYSIS FINAL RESULTS

SAMPLE NUMBER	SPOT DEPTH m	SAMPLE LENGTH m	PERMEABILITY			POROSITY (HELIUM) fraction	BULK DENSITY kg/m ³	GRAIN DENSITY kg/m ³	COMMENTS
			(MAXIMUM) Kair mD	(90 DEG) Kair mD	(VERTICAL) Kair mD				
FD 21	226.74	0.06	0.13	0.03	<0.01	0.005	2610	2620	frac
VSP 22	230.00				0.01	0.028	2510	2580	
SPA 23	245.25		0.072			0.037	2530	2630	
VSPA 24	249.30				0.015	0.015	2580	2620	
VSP 25	263.25				0.02	0.034	2580	2670	
FD 26	265.40	0.08	0.42	0.20	0.05	0.035	2470	2560	fracs



CODE KEY - DESCRIPTIONS

ACA	= Removed for advanced core analysis	ls	= Limestone	SPH	= Humidity analysis of small plug sample at 60 degrees Celsius and 50 % relative humidity
anhy	= Anhydrite	lv	= Large vug	SPP	= Small plug from preserved section of the core
arg	= Argillaceous	m	= Medium	SPT	= Small Plug used for tracer analysis
AST	= Appears similar to	mi	= Mud invaded	ss	= Sandstone
bit	= Bitumen	mv	= Medium vug	ssdy	= Slightly sandy (<20%)
bk	= Break	NA	= Not analyzed by request	sshy	= Slightly shaly (<20%)
c	= Coarse	NR	= Not received	sty	= Stylolite (ic)
calc	= Calcite (calcareous)	OB	= Overburden sample (permeability and porosity measured at net overburden stress)	sulf	= Sulphur
carb	= Carbonaceous			sv	= Small vug
cbl	= Cobble	ool	= Oolitic	TEC	= Thermal Extraction Chromatography to determine oil richness
cgl	= Conglomerate	pbl	= Pebble	TS	= Thin section
cht	= Chert	PFD	= Preliminary Full Diameter sample	uncons	= Unconsolidated
coal	= Coal/coal inclusion	ppv	= Pinpoint vug	vc	= Very coarse
coq	= Coquina	PR	= Preserved for future studies	vf	= Very fine
dol	= Dolomite	PSA	= Particle size analysis	vfrac	= Vertical fracture
f	= Fine	PSP	= Preliminary Small Plug sample	VIS	= Viscosity of oil measured
fc	= Filter cake on surface of core sample	pyr	= Pyrite (pyritic)	VOB	= Vertical overburden sample (vertical permeability measured at net overburden stress)
FD	= Full diameter analysis including three directional permeabilities, porosity and densities	pyrbit	= Pyrobitumen		
foss	= Fossil (fossiliferous)	ru	= Rubble	vshy	= Very shaly (>40%)
frac	= Fracture (undifferentiated)	SA	= Sieve analysis	VSP	= Vertical small plug drilled from whole core to measure vertical permeability (and occasionally porosity)
fri	= Friable	sdv	= Sandy		
glauc	= Glauconite (glaucanitic)	SEM	= Scanning electron microscope analysis	vug	= Vuggy (vuggular)
grnl	= Granule	sh	= Shale	ws	= Water sand
gyp	= Gypsum	shy	= Moderately shaly (20% - 40%)	XRD	= X-ray diffraction
hal	= Halite (salt)	sid	= Siderite	*	= Data unavailable due to poor sample quality
hfrac	= Horizontal fracture	sltst	= Siltstone	10240	= Permeability >10 Darcies, (maximum routine permeability measurement)
i	= Intercrystalline	slty	= Silty		
IFD	= Inner Full Diameter (Full diameter sample is drilled from the bulk portion of the core in the vertical direction for permeability and porosity measurements)	SP	= Small plug (sample drilled from core in maximum horizontal direction and parallel to bedding plane where possible) permeability porosity, and grain density are measured		
incl	= Inclusions	SPA	= (Prefix A) Horizontal matrix permeability measured by pressure decay profile permeametry through a probe tip due to sample quality		
lam	= Laminae (laminated)				