AGAT® Laboratories

HYDROCARBON LIQUID ANALYSIS

Container Identification
00031004A

Operator Name	Laboratory Number
HITIC ENERGY	14CR800814A

Unique Well Identifier	Well Name
100/01-18-065-18W5/00	HEL Hz KABOB 1-18-65-18

Field or Area	Pool or Zone	Sampler's Company
KAYBOB	DUVERNAY	CENTENNIAL WELL TESTING

Well License	Elevation	Test Type	Test No.	Name of Sampler
0453977	KB m GRD m			NOT AVAILABLE

Test Interval or Perfs mKB		Sampling Point
		DATA HEADER

	Separator	Reservoir	Source	Sampled	Received
Pressure (kPa)			8624	8624	5000
Temperature			36	36	23

Date Sampled	Date Received	Date Analyzed	Date Reported	Location - Approved By - Title
Jan 10, 2013	Jan 14, 2014	Jan 16, 2014	Jan 16, 2014	Calgary - Cung Tran - Reporter

Other Information
TIGHT HOLE

** Results relate only to the items tested*

COMP.	MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
N2	0.0008	0.0002	0.0002
CO2	0.0033	0.0014	0.0012
H2S	0.0000	0.0000	0.0000
C1	0.1778	0.0279	0.0660
C2	0.1228	0.0362	0.0716
C3	0.1087	0.0469	0.0656
IC4	0.0192	0.0109	0.0138
NC4	0.0578	0.0329	0.0399
IC5	0.0209	0.0147	0.0167
NC5	0.0268	0.0189	0.0213
C6	0.0347	0.0289	0.0308
C7+	0.4272	0.7811	0.6729
TOTAL	**1.0000**	**1.0000**	**1.0000**

This analysis and calculations are based on GPA 2186, GPA 2286, ASTM 2597, and ASTM 5307

Observed Properties of C7+ Residue (15/15° C)

Density	*Relative Density*	*API @ 15°*
822.6 kg/m³	0.8233	40.4

Relative Molecular Mass: 186.8

Calculated Properties of Total Sample (15/15° C)

Density	*Relative Density*	*API @ 15°*
708.9 kg/m³	0.7096	67.9

Relative Molecular Mass	*Gas Equivalency*
102.2	164.1

Calculations for C6 and C7 are based on Boiling Point Grouping. If Carbon Number Grouping had been done, the mole fractions would be (C6: 0.0546) (C7+:0.4073)

AGAT® Laboratories

PROPERTIES OF C6+ FRACTION

File No.	Company	UWI / LSD
14CR800814A	HITIC ENERGY	100/01-18-065-18W5/00

BOILING POINT RANGE (C)	COMPONENT		MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
36.1 - 68.9	HEXANES	C6	0.0326	0.0275	0.0294
68.9 - 98.3	HEPTANES	C7	0.0428	0.0443	0.0425
98.3 - 125.6	OCTANES	C8	0.0485	0.0571	0.0528
125.6 - 150.6	NONANES	C9	0.0353	0.0467	0.0427
150.6 - 173.9	DECANES	C10	0.0348	0.0511	0.0460
173.9 - 196.1	UNDECANES	C11	0.0255	0.0412	0.0367
196.1 - 215.0	DODECANES	C12	0.0224	0.0393	0.0345
215.0 - 235.0	TRIDECANES	C13	0.0209	0.0398	0.0346
235.0 - 252.2	TETRADECANES	C14	0.0198	0.0405	0.0349
252.2 - 270.6	PENTADECANES	C15	0.0101	0.0221	0.0189
270.6 - 287.8	HEXADECANES	C16	0.0121	0.0283	0.0240
287.8 - 302.8	HEPTADECANES	C17	0.0119	0.0296	0.0250
302.8 - 317.2	OCTADECANES	C18	0.0104	0.0273	0.0230
317.2 - 330.0	NONADECANES	C19	0.0072	0.0200	0.0168
330.0 - 344.4	EICOSANES	C20	0.0080	0.0235	0.0196
344.4 - 357.2	HENEICOSANES	C21	0.0057	0.0174	0.0144
357.2 - 369.4	DOCOSANES	C22	0.0051	0.0164	0.0136
369.4 - 380.0	TRICOSANES	C23	0.0058	0.0195	0.0161
380.0 - 391.1	TETRACOSANES	C24	0.0042	0.0147	0.0120
391.1 - 401.7	PENTACOSANES	C25	0.0044	0.0161	0.0132
401.7 - 412.2	HEXACOSANES	C26	0.0048	0.0182	0.0149
412.2 - 422.2	HEPTACOSANES	C27	0.0041	0.0160	0.0131
422.2 - 431.7	OCTACOSANES	C28	0.0032	0.0129	0.0105
431.7 - 441.1	NONACOSANES	C29	0.0042	0.0177	0.0144
441.1 - PLUS	TRIACONTANES	C30+	0.0134	0.0585	0.0474

BOILING POINT RANGE (C)	Aromatics		MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
80.0	BENZENE	C6	0.0010	0.0008	0.0006
110.6	TOLUENE	C7	0.0042	0.0040	0.0030
136.2	ETHYLBENZENE	C8	0.0027	0.0030	0.0023
138.4 - 144.4	XYLENES	C8	0.0109	0.0120	0.0091
168.9	1,2,4 TRIMETHYLBENZENE	C9	0.0066	0.0081	0.0062

BOILING POINT RANGE (C)	Naphthenes		MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
48.9	CYCLOPENTANE	CC5	0.0021	0.0014	0.0014
72.2	METHYLCYCLOPENTANE	MCC5	0.0115	0.0100	0.0088
81.1	CYCLOHEXANE	CC6	0.0074	0.0064	0.0054
101.1	METHYLCYCLOHEXANE	MCC6	0.0183	0.0186	0.0159

The above hexanes plus values are based upon a measured mass fraction and a calculated mole fraction, and assume a total hydrocarbon recovery from the chromatographic system.