



**LABORATORY TEST RESULTS**

**FILE NUMBER: 52137-2013-2615**

**COMPANY: Transportation Safety Board of Canada**

SAMPLE NAME: NATX 310533 A  
 DATE SAMPLED: 26-Jul-13  
 SAMPLE DESCRIPTION: Oil

LABORATORY I.D.: 52137-2013-2615-1-342  
 DATE RECEIVED: 30-Jul-13

TEST DESCRIPTION	RESULTS	UNIT OF MEASURE	TEST METHOD	DATE ANALYZED	TECH
<b>Pensky-Martens Flash Point</b>	<b>&lt; -5</b>	°C	ASTM D-93	30-Jul-13	JC
<b>Atmospheric Distillation</b>		°C (AET Corrected)	ASTM D-86	30-Jul-13	SP
Initial Boiling Point	<b>48.0</b>				
5 % Off	<b>82.0</b>				
10 % Off	<b>101.5</b>				
15 % Off	<b>118.0</b>				
20 % Off	<b>134.0</b>				
25 % Off	<b>150.0</b>				
30 % Off	<b>168.0</b>				
35 % Off	<b>186.5</b>				
40 % Off	<b>204.5</b>				
45 % Off	<b>231.5</b>				
50 % Off	<b>253.0</b>				
55 % Off	<b>274.0</b>				
60 % Off	<b>297.0</b>				
65 % Off	<b>327.5</b>				
70 % Off	<b>351.5</b>				
75 % Off	<b>367.5</b>				
80 % Off	<b>369.5</b>				
85 % Off	<b>372.5</b>				
90 % Off	<b>375.5</b>				
Crack Point	<b>376.5</b>				
Final Boiling Point	<b>376.5</b>				
Percent Recovery	<b>94</b>				
Percent Residue	<b>6</b>				
Percent Loss	<b>0</b>				

CORE LABORATORIES  
 2810 - 12th Street N.E.  
 CALGARY, ALBERTA T2E 7P7



**LABORATORY TEST RESULTS**

**FILE NUMBER: 52137-2013-2615**

**COMPANY: Transportation Safety Board of Canada**

SAMPLE NAME: NATX 310595 A  
 DATE SAMPLED: 26-Jul-13  
 SAMPLE DESCRIPTION: Oil

LABORATORY I.D.: 52137-2013-2615-2-343  
 DATE RECEIVED: 30-Jul-13

TEST DESCRIPTION	RESULTS	UNIT OF MEASURE	TEST METHOD	DATE ANALYZED	TECH
<b>Pensky-Martens Flash Point</b>	<b>&lt; -5</b>	°C	ASTM D-93	30-Jul-13	JC
<b>Atmospheric Distillation</b>		°C (AET Corrected)	ASTM D-86	30-Jul-13	SP
Initial Boiling Point	<b>50.0</b>				
5 % Off	<b>85.5</b>				
10 % Off	<b>105.5</b>				
15 % Off	<b>122.5</b>				
20 % Off	<b>138.0</b>				
25 % Off	<b>154.0</b>				
30 % Off	<b>175.0</b>				
35 % Off	<b>196.5</b>				
40 % Off	<b>217.0</b>				
45 % Off	<b>240.5</b>				
50 % Off	<b>261.5</b>				
55 % Off	<b>286.0</b>				
60 % Off	<b>314.5</b>				
65 % Off	<b>343.5</b>				
70 % Off	<b>361.5</b>				
75 % Off	<b>366.5</b>				
80 % Off	<b>369.5</b>				
85 % Off	<b>373.5</b>				
90 % Off	<b>375.5</b>				
Crack Point	<b>375.5</b>				
Final Boiling Point	<b>375.5</b>				
Percent Recovery	<b>93</b>				
Percent Residue	<b>7</b>				
Percent Loss	<b>0</b>				

CORE LABORATORIES  
 2810 - 12th Street N.E.  
 CALGARY, ALBERTA T2E 7P7

## Report of Analysis

This report may only be reproduced in its entirety

Reported: 25-Sep-2013  
Revision: 2013-1

**Report To:**

Transportation Safety Board of Canada  
1901 Research Road  
Ottawa, Ontario, K1A 1K8

**Attention:** Dr. Sylvie Dionne  
**E-mail:** sylvie.dionne@tsb-bst.gc.ca  
**Fax:** 613- 998-5572

**Invoice To:**

Transportation Safety Board of Canada  
1901 Research Road  
Ottawa, Ontario K1A 1K8

**Attention:** Dr. Sylvie Dionne  
**E-mail:**  
**Fax:**

**Order Id:** FL13\_1205  
**Contract #:**  
**Contract Name:**  
**PO#:**

Lab Sample Number	Client's Reference Matrix; Date Received	Test	Method	Analysis Parameter	Result	Notes
FL13_1205-001	TSB CAR 1 Crude Oil; 02-Aug-2013	ASTM D3828	Method B	Corrected Flash Point	<-30.0 °C	1
		ASTM D7169		Simulated Distillation	See Attached	
FL13_1205-002	TSB CAR 2 Crude Oil; 02-Aug-2013	ASTM D3828	Method B	Corrected Flash Point	<-30.0 °C	1
		ASTM D7169		Simulated Distillation	See Attached	
FL13_1205-003	TSB CAR 3 Crude Oil; 02-Aug-2013	ASTM D3828	Method B	Corrected Flash Point	<-30.0 °C	1
		ASTM D7169		Simulated Distillation	See Attached	
FL13_1205-004	TSB CAR 4 Crude Oil; 02-Aug-2013	ASTM D3828	Method B	Corrected Flash Point	<-30.0 °C	1
		ASTM D7169		Simulated Distillation	See Attached	

**Results relate only to items tested.**

## Report of Analysis

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Reported: 25-Sep-2013  
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**E-mail:**  
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**Order Id:** FL13\_1205


**Contract #:**  
**Contract Name:**  
**PO#:**

Lab Sample Number	Client's Reference Matrix; Date Received	Test	Method	Analysis Parameter	Result	Notes
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**Remarks and Notes**

- The containers for samples TSB CAR 1 and TSB CAR 3 were leaking upon arrival.

Results relate only to items tested.

Approved by:   
 Susan Brown  
 Specification Analytical Coordinator

**Contact Information**  
 Portfolio Manager: Dan Wispinski  
 Phone: (780) 450-5108  
 Email: dan.wispinski@albertainnovates.ca

File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-001.D\FL13-1205-001\_FID1\_A.CDF Sep-13, 07:02:34  
 Sample: FL13-1205-001 Operator:  
 Parameter: HTSD7169

## Boiling Point Table (%Off)

### ASTM D7169

#### Carbon (0) Channel

<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>
IBP	< 36.1	39.00	234.8	77.00	444.2
2.00	39.4	40.00	239.9	78.00	451.5
3.00	66.5	41.00	245.0	79.00	459.2
4.00	75.8	42.00	249.7	80.00	467.2
5.00	83.8	43.00	254.3	81.00	475.2
6.00	89.6	44.00	259.6	82.00	483.7
7.00	95.3	45.00	264.3	83.00	492.8
8.00	98.4	46.00	269.3	84.00	502.0
9.00	100.4	47.00	273.9	85.00	511.6
10.00	101.6	48.00	279.8	86.00	522.1
11.00	105.9	49.00	285.8	87.00	534.5
12.00	110.6	50.00	290.1	88.00	547.3
13.00	113.0	51.00	295.0	89.00	562.2
14.00	115.8	52.00	300.1	90.00	578.0
15.00	125.0	53.00	303.8	91.00	596.8
16.00	128.2	54.00	309.0	92.00	619.1
17.00	132.8	55.00	314.4	93.00	648.5
18.00	137.6	56.00	318.4	94.00	697.3
19.00	141.4	57.00	324.0		
20.00	145.4	58.00	329.6		
21.00	149.7	59.00	334.7		
22.00	155.0	60.00	340.7		
23.00	158.5	61.00	345.9		
24.00	163.4	62.00	351.7		
25.00	166.4	63.00	357.1		
26.00	172.1	64.00	363.1		
27.00	176.7	65.00	368.8		
28.00	181.3	66.00	374.8		
29.00	187.2	67.00	380.8		
30.00	193.2	68.00	387.0		
31.00	196.9	69.00	393.1		
32.00	201.6	70.00	399.6		
33.00	207.3	71.00	405.6		
34.00	212.1	72.00	412.0		
35.00	215.8	73.00	418.0		
36.00	220.0	74.00	424.1		
37.00	225.3	75.00	430.6		
38.00	230.0	76.00	437.2		

**Recovery:** 94.15 @707.8C  
**Analysis Area:** 1.08194e-01  
**Detector RF:** 5.68108e-08  
**R.Time Date:** 9/23/2013

**Start Time:** 0.098 min.  
**Start Signal:** 0.000 pA  
**Sample Amt:** 0.2053  
**R.Factor Date:** 9/23/2013

**End Time:** 28.558 min.  
**End Signal:** 0.000 pA  
**Solvent Amt:** 12.5472

**Response Factor:** 1.40081e-01  
**R.Time File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
**R.Factor File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
**Blank File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK3B.D\BLANK3B\_FID1\_A.CDF

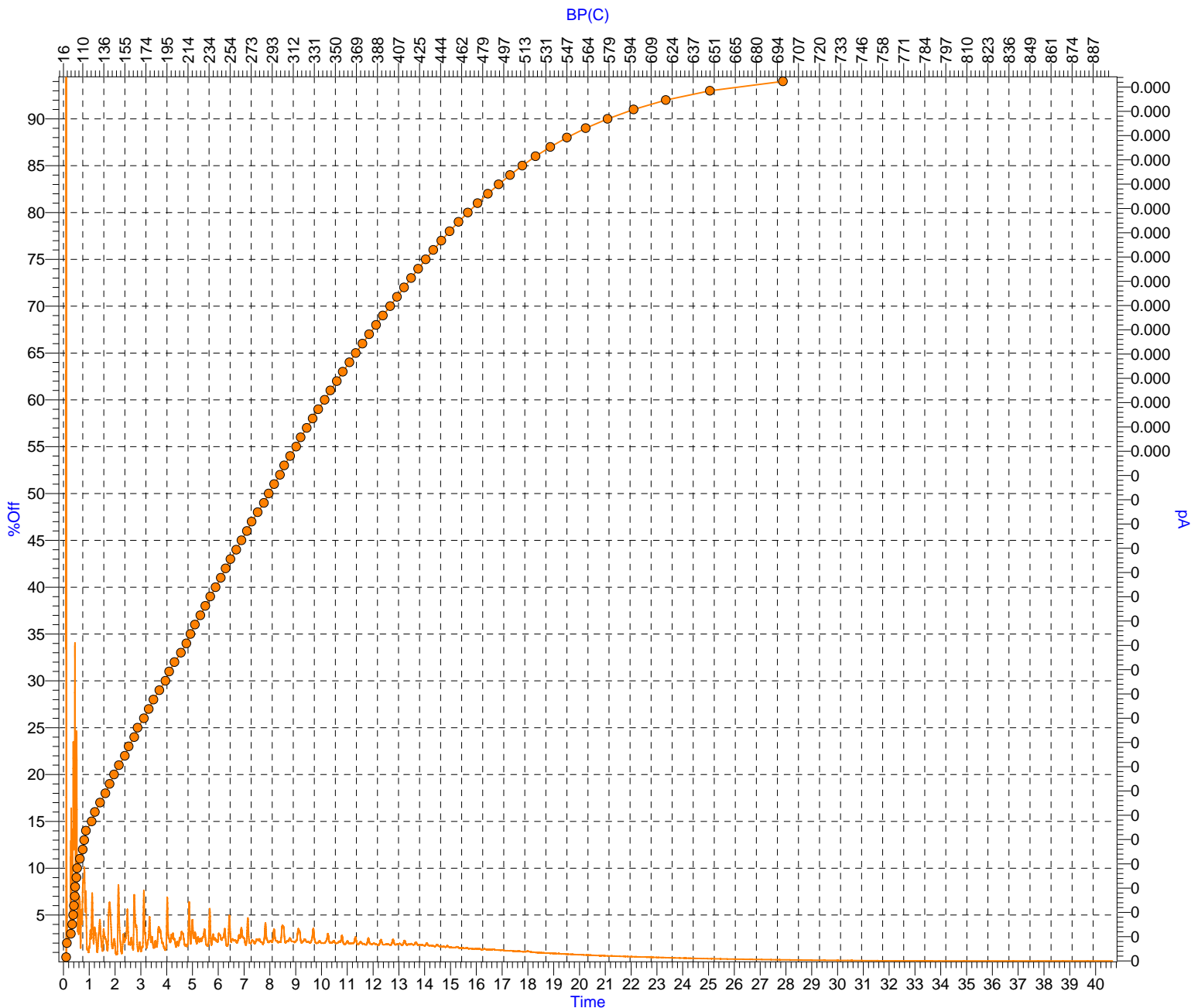
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 Sample: FL13-1205-001  
 Parameter: HTSD7169

Sep-13, 07:02:34  
 Operator:

# Distillation Chart

## ASTM D7169

### Carbon (0) Channel



**Recovery:** 94.15 @707.8C  
**Analysis Area:** 1.08194e-01  
**Detector RF:** 5.68108e-08  
**R.Time Date:** 9/23/2013

**Start Time:** 0.098 min.  
**Start Signal:** 0.000 pA  
**Sample Amt:** 0.2053  
**R.Factor Date:** 9/23/2013

**End Time:** 28.558 min.  
**End Signal:** 0.000 pA  
**Solvent Amt:** 12.5472

**Response Factor:** 1.40081e-01  
**R.Time File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
**R.Factor File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
**Blank File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK3B.D\BLANK3B\_FID1\_A.CDF

File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-002.D\FL13-1205-002\_FID1\_A.CDF Sep-13, 10:02:04  
 Sample: FL13-1205-002 Operator:  
 Parameter: HTSD7169

## Boiling Point Table (%Off)

### ASTM D7169

#### Carbon (0) Channel

<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>
IBP	< 36.1	39.00	229.4	77.00	455.2
2.00	37.9	40.00	234.4	78.00	463.9
3.00	62.7	41.00	239.4	79.00	472.7
4.00	73.1	42.00	244.2	80.00	481.8
5.00	81.4	43.00	249.0	81.00	491.8
6.00	86.5	44.00	253.9	82.00	501.8
7.00	93.5	45.00	259.3	83.00	512.2
8.00	97.0	46.00	264.0	84.00	524.1
9.00	99.8	47.00	269.0	85.00	537.3
10.00	100.7	48.00	273.9	86.00	551.5
11.00	104.3	49.00	279.8	87.00	567.5
12.00	108.8	50.00	285.9	88.00	585.2
13.00	111.6	51.00	290.6	89.00	606.1
14.00	113.9	52.00	295.6	90.00	632.8
15.00	122.1	53.00	301.2	91.00	673.2
16.00	125.9	54.00	305.7		
17.00	130.6	55.00	311.1		
18.00	135.3	56.00	316.2		
19.00	140.0	57.00	321.8		
20.00	141.9	58.00	327.7		
21.00	148.5	59.00	332.8		
22.00	150.3	60.00	339.0		
23.00	156.3	61.00	344.8		
24.00	160.1	62.00	350.7		
25.00	163.6	63.00	356.6		
26.00	167.3	64.00	363.0		
27.00	172.1	65.00	369.1		
28.00	176.7	66.00	375.7		
29.00	181.4	67.00	382.1		
30.00	187.0	68.00	389.0		
31.00	192.1	69.00	395.7		
32.00	196.2	70.00	402.5		
33.00	200.8	71.00	409.6		
34.00	206.4	72.00	416.6		
35.00	210.8	73.00	423.6		
36.00	215.1	74.00	431.0		
37.00	219.3	75.00	438.7		
38.00	224.5	76.00	446.8		

**Recovery:** 91.52 @707.8C  
**Analysis Area:** 1.02733e-01  
**Detector RF:** 5.68108e-08  
**R.Time Date:** 9/23/2013

**Start Time:** 0.099 min.  
**Start Signal:** 0.000 pA  
**Sample Amt:** 0.2033  
**R.Factor Date:** 9/23/2013

**End Time:** 28.558 min.  
**End Signal:** 0.000 pA  
**Solvent Amt:** 12.7227

**Response Factor:** 1.40081e-01  
**R.Time File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
**R.Factor File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
**Blank File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK4B.D\BLANK4B\_FID1\_A.CDF

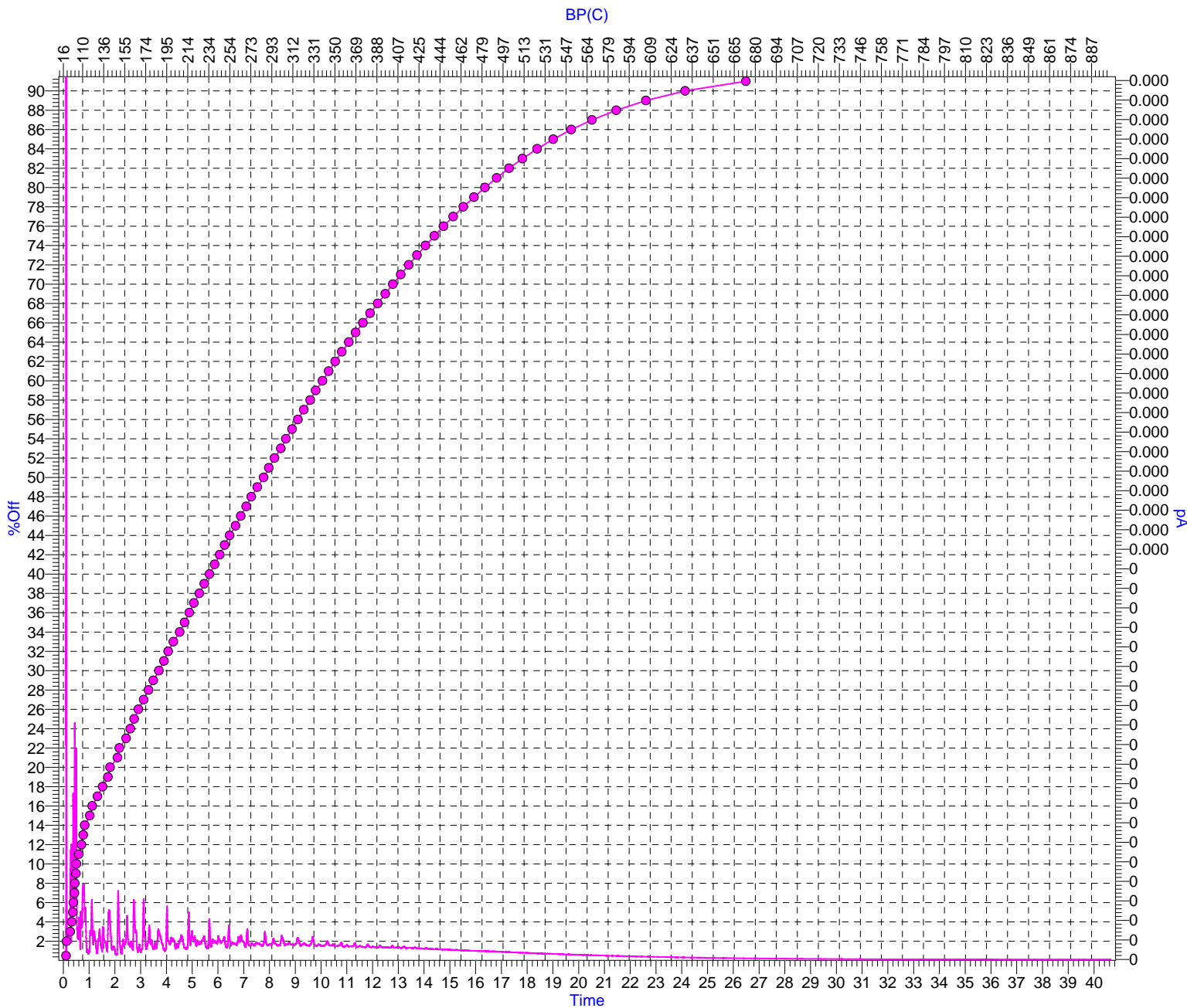
File: O:\SimDDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-002.D\FL13-1205-002\_FID1\_A.CDF  
 Sample: FL13-1205-002  
 Parameter: HTSD7169

Sep-13, 10:02:04  
 Operator:

# Distillation Chart

## ASTM D7169

### Carbon (0) Channel



**Recovery:** 91.52 @707.8C  
**Analysis Area:** 1.02733e-01  
**Detector RF:** 5.68108e-08  
**R.Time Date:** 9/23/2013

**Start Time:** 0.099 min.  
**Start Signal:** 0.000 pA  
**Sample Amt:** 0.2033  
**R.Factor Date:** 9/23/2013

**End Time:** 28.558 min.  
**End Signal:** 0.000 pA  
**Solvent Amt:** 12.7227

**Response Factor:** 1.40081e-01  
**R.Time File:** O:\SimDDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
**R.Factor File:** O:\SimDDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
**Blank File:** O:\SimDDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK4B.D\BLANK4B\_FID1\_A.CDF



File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-003.D\FL13-1205-003\_FID1\_A.CDF  
Sample: FL13-1205-003  
Parameter: HTSD7169

Sep-13, 13:01:55  
Operator:

## Boiling Point Table (%Off)

ASTM D7169  
Carbon (0) Channel

<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>
IBP	< 36.1	40.00	234.5	78.00	457.3
3.00	45.3	41.00	239.7	79.00	466.0
4.00	67.7	42.00	244.3	80.00	474.5
5.00	77.2	43.00	249.1	81.00	483.6
6.00	83.8	44.00	254.0	82.00	493.6
7.00	90.5	45.00	259.4	83.00	503.5
8.00	95.3	46.00	264.0	84.00	514.2
9.00	98.9	47.00	268.9	85.00	526.2
10.00	100.4	48.00	273.9	86.00	539.5
11.00	102.5	49.00	279.6	87.00	554.4
12.00	107.5	50.00	285.6	88.00	570.7
13.00	110.9	51.00	290.3	89.00	589.8
14.00	113.2	52.00	295.3	90.00	612.7
15.00	118.1	53.00	300.8	91.00	643.0
16.00	125.5	54.00	305.4	92.00	692.8
17.00	129.3	55.00	310.6		
18.00	134.4	56.00	315.8		
19.00	139.7	57.00	321.1		
20.00	141.8	58.00	326.8		
21.00	148.4	59.00	331.8		
22.00	150.4	60.00	337.8		
23.00	156.4	61.00	343.6		
24.00	160.4	62.00	349.2		
25.00	163.7	63.00	355.2		
26.00	168.0	64.00	361.1		
27.00	172.3	65.00	367.2		
28.00	177.1	66.00	373.3		
29.00	182.5	67.00	379.7		
30.00	187.4	68.00	386.0		
31.00	193.2	69.00	392.6		
32.00	196.6	70.00	399.3		
33.00	201.1	71.00	405.9		
34.00	206.6	72.00	412.7		
35.00	211.3	73.00	419.4		
36.00	215.3	74.00	426.4		
37.00	219.7	75.00	433.6		
38.00	224.7	76.00	441.2		
39.00	229.6	77.00	449.1		

Recovery: 92.36 @720.0C  
Analysis Area: 1.16473e-01  
Detector RF: 5.68108e-08  
R.Time Date: 9/23/2013

Start Time: 0.098 min.  
Start Signal: 0.000 pA  
Sample Amt: 0.2302  
R.Factor Date: 9/23/2013

End Time: 29.304 min.  
End Signal: 0.000 pA  
Solvent Amt: 12.8022

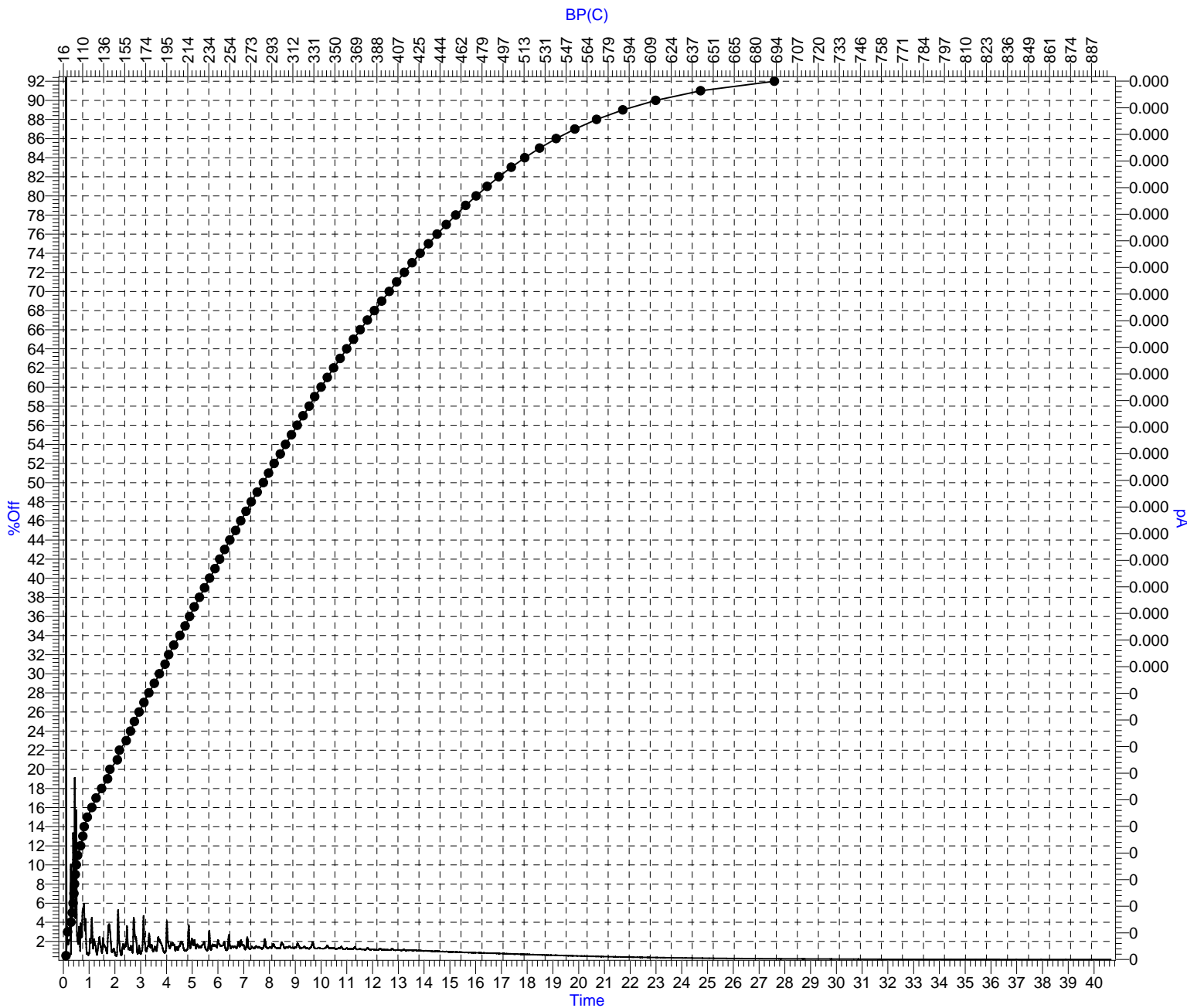
Response Factor: 1.40081e-01  
R.Time File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
R.Factor File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
Blank File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK5B.D\BLANK5B\_FID1\_A.CDF

File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-003.D\FL13-1205-003\_FID1\_A.CDF  
 Sample: FL13-1205-003  
 Parameter: HTSD7169

# Distillation Chart

## ASTM D7169

### Carbon (0) Channel



**Recovery:** 92.36 @720.0C  
**Analysis Area:** 1.16473e-01  
**Detector RF:** 5.68108e-08  
**R.Time Date:** 9/23/2013

**Start Time:** 0.098 min.  
**Start Signal:** 0.000 pA  
**Sample Amt:** 0.2302  
**R.Factor Date:** 9/23/2013

**End Time:** 29.304 min.  
**End Signal:** 0.000 pA  
**Solvent Amt:** 12.8022

**Response Factor:** 1.40081e-01  
**R.Time File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
**R.Factor File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
**Blank File:** O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK5B.D\BLANK5B\_FID1\_A.CDF

File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-004.D\FL13-1205-004\_FID1\_A.CDF  
Sample: FL13-1205-004  
Parameter: HTSD7169

Sep-13, 16:01:13  
Operator:

## Boiling Point Table (%Off)

ASTM D7169  
Carbon (0) Channel

<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>	<u>%Off</u>	<u>BP(C)</u>
IBP	< 36.1	40.00	231.7	78.00	454.7
3.00	44.9	41.00	236.4	79.00	463.3
4.00	67.0	42.00	241.4	80.00	472.1
5.00	75.0	43.00	246.1	81.00	481.2
6.00	83.0	44.00	251.4	82.00	491.2
7.00	88.1	45.00	255.9	83.00	501.4
8.00	94.3	46.00	261.2	84.00	512.0
9.00	97.6	47.00	265.4	85.00	524.1
10.00	100.0	48.00	270.1	86.00	537.7
11.00	100.9	49.00	275.9	87.00	552.7
12.00	105.4	50.00	281.6	88.00	569.6
13.00	110.0	51.00	287.1	89.00	589.2
14.00	112.3	52.00	292.3	90.00	613.0
15.00	115.0	53.00	297.2	91.00	645.4
16.00	124.2	54.00	302.3	92.00	701.4
17.00	127.5	55.00	307.4		
18.00	132.4	56.00	312.7		
19.00	136.9	57.00	317.5		
20.00	140.8	58.00	323.2		
21.00	144.0	59.00	329.0		
22.00	149.1	60.00	334.3		
23.00	153.7	61.00	340.4		
24.00	157.4	62.00	346.0		
25.00	162.8	63.00	351.9		
26.00	164.8	64.00	357.7		
27.00	171.2	65.00	363.9		
28.00	173.6	66.00	370.0		
29.00	178.5	67.00	376.4		
30.00	185.0	68.00	382.9		
31.00	188.8	69.00	389.6		
32.00	194.7	70.00	396.2		
33.00	198.5	71.00	402.9		
34.00	203.2	72.00	409.8		
35.00	208.0	73.00	416.7		
36.00	213.6	74.00	423.6		
37.00	216.9	75.00	430.8		
38.00	221.2	76.00	438.4		
39.00	226.6	77.00	446.4		

Recovery: 92.09 @707.8C  
Analysis Area: 1.06899e-01  
Detector RF: 5.68108e-08  
R.Time Date: 9/23/2013

Start Time: 0.098 min.  
Start Signal: 0.000 pA  
Sample Amt: 0.2096  
R.Factor Date: 9/23/2013

End Time: 28.558 min.  
End Signal: 0.000 pA  
Solvent Amt: 12.6780

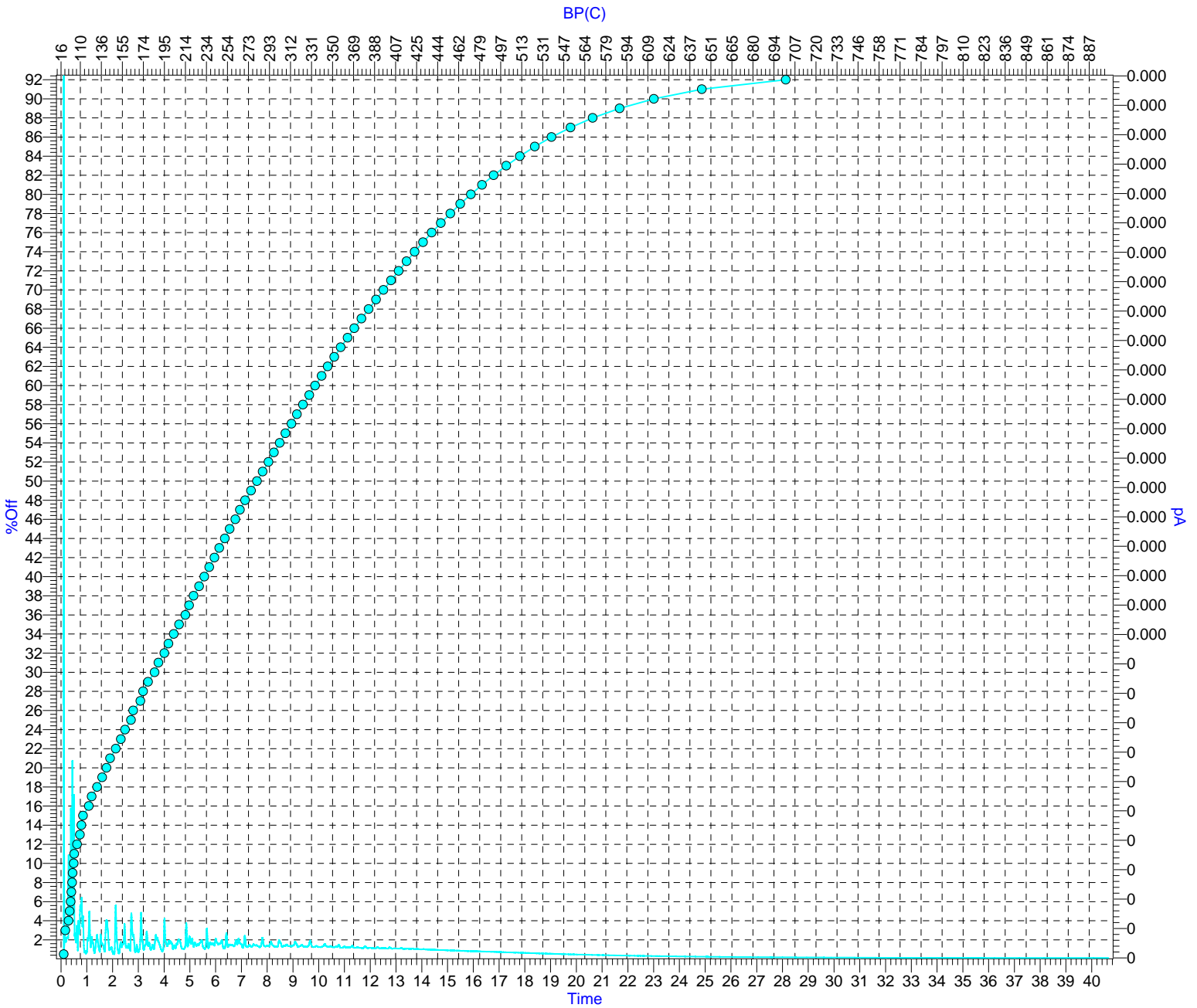
Response Factor: 1.40081e-01  
R.Time File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR\_FID1\_A.CDF  
R.Factor File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT\_FID1\_A.CDF  
Blank File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK6B.D\BLANK6B\_FID1\_A.CDF

File: O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\FL13-1205-004.D\FL13-1205-004\_FID1\_A.CDF  
 Sample: FL13-1205-004  
 Parameter: HTSD7169

# Distillation Chart

## ASTM D7169

### Carbon (0) Channel



<b>Recovery:</b> 92.09 @707.8C	<b>Start Time:</b> 0.098 min.	<b>End Time:</b> 28.558 min.
<b>Analysis Area:</b> 1.06899e-01	<b>Start Signal:</b> 0.000 pA	<b>End Signal:</b> 0.000 pA
<b>Detector RF:</b> 5.68108e-08	<b>Sample Amt:</b> 0.2096	<b>Solvent Amt:</b> 12.6780
<b>R.Time Date:</b> 9/23/2013	<b>R.Factor Date:</b> 9/23/2013	
<b>Response Factor:</b> 1.40081e-01		
<b>R.Time File:</b> O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RT-INITR.D\RT-INITR_FID1_A.CDF		
<b>R.Factor File:</b> O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\RF-INIT.D\RF-INIT_FID1_A.CDF		
<b>Blank File:</b> O:\SimDData\HPChem\1\data\FL13-1205F 2013-09-20 17-07-04\BLANK6B.D\BLANK6B_FID1_A.CDF		



**Attention: SYLVIE DIONNE**

TRANSPORTATION SAFETY BOARD OF CANADA  
OTTAWA  
1901 RESEARCH ROAD  
OTTAWA , ON  
CANADA K1A 1K8

**Report Date: 2013/08/16**

Job/Sample	Analysis Type	Well Name/Sample ID	Sample Point
B366426/ HB6491	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	NATX 310533-B
B366426/ HB6492	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	NATX 310595-B
B366426/ HB6493	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	NATX 310406
B366426/ HB6494	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	WFIX 130629
B366426/ HB6495	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	PROX 44211
B366426/ HB6496	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	NATX 310425
B366426/ HB6497	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	ACFX 73452
B366426/ HB6498	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	NATX 310572
B366426/ HB6499	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA R13D0054	NATX 310487
B366426/ HB6500	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA FARNHAM R13D0054	NATX 303425
B366426/ HB6501	Certificate of Analysis	TRANSPORTATION SAFETY BOARD OF CANADA FARNHAM R13D0054	PROX 44169

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Victoria Martinek, Project Manager  
Email: VMartinek@maxxam.ca  
Phone# (780) 378-8554

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports.

**Report Distribution**

0 Reports(B366426)SYLVIE DIONNE      TRANSPORTATION SAFETY BOARD OF CANADA      1901 RESEARCH ROAD      OTTAWA , CANADA



# CERTIFICATE OF ANALYSIS

B366426:HB6491

MaxxiD Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

NATX 310533-B GLASS BOTTLE

Field or Area Pool or Zone Sample Point Container Identity Percent Full

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Water m3/d Oil m3/d Gas 1000m3/d Gauge Pressures kPa Source As Received Temperature °C 23.0 Source As Received Well Status Type Well Type Gas or Condensate Project Licence No.

2013/07/17 2013/08/01 2013/08/16 2013/08/16 APC,KMS  
 Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	32.6	vol%	ASTM D86
Distillation Recovery	66.4	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	32.4	vol%	ASTM D86
Distillation Kerosene	15.2	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	46.0	°C	ASTM D86
5 Vol Percent	97.9	°C	ASTM D86
10 Vol Percent	118.4	°C	ASTM D86
15 Vol Percent	135.9	°C	ASTM D86
20 Vol Percent	149.0	°C	ASTM D86
25 Vol Percent	167.2	°C	ASTM D86
30 Vol Percent	193.9	°C	ASTM D86
35 Vol Percent	214.8	°C	ASTM D86
40 Vol Percent	237.9	°C	ASTM D86
45 Vol Percent	261.6	°C	ASTM D86
50 Vol Percent	285.6	°C	ASTM D86
55 Vol Percent	311.4	°C	ASTM D86
60 Vol Percent	336.5	°C	ASTM D86
65 Vol Percent	350.4	°C	ASTM D86
Final Boiling Point	350.4	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6492

<i>MaxxID</i>	<i>Client ID</i>	<i>Meter Number</i>	<i>Laboratory Number</i>
TRANSPORTATION SAFETY BOARD OF CANADA			
<i>Operator Name</i>		<i>LSD</i>	<i>Well ID</i>
TRANSPORTATION SAFETY BOARD OF CANADA R13D0054		N/A	TRANSPORTATION SAFETY BOARD OF CANA
<i>Well Name</i>		<i>Initials of Sampler</i>	<i>Sampling Company</i>
		NATX 310595-B	GLASS BOTTLE
<i>Field or Area</i>	<i>Pool or Zone</i>	<i>Sample Point</i>	<i>Container Identity</i> <i>Percent Full</i>
<i>Test Recovery</i>		<i>Interval</i>	<i>Elevations (m)</i>
<i>Test Type</i>	<i>No.</i>	<i>Multiple Recovery</i>	<i>Sample Gathering Point</i>
			<i>Well Fluid Status</i>
			<i>Well Status Mode</i>
<i>Production Rates</i>		<i>Gauge Pressures kPa</i>	<i>Temperature °C</i>
<i>Water m3/d</i>	<i>Oil m3/d</i>	<i>Source</i>	<i>Source</i>
		<i>As Received</i>	<i>As Received</i>
			<i>Well Status Type</i>
			<i>Well Type</i>
			<i>Gas or Condensate Project</i>
			<i>Licence No.</i>
2013/07/17	2013/08/01	2013/08/16	2013/08/16
<i>Date Sampled Start</i>	<i>Date Sampled End</i>	<i>Date Received</i>	<i>Date Reported</i>
			<i>Date Reissued</i>
			APC,KMS
			<i>Analyst</i>

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	23.8	vol%	ASTM D86
Distillation Recovery	75.2	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	34.7	vol%	ASTM D86
Distillation Kerosene	15.2	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	45.5	°C	ASTM D86
5 Vol Percent	92.2	°C	ASTM D86
10 Vol Percent	112.9	°C	ASTM D86
15 Vol Percent	129.2	°C	ASTM D86
20 Vol Percent	144.2	°C	ASTM D86
25 Vol Percent	161.3	°C	ASTM D86
30 Vol Percent	181.4	°C	ASTM D86
35 Vol Percent	205.5	°C	ASTM D86
40 Vol Percent	227.7	°C	ASTM D86
45 Vol Percent	251.9	°C	ASTM D86
50 Vol Percent	274.7	°C	ASTM D86
55 Vol Percent	299.0	°C	ASTM D86
60 Vol Percent	323.8	°C	ASTM D86
65 Vol Percent	347.0	°C	ASTM D86
70 Vol Percent	353.7	°C	ASTM D86
75 Vol Percent	371.4	°C	ASTM D86
Final Boiling Point	373.1	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93
** Information not supplied by client -- data derived from LSD information			
Results relate only to items tested			

Remarks:  
**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6493

MaxxID Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 310406 GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/07/23 2013/08/01 2013/08/16 2013/08/16 APC,KMS

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	26.2	vol%	ASTM D86
Distillation Recovery	72.8	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	35.9	vol%	ASTM D86
Distillation Kerosene	15.0	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	46.2	°C	ASTM D86
5 Vol Percent	91.5	°C	ASTM D86
10 Vol Percent	111.0	°C	ASTM D86
15 Vol Percent	126.6	°C	ASTM D86
20 Vol Percent	141.7	°C	ASTM D86
25 Vol Percent	157.8	°C	ASTM D86
30 Vol Percent	176.7	°C	ASTM D86
35 Vol Percent	199.5	°C	ASTM D86
40 Vol Percent	223.4	°C	ASTM D86
45 Vol Percent	246.7	°C	ASTM D86
50 Vol Percent	269.7	°C	ASTM D86
55 Vol Percent	293.3	°C	ASTM D86
60 Vol Percent	317.7	°C	ASTM D86
65 Vol Percent	339.9	°C	ASTM D86
70 Vol Percent	350.9	°C	ASTM D86
Final Boiling Point	350.9	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**





# CERTIFICATE OF ANALYSIS

B366426:HB6494

MaxxID

Client ID

Meter Number

Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name

LSD

Well ID

TRANSPORTATION SAFETY BOARD OF CANADA R13D0054

N/A

TRANSPORTATION SAFETY BOARD OF CANA

Well Name

Initials of Sampler

Sampling Company

WFIX 130629

GLASS BOTTLE

Field or Area

Pool or Zone

Sample Point

Container Identity

Percent Full

Test Recovery

Interval

Elevations (m)

Sample Gathering Point

Solution Gas

Test Type

No.

Multiple Recovery

From:

To:

KB

GRD

Well Fluid Status

Well Status Mode

Production Rates

Gauge Pressures kPa

Temperature °C

Well Status Type

Well Type

Water m3/d

Oil m3/d

Gas 1000m3/d

Source

As Received

Source

As Received

Gas or Condensate Project

Licence No.

2013/07/23

2013/08/01

2013/08/16

2013/08/16

APC,KMS

Date Sampled Start

Date Sampled End

Date Received

Date Reported

Date Reissued

Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	32.9	vol%	ASTM D86
Distillation Recovery	66.1	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	32.1	vol%	ASTM D86
Distillation Kerosene	15.0	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	46.7	°C	ASTM D86
5 Vol Percent	101.2	°C	ASTM D86
10 Vol Percent	121.5	°C	ASTM D86
15 Vol Percent	138.0	°C	ASTM D86
20 Vol Percent	154.0	°C	ASTM D86
25 Vol Percent	171.5	°C	ASTM D86
30 Vol Percent	194.3	°C	ASTM D86
35 Vol Percent	217.3	°C	ASTM D86
40 Vol Percent	240.9	°C	ASTM D86
45 Vol Percent	264.0	°C	ASTM D86
50 Vol Percent	288.0	°C	ASTM D86
55 Vol Percent	314.6	°C	ASTM D86
60 Vol Percent	339.8	°C	ASTM D86
65 Vol Percent	353.8	°C	ASTM D86
Final Boiling Point	353.8	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6495

MaxxID Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name: TRANSPORTATION SAFETY BOARD OF CANADA R13D0054  
 LSD: N/A  
 Well ID: TRANSPORTATION SAFETY BOARD OF CANA

Well Name: PROX 44211  
 Initials of Sampler: GLASS BOTTLE

Field or Area: Pool or Zone: Sample Point: Container Identity: Percent Full:

Test Recovery		Interval		Elevations (m)		Sample Gathering Point		Solution Gas	
Test Type	No.	From:	To:	KB	GRD	Well Fluid Status	Well Status Mode		
Production Rates			Gauge Pressures kPa		Temperature °C		Well Status Type	Well Type	
Water m3/d	Oil m3/d	Gas 1000m3/d	Source	As Received	Source	As Received	23.0	Gas or Condensate Project	Licence No.

2013/07/23 2013/08/01 2013/08/16 2013/08/16 APC,KMS  
 Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	23.1	vol%	ASTM D86
Distillation Recovery	75.9	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	34.1	vol%	ASTM D86
Distillation Kerosene	15.2	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	48.5	°C	ASTM D86
5 Vol Percent	94.0	°C	ASTM D86
10 Vol Percent	115.4	°C	ASTM D86
15 Vol Percent	132.0	°C	ASTM D86
20 Vol Percent	147.9	°C	ASTM D86
25 Vol Percent	164.3	°C	ASTM D86
30 Vol Percent	186.6	°C	ASTM D86
35 Vol Percent	207.6	°C	ASTM D86
40 Vol Percent	232.2	°C	ASTM D86
45 Vol Percent	254.3	°C	ASTM D86
50 Vol Percent	277.0	°C	ASTM D86
55 Vol Percent	300.6	°C	ASTM D86
60 Vol Percent	326.4	°C	ASTM D86
65 Vol Percent	350.4	°C	ASTM D86
70 Vol Percent	356.9	°C	ASTM D86
75 Vol Percent	362.3	°C	ASTM D86
Final Boiling Point	362.4	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:  
**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6496

MaxxiD Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 310425 GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/07/23 2013/08/01 2013/08/16 2013/08/16 APC,KMS

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
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**Atmospheric Distillation**

Distillation Residue	34.3	vol%	ASTM D86
Distillation Recovery	64.7	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	31.2	vol%	ASTM D86
Distillation Kerosene	14.8	vol%	ASTM D86

**Distillation Analysis**

Initial Boiling Point	44.7	°C	ASTM D86
5 Vol Percent	99.5	°C	ASTM D86
10 Vol Percent	120.1	°C	ASTM D86
15 Vol Percent	137.7	°C	ASTM D86
20 Vol Percent	155.3	°C	ASTM D86
25 Vol Percent	174.8	°C	ASTM D86
30 Vol Percent	198.6	°C	ASTM D86
35 Vol Percent	220.7	°C	ASTM D86
40 Vol Percent	244.4	°C	ASTM D86
45 Vol Percent	268.8	°C	ASTM D86
50 Vol Percent	293.3	°C	ASTM D86
55 Vol Percent	318.7	°C	ASTM D86
60 Vol Percent	342.0	°C	ASTM D86
Final Boiling Point	349.2	°C	ASTM D86

**Physical Properties**

Closed Cup Flash point	<-35	°C	ASTM D93
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\*\* Information not supplied by client -- data derived from LSD information Results relate only to items tested

Remarks:  
**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6497

<i>MaxxiD</i>	<i>Client ID</i>	<i>Meter Number</i>	<i>Laboratory Number</i>
TRANSPORTATION SAFETY BOARD OF CANADA			
<i>Operator Name</i>		<i>LSD</i>	<i>Well ID</i>
TRANSPORTATION SAFETY BOARD OF CANADA R13D0054		N/A	TRANSPORTATION SAFETY BOARD OF CANA
<i>Well Name</i>		<i>Initials of Sampler</i>	<i>Sampling Company</i>
		ACFX 73452	GLASS BOTTLE
<i>Field or Area</i>	<i>Pool or Zone</i>	<i>Sample Point</i>	<i>Container Identity</i> <i>Percent Full</i>
<i>Test Recovery</i>		<i>Elevations (m)</i>	<i>Sample Gathering Point</i> <i>Solution Gas</i>
<i>Test Type</i>	<i>No.</i> <i>Multiple Recovery</i>	From: _____ To: _____	<i>Well Fluid Status</i> <i>Well Status Mode</i>
<i>Production Rates</i>		KB _____ GRD _____	<i>Well Status Type</i> <i>Well Type</i>
Water m3/d	Oil m3/d	Gas 1000m3/d	<i>Gas or Condensate Project</i> <i>Licence No.</i>
<i>Gauge Pressures kPa</i>		<i>Temperature °C</i>	
Source _____	As Received _____	23.0	
		Source _____	
2013/07/23	2013/08/01	2013/08/16	2013/08/16
<i>Date Sampled Start</i>	<i>Date Sampled End</i>	<i>Date Received</i>	<i>Date Reissued</i>
			APC,KMS
			<i>Analyst</i>

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	19.7	vol%	ASTM D86
Distillation Recovery	79.3	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	32.4	vol%	ASTM D86
Distillation Kerosene	15.2	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	48.5	°C	ASTM D86
5 Vol Percent	97.6	°C	ASTM D86
10 Vol Percent	119.2	°C	ASTM D86
15 Vol Percent	136.8	°C	ASTM D86
20 Vol Percent	151.8	°C	ASTM D86
25 Vol Percent	172.3	°C	ASTM D86
30 Vol Percent	194.4	°C	ASTM D86
35 Vol Percent	214.8	°C	ASTM D86
40 Vol Percent	239.1	°C	ASTM D86
45 Vol Percent	262.9	°C	ASTM D86
50 Vol Percent	284.7	°C	ASTM D86
55 Vol Percent	309.4	°C	ASTM D86
60 Vol Percent	334.4	°C	ASTM D86
65 Vol Percent	354.4	°C	ASTM D86
70 Vol Percent	358.9	°C	ASTM D86
75 Vol Percent	362.9	°C	ASTM D86
Final Boiling Point	362.9	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93
** Information not supplied by client -- data derived from LSD information			
Results relate only to items tested			

Remarks:  
**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6498

MaxxiD Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 310572 GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/07/23 2013/08/01 2013/08/16 2013/08/16 APC,KMS

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	30.3	vol%	ASTM D86
Distillation Recovery	68.7	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	33.3	vol%	ASTM D86
Distillation Kerosene	15.2	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	43.9	°C	ASTM D86
5 Vol Percent	95.7	°C	ASTM D86
10 Vol Percent	117.2	°C	ASTM D86
15 Vol Percent	134.7	°C	ASTM D86
20 Vol Percent	149.9	°C	ASTM D86
25 Vol Percent	168.1	°C	ASTM D86
30 Vol Percent	189.7	°C	ASTM D86
35 Vol Percent	211.6	°C	ASTM D86
40 Vol Percent	233.6	°C	ASTM D86
45 Vol Percent	258.5	°C	ASTM D86
50 Vol Percent	281.0	°C	ASTM D86
55 Vol Percent	306.3	°C	ASTM D86
60 Vol Percent	332.1	°C	ASTM D86
65 Vol Percent	355.7	°C	ASTM D86
Final Boiling Point	363.5	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6499

MaxxiD Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 310487 GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/07/23 2013/08/01 2013/08/16 2013/08/16 APC,KMS

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

2013/07/23 2013/08/01 2013/08/16 2013/08/16 APC,KMS

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	31.7	vol%	ASTM D86
Distillation Recovery	67.3	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	33.7	vol%	ASTM D86
Distillation Kerosene	14.5	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	46.3	°C	ASTM D86
5 Vol Percent	95.7	°C	ASTM D86
10 Vol Percent	117.5	°C	ASTM D86
15 Vol Percent	134.4	°C	ASTM D86
20 Vol Percent	150.7	°C	ASTM D86
25 Vol Percent	167.7	°C	ASTM D86
30 Vol Percent	187.4	°C	ASTM D86
35 Vol Percent	209.8	°C	ASTM D86
40 Vol Percent	235.1	°C	ASTM D86
45 Vol Percent	259.6	°C	ASTM D86
50 Vol Percent	281.8	°C	ASTM D86
55 Vol Percent	307.1	°C	ASTM D86
60 Vol Percent	333.1	°C	ASTM D86
65 Vol Percent	349.5	°C	ASTM D86
Final Boiling Point	350.3	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6500

MaxxiD Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA FARNHAM R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 303425 GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/07/25 2013/08/01 2013/08/16 2013/08/16 APC,KMS

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

2013/07/25 2013/08/01 2013/08/16 2013/08/16 APC,KMS

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	33.8	vol%	ASTM D86
Distillation Recovery	65.2	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	31.3	vol%	ASTM D86
Distillation Kerosene	14.9	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	46.2	°C	ASTM D86
5 Vol Percent	101.1	°C	ASTM D86
10 Vol Percent	121.8	°C	ASTM D86
15 Vol Percent	139.9	°C	ASTM D86
20 Vol Percent	157.9	°C	ASTM D86
25 Vol Percent	176.5	°C	ASTM D86
30 Vol Percent	198.5	°C	ASTM D86
35 Vol Percent	220.5	°C	ASTM D86
40 Vol Percent	244.7	°C	ASTM D86
45 Vol Percent	268.2	°C	ASTM D86
50 Vol Percent	293.2	°C	ASTM D86
55 Vol Percent	318.5	°C	ASTM D86
60 Vol Percent	344.4	°C	ASTM D86
65 Vol Percent	361.1	°C	ASTM D86
Final Boiling Point	361.1	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**



# CERTIFICATE OF ANALYSIS

B366426:HB6501

MaxxiD Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD OF CANADA FARNHAM R13D0054 N/A TRANSPORTATION SAFETY BOARD OF CANA

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

PROX 44169 GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/07/25 2013/08/01 2013/08/16 2013/08/16 APC,KMS  
 Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Atmospheric Distillation</b>			
Distillation Residue	32.8	vol%	ASTM D86
Distillation Recovery	66.2	vol%	ASTM D86
Distillation Loss	1.0	vol%	ASTM D86
Distillation Naptha	32.2	vol%	ASTM D86
Distillation Kerosene	15.1	vol%	ASTM D86
<b>Distillation Analysis</b>			
Initial Boiling Point	46.3	°C	ASTM D86
5 Vol Percent	97.0	°C	ASTM D86
10 Vol Percent	118.9	°C	ASTM D86
15 Vol Percent	136.3	°C	ASTM D86
20 Vol Percent	151.9	°C	ASTM D86
25 Vol Percent	172.0	°C	ASTM D86
30 Vol Percent	194.7	°C	ASTM D86
35 Vol Percent	216.1	°C	ASTM D86
40 Vol Percent	239.0	°C	ASTM D86
45 Vol Percent	263.0	°C	ASTM D86
50 Vol Percent	287.5	°C	ASTM D86
55 Vol Percent	312.2	°C	ASTM D86
60 Vol Percent	337.6	°C	ASTM D86
65 Vol Percent	350.6	°C	ASTM D86
Final Boiling Point	351.0	°C	ASTM D86
<b>Physical Properties</b>			
Closed Cup Flash point	<-35	°C	ASTM D93

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**Distillation Corrected to 101.3 kPa**





**Attention: WENDY BRYSON**

TRANSPORTATION SAFETY BOARD OF CANADA  
OTTAWA  
1901 RESEARCH ROAD  
OTTAWA , ON  
CANADA K1A 1K8

**Report Date: 2013/10/17**

Job/Sample	Analysis Type	Well Name/Sample ID	Sample Point
B391775/ HS9845	Certificate of Analysis	TRANSPORTATION SAFETY BOARD	NATX 310572-C-TOP
B391775/ HS9846	Certificate of Analysis	TRANSPORTATION SAFETY BOARD	NATX 310572-C-BOT
B391775/ HS9847	Certificate of Analysis	TRANSPORTATION SAFETY BOARD	PROX 44211-C-TOP
B391775/ HS9848	Certificate of Analysis	TRANSPORTATION SAFETY BOARD	PROX 44211-C-BOT

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Victoria Martinek, Project Manager  
Email: VMartinek@maxxam.ca  
Phone# (780) 378-8554

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports.

**Report Distribution**

0	Reports(B391775)WENDY BRYSON	TRANSPORTATION SAFETY BOARD OF CANADA	1901 RESEARCH ROAD	OTTAWA , CANADA
0	Reports(B391775)SYLVIE DIONNE	TRANSPORTATION SAFETY BOARD OF CANADA	1901 RESEARCH ROAD	OTTAWA , CANADA



**CERTIFICATE OF ANALYSIS**

B391775:HS9845

MaxxID Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD N/A TRANSPORTATION SAFETY BOARD

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 310572-C-TOP GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/10/07 2013/10/17 2013/10/17 SK1,NH4,KL9,MPW,BS7

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Density Analysis</b>			
Absolute Density @ 15 °C	815.9	kg/m3	ASTM D5002
Measured Relative Density @ 15 °C	0.8166	N/A	ASTM D5002
API Gravity @ 15 °C	41.8	N/A	
<b>Heat of Combustion</b>			
Measured Gross Heat of Combustion	19247	BTU/lb	ASTM D240
<b>Physical Properties</b>			
Pour Point	<-65	°C	ASTM D5853
Reid Vapour Pressure	66.1	kPa	ASTM D323A
Total Sulphur (S)	0.096	mass%	ASTM D4294
<b>Viscosity Analysis</b>			
Viscosity @ 20°C	2.882	cSt	ASTM D7042
Viscosity @ 30°C	2.295	cSt	ASTM D7042
Viscosity @ 10°C	3.639	cSt	ASTM D7042
Viscosity @ 40°C	1.910	cSt	ASTM D7042

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**SAMPLE DATE NOT RECORDED**  
**Viscosity at 10C was extrapolated from 20, 30, 40C.**



# CERTIFICATE OF ANALYSIS

B391775:HS9846

MaxxID Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD N/A TRANSPORTATION SAFETY BOARD

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

NATX 310572-C-BOT GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/10/07 2013/10/17 2013/10/17 SK1,NH4,KL9,MPW,BS7

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
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**Density Analysis**

Absolute Density @ 15 °C	816.5	kg/m3	ASTM D5002
Measured Relative Density @ 15 °C	0.8172	N/A	ASTM D5002
API Gravity @ 15 °C	41.7	N/A	

**Heat of Combustion**

Measured Gross Heat of Combustion	18445	BTU/lb	ASTM D240
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**Physical Properties**

Pour Point	<-65	°C	ASTM D5853
Reid Vapour Pressure	64.3	kPa	ASTM D323A
Total Sulphur (S)	0.096	mass%	ASTM D4294

**Viscosity Analysis**

Viscosity @ 20°C	2.982	cSt	ASTM D7042
Viscosity @ 30°C	2.467	cSt	ASTM D7042
Viscosity @ 10°C	3.720	cSt	ASTM D7042
Viscosity @ 40°C	2.080	cSt	ASTM D7042

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**SAMPLE DATE NOT RECORDED**  
**Viscosity at 10C was extrapolated from 20, 30, 40C.**



# CERTIFICATE OF ANALYSIS

B391775:HS9847

MaxxID Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD N/A TRANSPORTATION SAFETY BOARD

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

PROX 44211-C-TOP GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/10/07 2013/10/17 2013/10/17 SK1,NH4,KL9,MPW,BS7

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Density Analysis</b>			
Absolute Density @ 15 °C	821.9	kg/m3	ASTM D5002
Measured Relative Density @ 15 °C	0.8226	N/A	ASTM D5002
API Gravity @ 15 °C	40.5	N/A	
<b>Heat of Combustion</b>			
Measured Gross Heat of Combustion	19416	BTU/lb	ASTM D240
<b>Physical Properties</b>			
Pour Point	<-65	°C	ASTM D5853
Reid Vapour Pressure	62.3	kPa	ASTM D323A
Total Sulphur (S)	0.117	mass%	ASTM D4294
<b>Viscosity Analysis</b>			
Viscosity @ 20°C	3.259	cSt	ASTM D7042
Viscosity @ 30°C	2.665	cSt	ASTM D7042
Viscosity @ 10°C	4.100	cSt	ASTM D7042
Viscosity @ 40°C	2.230	cSt	ASTM D7042

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**SAMPLE DATE NOT RECORDED**  
**Viscosity at 10C was extrapolated from 20, 30, 40C.**



# CERTIFICATE OF ANALYSIS

B391775:HS9848

MaxxID Client ID Meter Number Laboratory Number

TRANSPORTATION SAFETY BOARD OF CANADA

Operator Name LSD Well ID

TRANSPORTATION SAFETY BOARD N/A TRANSPORTATION SAFETY BOARD

Well Name Initials of Sampler Sampling Company

Field or Area Pool or Zone Sample Point Container Identity Percent Full

PROX 44211-C-BOT GLASS BOTTLE

Test Recovery Interval Elevations (m) Sample Gathering Point Solution Gas

Test Type No. Multiple Recovery From: To: KB GRD Well Fluid Status Well Status Mode

Production Rates Gauge Pressures kPa Temperature °C Well Status Type Well Type

Water m3/d Oil m3/d Gas 1000m3/d Source As Received Source As Received Gas or Condensate Project Licence No.

2013/10/07 2013/10/17 2013/10/17 MS7,SK1,KL9,MPW,BS7

Date Sampled Start Date Sampled End Date Received Date Reported Date Reissued Analyst

PARAMETER DESCRIPTION	Result	unit	Method
<b>Density Analysis</b>			
Absolute Density @ 15 °C	821.8	kg/m3	ASTM D5002
Measured Relative Density @ 15 °C	0.8225	N/A	ASTM D5002
API Gravity @ 15 °C	40.5	N/A	
<b>Heat of Combustion</b>			
Measured Gross Heat of Combustion	19164	BTU/lb	ASTM D240
<b>Physical Properties</b>			
Pour Point	<-65	°C	ASTM D5853
Reid Vapour Pressure	62.4	kPa	ASTM D323A
Total Sulphur (S)	0.117	mass%	ASTM D4294
<b>Viscosity Analysis</b>			
Viscosity @ 20°C	3.220	cSt	ASTM D7042
Viscosity @ 30°C	2.548	cSt	ASTM D7042
Viscosity @ 10°C	4.078	cSt	ASTM D7042
Viscosity @ 40°C	2.205	cSt	ASTM D7042

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

**SAMPLE DATE NOT RECORDED**  
**Viscosity at 10C was extrapolated from 20, 30, 40C.**



October 11, 2013

Sylvie Dionne  
Transportation Safety Board of Canada  
1901 Research Road  
Ottawa, Ontario  
K1A 1K8

**RE: Analytical Report for Transportation Safety Board of Canada Project: N/A  
CASSEN Work Order No. 2505040**

Dear Sylvie,

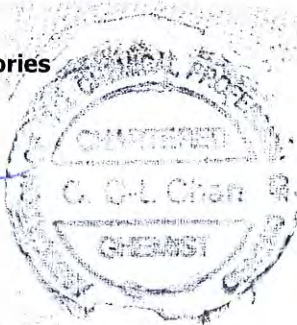
We have completed the analysis of the 4 Bulk Liquid samples that you submitted on October 04, 2013 for the determination of BTEX using gas chromatography mass spectrometry. Results of the analysis are summarized in the attached report, which includes the method description and quality control data.

Sylvie, please feel free to give me a call at (416) 679-9663 should you need any clarification. Thank you for using our services.

Sincerely,

**CASSEN Testing Laboratories**

Cecilia Chan, M.Sc., C.Chem  
Laboratory Director



# Determination of Target Analytes in Bulk Liquids, Using Gas Chromatography/Mass Spectrometry

## Brief Description of the Method:

The sample was diluted with appropriate solvent then injected directly into a capillary column of GC/MS system for quantification of the target analytes.

**CASSEN method #:** M.3005.R0

## Method Reference:

"Characteristics of Spilled Oils, Fuels, and Petroleum Products: 1. Composition and Properties of Selected Oils", EPA 600/R-03/072, July 2003

## Analytical System:

### Instrument:

GC/MS System:	Varian Model CP-3800 Gas Chromatograph coupled with Varian Saturn 2200 MS/MS system
Autosampler:	Varian CP 8400 Autosampler
Data System:	Varian MS-Workstation Data Review system
LIM System:	CAS-LIMS Laboratory Information System

**Sampling Media:** Bulk Liquid



# CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3  
Tel: (416) 679-9663 Fax: (416) 679-9668 Web: www.cassen.ca

## Analytical Results

Date: October 10, 2013

**Organization:** Transportation Safety Board of Canada  
**Address:** 1901 Research Road, Ottawa, Ontario, K1A 1K8  
**Contact:** Sylvie Dionne  
**Project:** N/A

**Work Order No.:** 2505040  
**Date Received:** October 04, 2013

**Analysis Requested:** BTEX  
**CASSEN Method:** M.3005.R0  
**Reference Method:** EPA 600/R-03/072  
**Sampling Media:** Bulk Sample  
**No. of Samples:** 4  
**No. of Blanks:** 0

**Sample Identification:** R13D0054-BTEX-1  
**Mass (g):** 0.8152  
**Date Sampled:** August 07, 2013  
**Date Analyzed:** October 08, 2013

#	Analyte	CAS	Analytical Results		
			Total (ug)	(ug/g)	(ppm)
1	Benzene	000071-43-2	1510	1850	1850
2	Toluene	000108-88-3	2580	3170	3170
3	Ethylbenzene	000100-41-4	693	850	850
4	m/p-Xylene	000106-42-3	2850	3500	3500
5	o-Xylene	000095-47-6	1350	1660	1660

**Sample Identification:** R13D0054-BTEX-2  
**Mass (g):** 0.8167  
**Date Sampled:** August 07, 2013  
**Date Analyzed:** October 08, 2013

#	Analyte	CAS	Analytical Results		
			Total (ug)	(ug/g)	(ppm)
1	Benzene	000071-43-2	1410	1720	1720
2	Toluene	000108-88-3	2340	2870	2870
3	Ethylbenzene	000100-41-4	627	768	768
4	m/p-Xylene	000106-42-3	2690	3300	3300
5	o-Xylene	000095-47-6	1270	1560	1560

**Sample Identification:** R13D0054-BTEX-3  
**Mass (g):** 0.8161  
**Date Sampled:** August 07, 2013  
**Date Analyzed:** October 08, 2013

#	Analyte	CAS	Analytical Results		
			Total (ug)	(ug/g)	(ppm)
1	Benzene	000071-43-2	1470	1800	1800
2	Toluene	000108-88-3	2380	2920	2920
3	Ethylbenzene	000100-41-4	644	789	789
4	m/p-Xylene	000106-42-3	2700	3310	3310
5	o-Xylene	000095-47-6	1320	1620	1620

### Notes:

- 1) <: Less than the indicated instrument detection limit (IDL).
- 2) N.A.: Information not available or not applicable.
- 3) The results have been lab blank subtracted.
- 4) This **Certificate of Analysis** shall not be reproduced except in full, without written approval of the laboratory. These analytical results pertain only to the samples as received in the laboratory. No responsibility or liability is assumed for the manner in which the results are used.





# CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3  
Tel: (416) 679-9663 Fax: (416) 679-9668 Web: www.cassen.ca

## Analytical Results

Date: October 10, 2013

**Organization:** Transportation Safety Board of Canada  
**Address:** 1901 Research Road, Ottawa, Ontario, K1A 1K8  
**Contact:** Sylvie Dionne  
**Project:** N/A

**Work Order No.:** 2505040  
**Date Received:** October 04, 2013

**Sample Identification:** R13D0054-BTEX-4  
**Mass (g):** 0.8201

**Date Sampled:** August 07, 2013  
**Date Analyzed:** October 08, 2013

#	Analyte	CAS	Analytical Results		
			Total (ug)	(ug/g)	(ppm)
1	Benzene	000071-43-2	1200	1470	1470
2	Toluene	000108-88-3	2270	2770	2770
3	Ethylbenzene	000100-41-4	699	852	852
4	m/p-Xylene	000106-42-3	2370	2890	2890
5	o-Xylene	000095-47-6	1230	1500	1500

**Notes:**

1) <: Less than the indicated instrument detection limit (IDL).

2) N.A.: Information not available or not applicable.

3) The results have been lab blank subtracted.

4) This *Certificate of Analysis* shall not be reproduced except in full, without written approval of the laboratory. These analytical results pertain only to the samples as received in the laboratory. No responsibility or liability is assumed for the manner in which the results are used.



# CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3  
Tel: (416) 679-9663 Fax: (416) 679-9668 Web: www.cassen.ca

## Analytical Results

Date: October 10, 2013

Organization: Transportation Safety Board of Canada  
Address: 1901 Research Road, Ottawa, Ontario, K1A 1K8  
Contact: Sylvie Dionne  
Project: N/A

Work Order No.: 2505040  
Date Received: October 04, 2013

## Quality Control Batch #: 12285-153

#	Analyte	CAS	Uncertainty %	IDL (ug)
1	Benzene	000071-43-2	8.91	0.00005
2	Toluene	000108-88-3	7.80	0.00005
3	Ethylbenzene	000100-41-4	12.05	0.00005
4	m/p-Xylene	000106-42-3	11.52	0.00005
5	o-Xylene	000095-47-6	10.87	0.00005

Notes:

Analyst:

Matthew Yao, M.Sc., Chemist

Reviewer:

Queenie Yip, B.Sc., C/Chem., Senior Chemist



Notes:

- 1) <: Less than the indicated instrument detection limit (IDL).
- 2) N.A.: Information not available or not applicable.
- 3) The results have been lab blank subtracted.
- 4) This **Certificate of Analysis** shall not be reproduced except in full, without written approval of the laboratory. These analytical results pertain only to the samples as received in the laboratory. No responsibility or liability is assumed for the manner in which the results are used.



# CASSEN Testing Laboratories

Division of CASSEN Group Inc.

# ANALYTICAL SERVICES REQUEST FORM

51 International Blvd.  
Toronto, ON M9W 6H3  
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Fax: (416) 679-9668  
Toll Free: 1-866-423-3001  
Web: www.cassen.ca

FOR CASSEN USE ONLY  
CASSEN Work Order No:

2505040

### Send Report To:

Check if this is a new address

Company: Transportation Safety Board of Canada  
Address: 1901 Research Road  
City: Ottawa Province: Ontario  
Attention: Sylvie Dionne Postal Code: K1A1K8  
Phone: 613-949-3949 Fax: 613-998-5572  
Email: Sylvie.Dionne@tsb-bst.gc.ca

### Invoice To (if different):

Check if this is a new address

Company: Transportation Safety Board of Canada  
Address: 1901 Research Road  
City: Ottawa Province: Ontario  
Attention: Wendy Bryson Postal Code: K1A1K8  
Phone: 613-990-0776 Fax: 613-998-5572  
Email: Wendy.Bryson@tsb-bst.gc.ca

### Required Turnaround Time

Regular Routine Analysis Turnaround Time (5 Days)\*  
 Open Characterization with Interpretation Requires 8 Days\* TAT  
 Rush Analysis Options (Please Call Ahead)  
 8 Hours  24 Hours  48 Hours  72 Hours

Project Name / Number: \_\_\_\_\_ P.O. Number: \_\_\_\_\_ Sampling Data Sheet Attached

Client Sample Number Description/Identification	Date Sampled (DD/MM/YYYY)	Sample Type	Active Sample Volume (L)	Passive Sample Time (mins)	Analysis Requested	Comment
R13D0054-BTEX-1	07/08/2013	crude oil			BTEX using GC/MS	
R13D0054-BTEX-2	07/08/2013	crude oil			BTEX using GC/MS	
R13D0054-BTEX-3	07/08/2013	crude oil			BTEX using GC/MS	
R13D0054-BTEX-4	07/08/2013	crude oil			BTEX using GC/MS	

Special Instructions: As discussed with Cecilia Chan, we require a detection limit of 0.1 ppm (benzene) and 1 ppm (toluene, ethyl benzene, m,p,o-xylene).

CHAIN OF CUSTODY	Print Name	Signature	Date (DD/MM/YYYY)	Time	Sample Condition Upon Receipt
Relinquished by:	John Ferguson	<i>[Signature]</i>	04/10/13	9:30 AM	<input checked="" type="checkbox"/> Acceptable
Received by Lab:	C. Resuto	<i>[Signature]</i>	04/10/13	9:30 AM	<input type="checkbox"/> Other (Explain Below)

Sample Condition Additional Comments: \_\_\_\_\_

\* Working days only, please consult the laboratory regarding workload. Samples received after 3:00PM will be treated as next day's samples. CASSEN's terms and conditions form a part of this contract for services. (See forms section of our website)