



St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207 Onondaga Lake

Odor Evaluation Report

Report No. 531903

11/15/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation  
and to advancing the science of sensory perception.

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customer service, flexible scheduling, timely results.

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3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 531903

Project: 05017-0207 Onondaga Lake

Evaluation Date: 11/15/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	10029-In-(0-2)	0-2 Hour Samples from Wind Tunnel	95	55	19	-0.28			
2	10029-In-(2-6)	2-6 Hour Sample	100	55	40	-0.51			
3	10029-In-(6-22)	6-22 Hour Wind Tunnel Sample	40	23	19	-0.30			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: **531903**

Project: 05017-0207 Onondaga Lake

Evaluation Date: 11/15/05

[illegible]

CHAIN OF CUSTODY RECORD  
FOR ODOR SAMPLES

Client: SERVICE Engr Group		Sampled By: <i>L. C. P.</i>		Odor Evaluations Requested: (X)				Page <u>1</u> of <u>1</u>	
Project Name: 05017-0207 Ontonagon Lake		Sampling Date: 11/14/05						For Laboratory use Only	
Comments:								Odor Evaluation Report No.	
								Laboratory Sample No.	
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	
1	10029-IN-(0-2)	0-2 hour samples from wind tunnel	11/14/05 14:43		X	X		X	
2	10029-IN-(2-6)	2-6 hour sample	11/14/05 20:50		X	X		X	
3									
4									
5									
6									
7									
8									
9									
10									

## Transfer &amp; Shipping Information

Number of "Air-Pacs" / Shipping Boxes \_\_\_\_\_

Relinquished By: <i>[Signature]</i>	Date: 11/15/05	Time: 0900	Accepted By: <i>[Signature]</i>	Date: 11/15/05	Time: 9:00	Comments & Exceptions Noted
Received at St. Croix Sensory Laboratory						

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CLIENT COPY PINK

# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 1 of 1

Client: <u>SERVICE Engr Group</u>		Sampled By: <u>William C. Hoff</u>		Odor Evaluations Requested: (X)				For Laboratory use Only	
Project Name: <u>05017-0207</u>		Sampling Date: <u>11/15/05 12:30</u>		Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence (“Dose-Response”)	Odor Evaluation Report No.	
Comments:		Field H <sub>2</sub> S (ppm)	Sample Time						
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence (“Dose-Response”)	Laboratory Sample No. LN FN
1	10029-IN-(6-22)	6-22 hour wind tunnel sample	11/15/05		X	X		X	
2									
3									
4									
5									
6									
7									
8									
9									
10									

## Transfer & Shipping Information

Number of  
“Air-Pacs”/  
Shipping Boxes \_\_\_\_\_

Relinquished By <u>William C. Hoff</u>	Date <u>11/15/05</u>	Time <u>12:30</u>	Accepted By	Date	Time	Comments & Exceptions Noted
Received at St. Croix Sensory Laboratory						

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207

Odor Evaluation Report

Report No. 532003

11/16/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

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# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 532003

Project: 05017-0207

Evaluation Date: 11/16/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	10029-10M-(0-2)	0-2 Hour Wind Tunnel Odor Sample	65	40	13	-0.18			
2	10029-10M-(2-6)	2-6 Hour Odor Sample	45	30	15	-0.21			
3	10029-10M-(6-22)	6-22 Hour Odor Sample	50	30	14	-0.21			



**St. Croix Sensory, Inc.**

## Odor Evaluation Report

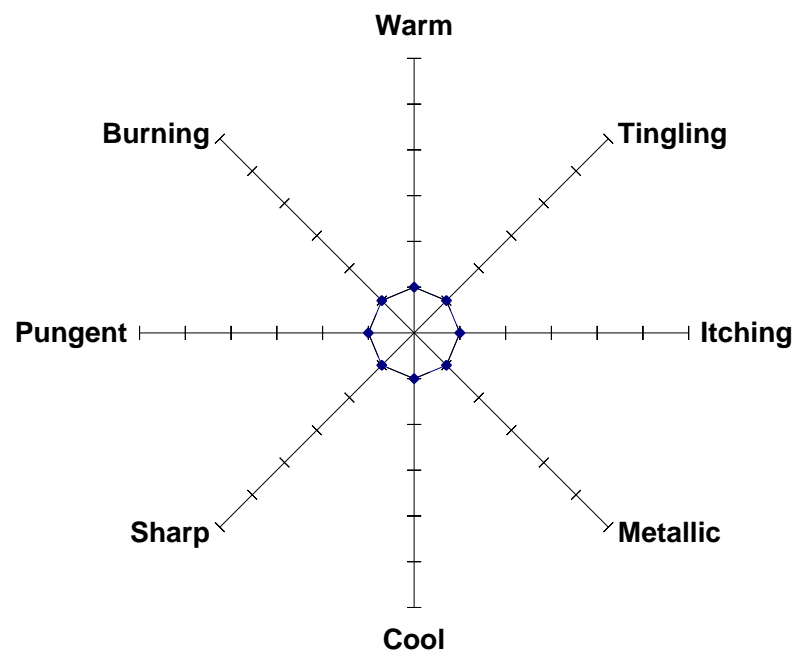
Client: SERVICE Engineering Group

Project: 05017-0207

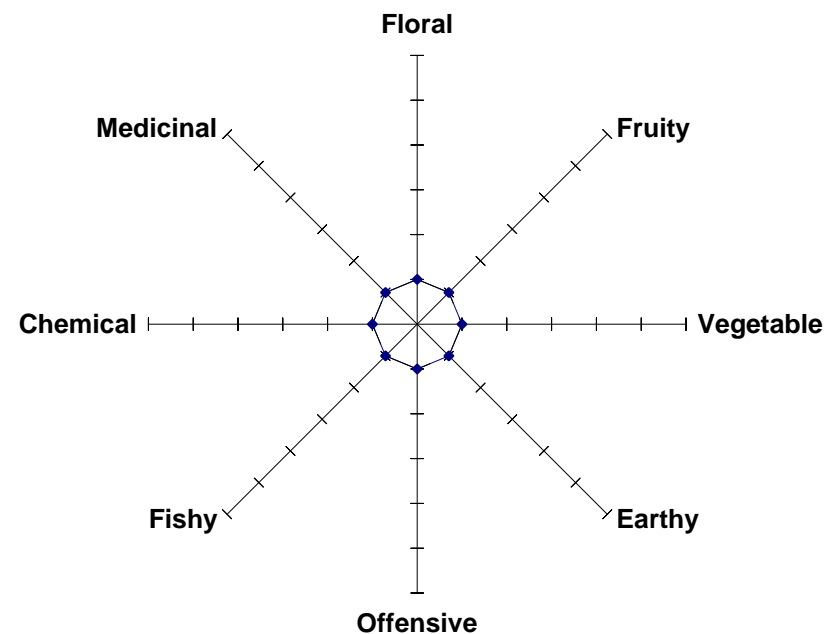
Report No.: **532003**

Evaluation Date: 11/16/05

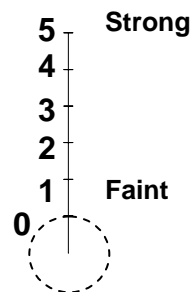
[illegible]

Client: SERVICE Engineering GroupField No.: 10029-10M-(0-2)Report No.: 532003Project: 05017-0207Description: 0-2 Hour Wind Tunnel Odor SampleEvaluation Date: 11/16/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 10029-10M-(0-2)

Report No.: **532003**

Project: 05017-0207

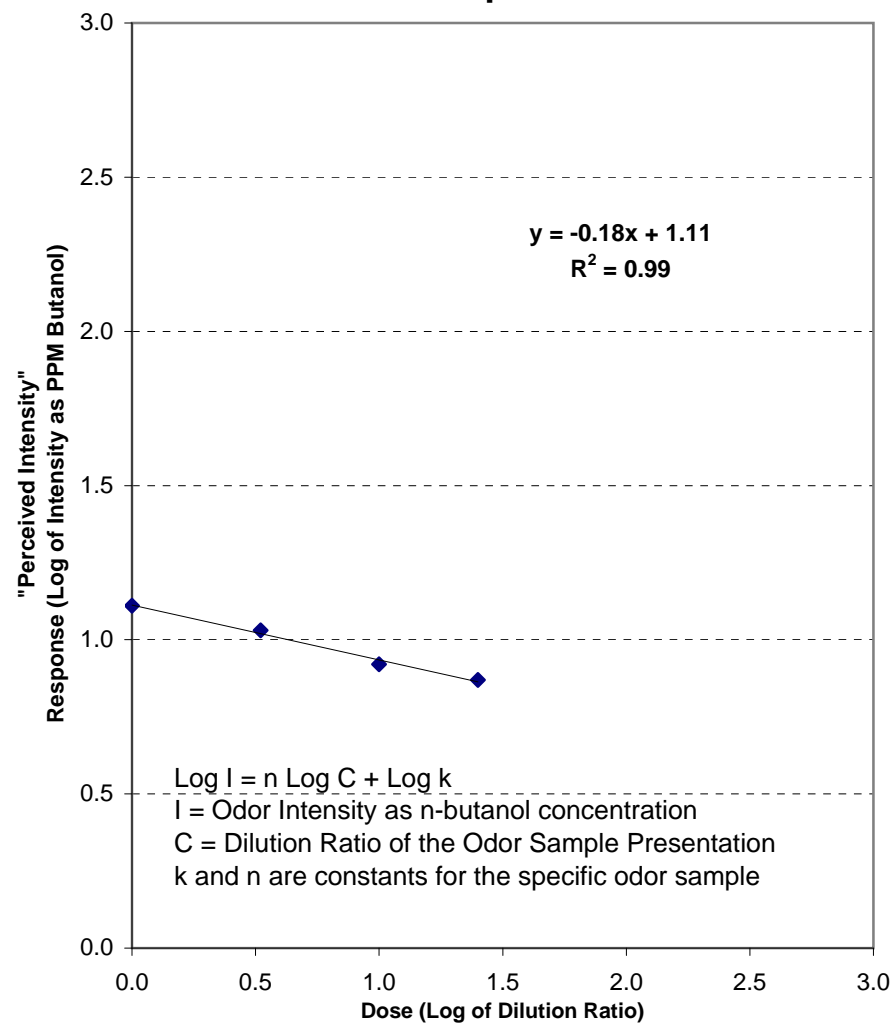
Description: 0-2 Hour Wind Tunnel Odor Sample

Evaluation Date: 11/16/05

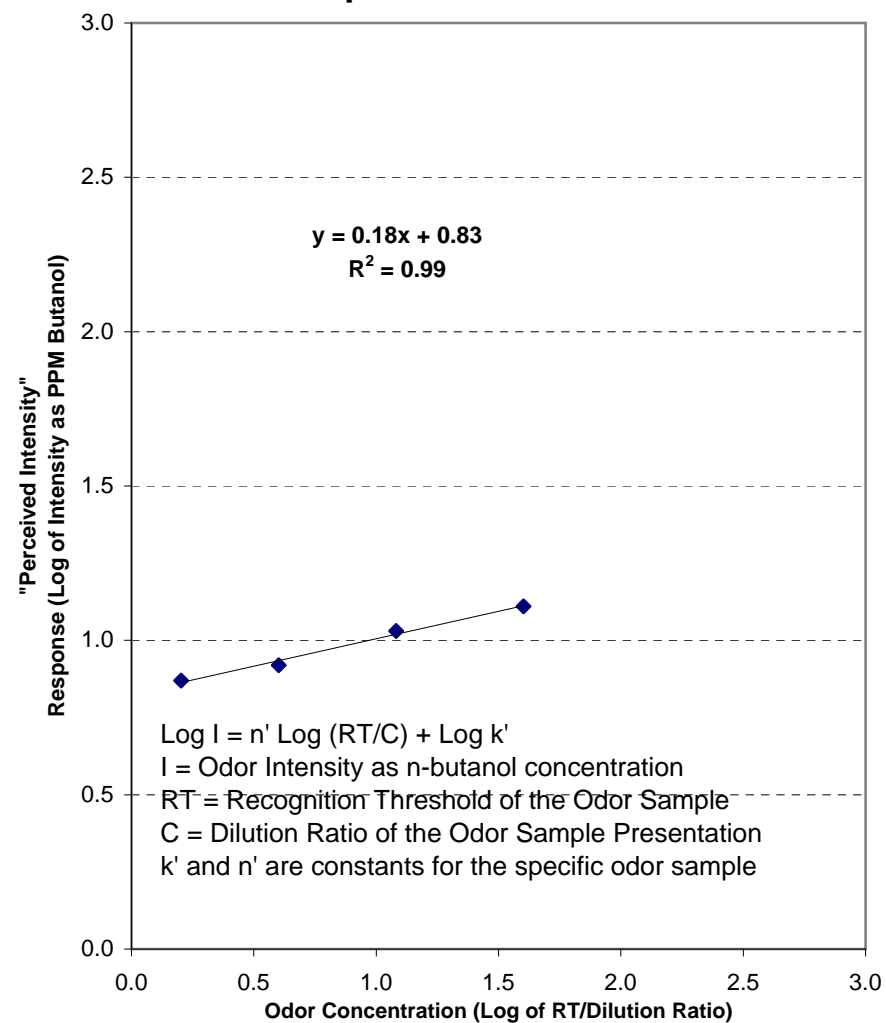
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

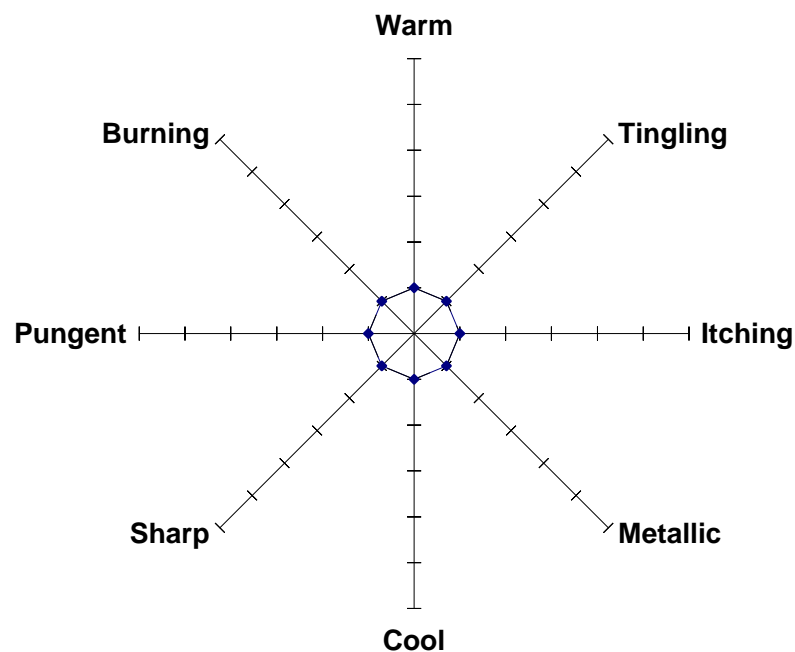
Client: SERVICE Engineering GroupField No.: 10029-10M-(0-2)Report No.: 532003Project: 05017-0207Description: 0-2 Hour Wind Tunnel Odor SampleEvaluation Date: 11/16/05

### Dose-Response

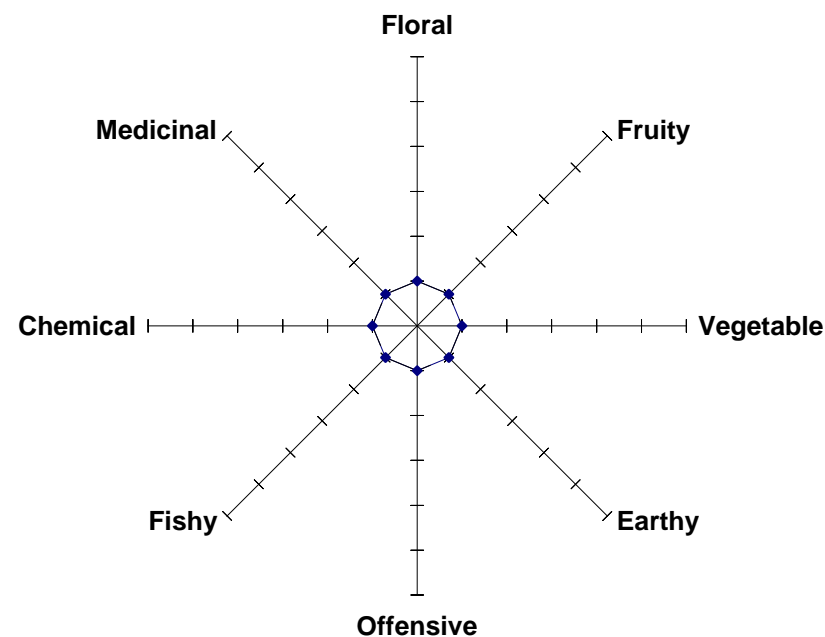


### Dose-Response as Power Law

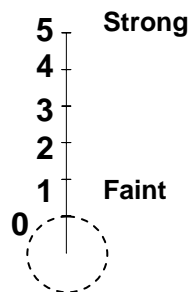


Client: SERVICE Engineering GroupField No.: 10029-10M-(2-6)Report No.: 532003Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/16/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 10029-10M-(2-6)

Report No.: **532003**

Project: 05017-0207

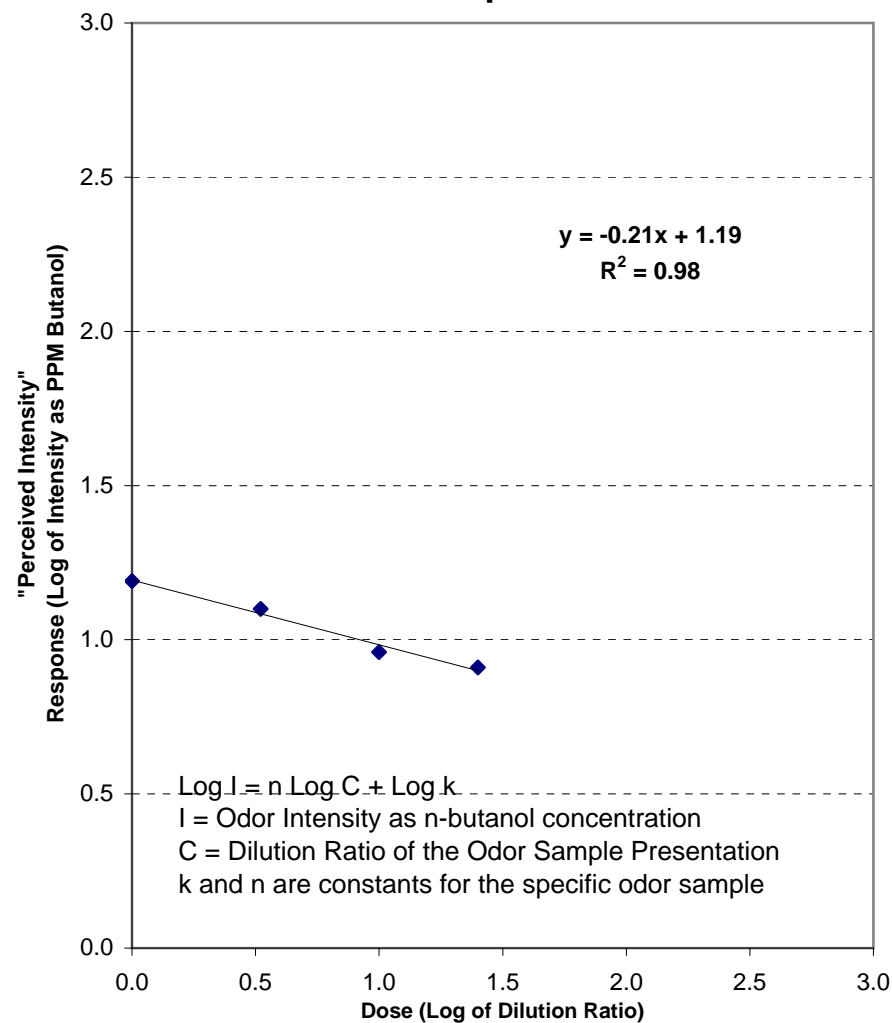
Description: 2-6 Hour Odor Sample

Evaluation Date: 11/16/05

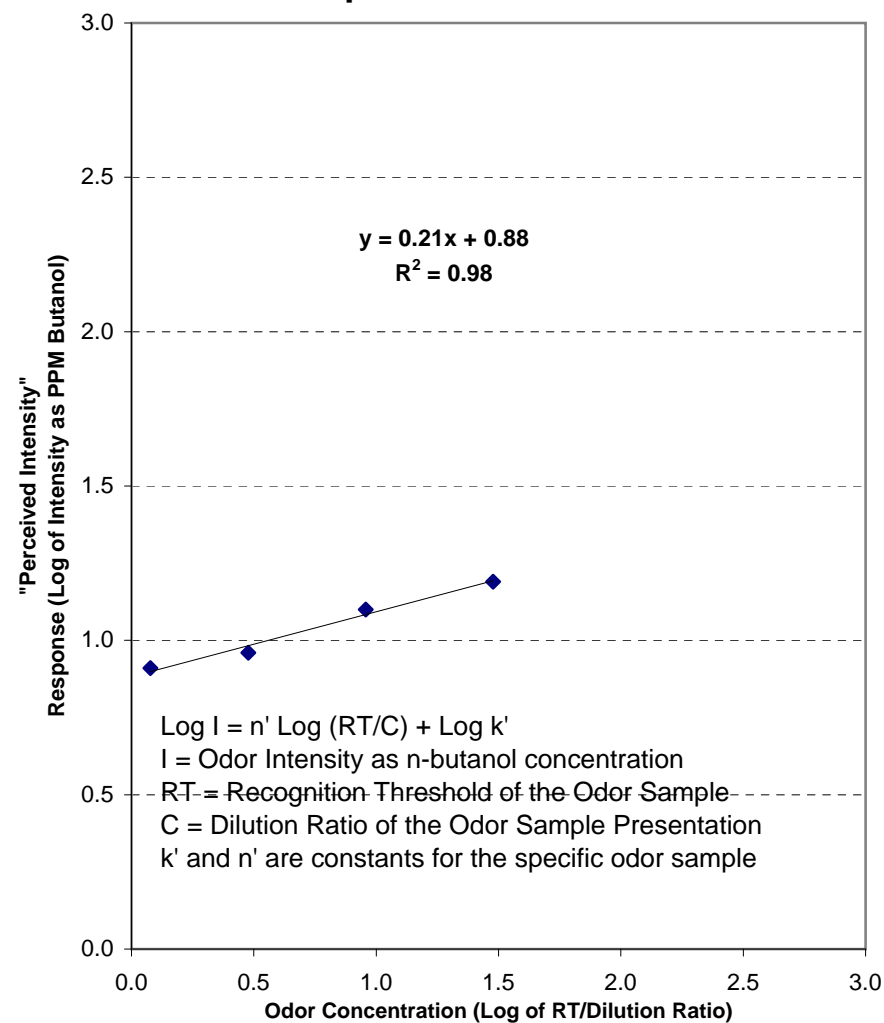
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

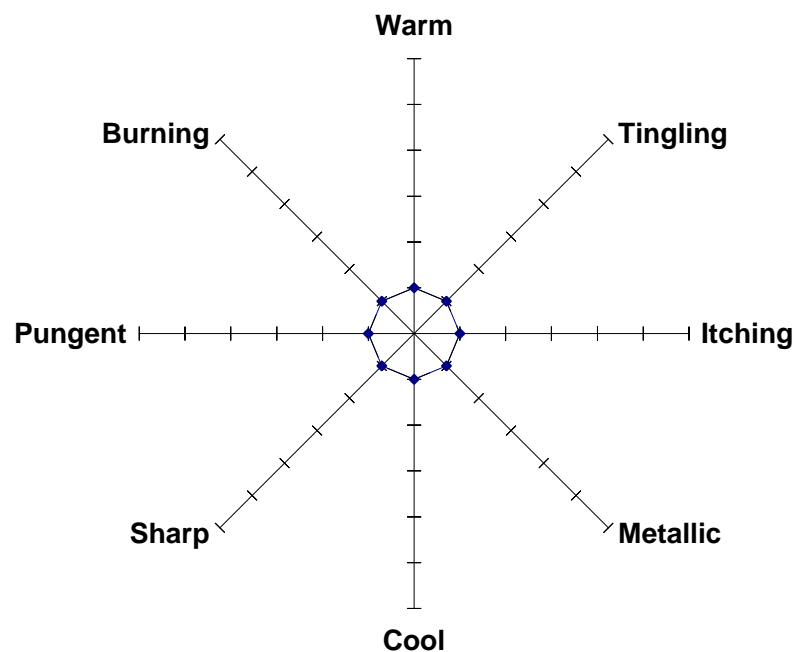
Client: SERVICE Engineering GroupField No.: 10029-10M-(2-6)Report No.: 532003Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/16/05

### Dose-Response

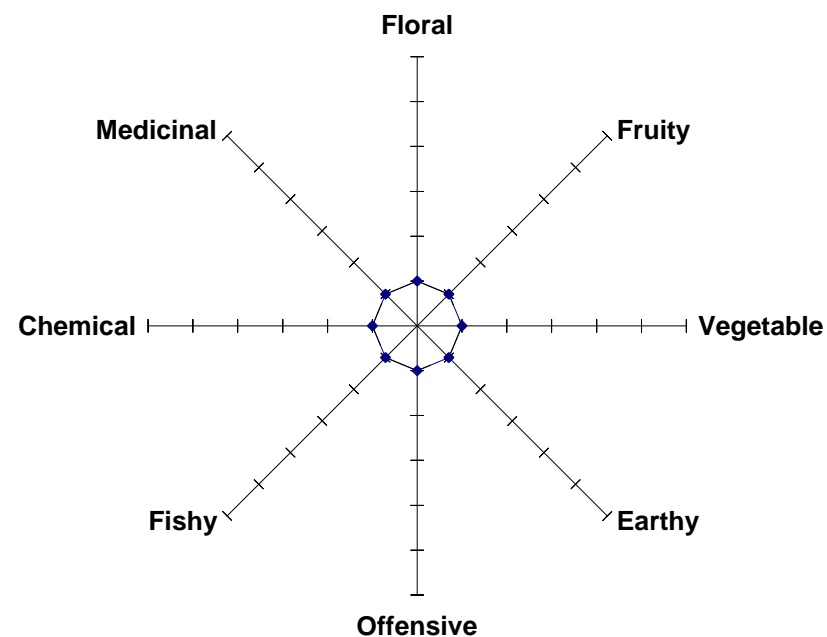


### Dose-Response as Power Law

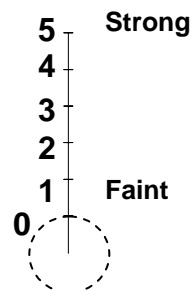


Client: SERVICE Engineering GroupField No.: 10029-10M-(6-22)Report No.: 532003Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/16/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 10029-10M-(6-22)

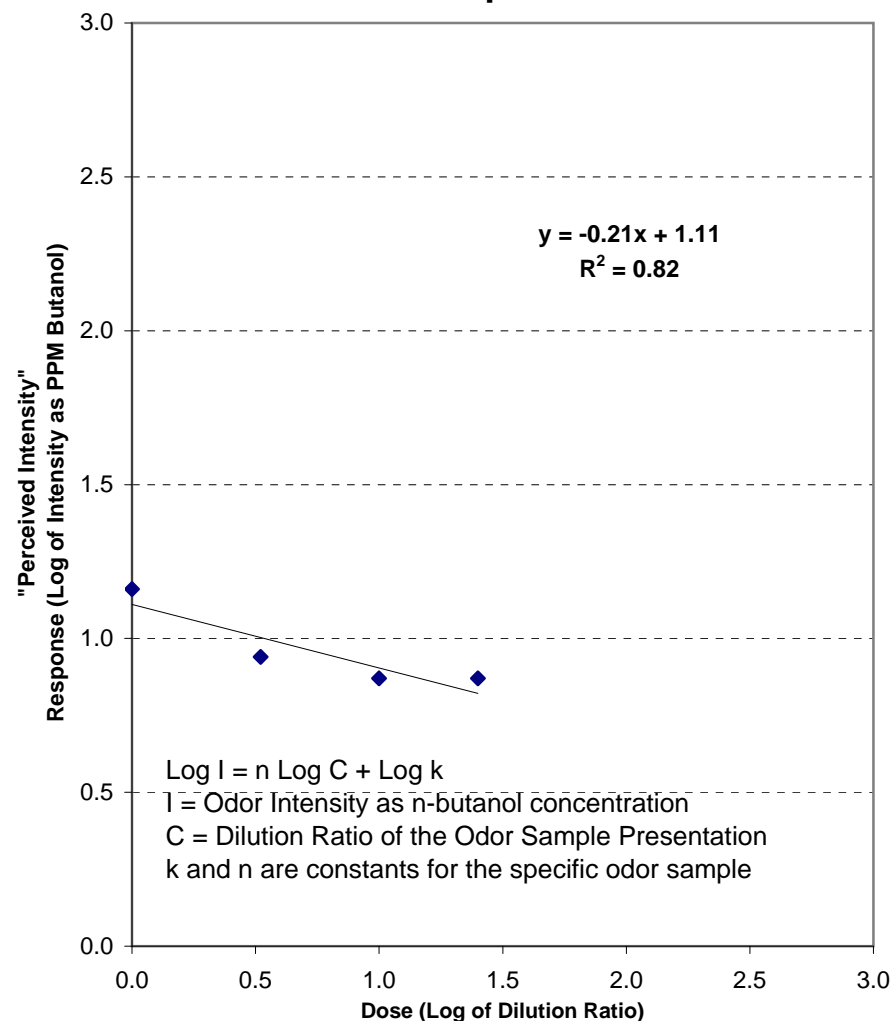
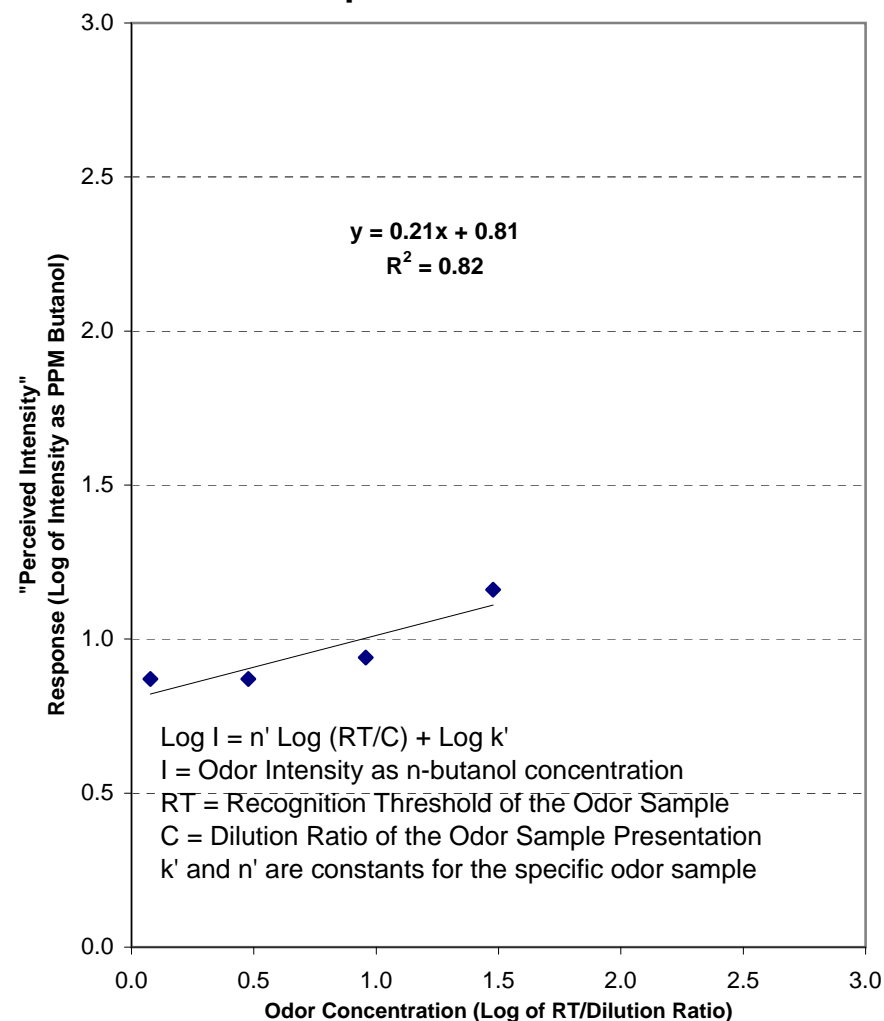
Report No.: **532003**

Project: 05017-0207

Description: 6-22 Hour Odor Sample

Evaluation Date: 11/16/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 10029-10M-(6-22)Report No.: 532003Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/16/05**Dose-Response****Dose-Response as Power Law**

# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Page 1 of 1

Client: <u>SERVICE Engr Group</u>		Sampled By: <u>William C. Hoff</u>		Odor Evaluations Requested: (X)				For Laboratory use Only	
Project Name: <u>05017-0207</u>		Sampling Date: <u>11/15 - 11/16/05</u>						Odor Evaluation Report No.	
Comments:								Laboratory Sample No.	
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	LN FN
1	10029-10m-(6-2)	0-2 hour wind tunnel odor sample	11/15/05 15:47		X	X		X	
2	10029-10m-(2-6)	2-6 hour odor sample	11/15/05 20:00		X	X		X	
3	10029-10m-(6-22)	6-22 hour odor sample	11/16/05		X	X		X	
4									
5									
6									
7									
8									
9									
10									

## Transfer & Shipping Information

Number of "Air-Pacs" /

Shipping Boxes 1

Relinquished By: <u>William C. Hoff</u>	Date: <u>11/16/05</u>	Time: <u>07:50</u>	Accepted By:	Date:	Time:	Comments & Exceptions Noted:
Received at St. Croix Sensory Laboratory			<u>William C. Hoff</u>	<u>11/16/05</u>	<u>8:30</u>	

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**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 532102

11/17/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation  
and to advancing the science of sensory perception.

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Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 532102

Project: 05017-0207

Evaluation Date: 11/17/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	10029-10Q-(0-2)	0-2 hour odor sample	65	35	17	-0.20			
2	10029-10Q-(2-6)	2-6 hour odor sample	90	50	17	-0.23			
3	10029-10Q-(6-22)	6-22 odor sample	60	45	13	-0.14			

# St. Croix Sensory, Inc.

# Odor Evaluation Report

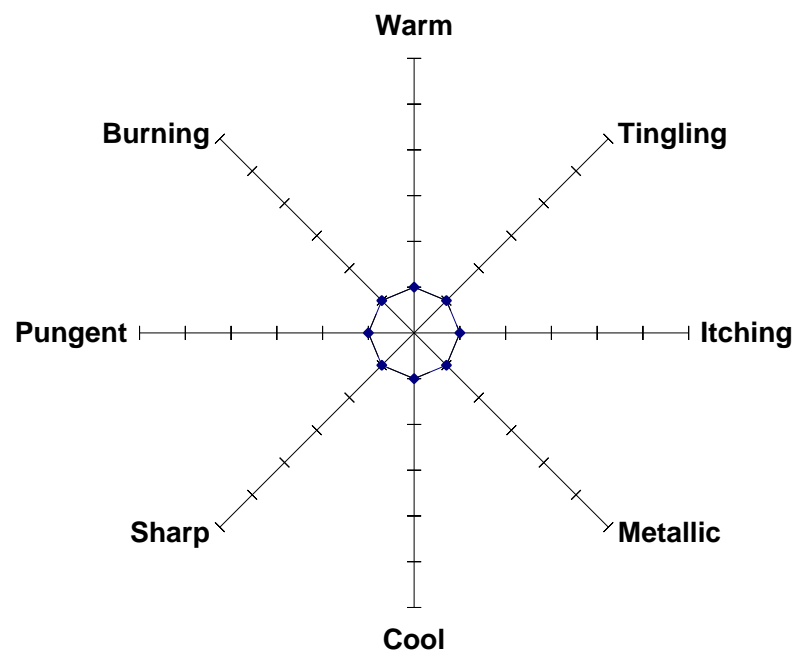
Client: Service Engineering Group

Report No.: 532102

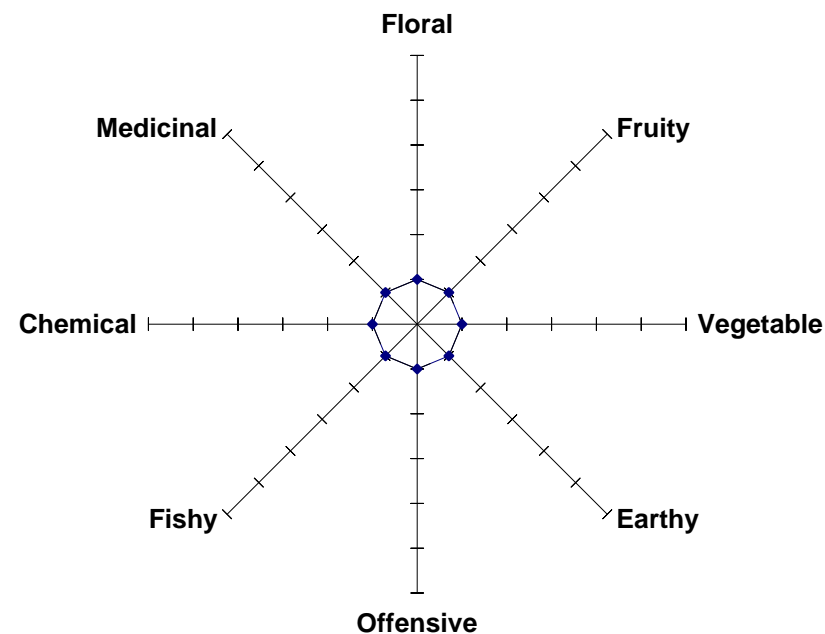
Project: 05017-0207

Evaluation Date: 11/17/05

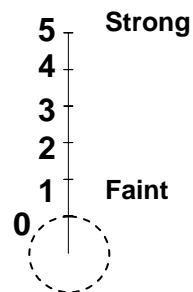
#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
							#REF!		
							#REF!		
							#REF!		
							#REF!		
							#REF!		
							#REF!		

Client: Service Engineering GroupField No.: 10029-10Q-(0-2)Report No.: **532102**Project: 05017-0207Description: 0-2 hour odor sampleEvaluation Date: 11/17/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 10029-10Q-(0-2)

Report No.: **532102**

Project: 05017-0207

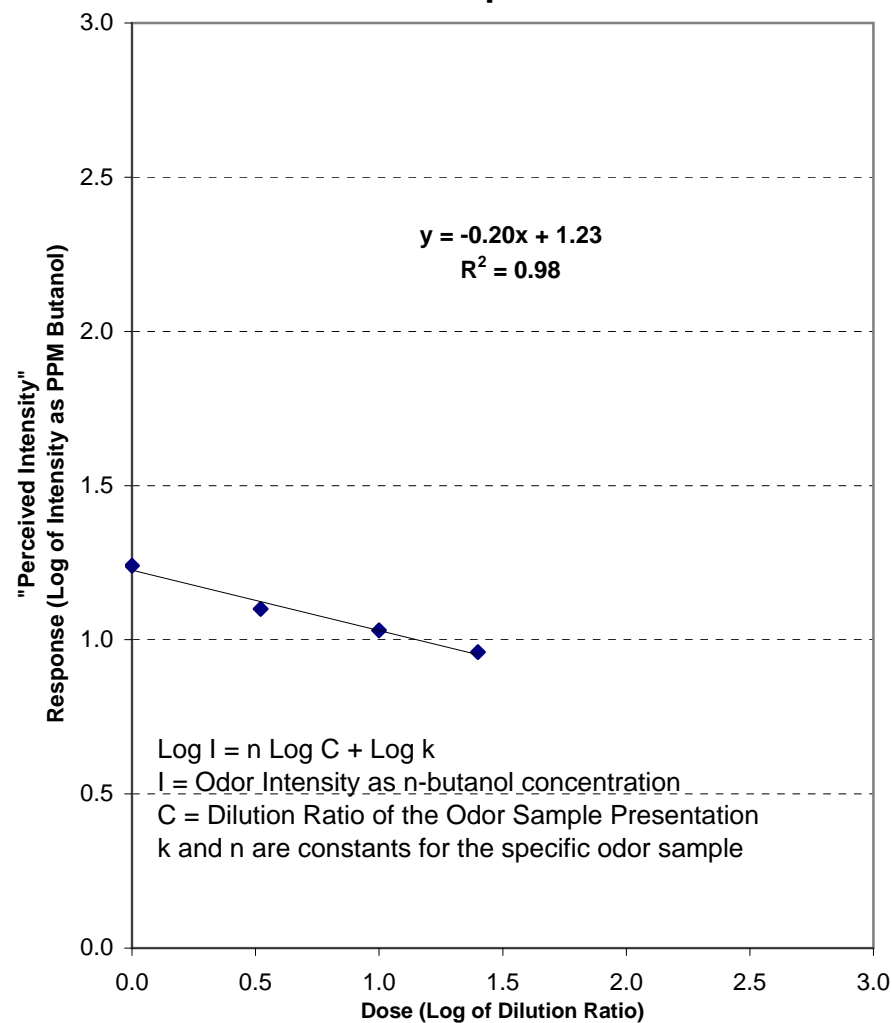
Description: 0-2 hour odor sample

Evaluation Date: 11/17/05

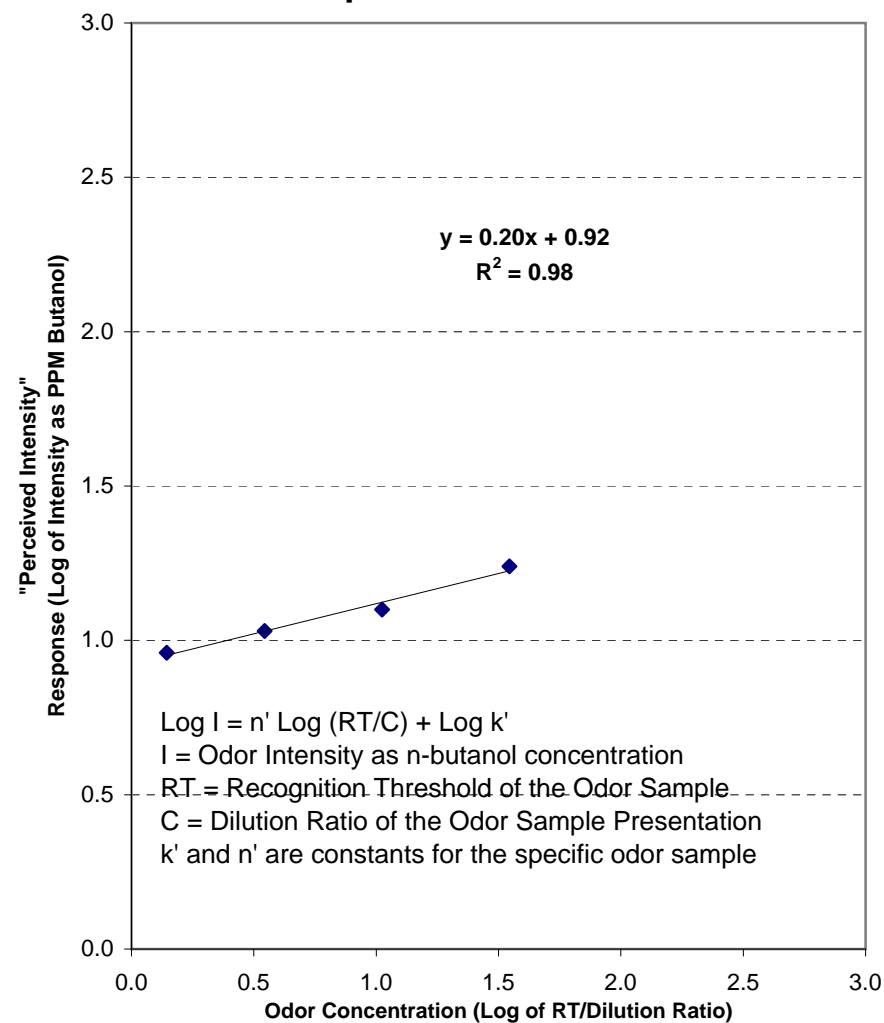
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

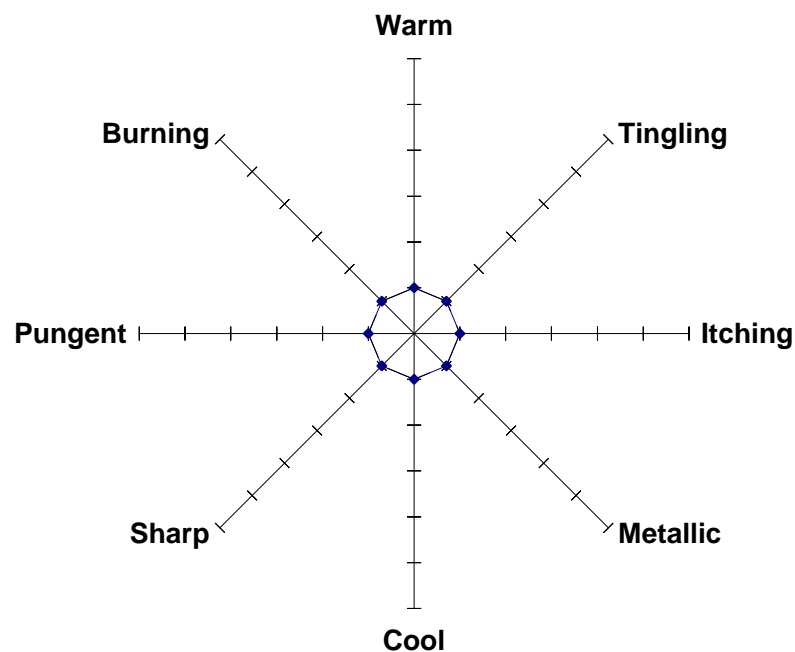
Client: Service Engineering GroupField No.: 10029-10Q-(0-2)Report No.: 532102Project: 05017-0207Description: 0-2 hour odor sampleEvaluation Date: 11/17/05

### Dose-Response

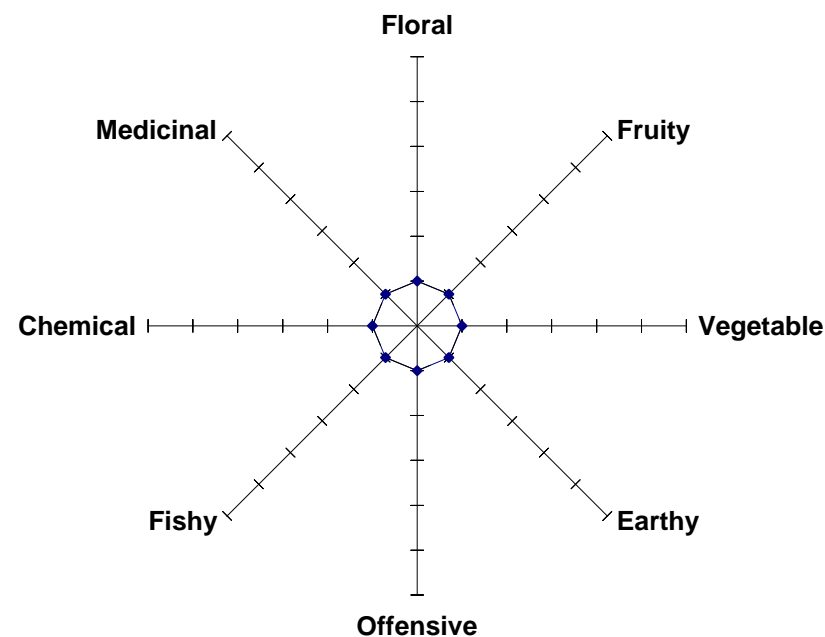


### Dose-Response as Power Law

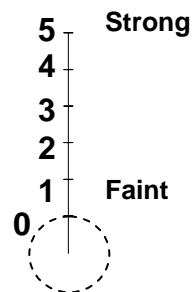


Client: Service Engineering GroupField No.: 10029-10Q-(2-6)Report No.: **532102**Project: 05017-0207Description: 2-6 hour odor sampleEvaluation Date: 11/17/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 10029-10Q-(2-6)

Report No.: **532102**

Project: 05017-0207

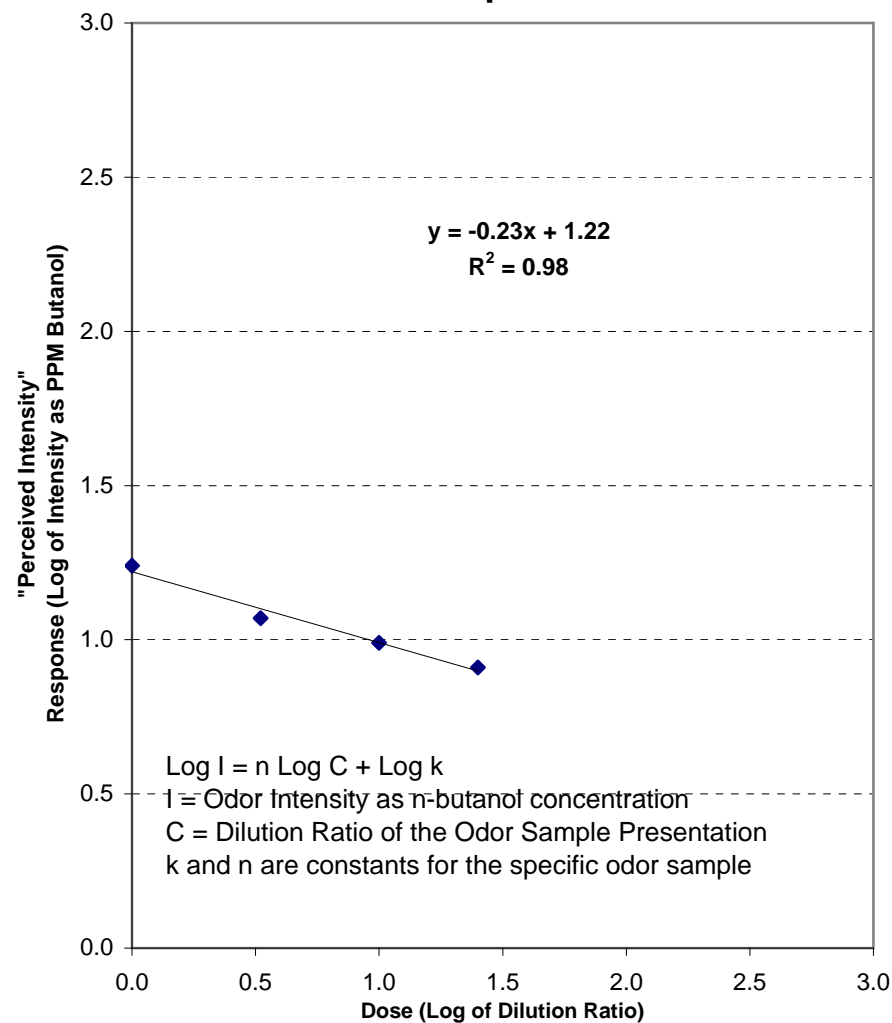
Description: 2-6 hour odor sample

Evaluation Date: 11/17/05

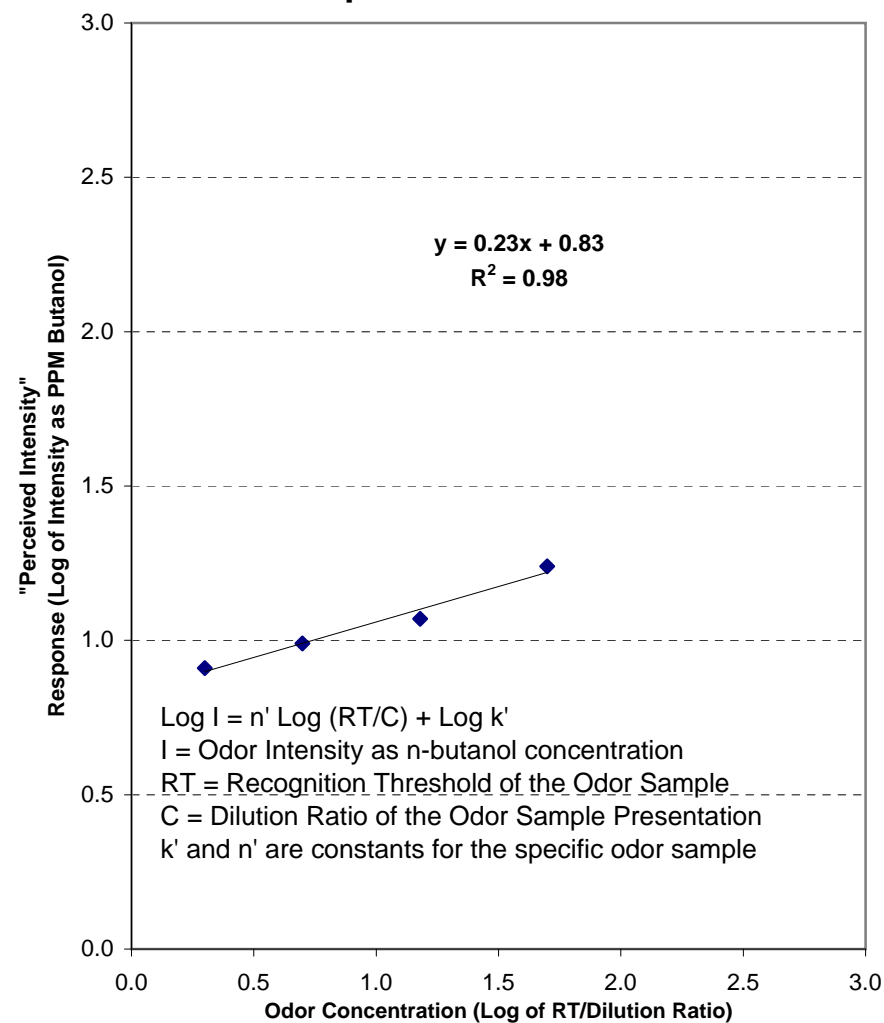
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

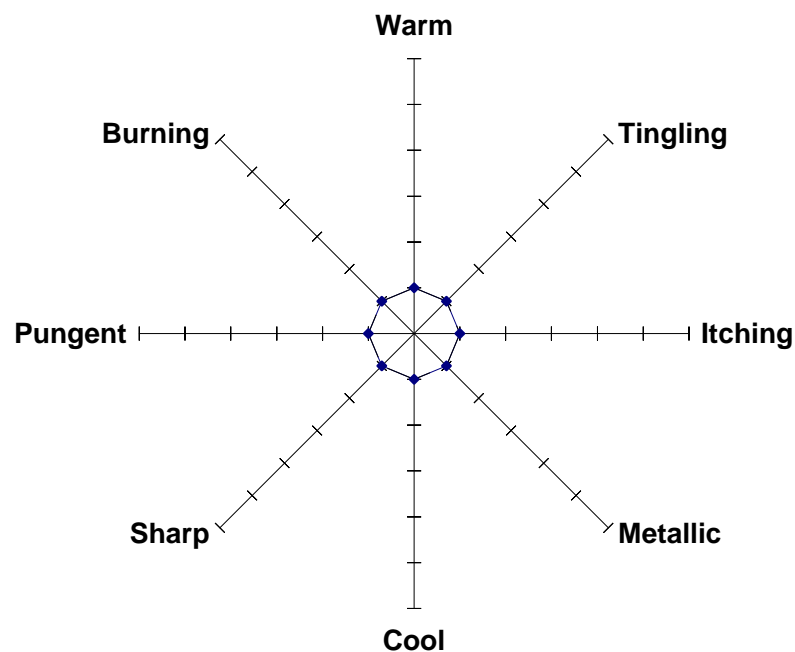
Client: Service Engineering GroupField No.: 10029-10Q-(2-6)Report No.: 532102Project: 05017-0207Description: 2-6 hour odor sampleEvaluation Date: 11/17/05

### Dose-Response

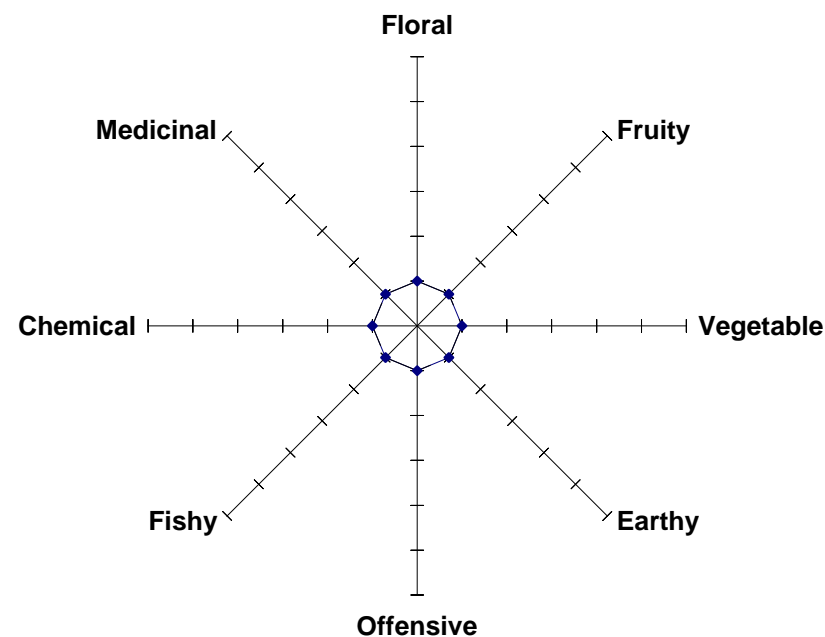


### Dose-Response as Power Law

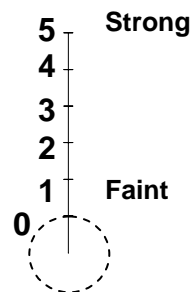


Client: Service Engineering GroupField No.: 10029-10Q-(6-22)Report No.: **532102**Project: 05017-0207Description: 6-22 odor sampleEvaluation Date: 11/17/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

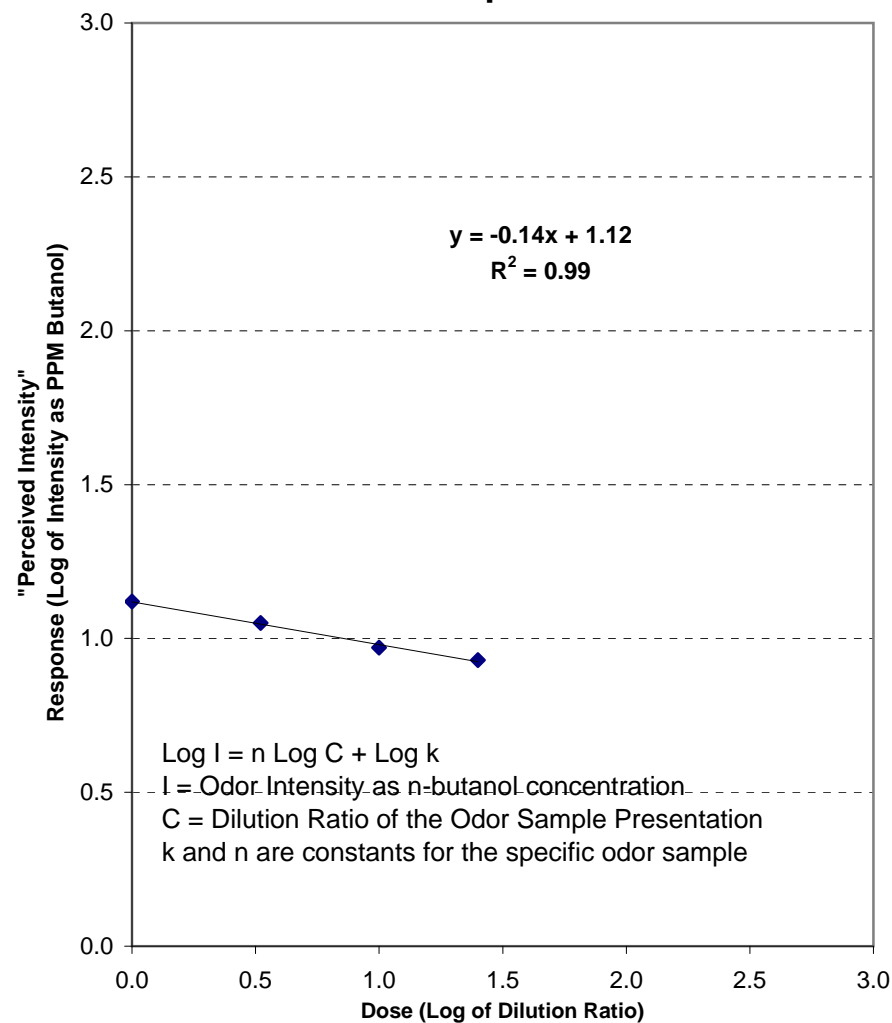
Client: Service Engineering Group Field No.: 10029-10Q-(6-22)  
Project: 05017-0207 Description: 6-22 odor sample

Report No.: **532102**  
Evaluation Date: 11/17/05

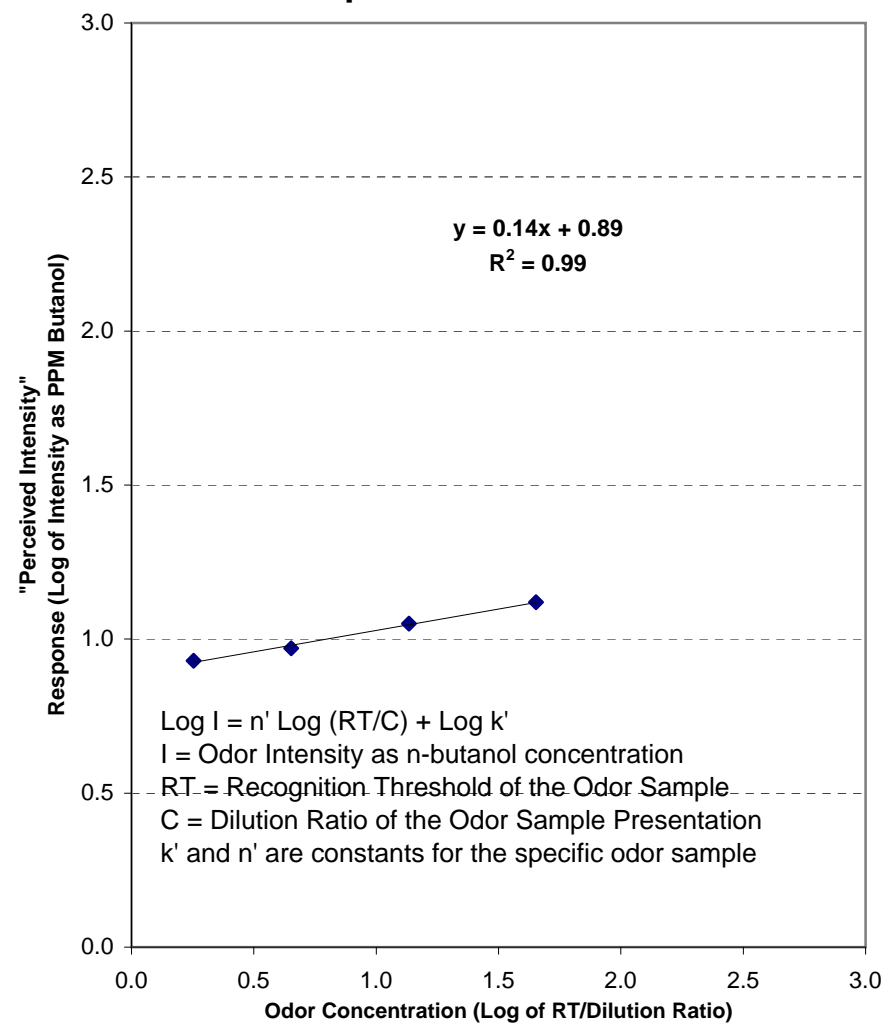
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 10029-10Q-(6-22)Report No.: 532102Project: 05017-0207Description: 6-22 odor sampleEvaluation Date: 11/17/05

### Dose-Response



### Dose-Response as Power Law





# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES


Client: SERVICE Engr GrpSampled By: Will C. HoffPage 1 of 1Project Name: 05017-0207Sampling Date: 11/16 - 11/17/05

Comments:

Odor Evaluations Requested: (X)

Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	For Laboratory use Only
1	10029-10Q-(0-2)	0-2 hour odor sample	11/16/05 14:29		X	X		X	Odor Evaluation Report No.  Laboratory Sample No. LN FN
2	10029-10Q-(2-6)	2-6 hour odor sample	11/16/05 18:46		X	X		X	
3	10029-10Q-(6-22)	6-22 hour odor sample	11/17/05 07:50		X	X		X	
4									
5									
6									
7									
8									
9									
10									

## Transfer & Shipping Information

 Number of  
"Air-Pacs"  
Shipping Boxes
Relinquished By: Will C. HoffDate: 11/17/05 Time: 08:02

Accepted By:

Date:

Time:

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory

Will C. Hoff  
11/17/05

LAB COPIES WHITE &amp; YELLOW

CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 532201

11/18/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation  
and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal  
customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make  
your project or product a success.

***[www.fivesenses.com](http://www.fivesenses.com)***

3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 532201

Project: 05017-0207

Evaluation Date: 11/18/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	10029-1M-(0-2)	0-2 hour odor sample	45	30	16	-0.25			
2	10029-1M-(2-6)	2-6 hour odor sample	60	35	11	-0.18			
3	10029-1M-(6-22)	6-22 hour odor sample	30	25	13	-0.23			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

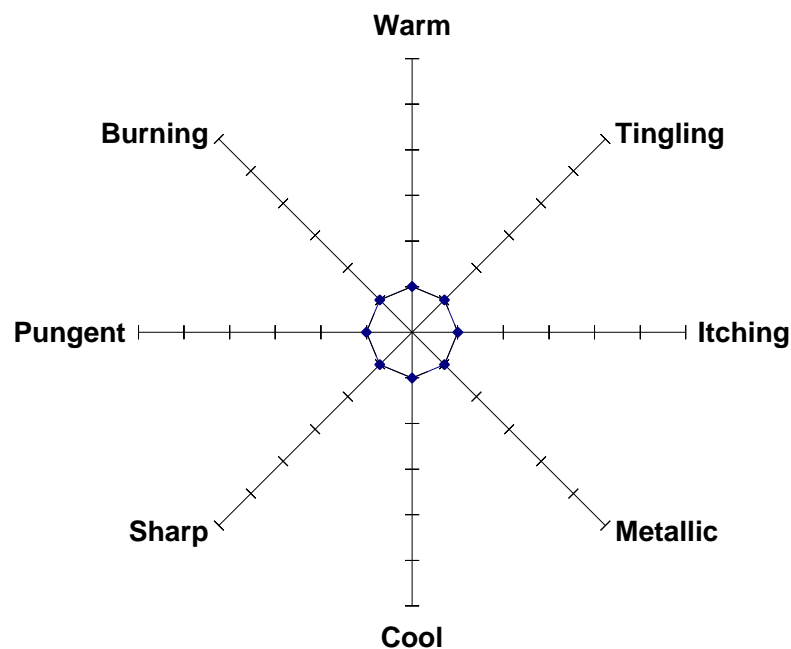
Client: Service Engineering Group

Project: 05017-0207

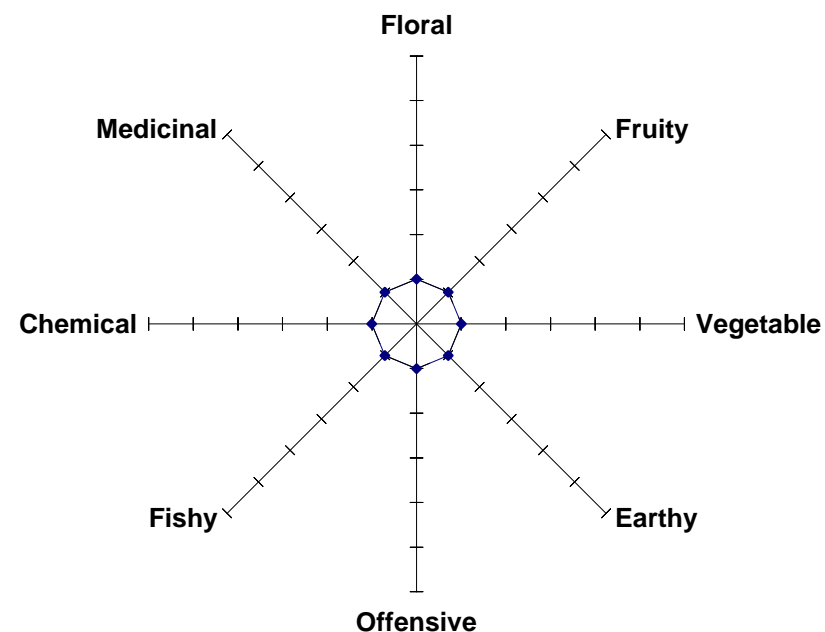
Report No.: **532201**

Evaluation Date: 11/18/05

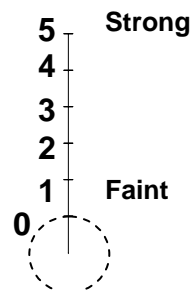
[illegible]

Client: Service Engineering GroupField No.: 10029-1M-(0-2)Report No.: **532201**Project: 05017-0207Description: 0-2 hour odor sampleEvaluation Date: 11/18/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 10029-1M-(0-2)

Report No.: **532201**

Project: 05017-0207

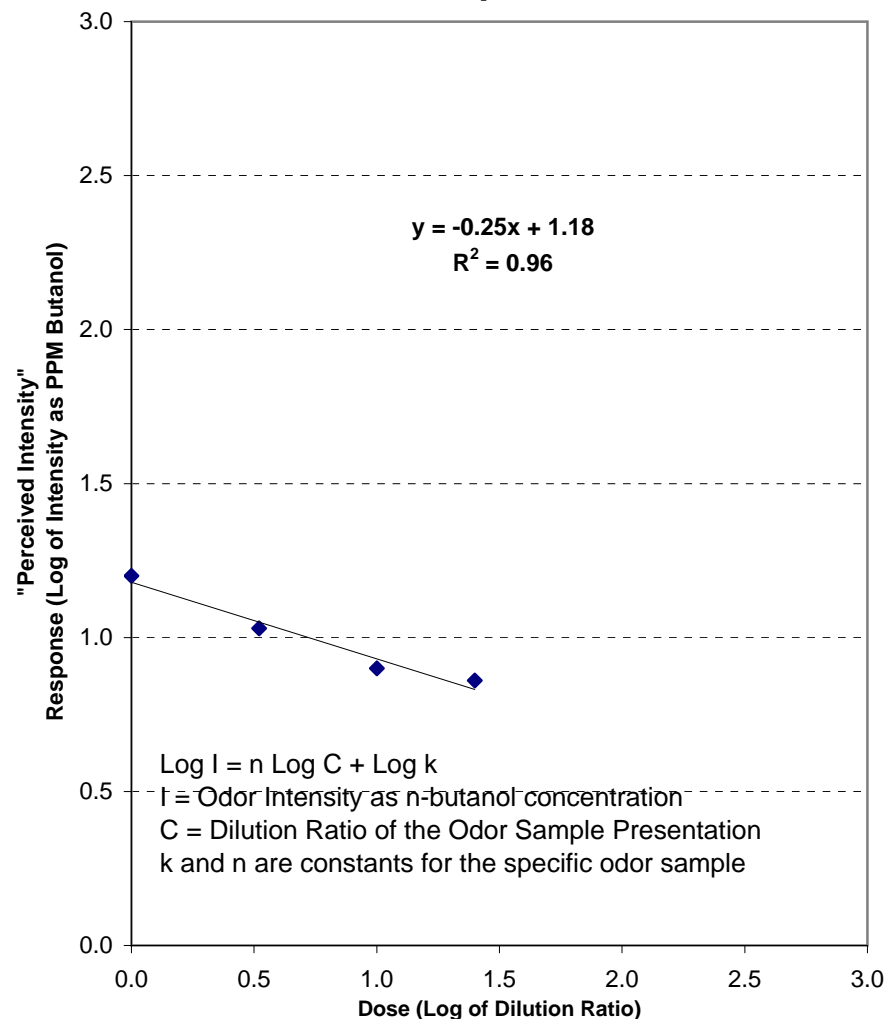
Description: 0-2 hour odor sample

Evaluation Date: 11/18/05

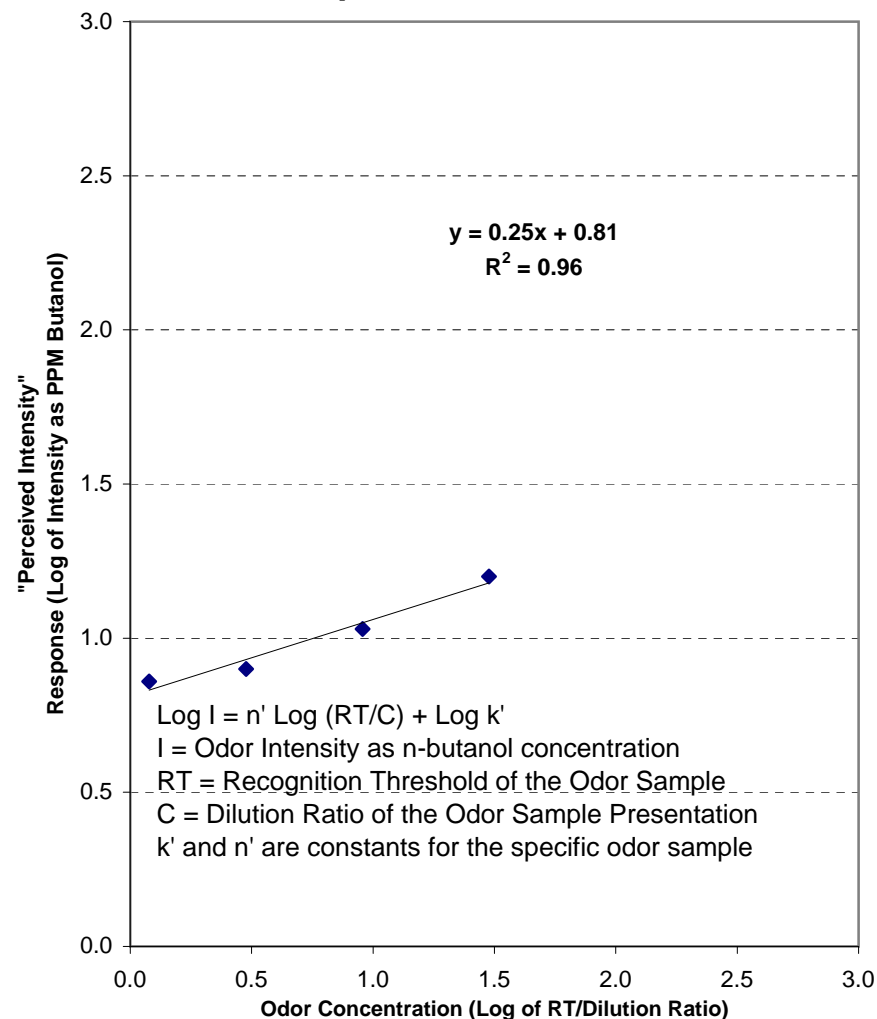
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 10029-1M-(0-2)Report No.: 532201Project: 05017-0207Description: 0-2 hour odor sampleEvaluation Date: 11/18/05

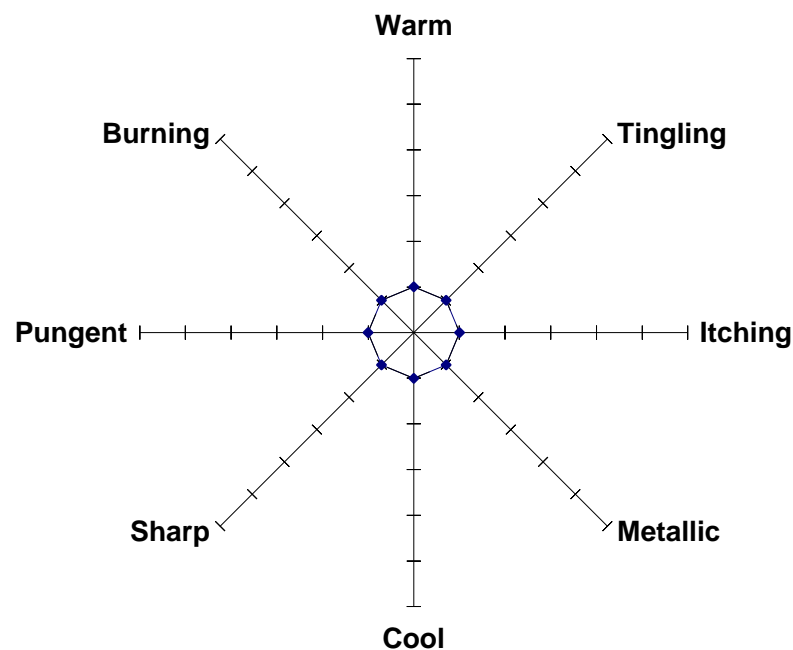
### Dose-Response



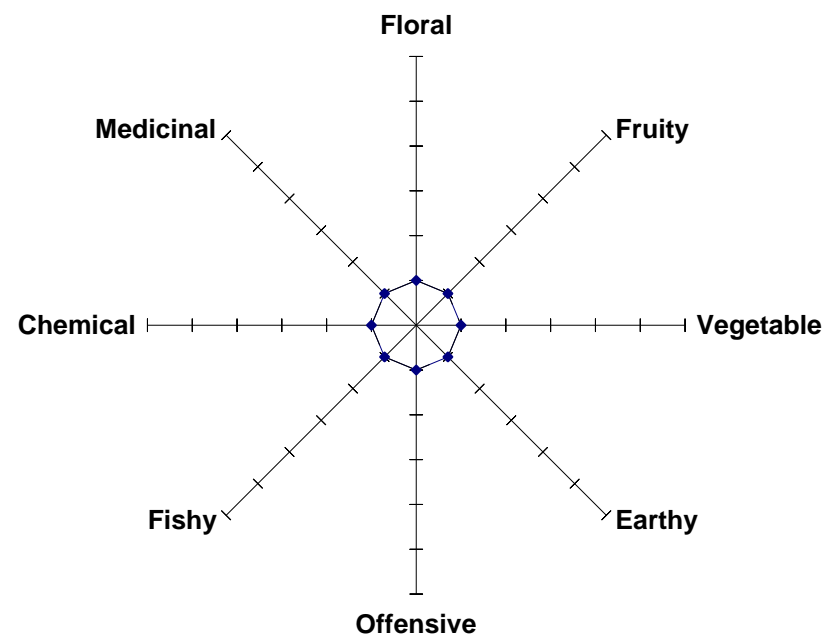
### Dose-Response as Power Law



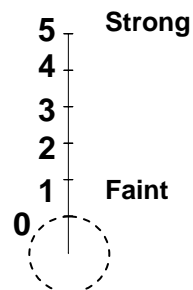


Client: Service Engineering GroupField No.: 10029-1M-(2-6)Report No.: 532201Project: 05017-0207Description: 2-6 hour odor sampleEvaluation Date: 11/18/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 10029-1M-(2-6)

Report No.: **532201**

Project: 05017-0207

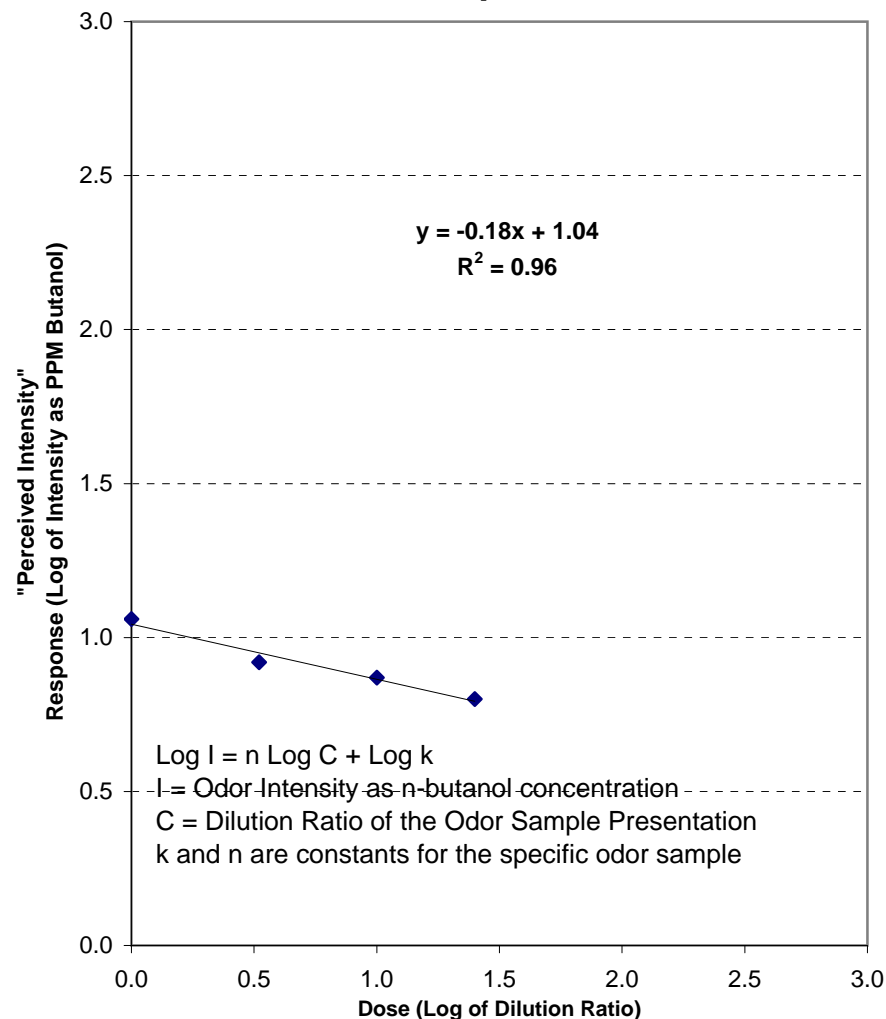
Description: 2-6 hour odor sample

Evaluation Date: 11/18/05

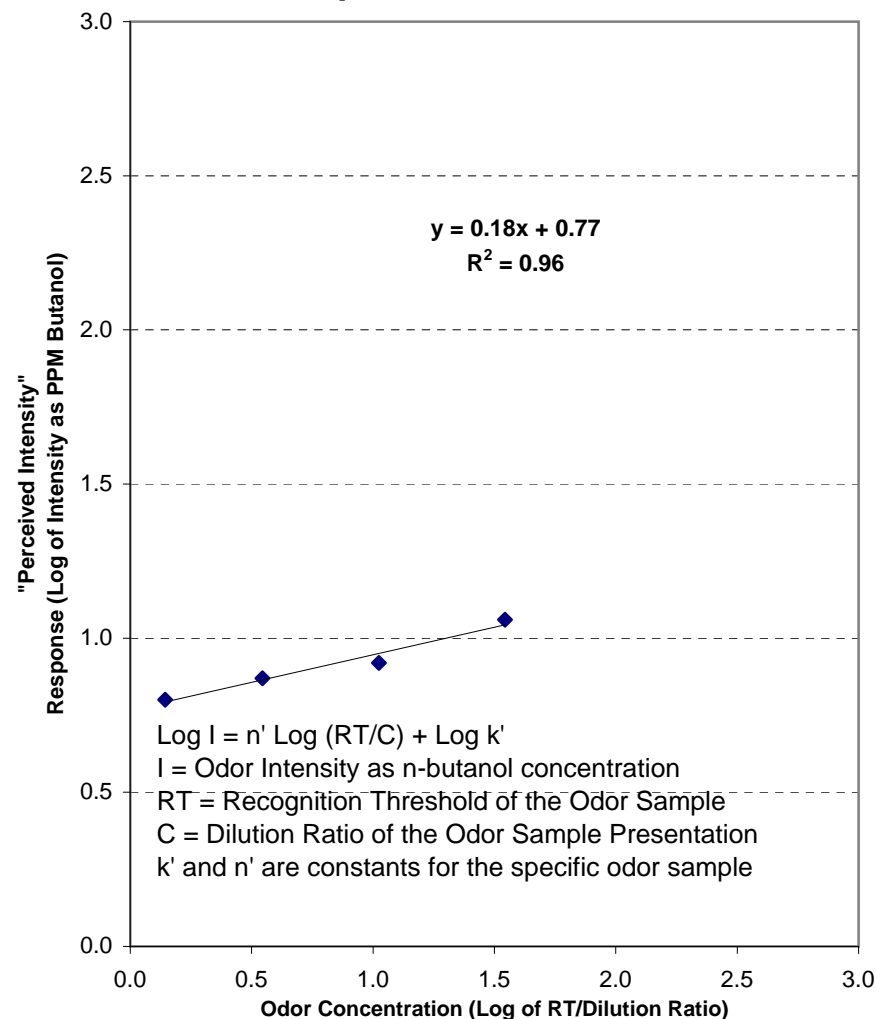
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

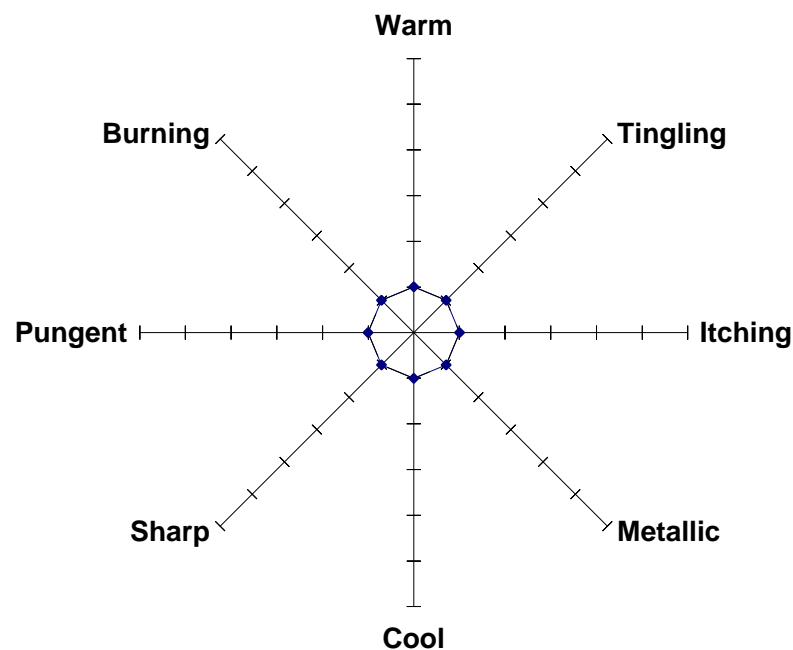
Client: Service Engineering GroupField No.: 10029-1M-(2-6)Report No.: 532201Project: 05017-0207Description: 2-6 hour odor sampleEvaluation Date: 11/18/05

### Dose-Response

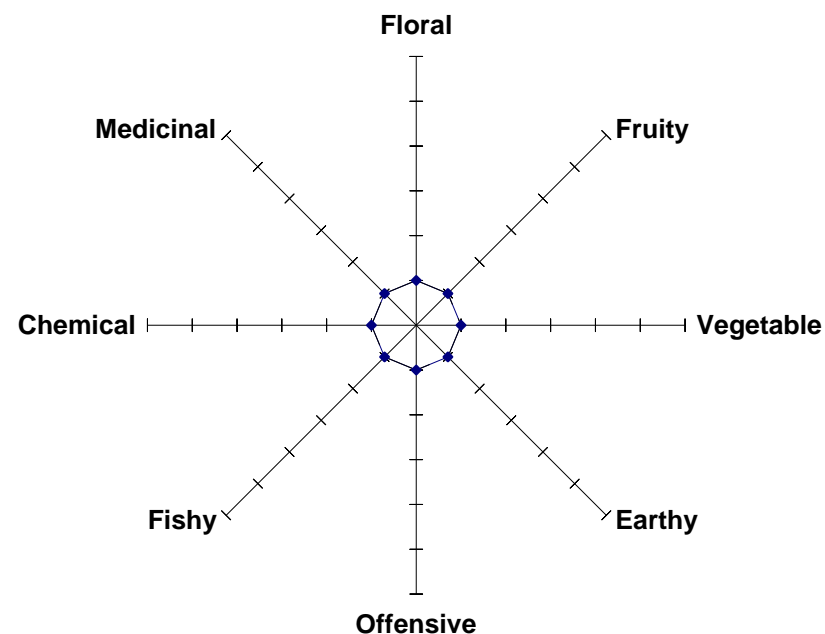


### Dose-Response as Power Law

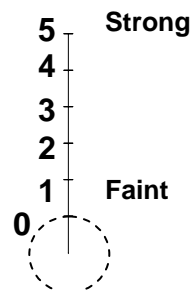


Client: Service Engineering GroupField No.: 10029-1M-(6-22)Report No.: **532201**Project: 05017-0207Description: 6-22 hour odor sampleEvaluation Date: 11/18/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 10029-1M-(6-22)

Report No.: **532201**

Project: 05017-0207

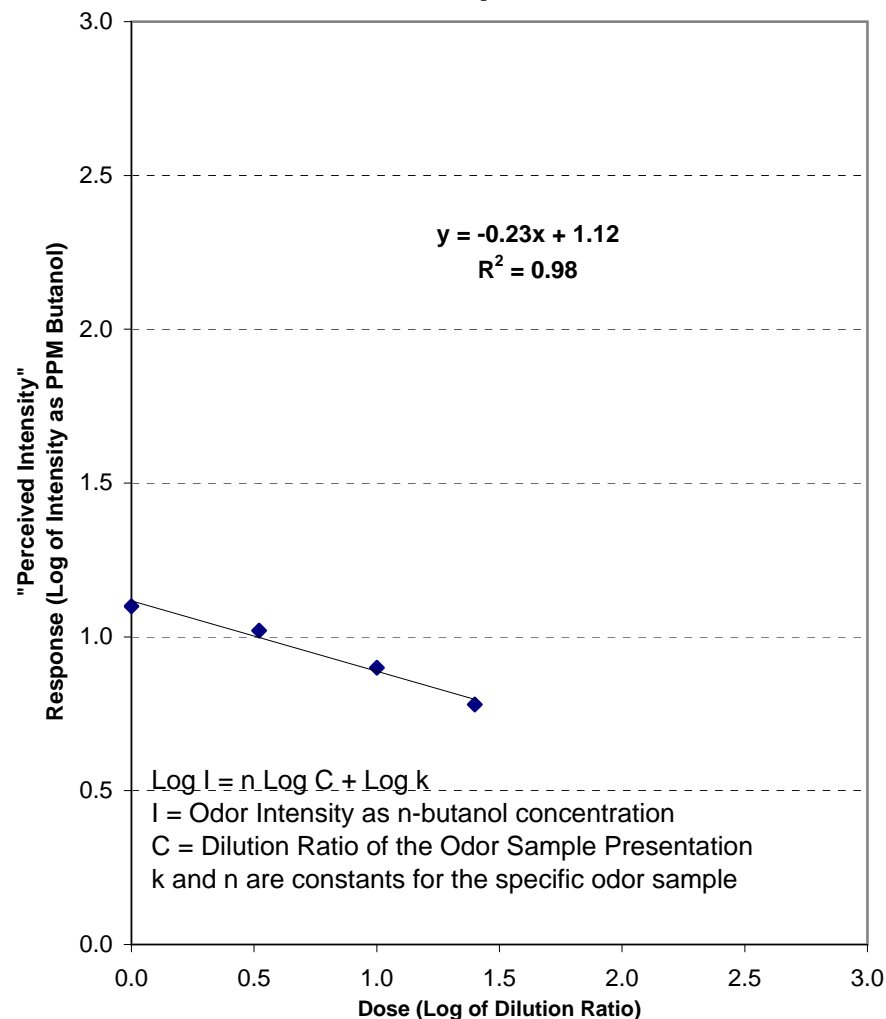
Description: 6-22 hour odor sample

Evaluation Date: 11/18/05

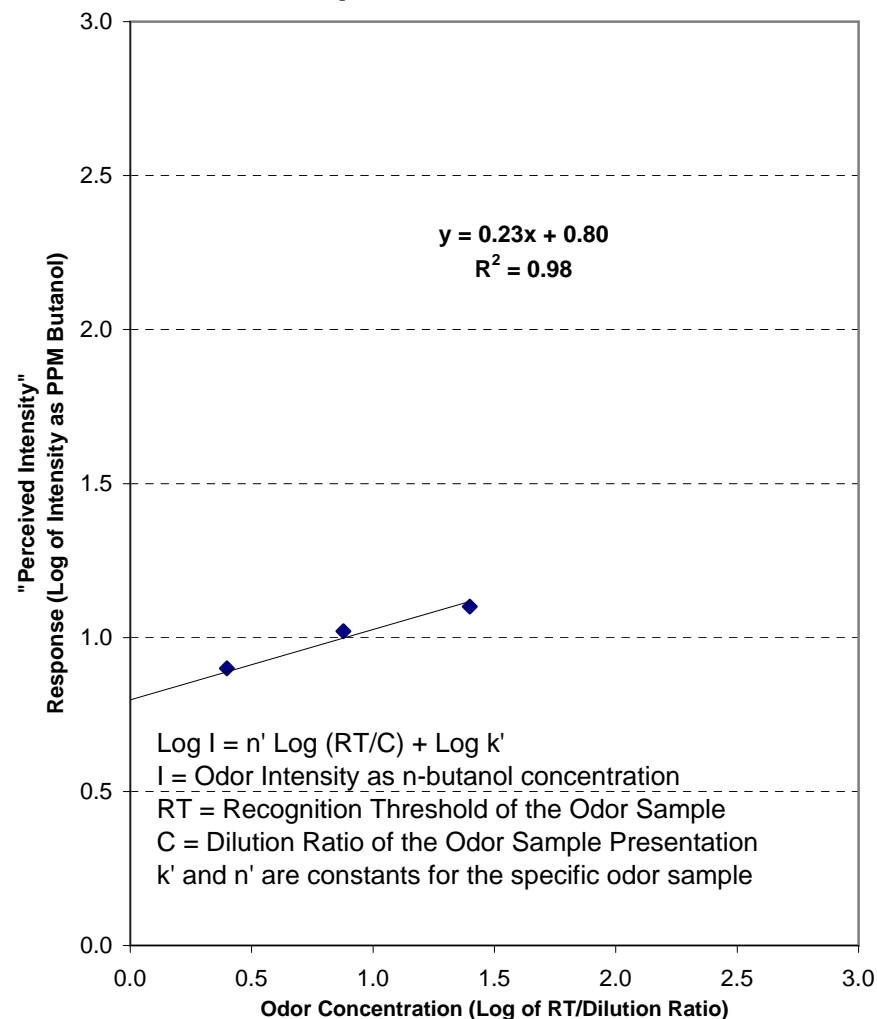
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 10029-1M-(6-22)Report No.: 532201Project: 05017-0207Description: 6-22 hour odor sampleEvaluation Date: 11/18/05

### Dose-Response



### Dose-Response as Power Law



# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES



Client: SERVICE Engr Grp		Sampled By: <i>William P. Hoff</i>		Odor Evaluations Requested: (X)				Page 1 of 1			
Project Name: 05017-0207		Sampling Date: 11/17 - 11/18/05		Odor Concentration (DT, RT)		Odor Intensity (PPM)		Odor Characterization (Hedonic Tone & Descriptors)		Odor Persistence ("Dose-Response")	
Comments:											
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	LN	FN	Odor Evaluation Report No.
1	10029-1M-(0-2)	0-2 hour odor sample	11/17/05 12:52		X	X		X			
2	10029-1M-(2-6)	2-6 hour odor sample	11/17/05 16:55		X	X		X			
3	10029-1M-(6-22)	6-22 hour odor sample	11/18/05 07:50		X	X		X			
4											
5											
6											
7											
8											
9											
10											

## Transfer & Shipping Information

Number of "Air-Pacs" / Shipping Boxes \_\_\_\_\_

Relinquished By: <i>William P. Hoff</i>	Date: 11/18/05	Time: 08:17	Accepted By:	Date:	Time:	Comments & Exceptions Noted
Received at St. Croix Sensory Laboratory			11/18/05		8:50	

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.





St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207

Odor Evaluation Report

Report No. 532301

11/19/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation  
and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal  
customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make  
your project or product a success.

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3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 532301

Project: 05017-0207

Evaluation Date: 11/19/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	10029-1Q-(0-2)	0-2 Hour Odor Sample	45	30	18	-0.28			
2	10029-1Q-(2-6)	2-6 Hour Odor Sample	45	30	21	-0.32			
3	10029-1Q-(6-22)	6-22 Hour Odor Sample	25	15	21	-0.24			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

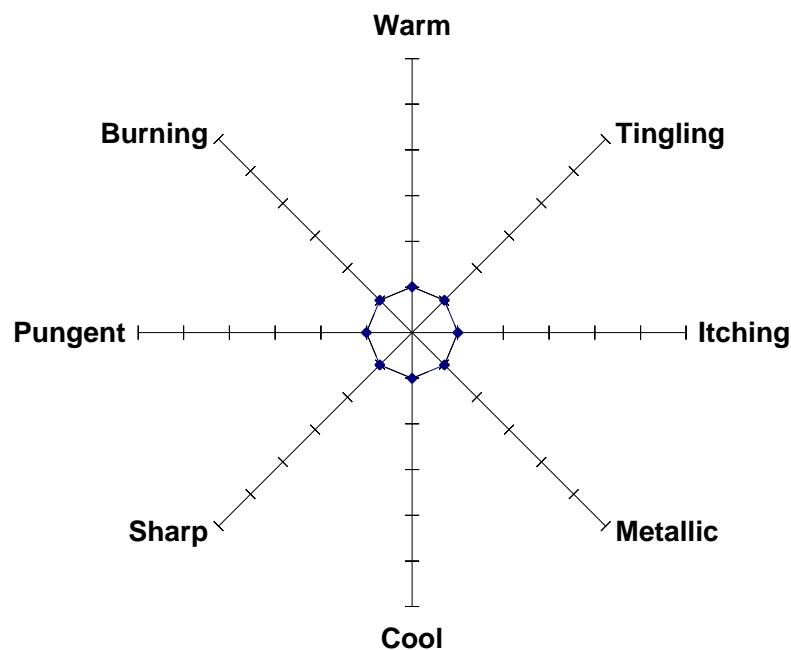
Client: SERVICE Engineering Group

Project: 05017-0207

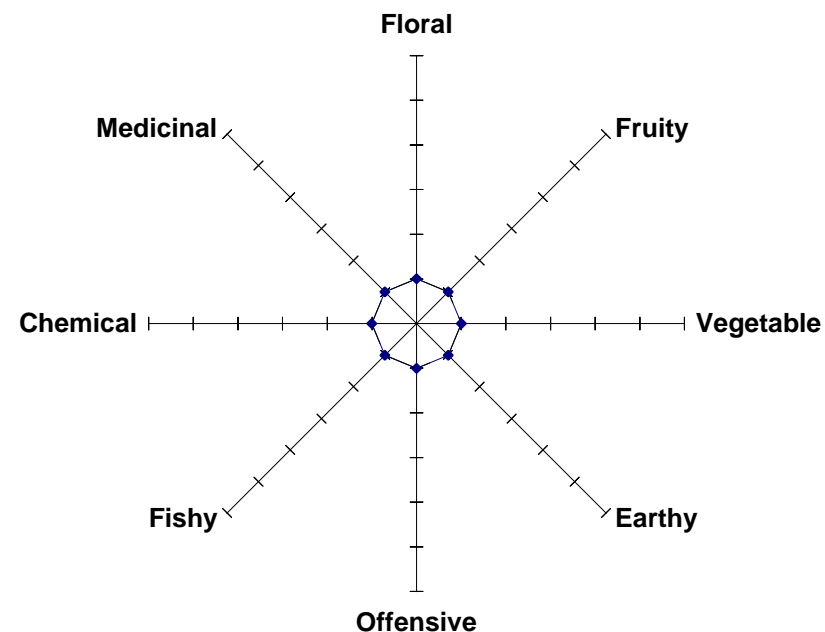
Report No.: **532301**

Evaluation Date: 11/19/05

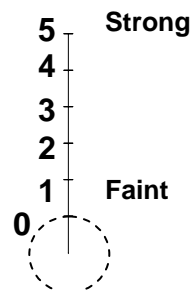
[illegible]

Client: SERVICE Engineering GroupField No.: 10029-1Q-(0-2)Report No.: 532301Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 11/19/05**Sensation Descriptor Graph**

	Average Relative Strength
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

	Average Relative Strength
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 10029-1Q-(0-2)

Report No.: **532301**

Project: 05017-0207

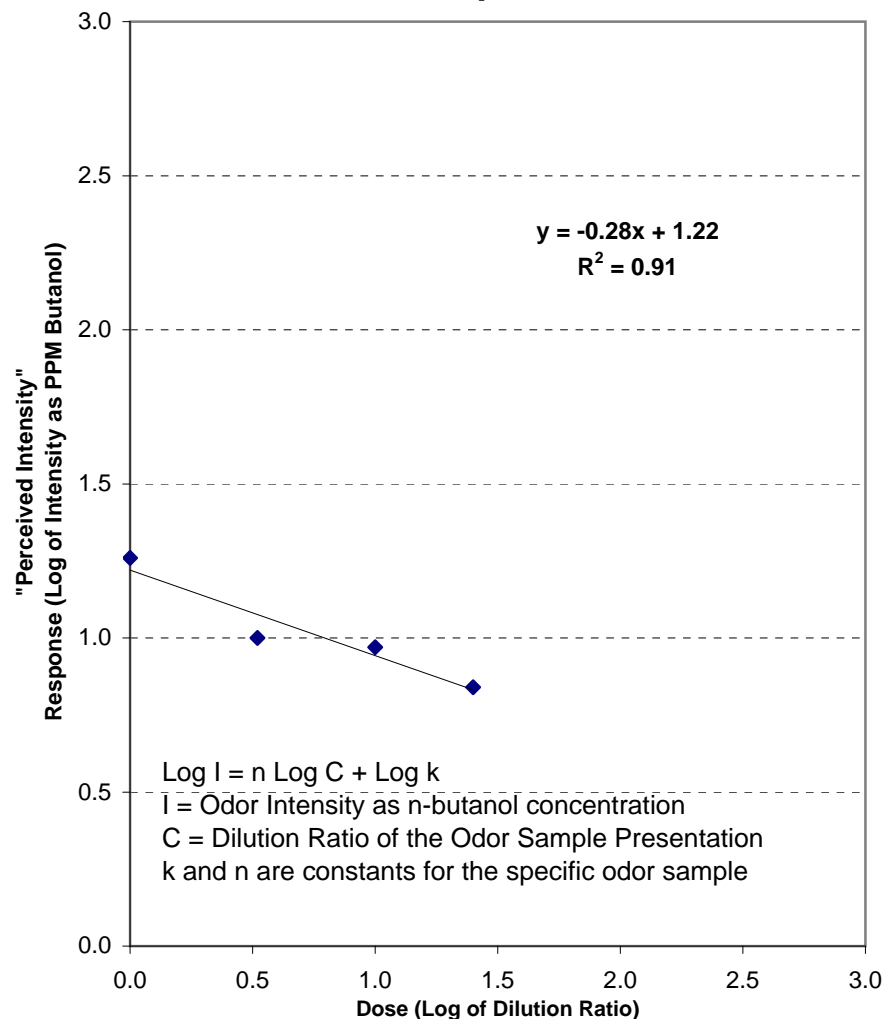
Description: 0-2 Hour Odor Sample

Evaluation Date: 11/19/05

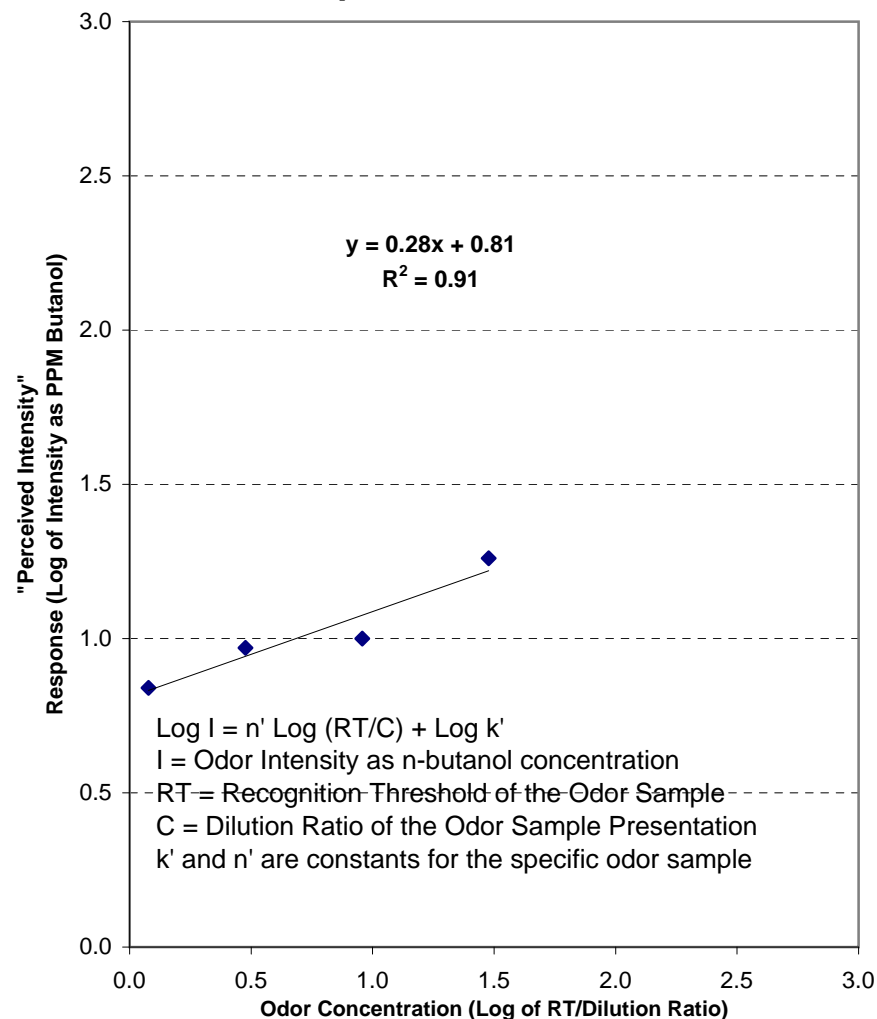
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

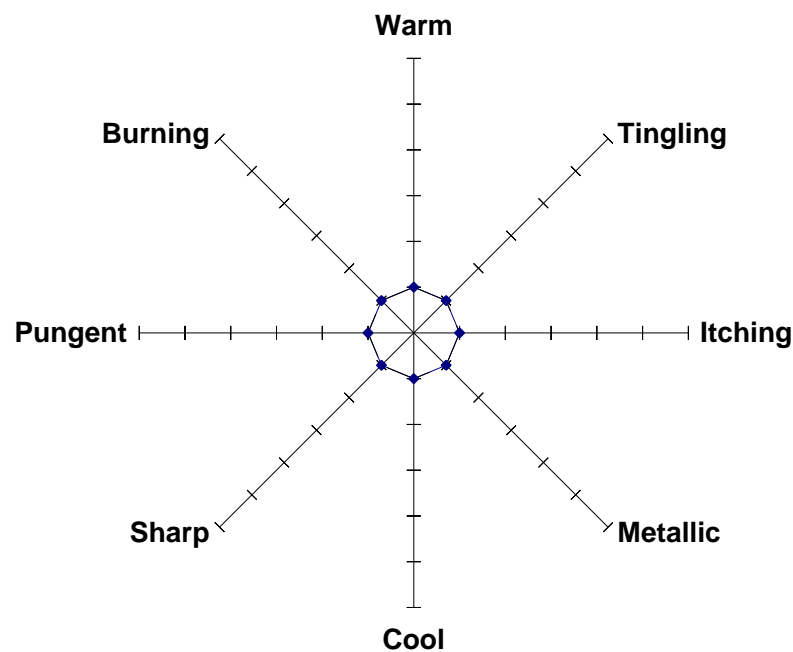
Client: SERVICE Engineering GroupField No.: 10029-1Q-(0-2)Report No.: 532301Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 11/19/05

### Dose-Response

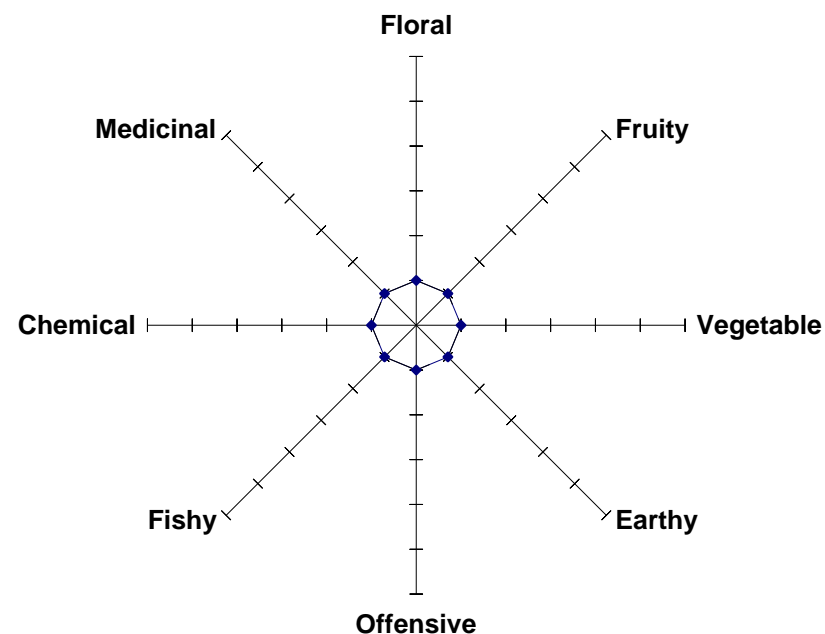


### Dose-Response as Power Law

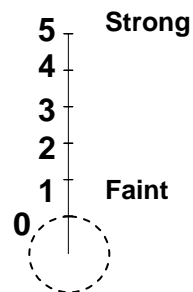


Client: SERVICE Engineering GroupField No.: 10029-1Q-(2-6)Report No.: **532301**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/19/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 10029-1Q-(2-6)

Report No.: **532301**

Project: 05017-0207

Description: 2-6 Hour Odor Sample

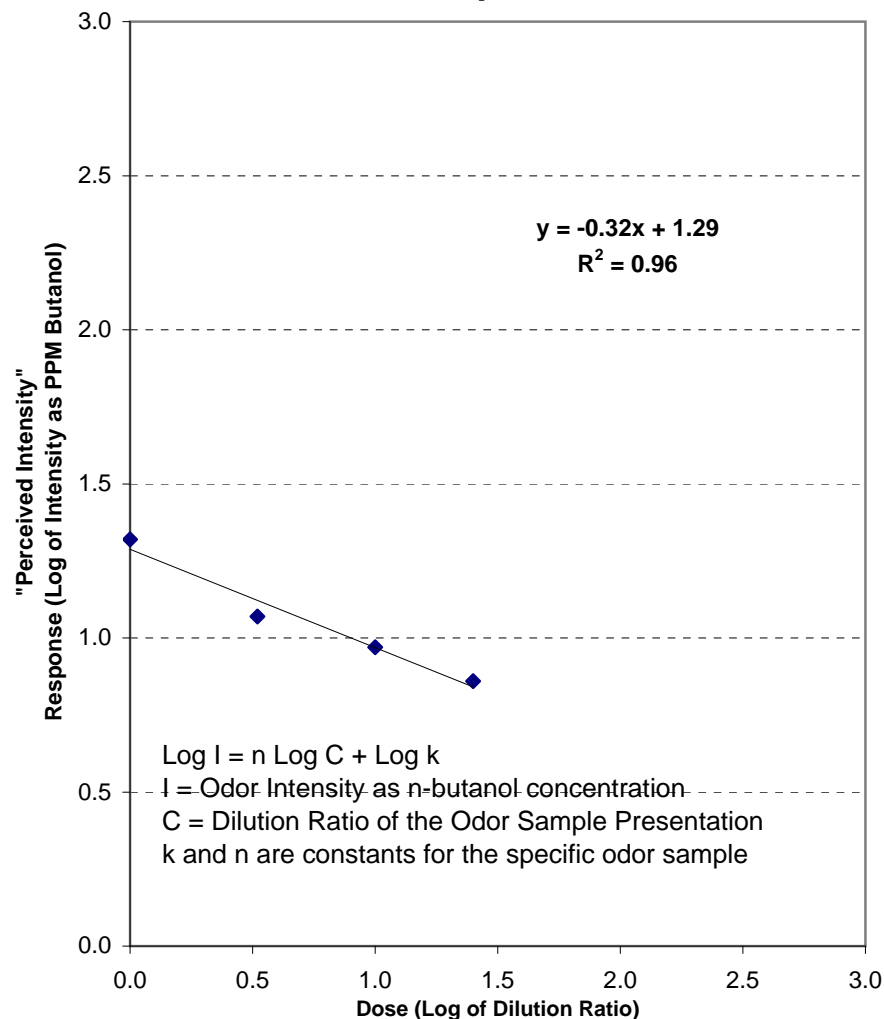
Evaluation Date: 11/19/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

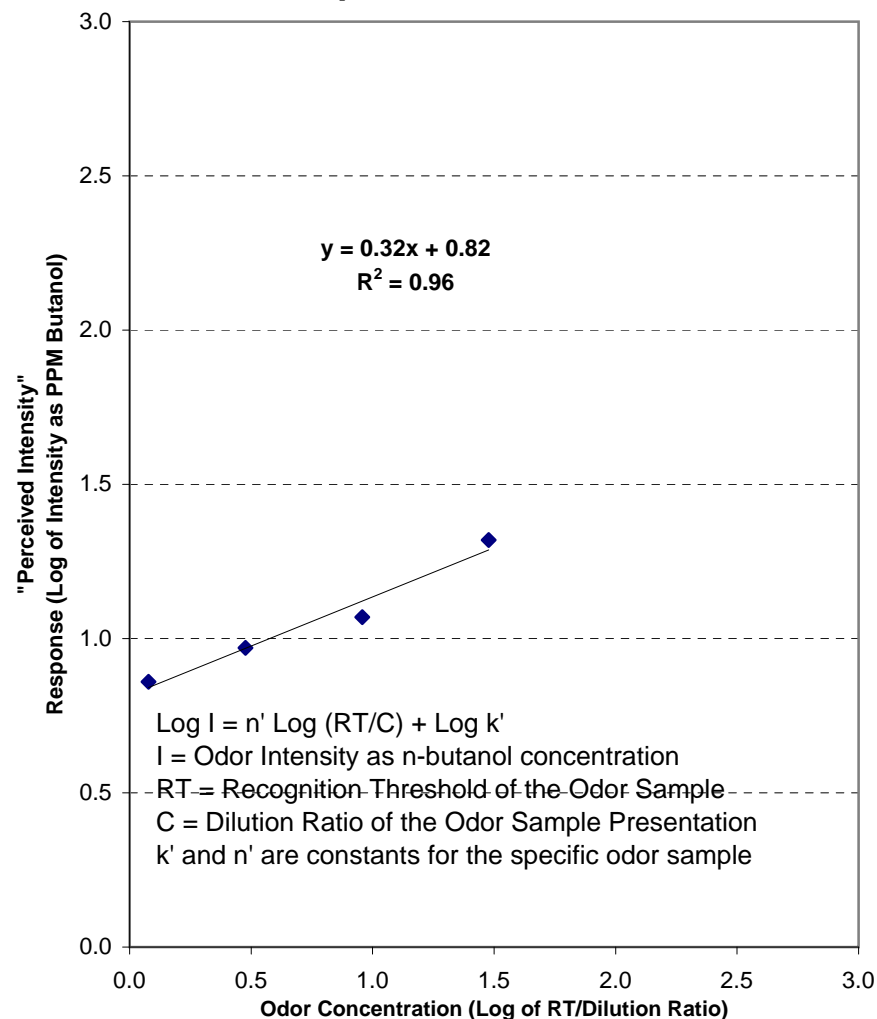


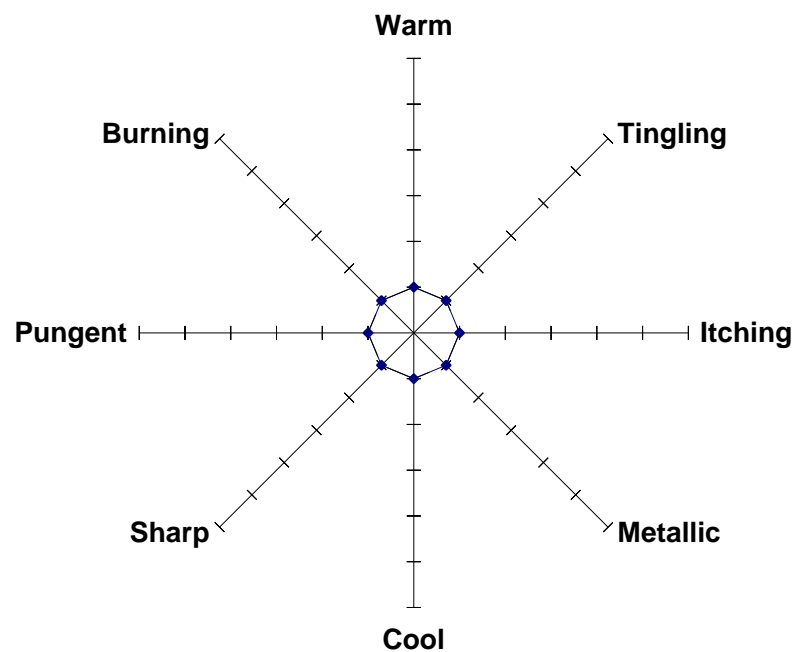
Client: SERVICE Engineering GroupField No.: 10029-1Q-(2-6)Report No.: 532301Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/19/05

### Dose-Response

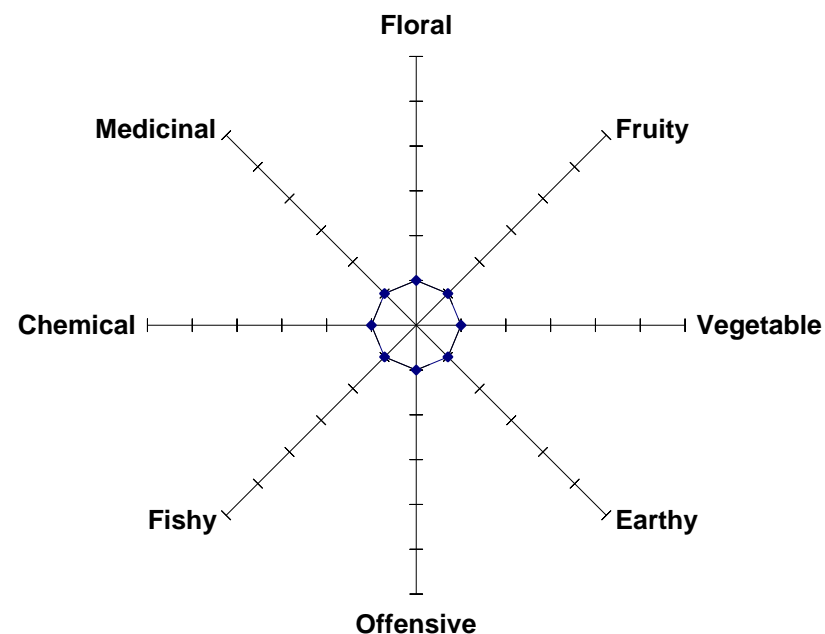


### Dose-Response as Power Law

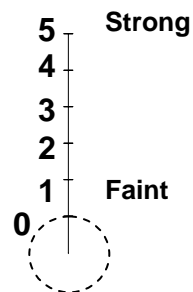


Client: SERVICE Engineering GroupField No.: 10029-1Q-(6-22)Report No.: **532301**Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/19/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 10029-1Q-(6-22)

Report No.: **532301**

Project: 05017-0207

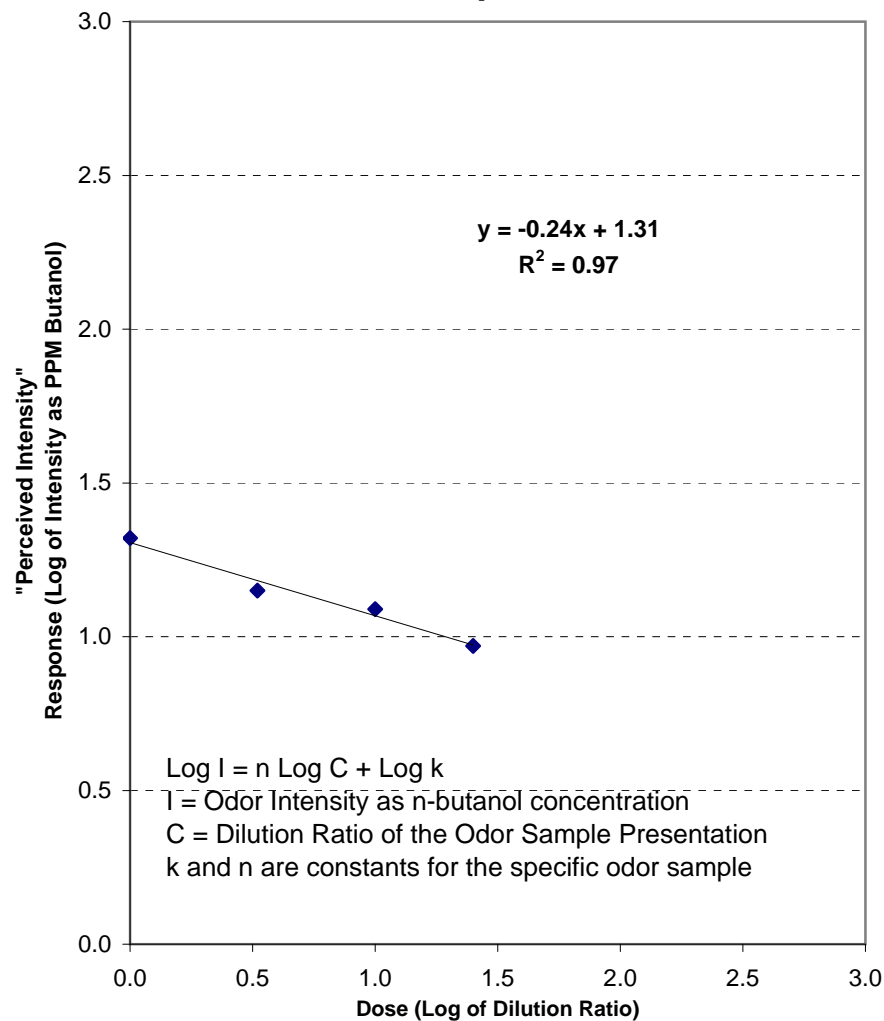
Description: 6-22 Hour Odor Sample

Evaluation Date: 11/19/05

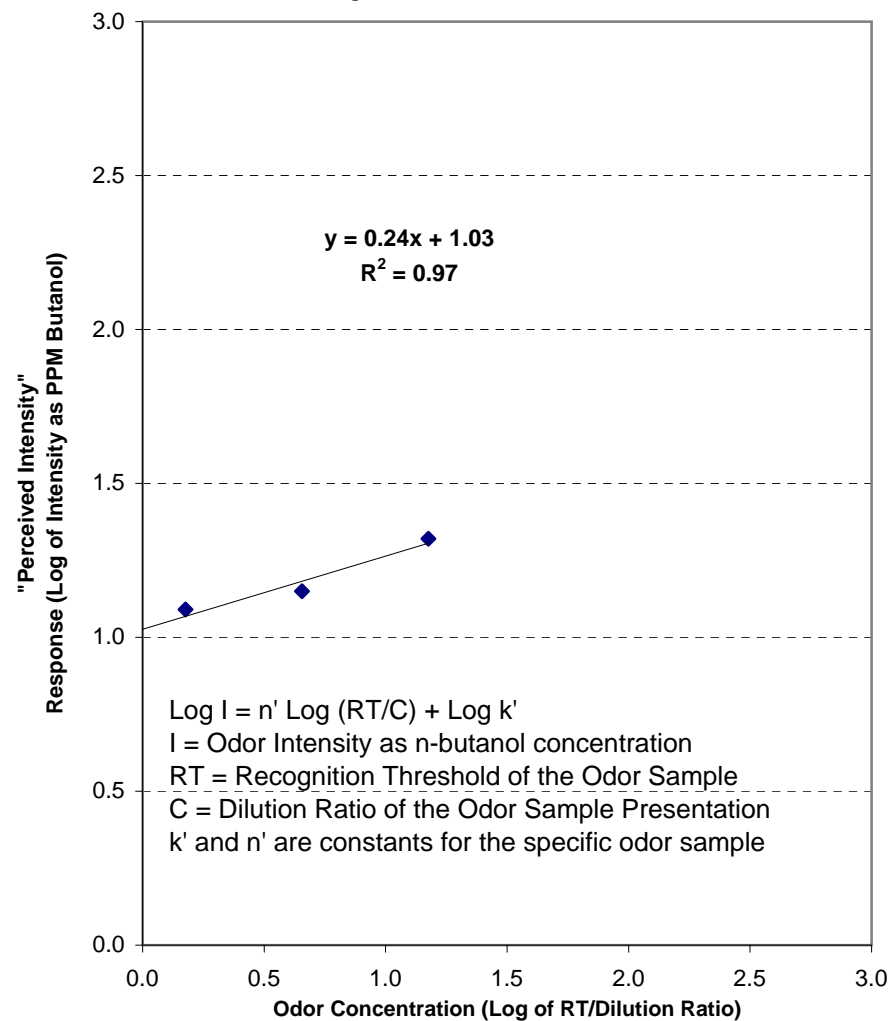
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 10029-1Q-(6-22)Report No.: 532301Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/19/05

### Dose-Response



### Dose-Response as Power Law



CHAIN OF CUSTODY RECORD  
FOR ODOR SAMPLES

Client: SERVICE Engr Gvp		Sampled By: <i>William C. Hef</i>		Odor Evaluations Requested: (X)				Page ___ of ___					
Project Name: 05017 - 0207		Sampling Date: 11/18 - 11/19/05		Odor Concentration (DT, RT)		Odor Intensity (PPM)		Odor Characterization (Hedonic Tone & Descriptors)		Odor Persistence ("Dose-Response")		For Laboratory use Only	
Comments:												Odor Evaluation Report No.	
												Laboratory Sample No.	
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	LN	FN			
1	10029-1Q-(0-2)	0-2 hour odor sample	11/18/05 11:18		X	X		X					
2	10029-1Q-(2-6)	2-6 hour odor sample	11/18/05 15:26		X	X		X					
3	10029-1Q-(6-22)	6-22 hour odor sample	11/19/05 07:18		X	X		X					
4													
5													
6													
7													
8													
9													
10													

## Transfer &amp; Shipping Information

Number of "Air-Pacs" /

Shipping Boxes \_\_\_\_\_

Relinquished By: <i>William C. Hef</i>	Date: 11/19/05	Time: 08:15	Accepted By:	Date:	Time:	Comments & Exceptions Noted
Received at St. Croix Sensory Laboratory			11/25/05 9:08			

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 612-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

LAB COPIES WHITE &amp; YELLOW

CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 533303

11/29/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make your project or product a success.

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Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

**St. Croix Sensory, Inc.**
**Odor Evaluation Report**

 Client: Service Engineering Group

 Report No.: 533303

 Project: 05017-0207

 Evaluation Date: 11/29/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	60028-IN-(0-2)	0-2 Hour Odor Sample	110	60	12	-0.07			
2	60028-IN-(2-6)	2-6 Hour Odor Sample	85	55	13	-0.15			
3	60028-IN-(6-22)	6-22 Hour Odor Sample	95	50	15	-0.23			



**St. Croix Sensory, Inc.**

## Odor Evaluation Report

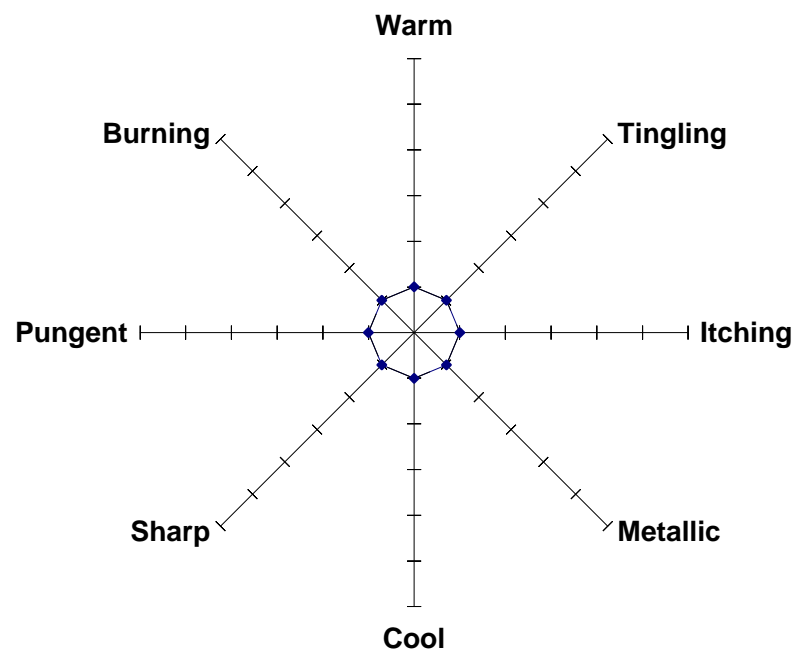
Client: Service Engineering Group

Project: 05017-0207

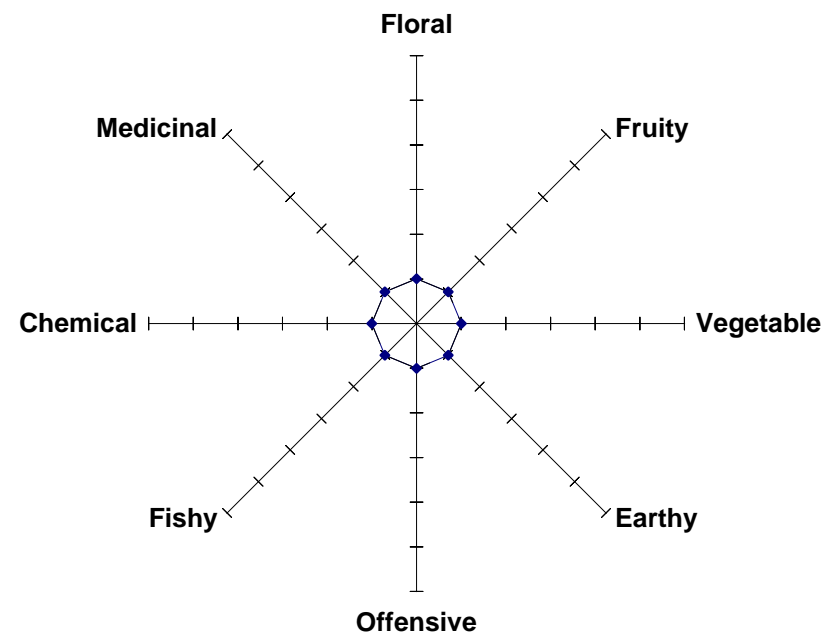
Report No.: **533303**

Evaluation Date: 11/29/05

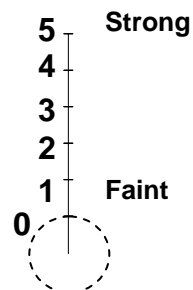
[illegible]

Client: Service Engineering GroupField No.: 60028-IN-(0-2)Report No.: 533303Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 11/29/05**Sensation Descriptor Graph**

	Average Relative Strength
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

	Average Relative Strength
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-IN-(0-2)

Report No.: **533303**

Project: 05017-0207

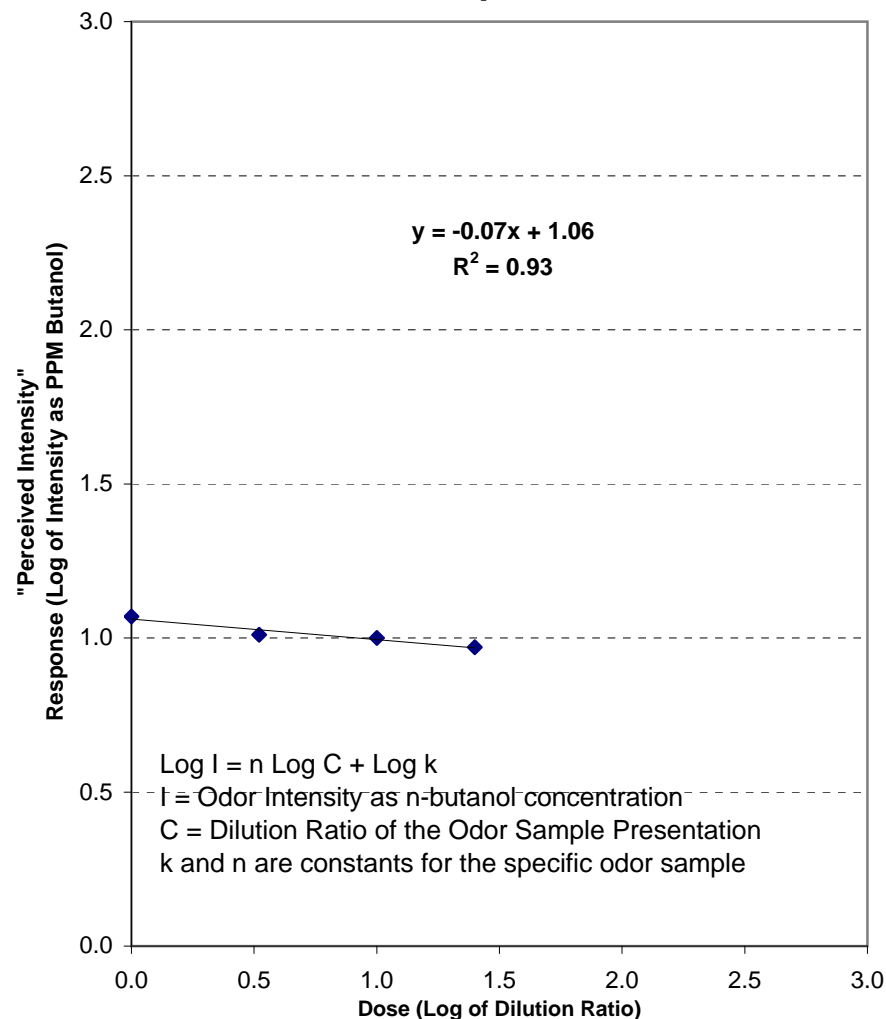
Description: 0-2 Hour Odor Sample

Evaluation Date: 11/29/05

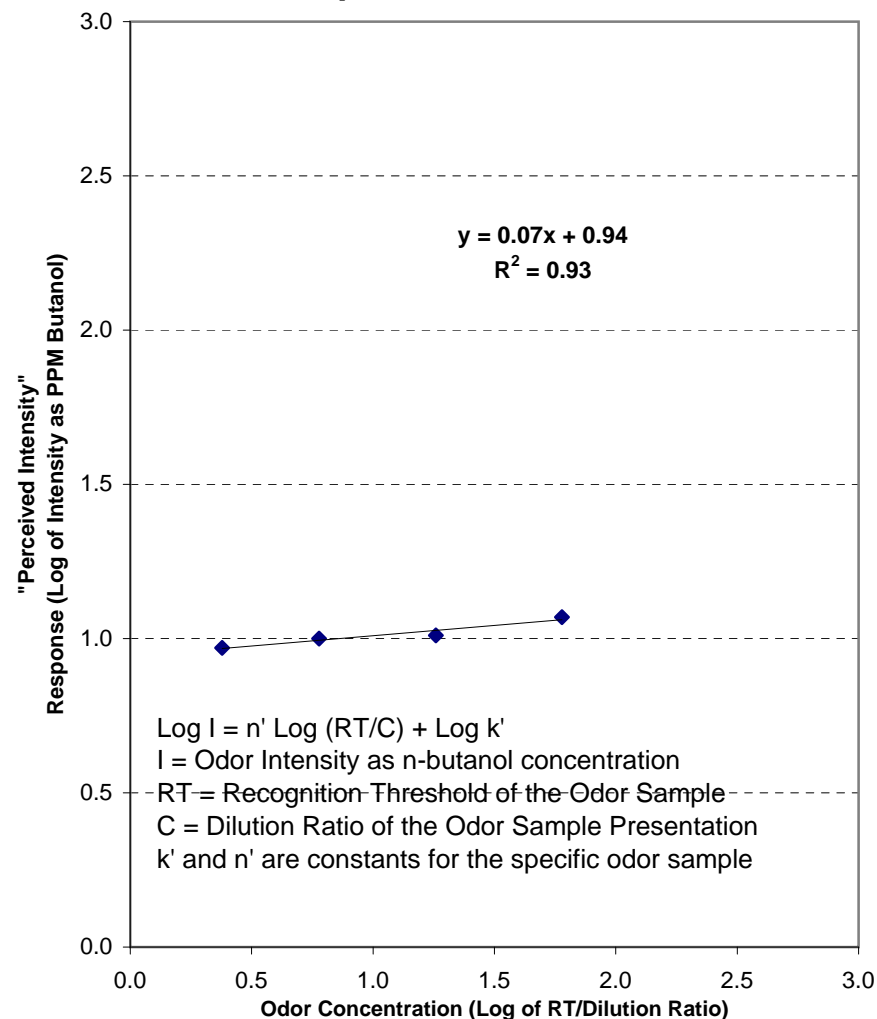
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

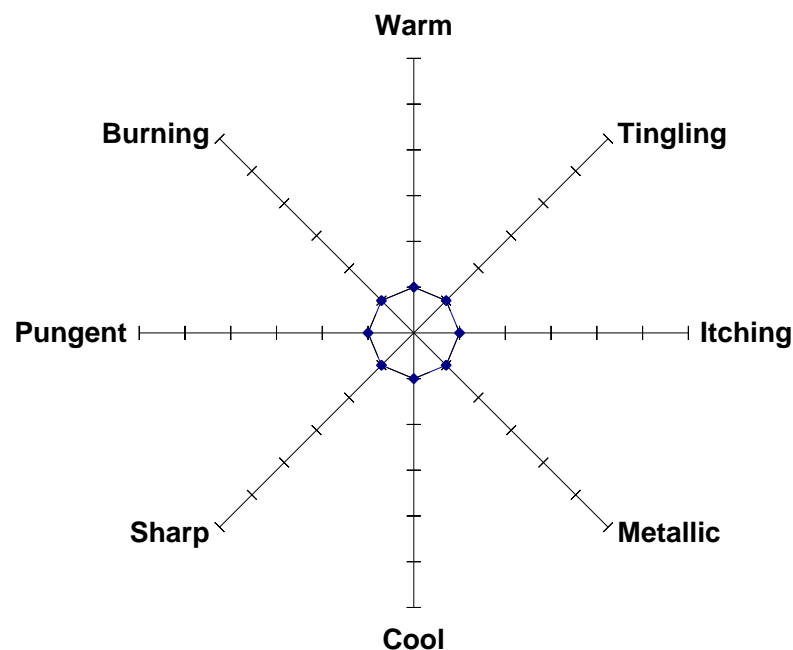
Client: Service Engineering GroupField No.: 60028-IN-(0-2)Report No.: 533303Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 11/29/05

### Dose-Response

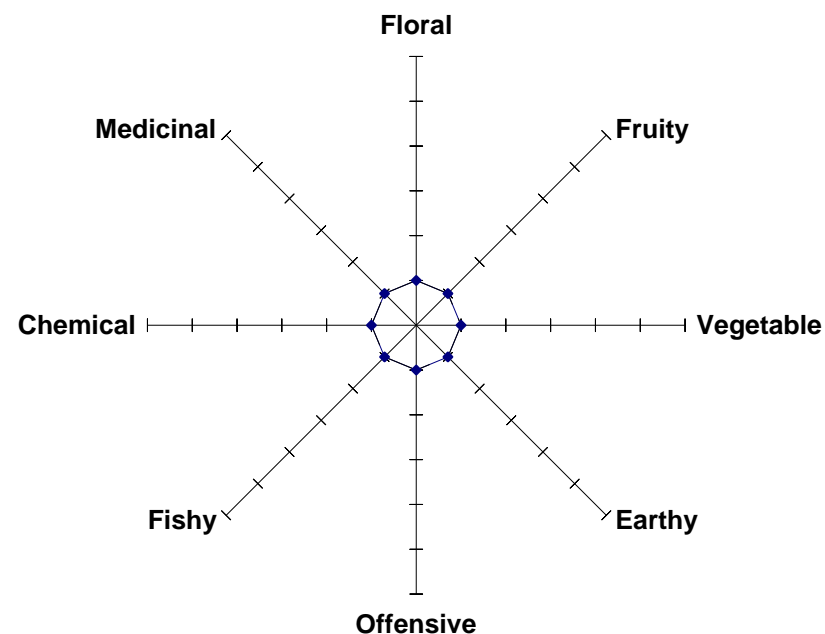


### Dose-Response as Power Law

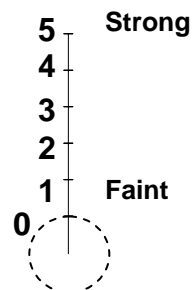


Client: Service Engineering GroupField No.: 60028-IN-(2-6)Report No.: 533303Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/29/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-IN-(2-6)

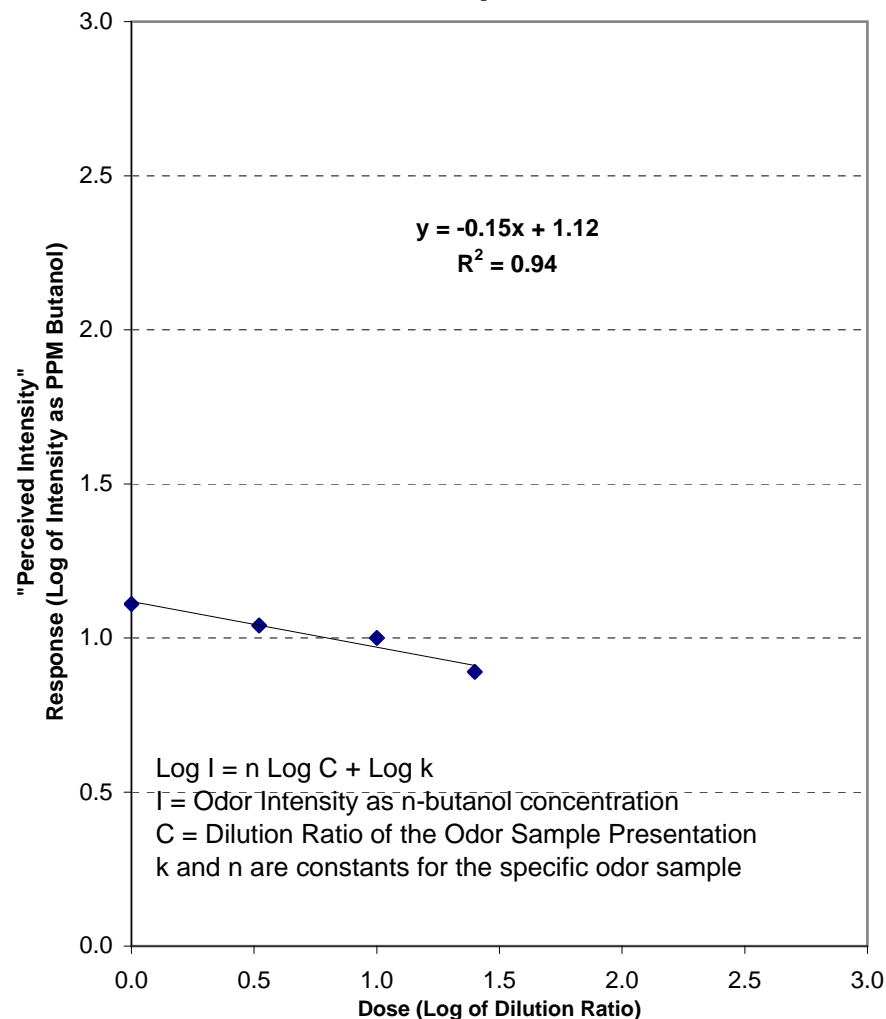
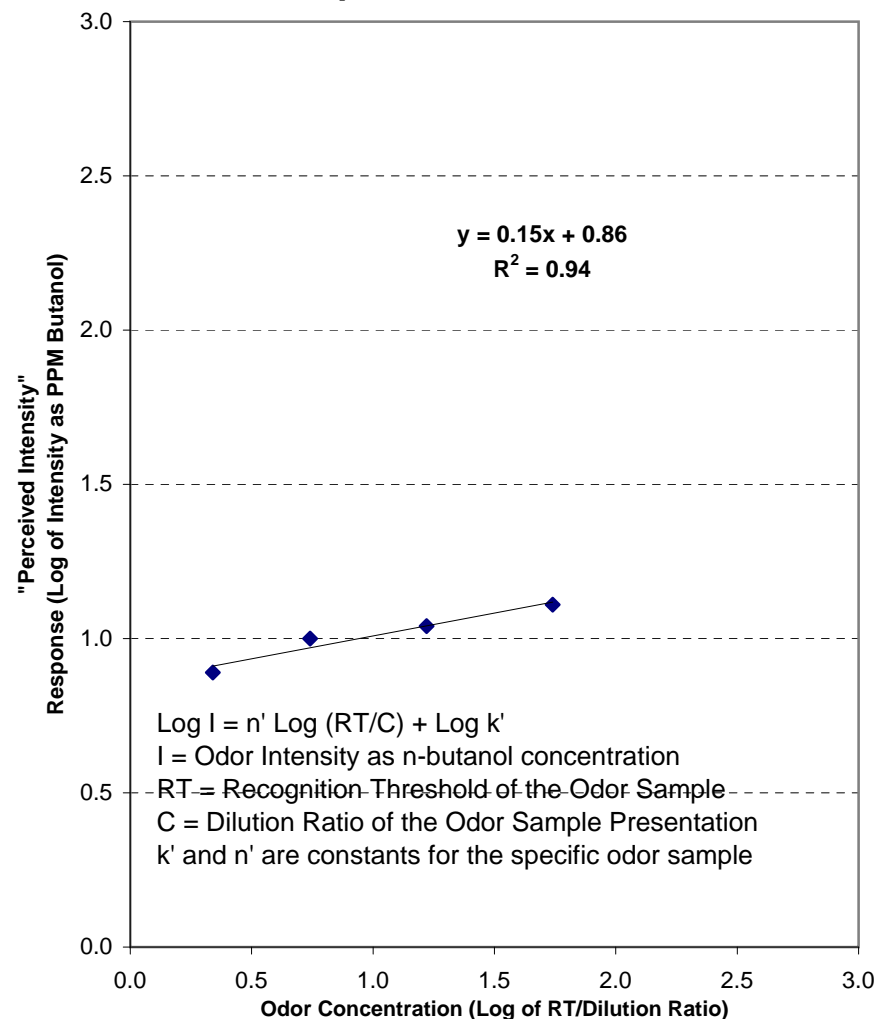
Report No.: **533303**

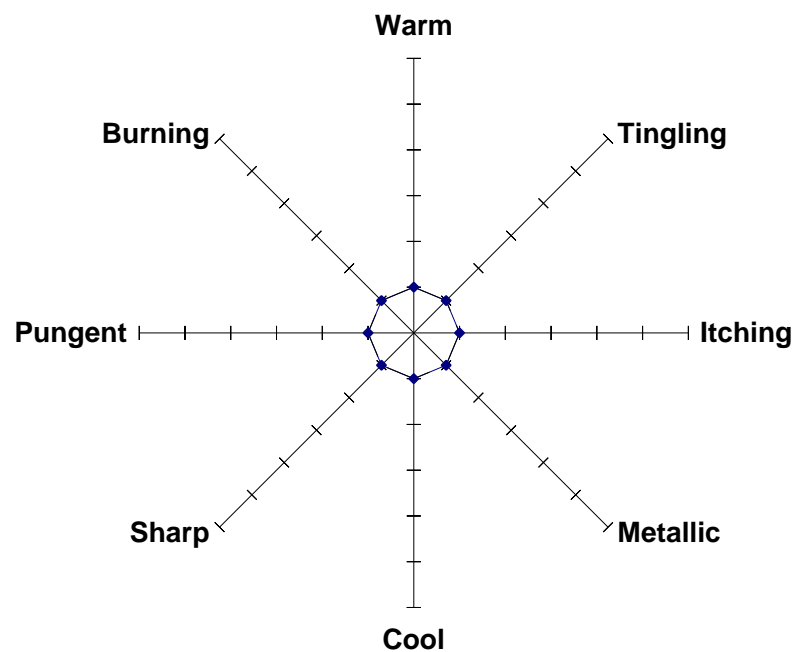
Project: 05017-0207

Description: 2-6 Hour Odor Sample

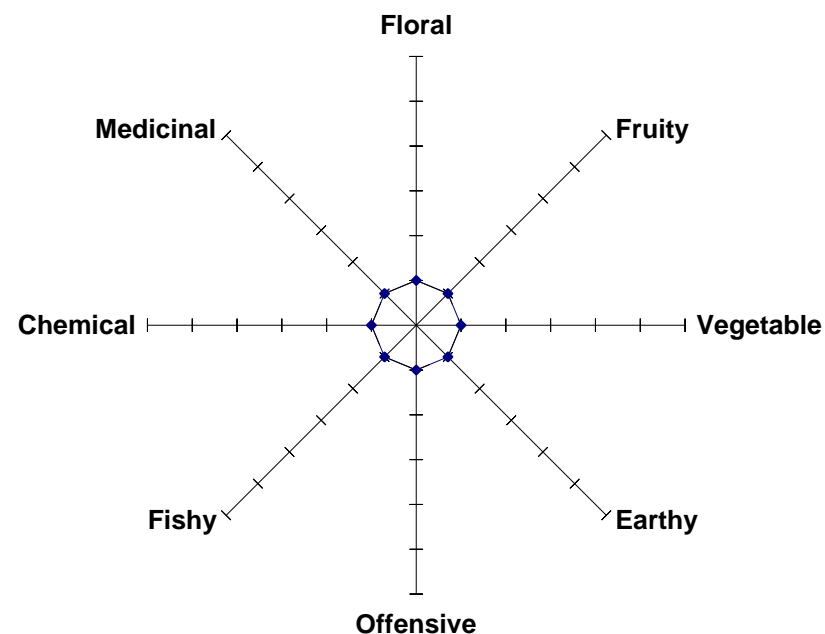
Evaluation Date: 11/29/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

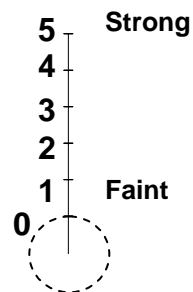
Client: Service Engineering GroupField No.: 60028-IN-(2-6)Report No.: 533303Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/29/05**Dose-Response****Dose-Response as Power Law**

Client: Service Engineering GroupField No.: 60028-IN-(6-22)Report No.: 533303Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/29/05**Sensation Descriptor Graph**

	Average Relative Strength
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

	Average Relative Strength
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-IN-(6-22)

Report No.: **533303**

Project: 05017-0207

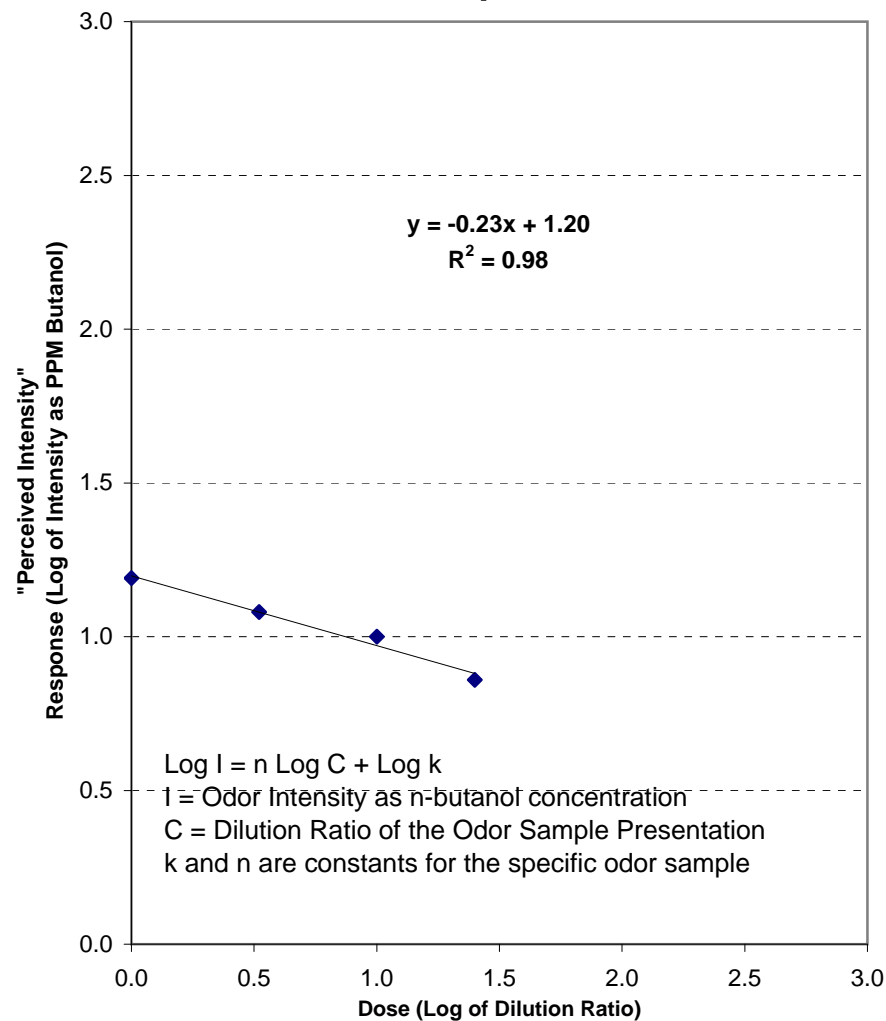
Description: 6-22 Hour Odor Sample

Evaluation Date: 11/29/05

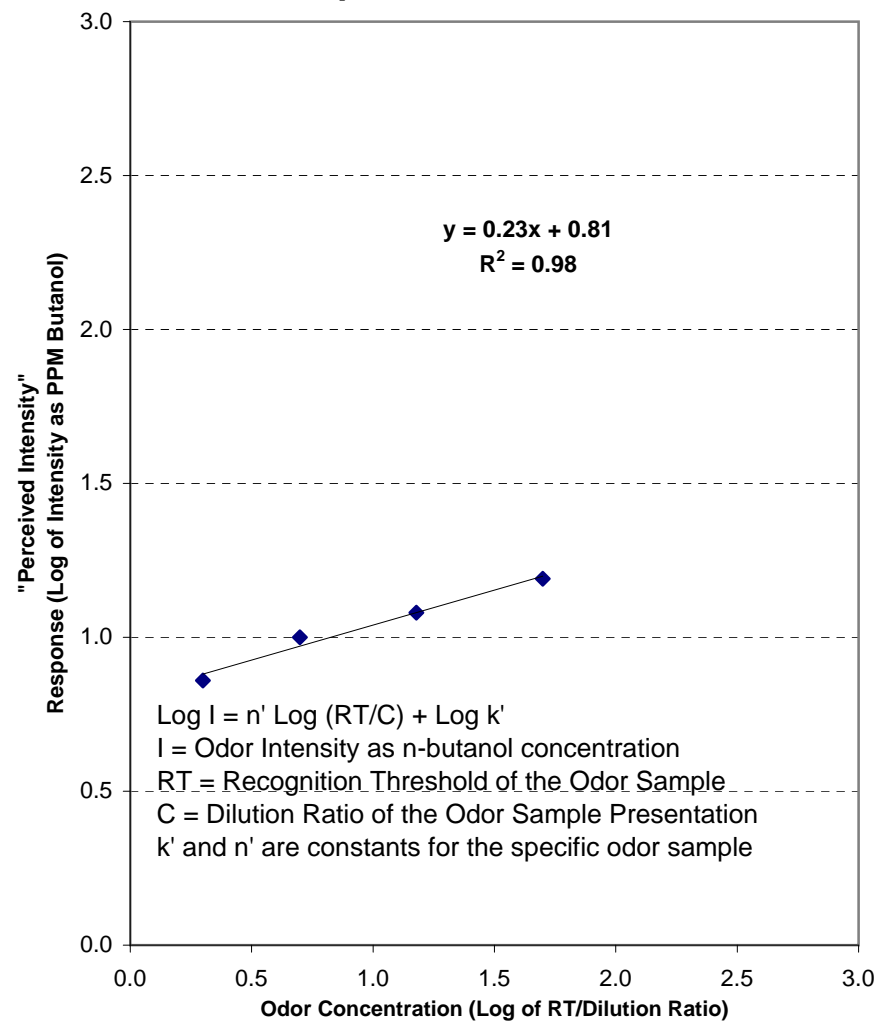
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 60028-IN-(6-22)Report No.: 533303Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/29/05

### Dose-Response



### Dose-Response as Power Law



# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES


Client: SERVICE Engr GroupSampled By: Will C. Hoff

Odor Evaluations Requested: (X)

Page 1 of 1Project Name: 05017-0207Sampling Date: 11/28 - 11/29/05

Comments:

Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (D.T. RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	LN	FN	For Laboratory use Only
1	60028-IN-(0-2)	0-2 hour odor sample	11/28/05 11:25		X	X		X			
2	60028-IN-(2-6)	2-6 hour odor sample	11/28/05 15:33		X	X		X			
3	60028-IN-(6-22)	6-22 hour odor sample	11/29/05 07:25		X	X		X			
4											
5											
6											
7											
8											
9											
10											

## Transfer & Shipping Information

 Number of  
"Air-Pacs"/  
Shipping Boxes
Relinquished By: Will C. HoffDate: 11/29/05 Time: 08:30

Accepted By:

Date:

Time:

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory


Date: 11/29/05 Time: 830

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**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 533403

11/30/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Charles M. McGinley, P.E.  
Technical Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation  
and to advancing the science of sensory perception.

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your project or product a success.

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Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 533403

Project: 05017-0207

Evaluation Date: 11/30/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	60028-10M-(0-2)	0-2 Hour Odor Sample	80	40	40	-0.39			
2	60028-10M-(2-6)	2-6 Hour Odor Sample	75	35	30	-0.29			
3	60028-10M-(6-22)	6-22 Hour Odor Sample	40	20	35	-0.35			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

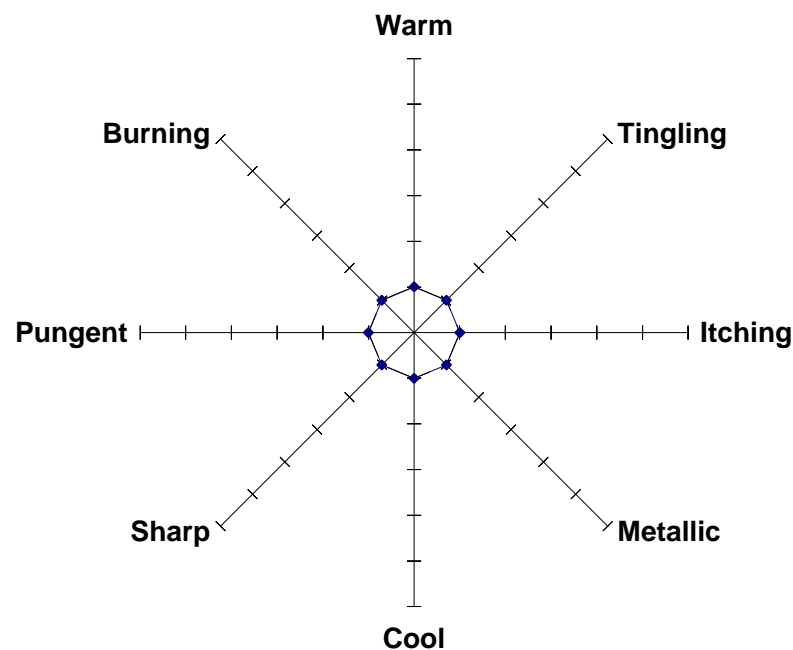
Client: Service Engineering Group

Project: 05017-0207

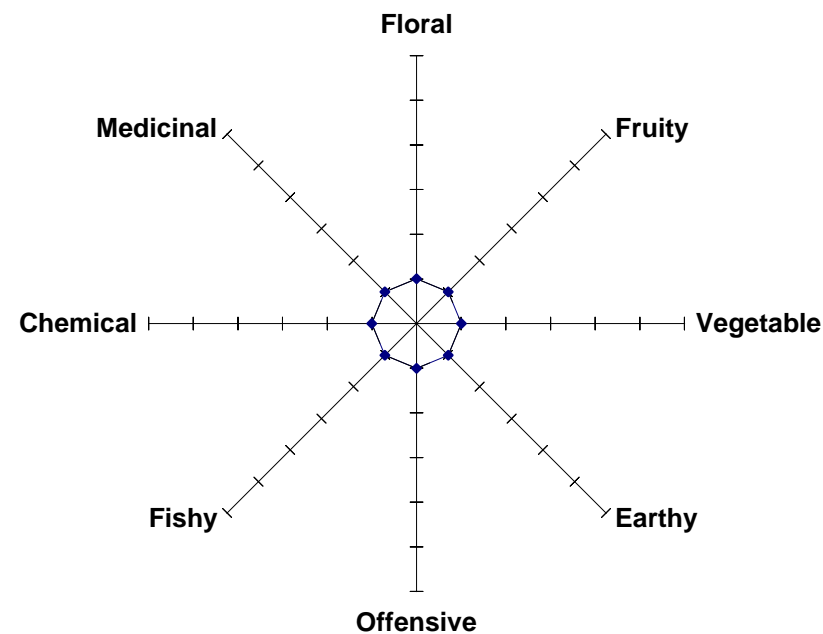
Report No.: **533403**

Evaluation Date: 11/30/05

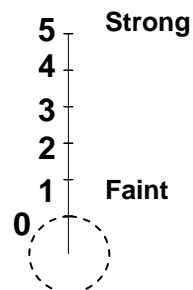
[illegible]

Client: Service Engineering GroupField No.: 60028-10M-(0-2)Report No.: 533403Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 11/30/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-10M-(0-2)

Report No.: **533403**

Project: 05017-0207

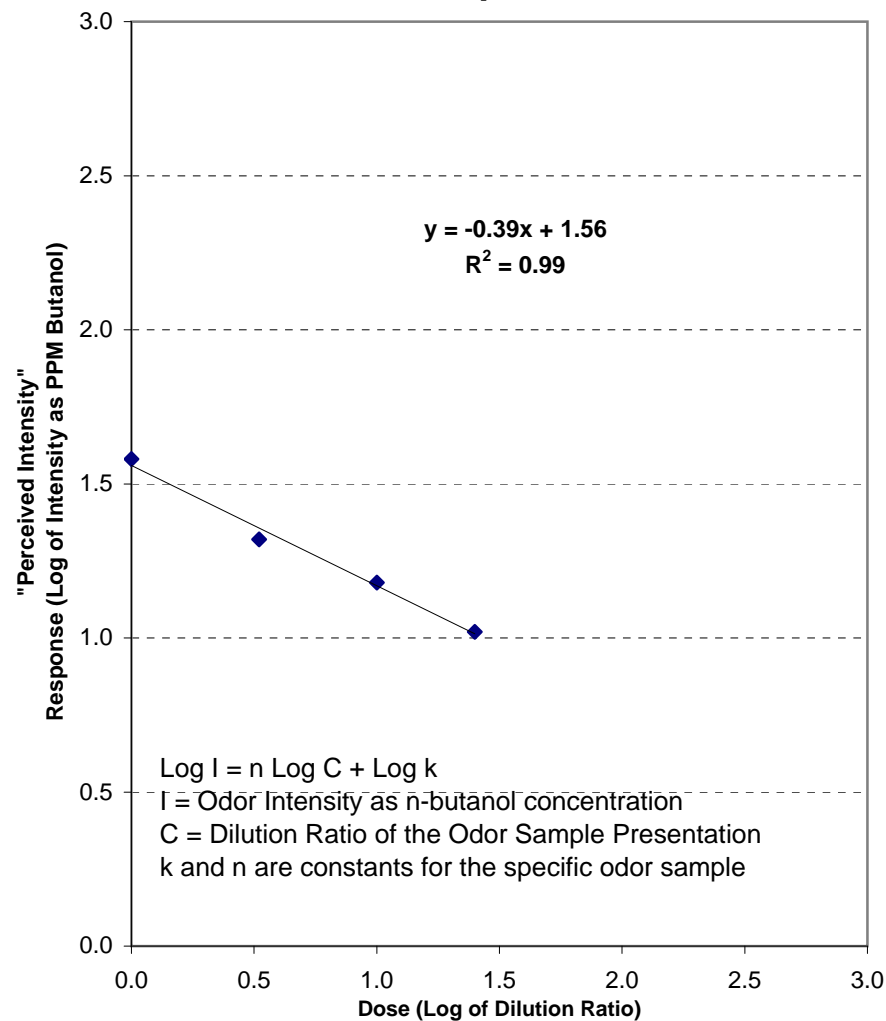
Description: 0-2 Hour Odor Sample

Evaluation Date: 11/30/05

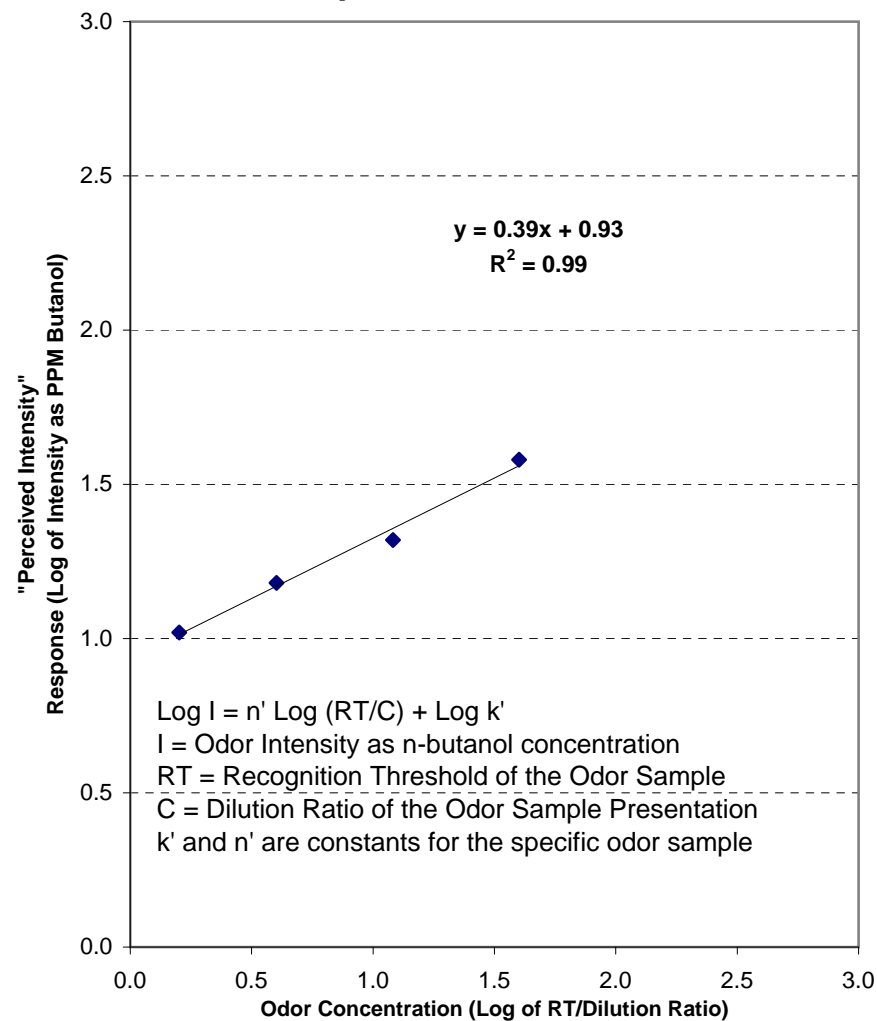
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

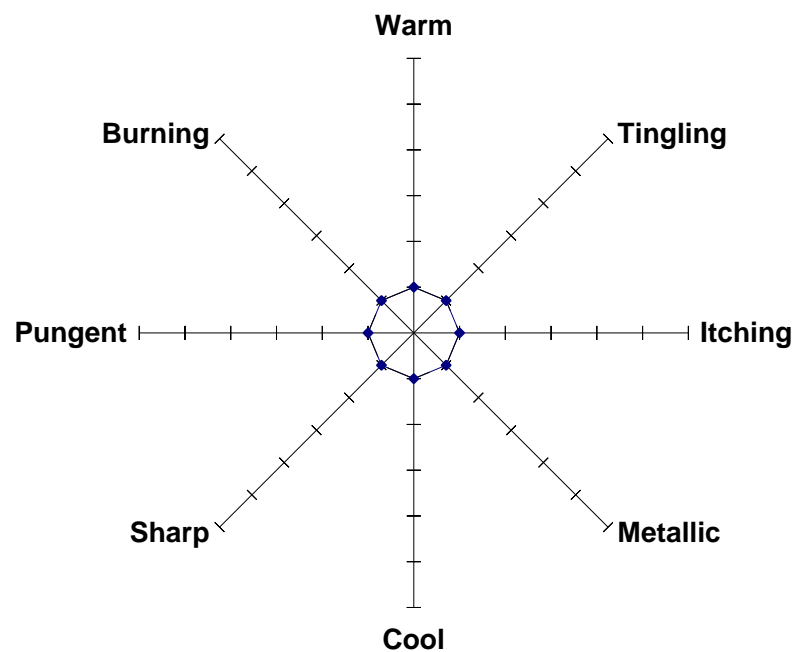
Client: Service Engineering GroupField No.: 60028-10M-(0-2)Report No.: 533403Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 11/30/05

### Dose-Response

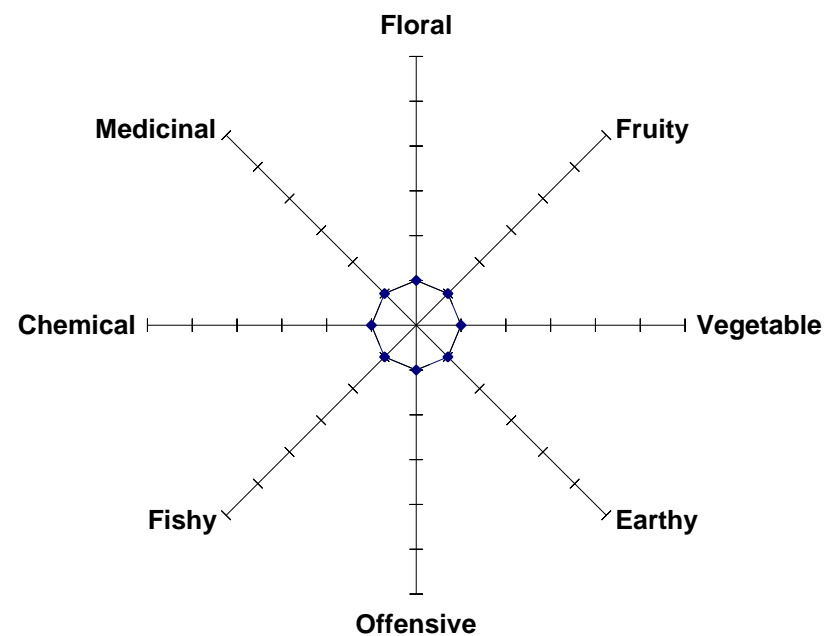


### Dose-Response as Power Law

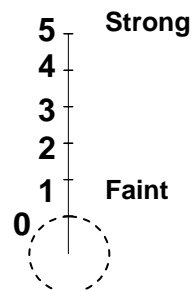


Client: Service Engineering GroupField No.: 60028-10M-(2-6)Report No.: **533403**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/30/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-10M-(2-6)

Report No.: **533403**

Project: 05017-0207

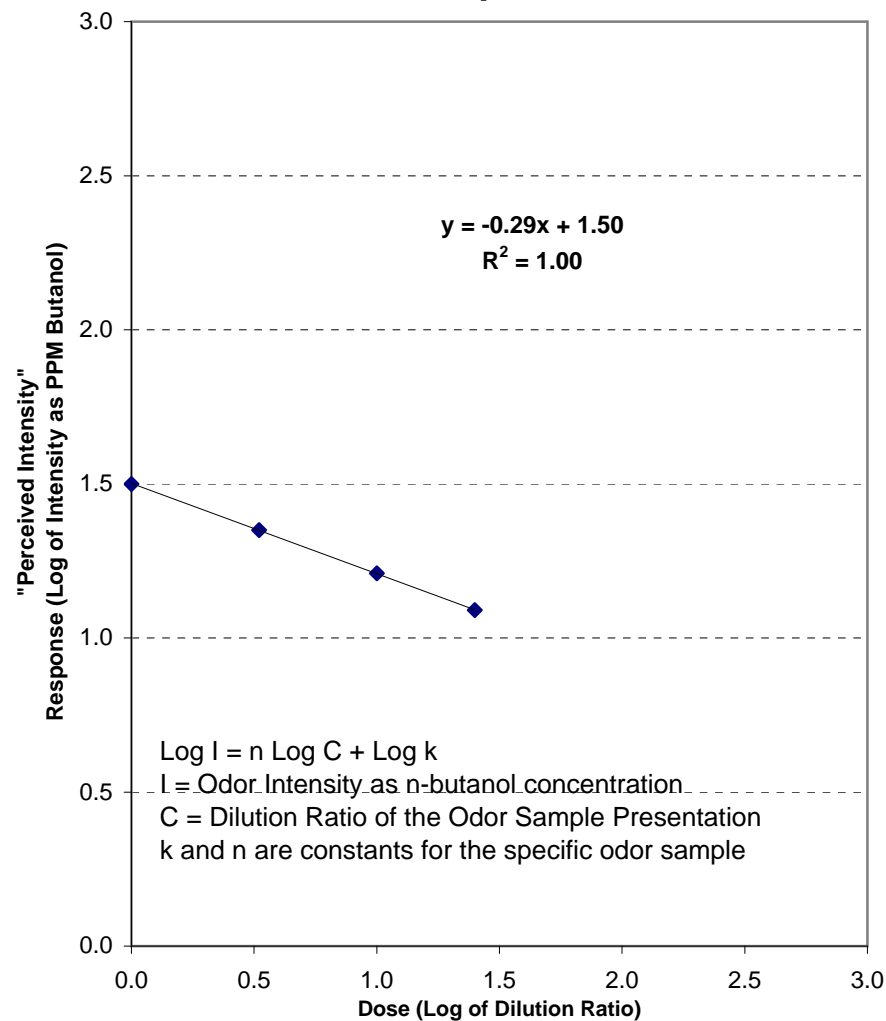
Description: 2-6 Hour Odor Sample

Evaluation Date: 11/30/05

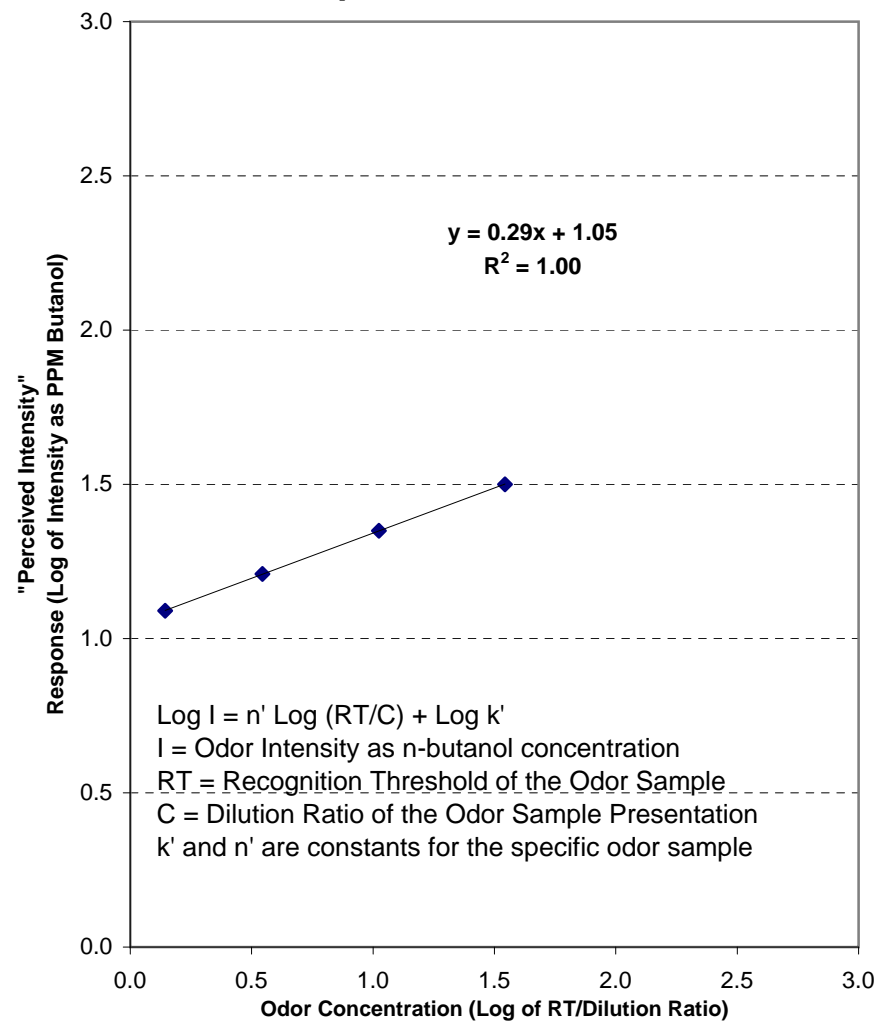
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

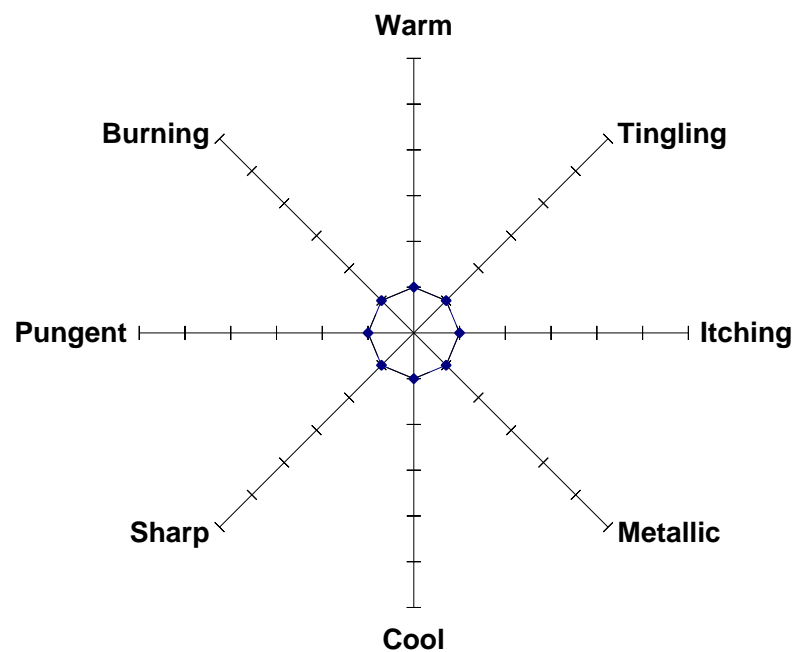
Client: Service Engineering GroupField No.: 60028-10M-(2-6)Report No.: 533403Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 11/30/05

### Dose-Response

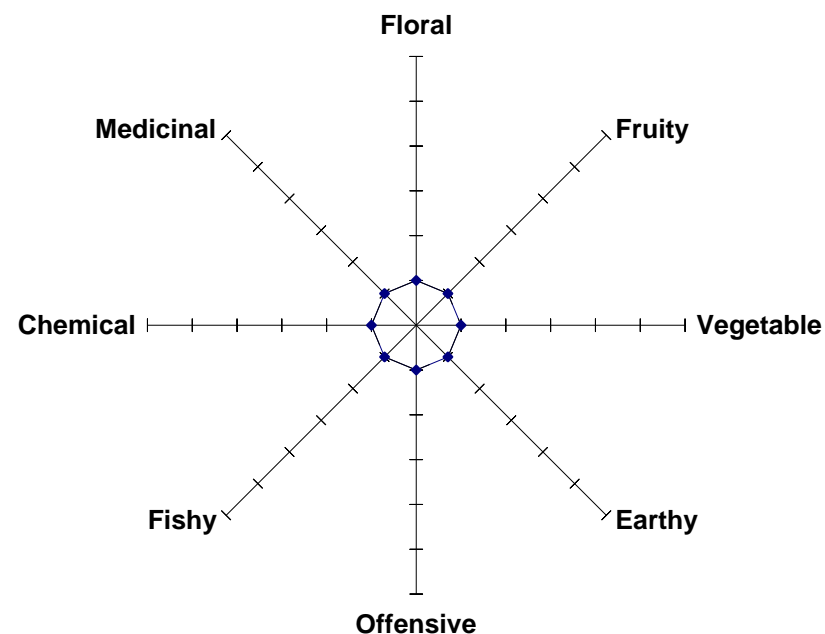


### Dose-Response as Power Law

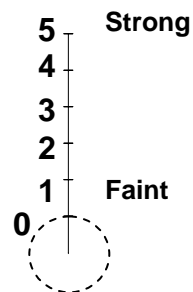


Client: Service Engineering GroupField No.: 60028-10M-(6-22)Report No.: **533403**Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/30/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-10M-(6-22)

Report No.: **533403**

Project: 05017-0207

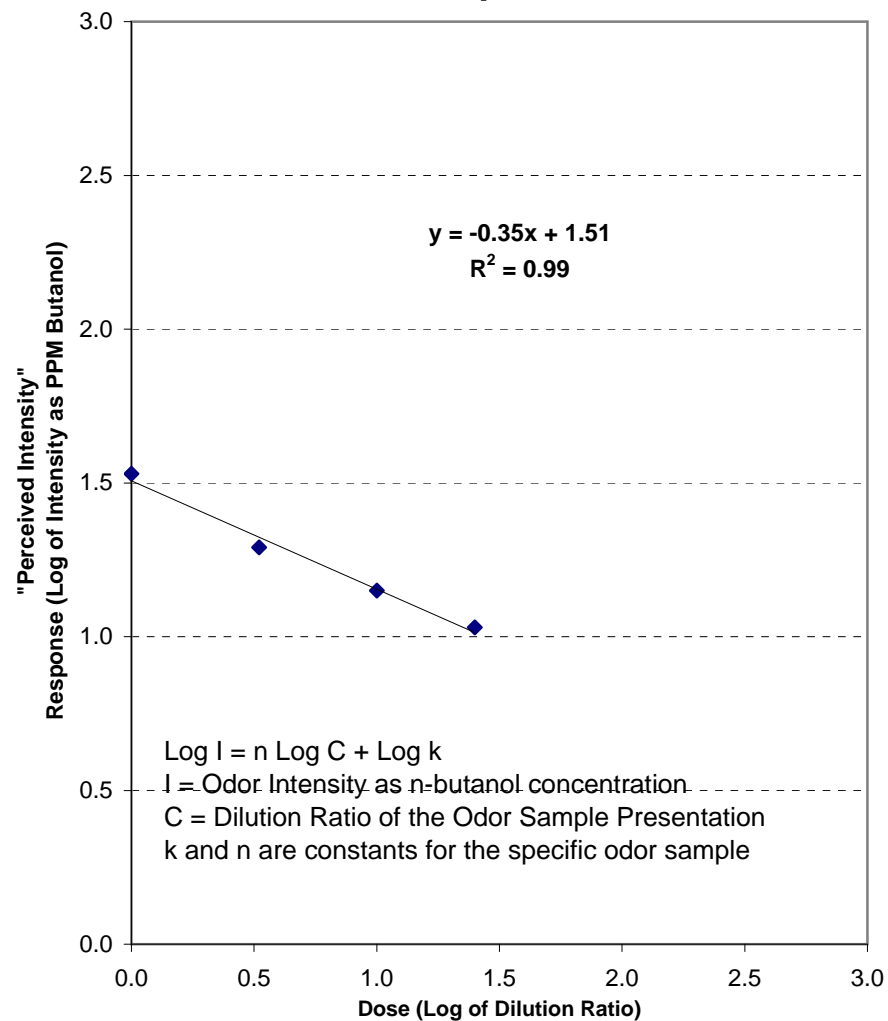
Description: 6-22 Hour Odor Sample

Evaluation Date: 11/30/05

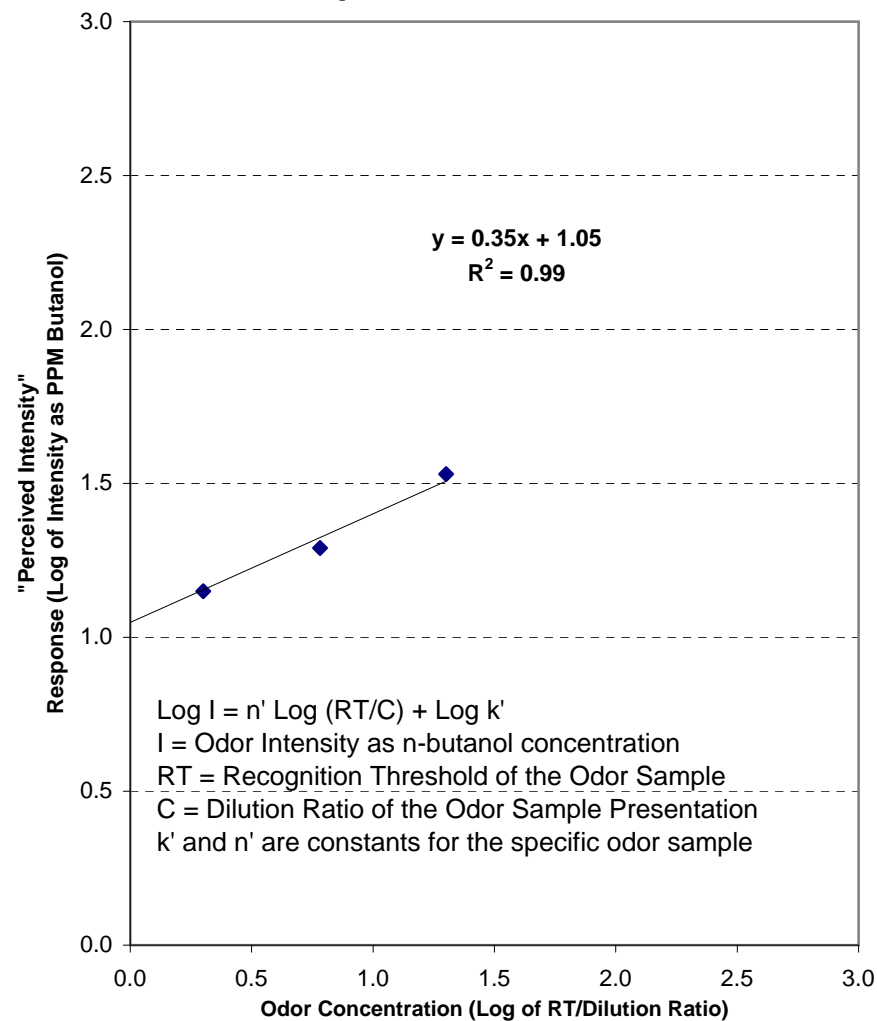
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 60028-10M-(6-22)Report No.: 533403Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 11/30/05

### Dose-Response



### Dose-Response as Power Law





CHAIN OF CUSTODY RECORD  
FOR ODOR SAMPLES

Client: SERVICE Engr Grp		Sampled By: <i>W. L. Hoff</i>		Odor Evaluations Requested: (X)				Page <u>1</u> of <u>1</u>					
Project Name: 05017-0207		Sampling Date: 11/29 - 11/30/05		Odor Concentration (DT, RT)		Odor Intensity (PPM)		Odor Characterization (Hedonic Tone & Descriptors)		Odor Persistence ("Dose-Response")		For Laboratory use Only	
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	Odor Evaluation Report No.	Laboratory Sample No.	LN	FN	
1	60028-10M-(6-2)	0-2 hour odor sample	11/29/05 11:45		X	X		X					
2	60028-10M-(2-6)	2-6 hour odor sample	11/29/05 15:50		X	X		X					
3	60028-10M-(6-22)	6-22 hour odor sample	11/30/05 07:45		X	X		X					
4													
5													
6													
7													
8													
9													
10													

## Transfer &amp; Shipping Information

Number of "Air-Pacs"/  
Shipping Boxes \_\_\_\_\_

Relinquished By:	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
<i>W. L. Hoff</i>	11/30/05	08:15				
Received at St. Croix Sensory Laboratory						
			<i>Cathy Moore</i>	11/30/05	8:45	

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LAB COPIES WHITE &amp; YELLOW

CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 533503

12/01/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

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3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 533503

Project: 05017-0207

Evaluation Date: 12/01/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	60028-10Q-(0-2)	0-2 Hour Odor Sample	80	50	25	-0.30			
2	60028-10Q-(2-6)	2-6 Hour Odor Sample	100	60	19	-0.29			
3	60028-10Q-(6-22)	6-22 Hour Odor Sample	85	50	19	-0.26			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

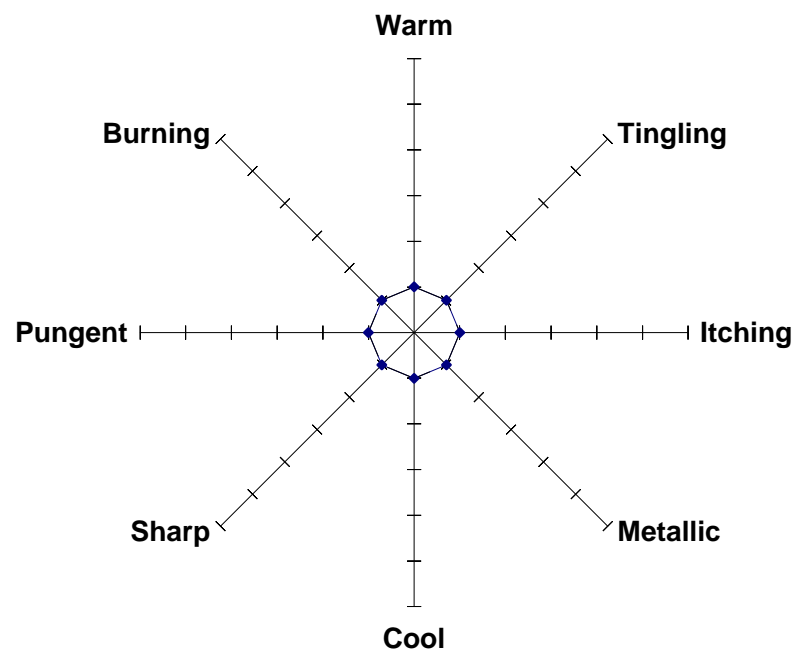
Client: Service Engineering Group

Project: 05017-0207

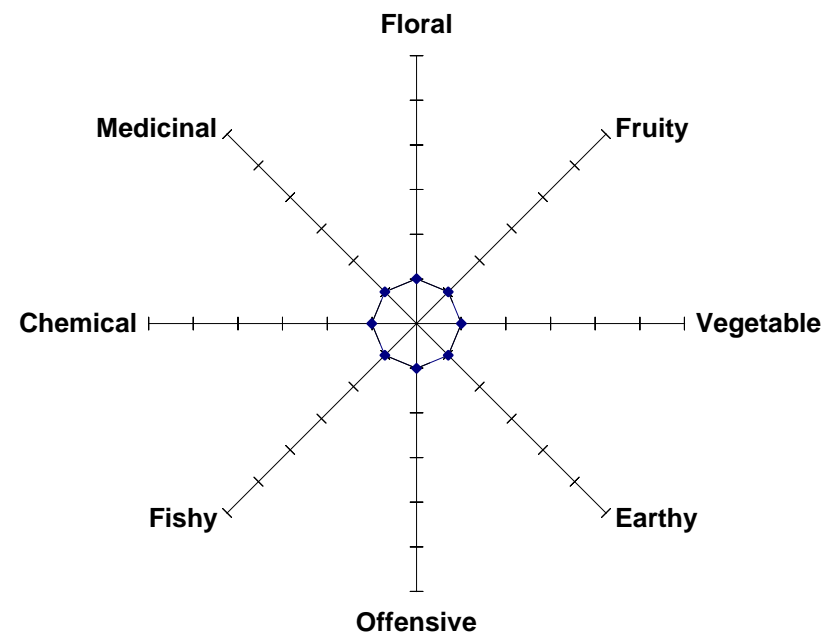
Report No.: **533503**

Evaluation Date: 12/01/05

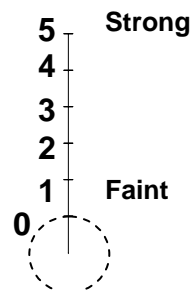
[illegible]

Client: Service Engineering GroupField No.: 60028-10Q-(0-2)Report No.: 533503Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/01/05**Sensation Descriptor Graph**

	Average Relative Strength
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

	Average Relative Strength
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-10Q-(0-2)

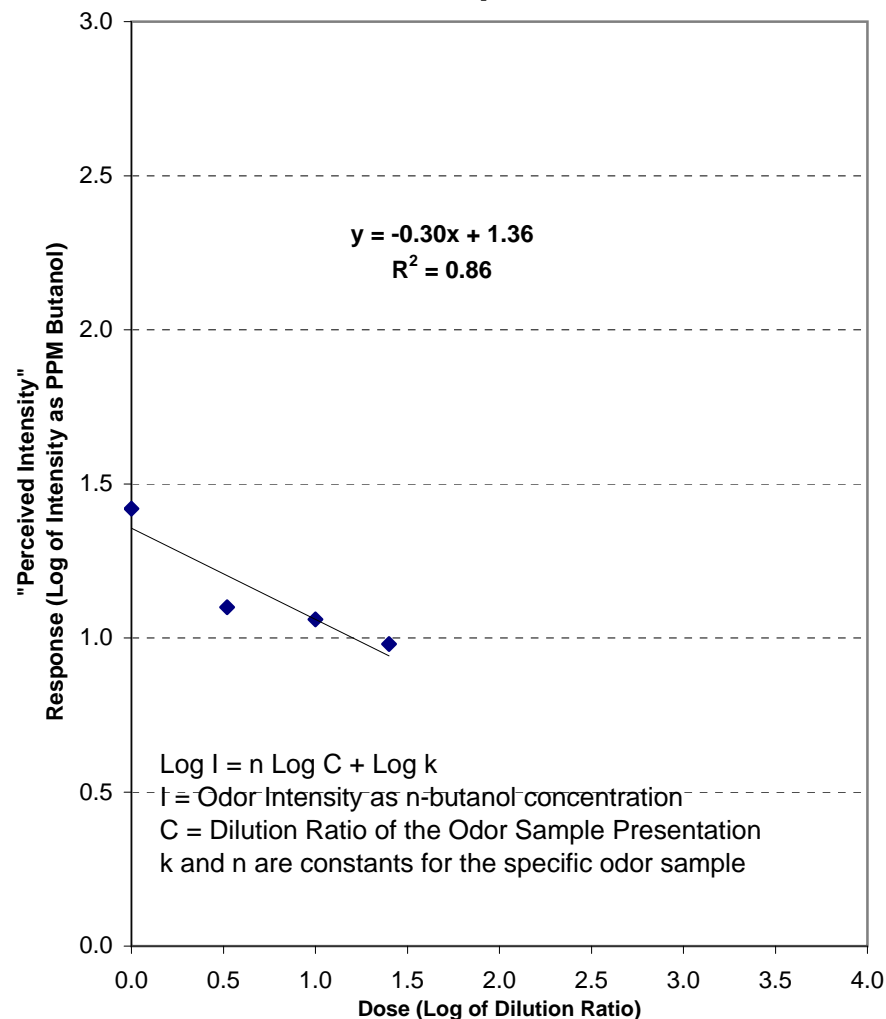
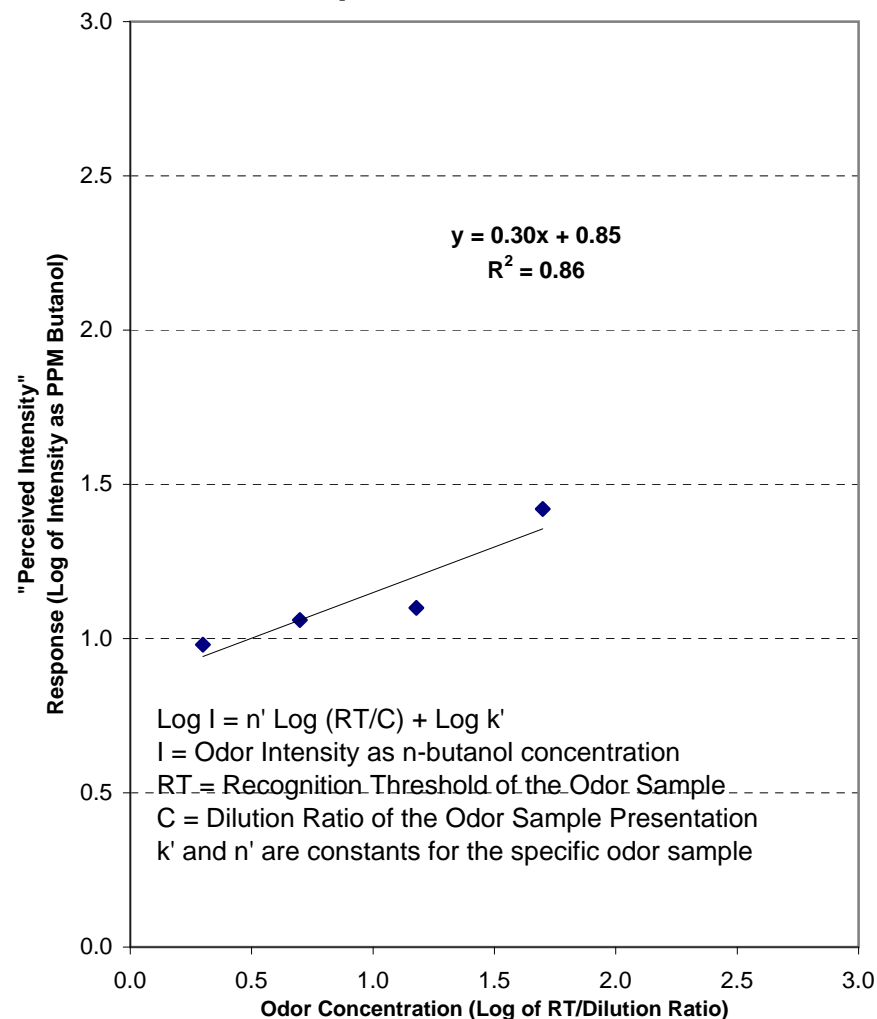
Report No.: **533503**

Project: 05017-0207

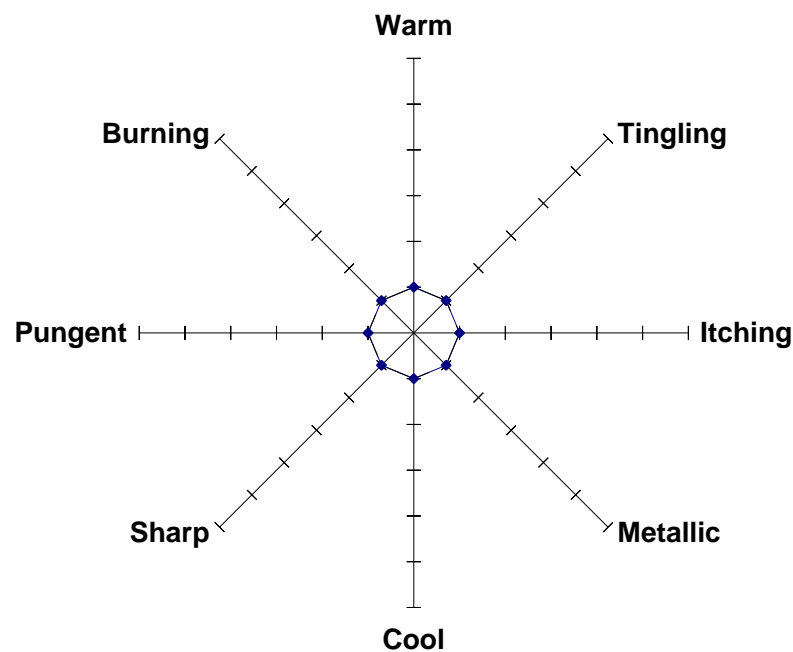
Description: 0-2 Hour Odor Sample

Evaluation Date: 12/01/05

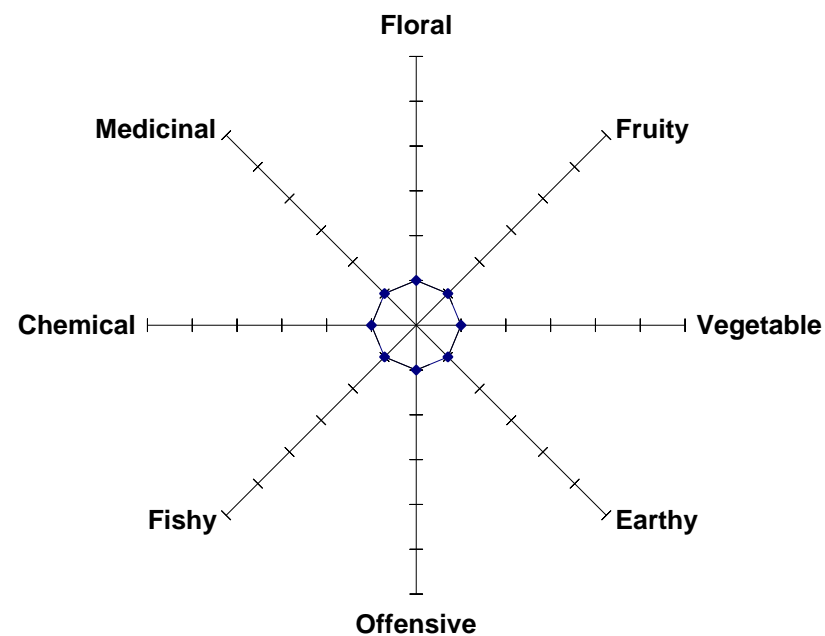
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 60028-10Q-(0-2)Report No.: 533503Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/01/05**Dose-Response****Dose-Response as Power Law**

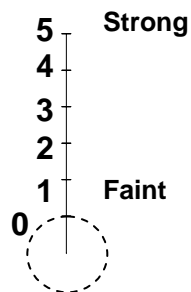


Client: Service Engineering GroupField No.: 60028-10Q-(2-6)Report No.: 533503Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/01/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-10Q-(2-6)

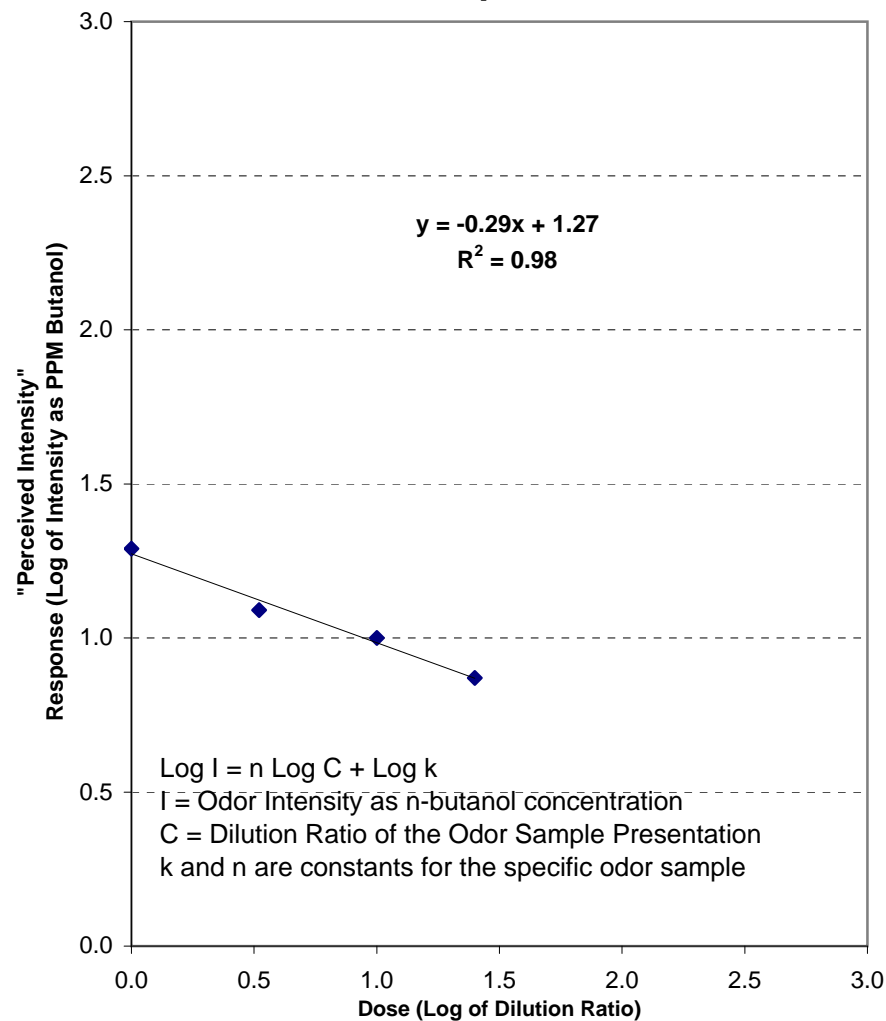
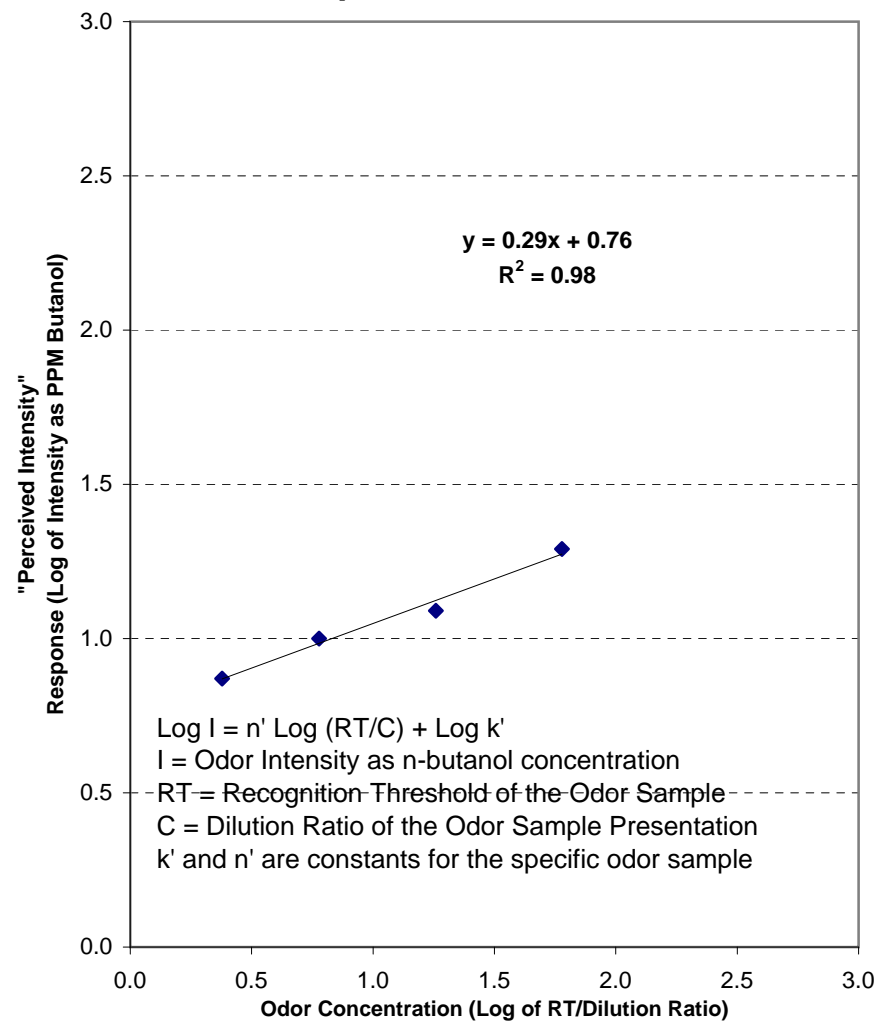
Report No.: **533503**

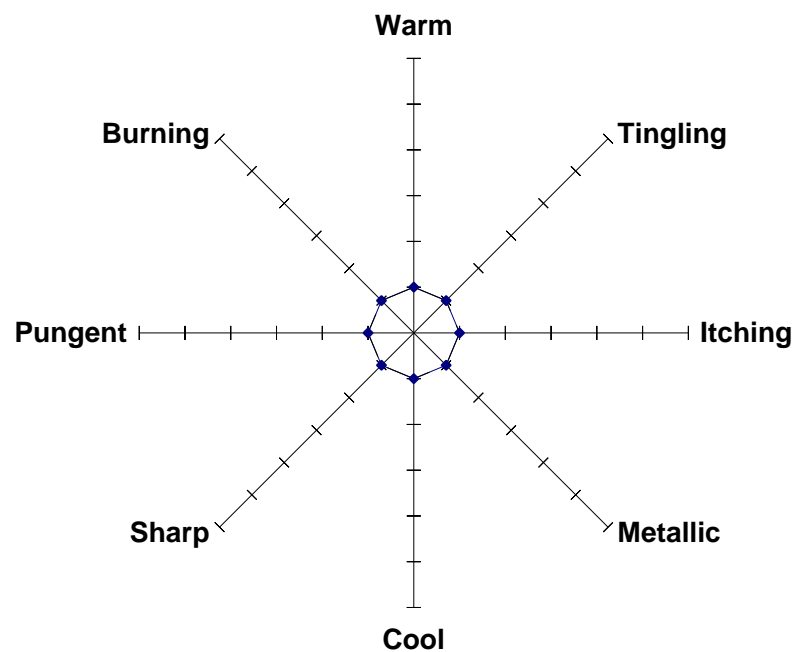
Project: 05017-0207

Description: 2-6 Hour Odor Sample

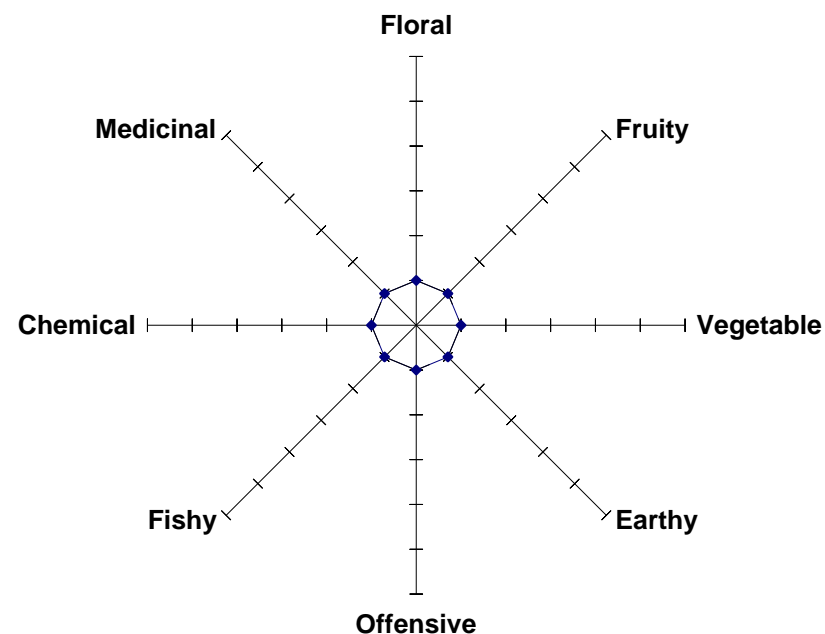
Evaluation Date: 12/01/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

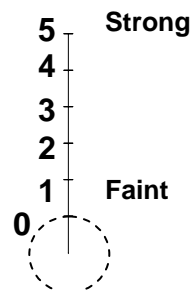
Client: Service Engineering GroupField No.: 60028-10Q-(2-6)Report No.: 533503Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/01/05**Dose-Response****Dose-Response as Power Law**

Client: Service Engineering GroupField No.: 60028-10Q-(6-22)Report No.: 533503Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/01/05**Sensation Descriptor Graph**

	Average Relative Strength
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

	Average Relative Strength
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-10Q-(6-22)

Report No.: **533503**

Project: 05017-0207

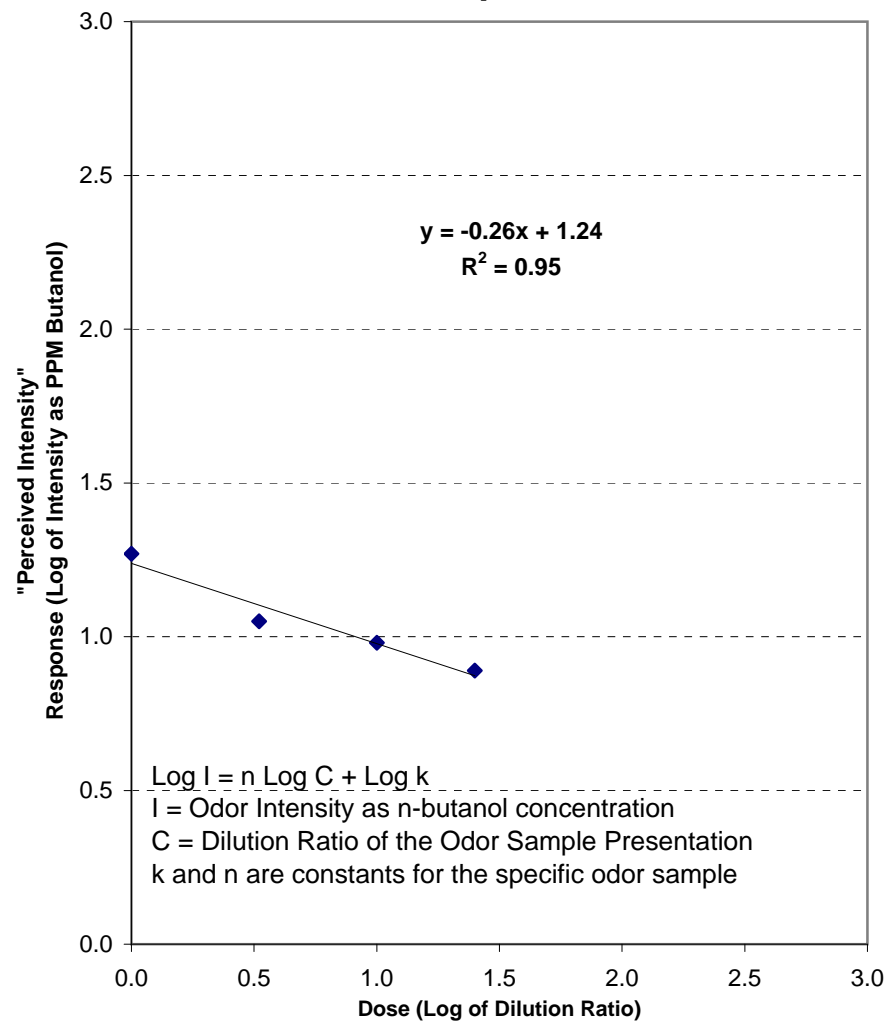
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/01/05

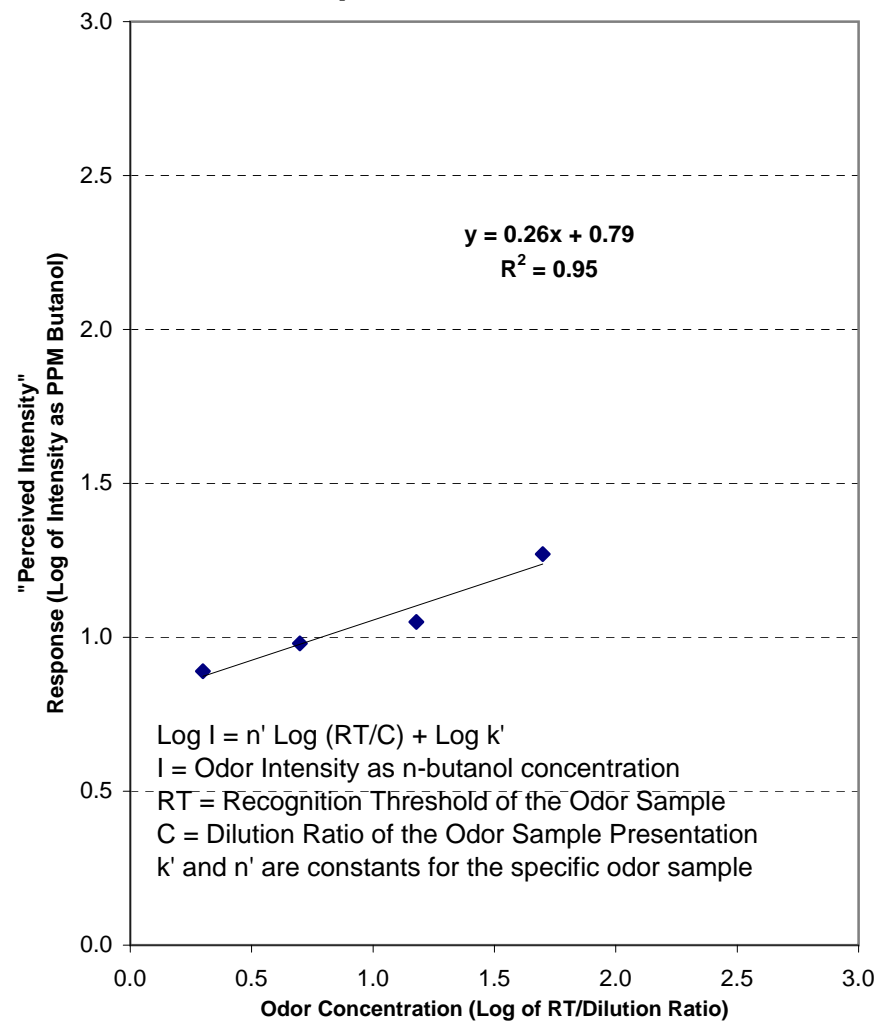
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 60028-10Q-(6-22)Report No.: 533503Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/01/05

### Dose-Response



### Dose-Response as Power Law



CHAIN OF CUSTODY RECORD  
FOR ODOR SAMPLES

Client: SERVICE Engr Group

Sampled By: *William C. Hoff*Page 1 of 1

Project Name: 05017-0207

Sampling Date: 11/30 - 12/01/05

Comments:

Odor Evaluations Requested: (X)

Odor Concentration (DT, RT)

Odor Intensity (PPM)

Odor Characterization (Hedonic Tone &amp; Descriptors)

Odor Persistence ("Dose-Response")

For Laboratory use Only

Odor Evaluation Report No.

Laboratory Sample No.

LN

FN

Line No.

Field No.

Sample Description

Sample Time

Field H<sub>2</sub>S (ppm)

1

60028-10Q-(0-2)

0-2 hour Odor Sample

11/30/05 11:47

2

60028-10Q-(2-6)

2-6 hour Odor Sample

11/30/05 15:55

3

60028-10Q-(6-22)

6-22 hour Odor Sample

12/01/05 07:51

4

5

6

7

8

9

10

## Transfer &amp; Shipping Information

Number of "Air-Pacs" /

Shipping Boxes

Relinquished By

*William C. Hoff*

Date

12/01/05

Accepted By

Cathy Moss

Date

12/1/05

Time

8:50

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.





St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 533601

12/02/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

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Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 533601

Project: 05017-0207

Evaluation Date: 12/02/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	60028-1M-(0-2)	0-2 Hour Odor Sample	50	30	21	-0.26			
2	60028-1M-(2-6)	2-6 Hour Odor Sample	80	50	20	-0.22			
3	60028-1M-(6-22)	6-22 Hour Odor Sample	75	40	17	-0.20			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

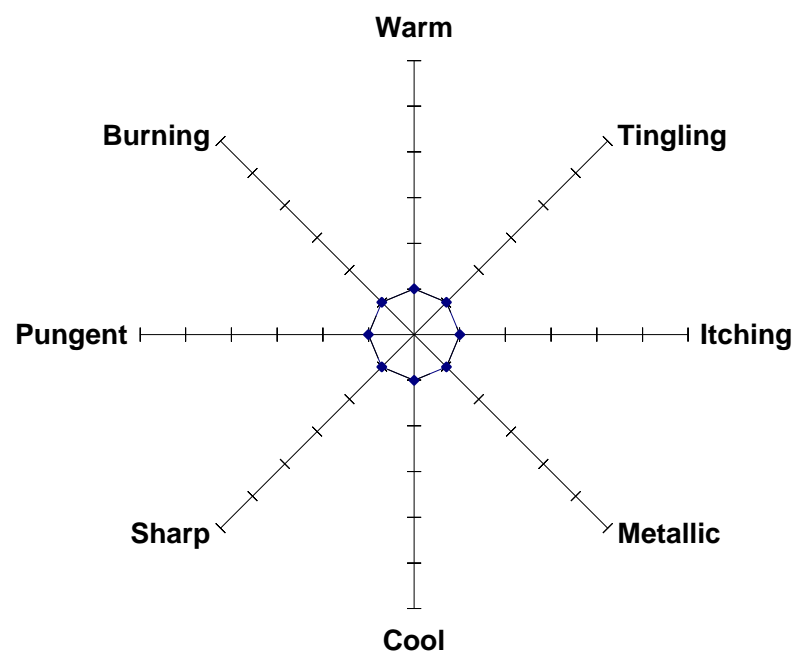
Client: Service Engineering Group

Project: 05017-0207

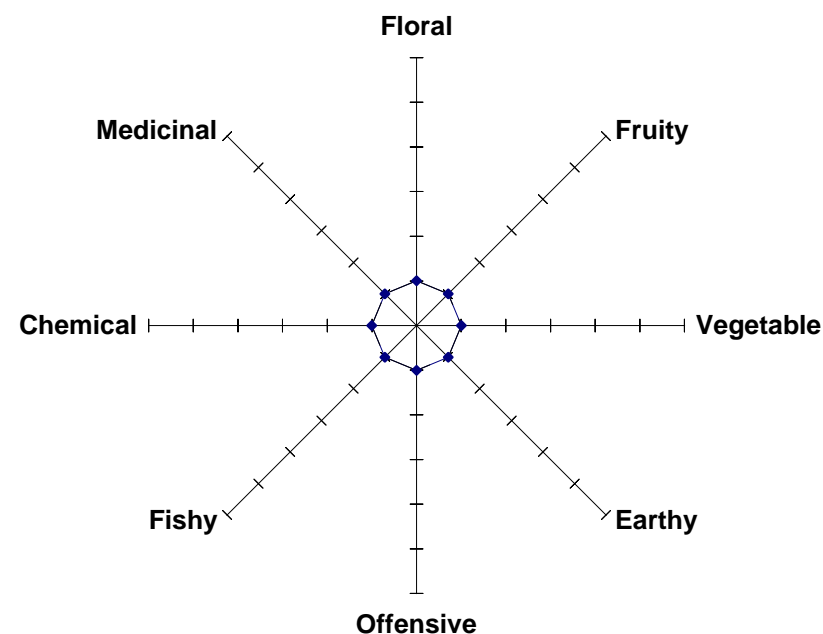
Report No.: **533601**

Evaluation Date: 12/02/05

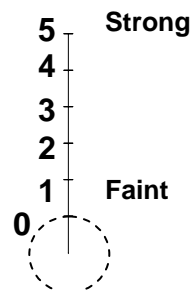
[illegible]

Client: Service Engineering GroupField No.: 60028-1M-(0-2)Report No.: 533601Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/02/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-1M-(0-2)

Report No.: **533601**

Project: 05017-0207

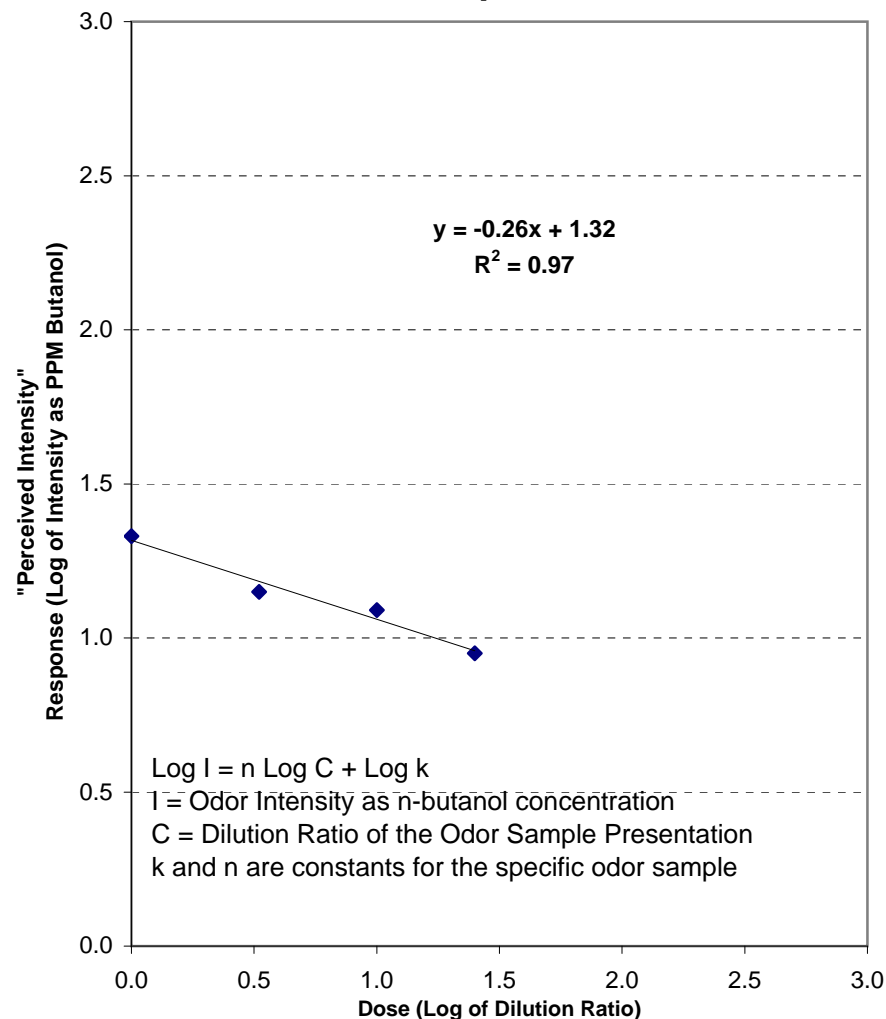
Description: 0-2 Hour Odor Sample

Evaluation Date: 12/02/05

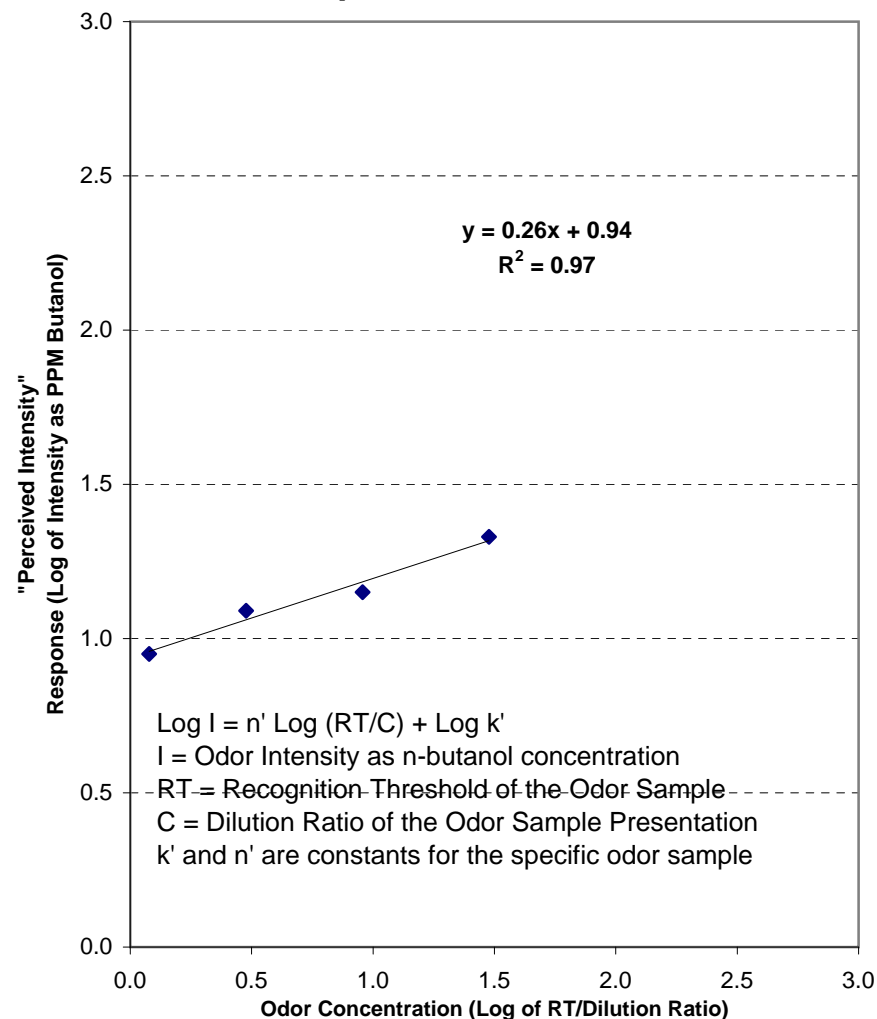
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

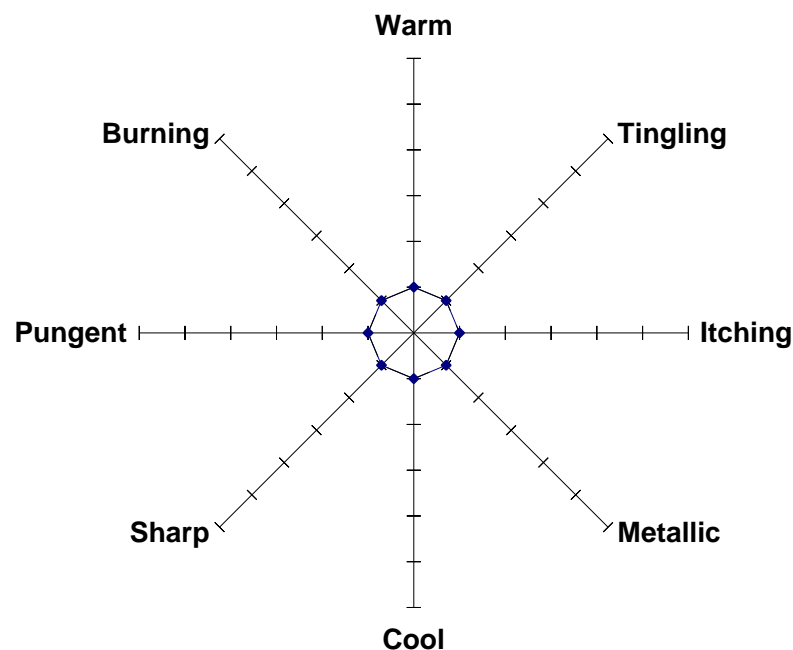
Client: Service Engineering GroupField No.: 60028-1M-(0-2)Report No.: 533601Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/02/05

### Dose-Response

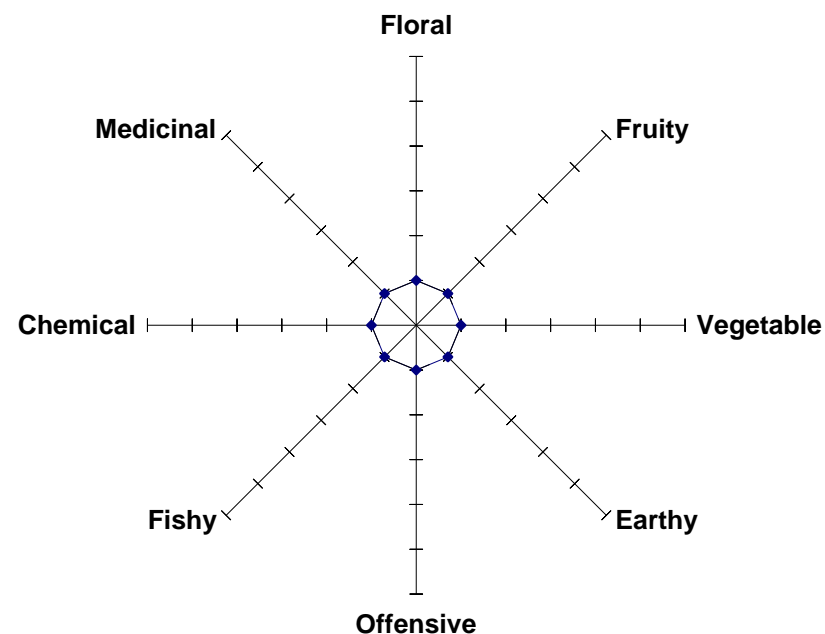


### Dose-Response as Power Law

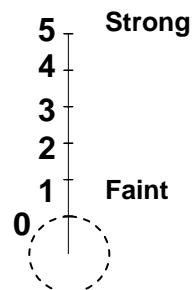


Client: Service Engineering GroupField No.: 60028-1M-(2-6)Report No.: **533601**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/02/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-1M-(2-6)

Report No.: **533601**

Project: 05017-0207

Description: 2-6 Hour Odor Sample

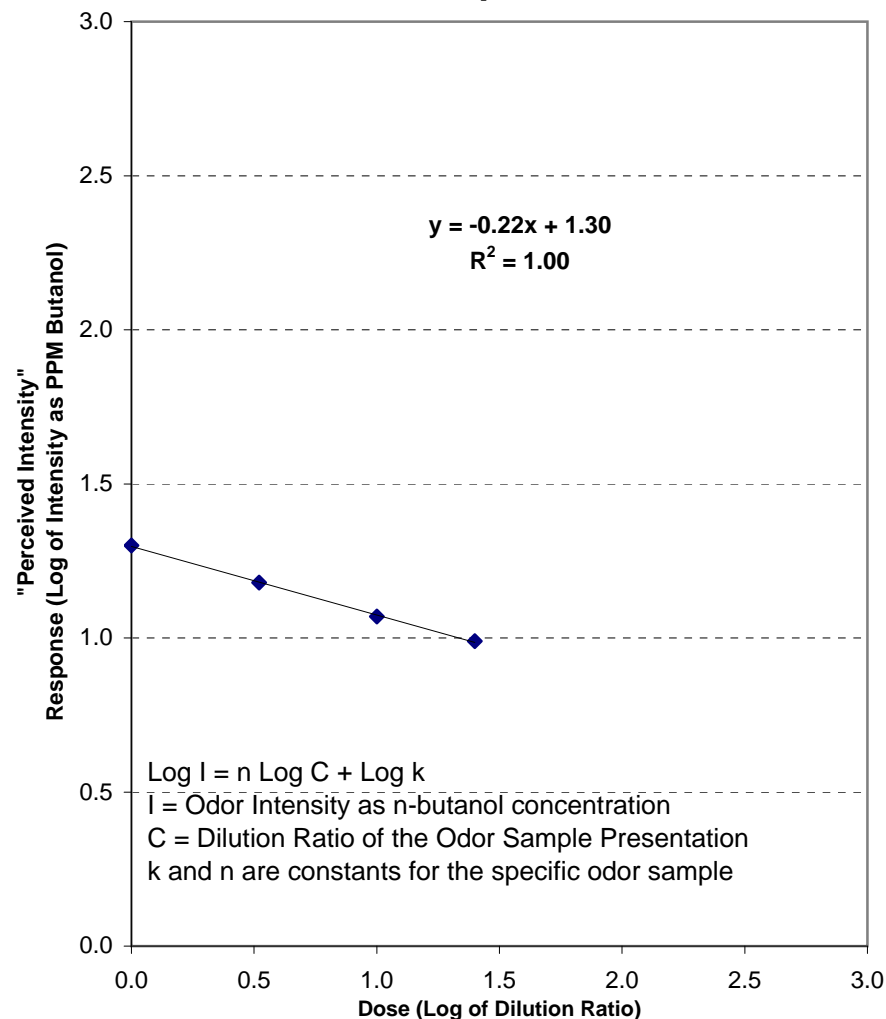
Evaluation Date: 12/02/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

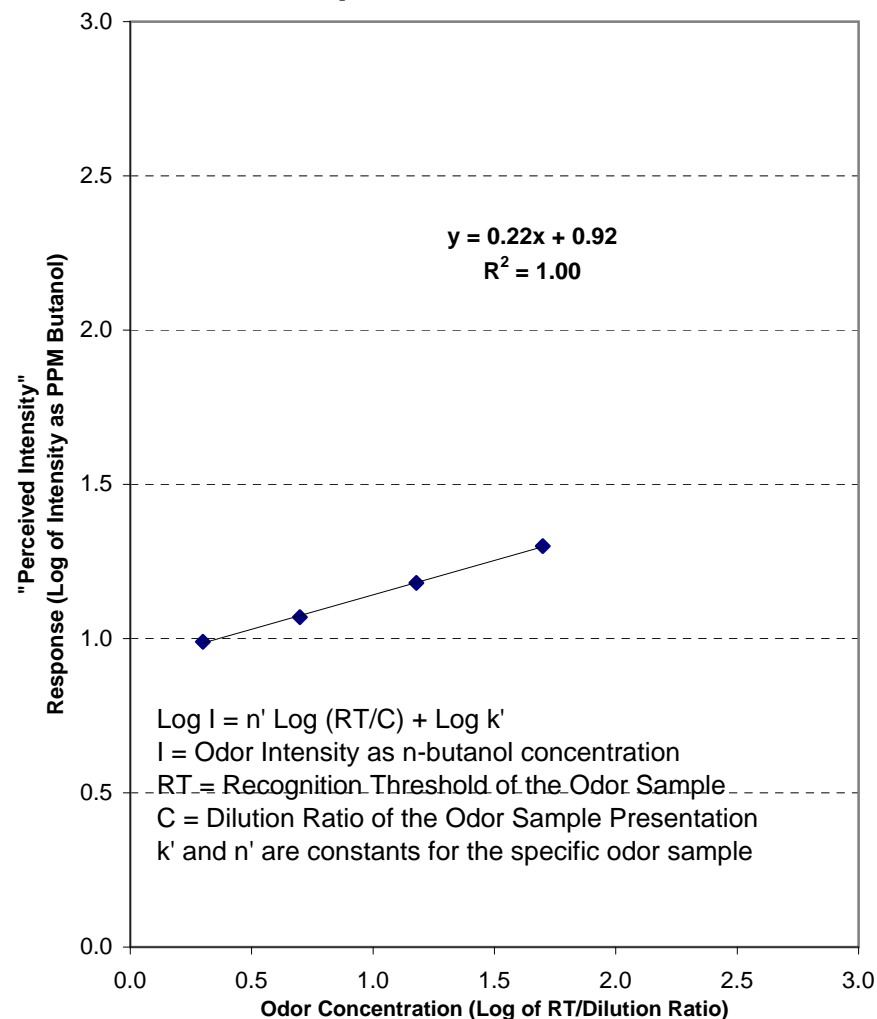


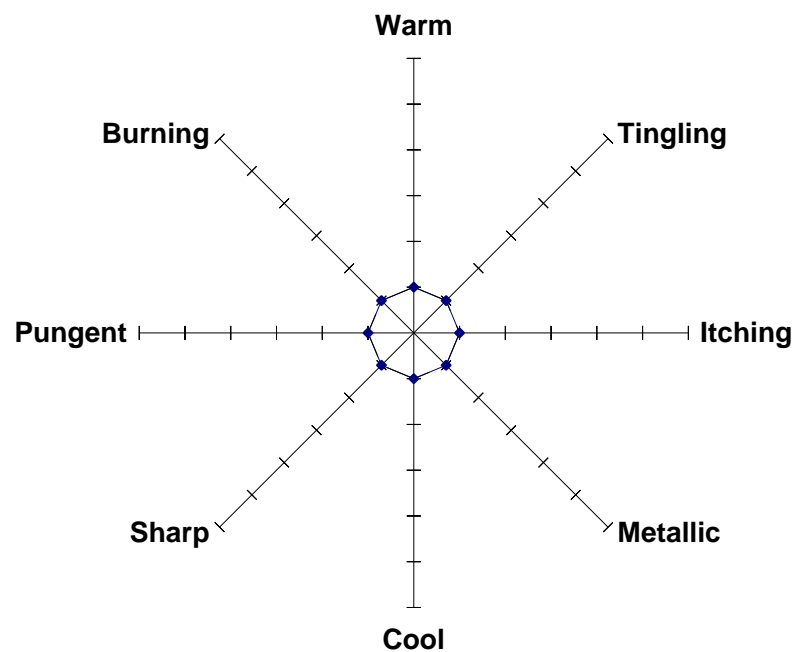
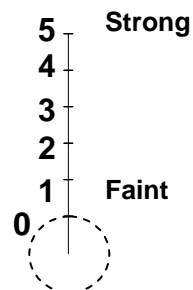
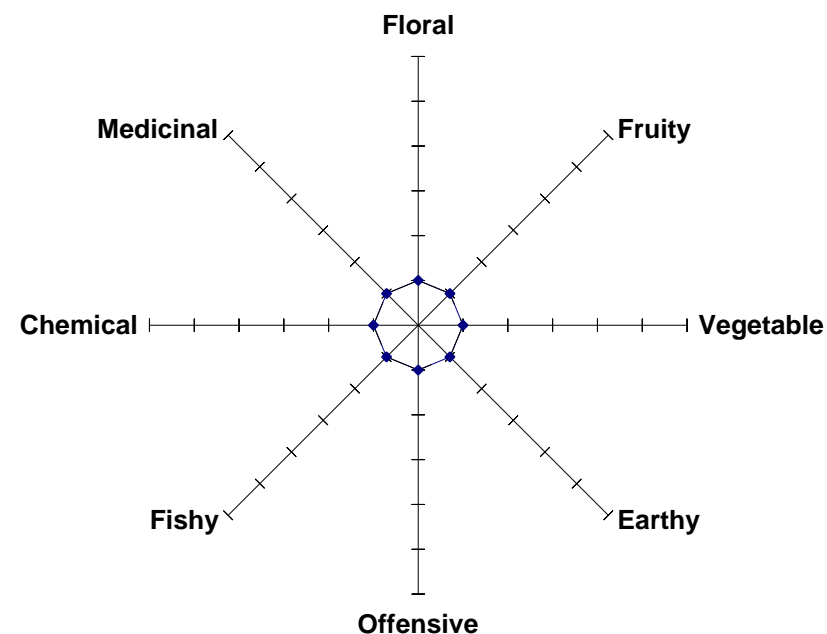
Client: Service Engineering GroupField No.: 60028-1M-(2-6)Report No.: 533601Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/02/05

### Dose-Response



### Dose-Response as Power Law



Client: Service Engineering GroupField No.: 60028-1M-(6-22)Report No.: 533601Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/02/05**Sensation Descriptor Graph****KEY****Relative Strength****Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-1M-(6-22)

Report No.: **533601**

Project: 05017-0207

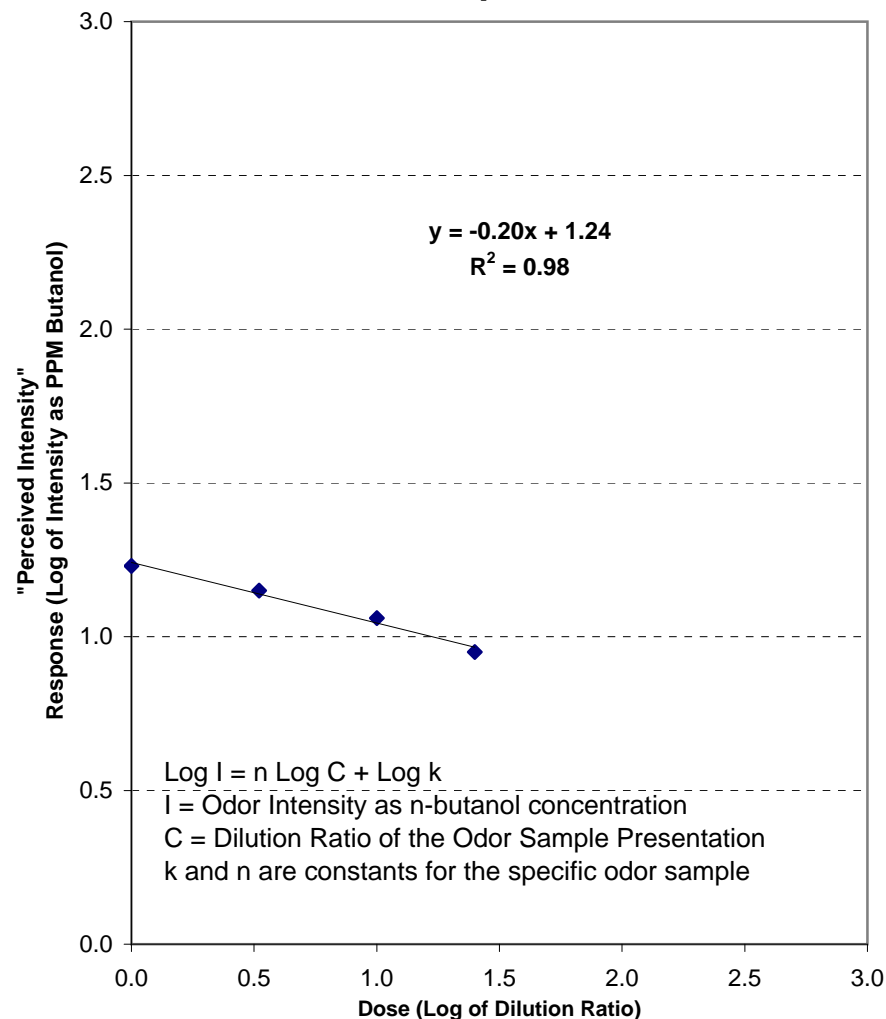
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/02/05

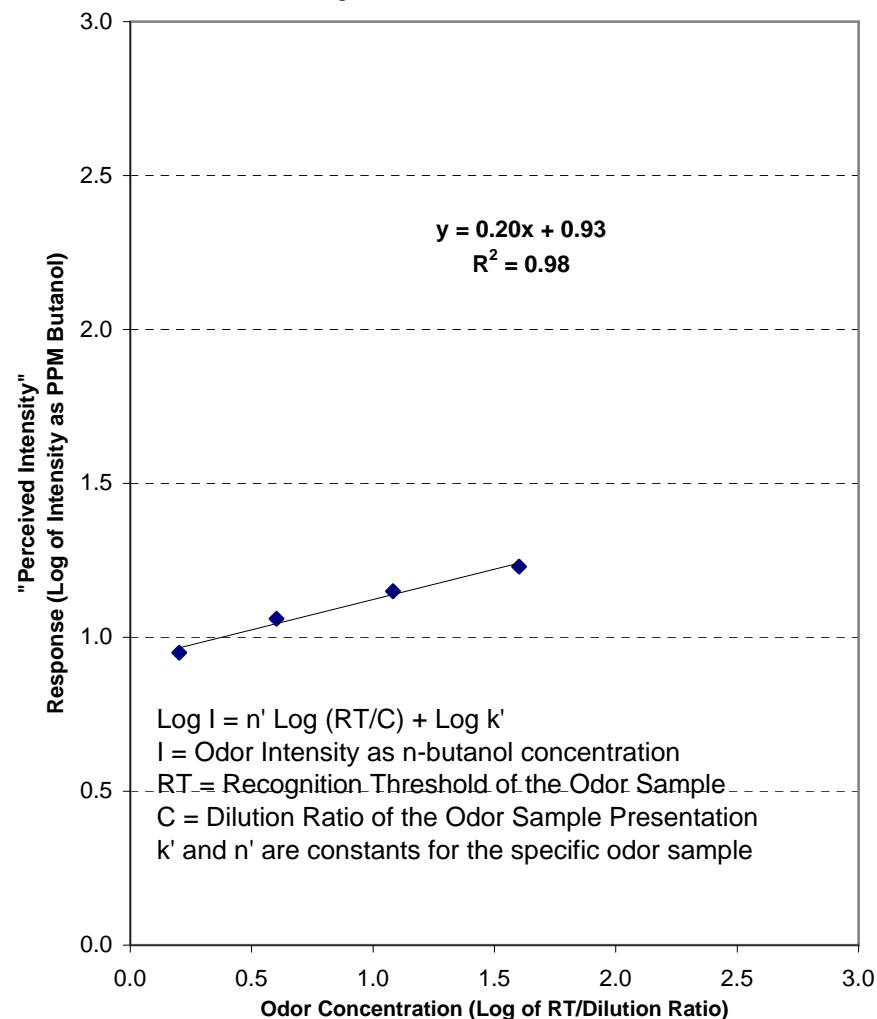
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 60028-1M-(6-22)Report No.: 533601Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/02/05

### Dose-Response



### Dose-Response as Power Law



# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES



Client: <u>SERVICE Engr Group</u>		Sampled By: <u>W. L. P. P.</u>		Odor Evaluations Requested: (X)		Page <u>1</u> of <u>1</u>	
Project Name: <u>05017-0207</u>		Sampling Date: <u>12/01 - 12/02/05</u>		Odor Concentration (DT, RT)		Odor Intensity (PPM)	
Comments:				Odor Characterization (Hedonic Tone & Descriptors)		Odor Persistence ("Dose-Response")	
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)			
1	60028-1M- (0-2)	0-2 hour odor sample	12/01/05 11:45		X	X	X
2	60028-1M- (2-6)	2-6 hour odor sample	12/01/05 15:53		X	X	X
3	60028-1M- (6-22)	6-22 hour odor sample	12/02/05 07:45		X	X	X
4							
5							
6							
7							
8							
9							
10							

For Laboratory use Only

Odor Evaluation Report No.

Laboratory Sample No.

LN

FN

## Transfer & Shipping Information

Number of "Air-Pacs" / Shipping Boxes \_\_\_\_\_

Relinquished By	Date	Time	Accepted By	Date	Time	Comments & Exceptions Noted
<u>W. L. P. P.</u>	<u>12/02/05</u>	<u>08:15</u>				
Received at St. Croix Sensory Laboratory			<u>Cathy M. P.</u>	<u>12/2/05</u>	<u>8:45</u>	

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

LAB COPIES WHITE &amp; YELLOW

CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 533701

12/03/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

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3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 533701

Project: 05017-0207

Evaluation Date: 12/03/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	60028-1Q-(0-2)	0-2 Hour Odor Sample	40	25	22	-0.33			
2	60028-1Q-(2-6)	2-6 Hour Odor Sample	55	45	16	-0.23			
3	60028-1Q-(6-22)	6-22 Hour Odor Sample	45	30	19	-0.31			



**St. Croix Sensory, Inc.**

## Odor Evaluation Report

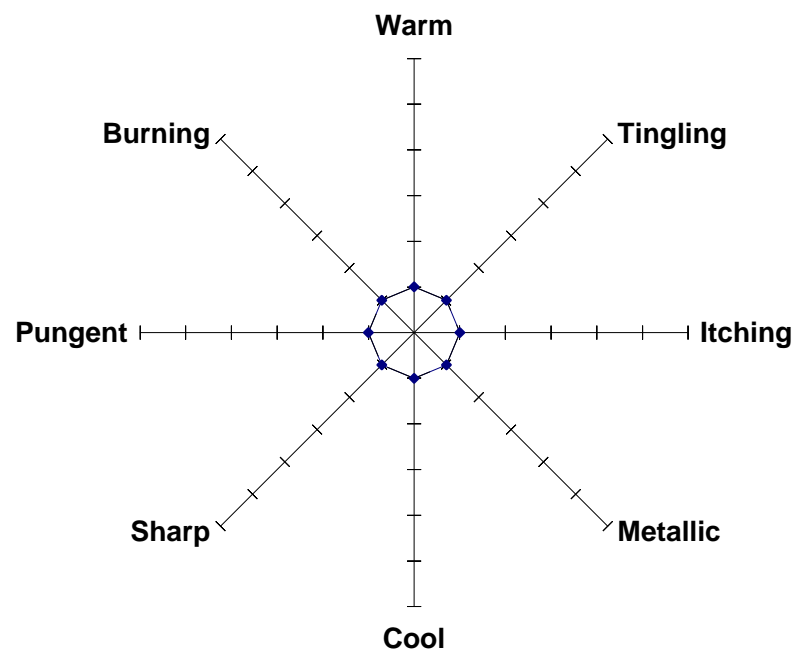
Client: Service Engineering Group

Project: 05017-0207

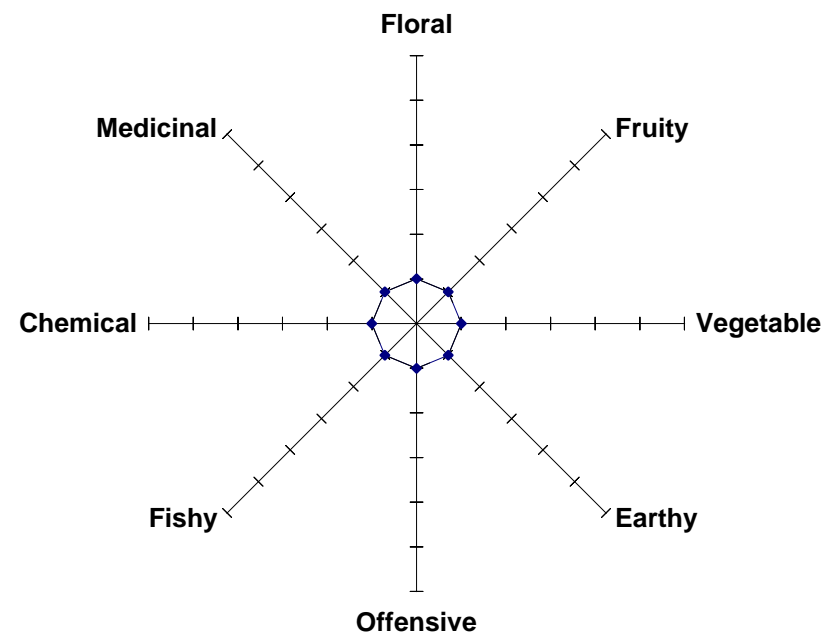
Report No.: **533701**

Evaluation Date: 12/03/05

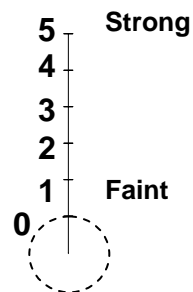
[illegible]

Client: Service Engineering GroupField No.: 60028-1Q-(0-2)Report No.: 533701Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/03/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-1Q-(0-2)

Report No.: **533701**

Project: 05017-0207

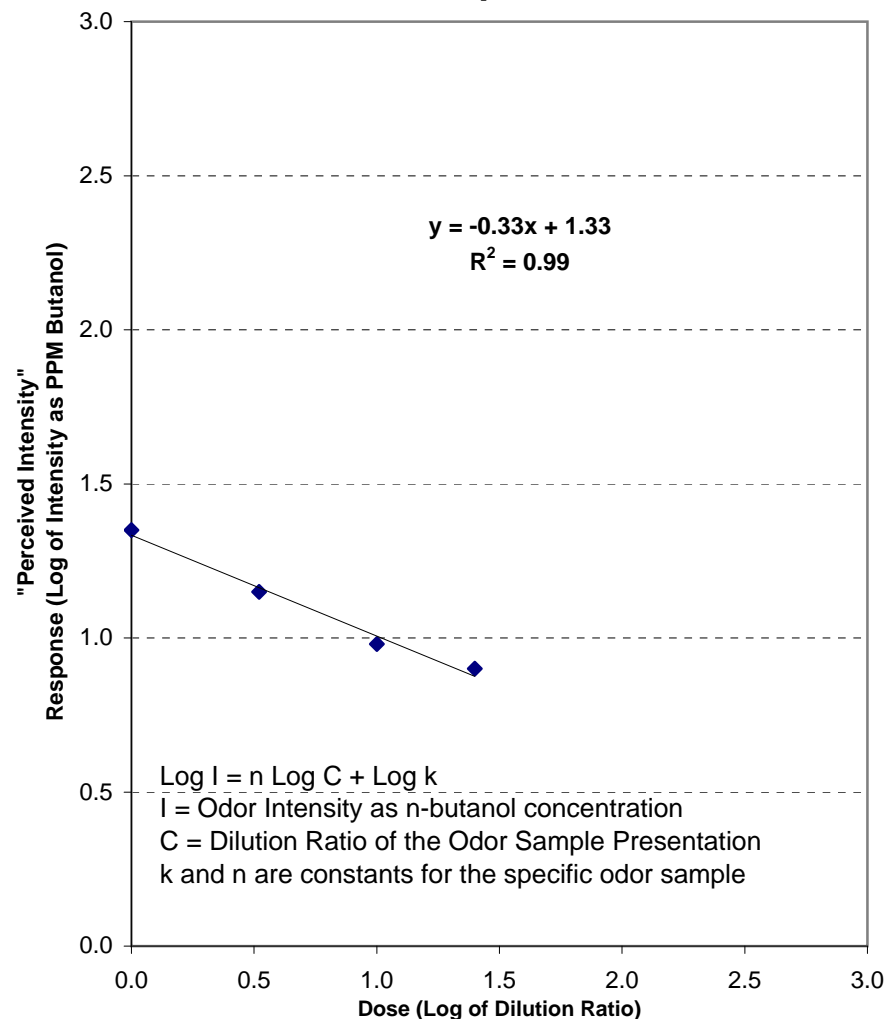
Description: 0-2 Hour Odor Sample

Evaluation Date: 12/03/05

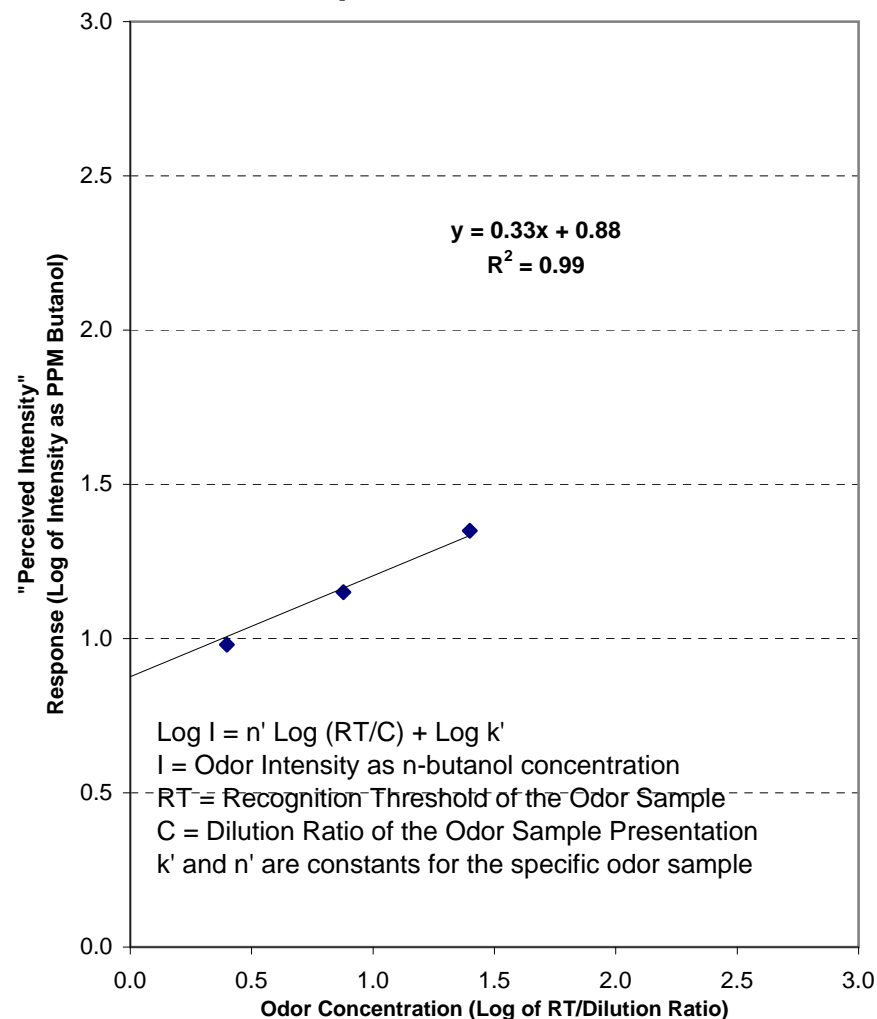
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

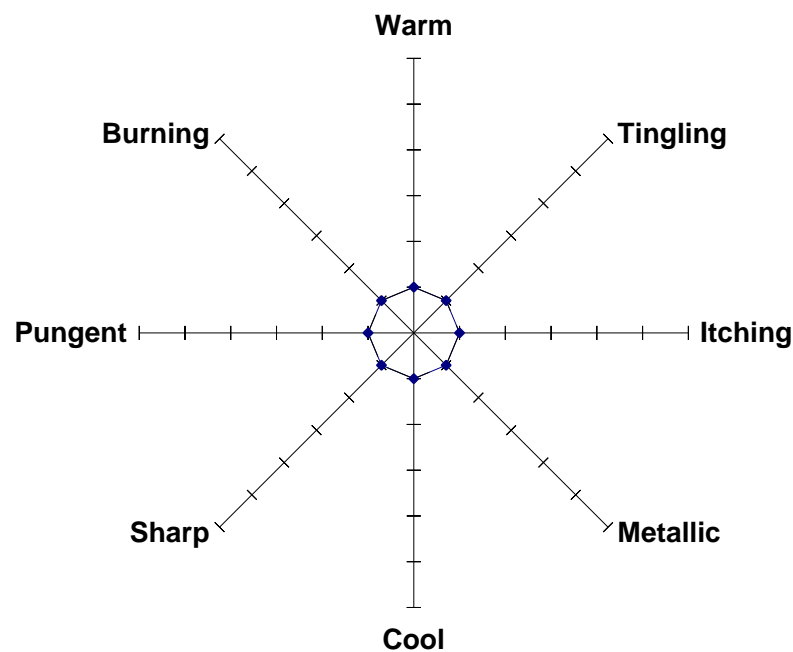
Client: Service Engineering GroupField No.: 60028-1Q-(0-2)Report No.: 533701Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/03/05

### Dose-Response

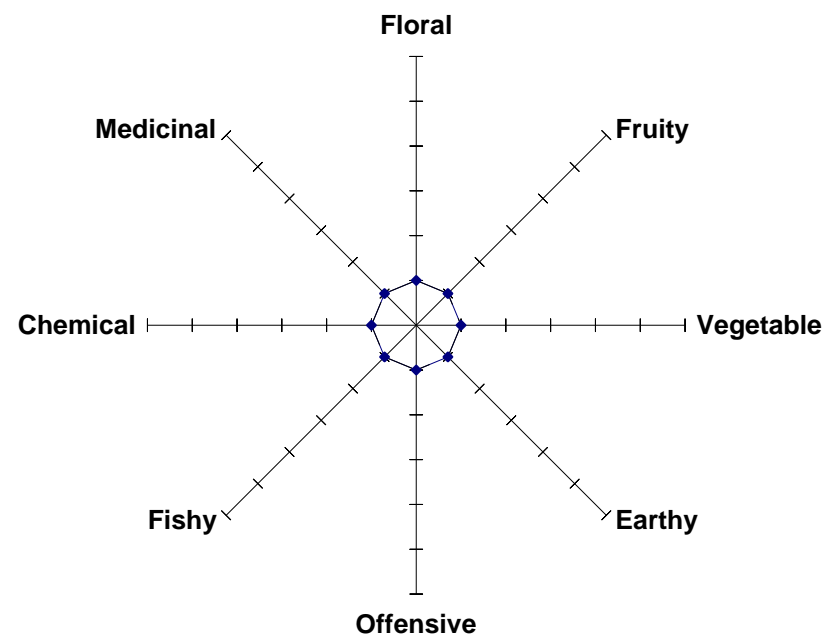


### Dose-Response as Power Law

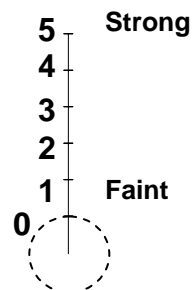


Client: Service Engineering GroupField No.: 60028-1Q-(2-6)Report No.: **533701**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/03/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-1Q-(2-6)

Report No.: **533701**

Project: 05017-0207

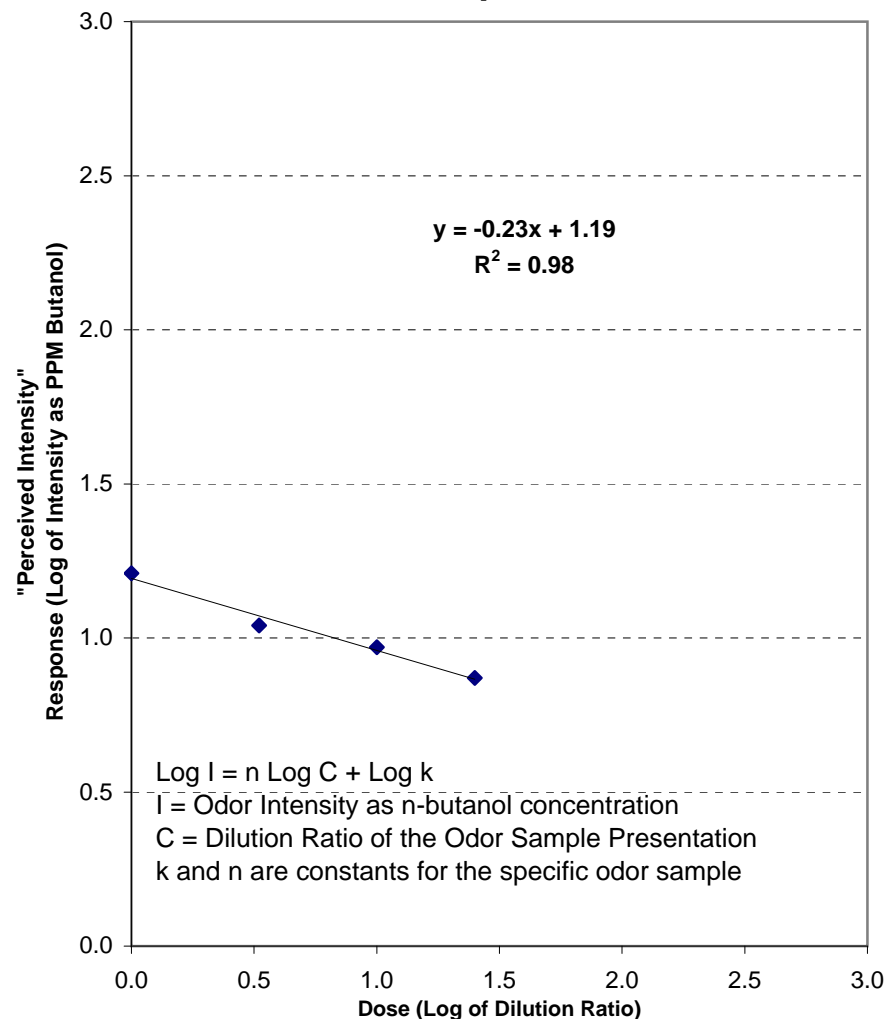
Description: 2-6 Hour Odor Sample

Evaluation Date: 12/03/05

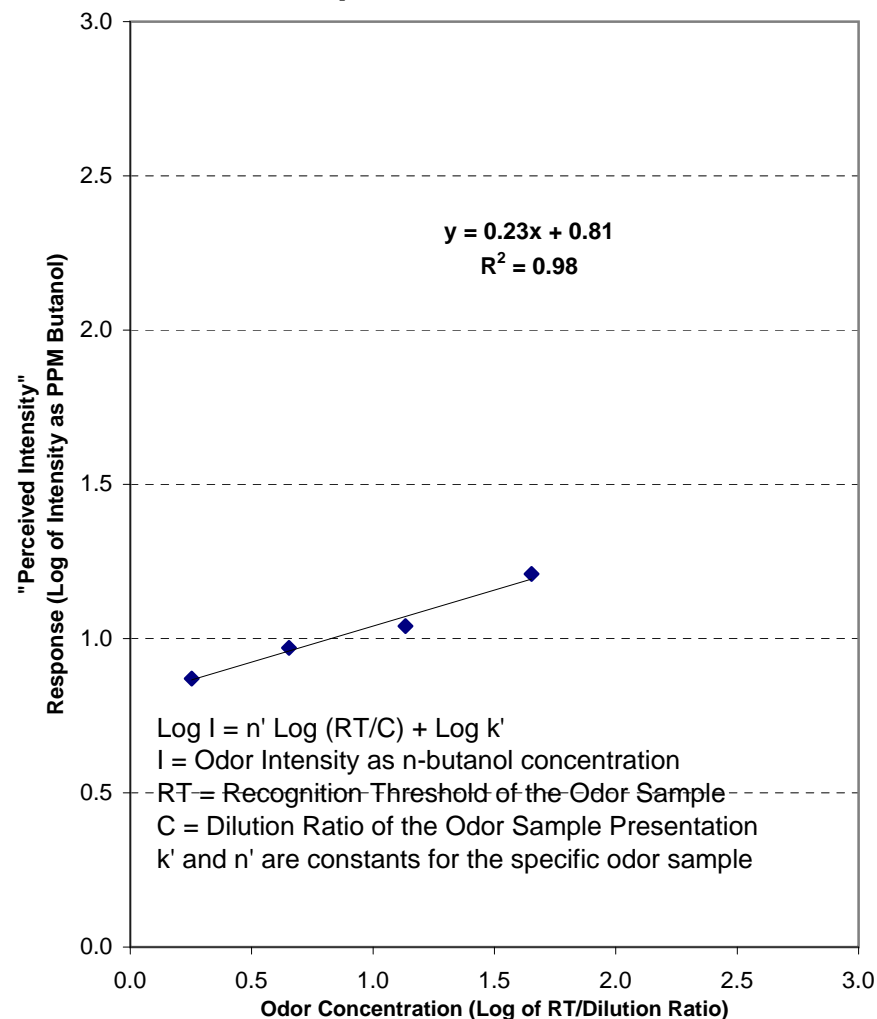
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

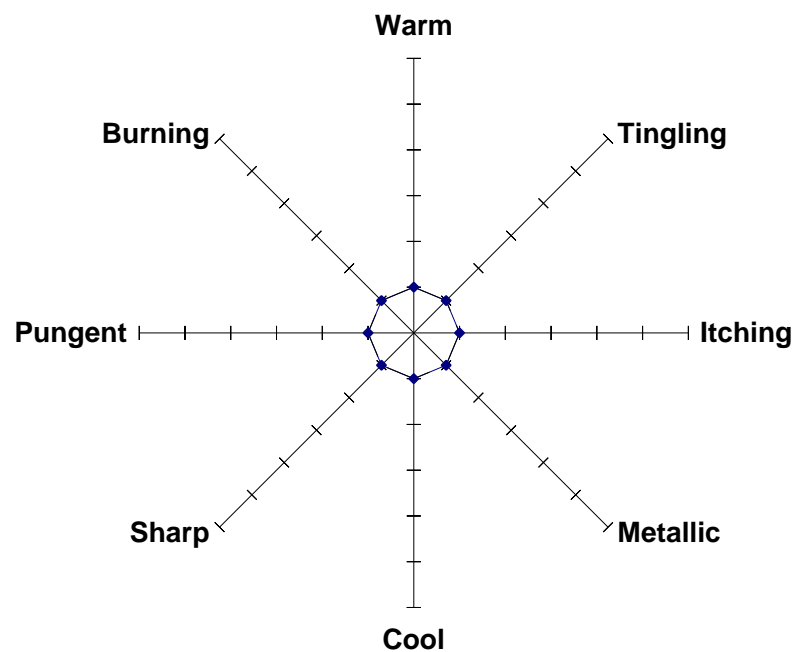
Client: Service Engineering GroupField No.: 60028-1Q-(2-6)Report No.: 533701Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/03/05

### Dose-Response

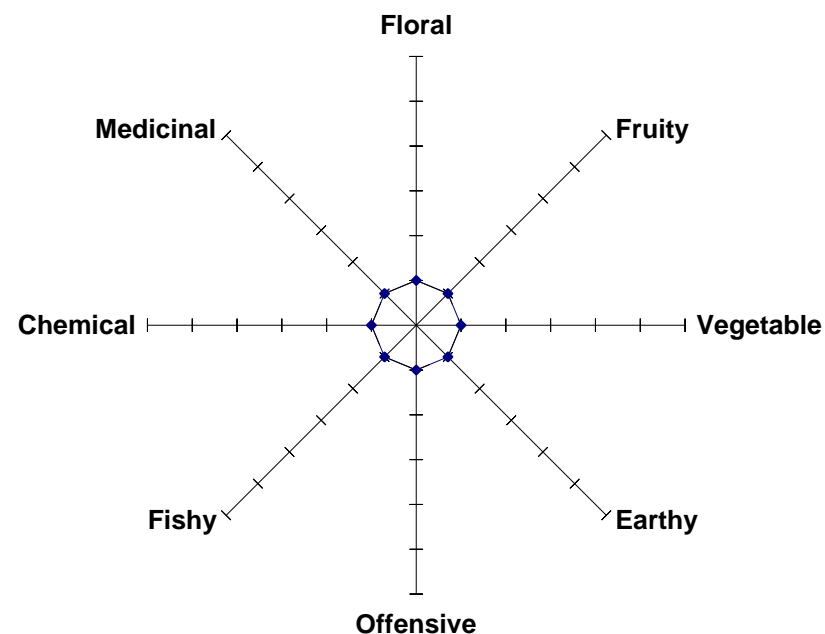


### Dose-Response as Power Law

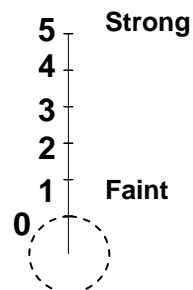


Client: Service Engineering GroupField No.: 60028-1Q-(6-22)Report No.: **533701**Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/03/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 60028-1Q-(6-22)

Report No.: **533701**

Project: 05017-0207

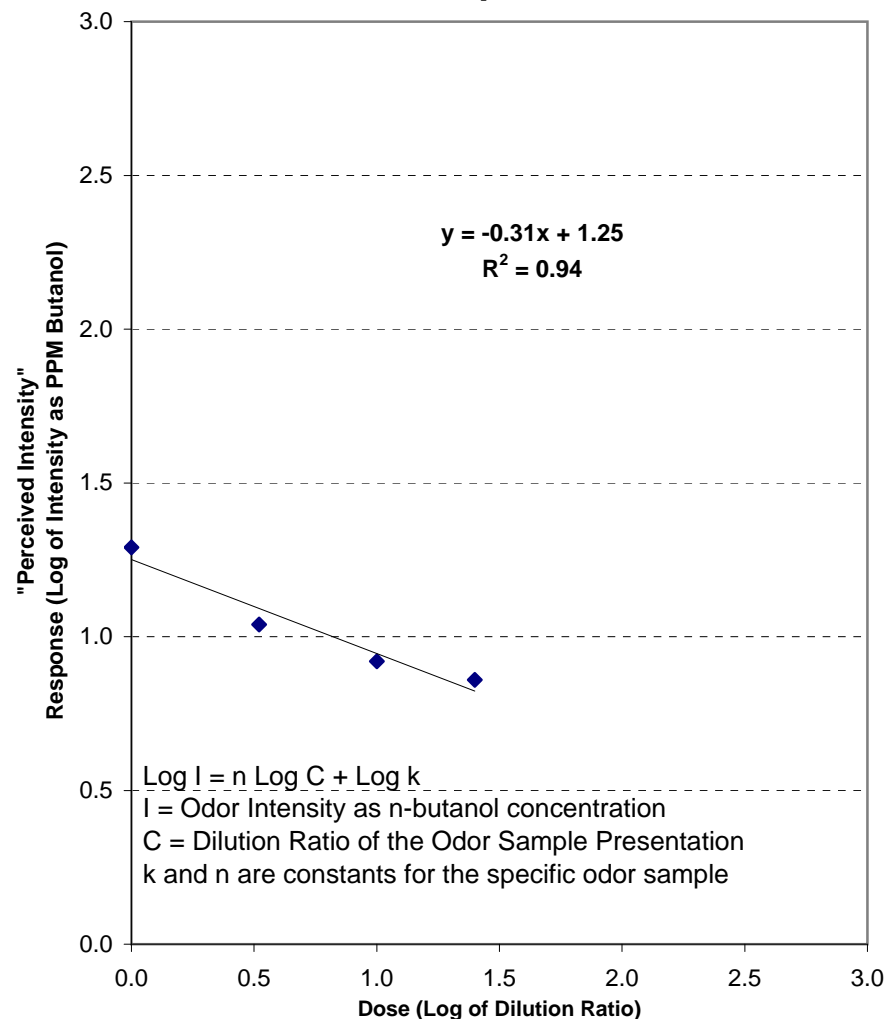
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/03/05

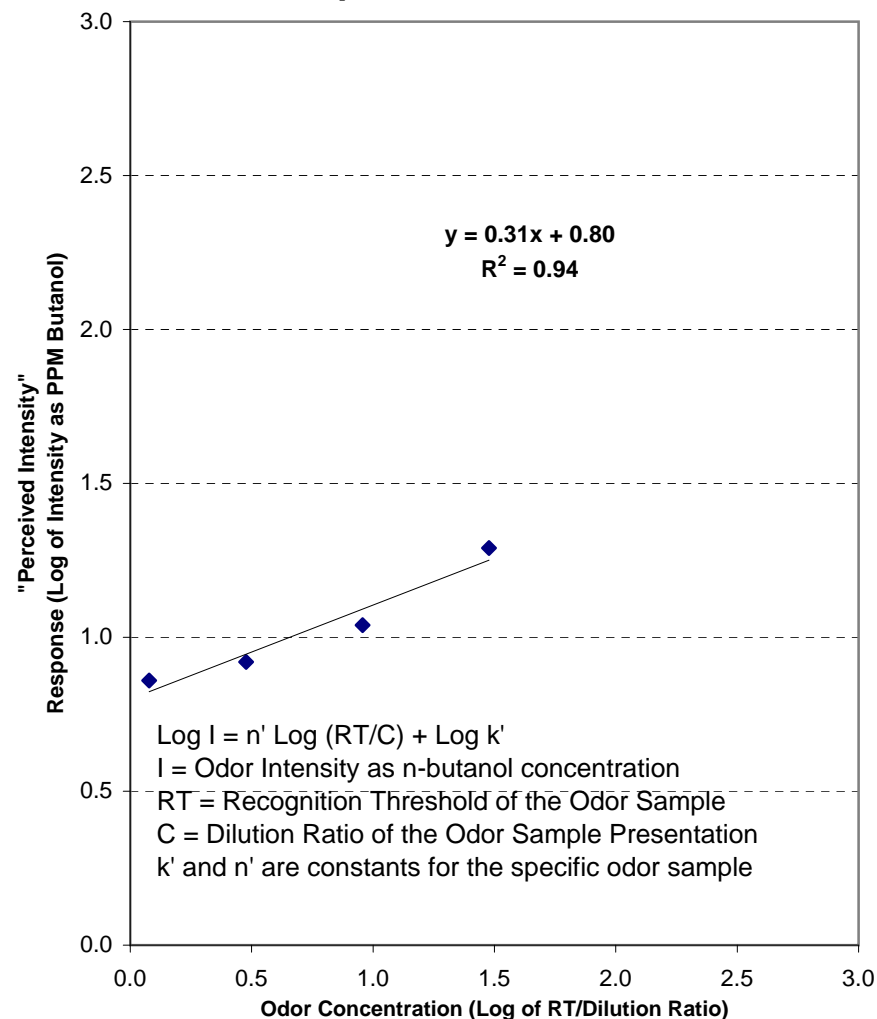
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 60028-1Q-(6-22)Report No.: 533701Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/03/05

### Dose-Response



### Dose-Response as Power Law



CHAIN OF CUSTODY RECORD  
FOR ODOR SAMPLES

12/13/05

Page 1 of 1

Client: SERVICE Engr Group		Sampled By: <i>William C. Hoff</i>		Odor Evaluations Requested: (X)				For Laboratory use Only		
Project Name: 05017-0207		Sampling Date: 12/02 - 12/03/05						Odor Evaluation Report No.		
Comments:								Laboratory Sample No.		
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	LN	FN
1	60028-1Q-(0-2)	0-2 hour odor sample	12/02/05 11:47		X	X		X		
2	60028-1Q-(2-6)	2-6 hour odor sample	12/02/05 15:53		X	X		X		
3	60028-1Q-(6-22)	6-22 hour odor sample	12/03/05 07:47		X	X		X		
4										
5										
6										
7										
8										
9										
10										

Transfer & Shipping  
InformationNumber of  
"Air-Pacs" /

Shipping Boxes \_\_\_\_\_

Relinquished By <i>William C. Hoff</i>	Date 12/03/05	Time 08:30	Accepted By	Date 12/13/05	Time 8:45	Comments & Exceptions Noted
Received at St. Croix Sensory Laboratory						

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

LAB COPIES WHITE &amp; YELLOW

CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207

Odor Evaluation Report

Report No. 534003

12/06/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make your project or product a success.

***[www.fivesenses.com](http://www.fivesenses.com)***

3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 534003

Project: 05017-0207

Evaluation Date: 12/06/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	70015-IN-(0-2)	0-2 Hour Odor Sample	100	60	14	-0.25			
2	70015-IN-(2-6)	2-6 Hour Odor Sample	90	70	20	-0.26			
3	70015-IN-(6-22)	6-22 Hour Odor Sample	85	50	15	-0.22			

# St. Croix Sensory, Inc.

# Odor Evaluation Report

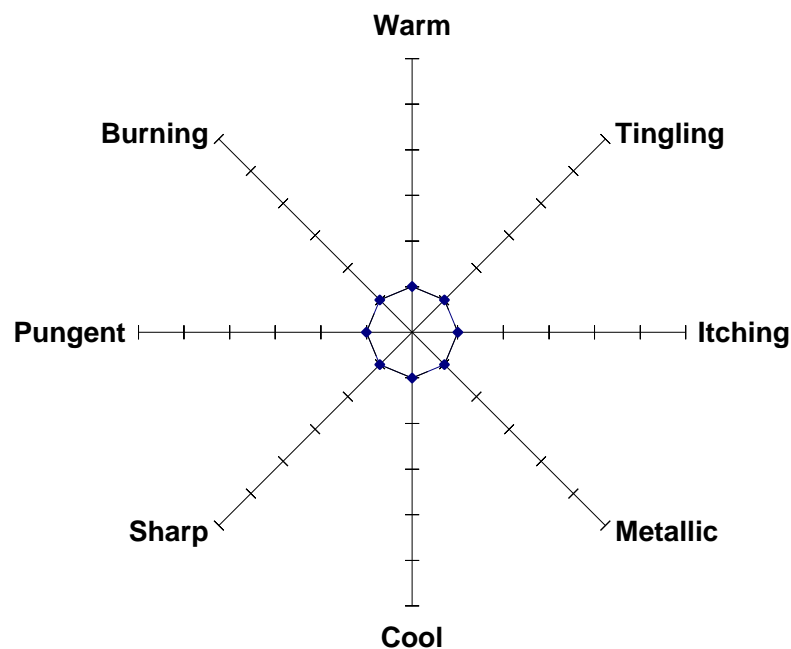
Client: SERVICE Engineering Group

Report No.: 534003

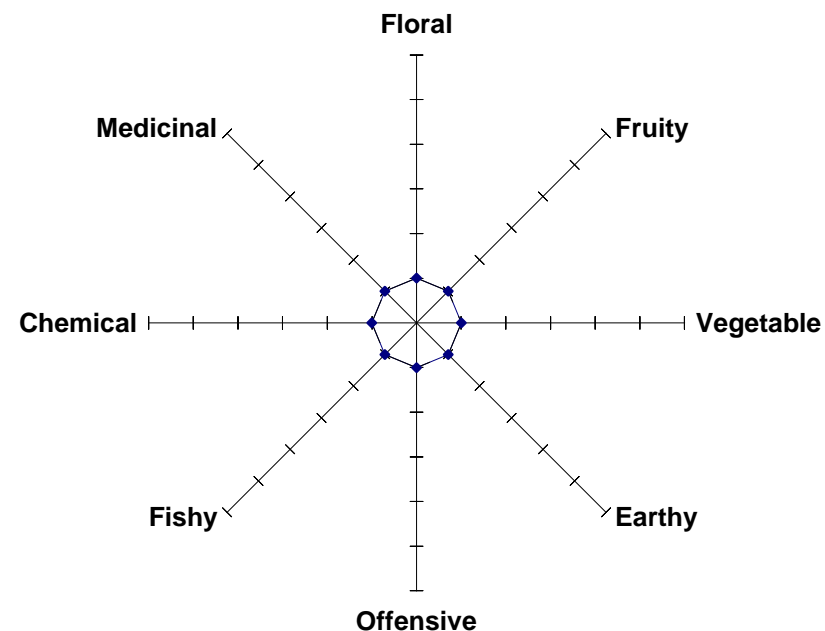
Project: 05017-0207

Evaluation Date: 12/06/05

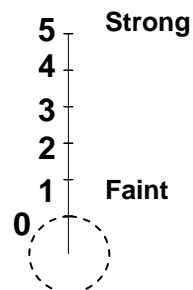
#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	

Client: SERVICE Engineering GroupField No.: 70015-IN-(0-2)Report No.: 534003Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/06/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-IN-(0-2)

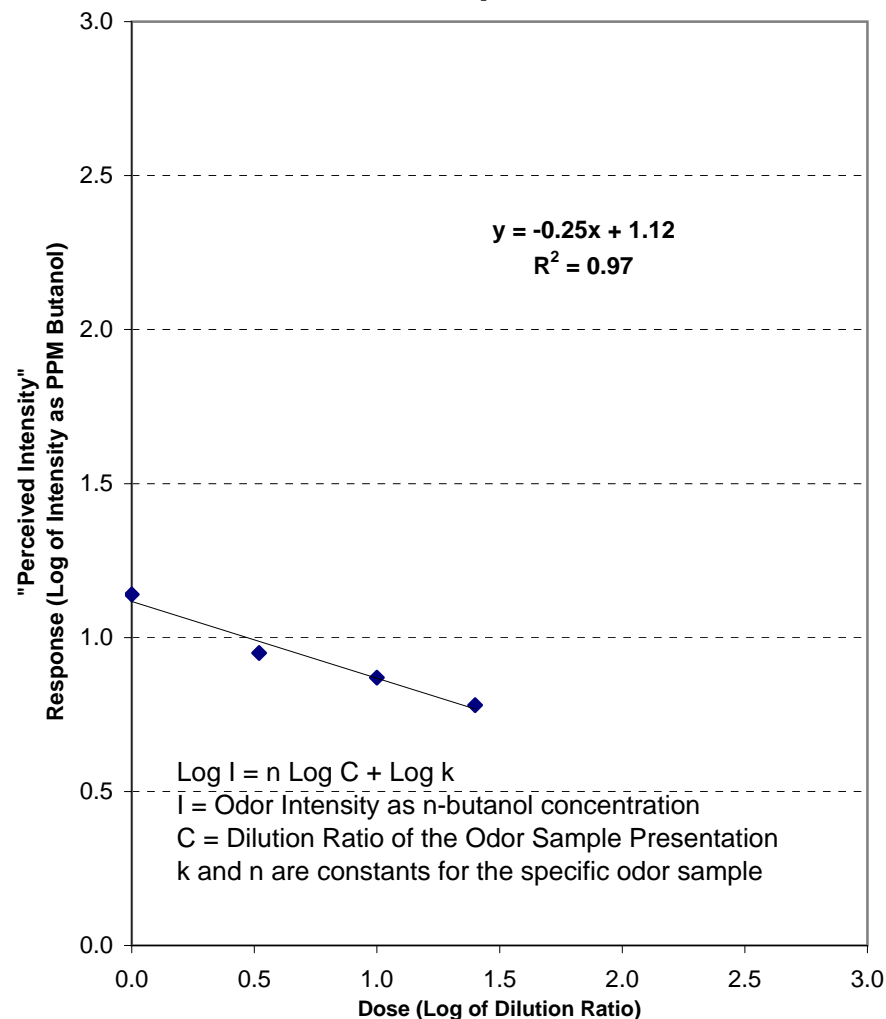
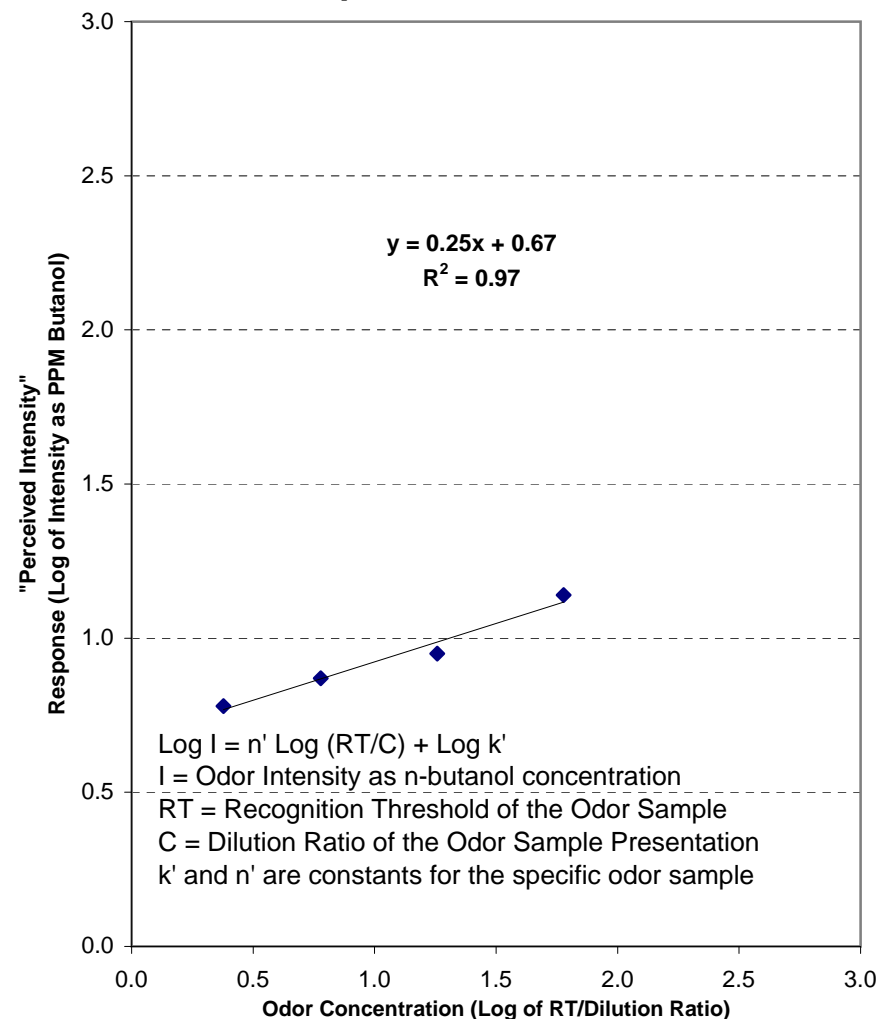
Report No.: **534003**

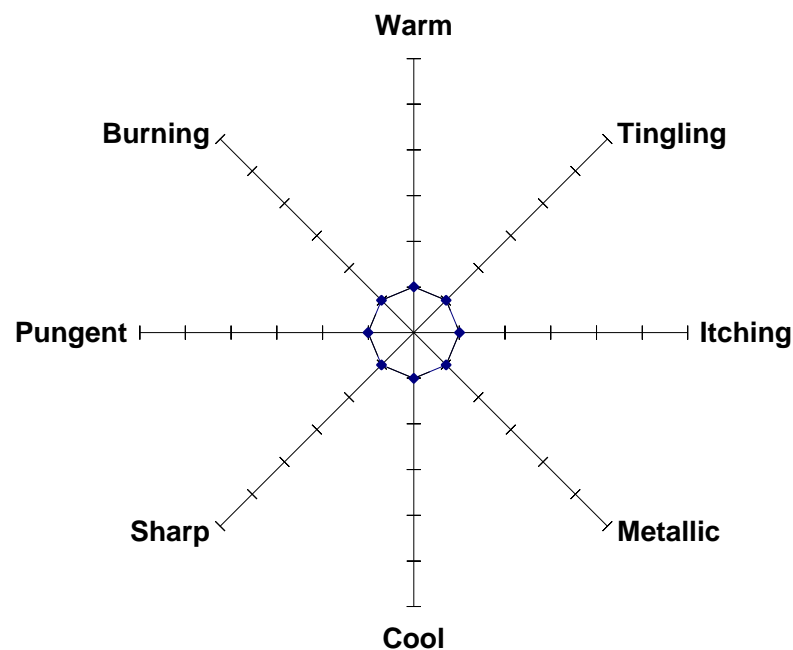
Project: 05017-0207

Description: 0-2 Hour Odor Sample

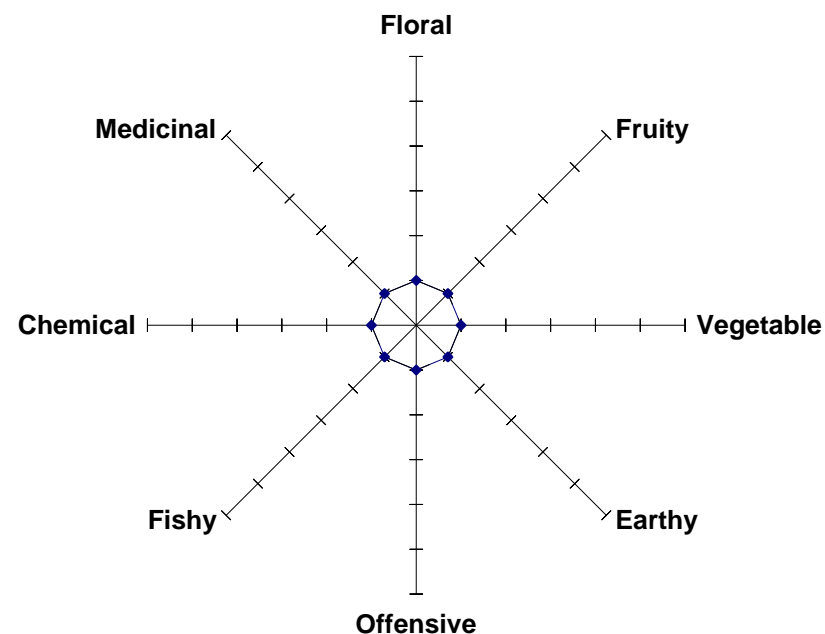
Evaluation Date: 12/06/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

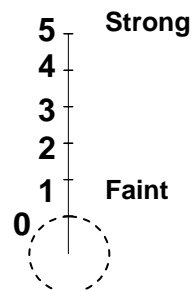
Client: SERVICE Engineering GroupField No.: 70015-IN-(0-2)Report No.: 534003Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/06/05**Dose-Response****Dose-Response as Power Law**

Client: SERVICE Engineering GroupField No.: 70015-IN-(2-6)Report No.: 534003Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/06/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-IN-(2-6)

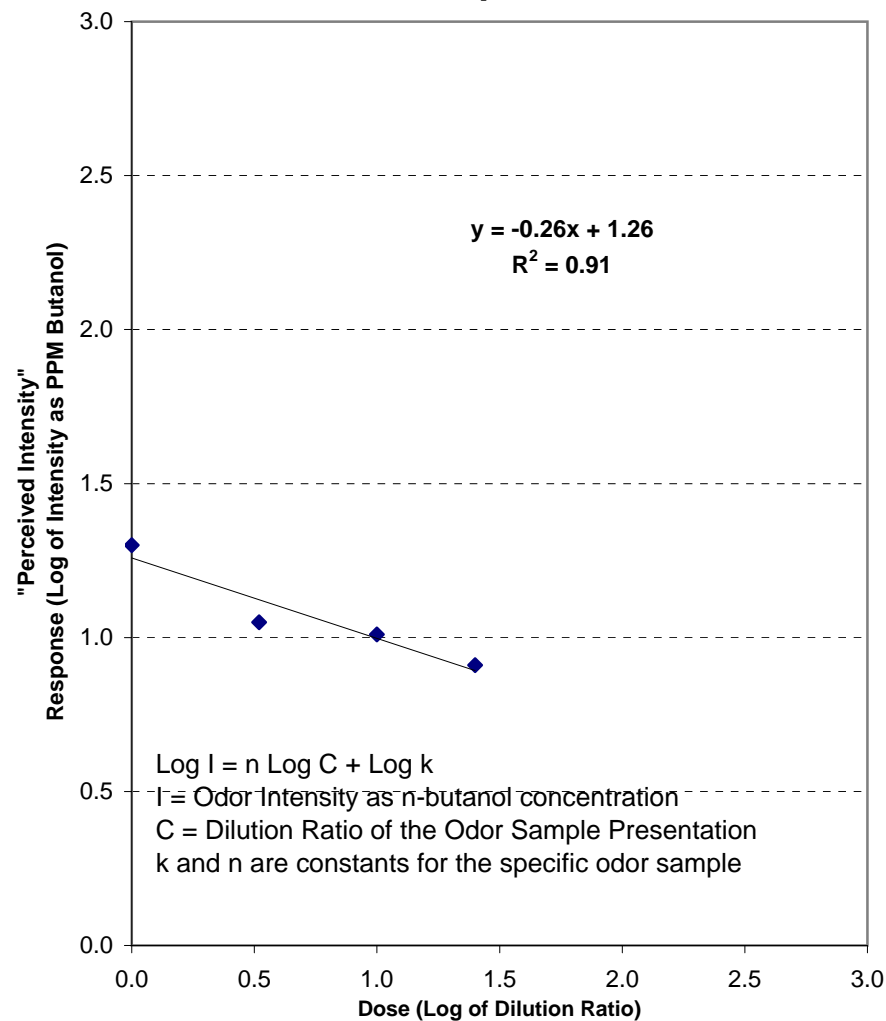
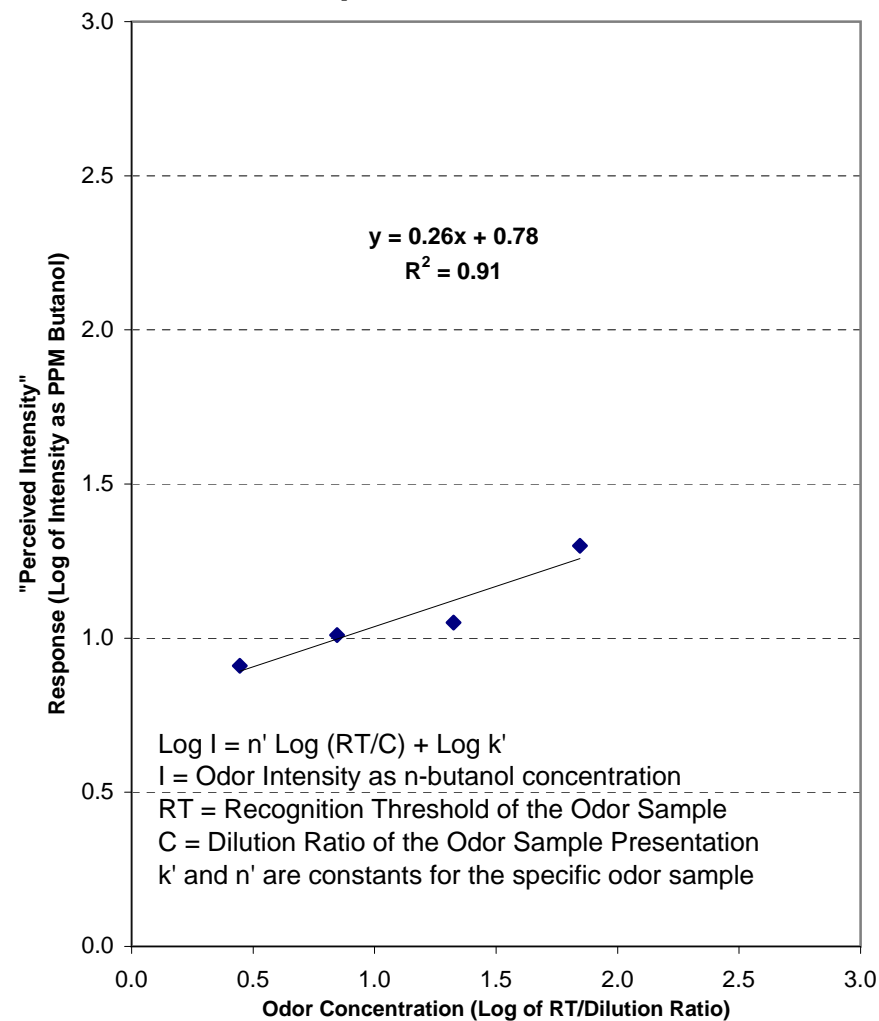
Report No.: **534003**

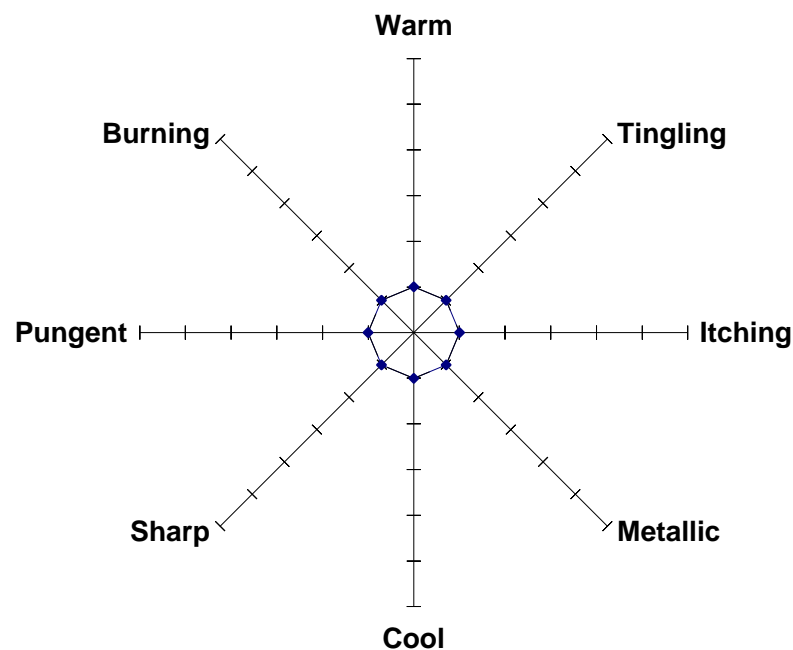
Project: 05017-0207

Description: 2-6 Hour Odor Sample

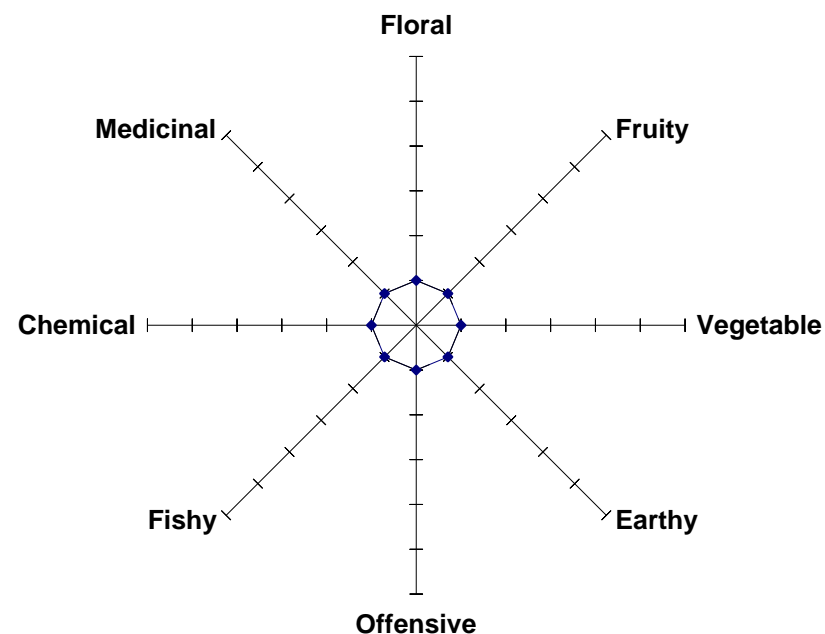
Evaluation Date: 12/06/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

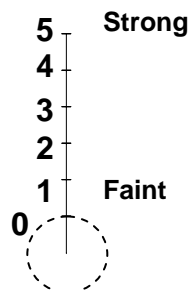
Client: SERVICE Engineering GroupField No.: 70015-IN-(2-6)Report No.: 534003Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/06/05**Dose-Response****Dose-Response as Power Law**

Client: SERVICE Engineering GroupField No.: 70015-IN-(6-22)Report No.: 534003Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/06/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-IN-(6-22)

Report No.: **534003**

Project: 05017-0207

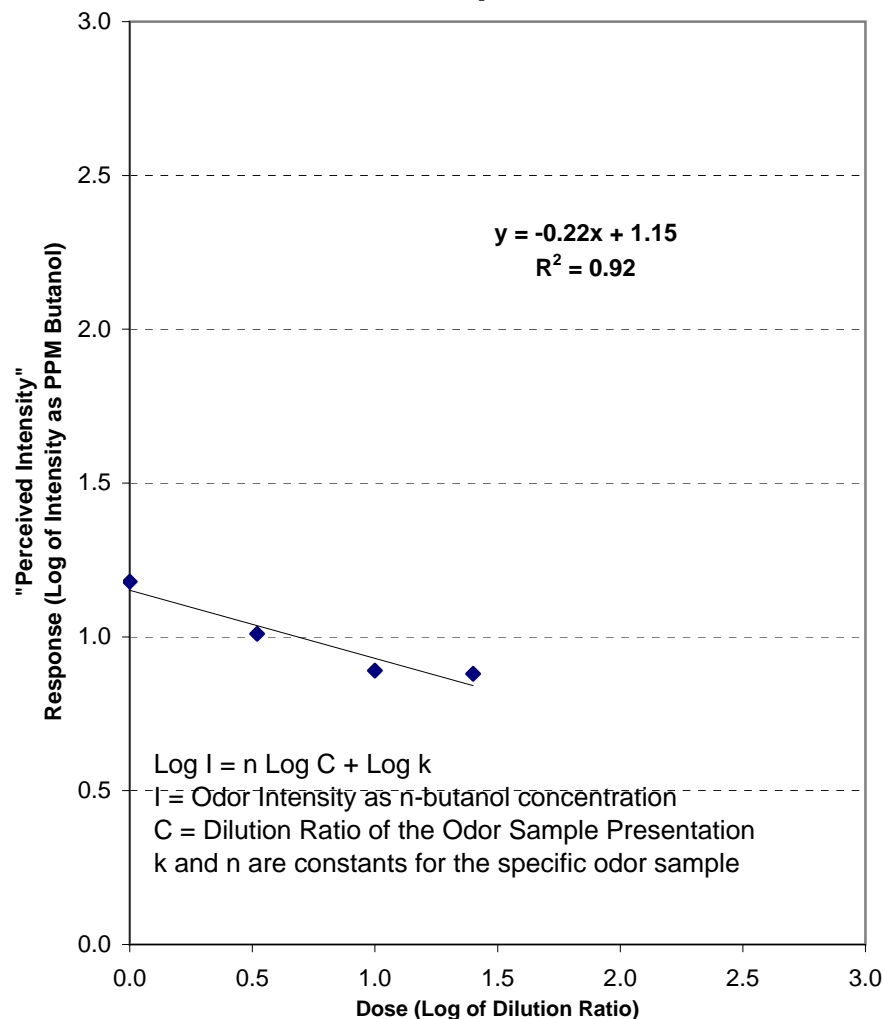
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/06/05

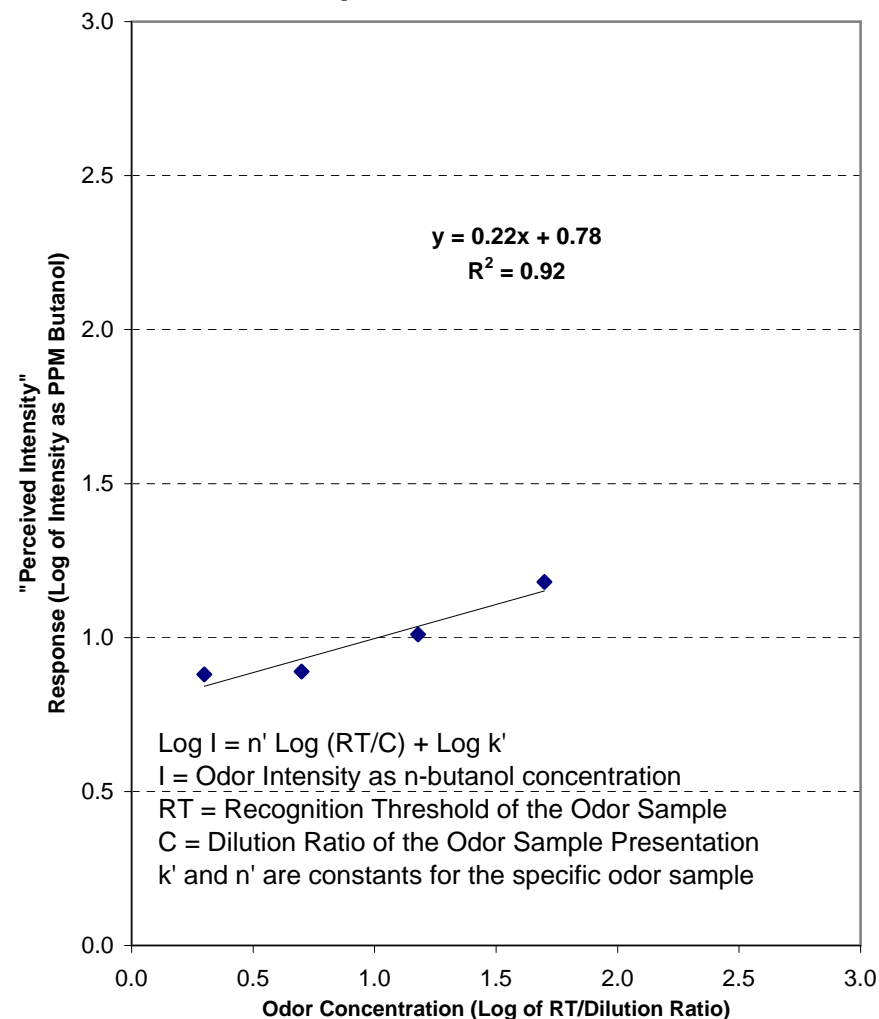
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 70015-IN-(6-22)Report No.: 534003Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/06/05

### Dose-Response



### Dose-Response as Power Law





CHAIN OF CUSTODY RECORD  
FOR ODOR SAMPLESClient: SERVICE Engr GroupSampled By: William C. HoffSampling Date: 12/05 - 12/06/05

Odor Evaluations Requested: (X)

Page 1 of 1Project Name: 05017 - 0207

Comments:

Sampling Date: 12/05 - 12/06/05

For Laboratory use Only

Odor Evaluation  
Report No.Laboratory Sample No.  
LN FNField H<sub>2</sub>S  
(ppm)Sample  
Time

Sample Description

Line  
No.

1

70015-IN-(0-2)

0-2 hour odor sample

12/05/05  
11:4112/05/05  
15:4812/06/05  
07:41

X

X

X

X

X

2

70015-IN-(2-6)

2-6 hour odor sample

12/05/05  
15:4812/06/05  
07:41

X

X

X

X

X

X

3

70015-IN-(6-22)

6-22 hour odor sample

12/05/05  
15:4812/06/05  
07:41

X

X

X

X

X

X

4

5

6

7

8

9

10

Transfer & Shipping  
InformationNumber of  
"Air-Pacs"/

Shipping Boxes

Relinquished By

Date

Time

Accepted By

Date

Time

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory

Cathy Moss

12/06/05 08:00

12/06/05 8:35

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207

Odor Evaluation Report

Report No. 534103

12/07/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make your project or product a success.

***[www.fivesenses.com](http://www.fivesenses.com)***

3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 534103

Project: 05017-0207

Evaluation Date: 12/07/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	70015-10M-(0-2)	0-2 Hour Odor Sample	100	65	35	-0.43			
2	70015-10M-(2-6)	2-6 Hour Odor Sample	150	110	25	-0.31			
3	70015-10M-(6-22)	6-22 Hour Odor Sample	55	40	22	-0.36			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

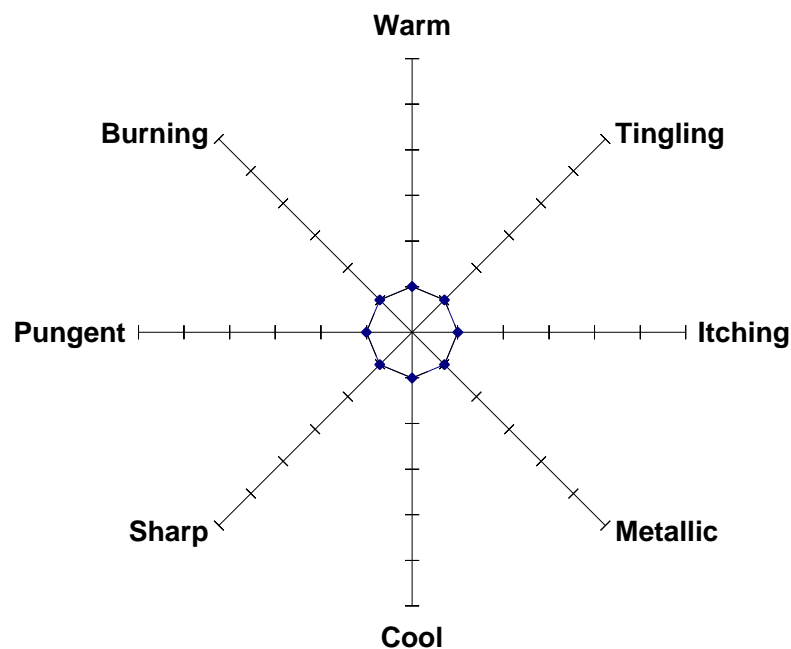
Client: SERVICE Engineering Group

Report No.: **534103**

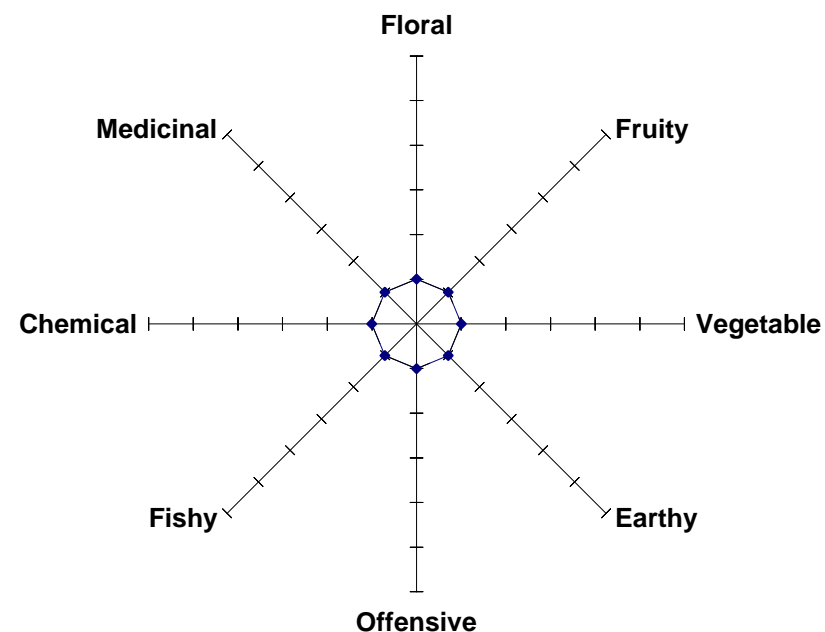
Project: 05017-0207

Evaluation Date: 12/07/05

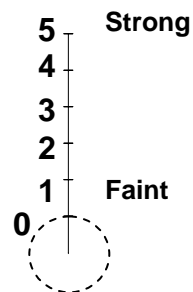
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Client: SERVICE Engineering GroupField No.: 70015-10M-(0-2)Report No.: 534103Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/07/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-10M-(0-2)

Report No.: **534103**

Project: 05017-0207

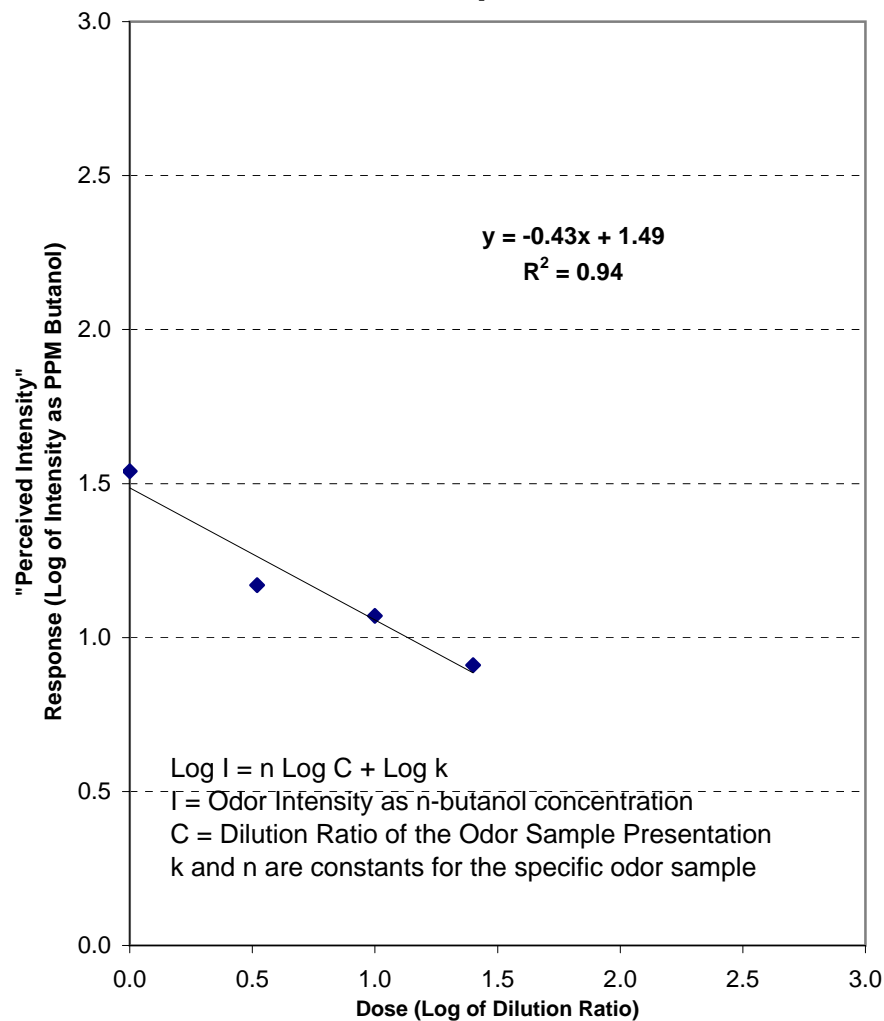
Description: 0-2 Hour Odor Sample

Evaluation Date: 12/07/05

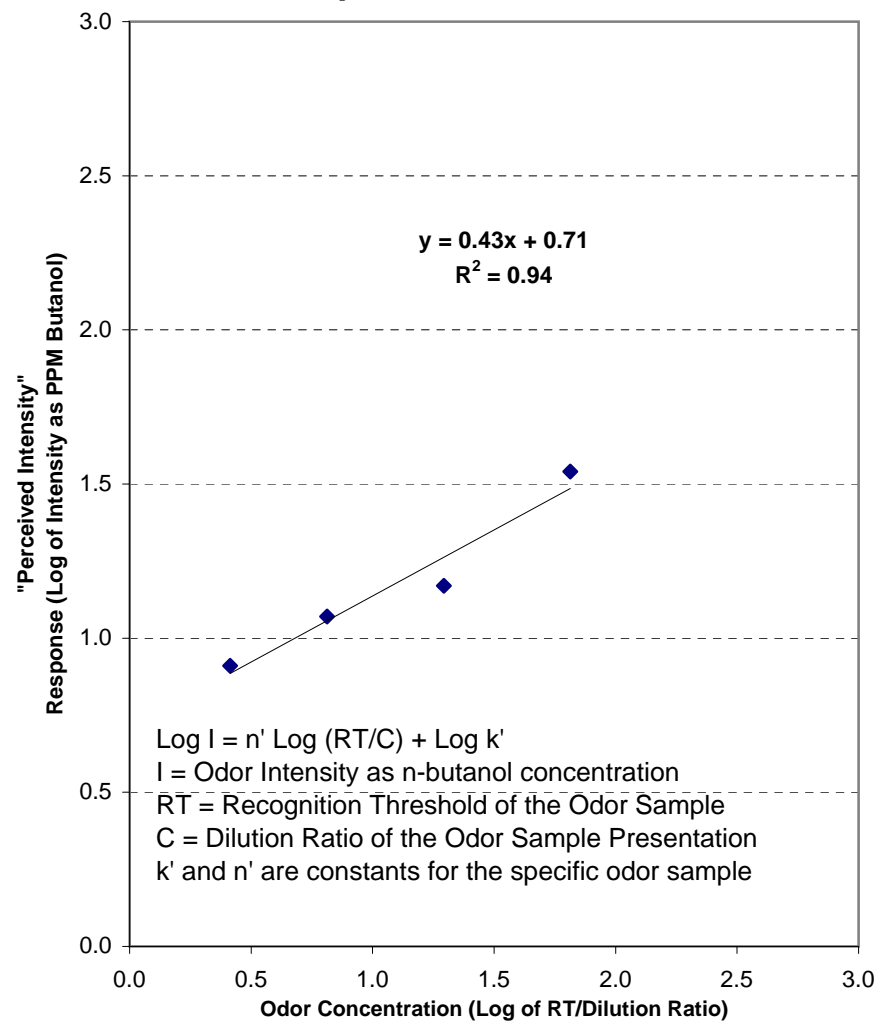
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 70015-10M-(0-2)Report No.: 534103Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/07/05

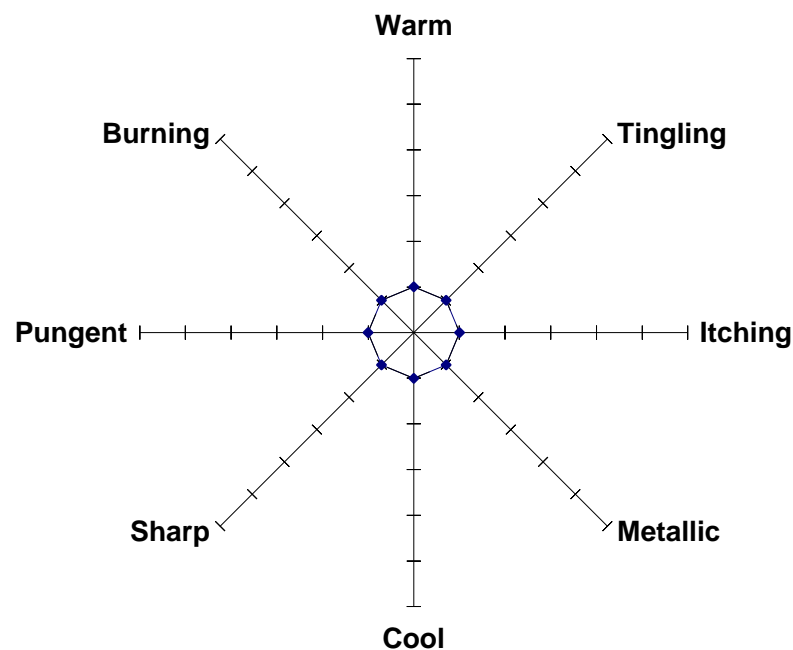
### Dose-Response



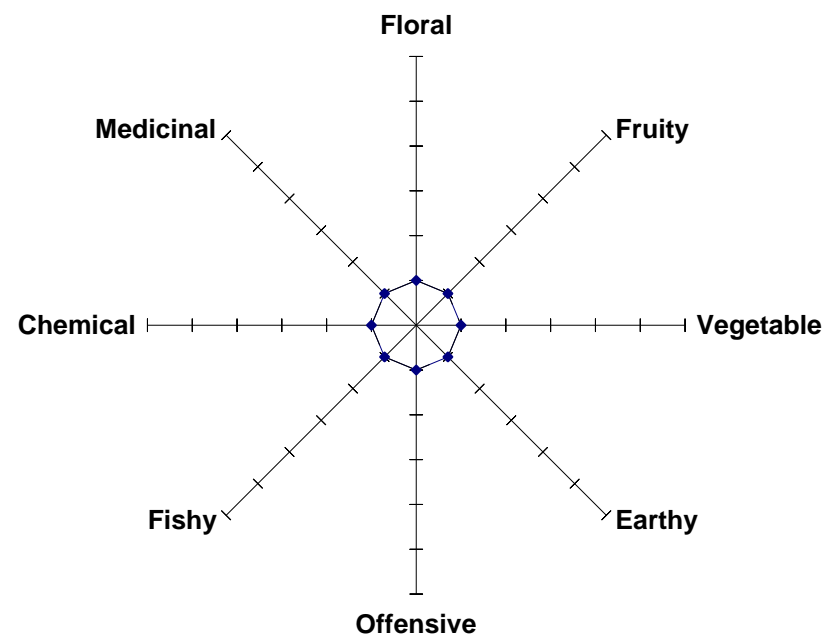
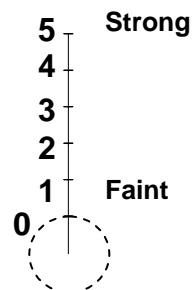
### Dose-Response as Power Law





Client: SERVICE Engineering GroupField No.: 70015-10M-(2-6)Report No.: **534103**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/07/05**Sensation Descriptor Graph**

	Average Relative Strength
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph****KEY****Relative Strength**

	Average Relative Strength
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-10M-(2-6)

Report No.: **534103**

Project: 05017-0207

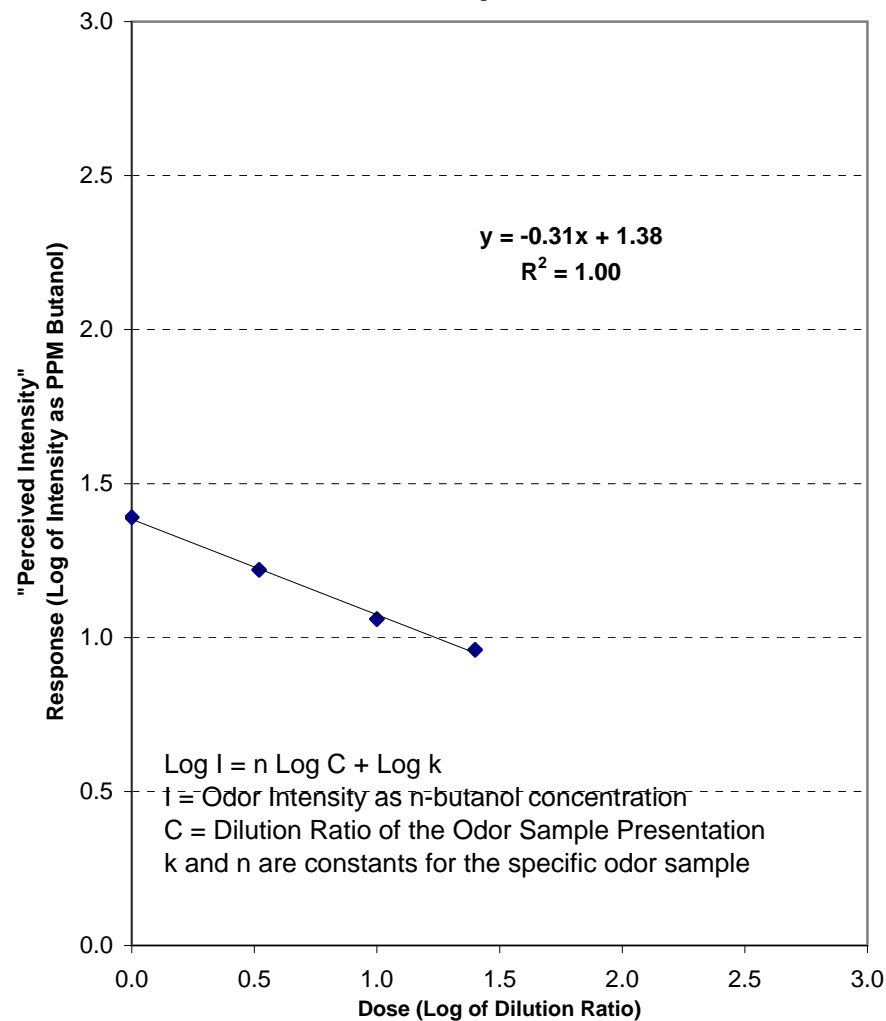
Description: 2-6 Hour Odor Sample

Evaluation Date: 12/07/05

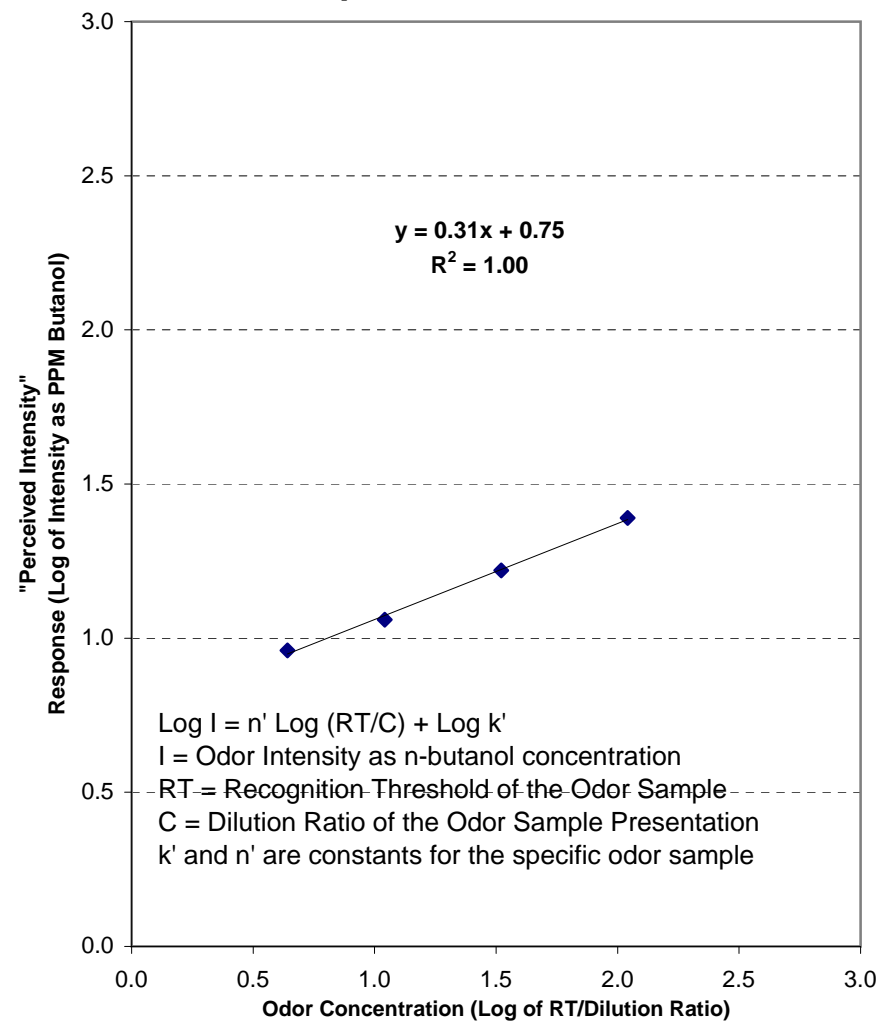
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

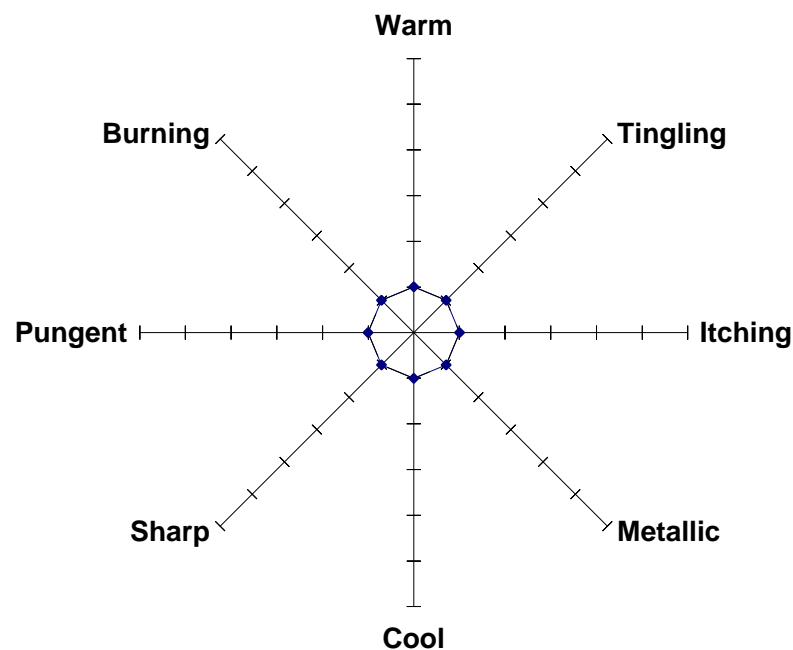
Client: SERVICE Engineering GroupField No.: 70015-10M-(2-6)Report No.: 534103Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/07/05

### Dose-Response

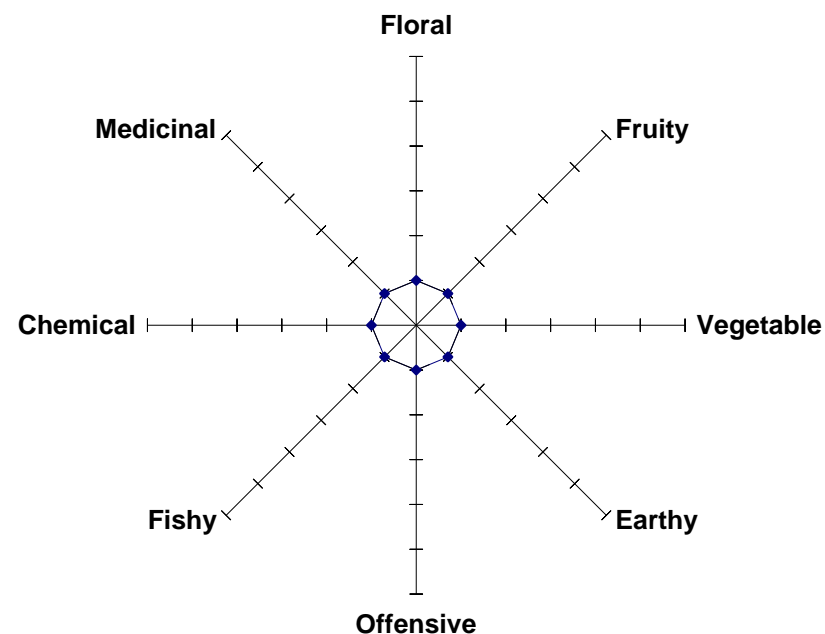


### Dose-Response as Power Law

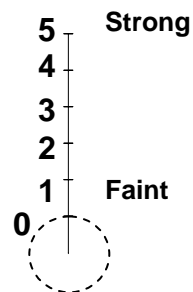


Client: SERVICE Engineering GroupField No.: 70015-10M-(6-22)Report No.: **534103**Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/07/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-10M-(6-22)

Report No.: **534103**

Project: 05017-0207

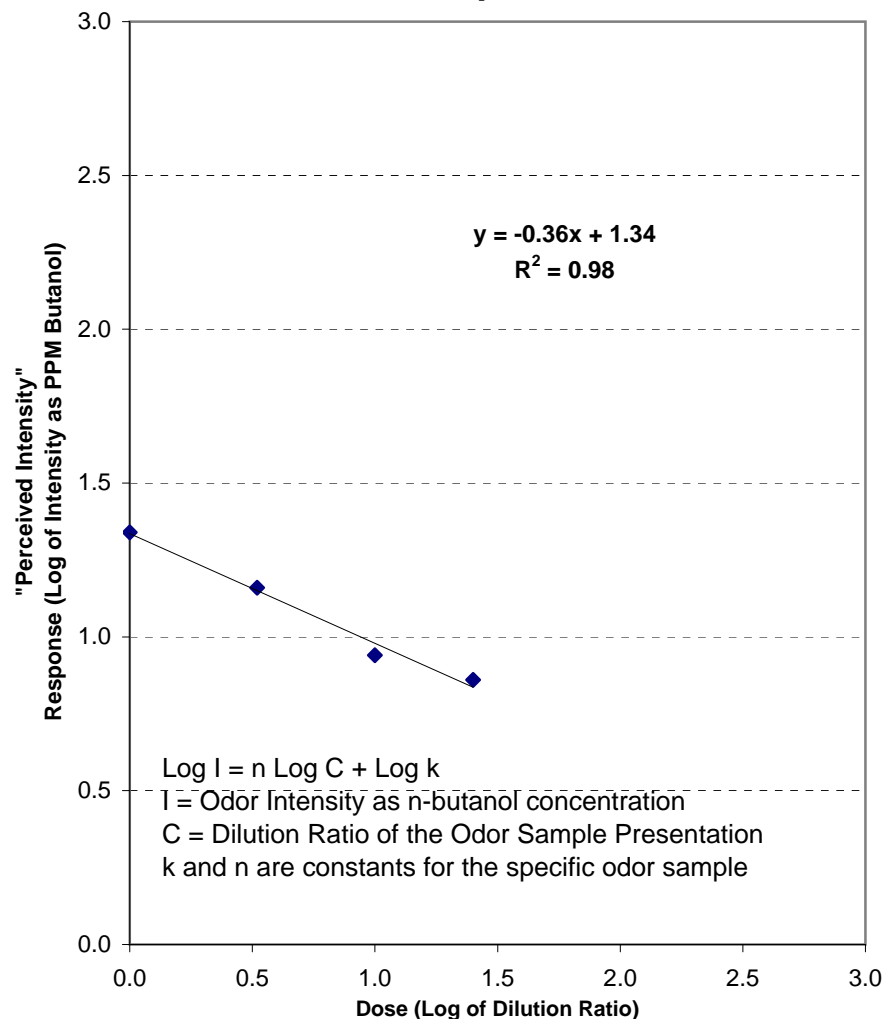
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/07/05

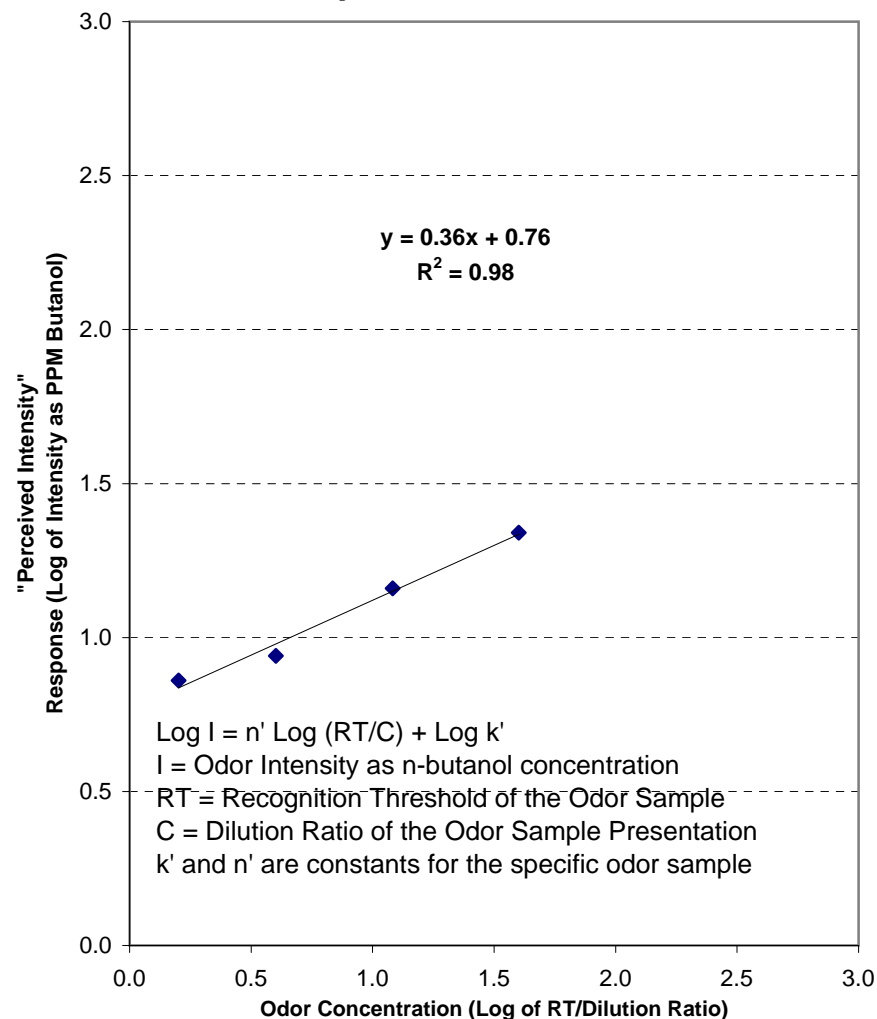
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 70015-10M-(6-22)Report No.: 534103Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/07/05

### Dose-Response



### Dose-Response as Power Law



# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Client: SERVICE Engr GroupSampled By: Will C. HillPage 1 of 1Project Name: 05017 - 0207Sampling Date: 12/06 - 12/07/05

Comments:

Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Evaluations Requested: (X)				Laboratory Sample No. LN FN
					Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	
1	70015-10M-(0-2)	0-2 hour odor sample	12/06/05 11:50		X	X		X	
2	70015-10M-(2-6)	2-6 hour odor sample	12/06/05 16:00		X	X		X	
3	70015-10M-(6-22)	6-22 hour odor sample	12/07/05 07:50		X	X		X	
4									
5									
6									
7									
8									
9									
10									

## Transfer & Shipping Information

Number of "Air-Pacs" /

Shipping Boxes \_\_\_\_\_

Relinquished By <u>Will C. Hill</u>	Date <u>12/07/05</u>	Time <u>08:30</u>	Accepted By	Date	Time	Comments & Exceptions Noted
Received at St. Croix Sensory Laboratory <u>Cathy Moss</u>						

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.





St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207

Odor Evaluation Report

Report No. 534202

12/08/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make your project or product a success.

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P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 534202

Project: 05017-0207

Evaluation Date: 12/08/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	70015-10Q-(0-2)	0-2 Hour Odor Sample	50	35	23	-0.34			
2	70015-10Q-(2-6)	2-6 Hour Odor Sample	95	65	21	-0.30			
3	70015-10Q-(6-22)	6-22 Hour Odor Sample	190	120	25	-0.29			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

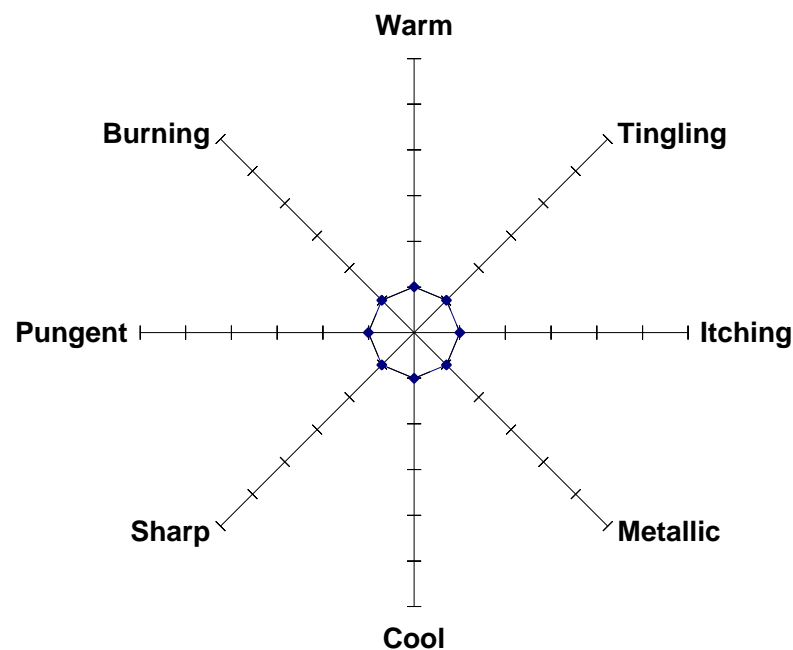
Client: SERVICE Engineering Group

Project: 05017-0207

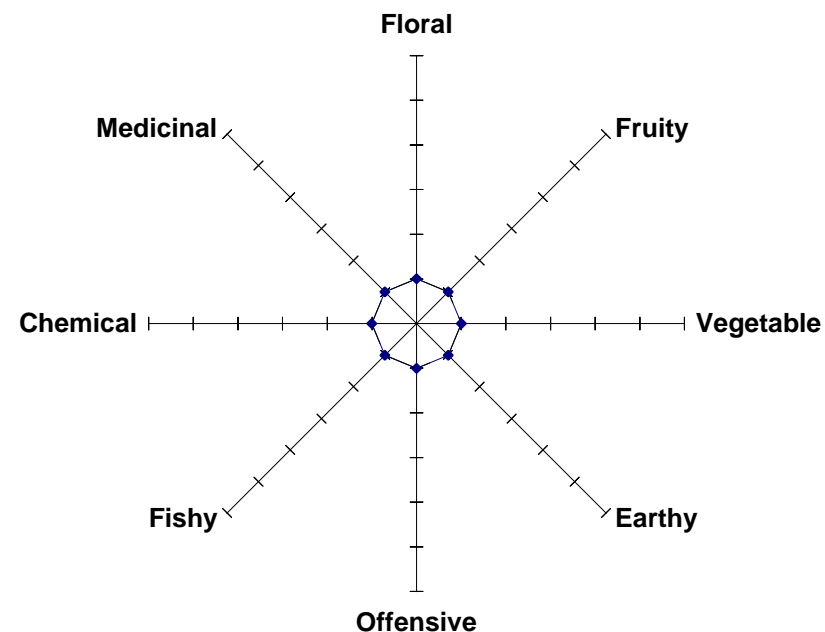
Report No.: **534202**

Evaluation Date: 12/08/05

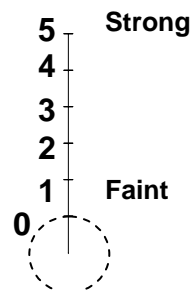
[illegible]

Client: SERVICE Engineering GroupField No.: 70015-10Q-(0-2)Report No.: 534202Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/08/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-10Q-(0-2)

Report No.: **534202**

Project: 05017-0207

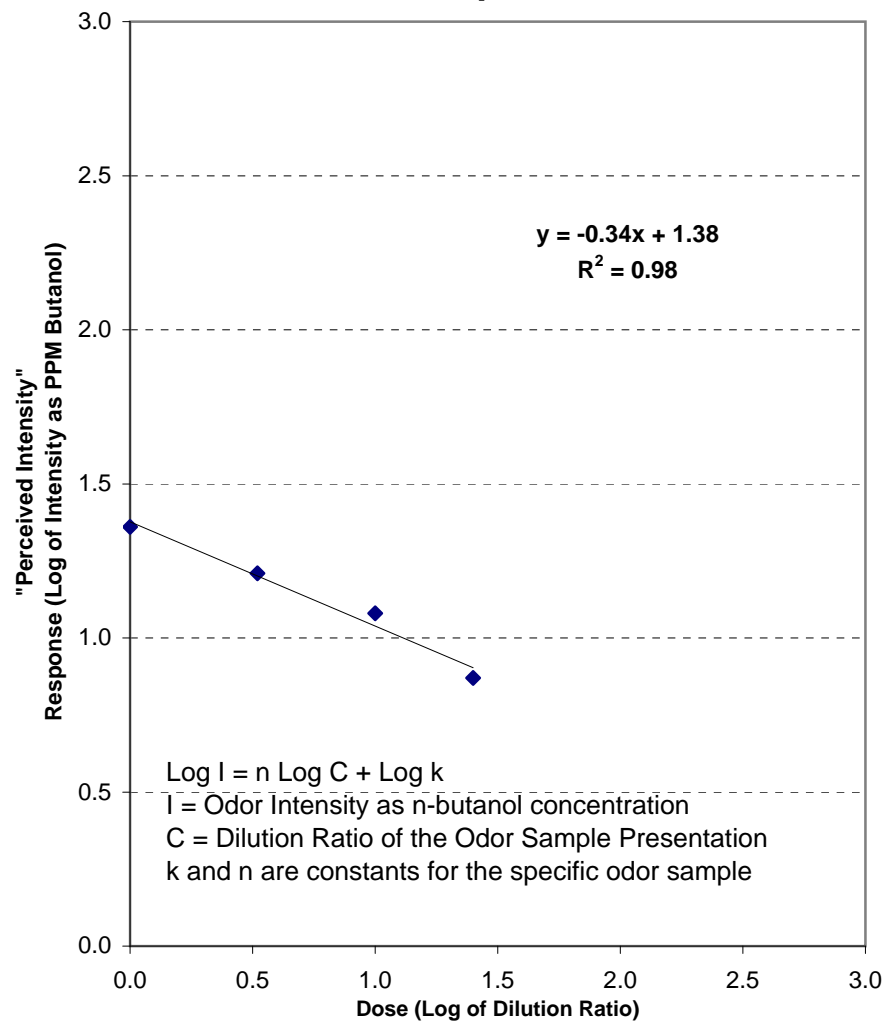
Description: 0-2 Hour Odor Sample

Evaluation Date: 12/08/05

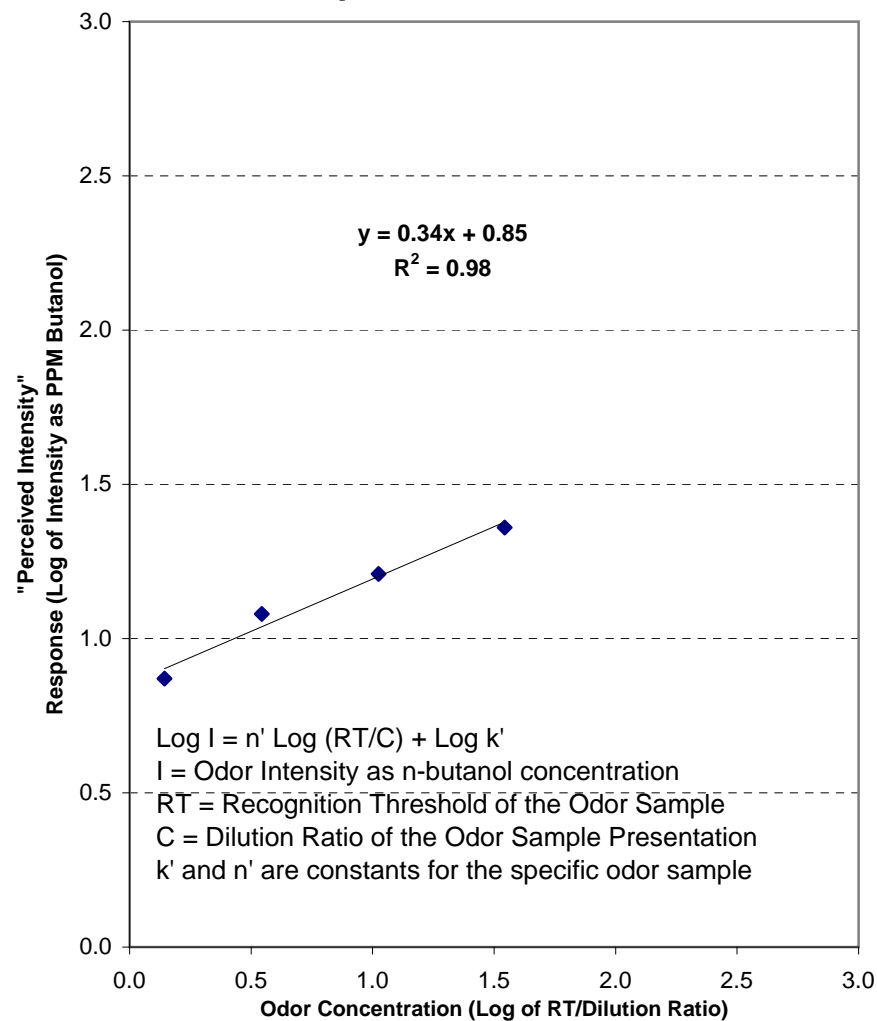
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

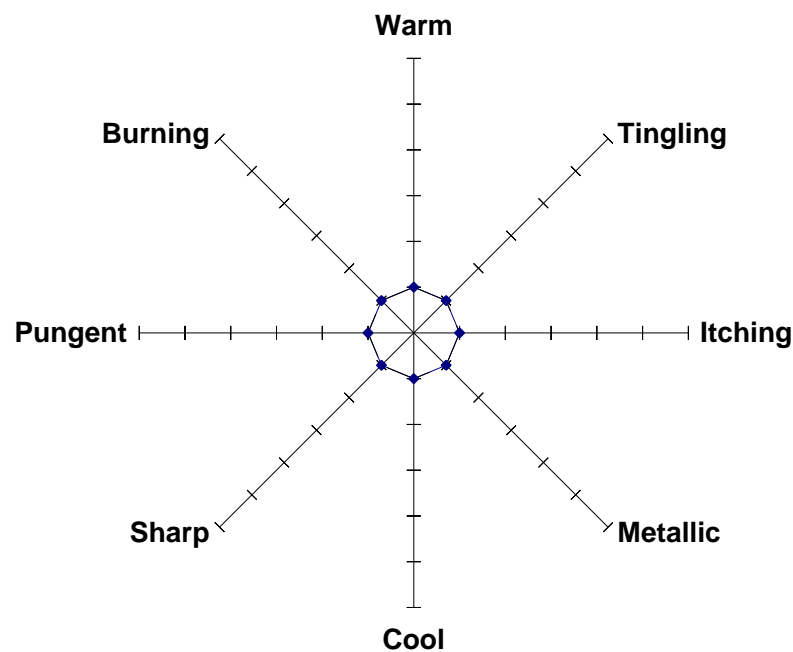
Client: SERVICE Engineering GroupField No.: 70015-10Q-(0-2)Report No.: 534202Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/08/05

### Dose-Response

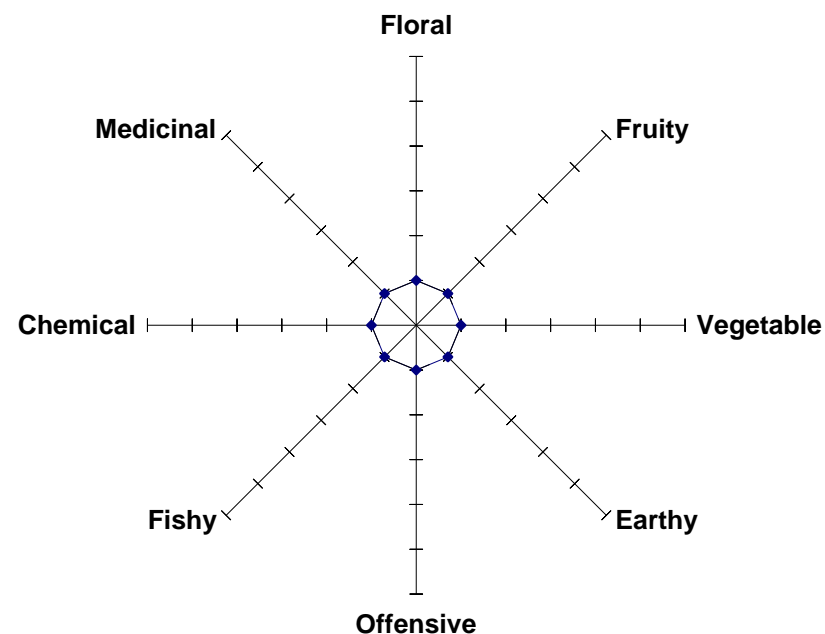


### Dose-Response as Power Law

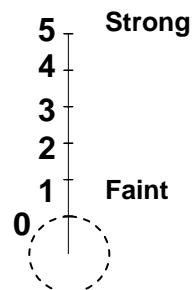


Client: SERVICE Engineering GroupField No.: 70015-10Q-(2-6)Report No.: 534202Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/08/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-10Q-(2-6)

Report No.: **534202**

Project: 05017-0207

Description: 2-6 Hour Odor Sample

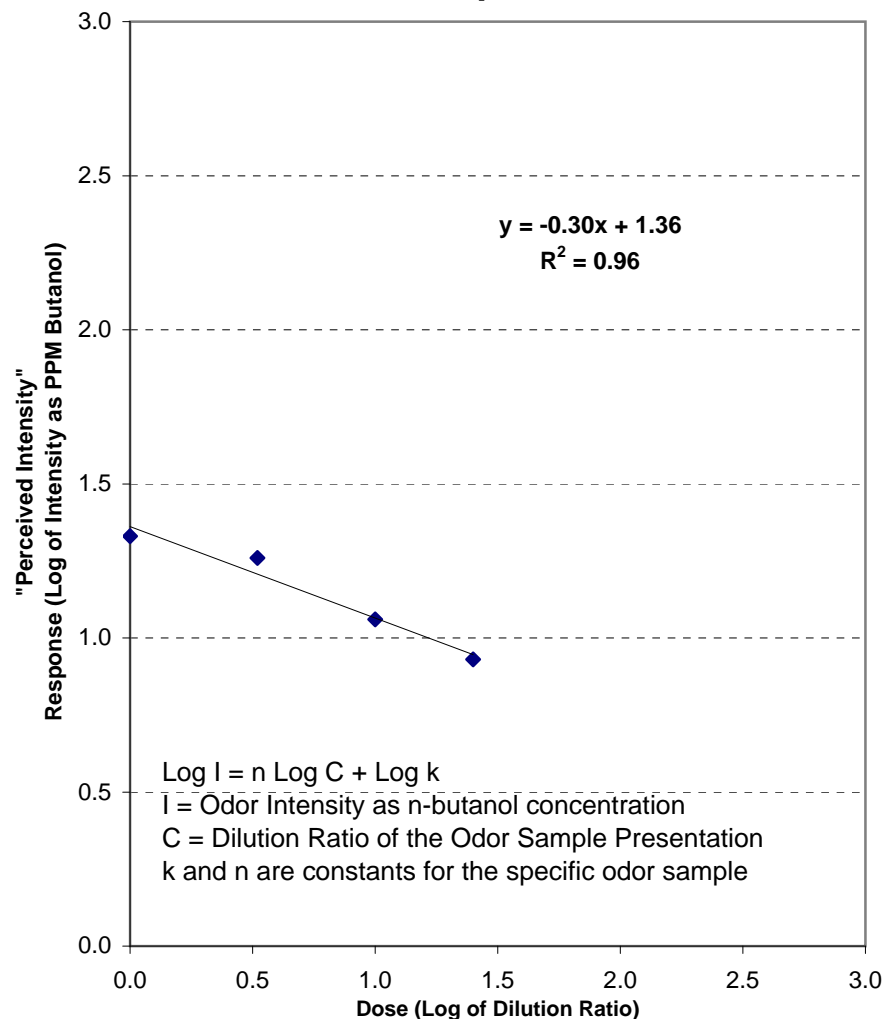
Evaluation Date: 12/08/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

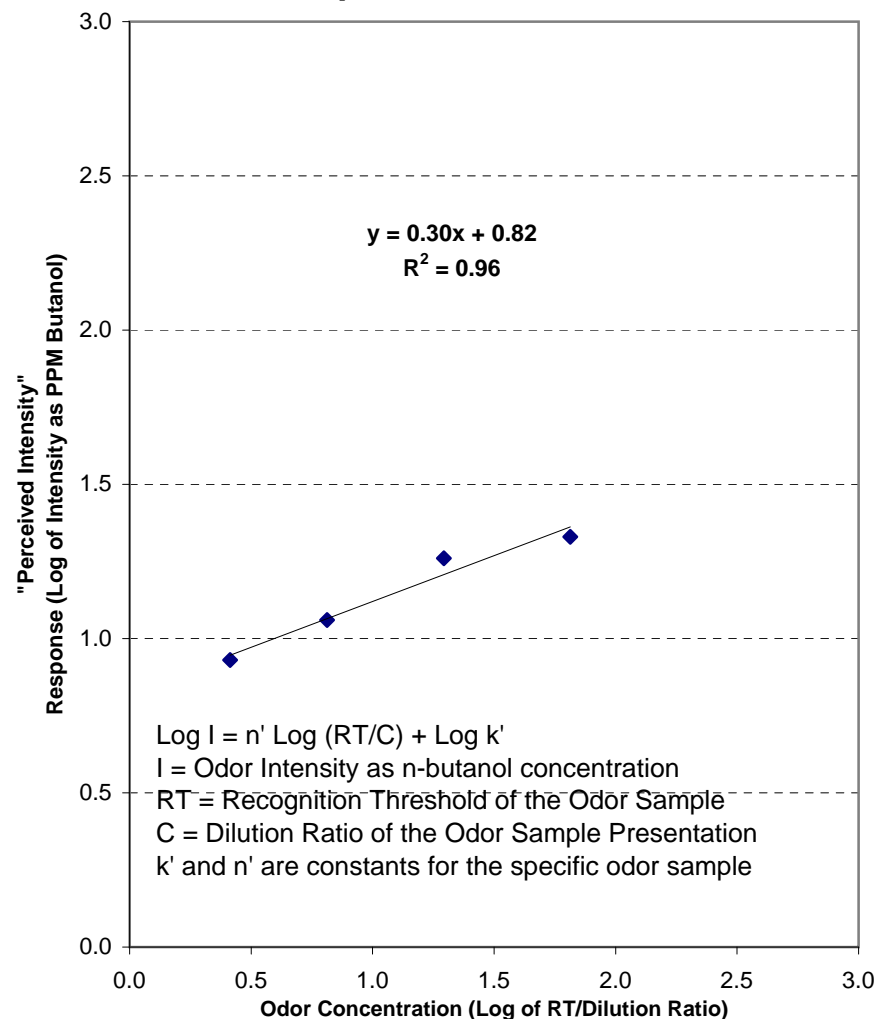


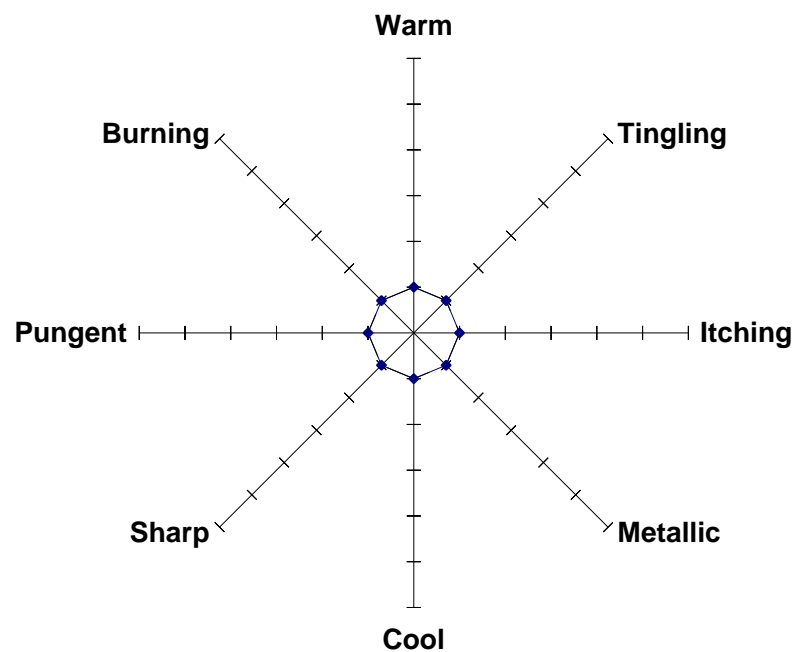
Client: SERVICE Engineering GroupField No.: 70015-10Q-(2-6)Report No.: 534202Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/08/05

### Dose-Response

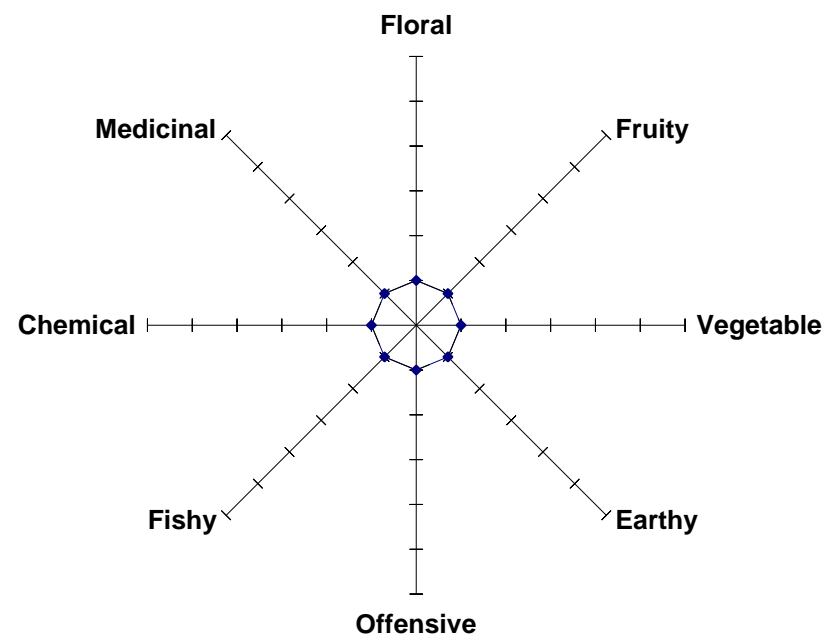


### Dose-Response as Power Law

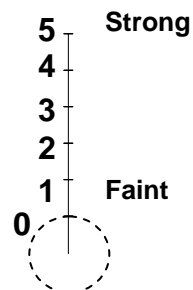


Client: SERVICE Engineering GroupField No.: 70015-10Q-(6-22)Report No.: 534202Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/08/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-10Q-(6-22)

Report No.: **534202**

Project: 05017-0207

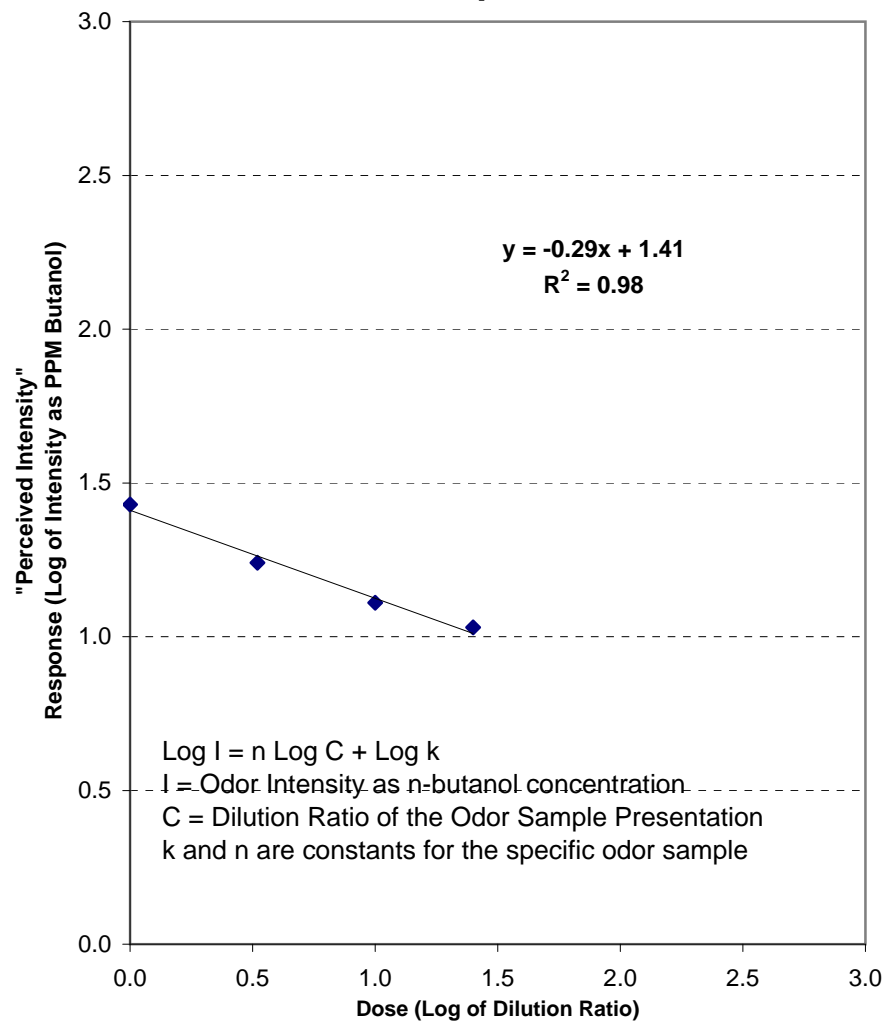
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/08/05

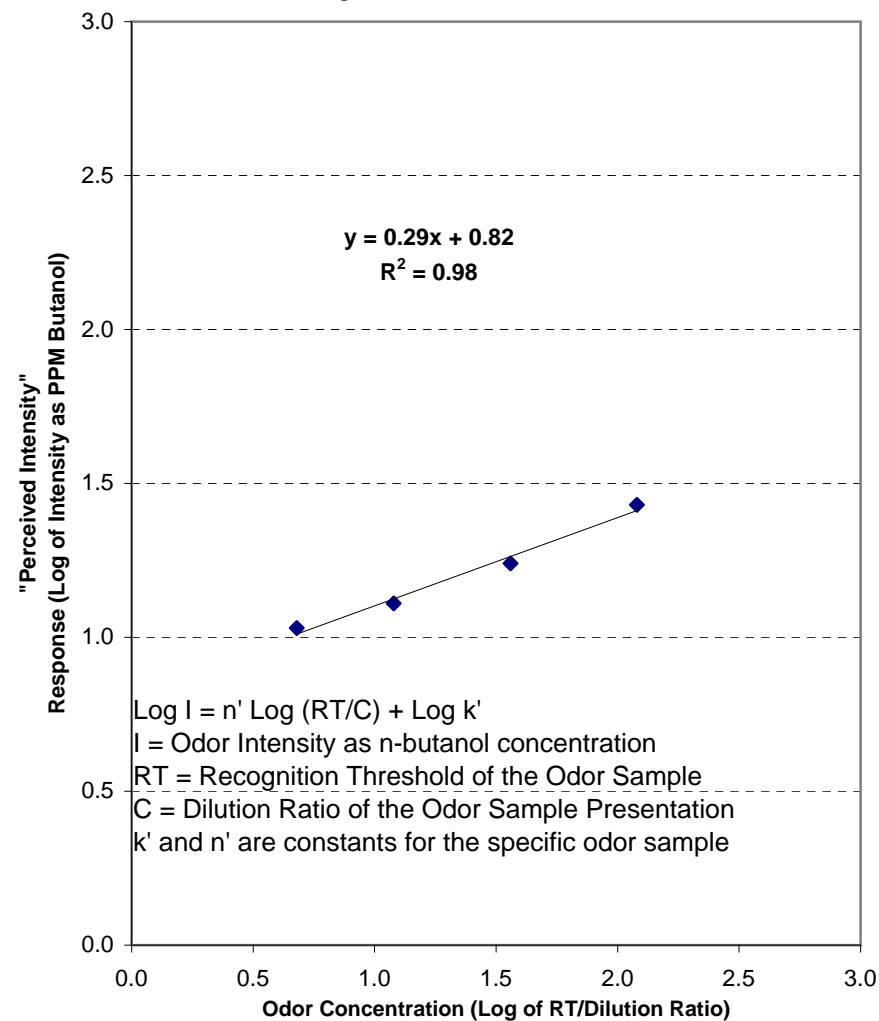
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 70015-10Q-(6-22)Report No.: 534202Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/08/05

### Dose-Response



### Dose-Response as Power Law



# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Client: SERVICE Engr GroupSampled By: Will R. HoffPage 1 of 1Project Name: 05017-0207Sampling Date: 12/07 - 12/08/05

Comments:

Client: SERVICE Engr Group		Sampled By: Will G. Hoff		Odor Evaluations Requested: (X)							
Project Name: 05017-0207		Sampling Date: 12/07 - 12/08/05									
Comments:											
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")			
1	70015-10Q-(0-2)	0-2 hour odor sample	12/07/05 11:54		X	X		X			
2	70015-10Q-(2-6)	2-6 hour odor sample	12/07/05 16:00		X	X		X			
3	70015-10Q-(6-22)	6-22 hour odor sample	12/08/05 07:54		X	X		X			
4											
5											
6											
7											
8											
9											
10											

## Transfer & Shipping Information

Number of "Air-Pacs"/

Shipping Boxes \_\_\_\_\_

Relinquished By: Will R. HoffDate: 12/08/05Time: 08:15

Accepted By:

Date:

Time:

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory

Date:

Time:

Date:

Time:

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

SERVICE Engineering Group

05017-0207

Odor Evaluation Report

Report No. 534301

12/09/05

Data Release Authorization:

Melissa McGinley  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make your project or product a success.

***[www.fivesenses.com](http://www.fivesenses.com)***

3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: SERVICE Engineering Group

Report No.: 534301

Project: 05017-0207

Evaluation Date: 12/09/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	70015-1M-(0-2)	0-2 Hour Odor Sample	85	50	11	-0.15			
2	70015-1M-(2-6)	2-6 Hour Odor Sample	65	35	12	-0.18			
3	70015-1M-(6-22)	6-22 hour Odor Sample	80	45	12	-0.18			



**St. Croix Sensory, Inc.**

## Odor Evaluation Report

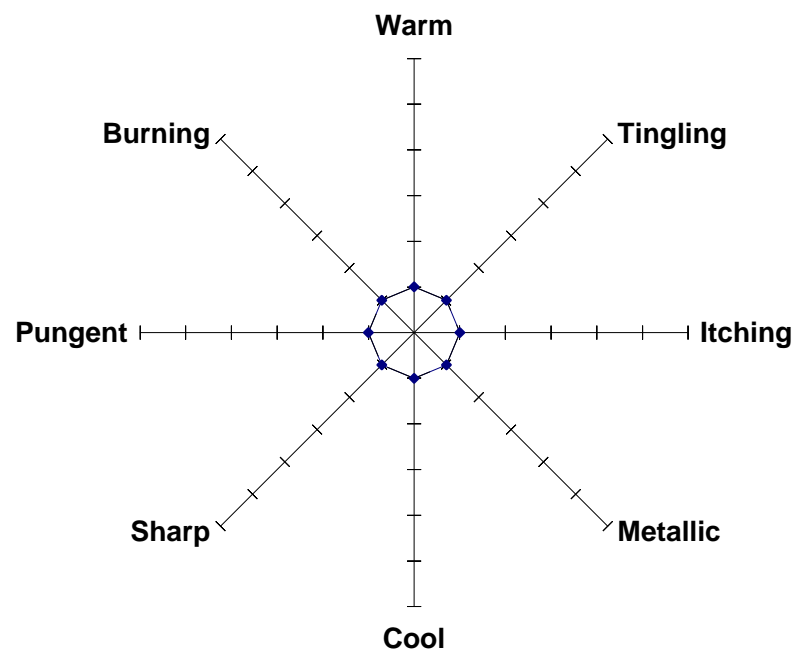
Client: SERVICE Engineering Group

Project: 05017-0207

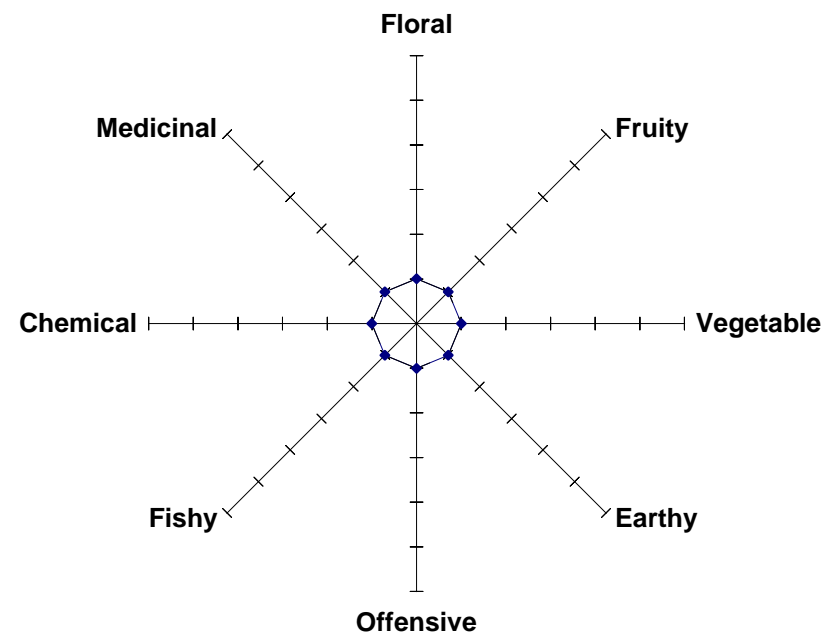
Report No.: **534301**

Evaluation Date: 12/09/05

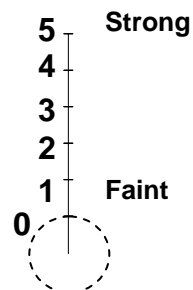
[illegible]

Client: SERVICE Engineering GroupField No.: 70015-1M-(0-2)Report No.: 534301Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/09/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-1M-(0-2)

Report No.: **534301**

Project: 05017-0207

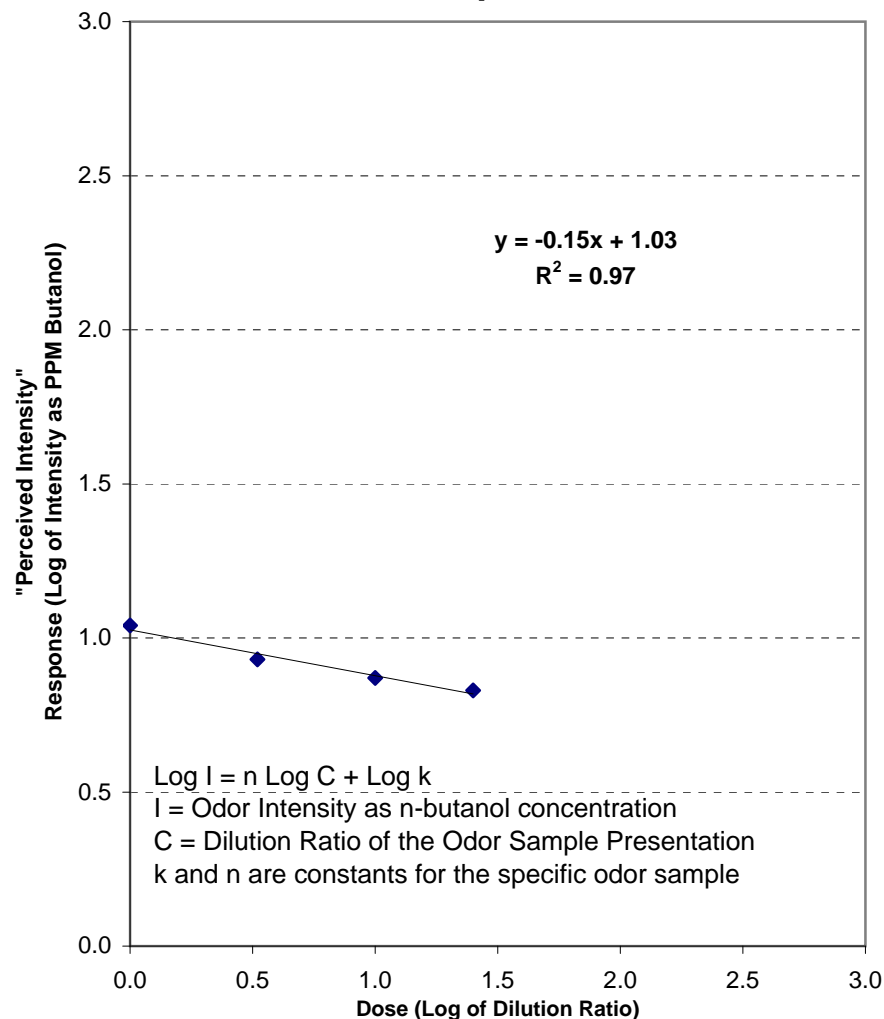
Description: 0-2 Hour Odor Sample

Evaluation Date: 12/09/05

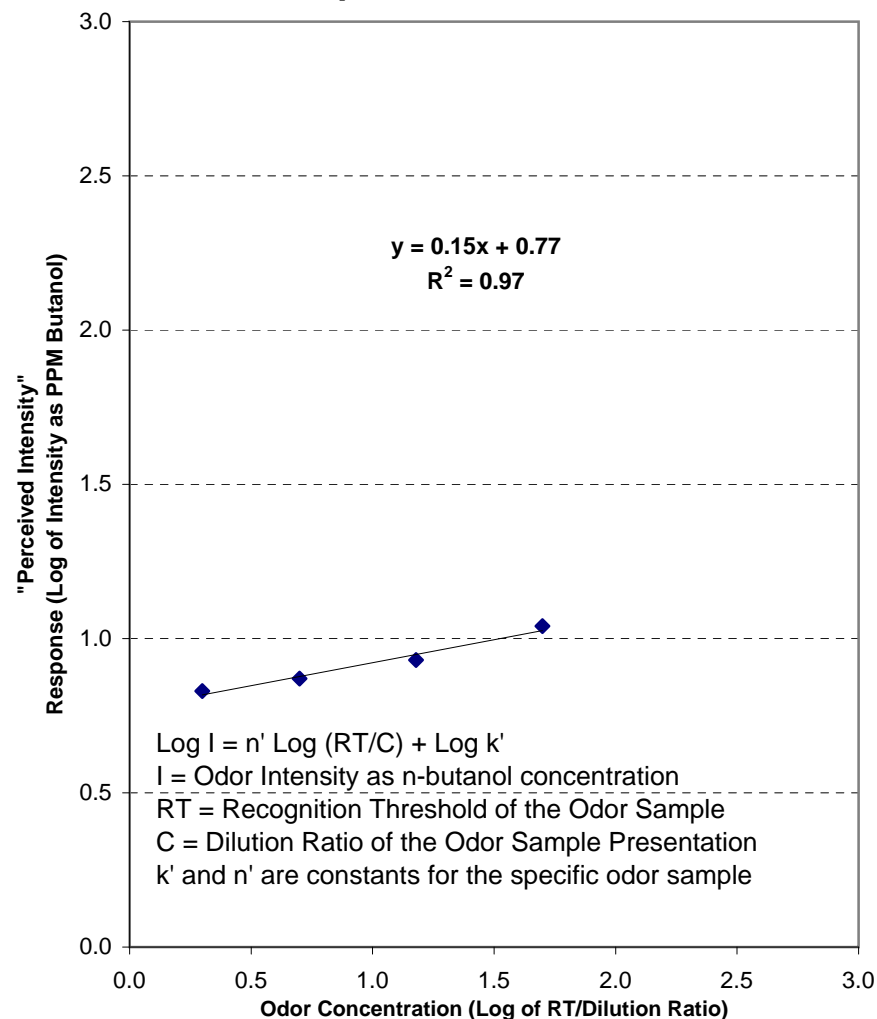
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

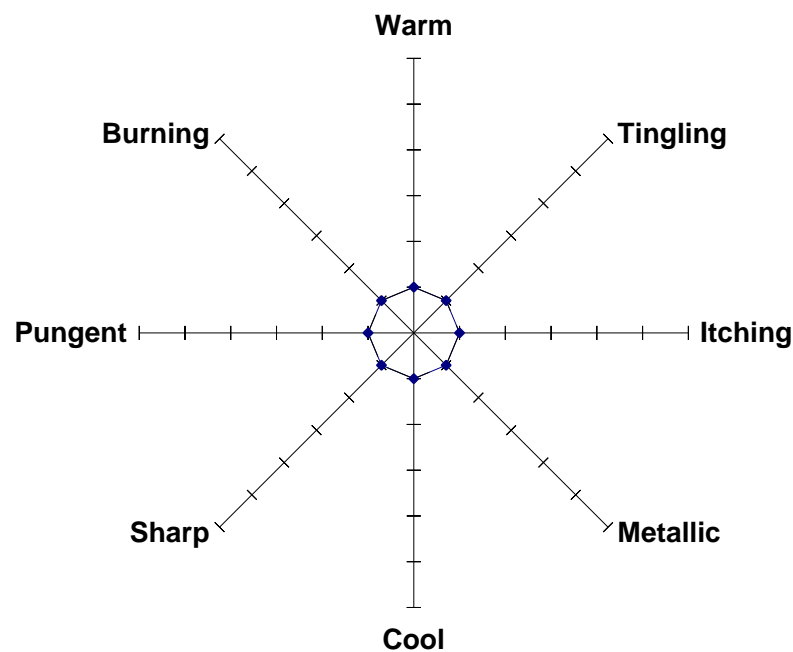
Client: SERVICE Engineering GroupField No.: 70015-1M-(0-2)Report No.: 534301Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/09/05

### Dose-Response

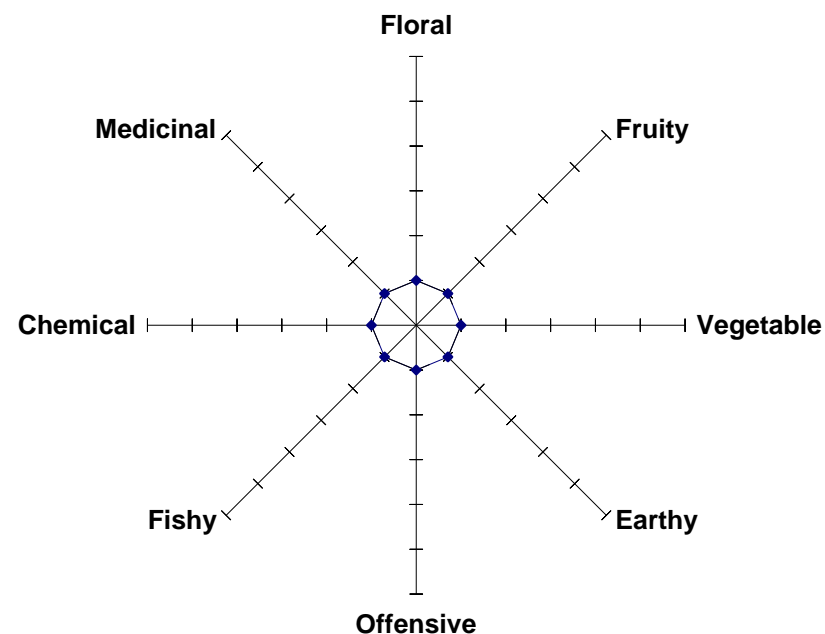


### Dose-Response as Power Law

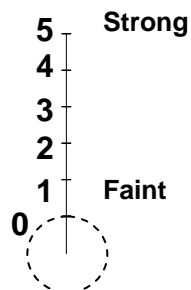


Client: SERVICE Engineering GroupField No.: 70015-1M-(2-6)Report No.: **534301**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/09/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-1M-(2-6)

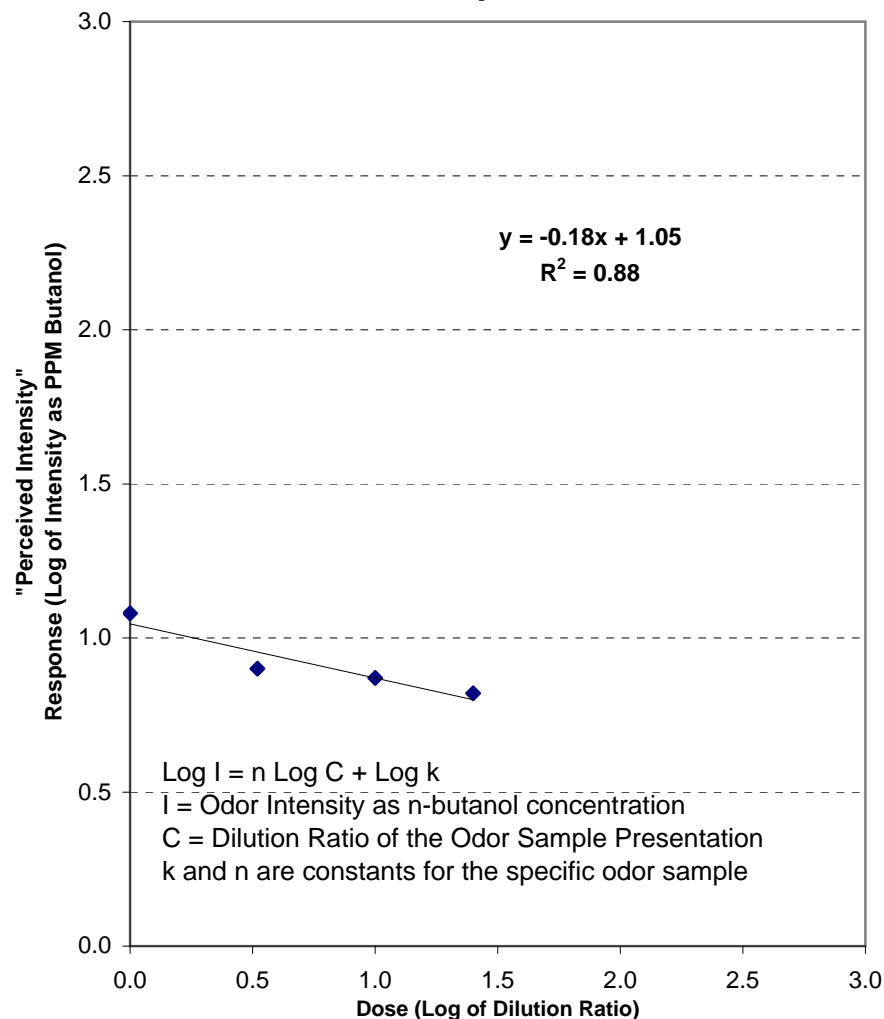
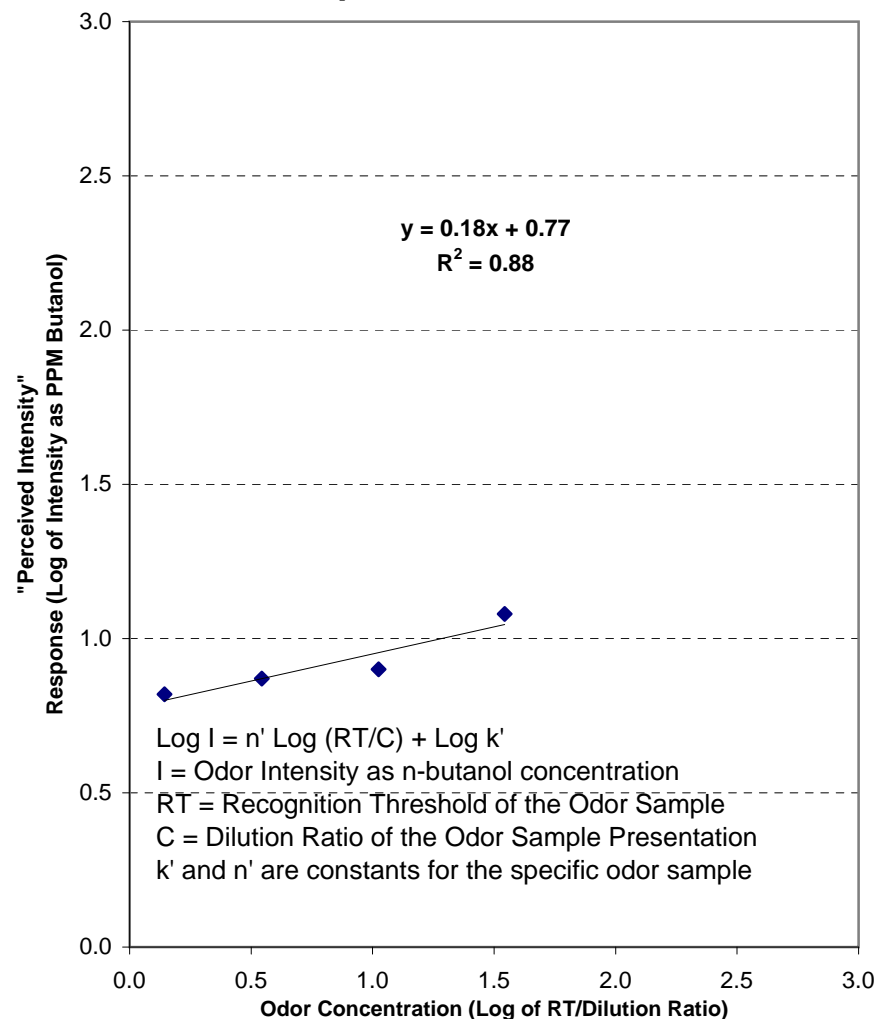
Report No.: **534301**

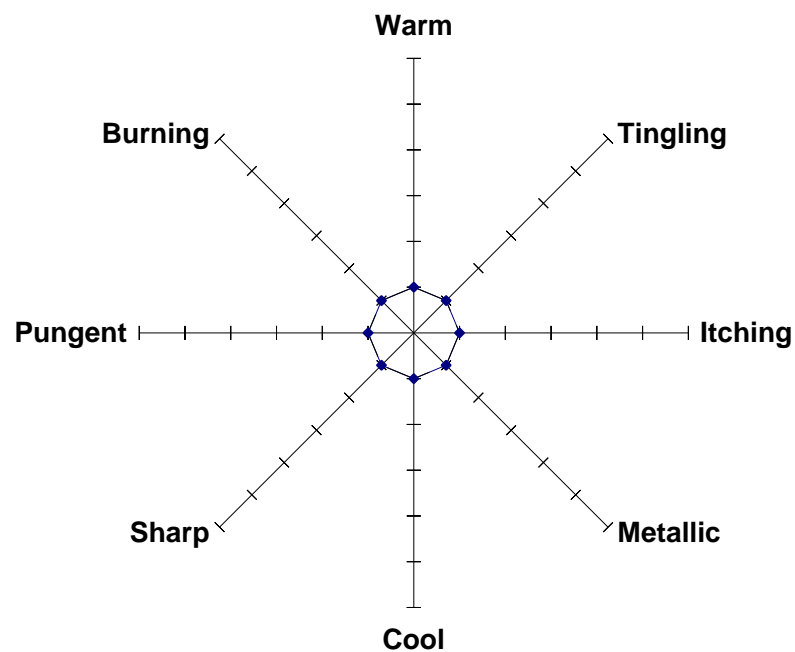
Project: 05017-0207

Description: 2-6 Hour Odor Sample

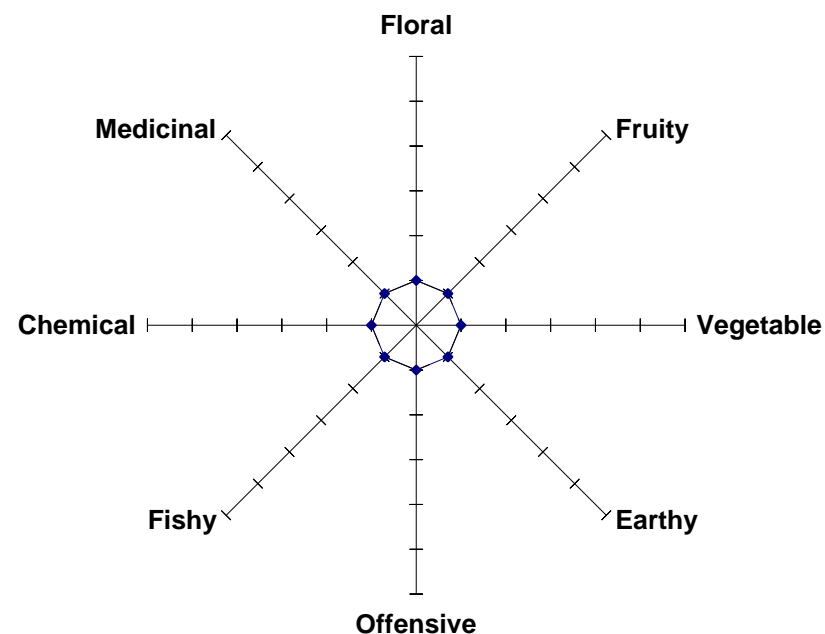
Evaluation Date: 12/09/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

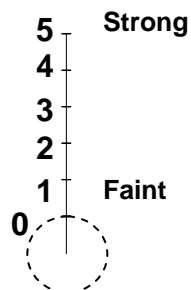
Client: SERVICE Engineering GroupField No.: 70015-1M-(2-6)Report No.: 534301Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/09/05**Dose-Response****Dose-Response as Power Law**

Client: SERVICE Engineering GroupField No.: 70015-1M-(6-22)Report No.: 534301Project: 05017-0207Description: 6-22 hour Odor SampleEvaluation Date: 12/09/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: SERVICE Engineering Group

Field No.: 70015-1M-(6-22)

Report No.: **534301**

Project: 05017-0207

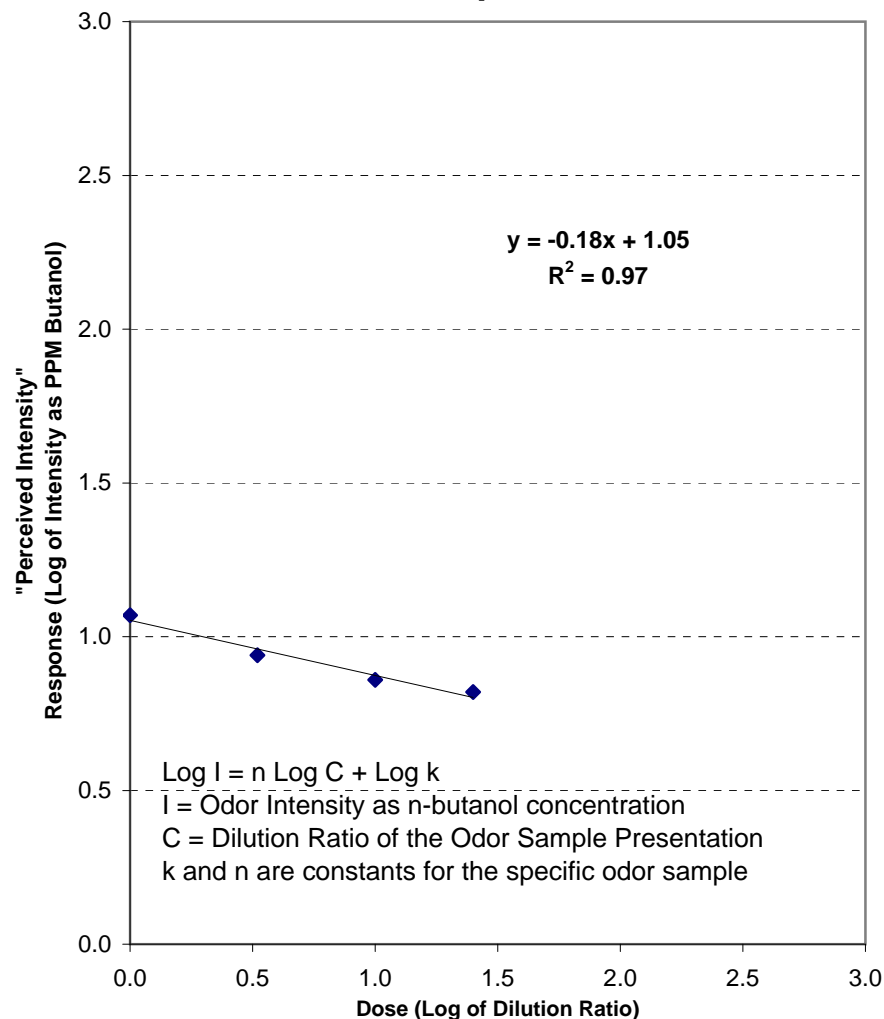
Description: 6-22 hour Odor Sample

Evaluation Date: 12/09/05

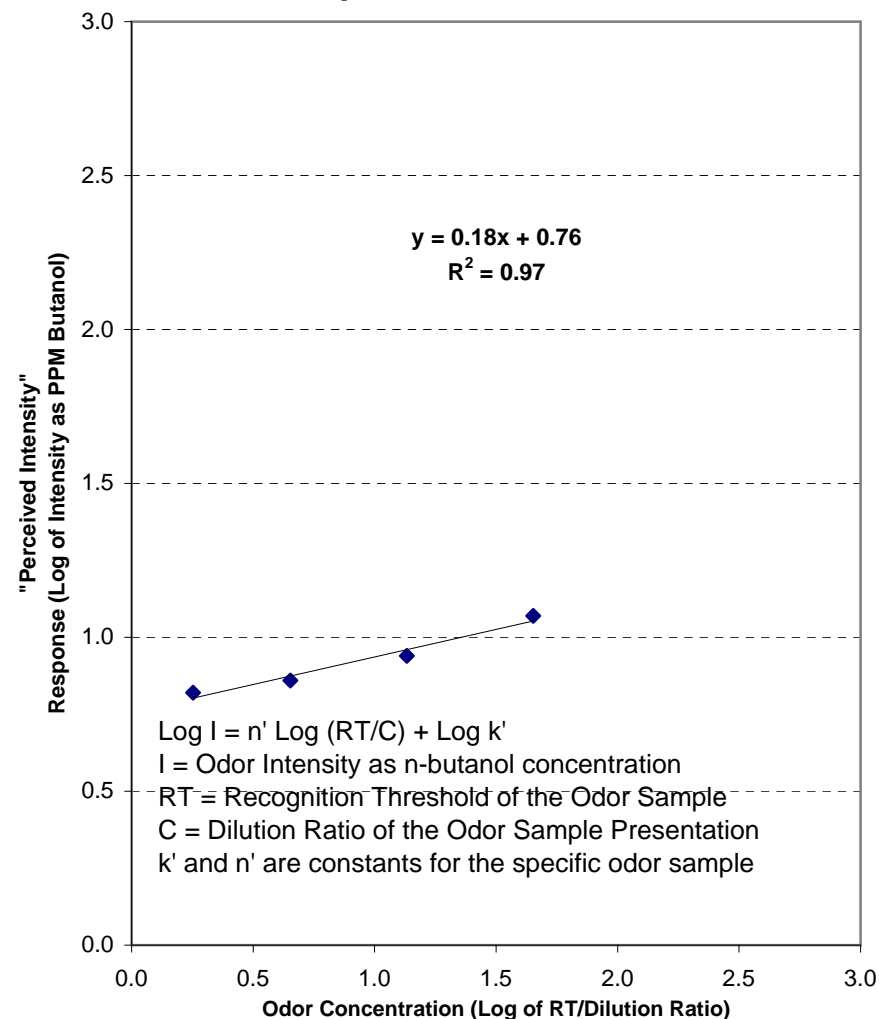
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: SERVICE Engineering GroupField No.: 70015-1M-(6-22)Report No.: 534301Project: 05017-0207Description: 6-22 hour Odor SampleEvaluation Date: 12/09/05

### Dose-Response



### Dose-Response as Power Law



# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Client: SERVICE Engr GroupSampled By: Will C. ZieglerPage 1 of 1Project Name: 05017 - 0207

Sampling Date:

Comments:

Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	Odor Evaluations Requested: (X)				For Laboratory use Only	
					Odor Concentration (DT, RT)	Odor Intensity (PPM)	Odor Characterization (Hedonic Tone & Descriptors)	Odor Persistence ("Dose-Response")	Odor Evaluation Report No.	Laboratory Sample No.
1	70015-1M-(2-2)	0-2 hour odor sample	12/08/05 11:57		X	X	X			
2	70015-1M-(2-6)	2-6 hour odor sample	12/08/05 16:03		X	X	X			
3	70015-1M-(6-22)	6-22 hour odor sample	12/09/05 07:57		X	X	X			
4										
5										
6										
7										
8										
9										
10										

## Transfer & Shipping Information

Number of "Air-Pacs" / Shipping Boxes \_\_\_\_\_

Relinquished By: Will C. Ziegler

Date

Time

12/09/05 08:30

Accepted By

Date

Time

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory

Cathy Moss12/9/059:00

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

LAB COPIES WHITE &amp; YELLOW

CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.



St. Croix Sensory, Inc.

Service Engineering Group

05017-0207

Odor Evaluation Report

Report No. 534401

12/10/05

Data Release Authorization:

Natasha Kaslow  
Laboratory Associate

Reviewed and Approved:

Michael A. McGinley, P.E.  
Laboratory Director

St. Croix Sensory is a laboratory dedicated to practicing state-of-the-art sensory evaluation and to advancing the science of sensory perception.

We are a family owned and operated business providing our clients with personal customer service, flexible scheduling, timely results.

Our focus is to provide the best professional services available to help make your project or product a success.

***[www.fivesenses.com](http://www.fivesenses.com)***

3549 Lake Elmo Avenue North  
P.O. Box 313  
Lake Elmo, Minnesota 55042 U.S.A.

Tel: 800-879-9231  
Fax: 651-439-1065

Email: [stcroix@fivesenses.com](mailto:stcroix@fivesenses.com)

# St. Croix Sensory, Inc.

# Odor Evaluation Report

Client: Service Engineering Group

Report No.: 534401

Project: 05017-0207

Evaluation Date: 12/10/05

#	Field No.	Sample Description	ASTM E679 & EN13725		ASTM E544	PERSISTENCY	CHARACTERIZATION		Comments
			Detection Threshold	Recognition Threshold	Intensity	Dose-Response Slope	Hedonic Tone	Principal Odor Descriptors	
1	70015-1Q-(0-2)	0-2 Hour Odor Sample	50	30	13	-0.13			
2	70015-1Q-(2-6)	2-6 Hour Odor Sample	50	25	12	-0.16			
3	70015-1Q-(6-22)	6-22 Hour Odor Sample	40	25	14	-0.21			

**St. Croix Sensory, Inc.**

## Odor Evaluation Report

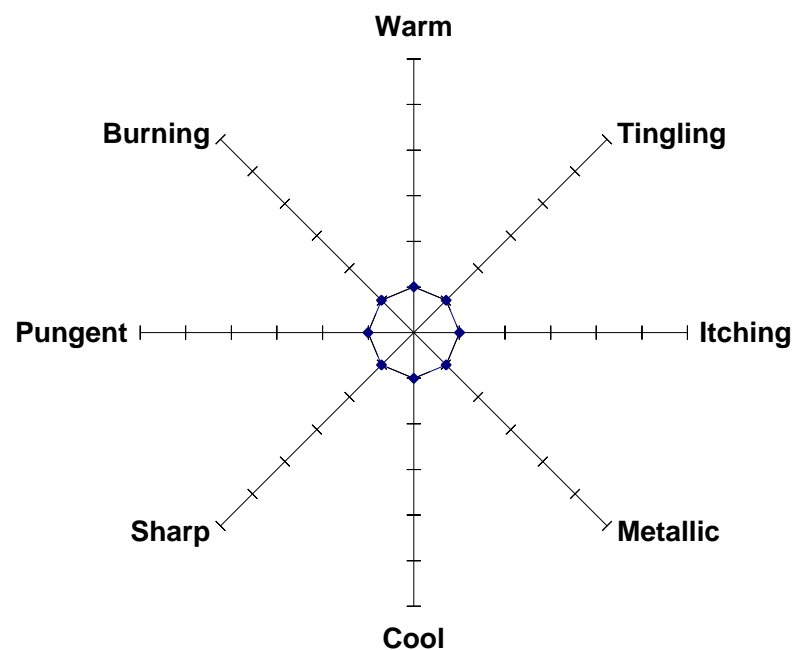
Client: Service Engineering Group

Report No.: **534401**

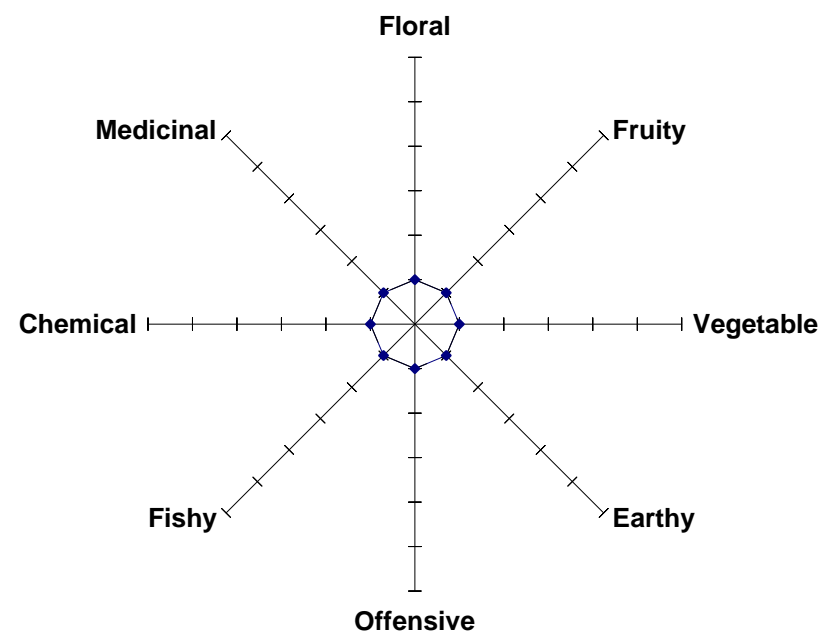
Project: 05017-0207

Evaluation Date: 12/10/05

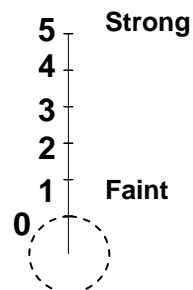
[illegible]

Client: Service Engineering GroupField No.: 70015-1Q-(0-2)Report No.: **534401**Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/10/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**



## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 70015-1Q-(0-2)

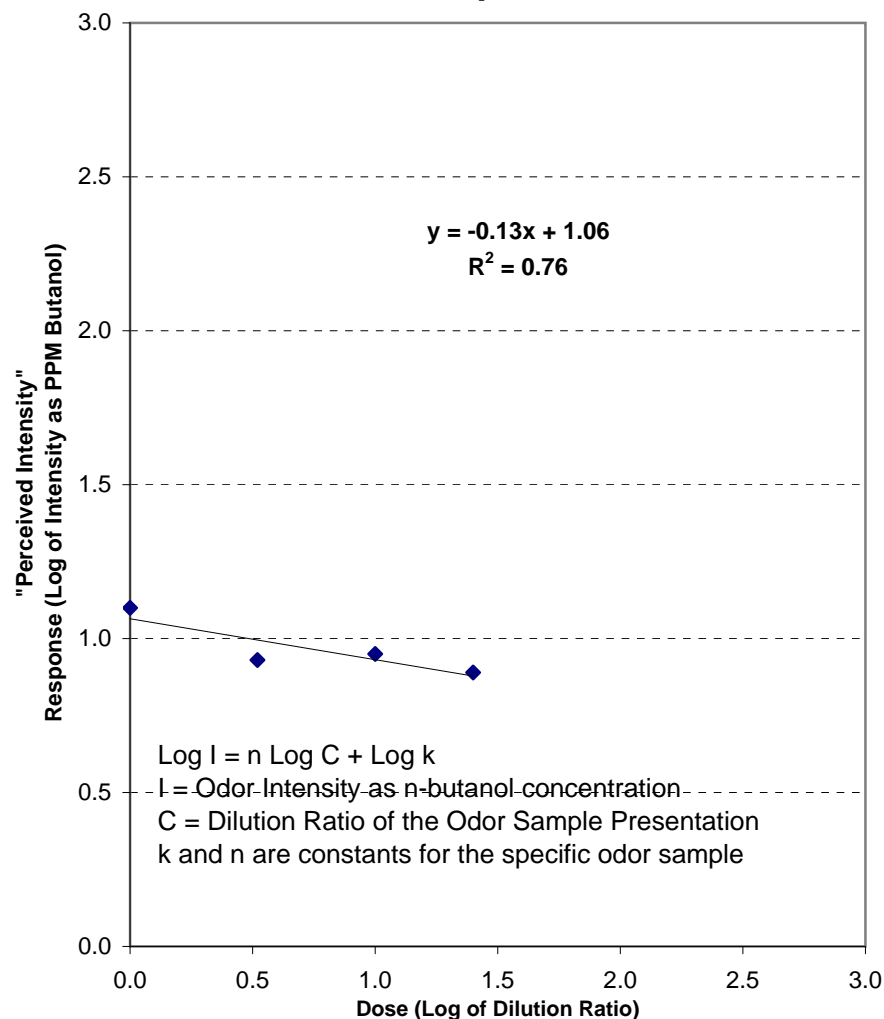
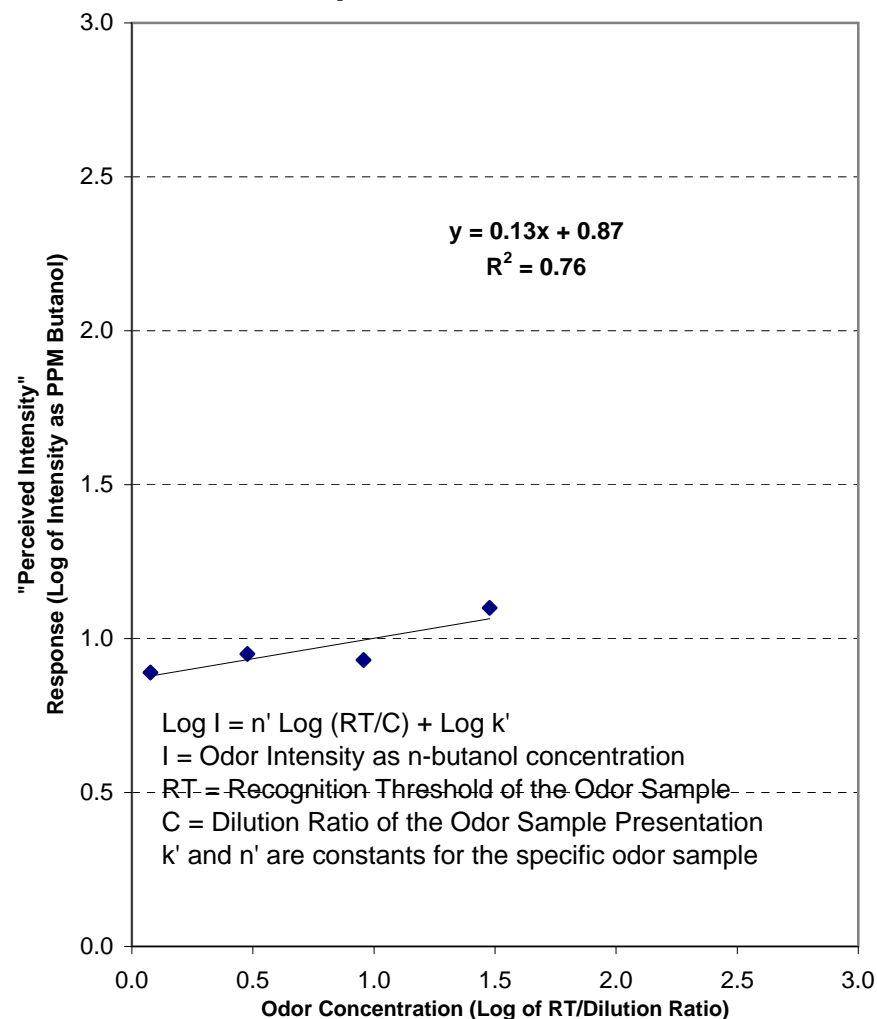
Report No.: **534401**

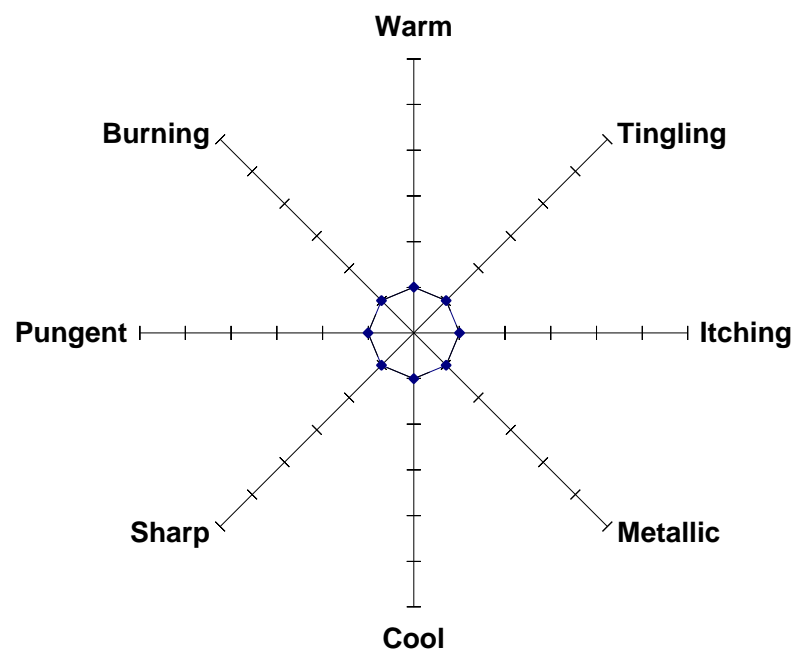
Project: 05017-0207

Description: 0-2 Hour Odor Sample

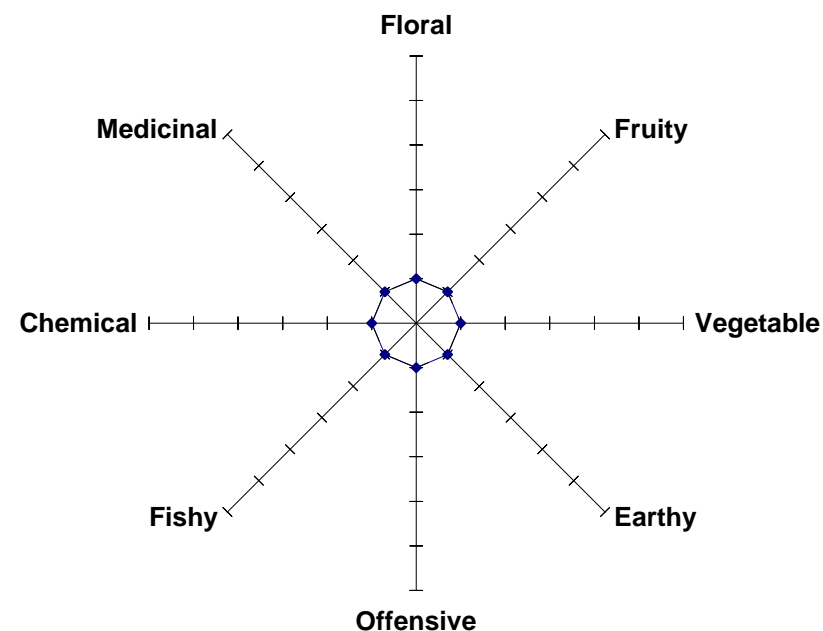
Evaluation Date: 12/10/05

% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

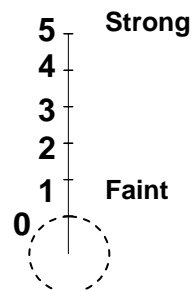
Client: Service Engineering GroupField No.: 70015-1Q-(0-2)Report No.: 534401Project: 05017-0207Description: 0-2 Hour Odor SampleEvaluation Date: 12/10/05**Dose-Response****Dose-Response as Power Law**

Client: Service Engineering GroupField No.: 70015-1Q-(2-6)Report No.: **534401**Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/10/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 70015-1Q-(2-6)

Report No.: **534401**

Project: 05017-0207

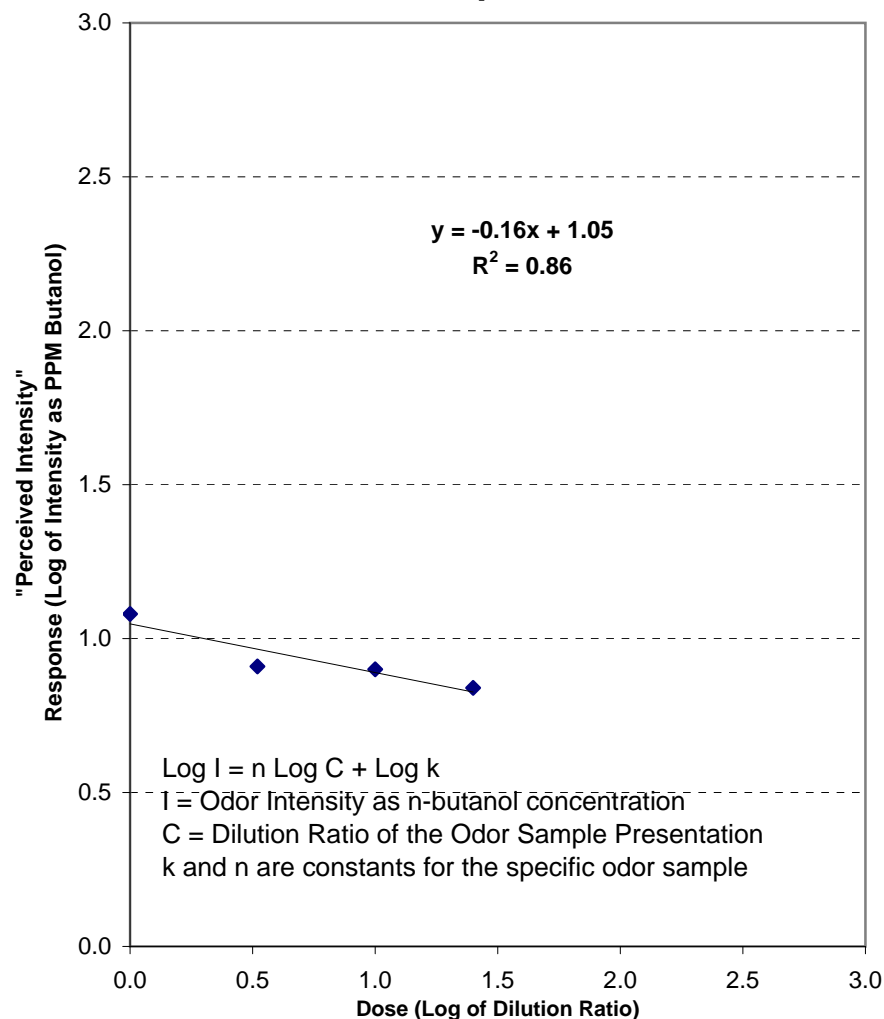
Description: 2-6 Hour Odor Sample

Evaluation Date: 12/10/05

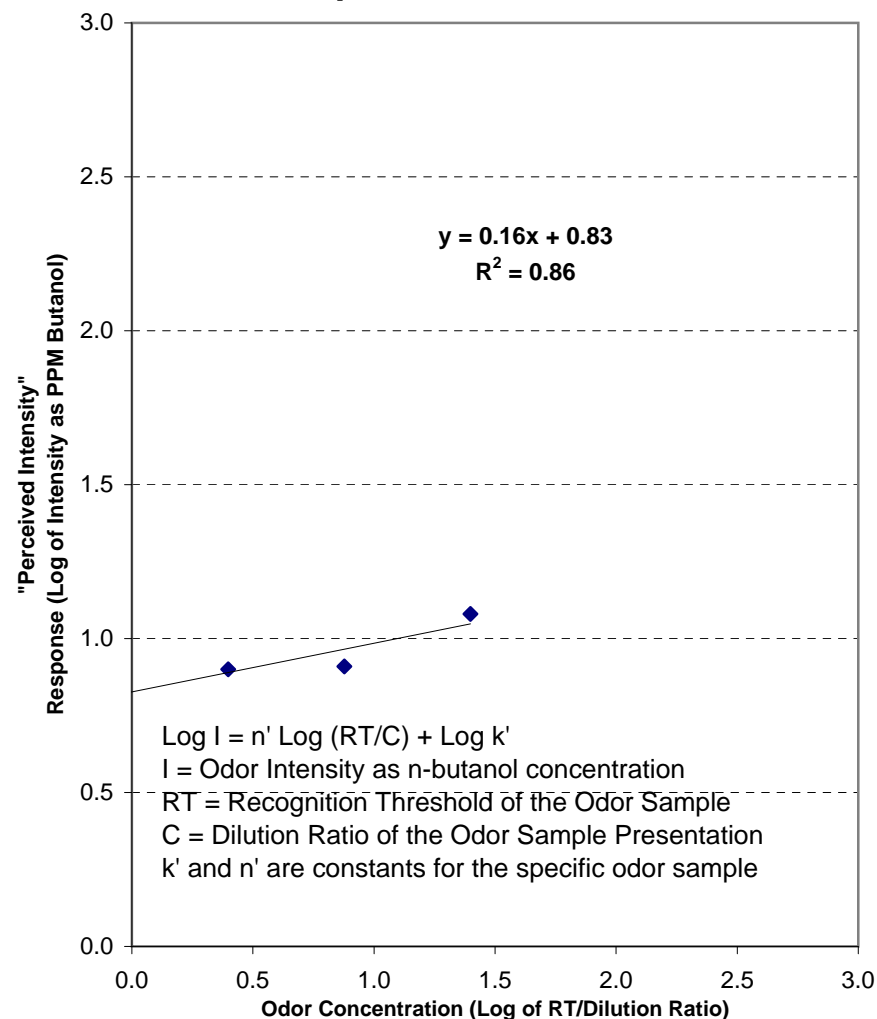
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

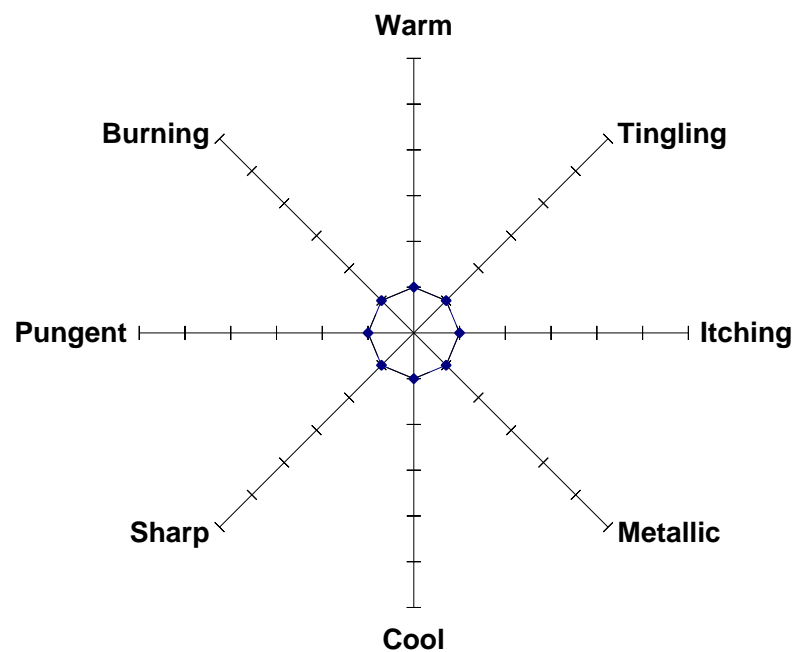
Client: Service Engineering GroupField No.: 70015-1Q-(2-6)Report No.: 534401Project: 05017-0207Description: 2-6 Hour Odor SampleEvaluation Date: 12/10/05

### Dose-Response

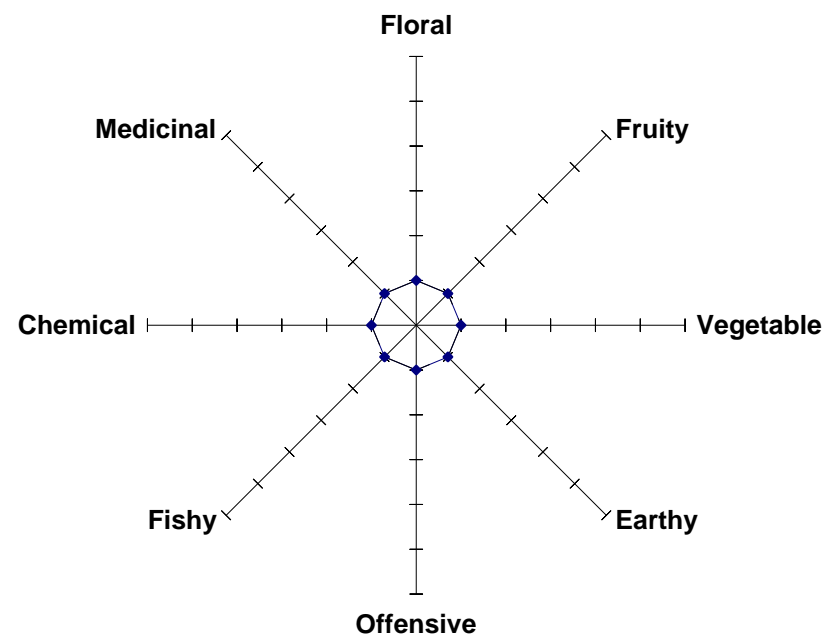


### Dose-Response as Power Law

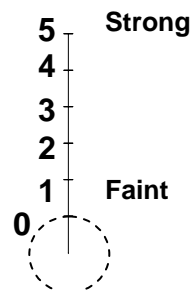


Client: Service Engineering GroupField No.: 70015-1Q-(6-22)Report No.: 534401Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/10/05**Sensation Descriptor Graph**

Average Relative Strength	
Warm	0.0
Tingling	0.0
Itching	0.0
Metallic	0.0
Cool	0.0
Sharp	0.0
Pungent	0.0
Burning	0.0

**Odor Descriptor Graph**

Average Relative Strength	
Floral	0.0
Fruity	0.0
Vegetable	0.0
Earthy	0.0
Offensive	0.0
Fishy	0.0
Chemical	0.0
Medicinal	0.0

**KEY****Relative Strength**

## St. Croix Sensory, Inc.

## Odor Evaluation Report

Client: Service Engineering Group

Field No.: 70015-1Q-(6-22)

Report No.: **534401**

Project: 05017-0207

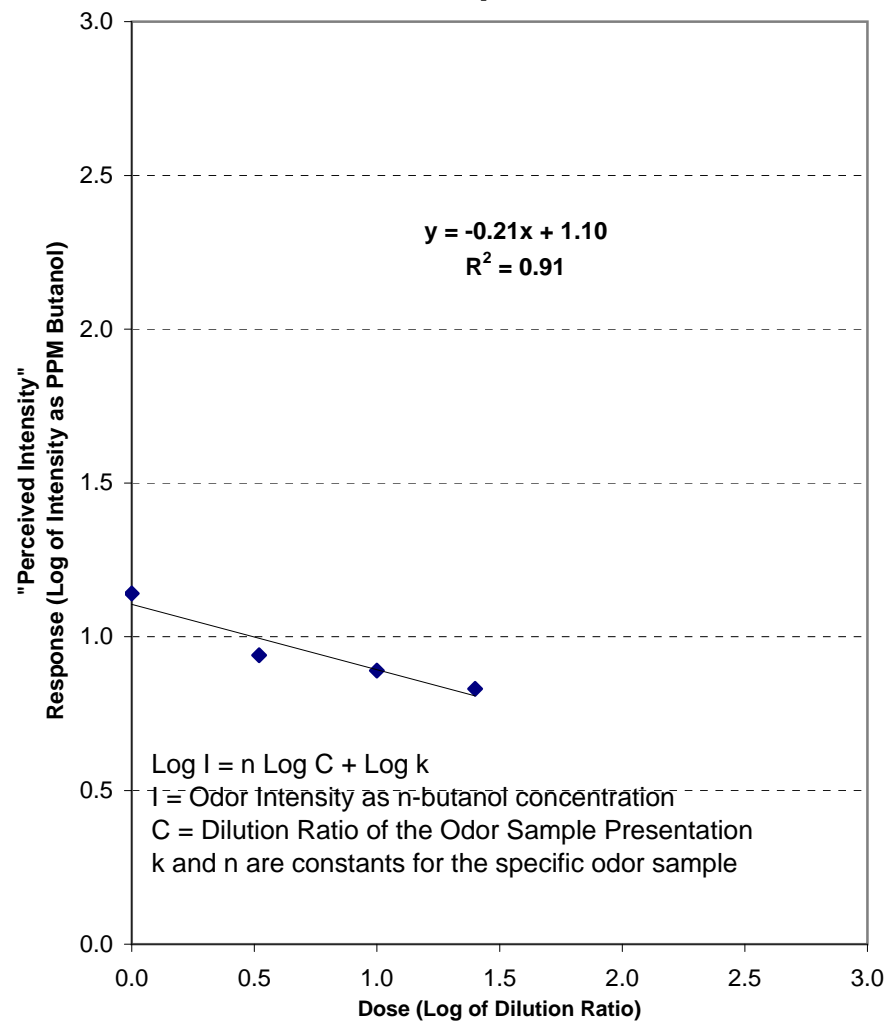
Description: 6-22 Hour Odor Sample

Evaluation Date: 12/10/05

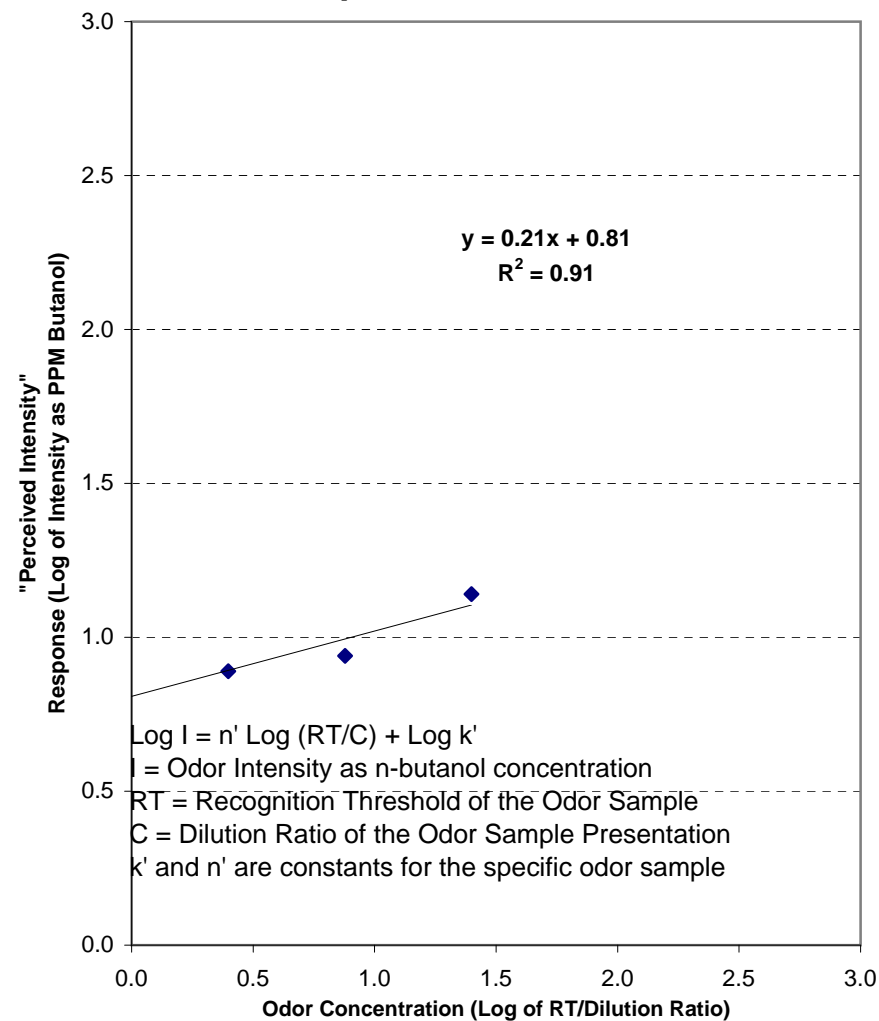
% of Assessors |\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*|\*\*\*\*\*| 100%

Client: Service Engineering GroupField No.: 70015-1Q-(6-22)Report No.: 534401Project: 05017-0207Description: 6-22 Hour Odor SampleEvaluation Date: 12/10/05

### Dose-Response



### Dose-Response as Power Law





# CHAIN OF CUSTODY RECORD FOR ODOR SAMPLES

Client: SERVICE Engr Group

Sampled By: *William C. Hoff*Page 1 of 1

Project Name: 05017-0207

Sampling Date: 12/09 - 12/10/05

Comments:

Odor Evaluations Requested: (X)				For Laboratory use Only	
				Odor Evaluation Report No.	
				Laboratory Sample No.	
				LN	FN
Line No.	Field No.	Sample Description	Sample Time	Field H <sub>2</sub> S (ppm)	
1	70015-1Q-(0-2)	0-2 hour odor sample	12/09/05 12:03		
2	70015-1Q-(2-6)	2-6 hour odor sample	12/09/05 16:09		
3	70015-1Q-(6-22)	6-22 hour odor sample	12/10/05 08:03		
4					
5					
6					
7					
8					
9					
10					

## Transfer & Shipping Information

 Number of  
"Air-Pacs"/  
Shipping Boxes \_\_\_\_\_

Relinquished By

*William C. Hoff*

Date

12/10/05

Time

08:30

Accepted By

Date

Time

Comments &amp; Exceptions Noted

Received at St. Croix Sensory Laboratory

*William C. Hoff*

12/10/05 8:45

St. Croix Sensory, Inc. ♦ 3549 Lake Elmo Avenue North ♦ Lake Elmo, MN 55042 U.S.A. ♦ Tel: 800-879-9231 ♦ Fax: 651-439-1065 ♦ Email: stcroix@fivesenses.com ♦ Web: www.fivesenses.com

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CLIENT COPY PINK

**Comments Key:**

- A** Sample bag was received without sample.
- B** Insufficient sample volume to complete evaluation.
- C** Sample bag was received with condensation in the bag.
- D** Sample description was not provided.
- E** Assessors did not observe the sample at full strength for Intensity, Characterization, or Persistency evaluations.
  - E1** Sample was observed at a maximum of 50% dilution.
  - E2** Only Persistency evaluation was conducted.
- F** Assessors did not observe the sample for Intensity, Characterization, or Persistency evaluations.
- G** By client request, the IITRI Dynamic Dilution Triangle Olfactometer, with a sample presentation flow rate of 0.5-lpm and a Method Detection Limit for Detection and Recognition Threshold of '4', was used to determine the thresholds for this odor evaluation

If you have any questions regarding the comments for this evaluation, please contact our lab at +800-879-9231 ext.12.

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** 10029-10M-(0-2)  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2502850  
CAS Sample ID: P2502850-001

**Test Code:** ASTM D 5504-01  
**Instrument ID:** Agilent 6890A/GC13/SCD  
**Analyst:** Zheng Wang  
**Sampling Media:** Tedlar Bag  
**Test Notes:**

**Date Collected:** 11/15/2005  
**Time Collected:** 15:47  
**Date Received:** 11/16/2005  
**Date Analyzed:** 11/16/05  
**Time Analyzed:** 11:24  
**Volume(s) Analyzed:** 1.0 ml(s)

D.F.= 1.00

CAS #	Compound	Result $\mu\text{g}/\text{m}^3$	MRL $\mu\text{g}/\text{m}^3$	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	11	7.8	3.5	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the **laboratory detection limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** Method Blank  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2502850  
CAS Sample ID: P051116-MB

**Test Code:** ASTM D 5504-01  
**Instrument ID:** Agilent 6890A/GC13/SCD  
**Analyst:** Zheng Wang  
**Sampling Media:** Tedlar Bag  
**Test Notes:**

**Date Collected:** NA  
**Time Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 11/16/05  
**Time Analyzed:** 09:34  
**Volume(s) Analyzed:** 1.0 ml(s)

D.F.= 1.00

CAS #	Compound	Result $\mu\text{g}/\text{m}^3$	MRL $\mu\text{g}/\text{m}^3$	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the **laboratory detection limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** 10029-10M-(0-2)  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2502850  
CAS Sample ID: P2502850-001B

**Test Code:** GC/NPD  
**Instrument ID:** 6890N/GC14/NPD  
**Analyst:** Madeleine Dangazyan  
**Sampling Media:** Treated Alumina Tube  
**Test Notes:** BC, DE

**Date Collected:** 11/15/2005  
**Date Received:** 11/16/2005  
**Date Analyzed:** 12/1/2005  
**Desorption Volume:** 2.0 ml  
**Volume Sampled:** 301.2 Liters

Compound	Result	MRL	Result	MRL	Data Qualifier
	µg/Tube	µg/Tube	µg/m <sup>3</sup>	µg/m <sup>3</sup>	
Dimethylamine	ND	0.20	ND	0.66	
Ethylamine	ND	0.22	ND	0.73	
Trimethylamine	ND	0.19	ND	0.63	
Isopropylamine	ND	0.20	ND	0.67	
t-Butylamine	ND	0.21	ND	0.69	
Propylamine	ND	0.20	ND	0.66	
Diethylamine	ND	0.21	ND	0.68	
s-Butylamine	ND	0.20	ND	0.67	
Isobutylamine	ND	0.19	ND	0.63	
Butylamine	ND	0.20	ND	0.65	
Diisopropylamine	ND	0.21	ND	0.69	
Triethylamine	ND	0.21	ND	0.69	
Dipropylamine	ND	0.42	ND	1.4	

ND = Compound was analyzed for, but not detected above the **laboratory reporting limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable

BC = Results reported are not blank corrected

DE = Results reported are corrected for desorption efficiency.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** Method Blank  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2502850  
CAS Sample ID: P051201-MB

**Test Code:** GC/NPD  
**Instrument ID:** 6890N/GC14/NPD  
**Analyst:** Madeleine Dangazyan  
**Sampling Media:** Treated Alumina Tube  
**Test Notes:** BC, DE

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 12/01/05  
**Desorption Volume:** 2.0 ml  
**Volume Sampled:** NA Liters

Compound	Result	MRL	Result	MRL	Data Qualifier
	µg/Tube	µg/Tube	µg/m <sup>3</sup>	µg/m <sup>3</sup>	
Dimethylamine	ND	0.20	NA	NA	
Ethylamine	ND	0.22	NA	NA	
Trimethylamine	ND	0.19	NA	NA	
Isopropylamine	ND	0.20	NA	NA	
t-Butylamine	ND	0.21	NA	NA	
Propylamine	ND	0.20	NA	NA	
Diethylamine	ND	0.21	NA	NA	
s-Butylamine	ND	0.20	NA	NA	
Isobutylamine	ND	0.19	NA	NA	
Butylamine	ND	0.20	NA	NA	
Diisopropylamine	ND	0.21	NA	NA	
Triethylamine	ND	0.21	NA	NA	
Dipropylamine	ND	0.42	NA	NA	

ND = Compound was analyzed for, but not detected above the **laboratory reporting limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable

BC = Results reported are not blank corrected

DE = Results reported are corrected for desorption efficiency.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** 70015-10M-(0-2)  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2503043  
CAS Sample ID: P2503043-001

**Test Code:** ASTM D 5504-01  
**Instrument ID:** Agilent 6890A/GC13/SCD  
**Analyst:** Zheng Wang  
**Sampling Media:** Tedlar Bag  
**Test Notes:**

**Date Collected:** 12/6/2005  
**Time Collected:** 11:50  
**Date Received:** 12/7/2005  
**Date Analyzed:** 12/7/05  
**Time Analyzed:** 10:14  
**Volume(s) Analyzed:** 1.0 ml(s)

D.F.= 1.00

CAS #	Compound	Result $\mu\text{g}/\text{m}^3$	MRL $\mu\text{g}/\text{m}^3$	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the **laboratory detection limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** Method Blank  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2503043  
CAS Sample ID: P051207-MB

**Test Code:** ASTM D 5504-01  
**Instrument ID:** Agilent 6890A/GC13/SCD  
**Analyst:** Zheng Wang  
**Sampling Media:** Tedlar Bag  
**Test Notes:**

**Date Collected:** NA  
**Time Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 12/07/05  
**Time Analyzed:** 09:29  
**Volume(s) Analyzed:** 1.0 ml(s)

D.F.= 1.00

CAS #	Compound	Result $\mu\text{g}/\text{m}^3$	MRL $\mu\text{g}/\text{m}^3$	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the **laboratory detection limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_



# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** 70015-10M-(0-2)  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2503043  
CAS Sample ID: P2503043-001B

**Test Code:** GC/NPD  
**Instrument ID:** HP5890II/GC9/NPD  
**Analyst:** Madeleine Dangazyan  
**Sampling Media:** Treated Alumina Tube  
**Test Notes:** BC, DE

**Date Collected:** 12/6/2005  
**Date Received:** 12/7/2005  
**Date Analyzed:** 12/8/2005  
**Desorption Volume:** 2.0 ml  
**Volume Sampled:** 174 Liters

Compound	Result	MRL	Result	MRL	Data Qualifier
	µg/Tube	µg/Tube	µg/m <sup>3</sup>	µg/m <sup>3</sup>	
Dimethylamine	ND	0.20	ND	1.1	
Ethylamine	ND	0.22	ND	1.3	
Trimethylamine	ND	0.19	ND	1.1	V
Isopropylamine	ND	0.20	ND	1.2	
t-Butylamine	ND	0.21	ND	1.2	
Propylamine	ND	0.20	ND	1.1	
Diethylamine	ND	0.21	ND	1.2	
s-Butylamine	ND	0.20	ND	1.2	
Isobutylamine	ND	0.19	ND	1.1	
Butylamine	ND	0.20	ND	1.1	
Diisopropylamine	ND	0.21	ND	1.2	
Triethylamine	ND	0.21	ND	1.2	
Dipropylamine	ND	0.42	ND	2.4	

ND = Compound was analyzed for, but not detected above the **laboratory reporting limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable

BC = Results reported are not blank corrected

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside (biased low) the method limits for this compound. See case narrative.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

# COLUMBIA ANALYTICAL SERVICES, INC.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Service Engineering Group  
**Client Sample ID:** Method Blank  
**Client Project ID:** Onondaga Lake/05017-0207

CAS Project ID: P2503043  
CAS Sample ID: P051208-MB

**Test Code:** GC/NPD  
**Instrument ID:** HP5890II/GC9/NPD  
**Analyst:** Madeleine Dangazyan  
**Sampling Media:** Treated Alumina Tube  
**Test Notes:** BC, DE

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 12/08/05  
**Desorption Volume:** 2.0 ml  
**Volume Sampled:** NA Liters

Compound	Result	MRL	Result	MRL	Data Qualifier
	µg/Tube	µg/Tube	µg/m <sup>3</sup>	µg/m <sup>3</sup>	
Dimethylamine	ND	0.20	NA	NA	
Ethylamine	ND	0.22	NA	NA	
Trimethylamine	ND	0.19	NA	NA	
Isopropylamine	ND	0.20	NA	NA	
t-Butylamine	ND	0.21	NA	NA	
Propylamine	ND	0.20	NA	NA	
Diethylamine	ND	0.21	NA	NA	
s-Butylamine	ND	0.20	NA	NA	
Isobutylamine	ND	0.19	NA	NA	
Butylamine	ND	0.20	NA	NA	
Diisopropylamine	ND	0.21	NA	NA	
Triethylamine	ND	0.21	NA	NA	
Dipropylamine	ND	0.42	NA	NA	

ND = Compound was analyzed for, but not detected above the **laboratory reporting limit**.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable

BC = Results reported are not blank corrected

DE = Results reported are corrected for desorption efficiency.

Verified By: \_\_\_\_\_ Date: \_\_\_\_\_

**APPENDIX E**  
**LABORATORY REPORTS QA/QC SUMMARIES**

## **Appendix E: Laboratory Reports QA/QC Summaries**

A discussion of QA/QC for laboratory reports for each SMU is included below. The QA/QC Summary Tables follow the narrative in this appendix. This QC review has been conducted as approved in the overall project QAPP as a Level III Engineering Study.

### **SMU 1**

No deviations resulted in the exclusion of data for the analyses for SMU 1. All recoveries that were outside of laboratory limits are attributed to matrix interference in the MS/MSD samples because the recoveries for all of the LCS/LCSDs were within laboratory limits.

There were two instances of contaminants found in the method blanks that were detected in the corresponding decontamination sample. They are mercury and 1,2,3 trichlorobenzene. The decontamination result for mercury is biased high while the 1,2,3 trichlorobenzene returned a nondetect and appeared unaffected. These results are marked with a “B” in Appendix B. They were non-detect for COIs except where also found in the blank, implying the measurement was due to laboratory contamination rather than insufficient decontamination.

### **SMU 6**

No deviations resulted in the exclusion of data for the analyses for SMU 6. Recoveries that were outside of laboratory limits have been attributed to matrix interference in the MS/MSD samples because the recoveries for all of the LCS/LCSDs were within laboratory limits.

Several compounds were found in the method blanks in two of the analyses. Their presence did not affect the results of the sample analyses. The compounds and the related samples are:

Affected Sample	Compound	Sample Result (mg/kg)	Blank Result (mg/kg)
60028-1M-PR	1,2,3 Trichlorobenzene	ND	0.0275
60028-1M-PR	1,2,4 Trichlorobenzene	ND	0.0165
60028-1M-PR	Bromoform	ND	0.0965
60028-1M-PR	Hexachlorobutadiene	ND	0.0460
60028-1M-PR	Methylene Chloride	ND	0.0340
60028-1M-PR	Vinyl Chloride	ND	0.0125
60028-1Q-PO, 60028-1Q-DCN	1,2,3 Trichlorobenzene	ND, ND	0.320
60028-1Q-PO, 60028-1Q-DCN	1,2,4 Trichlorobenzene	ND, ND	0.240
60028-1Q-PO, 60028-1Q-DCN	Bromoform	ND, ND	1.98
60028-1Q-PO, 60028-1Q-DCN	Hexachlorobutadiene	ND, ND	1.07
60028-1Q-PO, 60028-1Q-DCN	Methylene Chloride	ND, ND	0.850

Decontamination results can be found in Appendix B. They were non-detect for COIs except where also found in the blank, implying the measurement was due to laboratory contamination rather than insufficient decontamination.

The Laboratory Control Spike Duplicate (LCSD) for hexachlorobenzene was outside of Laboratory control limits for all of the air analyses for SMU 6. The LCSD recovery was 123% of the LCS. The results for hexachlorobenzene could have been biased high. However, they were all below the Method Reporting Limit (MRL).

## SMU 7

No deviations resulted in the exclusion of data for the analyses for SMU 7. Recoveries that were outside of laboratory limits were attributed to matrix interference in the MS/MSD samples. All but three of the LCS/LCSDs were within laboratory limits and the ones outside the limits did not affect the results because they were for Relative Percent Differences (RPD) of compounds that are not on the COI list.

Several compounds were found in the method blanks in two of the analyses. Their presence did not affect the results of the sample analyses. The compounds and the related samples are:

Affected Sample	Compound	Sample Result (mg/kg)	Blank Result (mg/kg)
70015-IN-PR	1,2,3 Trichlorobenzene	ND	0.0275
70015-IN-PR	Bromoform	ND	0.0965
70015-IN-PR	Hexachlorobutadiene	ND	0.0460
70015-IN-PR	Methylene Chloride	ND	0.0340
70015-IN-PR	Vinyl Chloride	ND	0.0125

Decontamination results can be found in Appendix B. They were non-detect for COIs except where also found in the blank, implying the measurement was due to laboratory contamination rather than insufficient decontamination.

The Laboratory Control Spike Duplicate (LCSD) for hexachlorobenzene was outside of Laboratory control limits for all of the air analyses for SMU 6. The LCSD recovery was 123% of the LCS. The results for hexachlorobenzene could have been biased high. However, they were all below the Method Reporting Limit (MRL).

# Chemistry QC Summary – SMU 1

## January 2006



Assessment Characteristic	Comments						
Holding Times	All holding times were met according to established protocols with the exception of one set of SVOCs, which was surpassed by three days.						
Detection Limits	Reporting and Detection limits were met according to established protocols with the exception of the air analysis for the following compounds:						
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)			
	Phenanthrene	Pyrene					
Field Duplicates	All recoveries were within established protocols for all field duplicates analyzed.						
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:						
	Associated Sample		Compound	Sample	Blank	RL	Units
	10029-IN-DCN (0505992-03)		Mercury	0.084	0.0890	0.55	ug/L
	10029-IN-DCN (0505992-03)		1,2,3 Trichlorobenzene	ND	1.01	1.0	ug/L
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) All Mercury MS/MSDs analyzed had all recoveries within laboratory limits. 2) Of the VOC MS/MSDs analyzed, all out of limit recoveries could be attributed to matrix interference. 3) All SVOC MS/MSDs analyzed had all recoveries within laboratory limits.						
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) All Mercury LCS/LCSDs analyzed had all recoveries within laboratory limits. 2) All SVOC LCS/LCSDs analyzed had all recoveries within laboratory limits. 3) All VOC LCS/LCSDs analyzed had all recoveries within laboratory limits with the exception of acetone in one LCS/LCSD pair. Acetone was not detected in the associated sample.						
Surrogate Standard Recoveries	Any surrogate standard recoveries that fell outside the laboratory generated control limits are summarized in the individual laboratory report QC summary. No deviation resulted in the exclusion of any result.						
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The accuracy results show that significant bias was not evident within the analytical results for this task.						
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.						
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.						
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.						

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting and Detection limits were met according to established protocols with the exception of the air analysis for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	All recoveries were within established protocols for all field duplicates analyzed.			
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:			
	Affected Sample	Compound	Sample Result (mg/kg)	Blank Result (mg/kg)
	60028-1M-PR	1,2,3 Trichlorobenzene	ND	0.0275
	60028-1M-PR	1,2,4 Trichlorobenzene	ND	0.0165
	60028-1M-PR	Bromoform	ND	0.0965
	60028-1M-PR	Hexachlorobutadiene	ND	0.0460
	60028-1M-PR	Methylene Chloride	ND	0.0340
	60028-1M-PR	Vinyl Chloride	ND	0.0125
	60028-1Q-PO, 60028-1Q-DCN	1,2,3 Trichlorobenzene	ND, ND	0.320
	60028-1Q-PO, 60028-1Q-DCN	1,2,4 Trichlorobenzene	ND, ND	0.240
	60028-1Q-PO, 60028-1Q-DCN	Bromoform	ND, ND	1.98
	60028-1Q-PO, 60028-1Q-DCN	Hexachlorobutadiene	ND, ND	1.07
	60028-1Q-PO, 60028-1Q-DCN	Methylene Chloride	ND, ND	0.850
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) All Mercury MS/MSDs analyzed had all recoveries within laboratory limits. 2) All VOC MS/MSDs analyzed had all recoveries within laboratory limits with only two isolated exceptions that did not result in the exclusion of any data. 3) All SVOC MS/MSDs analyzed had all recoveries within laboratory limits.			
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) All Mercury LCS/LCSDs analyzed had all recoveries within laboratory limits. 2) All SVOC LCS/LCSDs analyzed had all recoveries within laboratory limits. 3) All VOC LCS/LCSDs analyzed had all recoveries within laboratory limits with few exceptions that did not result in the exclusion of any data.			
Surrogate Standard Recoveries	Any surrogate standard recoveries that fell outside the laboratory generated control limits are summarized in the individual laboratory report QC summary. No deviation resulted in the exclusion of any result.			
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The accuracy results show that significant bias was not evident within the analytical results for this task. For the air analyses, the Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			



# **Chemistry QC Summary – SMU 6**

## **January 2006**



### **Abbreviations:**

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting and Detection limits were met according to established protocols with the exception of the air analysis for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	All recoveries were within established protocols for all field duplicates analyzed.			
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:			
	Affected Sample	Compound	Sample Result (mg/kg)	Blank Result (mg/kg)
	70015-IN-PR	1,2,3 Trichlorobenzene	ND	0.0275
	70015-IN-PR	Bromoform	ND	0.0965
	70015-IN-PR	Hexachlorobutadiene	ND	0.0460
	70015-IN-PR	Methylene Chloride	ND	0.0340
	70015-IN-PR	Vinyl Chloride	ND	0.0125
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) All Mercury MS/MSDs analyzed had all recoveries within laboratory limits with the exception of one set due to high levels of mercury in the sample. 2) Of the VOC MS/MSDs analyzed, all out of limit recoveries could be attributed to matrix interference. 3) Of the SVOC MS/MSDs analyzed, all out of limit recoveries could be attributed to matrix interference.			
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) All Mercury LCS/LCSDs analyzed had all recoveries within laboratory limits. 2) All SVOC LCS/LCSDs analyzed had all recoveries within laboratory limits with one isolated exception that did not affect the results. 3) All VOC LCS/LCSDs analyzed had all recoveries within laboratory limits with two isolated exceptions that did not affect the results.			
Surrogate Standard Recoveries	Any surrogate standard recoveries that fell outside the laboratory generated control limits are summarized in the individual laboratory report QC summary. No deviation resulted in the exclusion of any result.			
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The accuracy results show that significant bias was not evident within the analytical results for this task. The Laboratory Control Spike Duplicate was outside of Laboratory control limits for the air analyses and the results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

# **Chemistry QC Summary – SMU 7**

## **January 2006**



### **Abbreviations:**

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506008

## November 2005



Assessment Characteristic	Comments											
Holding Times	All holding times were met according to established protocols.											
Detection Limits	Reporting and Detection limits were met according to established protocols.											
Field Duplicates	Field duplicates were not analyzed for this report.											
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blanks.											
MS/MSD	MS/MSDs were not analyzed for this report.											
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries and the RPD within established protocols. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries and the RPD within established protocols. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries and the RPD within established protocols.											
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>10029-10M-PR</td><td>Nitrobenzene-d5</td><td>25.4</td><td>30 – 90</td></tr></table>				Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	10029-10M-PR	Nitrobenzene-d5	25.4	30 – 90
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)									
10029-10M-PR	Nitrobenzene-d5	25.4	30 – 90									
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable with the exception noted above.											
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.											
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.											
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.											

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0505992

## December 2005



Assessment Characteristic	Comments																																								
Holding Times	All holding times were met according to established protocols.																																								
Detection Limits	Reporting and Detection limits were met according to established protocols.																																								
Field Duplicates	One field duplicate for Total Organic Carbon (TOC) was analyzed and the RPD is within established protocols.																																								
Method Blanks	<p>All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:</p> <table><tr><th>Associated Sample</th><th>Compound</th><th>Sample</th><th>Blank</th><th>RL</th><th>Units</th></tr><tr><td>10029-IN-DCN (0505992-03)</td><td>Mercury</td><td>0.084</td><td>0.0890</td><td>0.55</td><td>ug/L</td></tr><tr><td>10029-IN-DCN (0505992-03)</td><td>1,2,3 Trichlorobenzene</td><td>ND</td><td>1.01</td><td>1.0</td><td>ug/L</td></tr></table>	Associated Sample	Compound	Sample	Blank	RL	Units	10029-IN-DCN (0505992-03)	Mercury	0.084	0.0890	0.55	ug/L	10029-IN-DCN (0505992-03)	1,2,3 Trichlorobenzene	ND	1.01	1.0	ug/L																						
Associated Sample	Compound	Sample	Blank	RL	Units																																				
10029-IN-DCN (0505992-03)	Mercury	0.084	0.0890	0.55	ug/L																																				
10029-IN-DCN (0505992-03)	1,2,3 Trichlorobenzene	ND	1.01	1.0	ug/L																																				
MS/MSD	<p>Results of analyses performed on the MS/MSDs are summarized below.</p> <ul style="list-style-type: none"><li>1) One set of Mercury MS/MSDs was analyzed with all recoveries within laboratory limits.</li><li>2) One set of VOC MS/MSDs was analyzed and due to the high levels in the sample there was interference. Ten out of eleven RPDs were within limits.</li><li>3) One set of SVOC MS/MSDs was analyzed with all recoveries within laboratory limits.</li></ul>																																								
LCS/LCSDs	<p>Results of analyses performed on the LCS/LCSDs are summarized below.</p> <ul style="list-style-type: none"><li>1) Two sets of Mercury LCS/LCSDs, one water and one soil, were analyzed with all recoveries within laboratory.</li><li>2) Two sets of SVOC LCS/LCSDs, one water and one soil, were analyzed with all recoveries within laboratory limits.</li><li>3) Two sets of VOC LCS/LCSDs, one water and one soil, were analyzed with all recoveries within laboratory limits with the exception of acetone in the water LCS/LCSD pair. Acetone was not detected in the associated sample.</li></ul>																																								
Surrogate Standard Recoveries	<p>All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions:</p> <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>10029-IN-PR</td><td>2,4,6-Tribromophenol</td><td>8.89</td><td>30 – 150</td></tr><tr><td>10029-IN-PR</td><td>2-Fluorophenol</td><td>28.1</td><td>30 – 106</td></tr><tr><td>Matrix Spike (10029-IN-PR)</td><td>2,4,6-Tribromophenol</td><td>29.4</td><td>30 – 150</td></tr><tr><td>Matrix Spike (10029-IN-PR)</td><td>2-Fluorobiphenol</td><td>129</td><td>30 – 104</td></tr><tr><td>Matrix Spike Dup (10029-IN-PR)</td><td>2,4,6-Tribromophenol</td><td>22.7</td><td>30 – 150</td></tr><tr><td>SVOC Method Blank</td><td>Nitrobenzene-d5</td><td>53.2</td><td>57 – 101</td></tr><tr><td>SVOC Method Blank</td><td>Phenol-d6</td><td>26.4</td><td>30 – 75</td></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>103</td><td>65 – 100</td></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	10029-IN-PR	2,4,6-Tribromophenol	8.89	30 – 150	10029-IN-PR	2-Fluorophenol	28.1	30 – 106	Matrix Spike (10029-IN-PR)	2,4,6-Tribromophenol	29.4	30 – 150	Matrix Spike (10029-IN-PR)	2-Fluorobiphenol	129	30 – 104	Matrix Spike Dup (10029-IN-PR)	2,4,6-Tribromophenol	22.7	30 – 150	SVOC Method Blank	Nitrobenzene-d5	53.2	57 – 101	SVOC Method Blank	Phenol-d6	26.4	30 – 75	SVOC LCS	2,4,6-Tribromophenol	103	65 – 100	SVOC LCS	2,4,6-Tribromophenol	102	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)																																						
10029-IN-PR	2,4,6-Tribromophenol	8.89	30 – 150																																						
10029-IN-PR	2-Fluorophenol	28.1	30 – 106																																						
Matrix Spike (10029-IN-PR)	2,4,6-Tribromophenol	29.4	30 – 150																																						
Matrix Spike (10029-IN-PR)	2-Fluorobiphenol	129	30 – 104																																						
Matrix Spike Dup (10029-IN-PR)	2,4,6-Tribromophenol	22.7	30 – 150																																						
SVOC Method Blank	Nitrobenzene-d5	53.2	57 – 101																																						
SVOC Method Blank	Phenol-d6	26.4	30 – 75																																						
SVOC LCS	2,4,6-Tribromophenol	103	65 – 100																																						
SVOC LCS	2,4,6-Tribromophenol	102	65 – 100																																						
Bias	<p>The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task:</p> <ul style="list-style-type: none"><li>1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above.</li><li>2) All of the MS/MSD results were within the accuracy objectives for this task with the exception of the matrix interference in the VOC spikes.</li><li>3) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above and those are attributed to matrix interference due to high levels of volatile compounds.</li></ul>																																								
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																																								
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																																								

**Chemistry QC Summary – Braun Report #0505992**  
**December 2005**



Assessment Characteristic	Comments
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

**Abbreviations:**

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506016

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	LCS/LCSD were not analyzed for this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	It is not possible to determine if there is any bias in the results due to the lack of analytical recoveries in this report.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506044

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	LCS/LCSD were not analyzed for this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	It is not possible to determine if there is any bias in the results due to the lack of analytical recoveries in this report.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit



# Chemistry QC Summary – Braun Report #0506045

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	LCS/LCSD were not analyzed for this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	It is not possible to determine if there is any bias in the results due to the lack of analytical recoveries in this report.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506064

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	LCS/LCSD were not analyzed for this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	It is not possible to determine if there is any bias in the results due to the lack of analytical recoveries in this report.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506066

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	LCS/LCSD were not analyzed for this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	It is not possible to determine if there is any bias in the results due to the lack of analytical recoveries in this report.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506250

## December 2005



Assessment Characteristic	Comments
Holding Times	The holding time of seven days for the SVOC analysis was surpassed by three days. All other holding times were met according to established protocol.
Detection Limits	Reporting and Detection limits were met according to established protocols.
Field Duplicates	Field duplicates were not analyzed for this report.
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank.
MS/MSD	MS/MSDs were not analyzed for this report.
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits.
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) All of the MS/MSD results were within the accuracy objectives for this task. 3) The surrogate recoveries for all of the samples were acceptable.
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506264

## December 2005



Assessment Characteristic	Comments												
Holding Times	All holding times were met according to established protocols.												
Detection Limits	Reporting and Detection limits were met according to established protocols.												
Field Duplicates	Field duplicates were not analyzed for this report.												
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank.												
MS/MSD	MS/MSDs were not analyzed for this report.												
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. <div>1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory.</div> <div>2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.</div> <div>3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits with the exception of acetone and chlorodibromomethane. Neither was detected in the associated sample.</div>												
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>108</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>107</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	SVOC LCS	2,4,6-Tribromophenol	108	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	107	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)										
SVOC LCS	2,4,6-Tribromophenol	108	65 – 100										
SVOC LCSD	2,4,6-Tribromophenol	107	65 – 100										
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: <div>1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above.</div> <div>2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.</div>												
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.												
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.												
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.												

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506028

## December 2005



Assessment Characteristic	Comments																				
Holding Times	All holding times were met according to established protocols.																				
Detection Limits	Reporting and Detection limits were met according to established protocols.																				
Field Duplicates	Field duplicates were not analyzed for this report.																				
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blanks.																				
MS/MSD	MS/MSDs were not analyzed for this report.																				
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.																				
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>SVOC Method Blank</td><td>Nitrobenzene-d5</td><td>53.2</td><td>57 – 101</td></tr><tr><td>SVOC Method Blank</td><td>Phenol-d6</td><td>26.4</td><td>30 – 75</td></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>103</td><td>65 – 100</td></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	SVOC Method Blank	Nitrobenzene-d5	53.2	57 – 101	SVOC Method Blank	Phenol-d6	26.4	30 – 75	SVOC LCS	2,4,6-Tribromophenol	103	65 – 100	SVOC LCS	2,4,6-Tribromophenol	102	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)																		
SVOC Method Blank	Nitrobenzene-d5	53.2	57 – 101																		
SVOC Method Blank	Phenol-d6	26.4	30 – 75																		
SVOC LCS	2,4,6-Tribromophenol	103	65 – 100																		
SVOC LCS	2,4,6-Tribromophenol	102	65 – 100																		
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.																				
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																				
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																				
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																				

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506040

## December 2005



Assessment Characteristic	Comments																
Holding Times	All holding times were met according to established protocols.																
Detection Limits	Reporting and Detection limits were met according to established protocols.																
Field Duplicates	Field duplicates were not analyzed for this report.																
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blanks.																
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) One set of Mercury MS/MSDs was analyzed with all recoveries within laboratory limits.																
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) Two sets of VOC LCS/LCSDs were analyzed with all recoveries within laboratory limits.																
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>10029-10M-DCN</td><td>Nitrobenzene-d5</td><td>54.5</td><td>57 – 101</td></tr><tr><td>SVOC Method Blank</td><td>2,4,6-Tribromophenol</td><td>101</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	10029-10M-DCN	Nitrobenzene-d5	54.5	57 – 101	SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)														
10029-10M-DCN	Nitrobenzene-d5	54.5	57 – 101														
SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100														
SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100														
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) All of the MS/MSD results were within the accuracy objectives for this task. 3) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.																
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506041

## December 2005



Assessment Characteristic	Comments																			
Holding Times	All holding times were met according to established protocols.																			
Detection Limits	Reporting and Detection limits were met according to established protocols.																			
Field Duplicates	Field duplicates were not analyzed for this report.																			
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blanks.																			
MS/MSD	MS/MSDs were not analyzed for this report.																			
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of TSS LCS/LCSDs were analyzed with all recoveries within laboratory limits. 2) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 4) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.																			
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>10029-10Q-PO</td><td>2,4,6-Tribromophenol</td><td>104</td><td>65 – 100</td></tr><tr><td>SVOC Method Blank</td><td>2,4,6-Tribromophenol</td><td>101</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr></table>				Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	10029-10Q-PO	2,4,6-Tribromophenol	104	65 – 100	SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)																	
10029-10Q-PO	2,4,6-Tribromophenol	104	65 – 100																	
SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100																	
SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100																	
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.																			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																			
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit



# Chemistry QC Summary – Braun Report #0506042

## December 2005



Assessment Characteristic	Comments											
Holding Times	All holding times were met according to established protocols.											
Detection Limits	Reporting and Detection limits were met according to established protocols.											
Field Duplicates	Field duplicates were not analyzed for this report.											
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blanks.											
MS/MSD	MS/MSDs were not analyzed for this report.											
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of TSS LCS/LCSDs was analyzed with all recoveries within laboratory limits. 2) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 4) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.											
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>10029-1M-PR</td><td>2,4,6-Tribromophenol</td><td>28.8</td><td>30 – 150</td></tr></table>				Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	10029-1M-PR	2,4,6-Tribromophenol	28.8	30 – 150
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)									
10029-1M-PR	2,4,6-Tribromophenol	28.8	30 – 150									
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable with the exception noted above.											
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.											
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.											
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.											

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506069

## December 2005



Assessment Characteristic	Comments																				
Holding Times	All holding times were met according to established protocols.																				
Detection Limits	Reporting and Detection limits were met according to established protocols.																				
Field Duplicates	Field duplicates were not analyzed for this report.																				
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank.																				
MS/MSD	MS/MSDs were not analyzed for this report.																				
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory limits. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.																				
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>10029-1M-PO</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr><tr><td>10029-1M-PO</td><td>Nitrobenzene-d5</td><td>54.4</td><td>57 – 101</td></tr><tr><td>SVOC Method Blank</td><td>2,4,6-Tribromophenol</td><td>101</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	10029-1M-PO	2,4,6-Tribromophenol	102	65 – 100	10029-1M-PO	Nitrobenzene-d5	54.4	57 – 101	SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)																		
10029-1M-PO	2,4,6-Tribromophenol	102	65 – 100																		
10029-1M-PO	Nitrobenzene-d5	54.4	57 – 101																		
SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100																		
SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100																		
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above and those are attributed to matrix interference due to high levels of volatile compounds.																				
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																				
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																				
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																				

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506071

## December 2005



Assessment Characteristic	Comments															
Holding Times	All holding times were met according to established protocols.															
Detection Limits	Reporting and Detection limits were met according to established protocols.															
Field Duplicates	Field duplicates were not analyzed for this report.															
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank.															
MS/MSD	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory limits.															
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory limits. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.															
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>SVOC Method Blank</td><td>2,4,6-Tribromophenol</td><td>101</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr></table>				Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)													
SVOC Method Blank	2,4,6-Tribromophenol	101	65 – 100													
SVOC LCSD	2,4,6-Tribromophenol	102	65 – 100													
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above and those are attributed to matrix interference due to high levels of volatile compounds.															
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.															
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.															
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.															

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506265

## December 2005



Assessment Characteristic	Comments																
Holding Times	All holding times were met according to established protocols.																
Detection Limits	Reporting and Detection limits were met according to established protocols.																
Field Duplicates	Field duplicates were not analyzed for this report.																
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the exception of mercury. The initial blank returned a result of 0.181 ug/L. The blank was re-analyzed and returned a nondetect.																
MS/MSD	MS/MSDs were not analyzed for this report.																
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) Two sets of SVOC LCS/LCSDs were analyzed with all recoveries within laboratory limits. 3) Two sets of VOC LCS/LCSDs were analyzed with all recoveries within laboratory limits with the exception of acetone and chlorodibromomethane. Neither was detected in the associated sample.																
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>60028-10M-PO</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>108</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>107</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	60028-10M-PO	2,4,6-Tribromophenol	102	65 – 100	SVOC LCS	2,4,6-Tribromophenol	108	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	107	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)														
60028-10M-PO	2,4,6-Tribromophenol	102	65 – 100														
SVOC LCS	2,4,6-Tribromophenol	108	65 – 100														
SVOC LCSD	2,4,6-Tribromophenol	107	65 – 100														
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above. 2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.																
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506277

## December 2005



Assessment Characteristic	Comments												
Holding Times	All holding times were met according to established protocols.												
Detection Limits	Reporting and Detection limits were met according to established protocols.												
Field Duplicates	Field duplicates were not analyzed for this report.												
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the exception of mercury. The initial blank returned a result of 0.181 ug/L. The blank was re-analyzed and returned a nondetect.												
MS/MSD	MS/MSDs were not analyzed for this report.												
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. <div>1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory.</div> <div>2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.</div> <div>3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits with the exception of chlorodibromomethane. It was not detected in the associated sample.</div>												
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>108</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>107</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	SVOC LCS	2,4,6-Tribromophenol	108	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	107	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)										
SVOC LCS	2,4,6-Tribromophenol	108	65 – 100										
SVOC LCSD	2,4,6-Tribromophenol	107	65 – 100										
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: <div>1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above.</div> <div>2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.</div>												
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.												
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.												
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.												

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506328

## December 2005



Assessment Characteristic	Comments																				
Holding Times	All holding times were met according to established protocols.																				
Detection Limits	Reporting and Detection limits were met according to established protocols.																				
Field Duplicates	Field duplicates were not analyzed for this report.																				
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the exception of mercury. The initial blank returned a result of 0.181 ug/L. The blank was re-analyzed and returned a nondetect.																				
MS/MSD	MS/MSDs were not analyzed for this report.																				
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. <div>1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory.</div> <div>2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits.</div> <div>3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits with the exception of chlorodibromomethane. It was not detected in the associated sample.</div>																				
Surrogate Standard Recoveries	<div>All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions:</div> <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>60028-1M-PO</td><td>2,4,6-Tribromophenol</td><td>103</td><td>65 – 100</td></tr><tr><td>SVOC Method Blank</td><td>Nitrobenzene-d5</td><td>52.8</td><td>57 – 101</td></tr><tr><td>SVOC LCS</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr><tr><td>SVOC LCSD</td><td>2,4,6-Tribromophenol</td><td>105</td><td>65 – 100</td></tr></table>	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	60028-1M-PO	2,4,6-Tribromophenol	103	65 – 100	SVOC Method Blank	Nitrobenzene-d5	52.8	57 – 101	SVOC LCS	2,4,6-Tribromophenol	102	65 – 100	SVOC LCSD	2,4,6-Tribromophenol	105	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)																		
60028-1M-PO	2,4,6-Tribromophenol	103	65 – 100																		
SVOC Method Blank	Nitrobenzene-d5	52.8	57 – 101																		
SVOC LCS	2,4,6-Tribromophenol	102	65 – 100																		
SVOC LCSD	2,4,6-Tribromophenol	105	65 – 100																		
Bias	<div>The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task:</div> <div>1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above.</div> <div>2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.</div>																				
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																				
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																				
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																				

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit



# Chemistry QC Summary – Braun Report #0506279

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting and Detection limits were met according to established protocols.			
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:			
	Affected Sample	Compound	Sample Result (mg/kg)	Blank Result (mg/kg)
	60028-1M-PR	1,2,3 Trichlorobenzene	ND	0.0275
	60028-1M-PR	1,2,4 Trichlorobenzene	ND	0.0165
	60028-1M-PR	Bromoform	ND	0.0965
	60028-1M-PR	Hexachlorobutadiene	ND	0.0460
	60028-1M-PR	Methylene Chloride	ND	0.0340
	60028-1M-PR	Vinyl Chloride	ND	0.0125
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits with the exception of 1,1,1,2-Tetrachloroethane and chlorodibromomethane. It was not detected in the associated sample.			
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions:			
	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)
	VOC LCS	4-Bromofluorobenzene	118	74 – 117
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exceptions noted above. 2) The surrogate recoveries for all of the samples were acceptable with the exception noted above.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506399

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting and Detection limits were met according to established protocols.			
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:			
	Affected Sample	Compound	Sample Result (ug/L)	Blank Result (ug/L)
	60028-1Q-PO, 60028-1Q-DCN	1,2,3 Trichlorobenzene	ND, ND	0.320
	60028-1Q-PO, 60028-1Q-DCN	1,2,4 Trichlorobenzene	ND, ND	0.240
	60028-1Q-PO, 60028-1Q-DCN	Bromoform	ND, ND	1.98
	60028-1Q-PO, 60028-1Q-DCN	Hexachlorobutadiene	ND, ND	1.07
	60028-1Q-PO, 60028-1Q-DCN	Methylene Chloride	ND, ND	0.850
MS/MSD	MS/MSDs were not analyzed for this report.			
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits with the exception of chlorodibromomethane. It was not detected in the associated sample.			
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions:			
	Affected Sample	Surrogate	Recovery (%)	PR Limits (%)
	SVOC Method Blank	Nitrobenzene-d5	52.8	57 – 101
	SVOC LCS	2,4,6-Tribromophenol	102	65 – 100
	SVOC LCSD	2,4,6-Tribromophenol	105	65 – 100
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above. 2) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit



# Chemistry QC Summary – Braun Report #0506249

## December 2005



Assessment Characteristic	Comments
Holding Times	All holding times were met according to established protocols.
Detection Limits	Reporting and Detection limits were met according to established protocols.
Field Duplicates	One field duplicate for Total Organic Carbon (TOC) and one for % solids were analyzed and the RPD is within established protocols.
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank.
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) One set of Mercury MS/MSDs was analyzed with all recoveries within laboratory limits. 2) One set of VOC MS/MSDs was analyzed and 134 out of 136 recoveries were within laboratory limits. 3) One set of SVOC MS/MSDs was analyzed with all recoveries within laboratory limits.
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with 135 of 136 recoveries within laboratory.
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits.
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above. 2) All of the MS/MSD results were within the accuracy objectives for this task with the exceptions noted above. 3) The surrogate recoveries for all of the samples were acceptable.
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506248

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506259

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506276

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506358

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506445

## December 2005



Assessment Characteristic	Comments
Holding Times	All holding times were met according to established protocols.
Detection Limits	Reporting and Detection limits were met according to established protocols.
Field Duplicates	Field duplicates were not analyzed for this report.
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method.
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) One set of SVOC MS/MSDs was analyzed with all recoveries within laboratory limits.
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Three sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) Two sets of SVOC LCS/LCSDs were analyzed with all recoveries within laboratory limits with the exception of the recoveries for Pentachlorophenol in soil. 3) Two sets of VOC LCS/LCSDs were analyzed with all recoveries within laboratory.
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the MS/MSD results were within the accuracy objectives for this task. 2) All of the LCS/LCSD results were within the accuracy objectives for this task. 3) The surrogate recoveries for all of the samples were acceptable.
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506400

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting and Detection limits were met according to established protocols.			
Field Duplicates	One field duplicate for Total Organic Carbon was analyzed and the RPD was within laboratory limits.			
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank with the following exceptions:			
	Affected Sample	Compound	Sample Result (mg/kg)	Blank Result (mg/kg)
	70015-IN-PR	1,2,3 Trichlorobenzene	ND	0.0275
	70015-IN-PR	Bromoform	ND	0.0965
	70015-IN-PR	Hexachlorobutadiene	ND	0.0460
	70015-IN-PR	Methylene Chloride	ND	0.0340
	70015-IN-PR	Vinyl Chloride	ND	0.0125
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) One set of Mercury MS/MSDs was analyzed. The mercury spike recoveries were not detected due to high background levels of mercury in the samples. 2) One set of SVOC MS/MSDs was analyzed with 6 of 22 recoveries outside of laboratory limits due to matrix interference. The RPDs for the analysis were within laboratory limits. 3) VOC LCS/LCSDs could not be analyzed due to high levels of background compounds in the sample.			
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 4) One set of Mercury LCS/LCSDs was analyzed with all recoveries within laboratory. 5) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 6) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory limits with the exception of 1,1,1,2-Tetrachloroethane and chlorodibromomethane. It was not detected in the associated sample.			
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits			
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the MS/MSD results were within the accuracy objectives for this task with the exceptions noted above. 2) All of the LCS/LCSD results were within the accuracy objectives for this task with the exception noted above. 3) The surrogate recoveries for all of the samples were acceptable.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506408

## December 2005



Assessment Characteristic	Comments																							
Holding Times	All holding times were met according to established protocols.																							
Detection Limits	Reporting and Detection limits were met according to established protocols.																							
Field Duplicates	Field duplicates were not analyzed with this report.																							
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method blank.																							
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) One set of Mercury MS/MSDs was analyzed with all recoveries within laboratory limits. 2) One set of SVOC MS/MSDs was analyzed with all recoveries within laboratory limits.																							
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory limits. 2) Two sets of SVOC LCS/LCSDs were analyzed with all recoveries within laboratory limits. 3) Two sets of VOC LCS/LCSDs were analyzed with all recoveries within laboratory limits.																							
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits with the following exceptions: <table><tr><th>Affected Sample</th><th>Surrogate</th><th>Recovery (%)</th><th>PR Limits (%)</th></tr><tr><td>60028-10Q-DCN</td><td>Nitrobenzene-d5</td><td>50.4</td><td>57 – 101</td></tr><tr><td>60028-10Q-DCN, 70015-IN-DCN</td><td>Nitrobenzene-d5</td><td>52.8</td><td>57 – 101</td></tr><tr><td>60028-10Q-DCN, 70015-IN-DCN (LCS)</td><td>2,4,6-Tribromophenol</td><td>102</td><td>65 – 100</td></tr><tr><td>60028-10Q-DCN, 70015-IN-DCN (LCSD)</td><td>2,4,6-Tribromophenol</td><td>105</td><td>65 – 100</td></tr></table>				Affected Sample	Surrogate	Recovery (%)	PR Limits (%)	60028-10Q-DCN	Nitrobenzene-d5	50.4	57 – 101	60028-10Q-DCN, 70015-IN-DCN	Nitrobenzene-d5	52.8	57 – 101	60028-10Q-DCN, 70015-IN-DCN (LCS)	2,4,6-Tribromophenol	102	65 – 100	60028-10Q-DCN, 70015-IN-DCN (LCSD)	2,4,6-Tribromophenol	105	65 – 100
Affected Sample	Surrogate	Recovery (%)	PR Limits (%)																					
60028-10Q-DCN	Nitrobenzene-d5	50.4	57 – 101																					
60028-10Q-DCN, 70015-IN-DCN	Nitrobenzene-d5	52.8	57 – 101																					
60028-10Q-DCN, 70015-IN-DCN (LCS)	2,4,6-Tribromophenol	102	65 – 100																					
60028-10Q-DCN, 70015-IN-DCN (LCSD)	2,4,6-Tribromophenol	105	65 – 100																					
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the MS/MSD results were within the accuracy objectives for this task. 2) All of the LCS/LCSD results were within the accuracy objectives for this task. 3) The surrogate recoveries for all of the samples were acceptable with the exceptions noted above.																							
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.																							
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.																							
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.																							

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit



# Chemistry QC Summary – Braun Report #0506423

## December 2005



Assessment Characteristic	Comments
Holding Times	All holding times were met according to established protocols.
Detection Limits	Reporting and Detection limits were met according to established protocols.
Field Duplicates	One field duplicate for Total Organic Carbon was analyzed and the RPD was within laboratory limits.
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method.
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) One set of SVOC MS/MSDs was analyzed with all recoveries within laboratory limits.
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) Two sets of SVOC LCS/LCSDs were analyzed with all recoveries within laboratory limits. 3) Two sets of VOC LCS/LCSDs were analyzed with all recoveries within laboratory.
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the MS/MSD results were within the accuracy objectives for this task. 2) All of the LCS/LCSD results were within the accuracy objectives for this task. 3) The surrogate recoveries for all of the samples were acceptable.
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506487

## December 2005



Assessment Characteristic	Comments
Holding Times	All holding times were met according to established protocols.
Detection Limits	Reporting and Detection limits were met according to established protocols.
Field Duplicates	Field duplicates were not analyzed for this report.
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method.
MS/MSD	MS/MSDs were not analyzed for this report.
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory.
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the LCS/LCSD results were within the accuracy objectives for this task. 2) The surrogate recoveries for all of the samples were acceptable.
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506403

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506412

## December 2005



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506504

## December 2005



Assessment Characteristic	Comments
Holding Times	All holding times were met according to established protocols.
Detection Limits	Reporting and Detection limits were met according to established protocols.
Field Duplicates	Field duplicates were not analyzed for this report.
Method Blanks	All sample results were greater than 10 times the concentrations found in the corresponding method blanks or the compounds were not detected in the method.
MS/MSD	Results of analyses performed on the MS/MSDs are summarized below. 1) Two sets of Mercury MS/MSDs were analyzed with all recoveries within laboratory. 2) One set of SVOC MS/MSDs was analyzed with all recoveries within laboratory limits.
LCS/LCSDs	Results of analyses performed on the LCS/LCSDs are summarized below. 1) Two sets of Mercury LCS/LCSDs were analyzed with all recoveries within laboratory. 2) One set of SVOC LCS/LCSDs was analyzed with all recoveries within laboratory limits. 3) One set of VOC LCS/LCSDs was analyzed with all recoveries within laboratory.
Surrogate Standard Recoveries	All analyzed samples had the surrogate standard recoveries within the laboratory generated control limits
Bias	The distributions of analytical recoveries are typically centered about a value less than 100% because analytes are lost rather than gained throughout the procedures. The following accuracy results show that significant bias was not evident within the analytical results for this task: 1) All of the MS/MSD results were within the accuracy objectives for this task. 2) All of the LCS/LCSD results were within the accuracy objectives for this task. 3) The surrogate recoveries for all of the samples were acceptable.
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.
Comparability	All results are reported in comparable units within analyses (typically ug/L or mg/Kg) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.
Completeness	Quality control results that fell outside of the limits are summarized above and corresponding sample results are flagged in the laboratory reports. No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506424

## January 2006



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene and Mercury may be biased high. However, all analyses results were below the MRL. The LCS and LCSD recoveries for PCBs were biased slightly high. However, since there were no PCBs present in the samples, the overall results are not affected.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506454

## January 2006



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit

# Chemistry QC Summary – Braun Report #0506502

## January 2006



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

MDL: Method detection limit

RL: Reporting Limit



# Chemistry QC Summary – Braun Report #0506503

## January 2006



Assessment Characteristic	Comments			
Holding Times	All holding times were met according to established protocols.			
Detection Limits	Reporting limits met the established NYS SGC thresholds. Reporting limits did not meet the NYS AGC thresholds for the following compounds:			
	1,4 Dichlorobenzene	Benzene	Hexachlorobenzene	Naphthalene (0-2 hour only)
	Phenanthrene	Pyrene		
Field Duplicates	Field duplicates were not analyzed for this report.			
Method Blanks	Method blanks were not analyzed for this report.			
MS/MSD	MS/MSDs were not listed in this report.			
LCS/LCSDs	LCS/LCSD were not listed in this report.			
Surrogate Standard Recoveries	Surrogate standard recoveries were not reported in this report.			
Bias	The Laboratory Control Spike Duplicate was outside of Laboratory control limits. The LCSD recovery was 123%. The results for Hexachlorobenzene may be biased high. However, all analyses results were below the MRL.			
Representativeness	Proper sampling techniques were followed at all times. All samples were analyzed within proper holding times (except where noted) and according to laboratory SOPs. The data generated within this task represent the objectives described in the sampling plan.			
Comparability	All results are reported in comparable units within analyses (typically ug/m <sup>3</sup> ) and when comparisons are made to limits or previously reported data. All results were obtained using consistent methods of analysis. Samples were taken in accordance with the sampling plan with proper sampling technique.			
Completeness	No deviations resulted in the exclusion of data from the report for this task. All samples were analyzed according to the Work Plan and the percent completion for this task is 100%.			

### Abbreviations:

RPD: Relative percent deviation

MS, MSD: Matrix spike, matrix spike duplicate

LCS/LCSD: Laboratory control sample, Laboratory control sample duplicate

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RL: Reporting Limit