Vermont Department of Health Laboratory

195 Colchester Avenue, P.O. Box 1125, Burlington VT 05402-1125
DataMaster Technical Services (ph) 802-863-7641; (fax) 802-863-7632

DATAMASTER TECHNICAL SUPPORT INQUIRY

Agency/Site: Bennington County SO____ **DataMaster Serial #:** 100155_____

Date: 12 /07 ~~/2010~~ 2010 3/10/11 Requestor: K. Kimball_____

Instrument Supervisor: Jason Noblet_____ Phone #: 442-4900_____

Taken By: Harnois, Steven, E. _____

Problem: Instrument Supervisor Reports that simulator Solution Concentration goes out of Spec Quickly_____

Laboratory Response: Supervisor had just completed a Simulator solution change the instrument is running correctly, leave in place until after the New Year. _____

Work Performed:_____

1/4/2011 – retrieved instrument from Bennington to the Health Lab in Burlington. SH

1/6/2011 – set up instrument in the lab to test. SH

1/10/11 – Still testing instrument in the lab. SH

1/13/11 – Still testing instrument in the lab. SH

After troubleshooting in the lab and running several accuracy and prerecession tests we have found that this instrument is still running within specification and does not require a recalibration. See attachment titled "Troubleshooting for Instruments 100146 and 100155 Accuracy and Precision Results". Instrument is ready for the field.

20 Reports Attached

☐ On Site ☒ In-house

Performed By: Steven Harnois Date: 2/17/2011
Reviewed By: Amanda Bolduc Date: 2/17/2011

Troubleshooting for instruments 100146 and 100155
Accuracy and Precision Results

100146

Date	lot number	Target	Result	Delta	% recovery	
1/6/2011	11-21-100	0.096	0.095	0.001	98.96	
1/6/2011	11-20-100	0.097	0.097	0.000	100.00	
1/6/2011	11-19-100	0.103	0.102	0.001	99.03	
1/7/2011	11-19-100	0.103	0.101	0.002	98.06	
1/10/2011	11-19-100	0.103	0.100	0.003	97.09	
1/11/2011	11-19-100	0.103	0.100	0.003	97.09	
1/13/2011	11-19-100	0.103	0.100	0.003	97.09	
1/14/2011	11-19-100	0.103	0.100	0.003	97.09	
1/18/2011	11-19-100	0.103	0.099	0.004	96.12	
1/19/2011	11-25-100	0.103	0.101	0.002	98.06	
						RECALIBRATE
1/20/2011	11-21-100	0.096	0.093	0.003	96.88	
1/20/2011	11-25-100	0.103	0.101	0.002	98.06	
						RECALIBRATE
1/20/2011	11-21-100	0.096	0.095	0.001	98.96	
1/20/2011	11-22-020	0.020	0.019	0.001	95.00	
1/20/2011	11-16-080	0.081	0.077	0.004	95.06	
1/20/2011	11-17-160	0.160	0.158	0.002	98.75	
1/20/2011	11-18-400	0.407	0.391	0.016	96.07	
1/21/2011	11-19-100	0.103	0.102	0.001	99.03	

100155

Date	lot number	Target	Result	Delta	% recovery
1/5/2011	11-21-100	0.096	0.095	0.001	98.96
1/6/2011	11-20-100	0.097	0.096	0.001	98.97
1/6/2011	11-21-100	0.096	0.094	0.002	97.92
1/6/2011	11-19-100	0.103	0.101	0.002	98.06
1/7/2011	11-20-100	0.097	0.095	0.002	97.94
1/10/2011	11-20-100	0.097	0.094	0.003	96.91
1/11/2011	11-20-100	0.097	0.094	0.003	96.91
1/13/2011	11-20-100	0.097	0.094	0.003	96.91
1/14/2011	11-20-100	0.097	0.094	0.003	96.91
1/18/2011	11-20-100	0.097	0.093	0.004	95.88
1/19/2011	11-25-100	0.103	0.101	0.002	98.06
1/20/2011	11-21-100	0.096	0.094	0.002	97.92
1/20/2011	11-25-100	0.103	0.102	0.001	99.03

DIAGNOSTIC RESULT

DataMaster DMT: 100155
Location: BENNINGTON COUNTY SO
Calibration Date: 09/01/2010
Certification Date: 09/01/2010
Installation Date: 09/02/2010
Test Date: 01/05/2011
Time: 13:11

VERMONT
DEPARTMENT OF HEALTH

```
VERSIONS
DMT 1.05
PIC 2.05
Modem 1.06
Questions 1.00
Reports 1.02

TEMPERATURES
Sample Chamber = 49.03°C
Breath Tube    = 46.88°C

SETTINGS
Lamp Voltage   = 1.79 V
Cooler Voltage = 1.74 V
Bias Voltage   = 80.6 V
Chopper Freq   = 539.1 Hz

PUMP INFO
Flow Rate = 5.660 L/M

DETECTOR INFO
PUMP     ON       OFF
MAX(V)   0.1522   0.1512
MIN(V)   0.1451   0.1496

FILTER INFO
Filter 1  0.151  Zero = true
Filter 2  0.430  Zero = true
Filter 3  0.631  Zero = true

CALIBRATION CHECK
Xq = 0.0844  1.43%
```

ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

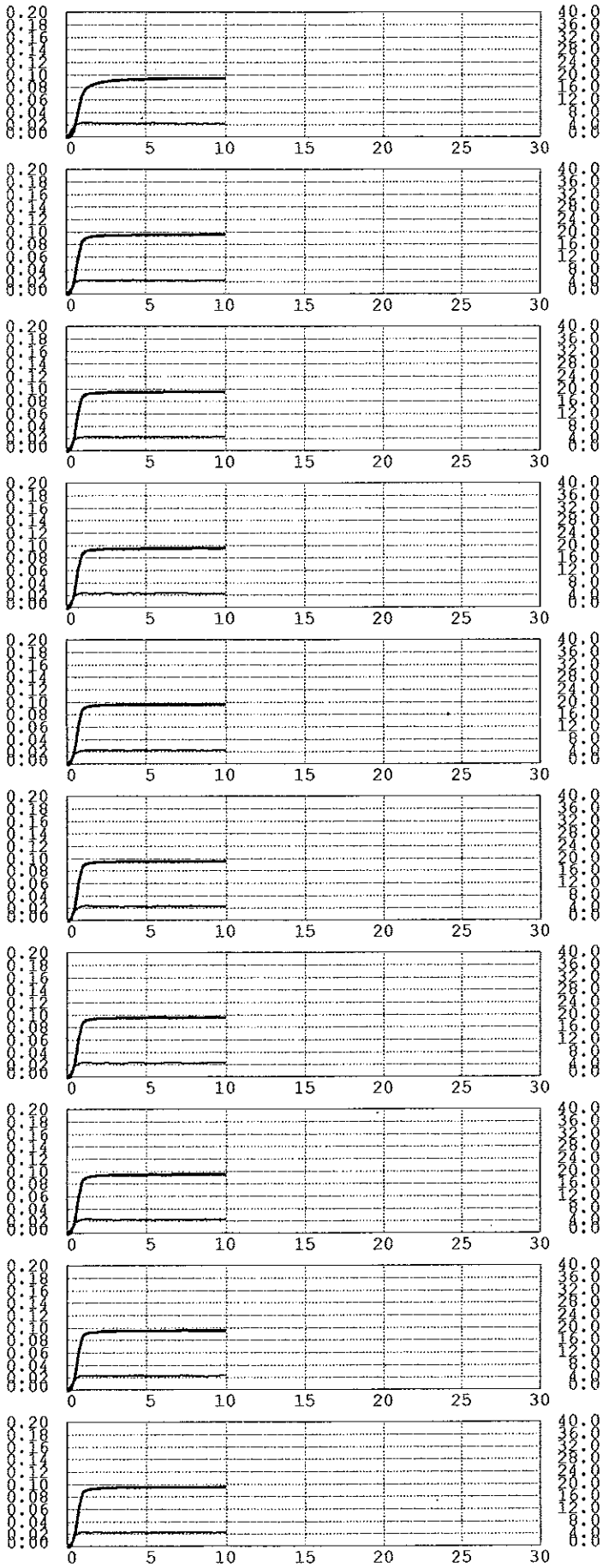
Date: 01/05/2011
Time: 13:48:08

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-21-100
SOLUTION CONCENTRATION: 0.096

BLANK TEST	0.000	13:49
CALIBRATION CHECK	PASSED	13:49
SIMULATOR VAPOR	0.096	13:49
SIMULATOR VAPOR	0.096	13:50
SIMULATOR VAPOR	0.095	13:51
SIMULATOR VAPOR	0.096	13:52
SIMULATOR VAPOR	0.096	13:53
SIMULATOR VAPOR	0.096	13:54
SIMULATOR VAPOR	0.096	13:55
SIMULATOR VAPOR	0.094	13:56
SIMULATOR VAPOR	0.096	13:57
SIMULATOR VAPOR	0.096	13:58
BLANK TEST	0.000	13:59

Average = 0.095
Std Dev = 0.0006



ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

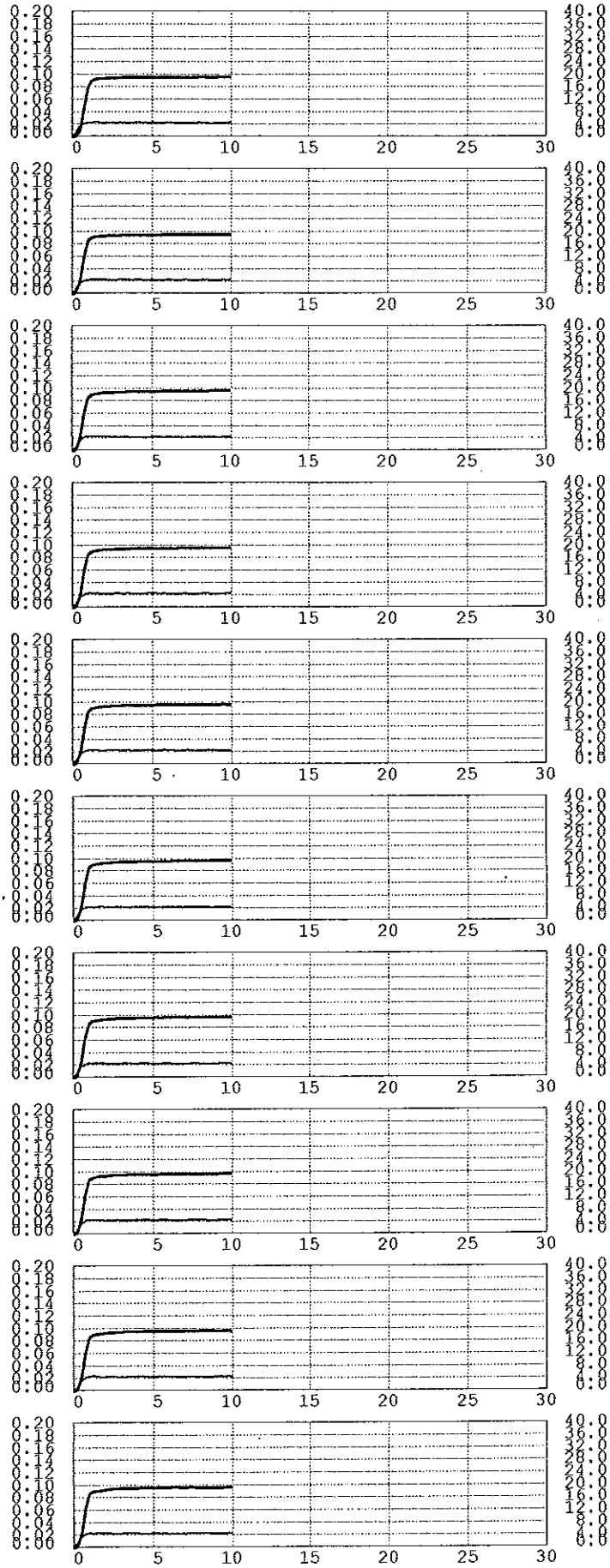
Date: 01/06/2011
Time: 08:05:51

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	08:06
CALIBRATION CHECK	PASSED	08:06
SIMULATOR VAPOR	0.096	08:07
SIMULATOR VAPOR	0.095	08:08
SIMULATOR VAPOR	0.096	08:09
SIMULATOR VAPOR	0.096	08:10
SIMULATOR VAPOR	0.097	08:11
SIMULATOR VAPOR	0.097	08:12
SIMULATOR VAPOR	0.097	08:13
SIMULATOR VAPOR	0.097	08:14
SIMULATOR VAPOR	0.096	08:15
SIMULATOR VAPOR	0.096	08:15
BLANK TEST	0.000	08:16

Average = 0.096
Std Dev = 0.0006



ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

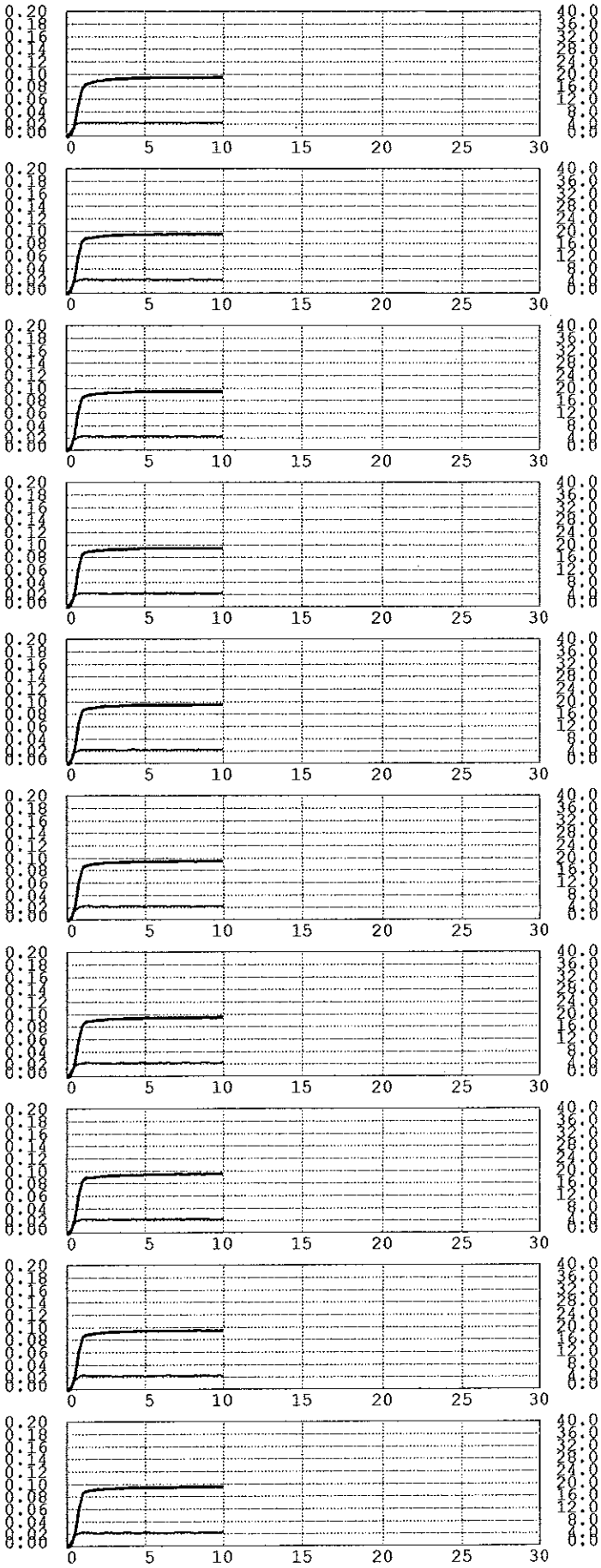
Date: 01/06/2011
Time: 08:29:36

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-21-100
SOLUTION CONCENTRATION: 0.096

BLANK TEST	0.000	08:30
CALIBRATION CHECK	PASSED	08:30
SIMULATOR VAPOR	0.095	08:30
SIMULATOR VAPOR	0.095	08:31
SIMULATOR VAPOR	0.095	08:32
SIMULATOR VAPOR	0.094	08:33
SIMULATOR VAPOR	0.095	08:34
SIMULATOR VAPOR	0.095	08:35
SIMULATOR VAPOR	0.095	08:36
SIMULATOR VAPOR	0.095	08:37
SIMULATOR VAPOR	0.095	08:38
SIMULATOR VAPOR	0.095	08:39
BLANK TEST	0.000	08:40

Average = 0.094
Std Dev = 0.0003



ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

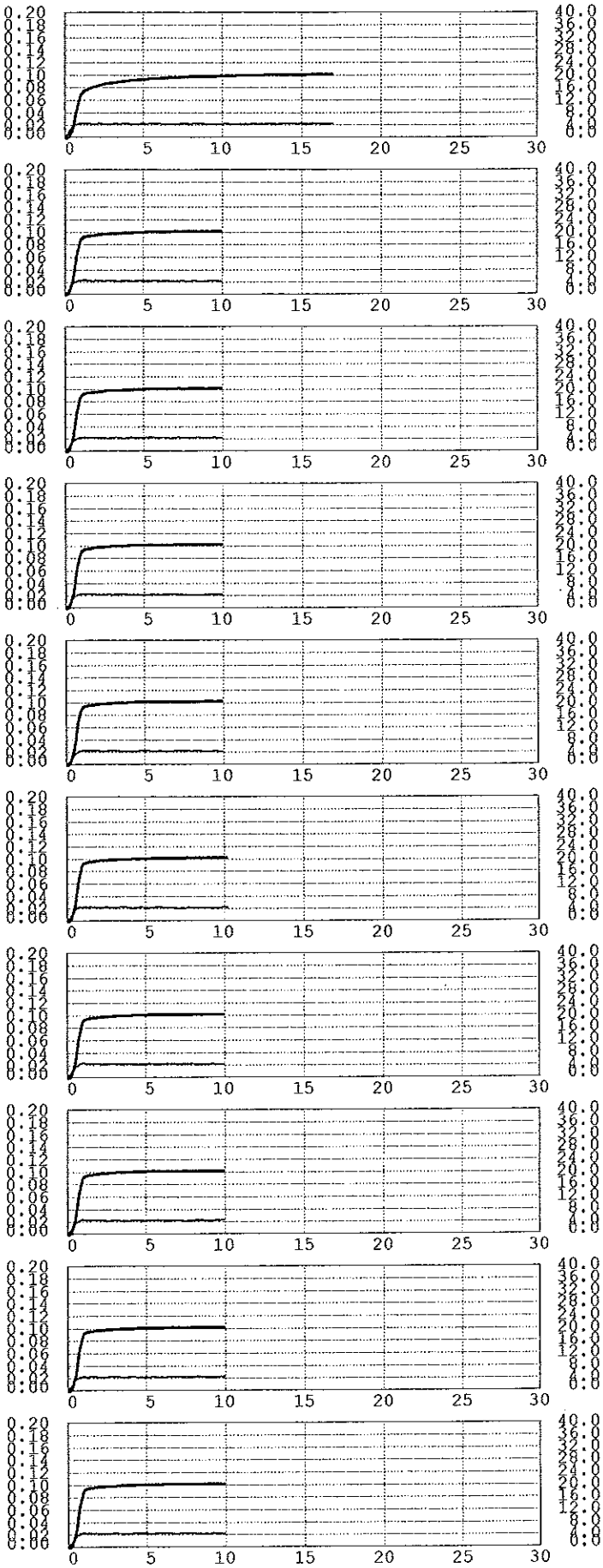
Date: 01/06/2011
Time: 09:52:47

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-19-100
SOLUTION CONCENTRATION: 0.103

BLANK TEST	0.000	09:53
CALIBRATION CHECK	PASSED	09:53
SIMULATOR VAPOR	0.101	09:54
SIMULATOR VAPOR	0.101	09:55
SIMULATOR VAPOR	0.101	09:56
SIMULATOR VAPOR	0.102	09:57
SIMULATOR VAPOR	0.102	09:58
SIMULATOR VAPOR	0.102	09:59
SIMULATOR VAPOR	0.102	10:00
SIMULATOR VAPOR	0.102	10:01
SIMULATOR VAPOR	0.101	10:02
SIMULATOR VAPOR	0.102	10:03
BLANK TEST	0.000	10:03

Average = 0.101
Std Dev = 0.0005



ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

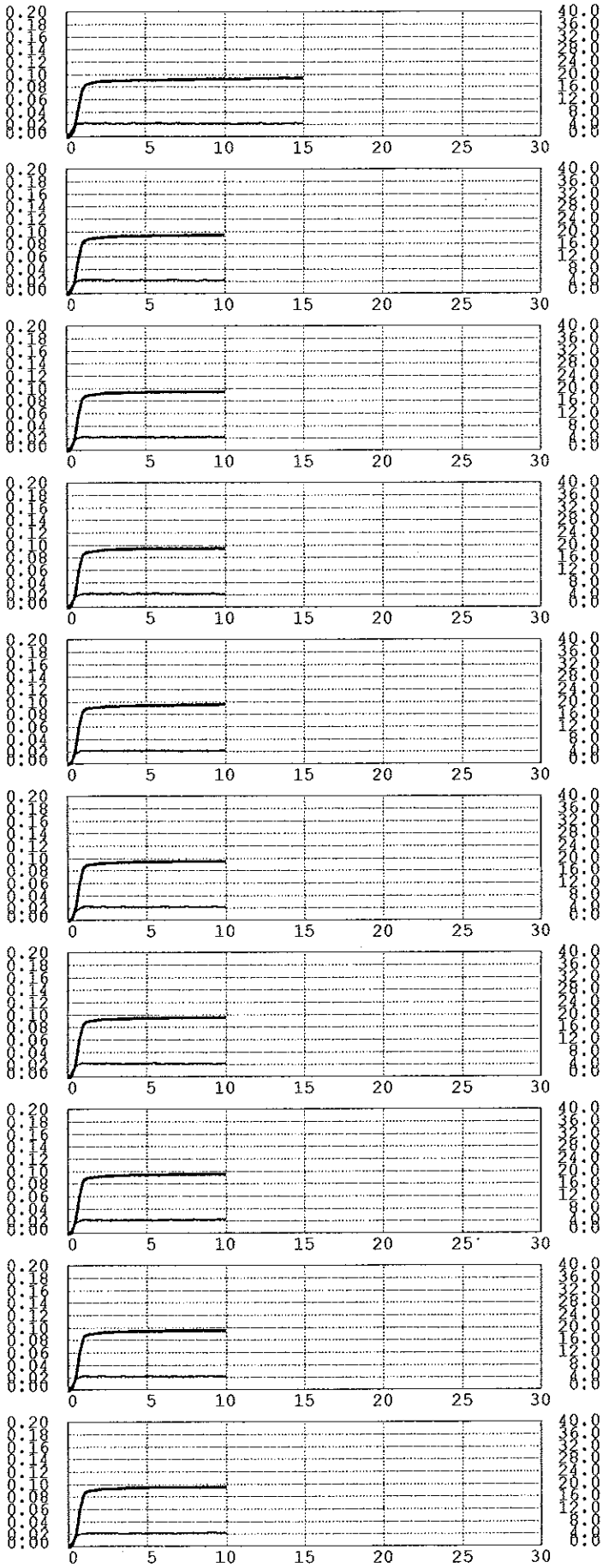
Date: 01/07/2011
Time: 09:22:41

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	09:23
CALIBRATION CHECK	PASSED	09:23
SIMULATOR VAPOR (34.1°C)	0.095	09:24
SIMULATOR VAPOR (34.1°C)	0.095	09:25
SIMULATOR VAPOR (34.1°C)	0.096	09:26
SIMULATOR VAPOR (34.2°C)	0.095	09:27
SIMULATOR VAPOR (34.1°C)	0.096	09:28
SIMULATOR VAPOR (34.1°C)	0.096	09:28
SIMULATOR VAPOR (34.1°C)	0.096	09:29
SIMULATOR VAPOR (34.1°C)	0.096	09:30
SIMULATOR VAPOR (34.2°C)	0.096	09:31
SIMULATOR VAPOR (34.1°C)	0.096	09:32
BLANK TEST	0.000	09:33

Average = 0.095
Std Dev = 0.0004



DIAGNOSTIC RESULT

DataMaster DMT: 100155
Location: BENNINGTON COUNTY SO
Calibration Date: 09/01/2010
Certification Date: 09/01/2010
Installation Date: 09/02/2010
Test Date: 01/10/2011
Time: 12:04

VERMONT
DEPARTMENT OF HEALTH

```
VERSIONS
DMT 1.05
PIC 2.05
Modem 1.06
Questions 1.00
Reports 1.02

TEMPERATURES
Sample Chamber = 49.09°C
Breath Tube    = 46.52°C
Digital Sim    = 34.2°C

SETTINGS
Lamp Voltage   = 1.79 V
Cooler Voltage = 1.74 V
Bias Voltage   = 80.5 V
Chopper Freq   = 541.2 Hz

PUMP INFO
Flow Rate = 5.719 L/M

DETECTOR INFO
PUMP     ON        OFF
MAX(V)   0.0037    0.0059
MIN(V)  -0.0006    0.0043

FILTER INFO
Filter 1  0.005  Zero = true
Filter 2  0.292  Zero = true
Filter 3  0.504  Zero = true

CALIBRATION CHECK
Xq = 0.0844  1.43%
```

ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

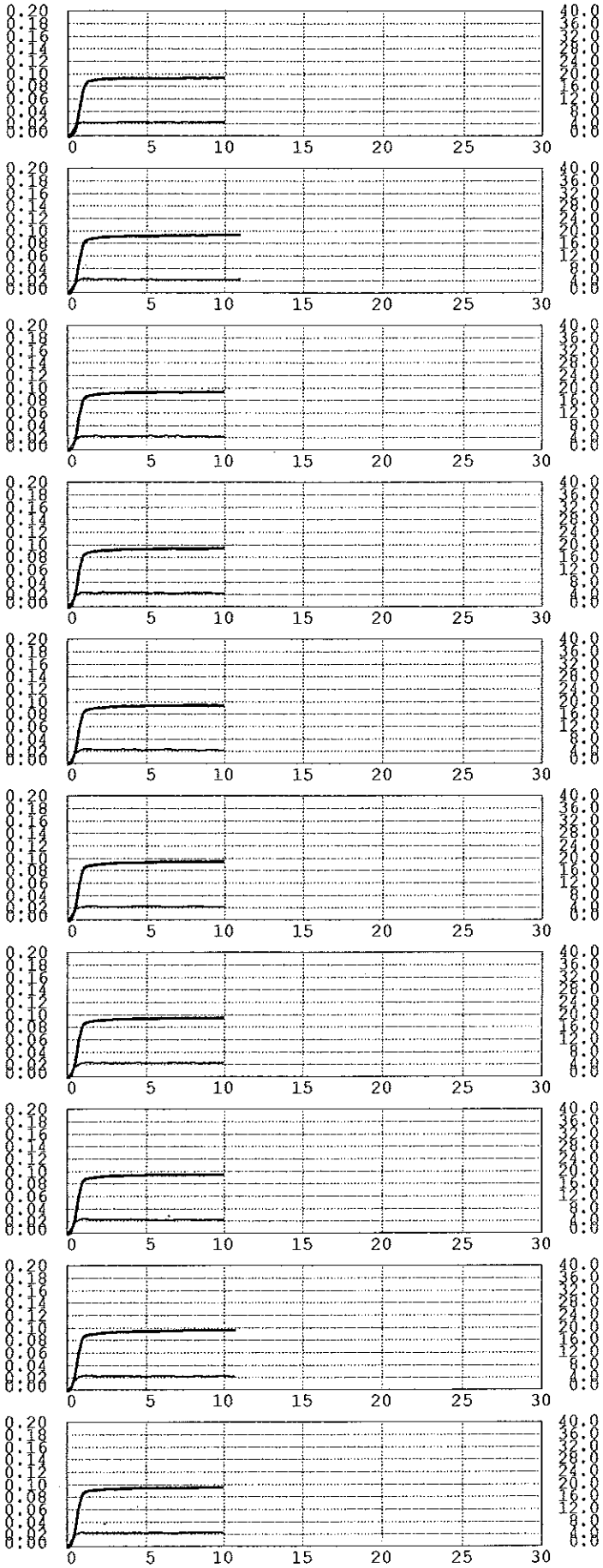
Date: 01/10/2011
Time: 12:06:24

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	12:07
CALIBRATION CHECK	PASSED	12:07
SIMULATOR VAPOR (34.1°C)	0.094	12:07
SIMULATOR VAPOR (34.1°C)	0.094	12:08
SIMULATOR VAPOR (34.2°C)	0.094	12:09
SIMULATOR VAPOR (34.1°C)	0.095	12:10
SIMULATOR VAPOR (34.1°C)	0.095	12:11
SIMULATOR VAPOR (34.2°C)	0.095	12:12
SIMULATOR VAPOR (34.2°C)	0.095	12:13
SIMULATOR VAPOR (34.2°C)	0.095	12:14
SIMULATOR VAPOR (34.2°C)	0.096	12:15
SIMULATOR VAPOR (34.1°C)	0.096	12:16
BLANK TEST	0.000	12:17

Average = 0.094
Std Dev = 0.0007



DIAGNOSTIC RESULT

DataMaster DMT: 100155
Location: BENNINGTON COUNTY SO
Calibration Date: 09/01/2010
Certification Date: 09/01/2010
Installation Date: 09/02/2010
Test Date: 01/11/2011
Time: 08:03

VERMONT
DEPARTMENT OF HEALTH

VERSIONS
DMT 1.05
PIC 2.05
Modem 1.06
Questions 1.00
Reports 1.02

TEMPERATURES
Sample Chamber = 48.86°C
Breath Tube = 45.18°C
Digital Sim = 34.2°C

SETTINGS
Lamp Voltage = 1.79 V
Cooler Voltage = 1.74 V
Bias Voltage = 80.5 V
Chopper Freq = 540.3 Hz

PUMP INFO
Flow Rate = 5.623 L/M

DETECTOR INFO

PUMP	ON	OFF
MAX(V)	0.0035	0.0071
MIN(V)	0.0002	0.0039

FILTER INFO
Filter 1 0.007 Zero = true
Filter 2 0.291 Zero = true
Filter 3 0.499 Zero = true

CALIBRATION CHECK
Xq = 0.0831 2.95%

ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

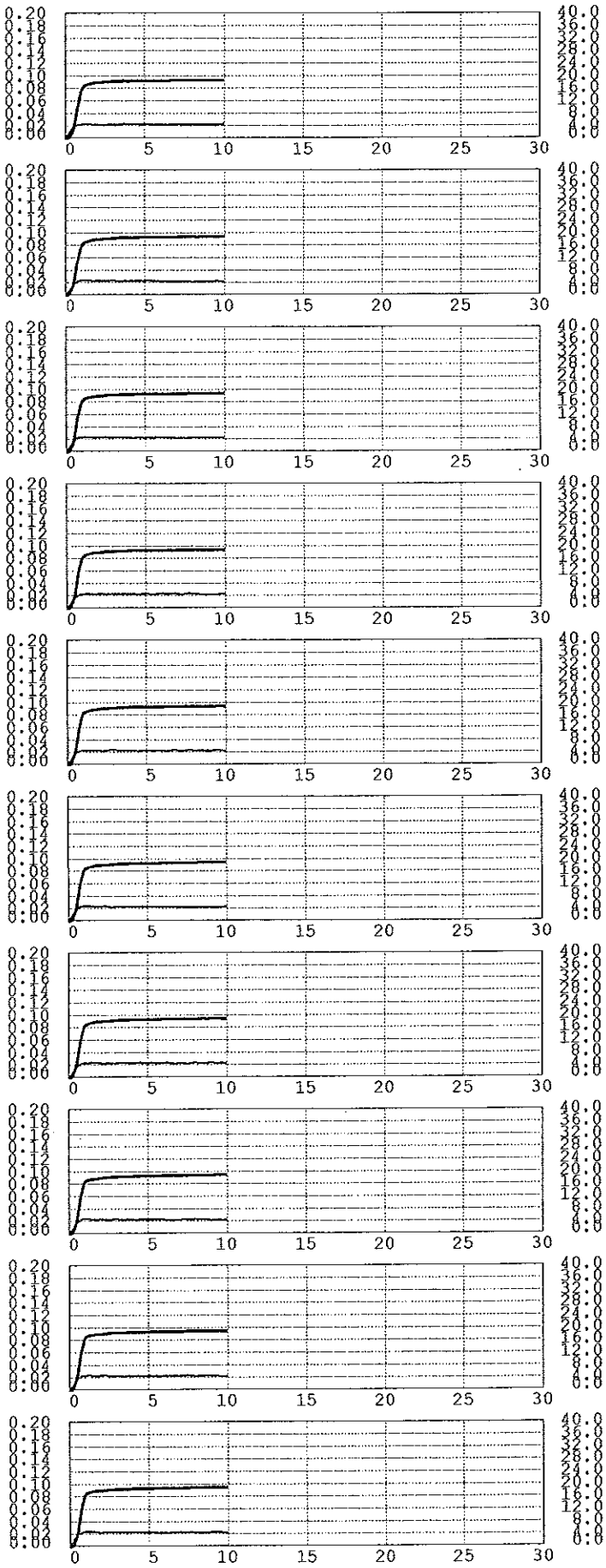
Date: 01/11/2011
Time: 08:06:18

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	08:07
CALIBRATION CHECK	PASSED	08:07
SIMULATOR VAPOR (34.2°C)	0.093	08:07
SIMULATOR VAPOR (34.1°C)	0.094	08:08
SIMULATOR VAPOR (34.2°C)	0.094	08:09
SIMULATOR VAPOR (34.3°C)	0.094	08:10
SIMULATOR VAPOR (34.1°C)	0.094	08:11
SIMULATOR VAPOR (34.2°C)	0.095	08:12
SIMULATOR VAPOR (34.1°C)	0.095	08:13
SIMULATOR VAPOR (34.2°C)	0.094	08:14
SIMULATOR VAPOR (34.2°C)	0.095	08:15
SIMULATOR VAPOR (34.1°C)	0.095	08:16
BLANK TEST	0.000	08:17

Average = 0.094
Std Dev = 0.0006



DIAGNOSTIC RESULT

DataMaster DMT: 100155
Location: BENNINGTON COUNTY SO
Calibration Date: 09/01/2010
Certification Date: 09/01/2010
Installation Date: 09/02/2010
Test Date: 01/13/2011
Time: 11:46

VERMONT
DEPARTMENT OF HEALTH

```
VERSIONS
DMT 1.05
PIC 2.05
Modem 1.06
Questions 1.00
Reports 1.02

TEMPERATURES
Sample Chamber = 49.15°C
Breath Tube    = 46.79°C
Digital Sim    = 34.1°C

SETTINGS
Lamp Voltage   = 1.79 V
Cooler Voltage = 1.74 V
Bias Voltage   = 80.5 V
Chopper Freq   = 541.7 Hz

PUMP INFO
Flow Rate = 5.740 L/M

DETECTOR INFO
PUMP     ON       OFF
MAX(V)   0.0033   0.0081
MIN(V)   0.0018   0.0065

FILTER INFO
Filter 1  0.008  Zero = true
Filter 2  0.294  Zero = true
Filter 3  0.512  Zero = true

CALIBRATION CHECK
Xq = 0.0844  1.43%
```

ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

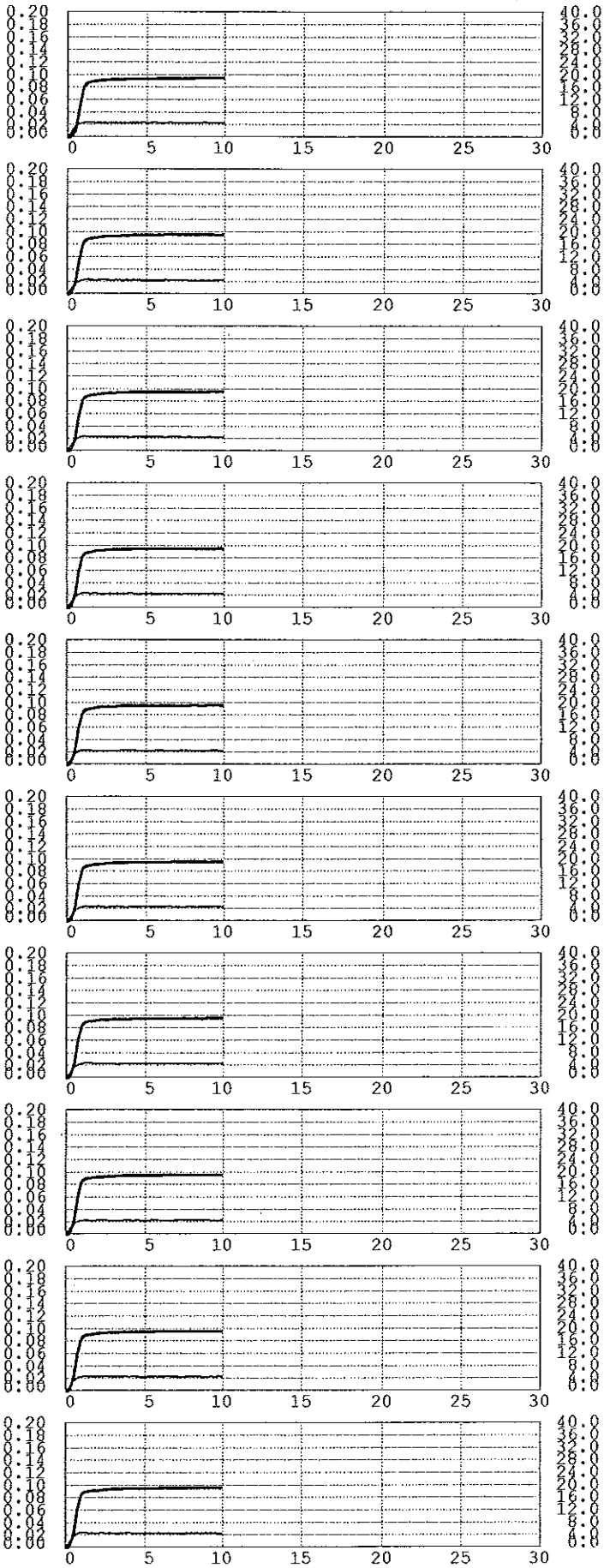
Date: 01/13/2011
Time: 11:47:56

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	11:48
CALIBRATION CHECK	PASSED	11:48
SIMULATOR VAPOR (34.1°C)	0.094	11:49
SIMULATOR VAPOR (34.2°C)	0.095	11:50
SIMULATOR VAPOR (34.1°C)	0.095	11:51
SIMULATOR VAPOR (34.2°C)	0.095	11:52
SIMULATOR VAPOR (34.2°C)	0.095	11:53
SIMULATOR VAPOR (34.1°C)	0.095	11:54
SIMULATOR VAPOR (34.1°C)	0.095	11:55
SIMULATOR VAPOR (34.1°C)	0.095	11:56
SIMULATOR VAPOR (34.2°C)	0.096	11:57
SIMULATOR VAPOR (34.1°C)	0.095	11:58
BLANK TEST	0.000	11:58

Average = 0.094
Std Dev = 0.0004



DIAGNOSTIC RESULT

DataMaster DMT: 100155
Location: BENNINGTON COUNTY SO
Calibration Date: 09/01/2010
Certification Date: 09/01/2010
Installation Date: 09/02/2010
Test Date: 01/14/2011
Time: 13:26

VERMONT
DEPARTMENT OF HEALTH

```
VERSIONS
DMT 1.05
PIC 2.05
Modem 1.06
Questions 1.00
Reports 1.02

TEMPERATURES
Sample Chamber = 48.74°C
Breath Tube    = 45.83°C
Digital Sim    = 34.2°C

SETTINGS
Lamp Voltage   = 1.79 V
Cooler Voltage = 1.74 V
Bias Voltage   = 80.5 V
Chopper Freq   = 541.2 Hz

PUMP INFO
Flow Rate = 5.627 L/M

DETECTOR INFO
PUMP     ON       OFF
MAX(V)   0.0047   0.0091
MIN(V)   0.0024   0.0073

FILTER INFO
Filter 1  0.008  Zero = true
Filter 2  0.295  Zero = true
Filter 3  0.506  Zero = true

CALIBRATION CHECK
Xq = 0.0844  1.43%
```

ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

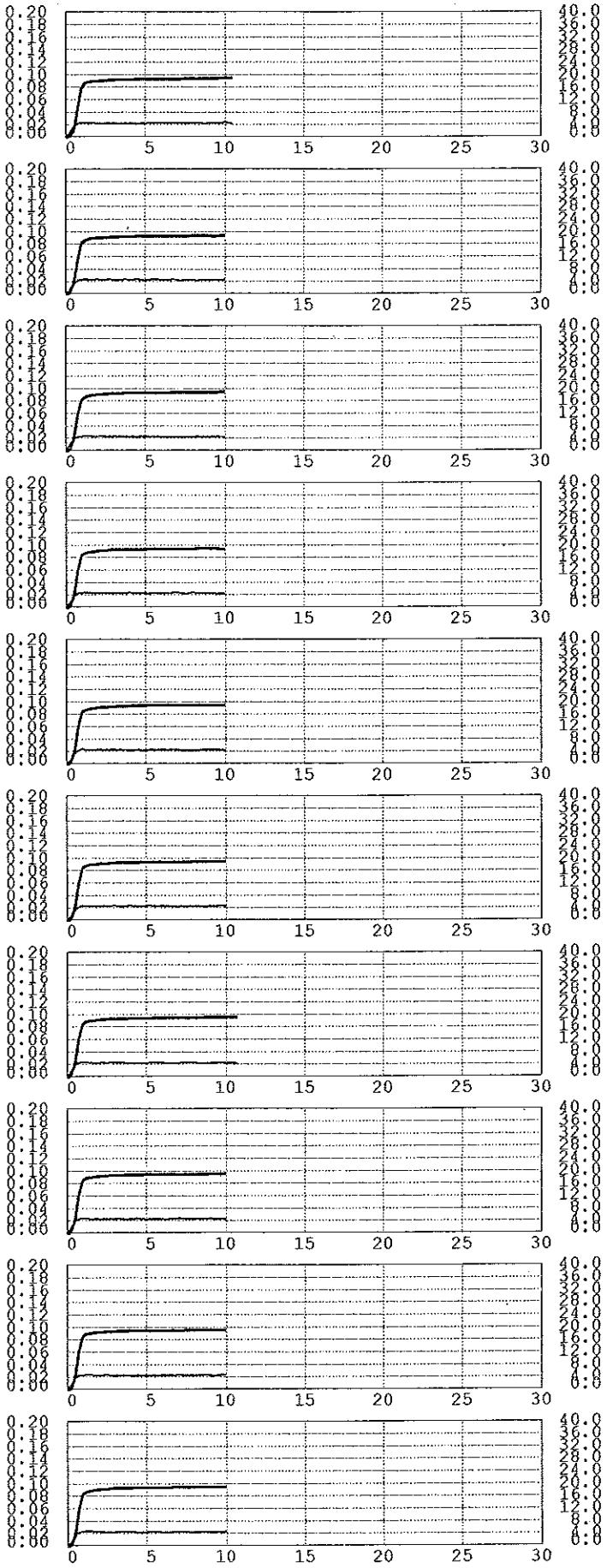
Date: 01/14/2011
Time: 13:31:47

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	13:32
CALIBRATION CHECK	PASSED	13:32
SIMULATOR VAPOR (34.1°C)	0.094	13:33
SIMULATOR VAPOR (34.1°C)	0.094	13:34
SIMULATOR VAPOR (34.1°C)	0.094	13:35
SIMULATOR VAPOR (34.1°C)	0.095	13:36
SIMULATOR VAPOR (34.1°C)	0.095	13:37
SIMULATOR VAPOR (34.1°C)	0.095	13:38
SIMULATOR VAPOR (34.0°C)	0.096	13:39
SIMULATOR VAPOR (34.0°C)	0.095	13:39
SIMULATOR VAPOR (34.1°C)	0.096	13:40
SIMULATOR VAPOR (34.1°C)	0.094	13:41
BLANK TEST	0.000	13:42

Average = 0.094
Std Dev = 0.0007



DIAGNOSTIC RESULT

DataMaster DMT: 100155
Location: BENNINGTON COUNTY SO
Calibration Date: 09/01/2010
Certification Date: 09/01/2010
Installation Date: 09/02/2010
Test Date: 01/18/2011
Time: 06:39

VERMONT
DEPARTMENT OF HEALTH

```
VERSIONS
DMT 1.05
PIC 2.05
Modem 1.06
Questions 1.00
Reports 1.02

TEMPERATURES
Sample Chamber = 48.91°C
Breath Tube    = 44.11°C
Digital Sim    = 34.2°C

SETTINGS
Lamp Voltage   = 1.79 V
Cooler Voltage = 1.74 V
Bias Voltage   = 80.5 V
Chopper Freq   = 539.8 Hz

PUMP INFO
Flow Rate = 5.572 L/M

DETECTOR INFO
PUMP     ON       OFF
MAX(V)   0.0020   0.0075
MIN(V)   0.0004   0.0057

FILTER INFO
Filter 1  0.006  Zero = true
Filter 2  0.292  Zero = true
Filter 3  0.496  Zero = true

CALIBRATION CHECK
Xq = 0.0837  2.24%
```

ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

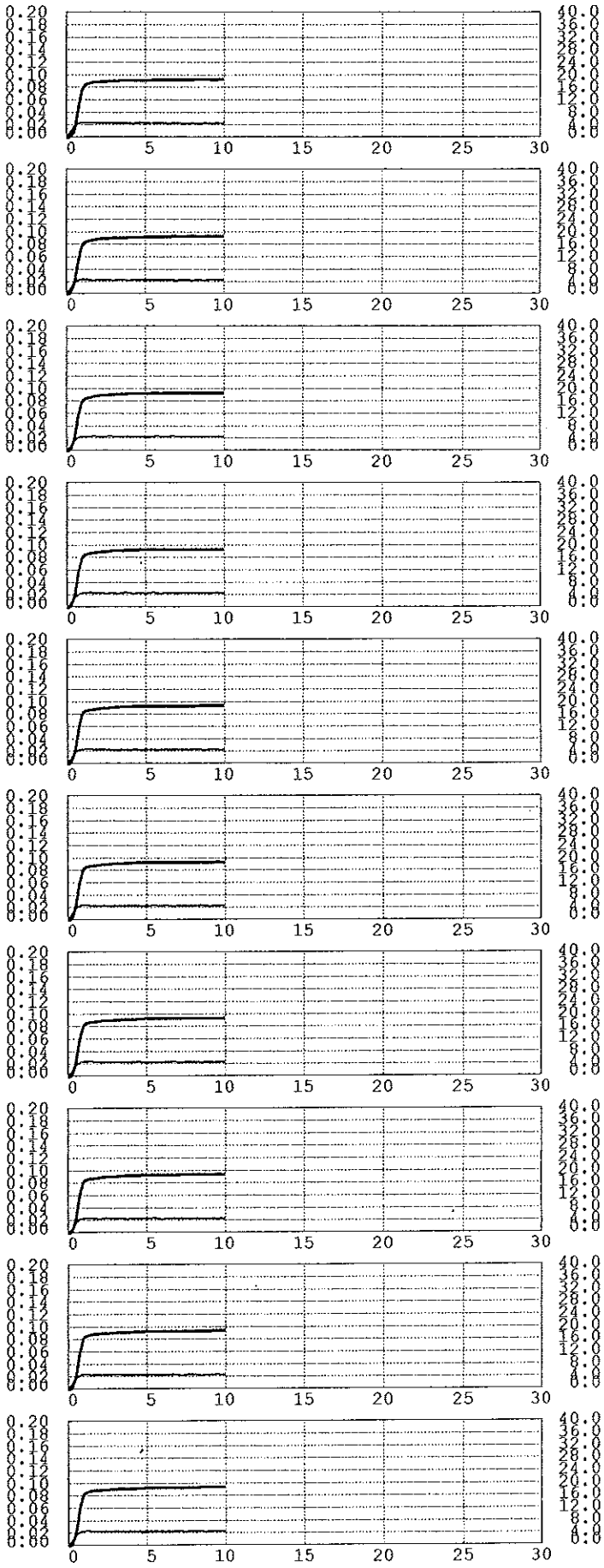
Date: 01/18/2011
Time: 08:21:02

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-20-100
SOLUTION CONCENTRATION: 0.097

BLANK TEST	0.000	08:21
CALIBRATION CHECK	PASSED	08:22
SIMULATOR VAPOR (34.2°C)	0.093	08:22
SIMULATOR VAPOR (34.1°C)	0.093	08:23
SIMULATOR VAPOR (34.2°C)	0.093	08:24
SIMULATOR VAPOR (34.2°C)	0.094	08:25
SIMULATOR VAPOR (34.2°C)	0.094	08:26
SIMULATOR VAPOR (34.2°C)	0.094	08:27
SIMULATOR VAPOR (34.1°C)	0.093	08:28
SIMULATOR VAPOR (34.2°C)	0.094	08:29
SIMULATOR VAPOR (34.1°C)	0.094	08:30
SIMULATOR VAPOR (34.2°C)	0.094	08:31
BLANK TEST	0.000	08:31

Average = 0.093
Std Dev = 0.0005



ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

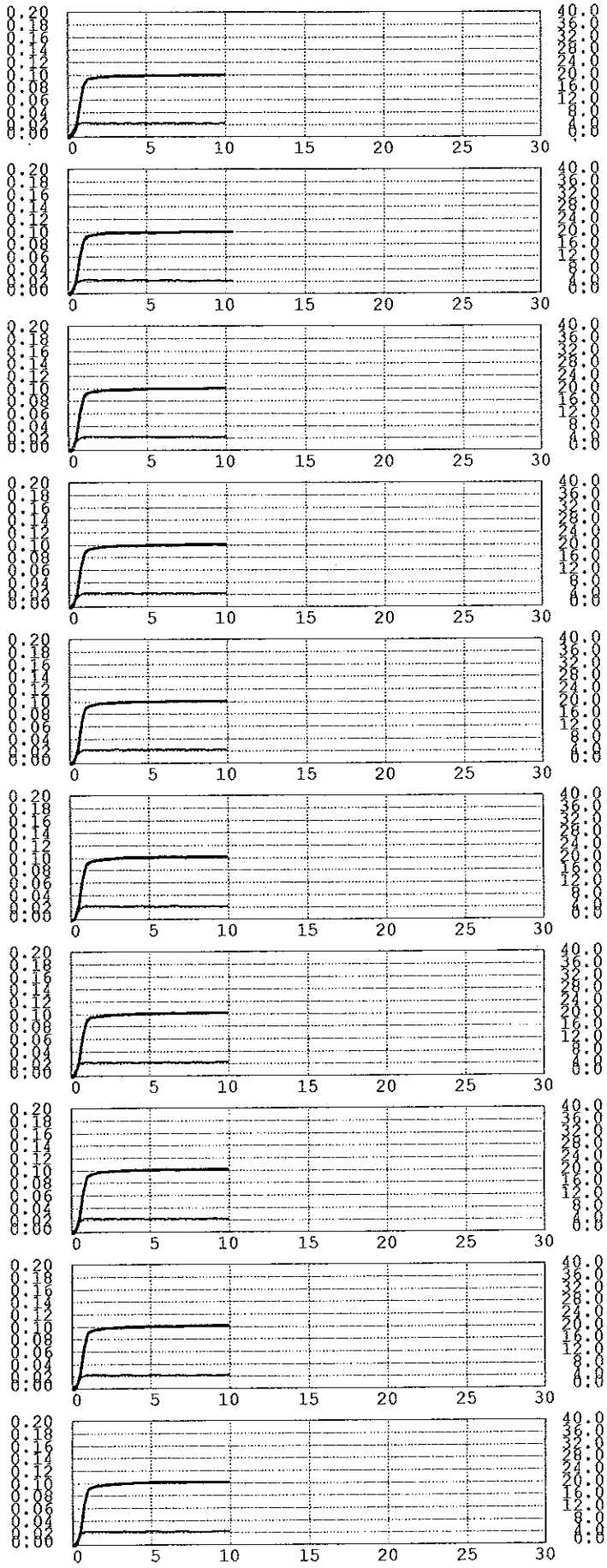
Date: 01/19/2011
Time: 09:43:15

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-25-100
SOLUTION CONCENTRATION: 0.103

BLANK TEST	0.000	09:44
CALIBRATION CHECK	PASSED	09:44
SIMULATOR VAPOR (34.1°C)	0.101	09:44
SIMULATOR VAPOR (34.1°C)	0.100	09:45
SIMULATOR VAPOR (34.1°C)	0.101	09:46
SIMULATOR VAPOR (34.2°C)	0.101	09:47
SIMULATOR VAPOR (34.3°C)	0.101	09:48
SIMULATOR VAPOR (34.1°C)	0.102	09:49
SIMULATOR VAPOR (34.1°C)	0.101	09:50
SIMULATOR VAPOR (34.1°C)	0.101	09:51
SIMULATOR VAPOR (34.2°C)	0.101	09:52
SIMULATOR VAPOR (34.3°C)	0.101	09:53
BLANK TEST	0.000	09:54

Average = 0.101
Std Dev = 0.0004



ACCURACY AND PRECISION TEST

STATE OF VERMONT

DataMaster DMT: 100155

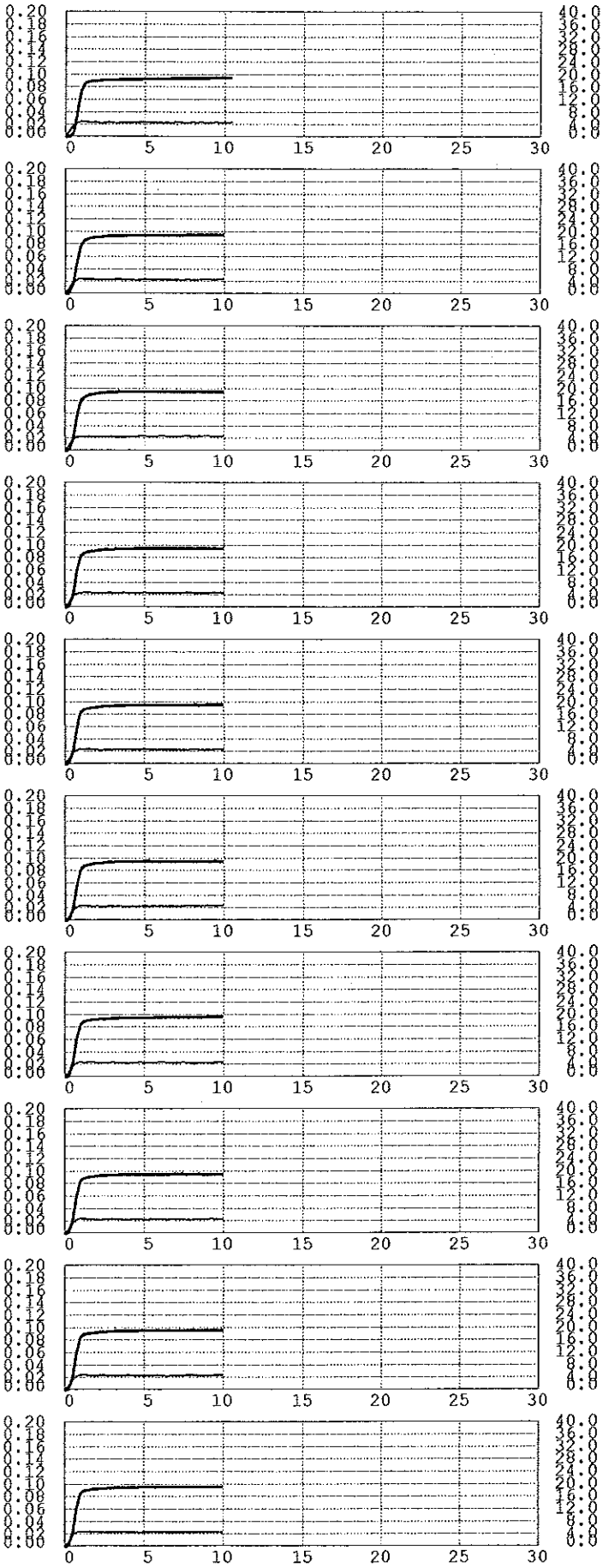
Date: 01/20/2011
Time: 09:23:02

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-21-100
SOLUTION CONCENTRATION: 0.096

BLANK TEST	0.000	09:23
CALIBRATION CHECK	PASSED	09:24
SIMULATOR VAPOR	0.094	09:24
SIMULATOR VAPOR	0.094	09:25
SIMULATOR VAPOR	0.095	09:26
SIMULATOR VAPOR	0.095	09:27
SIMULATOR VAPOR	0.095	09:28
SIMULATOR VAPOR	0.095	09:29
SIMULATOR VAPOR	0.095	09:30
SIMULATOR VAPOR	0.095	09:31
SIMULATOR VAPOR	0.096	09:32
SIMULATOR VAPOR	0.095	09:33
BLANK TEST	0.000	09:33

Average = 0.094
Std Dev = 0.0005



ACCURACY AND PRECISION TEST

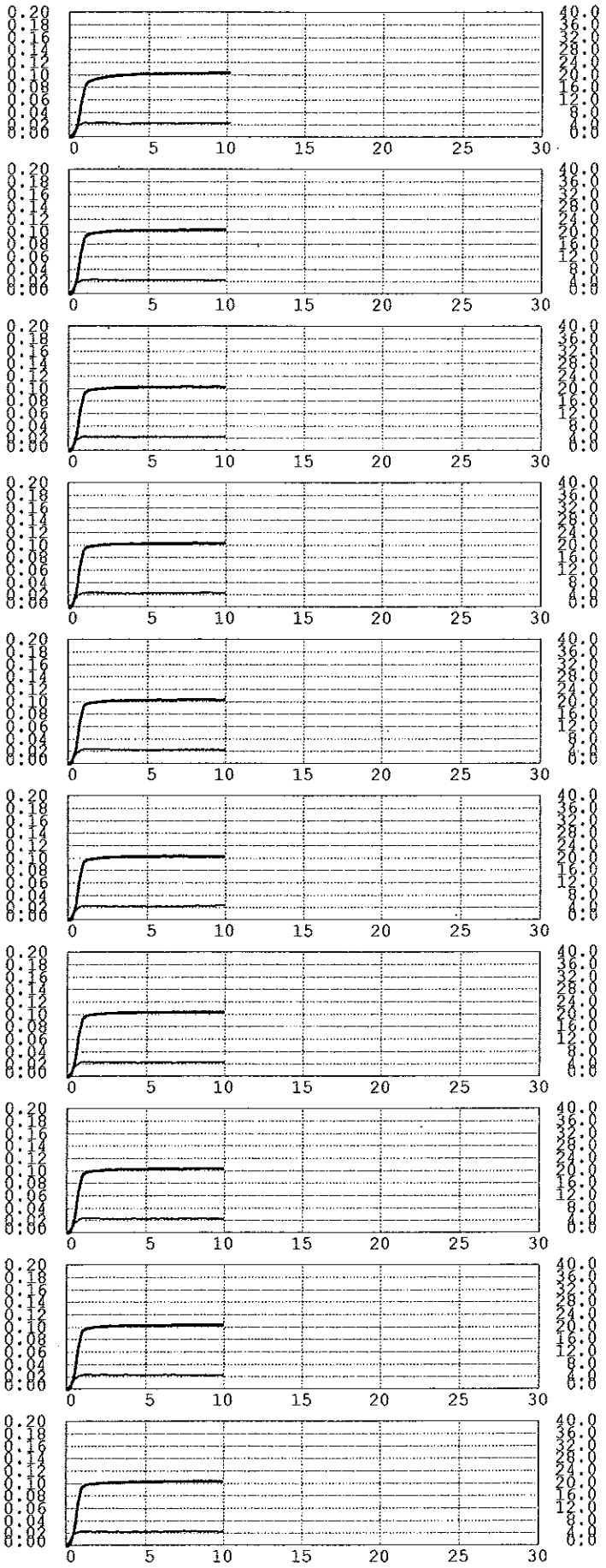
STATE OF VERMONT

DataMaster DMT: 100155

Date: 01/20/2011
Time: 09:35:09

SUPERVISOR NAME: SEH CAL CHECK

SOLUTION LOT #: 11-25-100
SOLUTION CONCENTRATION: 0.103

BLANK TEST	0.000	09:36
CALIBRATION CHECK	PASSED	09:36
SIMULATOR VAPOR	0.103	09:36
SIMULATOR VAPOR	0.103	09:37
SIMULATOR VAPOR	0.103	09:38
SIMULATOR VAPOR	0.103	09:39
SIMULATOR VAPOR	0.103	09:40
SIMULATOR VAPOR	0.102	09:41
SIMULATOR VAPOR	0.103	09:42
SIMULATOR VAPOR	0.103	09:43
SIMULATOR VAPOR	0.103	09:44
SIMULATOR VAPOR	0.103	09:45
BLANK TEST	0.000	09:46

Average = 0.102
Std Dev = 0.0003