

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 1 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

## 1.0 Purpose and Scope

- 1.1 The purpose of this procedure is to describe the process used by DataMaster DMT Supervisors and/or Vermont Forensic Laboratory (VFL) staff for the completion of a Routine Performance Check (RPC). It also describes the process used by VFL staff for the review of completed RPCs of the DataMaster DMT infrared breath alcohol analysis instruments designated for use as evidentiary breath testing devices.
- 1.2 The scope of this procedure includes completing an RPC protocol and review of RPCs performed on evidentiary breath testing instruments.

## 2.0 Responsibility

- 2.1 Each instrument shall have an RPC performed every February, June and October by a trained DataMaster DMT Supervisor, which includes trained VFL staff. Any instrument unable to successfully complete their RPC shall be repaired or returned to VFL for service as necessary.
- 2.2 It is the responsibility of staff performing this task to follow the procedure as written, to note any omissions, errors or unclear instructions in the procedure and bring them to the attention of the Alcohol Program Supervisor.
- 2.3 This procedure will be reviewed periodically by Alcohol Program staff. Revisions of the procedure will be made when a need is identified.

## 3.0 Precautions

- 3.1 Appropriate caution must be taken to avoid electrical shock when working with or using any electrically charged equipment.
- 3.2 All reports generated during this procedure must be retained; this includes those displaying error messages or failures. One copy of the report(s) will be retained by the agency in which the instrument is located. One copy of the report(s) will be returned to the VFL for review by Alcohol Program staff. The reviewed copy will be filed in the instrument's folder and an electronic copy placed in the instrument's DMT folder on the VFL intranet.

## 4.0 Procedure for Completing the RPC Protocol

### 4.1 Materials and Supplies

- 4.1.1 DataMaster DMT Instrument with keyboard, simulator and simulator lock.
- 4.1.2 HP 5650 or equivalent (HP PLC3e, PLC4 or PLC5) printer and USB cable.

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 2 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

4.1.3 DataMaster DMT Simulator Solution ~0.100 EtOH.

4.1.4 DataMaster DMT Mouthpieces.

4.1.5 Radio Frequency Transmitter.

#### **4.2 Changing the Simulator Solution**

4.2.1 Unplug the simulator, unlock the arms from around the simulator head and disconnect the simulator from the simulator tower. Unplug the BNC connector.

4.2.2 Remove the head of the simulator from the jar and discard the simulator solution.

4.2.3 Replace the simulator solution with a fresh, unexpired bottle of simulator solution and replace the simulator head snugly.

4.2.4 Affix one copy of the simulator solution label to the top of the simulator head.

4.2.5 Plug the simulator in and ensure the simulator is powered on correctly and the paddle is rotating.

4.2.6 Attach the BNC connector to the head of the simulator. Ensure the DMT registers a temperature for the simulator. Connect the simulator to the simulator tower on the DMT. Lock the arms around the simulator head using a small padlock.

#### **4.3 RPC Software Protocol**

4.3.1 Open the drop down menu. Select: Protocols → Routine Performance Check. Fill in all fields on the data entry screen as required and review before continuing.

4.3.2 The instrument will now perform a mandatory thirty minute wait period which gives the simulator solution time to warm up and equilibrate.

4.3.3 Once the wait period is complete, the instrument will automatically begin the RPC Protocol. Follow all instructions on the screen. The instrument will only continue on to the next step once each check passes.

4.3.3.1 The first step is a Diagnostic Check. The instrument will run a self-check to ensure all temperatures, settings and components are functioning properly.

4.3.3.2 The second step is an Accuracy and Precision Check. The instrument will run five replicates of the simulator solution and

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 3 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

calculate an average and standard deviation. The average must be within  $\pm 5\%$  of the certified simulator solution concentration and the standard deviation must be  $<0.002$ .

#### 4.3.3.3 The third step is the Radio Frequency (RF) Detection check.

4.3.3.3.1 When prompted to perform the RF check, if the agency has a console radio located in their building, have dispatch key all commonly used frequencies. The instrument should not react to dispatch frequencies. If a dispatch frequency causes an RF error, post a sign alerting operators to be aware of the potential RF detection warnings.

4.3.3.3.2 Key a handheld radio within two feet of the instrument. An RF should be reported. If the instrument does not report RF detected then refer to the power-up procedure (P-ALC 201) to reset the RF sensitivity and begin the test again. Adjusting the RF sensitivity can only be done at the technician level. On-site DataMaster Supervisors should contact VFL staff.

#### 4.3.3.4 The final step is a Sample Acceptance Check.

4.3.3.4.1 Press "OK" when you are ready to start the test. The DMT will run through a series of quality control checks.

4.3.3.4.2 When prompted "Please Blow" and an intermittent tone is heard, insert a new mouthpiece into the breath tube.

4.3.3.4.3 Provide breath samples. The bottom left corner of the screen will display the type of breath to deliver.

4.3.3.4.4 **Shallow Breath:** Very lightly blow a small amount of air into the mouth piece, allowing some air to escape out the sides of your mouth. The air flow should be very slight, but strong enough to just register air flow (blue line) on the screen. Blow for a few seconds then stop. The instrument should **not** report an alcohol response (black line) and should **not** accept the sample.

4.3.3.4.5 **Intermittent Breath:** Strongly blow into the mouth piece for 1-2 seconds and stop, repeating a couple of times.

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 4 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

Be careful not to suck back on the mouth piece between puffs of air. The instrument should **not** report an alcohol response (black line) and should **not** accept the sample.

4.3.3.4.6 **Suck Back Test: VERY GENTLY** suck back on the mouth piece just enough so you feel a one-way valve stop the air flow (less than one second of pressure). If you suck too hard, you may damage the one-way valve. Once you feel this one way valve hit, you are finished. **Do not continue to suck back on the breath tube. Once is enough.** The instrument should **not** report an alcohol response (black line) and should **not** accept the sample.

4.3.3.4.7 **1.5L Alcohol Free Sample:** While watching the total volume box in the bottom right corner of the screen, provide a sample of ~1.5L of air to the instrument. The instrument should accept a sample of 1.5L of air. The instrument should **not** report an alcohol response (black line).

4.3.3.4.8 Once the Sample Acceptance test is complete, the instrument will prompt “Did Instrument Pass All Sample Acceptance Checks? Yes/No”. If all checks passed, select “Yes”. If any of the checks failed, select “No”. When prompted, type in which check failed and why.

4.3.3.5 Once the protocol is complete, the instrument will prompt for technician signature. Sign in the box and press “finished”. Two copies of the report will now print.

#### 4.4 Record Keeping

- 4.4.1 When the RPC reports print, file one copy with the onsite maintenance records. A second copy of the report will be returned to the VFL for review by the Alcohol Program Supervisor or their designee. The reviewed copy will be filed in the instrument’s folder and an electronic copy placed into the instrument’s folder on the VFL intranet.
- 4.4.2 In the DataMaster DMT Maintenance Log (F-ALC 203) affix one copy of the simulator solution label, document your name, date of RPC and note any corrective actions that may have been performed.

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 5 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

4.4.3 In the DataMaster DMT Operators Log (F-ALC 204), if present, document your name, under the “subject” column write “test/RPC” and enter the result of the simulator vapor average.

## 5.0 RPC Review

5.1 Check the date of the RPC to ensure the correct time frame. RPC’s may be completed no more than 15 days prior to the RPC month. (1/17, 5/17 or 9/16).

5.2 The RPC must be submitted in color (electronic or paper).

### 5.3 Check the temperatures

5.3.1 Sample Chamber Temperature acceptable range: 44 - 52°C.

5.3.2 Breath Tube Temperature acceptable range: 40°C ± 10.

5.3.3 Digital Sim Temperature acceptable range: 34.0°C ± 0.5

### 5.4 Check the settings

5.4.1 The voltages will differ depending on the brand of detector being used.

5.4.2 If the Bias is set at ~120V, the lamp and cooler voltages should be ~2.0V.

5.4.3 If the Bias is set at ~80V, the cooler should be 1.7 ±0.2V.

5.4.4 For either bias setting, the lamp can be no higher than 2.6V and the cooler no higher than 2.2V.

### 5.5 Check the pump information

5.5.1 Flow rate should be between 3.0 and 6.5

### 5.6 Check the detector information as reported on the Filter 1 result.

5.6.1 Review the electronic DMT Log for voltage trends.

5.6.2 If the detector voltage is < -0.300 or > +0.600, the unit will be returned to VFL for service at the earliest convenience.

5.6.3 For further instruction/information, refer to the DataMaster DMT Technical Notes Binder.

### 5.7 Check the Calibration Check

5.7.1 Xq acceptable range: ± 4%

### 5.8 Check the Accuracy and Precision Check

5.8.1 Concentration: Ensure the proper concentration is entered.

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 6 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

5.8.2 Lot: Check the Simulator Solution Log (F-ALC 206) to ensure the concentration matches the lot that was entered.

5.8.3 If an incorrect lot number or target concentration is entered, the DMT Supervisor will be notified immediately. A Simulator Solution Change (SSC) protocol may be performed to assign the correct solution to the instrument. A physical change of the solution is not necessary. The SSC report will be sent to VFL and attached to the original RPC report. This is deemed acceptable as long as the original average reported on the RPC is within  $\pm 5\%$  of the actual target value. If the DMT Supervisor cannot correct the lot number or target concentration immediately, the instrument should be put out of service until the correction can be made.

#### 5.9 Check the RF Detection Test

5.9.1 Should report RF Detected.

#### 5.10 Check the Sample Acceptance Test

5.10.1 Should report Passed.

5.10.2 The graph should reflect a shallow, intermittent, suck-back and alcohol free breath sample.

5.10.3 A passing sample acceptance test should not show the presence of apparent ethanol. If the alcohol profile shows any ethanol reading above baseline, the DMT Supervisor shall be contacted and requested to perform a new sample acceptance test on a check-in ticket. The check-in ticket will be sent to VFL and attached to the RPC. If the second attempt at a sample acceptance test still displays apparent ethanol, further investigation by VFL Alcohol Program staff is required.

### 6.0 Record Keeping

6.1 A qualified Alcohol Program staff member will perform a combined technical and administrative review of the report(s). They shall initial next to any information that does not fall within specifications outlined in this document. Once the review is completed, they will sign and date the RPC. In the electronic DMT Log, the tech/admin reviewer should enter the RPC date, solution lot and concentration, Accuracy and Precision and voltage results.

6.2 **Any corrections required of the agency should be documented on the notes lines and if necessary, a Technical Support Inquiry (TSI) may be started.** Failing reports require follow-up with the DMT Supervisor to provide information regarding the cause of all failures. Reviewed RPC reports will go through a final review by the

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 7 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

Alcohol Program Supervisor or their designee. If the RPC is performed by VFL Alcohol Program staff, only review by the Alcohol Program Supervisor is required. The final reviewer will check the electronic DMT Log to ensure the RPC information has been entered correctly, review each page of the RPC report and sign and date the first page of the RPC. After final review, the report will be filed in its corresponding folder. If VFL deems an RPC as unacceptable, the agency will be immediately notified and the instrument put out of service until such time as a passing RPC can be completed. **The VFL Alcohol Program Supervisor should be informed immediately so as appropriate actions and notifications can be made.**

## 7.0 Emergency or High Priority Situations

7.1 The Laboratory Director or Alcohol Program Supervisor may designate any DataMaster DMT Routine Performance Check or review to be a high priority and request service as soon as possible.

## 8.0 Quality Criteria and Corrective Action

8.1 The standard approach to correct a problem is to first repeat the test to confirm the problem. Consult the Technical Notes Binder or ask for technical support from the Alcohol Program Supervisor. Try to correct the problem and document the event. Write the problem and corrective actions taken on the failing RPC reports and in the instrument's Maintenance Log (F-ALC 203).

8.2 If the problem is not correctable in the field or a repair or technical evaluation is needed, a DataMaster Technical Support Inquiry (TSI) (F-ALC 202) must be started. The instrument shall be returned to the laboratory for further evaluation. Once the repair is complete, the TSI is finished and placed in the instrument's file. This procedure may be begun again when the problem is resolved.

## 9.0 Preventative Maintenance and Backup Procedures

9.1 If a problem is encountered that cannot be resolved by Alcohol Program staff, the instrument manufacturer, National Patent Analytical Systems, Inc. (NPAS) will be contacted for technical support.

9.1.1 Contact NPAS at 1-800-800-8143 or [service@npas.com](mailto:service@npas.com).

9.2 If an agency's instrument requires repair and cannot be returned to service in a timely manner, a replacement instrument may be installed at that site.

## 10.0 References

10.1 DataMaster DMT Technical Notes Binder.

10.2 Electronic DMT Log.

Title: <b>DataMaster DMT Routine Performance Check (RPC) Performance and Review Instructions</b>		<b>Page 8 of 9</b>
Doc. No. P-ALC 206 Version 2	Approved By: Peg Schwartz, Lab Director	Date Effective: 1/14/2013

- 10.3 Simulator Solution Log (F-ALC 206).
- 10.4 DataMaster DMT Maintenance Log (F-ALC 203).
- 10.5 DataMaster DMT Operators Log (F-ALC 204).
- 10.6 DataMaster DMT Technical Support Inquiry (F-ALC 202).
- 10.7 Appendix A: Example of an Acceptable Routine Performance Check Report.

