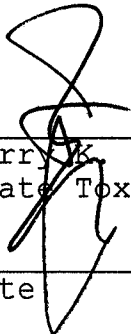


WASHINGTON STATE TOXICOLOGY LABORATORY

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STATEMENT OF STATE TOXICOLOGIST

In my role as the State Toxicologist and by my authority outlined in RCW 46.61.506, I have reviewed and approve the contents of this manual, the Breath Test Program Policy and Procedure Manual, containing forms for the implementation and maintenance of the breath alcohol testing program throughout the State of Washington. The contents of this manual become effective on September 3, 2003.



Barry K. Logan, Ph.D.
State Toxicologist

Date

9/2/2003

WASHINGTON STATE PATROL
BREATH TEST SECTION

BREATH TEST PROGRAM POLICY AND PROCEDURE MANUAL

PURPOSE STATEMENT

This notebook should contain the most recent written policies and procedures followed by personnel within the Breath Testing Program. Generally, these policies and procedures exceed the requirements of the Washington Administrative Code (WAC 448-13) and reflect an attempt to ensure the highest possible confidence in the Breath Testing Program.

These forms have been developed primarily by personnel within the Breath Test Program. In some cases, the State Toxicologist has had input where appropriate. Some forms reflect the language of appropriate court rules. All forms are subject to revision when appropriate to improve the overall program. When a significant revision is necessary, a Policy/Form Revision Directive will be issued along with the revisions to Breath Test Section personnel for updating the manual.

All records generated as a result of repairs, maintenance, or Quality Assurance of Datamaster instruments used for evidential purposes shall be maintained according to the protocols described in this manual. Program personnel are to follow all policies and procedures whenever reasonably possible. Deviation may be justified under certain circumstances where in the professional judgment of the technician, the scientific integrity of the procedure, the instrument, the program or any breath alcohol measurement is not compromised. These protocols are intended to provide program guidance and uniformity while still allowing for the technician's professional judgement.

Washington State Patrol
Breath Test Section

Policy/Form Revision Directive

The following outline summarizes revisions made to the Breath Test Section Policy and Procedure Manual effective September 3, 2003.

The following will list the location and a brief description of revisions made.

<u>Location</u>	<u>Description</u>
1. Cover page	Approval date revised.
2. Contents	Revised to reflect changes.
3. Page 1	Date of birth format revised for data entry
4. Former pages 7-10	Removed affidavits and associated pages
5. Page 11	Added R: Refused test and I: Incomplete test
6. Page 16	Filing policy regarding affidavits revised
7. Page 17	Part C.4. revised to reflect "custodian of the records"
8. Page 18	Part 6 added to encourage use of the web site
9. Page 20	Added questions regarding simulator thermometers.
10. Page 24	Step D revised to reflect source of solutions
11. Page 25	Step M revised regarding breath sample
12. Page 29	Step 1 under "Solution Supply" revised to include word "by"
13. Page 30	Steps 9 and 10 revised to describe breath sample and digits
14. All Pages	Dates and page numbers changed on all pages even where contents of the page did not change.

WASHINGTON STATE PATROL
BREATH TEST SECTION

BREATH TEST PROGRAM POLICY AND PROCEDURE MANUAL

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Copies of forms that are to be at all Datamaster Locations:

Breath Test Document

DUI Arrest Form Packet

Case Report/Witness/Suspect Statement

WASHINGTON STATE PATROL
BREATH TEST SECTION

DATA ENTRY FOR BREATH TEST SECTION PERSONNEL
Software Version 76016

For uniformity, the following data entry codes should be used by Breath Test Technicians and Solution Changers when running breath tests for new solution, tests, etc. that will appear on the database.

Simulator temp.?	Y
Observation Began	00:00
Citation Number	NEW/SOLUTION, SOLUTION or TEST
Operator	Correct Name
Arresting Agency	WSP1057
Subject's Name	NEW/SOLUTION, TEST, TEST/"TECHNICIAN'S OPTIONS"
Subject's DOB	00/00/0000
Subject's Sex	M
Subject's Ethnic Group	U
D.L. State/Number	00
County of Arrest	00
Crime Arrested For	00
Collision Involved?	N
Drinking Location	00000000
Batch #	Correct Number
PBT TEST GIVEN? (Y/N):	N

WASHINGTON STATE PATROL
BREATH TEST SECTION

**PROCEDURE FOR COMPLETING DATAMASTER
REPAIR/ADJUSTMENT FORM**

The following procedure shall apply when completing the Datamaster Repair/Adjustment Form (209.BTS). This policy shall apply to those repairs made to field instruments and simulators and not sub-components thereof, which have been replaced. The purpose is to provide guidelines for when it is to be completed and the information it should contain.

1. The form is to be completed only by Certified Breath Test Technicians.
2. The form shall be written clearly and concisely to allow others to interpret the information.
3. The form needs to be completed only in the following situations:
 - A. Following the instrument's initial Quality Assurance.
 - B. Replacement of any components or parts.
 - C. Repair to any components or parts.
 - D. Adjustment to any potentiometer that is outside of manufacturer's specifications.
 - E. Adjustment of the clock at the instrument that is more than 20 minutes off. (See 4-C)
 - F. Replacement of simulator.
 - G. Simulator repairs for the following reasons:
 1. Replacing the thermometer. When the thermometer is replaced, form 209.BTS will contain the simulator serial number, the serial number of the thermometer replaced, the serial number of the new thermometer installed and the reason the thermometer was replaced. If the thermometer is replaced because it does not comply with the standards outlined in the Simulator Thermometer Certification Policy and Protocol, then the magnitude and direction of deviation will be recorded. The new installed thermometer will have been certified according to the Simulator Thermometer Certification Policy and Protocol.

2. Re-calibration of the Guth Model 2100 Simulator thermometer.
 3. Temperature adjustment that is outside $34^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$.
 4. Repairing simulator stirring mechanism.
- H. Instrument Re-calibration.
 - I. Other necessary repairs or adjustment to restore an instrument to proper working order.
 - J. When a repair is performed requiring the form to be completed, a complete breath test will be conducted according to the procedure outlined in the Simulator Solution Changing Procedure and noted on the form. When in the discretion of the technician the particular repair will not influence the analytical performance of the instrument (e.g., correcting the clock time) then a complete breath test is not required.
 - K. Replacement of any printed circuit boards will require checking of the electrical voltages.
4. The form shall not need to be completed in the following situations:
- A. Prior to the instrument's initial Quality Assurance.
 - B. Powering the instrument off and on to clear a lock-up condition.
 - C. When changing time to correspond to changes in daylight savings time.
 - D. When removing a stuck ticket when there is no apparent problem with the printer.
 - E. When problem is due to operator error.
 - F. Obtaining copies of ticket for operators when there is no apparent printer problem.
 - G. When complaint is "system won't zero", "printer error", "calibration error", "radio interference", "CRC error", etc. and the problem is corrected on a subsequent test. A record of these situations is preserved in the database.
 - H. When the problem is corrected over the phone with an operator or Solution Changer.

- I. When performing routine purging of the instrument.
 - J. When replacing simulator tubing.
 - K. When an instrument is transferred to a permanent training status.
 - L. When replacing a normally worn or faded printer ribbon.
5. When completed, the original copy shall be sent to and retained by the Washington State Patrol, Breath Test Section, Seattle. Copies of the form are to be kept in the office of the Technician having geographical responsibility for a particular instrument.
- A. The exception will be when form 209.BTS is completed for a Quality Assurance simulator. In this case, the form will be retained only by the responsible technician and not sent to the Seattle office.

WASHINGTON STATE PATROL
BREATH TEST SECTION

REPAIRS AND/OR ADJUSTMENTS ON DATAMASTER

Instrument Location _____ Serial # _____

Complaint(s) Reported:

Technician Evaluation and Action Taken:

Technician _____ Complete Breath Test

	WORK BEGAN		LOCATION OF WORK	SERVICE TIME
	DATE	TIME		
FIELD				
LAB				
FACTORY				

209.BTS

WASHINGTON STATE PATROL
BREATH TEST SECTION

REPAIRS AND/OR ADJUSTMENTS ON QUALITY ASSURANCE SIMULATOR

Simulator Location _____ Serial # _____

Thermometer Serial # _____

Complaint(s) Reported:

Technician Evaluation and Action Taken:

Technician _____

	WORK BEGAN		LOCATION OF WORK	SERVICE TIME
	DATE	TIME		
LAB				
FACTORY				

210.BTS

BAC DATAMASTER SIMULATOR THERMOMETER CERTIFICATION

I, _____, do certify under penalty of perjury under the laws of the State of Washington that the following is true and correct:

I am employed by the Washington State Patrol and am certified as a Technician by the state toxicologist by virtue of applicable regulations and statutes.

On _____ (date) at _____ (time) I tested and certified simulator thermometer _____ (serial number) which is installed in simulator _____ (serial number) and which is attached to BAC Data Master _____ (serial number). In performing the test I employed a protocol approved by the state toxicologist. I found the thermometer to comply with the standards for accuracy as required by the state toxicologist. The certification of this thermometer is valid for one year from the date of this certification.

Signature of Technician

Dated: _____

Location: _____ (city and state)

WASHINGTON STATE PATROL
BREATH TEST SECTION

ALCO-SENSOR III (PBT) CERTIFICATION PROTOCOL

1. Obtain certified 0.082 g/210L (\pm 0.002) gas standards.
2. If using a Tru-Cal device, this will determine the concentration and will be the value that the PBT will be certified and/or calibrated to. If not using a Tru-Cal device, refer to the altitude chart on the side of the tank for the correct reference value.
3. Verify the PBT temperature is between 20⁰ and 36⁰ C.
4. Push **SET** button. Push and hold the **READ** button.
5. The digits should go to 0.003 or less within 10 seconds. If the digits do not go to 0.003 or less, push **SET**, wait one minute and push and hold the **READ** button again.
6. Attach the mouthpiece in one of the following configurations:
 - a. Attach the straight white tube mouthpiece to the instrument receptacle.
 - b. Attach the straight white mouthpiece with one-way valve so that the air will flow in the proper direction.
7. Attach mouthpiece to the gas standard source and provide the sample. Allow approximately three seconds of gas flow.
8. Push and hold the **READ** button while the sample is still being provided. Continue to hold the **READ** button until the result stabilizes.
9. Observe digital reading to determine if acceptably accurate.
 - a. If the results are within \pm 0.010 g/210L from the reference value for the gas standard, the PBT is properly calibrated and acceptably accurate and only one test is necessary. Proceed to step 11.
 - b. If the result is not within the acceptable limits, proceed to step 10.

10. Calibrating the PBT Instrument

- a. If the result is outside ± 0.010 g/210L of the reference value, first zero the instrument to 0.003 or less, then turn the calibration screw clockwise two full turns.
- b. Re-introduce the gas standard and while holding the READ button, turn the calibration screw counter-clockwise slowly to value on gas standard. Avoid adjusting to below the reference gas standard value during this procedure.
- c. Repeat steps 1 through 10 as often as necessary to obtain results within the acceptable range.
- d. If results following calibration are acceptable, only perform one certified test as required in step 9.a.
- e. Where instruments are not outside ± 0.010 g/210L, technicians are authorized to make small calibration adjustments without first turning the calibration screw clockwise two full turns. Following all calibration adjustments, a complete test will be performed according to steps 1 through 9.a. outlined above.

11. Record Keeping:

- a. Complete the Alco-Sensor III (PBT) Certification Record
- b. Record results to three decimal places.
- c. Note if it was necessary to calibrate the instrument.

12. The PBT instruments are to be certified at least every 6 months.

WASHINGTON STATE PATROL
BREATH TEST SECTION

ALCO-SENSOR III (PBT) CERTIFICATION RECORD

PBT STATE TAG

PBT SERIAL NUMBER

Date	Gas Standard Number	Gas Standard Value	Gas Standard Exp. Date	Results	Recalib. (Y/N)	Results	Technician

WASHINGTON STATE PATROL
BREATH TEST SECTION

DATAMASTER CODES

DATABASE DISPLAY

- 1.* **SYSTEM WON'T ZERO** - Unable to zero detector voltage.
 - 2. **TEMPERATURE LOW** - Sample chamber temperature falls to 45 C or below.
 - 3. **TEMPERATURE HIGH** - Sample chamber temperature raises to 55 C or above.
 - 5.* **RADIO INTERFERENCE** - Radio frequencies detected.
 - 6. **FATAL SYSTEM ERROR (ADDRESS)** - Random Access Memory (RAM), Read Only Memory (ROM), or Peripheral Interface Adapter (PIA) not responding properly.
 - 7.* **CALIBRATION ERROR** - Internal standard does not read within 10% of the value determined at time of calibration.
 - 8.* **PRINTER ERROR** - Printer not responding properly.
 - 9.* **RAM ERROR (ADDRESS)** - RAM checksum does not match that calculated following last write.
 - 10. **PUMP ERROR** - Flow detector does not detect pump operation.
 - 11. **BLANK ERROR** - Instrument obtains reading greater than .003 during blank test.
 - 12. **DETECTOR OVERFLOW** - Detector output exceeds the 1.999V that is readable by the instruments Analog/Digital convertor.
 - 13. **FILTER ERROR** - Filter solenoid not activating properly.
 - 15. **SIMULATOR OUT OF RANGE** - Simulator reading outside acceptable limits.
 - 17. **DATA MEMORY BATTERY LOW** - RAM battery backup failing.
 - 19. **AMBIENT FAIL** - Ethanol or other substance detected in sample chamber after purge.
 - 20. **SAMPLES OUTSIDE 10%**
- V : **INVALID SAMPLE** R: **REFUSED TEST**
- X : **INTERFERANT** I: **INCOMPLETE TEST**

* Old database codes

DATAMASTER
DISCOVERY REPORT INTERPRETATION GUIDE
SOFTWARE VERSION 76016

<u>Column Heading</u>	<u>Meaning</u>
Date	Date of the test
ObsTime	Time that observation began
Operator	Name of the instrument operator
Citation	Citation number
T	A code for test type (1=breath test, 2=supervisor test, 9=error code)
S.Tm	Simulator temperature (Y=temperature okay, if not acceptable no record will be retained in database)
Agency	Code for the arresting agency
DOB	Subject's date of birth
Sex	Subject's sex
Race	Subject's race
License	Driver's license number
Co	County of arrest
Cr	Crime arrested for
Acc	Accident involved (Y=yes N=No)
DrinkLoc	Last drinking location
Batch	Simulator solution batch number
IS ¹	Value of internal standard
BA1	Number of attempts for first breath test
ET1	Exhalation time in 0.25 second increments
BrAC1 ²	Result of first breath test
B1.Time	Time of first breath test
Sim ³	Result of simulator standard
S.Time	Time of simulator standard test
BA2	Number of attempts for second breath test
ET2	Exhalation time in 0.25 second increments
BrAC2 ²	Result of second breath test
B2.Time	Time of second breath test
PBT	PBT result
Err	Code for the type of error in an error record

- ¹ A leading zero and a decimal point should be added (e.g., 88 = .088)
- ² There will be no leading zeros and no decimal points (e.g., 165 = .165 and 73 = .073)
- ³ There will be no leading zeros and no decimal points (e.g., 104 = .104 and 98 = .098)

WASHINGTON STATE PATROL
BREATH TEST SECTION

FILING POLICY FOR THE BREATH TEST SECTION

The following procedures describe the filing of documents within the Breath Test Program. This will be the policy to be followed by individuals within the program that maintain files relative to breath test instruments. The intent is to provide uniformity throughout the program and ensure proper documentation. Records may also be kept in electronic format capable of producing a paper copy where appropriate. Technicians are allowed to exercise discretion where unique issues justify departure from the following policies.

A. FILES TO BE MAINTAINED

1. Evaluation file - This will include the four page Datamaster Evaluation Procedure (WSP-BTS-479). This file will also include documentation on repairs or changes performed on the instrument prior to initial Quality Assurance Procedure. This file will only contain forms for instruments evaluated prior to 9/1/90.
2. Quality Assurance file - This file will be kept following the completion of an initial Quality Assurance Procedure. This file will not be added to if an instrument is transferred to a permanent training status. This file will include the following forms:
 - a. All completed quality assurance procedures - Datamaster Quality Assurance Procedure (480.BTS-481.BTS). The associated printout documents shall also be retained but may be stored in a separate location.
 - b. All Repairs and/or Adjustments on Datamaster (209.BTS) forms.
 - 1). Exception: If an instrument is assigned permanently to a training function then repair records will no longer be kept. Prior to reinstallation in the field a quality assurance procedure will be performed.

- c. Instrument Status Report (486.BTS).
 - d. Repair documentation provided by the manufacturer.
- 3. Affidavit file - When affidavits are completed in accordance with CrRLJ 6.13, copies shall be maintained in a file.
 - 4. Database file - Where necessary, a database file on each instrument will be maintained. This will contain database information from which copies can be made for discovery purposes.
 - 5. Quality Assurance Simulator File - This file will be maintained for those simulators identified for the purpose of performing Quality Assurance Procedure calibrations and testing.

B. FORMS AND RECORDS TO BE MAINTAINED

- 1. Datamaster Evaluation Procedure (WSP-BTS-479).
 - a. This will only apply to instruments evaluated prior to 9/1/90.
 - b. This form is to be retained in the evaluation file.
- 2. Datamaster Quality Assurance Procedure (481-BTS).
 - a. Only completed forms are to be kept.
 - b. This form will be completed when an instrument is removed from a permanent training status and prior to field installation.
 - c. This form will be completed in accordance with the procedure outlined in Datamaster Quality Assurance Procedure.
 - d. This form will be kept in the Quality Assurance file.

- e. The associated printout documents from a completed Quality Assurance Procedure will also be retained by the local technicians and not sent to the Seattle Breath Test Section.
3. Repairs And/Or Adjustment on Datamaster (209.BTS).
- a. This form will be completed in accordance with Procedure for Completing Datamaster Repair/Adjustment Form.
 - b. The form should only specify work performed and not opinions.
 - c. Information should be brief and clear.
 - d. This form will only be completed on instruments that have an initially completed Datamaster Quality Assurance Procedure.
 - e. When different simulators are installed with an instrument then this form will be completed and will indicate appropriate serial numbers and State Tag number.
 - f. This form will not be kept on instruments that are in a permanent training status.
 - g. This form will be kept in the Quality Assurance file.
 - h. This form will also be used when replacing and or re-calibrating simulator thermometers.
4. Instrument Status Report (486.BTS).
- a. This form will be kept from the time of initial installation in a field location.
 - b. When the physical location of the instrument changes a notation will be made.
 - c. This form will not reflect changes in simulators.

- d. The original of this form will be kept in the Quality Assurance file by the technician having geographical responsibility.
5. Simulator Solution Replacement Record.
(482.BTS).
- a. This form will be maintained by the Technicians and Field Support Personnel.
 - b. Forms will be kept for each instrument on which solutions are changed.
 - c. The information to be recorded is self explanatory.
 - d. The breath test document printed at the time of installing a new solution will also be retained.
 - e. No copies of these forms are to be sent to the Seattle Breath Test Section.
6. Simulator Thermometer Certification Record
(483.BTS or 484.BTS)
- a. For field simulators, form 483.BTS will be maintained by the Technician either in a separate notebook, file or in electronic format. This form will be maintained in association with records for the particular Datamaster instrument to which the simulator and thermometer are assigned.
 - b. For Quality Assurance simulators, form 484.BTS will be maintained in the Quality Assurance Simulator File
 - c. These forms shall be kept only by the Technician having responsibility for the particular simulator and instrument.
7. Affidavits
- a. The responsible Technician will have discretion on which affidavits are to be maintained and when.
 - b. If affidavits are completed by the responsible Technician then a copy will be retained.

- d. These forms shall be kept by the Technician having responsibility for the particular instrument.
- e. These forms will be distributed to local courts or prosecutors as determined by local policy.

C. FORMS AND RECORDS DISTRIBUTION

- 1. The original of record forms Quality Assurance Procedure (481-BTS) and Repairs and/or Adjustments on Datamaster (209.BTS) shall be sent to and retained by the Seattle Breath Test Section.
- 2. Copies of all forms addressed in this procedure shall be kept in the office of the Technician having geographical responsibility for a particular instrument.
- 3. The affidavits addressed in part B-7 above are not to be sent to the Seattle Breath Test Section.
- 4. All Breath Test Technicians will be considered "Custodian of the Records" as part of their responsibilities. They will have the responsibility and capability of testifying to all regular business records required to be kept within the Breath Test Program as outlined within this Policy Manual.

D. RETENTION TIME OF RECORDS

- 1. All records addressed in this policy are to be retained indefinitely until further advised.

**WASHINGTON STATE PATROL
BREATH TEST SECTION**

POLICY ON RELEASE OF BREATH TEST SECTION RECORDS

1. Whenever a request for breath test discovery, with or without a court order, is received by any technician, it will be complied with to the fullest reasonable extent.
2. The release by a breath test technician of quality assurance, affidavit and database records associated with the instrument(s) in question is authorized.
3. The defendant's names shall not be released to Defense Attorneys. However, attorneys may observe names as per court order.
4. The Prosecutor may request the defendant's names be included. However, the defendant's names are not to be provided if the Prosecutor does not request them.
5. If the request is seeking routine records (quality assurance, maintenance, and database) on the instrument, only the records contained in the quality assurance/maintenance and database files shall be sent.
6. Attorneys should be encouraged to first try and obtain the requested information on the Breath Test Section Web Site. They would obtain the information sooner in this way.

WASHINGTON STATE PATROL
BREATH TEST SECTION

BREATH TEST SECTION PERSONNEL

Information on personnel currently qualified for the following positions is available from the Washington State Patrol Breath Test Section:

OPERATORS

INSTRUCTORS

TECHNICIANS

SOLUTION CHANGERS

This is to ensure that current lists of qualified personnel are available.

WASHINGTON STATE PATROL
BREATH TEST SECTION

SUGGESTED PREDICATE QUESTIONS
FOR BREATH TEST SECTION TECHNICIANS

1. Please state your name and occupation.
2. How long have you been so employed?
3. Please state your educational background and any specialized training you have received.
4. What are your principle duties as a Breath Testing Technician.
5. Are you familiar with an instrument known as the Datamaster.
6. What is the Datamaster?
7. Has the Datamaster breath testing instrument been approved by the Washington State Toxicologist?
8. Are you one of the custodians of the records?
9. According to your records did Datamaster # _____ successfully complete a Quality Assurance procedure not more than one year prior to the date of the test performed in this particular case?
10. What is a Quality Assurance Procedure?
11. According to your records was the thermometer used in the external standard simulator certified for accuracy not more than one year prior to the date of the test performed in this case?
12. Was the external standard simulator solution changed not more than 60 days prior to the date of the test performed in this particular case?
13. I am showing you what has been marked as state's exhibit # _____. Can you identify this document? (Answer: A breath test document for Datamaster # _____).
14. After reviewing that document do you have an opinion as to the accuracy and reliability of the test results indicated on that document?
15. On what do you base that opinion?
16. What is that opinion?

**WASHINGTON STATE PATROL
BREATH TEST SECTION
DATAMASTER CALIBRATION PROCEDURE**

I. Preliminary Guidelines:

- A. Use a certified ethanol solution from the State Toxicology Laboratory.
- B. For the ethanol solution, use a simulator with a thermometer that has been certified according to the Simulator Thermometer Certification Policy and Protocol.
- C. When using a given solution during calibration, the simulator inlet port should be attached to the pump via the "Calibrate" port on the instrument and the simulator outlet port to the breath tube.

II. Procedure:

- A. Set the "ETHANOL CONCENTRATION" in the supervisory options to the vapor concentration of the gas chromatograph reference value of the certified solution. Round the four digit State Toxicology Laboratory value to three digits.
- B. Ensure that the ethanol simulator thermometer indicates $34^{\circ} \pm 0.2^{\circ}$ C. The water simulator only needs to be heated and not at a specific indicated temperature.
- C. Use the F1-F2 keys on the keyboard to initiate the calibration procedure.
- D. Follow the displayed instructions.
 - 1. When the display reads "BLOW WATER VAPOR", introduce water vapor into the breath tube using a heated simulator. Push NOVOL (NV) if necessary to accept the sample.
 - 2. When the display reads "BLOW ETHANOL", introduce the known ethanol solution vapor into the breath tube until a stable reading is obtained. Push NOVOL (NV) to accept the sample if necessary.
- E. Printout and examine the CAL factors and retain the breath test document.
- F. Record the solution batch number used on the Quality Assurance Procedure report form (481.BTS).
- G. The technician shall be allowed to perform the calibration procedure as often as they determine to be necessary in order to achieve optimum instrument performance. Only the final breath test document needs to be retained.

WASHINGTON STATE PATROL
BREATH TEST SECTION

DATAMASTER QUALITY ASSURANCE PROCEDURE
SOFTWARE VERSION 76016

The quality assurance procedure described below is to be completed on instruments having software versions beginning with 76016 and including one of several possible extensions. This procedure is to be completed in the following circumstances:

1. Prior to an instrument being installed in the field for evidentiary use.
 2. After replacing any of the following components and prior to being placed back into the field for evidentiary use:
 - a. Central Processing Unit (CPU) Board
 - b. Infrared Detector
 - c. Infrared Detector Block
 - d. Infrared Detector Board
 - e. Software
 3. After disassembly and then reassembly of sample chamber.
 4. If instrument requires recalibration for any reason.
 5. At least once every year.
- I. Procedure: The following is to be performed or personally observed by each individual testing the instrument.
- A. Electrical Checks
1. Sample Chamber Control Board
 - I. Version #101226
 - a. Flow Detector
 - Place black voltmeter lead on TP5
 - Place red voltmeter lead on bottom of R28
 - Adjust R26 to 0.200 (+/- 0.005) VDC
 - Move red lead to TP2
 - Adjust R29 to 1.30 (+/- 0.010) VDC
 - Move red lead back to bottom of R28
 - Adjust R26 to 0.020 (+/- 0.010) VDC
 - (This should be double checked when instrument fully warm)

b. Sample Threshold

- Leave black voltmeter lead on TP5
- Place red voltmeter lead on TP1
- Adjust R34 to 2.40 (+/- 0.10) VDC

II. Sample Control Board (Version #41625)

a. Breath Volume Circuit

- Place black voltmeter lead on TP5
- Place red voltmeter lead on TP8
- Adjust R26 to 0.200 (+/- 0.005) VDC
- Move red lead to TP2
- Adjust R29 for 1.30 (+/- 0.05) VDC
- Move red lead back to TP8
- Adjust R26 to 0.020 (+/- 0.010) VDC
- (This should be double checked when instrument fully warm)

b. Sample Threshold

- Leave black voltmeter lead on TP5
- Place red voltmeter lead on TP1
- Adjust R34 to 2.40 (+/- 0.10) VDC

2. Detector Board: (Test Point 4 ground).

a. Infrared Detector Cooler:

1. Test Point 1: Adjust R4 to voltage indicated on tag attached to cable coming from J37 on Detector Board (± 0.01) VDC.
2. If the tag listing the cooler voltage is not present, or if the detector is replaced perform the following: Turn the instrument off and let it cool down to room temperature (approximately 30 minutes). Turn the instrument on and place voltmeter across R26 on Detector Board. Adjust R4 for .475 (± 0.010) VDC. Recheck voltage at Test Point 1. and notate this voltage as the new Detector Cooler voltage.

b. Detector Bias.

1. Top of R45 or TP13 depending on board version: 120.0 (± 0.5) VDC: Adjust R1

3. Sample Chamber Control Board:
 - a. IR Source Intensity
 1. Activate MTR on keyboard so the Detector voltage is displayed. Adjust R16 on the Sample Control Board for a displayed detector voltage of 0.000 (\pm .100) VDC.
 4. CPU Board: (Test point 0, or lower left corner pad is ground)
 - a. Analog-to-Digital Converter Reference
 1. Test Point 2 or U29 pin 2: 2.00(\pm .01) VDC: Adjust R37
 5. Radio Frequency Interference (RFI) threshold: (Top of R8 ground)
 - a. Antenna must be installed.
 - b. Activate MTR on keyboard
 - c. Left side of L2. If reading is 4-6 VDC, adjust R18 clockwise (CW) to read 0-1 VDC. If reading is at 0-1 VDC, adjust R18 counter clockwise (CCW) to read 4-6 VDC. When R18 turning point is reached, turn R18 $\frac{1}{2}$ to 1 turn clockwise. When the voltage is between 4-6 VDC the MTR should display "RADIO INTERFERENCE".
- B. Calibrate the instrument according to Datamaster Calibration Procedure. Record the batch number of the solution used on the Quality Assurance form 481.BTS.
 - C. Perform steps D - L below for each of the four solution levels (0.04, 0.08, 0.10, 0.15).
 - D. Use a simulator containing a certified ethanol solution prepared and tested by the State Toxicology Laboratory.
 - E. Set the supervisory test option for ten tests.
 - F. Set keyboard and data collection to "OFF".
 - G. Simulator check to "OFF".
 - H. Sample Check to "OFF".

- I. Verify that the simulators used have thermometers which have been certified according to the Simulator Thermometer Certification Policy and Protocol. Verify that the thermometer indicates that the temperature of the simulator solution is $34^{\circ} \pm 0.2^{\circ}\text{C}$. Initial the front side of Breath Test Document.
- J. Insert the document and push "SUP".
- K. When the ten tests are completed verify the simulator thermometer indicates the temperature of the solution is $34^{\circ} \pm 0.2^{\circ}\text{C}$, initial and retain the breath test document.
- L. Calculate the mean and standard deviation of the ten measurements using the three-digit value printed for each test. The mean and standard deviation should both be rounded to and reported to four decimal places.
1. Determine if results meet test for accuracy using the formula:

$$\frac{\text{Mean} - \text{Reference Value}}{\text{Reference Value}} \times 100 = \text{within } \pm 5.00\% \text{ inclusive.}$$
 - a. The Reference Value is to be determined by dividing the four digit mean value received from the State Toxicology Laboratory by 1.23.
 - b. The Reference Value is to be rounded to four digits.
 2. Determine if results meet test for precision (coefficient of variation) using the formula:

$$\frac{\text{Standard Deviation}}{\text{mean}} \times 100 \leq 3.00\%.$$
 3. The Accuracy % and CV% should both be rounded and reported to two decimal places.
- M. Complete Breath Test

Set supervisory test to One. Set keyboard, Simulator Check, and Sample Check to "ON". Conduct a complete breath test on the instrument using a live subject's breath sample. Use a simulator containing approximately 0.080 g/210L solution. Retain the Breath Test Document.

N. Interferant Detector Test

1. Use a simulator containing approximately 0.08 g/210L of ethanol to which approximately 0.5 ml of acetone has been added.
2. Verify the simulator thermometer indicates the temperature is $34^{\circ} \pm 0.2^{\circ}$ and conduct one supervisory test.
3. Verify that the instrument displays "INTERFERENCE DETECTED".
4. Push the ABT key and then push the copy key and retain printout copy.

O. Filter Error

1. Using the SUP mode, prevent the Acetone filter from going into place. The instrument should stop the test and display "FILTER ERROR" on the display.
2. Push the ABT key and then push the copy key and retain printout copy.

P. Mouth Alcohol Test

1. Set instrument up to perform a breath test. (with keyboard off)
2. A human subject is to exhale into instrument during the "PLEASE BLOW" phase shortly after introducing into the mouth a substance containing ethyl alcohol.
3. Verify that instrument displays "INVALID SAMPLE".
4. Push the ABT key and then push the copy key and retain printout copy.

Q. Radio Frequency Interference (RFI) Detector Test.

1. Set the instrument up to display "PLEASE BLOW".
2. Transmit a hand held (portable) police radio in the proximity of the instrument.
3. Verify that instrument displays "RADIO INTERFERENCE".
4. Push the ABT key and then push the copy key and retain printout copy.

R. Perform a Diagnostic Test and retain the breath test document.

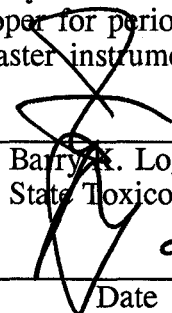
- S. Quality Assurance form 481.BTS shall be completed and signed when steps A-R have been successfully performed as described. The original completed form will be sent to the Seattle office and a copy retained locally.
- T. The entire Quality Assurance Procedure shall be repeated if one of the following conditions exist during the Quality Assurance procedure:
 - 1. Readjustment of voltages that are outside of tolerances are necessary prior to completing the Quality Assurance Procedure.
 - 2. Any replacement of parts or components are necessary prior to completing the Quality Assurance Procedure

II. Prior to re-installing the instrument in the field, complete the following:

- A. Employ the RESET OPTIONS function with the F1/F2 keys
- B. Ensure the simulator standard is set to 0.080 +/- 0.008.
- C. Ensure the INTERFERENCE level is set to 0.010

Statement of State Toxicologist

In my role as the State Toxicologist and by my authority outlined in RCW 46.61.506, I recognize the above quality assurance procedure to be proper for periodic confirmation of the accuracy, precision and proper working order of Datamaster instruments. Further, I direct Datamaster Technicians to follow these procedures.



Barry A. Logan, Ph.D.
State Toxicologist

9/2/2003

Date

WASHINGTON STATE PATROL BREATH TEST SECTION
DATAMASTER QUALITY ASSURANCE PROCEDURE
SOFTWARE VERSION 76016

Office use only

Instrument Serial Number # _____

Date _____

Electrical Checks:
 Within tolerance

Simulator Ethanol Tests (Guth Model 34C)

		Conc.	<u>0.04</u>	<u>0.08</u>	<u>0.10</u>	<u>0.15</u>
1.a) _____		St. Ref. Value	_____	_____	_____	_____
1.b) _____		Solution Batch #	_____	_____	_____	_____
2.a) _____		Simulator #	_____	_____	_____	_____
2.b) _____		Simulator Thermometer #	_____	_____	_____	_____
3. _____			_____	_____	_____	_____
4. _____	Calibration	Water				
		Simulator # _____				
		Simulator Thermometer # _____				
5. _____						
	Ethanol	Batch # _____				
		Simulator # _____				
		Simulator Thermometer # _____				
_____	Sim. Temp:34 (+/- .2)c		_____	_____	_____	_____
_____	Accurate (+/-5.00%)		_____	_____	_____	_____
_____	Precise (+/-3.00%)		_____	_____	_____	_____
_____	Complete Breath Test		_____	_____	_____	_____
_____	Interference Test		_____	_____	_____	_____
	Acetone	Ethanol Batch # _____				
		Simulator # _____				
		Simulator Thermometer # _____				
			Mean	_____	_____	_____
_____	Filter Error		SD	_____	_____	_____
_____	Mouth Alcohol Test		Accuracy %	_____	_____	_____
_____	RFI Test		CV%	_____	_____	_____
_____	Diagnostic Test			_____	_____	_____

A check mark indicates successful completion of the test, or compliance with Datamaster Quality Assurance Protocol. I swear under penalty of perjury that in regards to the above listed Instrument, I have complied with the DataMaster Quality Assurance Procedure approved by The Washington State Toxicologist.

WASHINGTON STATE PATROL
BREATH TEST SECTION

SIMULATOR SOLUTION CHANGING PROCEDURE

The following procedure shall apply to the Datamaster when changing simulator solutions or installing new instruments. The simulator solution is known as the External Standard.

RESPONSIBILITIES:

1. Only trained personnel shall change simulator solutions.
2. Trained personnel shall be responsible for monitoring and changing simulator solutions as necessary.
3. Solution measurements can be monitored through the host computer or by completing a supervisor test.

SOLUTION SUPPLY:

1. Simulator solutions for field use are to be prepared only by the State Toxicology Laboratory.
2. Only solutions within a sealed container labeled with the batch number are to be used.

WHEN TO CHANGE SOLUTIONS:

1. Solutions shall be changed at least every 60 days regardless of number of tests or measurement value.
2. The simulator solution shall have an expiration date of one calendar year following the date of its preparation.
3. When the Datamaster instrument is removed from the facility for Quality Assurance, for repair or for any other reason and then re-installed.

SIMULATOR SOLUTION CHANGE PROTOCOL

1. Turn off and disconnect simulator.
2. Discard old solution.
3. Dry the simulator tubing by removing excess moisture, replace tubing if necessary.
4. Check the instrument simulator ports for obvious excess moisture and dry if necessary.
5. The outlet tubing from the simulator should be kept as short as possible.
6. Ensure simulator elements and jar are clean and dry, pour contents of container into jar, tighten jar to simulator, and ensure the appropriate batch # label is attached.
7. Re-attach simulator and turn on.
8. Ensure that the thermometer indicates the correct temperature of: $34^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$
 - a. Adjust potentiometer if necessary (CW-Cooler, CCW-Warmer).
 - b. Ensure that the power and heater lamps are working properly.
9. Run one complete breath test entering data according to the steps outlined in Data Entry For Breath Test Section Personnel and using a live subject's breath sample.
10. Keep the evidence document of the completed test. Complete the form entitled "Simulator Solution Replacement Record" (482.BTS) recording the results to three digits. The expiration date is one calendar year following the date appearing on the solution container.

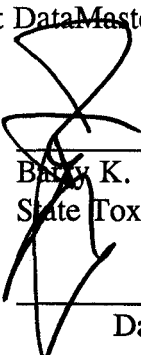
SIMULATOR SOLUTION CHANGE PROCEDURE CONT.

ADDITIONAL:

1. Ensure that the instrument has adequate supplies: mouthpieces, evidence documents, DUI arrest forms, code book.
2. Ensure breath tube is warm.
3. Check date and time and adjust if necessary.
4. Check RFI antenna and phone connections.
5. Replace "Drinking Location Codes" in code book with updates from the Liquor Control Board.

Statement of State Toxicologist

In my role as the State Toxicologist and by my authority outlined in RCW 46.61.506, I recognize the above simulator solution changing procedure to be proper for changing the simulator solution on DataMaster instruments. Further, I direct DataMaster solution changers to follow these procedures.



Betty K. Logan, Ph.D
State Toxicologist

9/2/2003
Date

**WASHINGTON STATE PATROL
BREATH TEST SECTION
DATAMASTER SIMULATOR SOLUTION REPLACEMENT RECORD**

SERIAL #

LOCATION

DATE	Simulator Serial #	Batch Number	Exp. Date	Temp. Correct	Results (.072 -.088)	Technician

WASHINGTON STATE PATROL
BREATH TEST SECTION

SIMULATOR THERMOMETER CERTIFICATION
POLICY AND PROTOCOL

I. Policy

- A. All Guth Model 34C or Guth Model 2100 simulators used during the performance of field evidentiary tests or used for Quality Assurance Procedures are to use a thermometer that has been certified for accuracy at least once per calendar year.
- B. Thermometers found to be acceptably accurate according to the following protocol are deemed to have been correct during the previous year and capable of providing accurate temperature measurements for another calendar year.
- C. Thermometers shall be initially certified according to the following protocol within one year of June 27, 2000.

II. Protocol

- A. Have the mercury thermometer to be tested placed in a fully warm and equilibrated Guth Model 34C simulator.
- B. Install the standard reference thermometer probe in the same simulator in the location designed for this purpose. For the Guth Model 2100, place the probe within the same Guth Model 2100 simulator being evaluated.
- C. Ensure that the temperatures of both the tested thermometer and the standard reference thermometer have stabilized.
- D. Ensure the tested thermometer indicates a temperature within $\pm 0.1^{\circ}\text{C}$ inclusive of the standard reference thermometer. Record the fully displayed standard reference thermometer results (including all digits) on the record form (483.BTS or 484.BTS). Record also the result indicated on the mercury thermometer to the second decimal place which will have to be estimated.
- E. If the thermometer results are acceptable, record "Yes" on the thermometer check record form (483.BTS or 484.BTS).
- F. If the thermometer results are not acceptable record "No" on the thermometer check form (483.BTS or 484.BTS). Depending on the type of thermometer, one of the following steps may be followed:
 - 1. Mercury thermometer: check for separation of mercury and attempt to correct
 - 2. Digital thermometer: re-calibrate the thermometer
 - 3. After performing one of these steps, complete again the test protocol outlined above
- G. Retain the forms 483.BTS and 484.BTS in the appropriate files as outlined in the Filing Policy for the Breath Test Section. Forms 483.BTS and 484.BTS are to be kept by the local responsible technician only.
- H. If the thermometer does not comply with the standards outlined above then a new thermometer will be installed (in the case of the mercury thermometer) or re-calibrated (in the case of the digital simulator) and a repair record (form 209.BTS) will be completed. The new thermometer will be certified as outlined in this policy above.

WASHINGTON STATE PATROL
BREATH TEST SECTION

FIELD SIMULATOR THERMOMETER CERTIFICATION RECORD

DATAMASTER SERIAL # _____

DATE	Simulator Thermometer Serial #	Reference Thermometer Serial #	Simulator Thermometer Temperature	Reference Thermometer Temperature	Temperature Difference	Acceptable	Location	Simulator Serial #	Technician

**WASHINGTON STATE PATROL
BREATH TEST SECTION**

QUALITY ASSURANCE SIMULATOR THERMOMETER CERTIFICATION RECORD

SIMULATOR SERIAL # _____

DATE	Simulator Thermometer Serial #	Reference Thermometer Serial #	Simulator Thermometer Temperature	Reference Thermometer Temperature	Temperature Difference	Acceptable	Location	Simulator Serial #	Technician

WASHINGTON STATE PATROL
BREATH TEST SECTION

DATAMASTER INSTALLATION FORM

Since the context of every instrument installation may vary widely, the following is a guide only for technicians to help ensure a thorough and complete installation.

Installation date ___/___/___ Time

Location

DEDICATED LINE PHONE NUMBER () - () - ()

Agency phone number near Datamaster () - () - ()

Contact at agency

Date of Last Quality Assurance

Items needed for installation:

- | | <u>Serial #</u> | <u>State Tag #</u> |
|--|-----------------|--------------------|
| 1) ___ Datamaster | _____ | _____ |
| 2) ___ Simulator | _____ | _____ |
| 3) ___ Power cord | | |
| 4) ___ Breath Tube | | |
| 5) ___ RFI Antenna | | |
| 6) ___ Screwdriver | | |
| 7) ___ Telephone/modem connecting cord | | |
| 8) ___ Tubing for simulator | | |
| 9) ___ Quick-connect for simulator | | |
| 10) ___ Simulator stand if necessary | | |
| 11) ___ Solution w/batch number | | |
| 12) ___ Evidence ticket packets | | |
| 13) ___ DUI Arrest Form Packet | | |
| 14) ___ Case Report/Witness/Suspect Statement | | |
| 15) ___ Mouthpieces | | |
| 16) ___ Informational Signs | | |
| 17) ___ Codebook | | |
| 18) ___ <u>Current Datamaster Information Book</u> | | |
| 19) ___ Ensure state tag numbers for Datamaster and simulator are affixed. | | |
| 20) ___ Check modem communication at office or at field location. | | |

At installation:

- 21) ___ Use function keys and set/advance keys to set options and set time to WSP radio time.
- 22) ___ Run breath test with "new/solution" as subject.

Installed by

**WASHINGTON STATE PATROL
BREATH TEST SECTION
DATAMASTER STATUS REPORT**

DATAMASTER SERIAL NUMBER

Service Status	Location	Date	Time	Comments

486.BTS

WASHINGTON STATE PATROL
BREATH TEST SECTION

WAC RULE CALCULATIONS FOR DUPLICATE BREATH ALCOHOL RESULTS

For Three Digit Results

Pursuant to WAC 448-13-060, a valid breath test is presumed if the result of each measurement is within plus or minus ten percent (10%) of the average of the two measurements.

CALCULATION

1. Determine the average of the two values. Add the two results together and divide the sum by two. This will give you the average of the two values. (use 4 decimal places)
2. Determine the lowest acceptable value by multiplying the average value obtained above by 0.9, truncate to 3 places.
3. Determine the highest acceptable value by multiplying the average value obtained in #1 above by 1.1, truncate to 3 places.

SUMMARY

$$\text{Average Value} = \frac{\text{First Result} + \text{Second Result}}{2}$$

$$\text{Average Value} \times 0.9 = \text{Low Limit} \quad (\text{truncate to 3 decimal places})$$

$$\text{Average Value} \times 1.1 = \text{High Limit} \quad (\text{truncate to 3 decimal places})$$

The range from the low to the high limit must include both sample results if the test is to be presumed valid as defined in the Washington Administrative Code.

EXAMPLE

First breath sample result: .155

Second breath sample result: .181

$$\text{Average Value} = \frac{.155 + .181}{2} = \frac{.336}{2} = .1680$$

$$\text{Low Limit} = .1680 \times 0.9 = .1512 = \text{Truncate to } .151$$

$$\text{High Limit} = .1680 \times 1.1 = .1848 = \text{Truncate to } .184$$

Since both breath sample results are in the range from .151 to .184, the test is presumed valid as defined by the WAC.

DATAMASTER HELPS FOR DISPLAYED MESSAGES*

INVALID SAMPLE	Check Mouth, wait 15 minutes, try one or more tests and then call WSP if fails. TAG instrument "Out of Service"
AMBIENT FAIL	Check for odors, check to see if mouth piece is removed, try one or more tests and then call WSP if fails. TAG
SYSTEM WON'T ZERO	Unable to zero detector voltage. Try one or more tests and then call WSP if fails. TAG
DETECTOR OVERFLOW	Try one or more tests and then call WSP if fails. TAG
RADIO INTERFERENCE	Radio transmission detected, remove source, rerun test.
CALIBRATION ERROR	Try one or more tests and then call WSP if fails. TAG
INTERFERENCE DETECTED	Try one more test, if interference is noted on the second test, request blood sample under implied consent.
SAMPLES OUTSIDE 10%	Try one or more tests. Coach the subject to provide similar samples to the instrument.
SIMULATOR OUT OF RANGE	Simulator reading outside of .072-.088 inclusive limits. Call WSP and TAG the instrument out of service. Go to another instrument to perform the test.
PRINTER ERROR	Call WSP , TAG the instrument out of service. Go to another instrument.
JAMMED/ILLEGIBLE DOCUMENT**	Printer not performing properly. Call WSP , TAG the instrument out of service. Do not press RUN.
BLANK ERROR	Try one or more tests and then call WSP if fails. TAG
FILTER ERROR	Try one or more tests and then call WSP if fails. TAG
TEMPERATURE LOW	Out of service, call WSP and TAG
TEMPERATURE HIGH	Out of service, call WSP and TAG
FATAL SYSTEM ERROR	Out of service, call WSP and TAG
RAM ERROR	Out of service, call WSP and TAG
PUMP ERROR	Out of service, call WSP and TAG
DATA MEMORY BATTERY LOW	Out of service, call WSP and TAG
EXTERNAL STANDARD TEMPERATURE	The simulator temperature must be within 0.2 (two lines above or below) of 34 degrees C.
OUT OF SERVICE	Call WSP at _____ and advise specific problem, serial number and TAG out of service.

* These are guidelines only, not mandatory, qualified operators may use discretion

** Will not be a displayed message