



STATE OF WASHINGTON

WASHINGTON STATE PATROL

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November 9, 1995

Dr. Barry K. Logan  
Washington State Toxicologist  
Park 90/5 Suite 360  
2203 Airport Way South  
Seattle, Washington 98134-2027

Dear Dr. Logan,

The Washington State Patrol Breath Alcohol Test Section has recently purchased a new version of software for the BAC Datamaster. This software will be installed in the new BAC Datamaster instruments beginning with serial numbers WA 949001. In addition, the new software will be installed in some older instruments having been converted for that purpose with a new cover and five-way valve. This new version of software will replace that which is currently approved and described in my correspondence dated September 20, 1990.

The new version of software is identified as version number 76016-002 and dated 11/8/95. The version number and date will be displayed on all printout documents. The file name identifying the new software for the new 949000 series instruments is 110895.BIN. The file names identifying the new software for older model instruments that will be upgraded are: 110895.U16, 110895.U23, 110895.U25, and 110895.U26. This version of software has the following features that are different from the previous version:

1. The data entry questions correspond to the following:

- |                          |                           |
|--------------------------|---------------------------|
| 1) SIM TEMP 34c +/- .2c? | 9) SUBJECT'S ETHNIC GROUP |
| 2) OBSERVATION BEGAN     | 10) D.L. STATE/NUMBER     |
| 3) CITATION NUMBER       | 11) COUNTY OF ARREST      |
| 4) OPERATOR'S NAME       | 12) CRIME ARRESTED FOR    |
| 5) ARRESTING AGENCY      | 13) ACCIDENT INVOLVED     |
| 6) SUBJECT'S NAME        | 14) DRINKING LOCATION     |
| 7) SUBJECT'S DOB         | 15) SOLUTION BATCH#       |
| 8) SUBJECT'S SEX         |                           |



2. The five-way valve closes immediately at the point of breath sample acceptance and introduction of the interferant filter
3. The breath sample acceptance criteria now includes the following parameters:
  - a. A minimum of five seconds exhalation
  - b. A minimum flow rate corresponding to a monitored voltage of 1.5 volts
  - c. A breath alcohol slope between  $\pm 0.001$  g/210L
  - d. A measured minimum breath volume of 1.5 Liters
4. Calibration is accomplished with the F1/F2 keys and no longer requires the introduction of acetone. Only water and ethanol are introduced during calibration.
5. The checksum value of the EPROM is retained in the EPROM and cannot be overwritten. This ensures the integrity of the EPROM contents.
6. Instrument passwords for polling purposes are unique to the instrument to allow better security
7. The following features of an evidential test are evaluated by the instrument to ensure conformance to the Washington Administrative Code:
  - a. The duplicate tests are within 10% of their mean using three digits
  - b. The simulator standard result must fall between 0.090 and 0.110 g/210L inclusive
  - c. Sixteen minutes of observation time must occur between "OBSERVATION TIME" and the first breath sample

Lack of conformance to the Washington Administrative Code for these features will result in no printout document.
8. Breath alcohol results will not be displayed during an evidential field test until printed on the document.
9. Duplicate evidential test agreement will be computed by the instrument employing three decimal places as outlined in the Washington Administrative Code to ensure  $\pm 10\%$  of the mean is complied with. If the results do not comply then the test is aborted and a message is displayed for the operator. No printout document is received. This computation is only done for duplicate results having a mean of 0.01 g/210L or greater.
10. Additional "message" or "error" codes are retained in the database to allow evaluation of instrument performance

11. Additional fields are retained in the database associated with each test to provide more information concerning instrument performance
12. The printout document will include the version of software and the notation "ALL RESULTS IN g/210L".
13. The algorithm for determining the presence of an interferant has been changed. The algorithm evaluates for a deviation from the two filter ratio of ethanol in either direction. The threshold for detection of interfering substances will be 0.01 g/210L ethanol equivalent for concentrations up to 0.20 g/210L. Beyond 0.20 g/210L the threshold will be 5% of the primary filter (3.44 $\mu$ m) result.
14. Results of the "INTERNAL STANDARD" are retained in the database.
15. Introduction of the interferant filter is being determined by the interferant algorithm which now identifies a change in the filter response ratio in both directions. A change in the signal at the interferant filter indicates that the filter has been activated.
16. All results printed on the breath test document will be recorded to three decimal places.
17. The database will retain the complete records for the following cases and yet will not provide a complete breath test document:
  - a. An "INVALID SAMPLE" (mouth alcohol condition)
  - b. An "INTERFERING SUBSTANCE"
  - c. Where duplicate tests do not agree within the 10% of the mean requirement
  - d. Where a simulator standard is "OUT OF RANGE"
18. The following new set of "error codes" are retained in the database:
 

<ol style="list-style-type: none"> <li>1. SYSTEM WON'T ZERO</li> <li>2. TEMPERATURE LOW</li> <li>3. TEMPERATURE HIGH</li> <li>4. (not present)</li> <li>5. RADIO INTERFERENCE</li> <li>6. FATAL SYSTEM ERROR</li> <li>7. CALIBRATION ERROR</li> <li>8. PRINTER ERROR</li> <li>9. RAM ERROR</li> <li>10. PUMP ERROR</li> </ol>	<ol style="list-style-type: none"> <li>11. BLANK ERROR</li> <li>12. DETECTOR OVERFLOW</li> <li>13. FILTER ERROR</li> <li>14. (not present)</li> <li>15. SIMULATOR OUT OF RANGE</li> <li>16. (not present)</li> <li>17. DATA MEMORY BATTERY LOW</li> <li>18. (not present)</li> <li>19. AMBIENT FAIL</li> </ol>
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19. The following fields of data will be retained in the database corresponding to a complete field evidentiary test:

- |                             |                                |
|-----------------------------|--------------------------------|
| 1. Test type code number    | 16. Drink location             |
| 2. Date                     | 17. Solution batch number      |
| 3. Simulator Temperature    | 18. Internal standard value    |
| 4. Observation time         | 19. First sample attempts      |
| 5. Citation number          | 20. Exhalation length in time  |
| 6. Operator                 | 21. First sample results       |
| 7. Agency                   | 22. First sample interference  |
| 8. Subject                  | 23. Time of first sample       |
| 9. Date of birth            | 24. Simulator result           |
| 10. Sex                     | 25. Simulator interference     |
| 11. Race                    | 26. Time of simulator sample   |
| 12. Driver's license number | 27. Second sample attempts     |
| 13. County                  | 28. Exhalation length in time  |
| 14. Crime arrested for      | 29. Second sample results      |
| 15. Accident involved       | 30. Second sample interference |
|                             | 31. Time of second sample      |

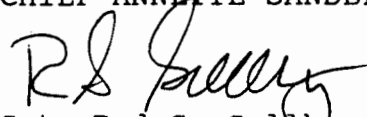
20. For purposes of breath sample acceptance, the breath alcohol is being computed as a mean of two raw data values over time. After sample acceptance the final result is computed from a mean of three data values at both the primary and interferant filters.
21. A date of birth of 00/00/00 will be allowed and explicitly checked for. This date of birth is entered by technicians and solution changers at the time of changing simulator solutions.
22. A change concerning the print routine will ensure that the occurrence of a "PRINTER ERROR" will not cause the instrument to lockup.
23. "Refusal" and "Incomplete" test records will place an "R" and "I" respectively in the field that would normally display the breath alcohol results. The number of sample attempts will also be preserved in the case of "Refusal" and "Incomplete" tests.

Valid performance of this software will be ensured through instrumental compliance with the Quality Assurance Procedure and the standards associated with a field evidential test as outlined in the Washington Administrative Code.

I am requesting your approval of this new BAC Datamaster software version 76016-002.

Sincerely,

CHIEF ANNETTE SANDBERG

A handwritten signature in black ink, appearing to read "R G Gullberg". The signature is written in a cursive style with a large initial "R" and "G".

Sgt. Rod G. Gullberg  
Breath Alcohol Test Section

RGG:rg

# WASHINGTON STATE TOXICOLOGY LABORATORY

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November 9th 1995

Sgt. Rod Gullberg  
Washington State Patrol  
Breath Test Section  
811 E. Roanoke  
Seattle WA 98102

Dear Sgt. Gullberg:

Thank you for the letter detailing the proposed changes in the software which have been developed over the last two years. I appreciate having been kept informed of the progress in this project and for the opportunity to have had my concerns addressed during the development stage.

As you are aware, my staff and I have been involved in testing the software throughout its development. I have reviewed the results and determined that the software when used in the DataMaster in the manner in which it will be used for subject breath tests, will ensure the accurate and reliable measurement of alcohol in a sample submitted to it, if the test meets the requirements set forth in the WAC.

As a result, I am pleased to approve the following versions of the software for use in the DataMaster. Note that the current software, approved by me on October 2nd 1990 will remain an approved software version until such time as the current instruments are replaced with new or reconfigured instruments. In addition software version 76016-002 dated 11/8/95 is approved for use in the DataMaster. The EPROMS are identified as follows:

For instruments requiring four EPROMS, and a cover without a built-in keyboard.

U16 U16vers.003  
U23 U23vers.005  
U25 U25vers.006  
U26 U26vers.006

For instruments requiring four EPROMS, with a cover with a built-in keyboard, and a five way valve.

U16 110895.U16  
U23 110895.U23  
U25 110895.U25  
U26 110895.U26

For instruments requiring a single EPROM, the following version of software is approved.

110895.BIN

Although our testing of the system comprising the software and hardware has been exhaustive, you should monitor the performance of these instruments in the field through the extended database information available, and inform me immediately if any problems are identified which may jeopardize the validity of a subject's breath test results.

Sincerely,

A handwritten signature in black ink, appearing to read 'Barry K. Logan', written over a circular stamp or mark.

Barry K. Logan Ph.D., DABFT  
Washington State Toxicologist  
Clinical Assistant Professor, Laboratory Medicine