SAN DIEGO POLICE DEPARTMENT
CRIME LABORATORY

FORENSIC CHEMISTRY UNIT

BREATH ALCOHOL MANUAL

Approved by: Alyson Talbot, Supervising Criminalist
August 28, 2025

1.0 INTRODUCTION

1.1 GENERAL GUIDELINES

1.1.1 Intoxilyzer instruments are utilized for the analysis of ethanol in breath samples from subjects. The instruments use infrared detectors for the measurement of ethanol. Quality checks are conducted using certified reference gases during each subject's testing sequence. Prior to new instrumentation being put into use, the new instrument must be validated and approved in accordance with laboratory procedures.

1.1.2 Testing of subjects for evidential purposes is conducted by Certified Operators, typically sworn police personnel.

1.1.3 This manual does not cover preliminary ethanol screening devices.

1.2 UNIT FUNCTIONS

1.2.1. This unit performs controlled substance analysis, ethanol analysis, and runs the evidential breath testing program for the SDPD.

1.2.2. General duties performed include:

1.2.2.1 Court testimony regarding all aspects of analysis and interpretation of results.

1.2.2.2 Providing breath instrument operator training and support to law enforcement and personnel.

1.3 BREATH TESTING LOCATIONS

1.3.1 Breath testing can take place in Room 138 of Police Headquarters, the DUI mobile trailer, or at one of the SDPD patrol vehicles outfitted with an Intoxilyzer.

1.4 CERTIFIED OPERATOR TRAINING

1.4.1 To use the Intoxilyzer instruments for evidential testing, personnel must have been trained as per Title 17 of the California Code of Regulations. Training includes:

1.4.1.1 Theory of operation
1.4.1.2 Detailed Procedure of operation
1.4.1.3 Precautionary checklist
1.4.1.4 Practical experience
1.4.1.5 Written examination

1.4.2 Training will be developed and conducted by Forensic Alcohol Analysts, with the assistance of other trained personnel.

2.0 PERSONNEL AND JOB DESCRIPTIONS

2.1 SUPERVISING CRIMINALIST

2.1.1 The duties of the supervisor in the Forensic Chemistry Unit are covered by their specific Performance Plan.

2.2 CRIMINALIST I & CRIMINALIST II

2.2.1 The duties of the Criminalists in the Forensic Chemistry Unit are covered by their specific Performance Plan.

2.3 CRIMINALIST III (Technical Lead)

2.3.1 The duties of the Criminalist III in the Forensic Chemistry Unit are covered by their specific Performance Plan.

2.4 LABORATORY TECHNICIAN

2.4.1 The duties of the laboratory technician in the Forensic Chemistry Unit are covered by their specific Performance Plan.

3.0 POLICIES

3.1 BREATH TESTING

3.1.1 Criminalists must be thoroughly familiar with Title 17 of the California Code of Regulations.

3.1.2 Only Certified Breath Operators can conduct evidential breath tests.

3.1.3 Evidential breath testing must follow the Precautionary Checklist (see Certified Operator Training).

3.1.4 Breath alcohol results are reported to three decimal places due to the accuracy, sensitivity, and calculated uncertainty of measurement of our process.

3.1.5 Breath alcohol results of greater than or equal to 0.010 g%, but less than 0.020 g% are considered positive for ethanol.

3.1.6 Breath alcohol results over the highest concentration used to confirm linearity during the most recent Yearly Quality Assurance are considered "Greater than" that amount.

3.1.6.1 For example, if 0.300 g% standard tanks are the highest concentration used during the Yearly Quality Assurance, then values above 0.300 g% are considered "Greater than 0.300 g%."

3.1.7 To be a successful test, there must be two breath samples within 0.020 g% of each other in one testing sequence, and there must be no failures during testing.

3.1.7.1 When a test has been completed successfully, a statement to that effect will be printed on the breath strip.

3.1.8 Only verified instruments, with up to date quality checks, will be placed into use for evidential testing.

3.2 GAS SUPPLIES AND ROOM 138 SUPPLIES

3.2.1 The laboratory technician will ensure Room 138 is stocked for use.

3.2.2 Supply requests, including lab-wide supplies, will be processed through the laboratory technician responsible for ordering supplies.

3.2.3 Gas cylinders will be properly emptied prior to disposal.

4.0 CASE DOCUMENTATION

4.1 BREATH TEST RESULTS

4.1.1 The Certified Operator conducting the test is responsible for distribution of the breath strips unless they are not the arresting officer. When the Certified Operator is conducting the test for someone else, the Certified Operator is responsible for printing the correct number of breath strips and instructing the arresting officer on their distribution.

4.1.1.1 Three copies of the breath strip, from each test conducted, must be printed and distributed appropriately to the subject, records, and the DMV.

4.1.2 Copies of breath strips are not kept by Forensic Chemistry. Reprints from the COBRA database are not considered originals as they do not have the Operator's signature.

4.2 BREATH STRIP FORMAT

4.2.1 The breath strip must include the following information, at a minimum:

4.2.1.1 Serial number or identifier of the instrument on which the test is being conducted
4.2.1.2 Date and time of test
4.2.1.3 Lab ID number for the test (assigned by the software)
4.2.1.4 Name of the Certified Operator conducting the test
4.2.1.5 Name of the subject
4.2.1.6 Acknowledgement of the 15 minute observation
4.2.1.7 Results of all diagnostic, control, and subject tests conducted during that testing sequence
4.2.1.8 Statement of successful or unsuccessful testing sequence
4.2.1.9 Acknowledgement of giving (or not) the Trombetta
4.2.1.10 Signature line for the Certified Operator
4.2.1.11 Statement of uncertainty of measurement, if the software is capable of accurately displaying it

4.3 INSTRUMENT RECORD DISTRIBUTION AND RETENTION

4.3.1 Copies of Intoxilyzer maintenance logs, calibration certificates, and Yearly Quality Assurance Certificates will be provided to the clerical staff by the Forensic Chemistry Unit staff at the beginning of each month, for the prior month, for distribution to the appropriate end users.

4.3.1.1 Original records will be kept by the laboratory

4.3.2 All alcohol records will be maintained according to the Quality Assurance policies.

5.0 EQUIPMENT

5.1 BREATH ALCOHOL EQUIPMENT LIST

5.1.1. The Forensic Chemistry Unit utilizes the following items of equipment (see chart below for specifics):

5.1.1.1. **Intoxilyzer 9000:** for quantitating breath alcohol concentrations.

5.1.1.2. **Guth simulators:** for heating of water/volatile mixtures.

Equipment	Make	Model	Serial#	Software version
Intoxilyzer	CMI	9000	90-002497	9634.04.00
Intoxilyzer	CMI	9000	90-002564	9634.04.00
Intoxilyzer	CMI	9000	90-003421	9634.04.00
Intoxilyzer	CMI	9000	90-003422	9634.04.00
Intoxilyzer	CMI	9000	90-003423	9634.04.00
Intoxilyzer	CMI	9000	90-003424	9634.04.00
Intoxilyzer	CMI	9000	90-003425	9634.04.00
Intoxilyzer	CMI	9000	90-003956	9634.04.00
Intoxilyzer	CMI	9000	90-003957	9634.04.00
Intoxilyzer	CMI	9000	90-003958	9634.04.00
Intoxilyzer	CMI	9000	90-004990	9634.04.00
Intoxilyzer	CMI	9000	90-004991	9634.04.00
Intoxilyzer	CMI	9000	90-004992	9634.04.00
Simulator	Guth	12V500	MP3809	NA
Simulator	Guth	12V500	MP3810	NA
Simulator	Guth	12V500	MP4552	NA
Simulator	Guth	12V500	MP4553	NA

5.2 INTOXILYZER 9000 QUALITY CHECKS

5.2.1 A certified gaseous ethanol breath standard (GEBS) is run at least one time with every set of evidential breath samples.

5.2.1.1 The GEBS can be any known value between 0.08 and 0.30 g%, per Title 17.

5.2.1.2 The Intoxilyzer software will check that the results of the GEBS are within the programmed limits, typically set by the current UM or Title 17. This ensures that the quantitation being performed is accurate.

5.2.1.3 Once every 10 days or 150 tests, whichever comes first, the results of a GEBS check must be reviewed by a Forensic Alcohol Analyst (as determined by Title 17) to ensure that the instrument is still operating with the appropriate accuracy. This check will be documented in the instrument's maintenance records.

5.2.1.4 If a GEBS check is run as the result of maintenance, the result of the test will be evaluated by a Forensic Alcohol Analyst.

5.2.1.5 Failed GEBS checks may require the instrument to be returned to the laboratory for evaluation.

5.2.1.5.1 The instrument must pass a GEBS check before it can be used for evidential testing.

5.2.2 Air blanks are run with each evidential breath test and must return a result of 0.000 g/210 L.

5.2.2.1 If an air blank fails, the test sequence is considered unsuccessful.

5.2.3 Diagnostic checks are performed at the beginning and end of each evidential breath testing sequence. All diagnostics must return passing results for the test to be completed successfully.

5.2.3.1 If there is a diagnostic fail, the test sequence is considered unsuccessful.

5.2.3.2 Failed diagnostics may require the instrument to be returned to the laboratory for evaluation.

5.2.3.1 The instrument must pass all diagnostic checks before it can be used for evidential testing.

5.2.3 Maintenance, repairs, etc., are documented for each instrument in a maintenance binder located in the breath alcohol room.

5.2.4 Each Intoxilyzer will undergo a Yearly Quality Assurance check. See Section 7.

5.3 SIMULATOR TANK CALIBRATION AND PERFORMANCE CHECKS

5.3.1 Calibration will be performed as needed by an outside vendor with traceability to NIST.

5.3.1.1 A label affixed to the simulator tank will indicate the date of last calibration.

5.3.1.2 Calibrations are only needed when the tanks are being used for quantitative ethanol determinations.

5.3.2 Performance checks will be performed as needed.

5.3.2.1 If it has been more than a year since the calibration, and the tank is going to be used for a quantitative ethanol determination, a performance check is recommended.

5.3.2.2 A solution of known vapor concentration will be allowed to warm up in the simulator for a minimum of one hour. The solution will then be tested either using a standard breath testing sequence or with two samplings through the instruments side ports. The average of the two samples must fall within the current UM of the known value.

5.3.2.3 Performance checks, maintenance, etc., will be documented in a maintenance binder located in the breath alcohol room.

5.4 UNCERTAINTY OF MEASUREMENT FOR BREATH RESULTS

5.4.1. The uncertainty of measurement will be determined for the breath testing program.

5.4.1.1 The maximum calculated repeatability and linearity measurements, along with instrument calibration uncertainty and the manufacturer determined uncertainty for the reference materials, are incorporated in the calculation of a combined standard uncertainty.

5.4.1.2 Expanded uncertainties will be calculated for ethanol values from 0.020 g/210 L to less than 0.100 g/210 L, and from 0.100 g/210 L to a minimum of 0.300 g/210 L, at the 95.45% confidence levels.

5.4.1.3 Standards must be Certified Reference Material (CRM) with values traceable to NIST Standardized Reference Material (SRM).

5.4.1.4 Analytical data and calculations used to determine the measured uncertainty will be maintained in uncertainty and/or validation binders in the Forensic Chemistry Unit.

5.4.1.5 The initial determination of the uncertainty of measurement for the Intoxilyzer 9000s was made from validation data gathered from seven instruments over the course of nine months.

5.4.1.5.1 New instruments will have their contribution to the uncertainty of measurements evaluated during their verification.

5.4.1.5.2 Data from yearly quality assurance tests will be used to evaluate each instrument's contribution to the uncertainty of measurement.

5.4.1.5.3 When an instrument falls outside of the established uncertainty of measurement, additional testing can be conducted to ensure a representative sample is being collected. If after the additional testing the instrument is still outside of the current range, or if additional testing was not conducted, the uncertainty of measurement for

the program will be reestablished or the instrument will be marked out of service.

5.4.1.6 Uncertainty of measurement testing for new instruments will consist of testing certified reference materials over a range of ethanol concentrations. The accuracy of the controls must be within 0.010 g/210 L of the expected value.

5.4.1.6.1 The following CRM gas standards will be run: 0.040, 0.080, 0.100, 0.200, and either 0.300 or 0.400 g/210 L in sets of five. This will be completed a minimum of five times over at least five days.

5.4.1.6.2 A 0.020 g/210 L CRM premixed liquid standard will be run in sets of five. This will be completed a minimum of five times over at least five days. NOTE: no test solution should be used for more than 25 samples.

5.4.1.6 The following formulas will be used to calculate the combined uncertainty (U_c), and the expanded uncertainty (U) at a given coverage factor (k).

$$\boldsymbol{U_c = \sqrt{[u(instrument\ calibration)^2 + u(CRM)^2 + u(repeatability)^2 + u(linearity)^2]}}$$

$$\boldsymbol{U = U_c * k}$$

5.4.2 The measured uncertainty of an instrument will be reestablished if the quantitation capability of the instrument is affected through repair.

5.5 OTHER EQUIPMENT PERFORMANCE EVALUATION

5.5.1 Hoods are checked on a monthly basis by a Lab Safety representative.

5.5.1.1 Hoods are checked annually by an outside vendor.

5.5.2 Other equipment is repaired or replaced as needed.

5.6 USE OF EQUIPMENT

5.6.1 Use and maintenance of equipment will be restricted to those properly trained to do so.

5.6.2 Alcohols and other volatile organic solvents will not be used to wash or rinse glassware dedicated to alcohol analysis.

5.7 STANDARDS

5.7.1 A standard log will be maintained on all standards used within the unit and will include the following, as applicable:

5.7.1.1 Name of the standard
5.7.1.2 Storage location
5.7.1.3 Manufacturer lot number
5.7.1.4 Expiration dates, if known
5.7.1.5 Lot number

5.7.2 Verification of standards will be done via manufacturer certificates.

5.7.2.1 Standards that do not pass verification will not be used.

5.7.3 The standard logs may be paper or electronic records.

5.7.4 Standards will be stored according to manufacturer specifications.

5.7.5 Standards must be labeled with the name of the standard, lot number, the date received or inspected, and initials.

5.8 SOLUTION PREPARATION/TESTING

5.8.1 A solution log will be maintained on all solutions used within the unit and will include the following, as applicable:

5.8.1.1 Name of the solution
5.8.1.2 What it is used for
5.8.1.3 Specific directions for preparation (see section 16)
5.8.1.4 The test used to verify the reagent and the expected results
5.8.1.5 Initials of person who prepared the solution
5.8.1.6 Verification test results and initials of the verifier

5.8.2 Solutions that will be used for quantitative purposes will be verified by a criminalist prior to use.

5.8.2.1 The lot number for the new solution will not be assigned until the solution has been verified.
5.8.2.1.1 The test date will indicate the first date of use and will be used as the lot number for the solution.

5.8.2.2 Results of testing will be recorded in the solution log along with the initials of the Criminalist performing the test.
5.8.2.3. If the expected results are not obtained during solution verification, the solution will not be put into use.

5.8.3. Stock bottles containing solutions will be identified by the name of the solution and lot number and include any appropriate signal words.

5.8.3.1. Working solutions obtained from the stock bottles will be labeled with the same lot number, as well as with the name of the solution and specific hazards.

6.0 QUALITY ASSURANCE

6.1 GENERAL QUALITY ASSURANCE

6.1.1 General Quality Assurance Policies are covered by the Quality Manual.

6.2 DEFINITIONS

6.2.1 Annual – 12 months

6.2.2 Weekly – Calendar week (Sunday-Saturday)

6.3 MAINTENANCE LOGS

6.3.1 Maintenance logs must be kept for the following equipment:

- 6.3.1.1 Intoxilyzers
- 6.3.1.2 Simulator tanks

6.3.2 Maintenance logs will contain the following information:

- 6.3.2.1 Make, model, and serial number
- 6.3.2.2 Record of all internal or external maintenance, who performed it, and the date
- 6.3.2.3 Dates the equipment was removed from service
- 6.3.2.4 Testing results to return the equipment to service, who tested it, and the date

6.4 CALIBRATION AND PERFORMANCE CHECKS

6.4.1 If the result of any calibration or performance check does not meet acceptable criteria, no casework will be conducted using that piece of equipment, solution, or standard until the problem is resolved.

- 6.4.1.1 A Quality Incident Summary Form will be filled out, if applicable (see section 6.6).

6.4.2 Whenever possible, the Criminalist or technician discovering the problem should attempt to troubleshoot the issue while communicating with the rest of the unit that the piece of equipment, solution, or standard should temporarily not be used in casework (does not need to be recorded in the maintenance log). This communication must be done through the use of a filled out "Troubleshooting" tag, at a minimum.

6.4.3 If troubleshooting fails, or the issue is persistent, the Technical Lead or Supervisor will be notified to determine if the piece of equipment, solution, or standard needs to be pulled from service.

6.4.3.1 If the equipment, solution, or standard needs to be pulled from service, this must be communicated to the rest of the unit through the use of a filled out "Out of Service" tag, at a minimum.

6.4.4 If the issue has potentially affected released casework results, the Technical Lead and Supervisor should be notified immediately to evaluate.

6.4.5 All equipment maintenance, and any time a piece of equipment is removed from or returned to service, must be documented in the applicable maintenance log.

6.5 PROFICIENCY TESTING PROGRAM

6.5.1 Once per calendar year, one criminalist signed off to do alcohol analysis must satisfactorily complete a proficiency test in breath alcohol analysis.

6.5.1.2 This test is generally assigned to the analyst in charge of the breath alcohol program during the month the samples are received.

6.5.2. The procedure for analyzing the samples will vary depending on if the samples are gas canisters or wet bath solutions. Gas canisters are preferred.

6.5.2.1 For each gas canisters, attach the canister to the instrument regulator and run a set of nine tests though the Stability Test setting.

6.5.2.2 For simulator solutions, allow each solution to warm up in the simulator tank for a minimum of one hour before beginning testing.

6.5.2.2.1 Connect the "to analyzer" port on the simulator to the "calibration inlet" port on the Intoxilyzer, and the "input" port on the simulator to the "simulator return" port on the Intoxilyzer, with appropriate tubing and connections. (NOTE: names of ports are for current versions of each piece of equipment and may change over time. Ensure proper connection to avoid flooding the instrument.)

6.5.2.2.2 Run a set of nine tests though the Stability Test setting making note of the temperature of the simulator at the beginning of testing and at each third test. Note: it is recommended to run a set of 2-3 samplings through the instrument prior to the nine needed for the proficiency to equilibrate the connection tubing.

6.5.3 All results of proficiency testing must be consistent with the test provider's results to be deemed satisfactory.

6.5.3.1 Results are deemed satisfactory when they are within the unit's currently reported uncertainty of the CTS Grand Mean.

6.5.3.2 If the test results are unsatisfactory, the Technical Lead and Supervisor will assess the situation and determine the best course of action.

6.5.3.2.1 Actions may include, but are not limited to, change in procedure, reanalysis of samples, retraining, and removal of the instrument from evidential testing.

6.5.4 Criminalists will be notified of proficiency test results via a Proficiency Test Record form.

6.6 QUALITY INCIDENT SUMMARY FORM

6.6.1 For any equipment failure or unexpected control result, a Quality Incident Summary (QIS) Form must be filled out.

6.6.2 QIS forms will be filled out by the Criminalist or Technician who discovered the issue when the issue is regarding an equipment failure or unexpected control result. When the issue is regarding a failure to follow a technical policy, the Criminalist conducting the analysis will fill out the form.

6.6.3 After filling out all pertinent information on the QIS form, the form, along with all supporting documentation, will be submitted to the Technical Lead for tracking and any necessary follow up.

6.6.4 QIS issues will be tracked and monitored by the Technical Lead to check for trends that could indicate issues such as problems with lab equipment, training inadequacies, or process failures.

6.6.4.1 The Technical Lead will follow up on each issue, and as appropriate:

6.6.4.1.1 Take action to control and correct the issue.

6.6.4.1.2 Address the consequences, to include evaluating potentially effected casework.

6.6.4.1.3 Ensure follow up action is completed and is effective.

6.6.4.1.4 Escalate the issue to a CAR (see Quality Manual).

6.6.5 Copies of QIS forms will be kept in maintenance, reagent, or standards binders, associated case packets, and/or electronically as appropriate.

7.0 YEARLY QUALITY ASSURANCE

7.1 GENERAL

7.1.1 A full quality assurance check will be completed on each instrument yearly.

7.1.1.1 A full quality assurance check may also be necessary before a previously out of service instrument is placed back into use or after factory maintenance.

7.2 QUALITY ASSURANCE CHECKS PERFORMED

7.2.1 Date and time verification
7.2.2 Diagnostic checks
7.2.3 Invalid sample check (mouth alcohol)
7.2.4 Deficient sample check
7.2.5 Improper sample check
7.2.6 Breath test refusal check
7.2.7 Abort test check
7.2.8 Operator card/magnetic reader check
7.2.9 Successful alcohol-free breath test
7.2.10 Successful alcohol breath test
7.2.11 Radio frequency interference check (RFI)
7.2.12 Interferent check
7.2.13 Ambient detection
7.2.14 Calibration check failure
7.2.15 Linearity check
7.2.16 Direct connect verification, with download and clearing of data
7.2.17 Tank pressure vs regulator verification
7.2.18 Temperature and cell monitor verification

7.3 PERFORMING QUALITY ASSURANCE CHECKS

7.3.1. Date and Time Verification

7.3.1.1 Verify that the date and time is accurate to within five minutes of a standard time, typically read from a phone or computer.
7.3.1.2 If necessary, adjust the date and time.
7.3.1.3 A date and time that is found to be incorrect by a larger degree, could be a sign that the internal battery is failing.

7.3.2 Diagnostic Checks

7.3.2.1 Once the subject test is started, a set of diagnostic checks is automatically initiated. All parameters must pass.

7.3.3 Invalid Sample Check (Mouth Alcohol)

7.3.3.1 Start a subject test. When the instrument instructs “Please Blow,” attach a new mouthpiece and swab the interior of it with a solution containing alcohol, such as mouthwash. Immediately deliver a breath sample. The instrument must fail the test and flag it as an invalid test.

7.3.4 Deficient Sample Check

7.3.4.1 Start a subject test. When the instrument instructs “Please Blow,” attach a new mouthpiece and blow softly, just to start the tone, without providing a full sample. Wait for the instrument to time out; this should take 3 minutes. The instrument must fail the test and flag it as a deficient sample.

7.3.5 Improper Sample Check

7.3.5.1 Start a subject test. Blow into the mouthpiece at any time prior to the “Please Blow” prompt. The instrument must fail the test and flag it as an improper test.

7.3.6 Breath test refusal check

7.3.6.1 Start a subject test. When the instrument instructs “Please Blow,” press the Refuse button. The instrument must stop the test and flag it as a refusal.

7.3.7 Abort Test Check

7.3.7.1 Start a subject test. Press the Abort button at any during the test sequence, except for when it says, “Please Blow.” The instrument must stop the test and flag the sequence as having been aborted.

7.3.8 Operator card/magnetic reader check

7.3.8.1 On any subject test, verify that the data gathered through the magnetic card reader, for either the operator or subject card, is correct.

7.3.9 Successful alcohol-free breath test

7.3.9.1 Start a subject test. Deliver two breath samples as instructed by the instrument. The results must be negative for alcohol and the instrument must declare the test successful.

7.3.10 Successful alcohol breath test

7.3.10.1 Start a subject test. Using a simulator with an alcohol containing solution, deliver two breath samples as instructed by the instrument. The results must be positive for alcohol, within 0.020 g% of each other, and the instrument must declare the test successful.

7.3.11 RFI Detection check

7.3.11.1 Start a subject test. Turn a police radio on and off while moving it around the instrument. The instrument should fail the test and flag it as having radio frequency interference.

7.3.11.2 Instruments have RFI shielding and may not fail with a police radio. If the test does not fail, it should be repeated with a walkie talkie type device. The instrument must fail the test and flag it as having radio frequency interference.

7.3.12 Interferent check

7.3.12.1 Use a simulator solution of ethanol/water mixed with either acetone, isopropanol, or methanol as the interferent. Start a breath test and deliver a breath sample as instructed by the instrument. The instrument must fail the test and flag it as containing an interferent.

7.3.13 Ambient detection

7.3.13.1 Start a subject test. When the instrument starts to do the air blank, put the mouthpiece near a solution containing ethanol. The instrument must fail the test and flag it as an ambient fail.

7.3.14 Calibration check failure

7.3.14.1 Prior to starting the test, replace the appropriate GEBS tank with one whose value differs from the correct value by more than 0.010 g%. Start a subject test. The instrument must fail the test and flag it as a calibration check failure.

7.3.15 Direct connect and clear records

7.3.15.1 Direct connect to the instrument via the COBRA laptop and download all stored data. Once downloaded, clear all data from the instrument

7.3.16 Tank pressure vs regulator reading

7.3.16.1 Compare the regulator pressure reading to the pressure reading given by the instrument. If the readings do not agree within approximately 50 psi, tare the instrument.

7.3.17 Instrument temperature check

7.3.17.1 When the instrument is in ready mode, access temperature monitors. The breath hose (B) temperature should be 36 - 47°C, with the ideal temperature at 45°C, and the cell temperature (C) should be 47°C ± 0.2°C.

7.3.18 Instrument linearity check

7.3.18.1 Four levels of NIST-traceable gases will each be run 10 times. The levels should include one near the lower limit of quantitation (ideally no greater than 0.040 g%), one near the upper limit of quantitation (but no lower than 0.300 g%), and two mid-level values (preferably 0.200 g% and either 0.080 g% or 0.100 g%). The mean, standard deviation, and average difference from the known value must be calculated for each level.

7.3.18.2 Use the calculated standard deviation and average difference from known to verify that the instrument is still operating within the currently established uncertainty of measurement. See uncertainty of measurement section 5.4 for additional details.

7.3.19 Instruments must pass all verifications and checks listed, and must still be operating within the uncertainty of measurements at the time of certification, in order to be considered passing their yearly QA.

7.4 DOCUMENTATION OF QUALITY ASSURANCE CHECKS

7.4.1. Tape or staple test strips from each test to letter sized paper and photocopy the test strips.

7.4.2. After verifying that the instrument can go back into service, complete the Yearly Quality Assurance Certificate and add the date of the QA to the maintenance log.

7.4.2.1 Submit the quality of assurance certificate and the test strips for technical and administrative review.

7.4.2.2 After review, file the photocopies along with the original test strips in the appropriate section of the maintenance log binder.

8.0 EVIDENTIAL TESTING

8.1 CONTROLS

8.1.1 At least one GEBS checks will be conducted during an evidential breath testing sequence.

8.1.1.1 GEBS check values must be within 0.010 g% of the known value, per Title 17.

8.1.1.2 If the GEBS check is conducted prior to the subject sample, an air blank must be run between the two.

8.2.1 An air blank (negative control) must be run immediately prior to each subject sample.

8.2.1.1 Air blanks must give a result of 0.000 g%.

8.2 SUBJECT SAMPLES

8.2.1 A subject must be continuously observed for 15 minutes prior to breath testing. During this time, the subject cannot ingest any fluids, regurgitate, vomit, eat, or smoke.

8.2.2 The subject must deliver two breath samples, in one testing sequence, that are within 0.02 g% of each other.

8.2.2.1 If the first two samples are more than 0.02 g% apart, a third sample can be given. This sample must be within 0.02 g% of either of the first two.

8.2.3 If an interferent is detected in a breath sample, a blood sample should be obtained.

8.2.4 The Trombetta Admonishment must be given to the subject after a successful breath test.

9.0 COURT

9.1 GENERAL COURT POLICIES

9.1.1 General court policies are covered by the following references:

9.1.1.1 Quality Manual
9.1.1.2 City of San Diego Employee Code of Conduct Handbook
9.1.1.3 SDPD Procedure 1.11

9.2 TESTIMONY REGARDING EFFECTS

9.2.1 Testimony to the physiological effects of ethanol are handled by Forensic Alcohol Analysts, as defined by Title 17.

9.2.1.1 Being authorized to run blood samples and/or to operate the breath alcohol instruments is not sufficient.

9.3 COURT EVALUATIONS

9.3.1 Evaluations will be performed by another qualified Criminalist.

9.3.2 Evaluations of breath testimony should be conducted once per accreditation cycle for any analyst who has testified.

9.4 COURT POLICY

9.4.1 Criminalists generally operate on an "on-call" basis and should not appear on the basis of a subpoena alone.

9.4.2 A criminalist should be placed on-call when the actual date of the trial is finalized and no later than the day before they are needed to allow time to prepare the court packet.

9.4.3 The prosecuting agency should maintain close communication with the Criminalist on the day needed and allow a one-hour response time for court.

9.4.4 If a Criminalist is unavailable for court, the unit supervisor can assign another Forensic Alcohol Analyst to testify.

9.4.5 One analyst is assigned each month as the primary on-call trial analyst for alcohol trials.

9.4.5.1 This individual is responsible for coordinating breath alcohol and DMV subpoenas for the month, as well as for cases in which the blood alcohol analyst is not qualified to testify to effects.

9.4.6 When a Criminalist is planning to be away from the office for three or more business days, they must have an out of office memo issued to the district and city attorneys, put an out of office autoreply on their email, and change their voicemail to an out of office message for the duration of their absence.

9.5 PROCESSING SUBPOENAS FOR ALCOHOL CASES

9.5.1 Subpoenas arrive in batches and are logged in by trial date. The clerical staff processes and places them in the Forensic Chemistry bin for dissemination as needed.

9.5.2 Each Criminalist is responsible to follow-up on their subpoenas.

9.6 DISCOVERY REQUESTS

9.6.1 Refer to the Quality Manual.

10.0 SOLUTION PREPARATION

10.1 PREPARING SOLUTIONS FOR SIMULATOR TANKS

10.1.1 When starting from a stock solution with a known vapor concentration at 34 °C, use $M_1V_1 = M_2V_2$ where:

M_1 = Vapor concentration of Stock Solution (g%)
V_1 = Volume of Stock Solution (mL)
M_2 = Desired concentration of Simulator Solution (g%)
V_2 = Volume of Simulator Solution Required (mL)

10.1.2 When starting from a stock solution with a known liquid concentration, an additional factor must be included to convert to vapor concentration.

10.1.2.1 In simulator tanks kept at 34 °C, the vapor concentration of the solution is typically 83-84% of the liquid concentration. Multiply the liquid concentration by approximately 83.5% to obtain the M_1 value to be used in the equation in 10.1.1.

10.1.3 Solutions that will be used for quantitative purposes must be verified by analysis on an instrument with a current QA.

11.0 APPROVED ABBREVIATIONS

Definition	Abbreviation (no regard to capitalization or periods)
Abort test	ABT
Ambient fail/detection	AMB
Certified Breath Operator	CBO
Deficient sample	DEF
Drug Recognition Expert	DRE
Forensic alcohol analyst	FAA
Gaseous ethanol breath standard	GEBS
Improper sample	IMP
Interferent detected	INT
Intoxilyzer	Intox
Intoxilyzer 9000	Intox 9000, 9000
Invalid sample	INV
No sample given	NSG
Purge fail	PUR
Radio Frequency interferent detected	RFI
Simulator tank	Sim
Title 17	T17