ALCO-SENSOR III

OPERATOR'S TRAINING MANUAL

Idaho State Police
Forensic Services
August 1, 1999
(Revised 8/06)

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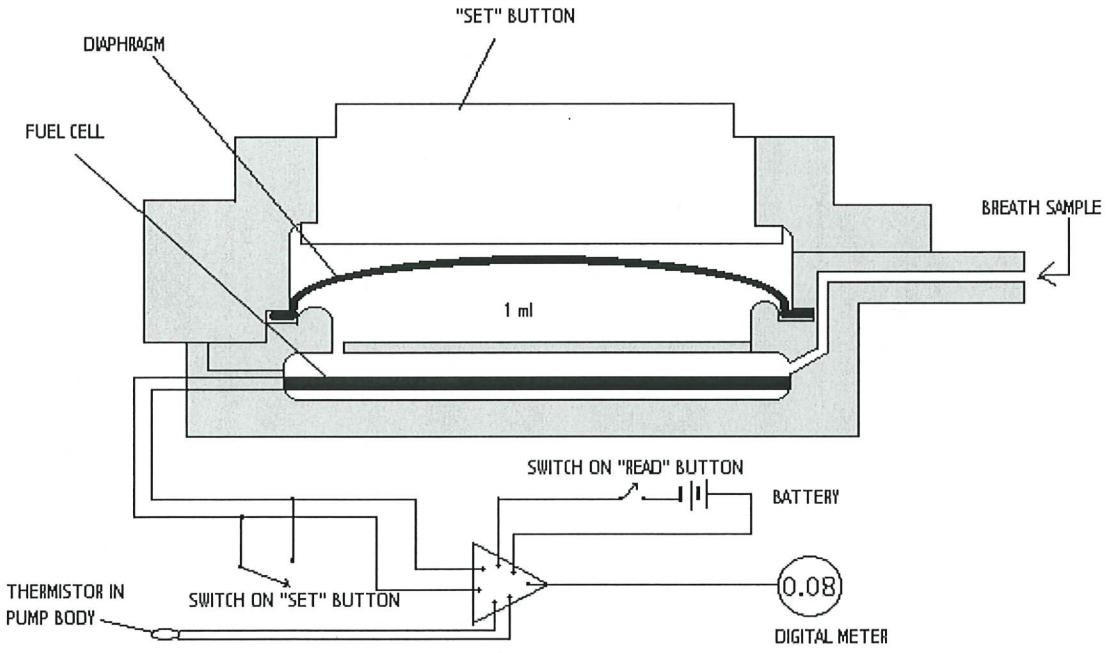
GENERAL INFORMATION

The spring-loaded sampling valve under the SET BUTTON is released by pressing on the READ BUTTON and a breath sample is drawn into the FUEL CELL for analysis. In the FUEL CELL, any alcohol present in the breath sample immediately starts to break down to acetic acid and electrons. The electrical current formed by the electrons is measured and displayed on the READOUT WINDOW as a BrAC. When all the acetic acid is cleared out of the FUEL CELL, the instrument is ready to analyze another sample.

$$\text{ALCOHOL} \underset{\text{FAST}}{\overset{\text{PLATINUM, PHOSPHORIC ACID}}{\rightleftharpoons}} \text{ACETIC ACID \& ELECTRONS} \underset{\text{SLOW}}{\rightleftharpoons} CO_2 + O_2 + H_2O$$

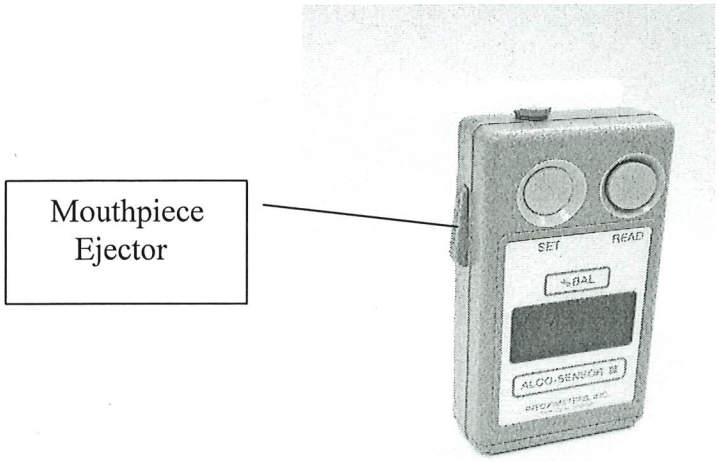


ALCO-SENSOR III

RBT-IIIA PRINTER

New Version ASIII

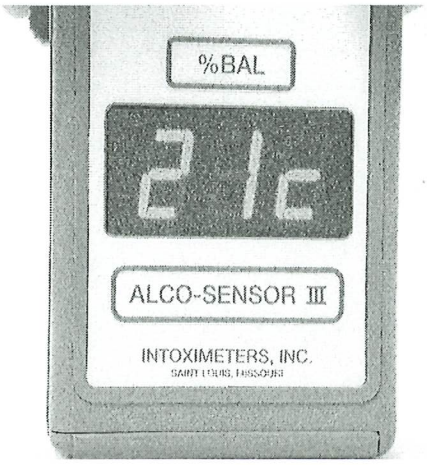
As of June 2004 a slightly modified version of the Alco-Sensor III will be the only AS III on the market. This instrument is readily identified by the red mouthpiece ejector on the left side and also by a serial number greater than 1200000.



There are no printer connections.

The test sequence is unchanged: Temperature check, then Air Blank/Breath Test/Air Blank/Breath Test/Air Blank.

These instruments do not have a thermometer on the back. Instrument temperature is determined by pressing both the **Set** and **Read** buttons together. The instrument temperature is displayed in degrees Celsius. After the temperature display, the instrument displays the firmware version followed by the revision designation.
Normal operating temperature range: 59° F (15° C) to 96° F (36° C).



If the displayed temperature is below 15° C the unit may be warmed in a shirt pocket or similar manner. If the temperature is above 36° C, it will take time for the instrument interior to cool off. Keep it out of hot cars!

Set button cocks the sampling system. Store with the **Set** button depressed.

Have the subject blow for at least 7 seconds, then depress the **Read** button. Once the display appears, it is ***not necessary*** to hold down the **Read** button.

Don't depress the **Set** button again until after you have recorded the final, bright reading from the display. Depressing the **Set** button during analysis will abort the analysis.

At first the display will be dim. This means the instrument is analyzing the sample. When the analysis is complete the display brightens, showing the final result. This result will hold for about 10 seconds. If the **Set** button is not depressed, the reading disappears and the display flashes **SEt** 10 times, then goes dark.

Result Recall: After the test result disappears and **SEt** begins flashing, ***and before the set button is depressed,*** the read button may be depressed again to recall the last test result. The display will show **rcL** and then display the most recent test result. The result will be available for recall for approximately 15 minutes following the breath test.
Once the **Set** button is depressed the last reading is erased from memory and recall will not work.

Other messages that may appear:
bAT: replace the battery.

bLn: run a blank. Don't wait for this to appear during the testing sequence, go ahead and run the blanks at the appropriate time.

bAd: instrument is unable to perform a successful blank. Depress the **Set** button and try again.

GENERAL INSTRUCTIONS, All Alco-Sensors

1. Calibration checks must be run **within 24 hours of any breath test that may be used for evidentiary purposes**.

2. The operator must be aware of radios transmitting within six feet of the Alco-Sensor III as they may cause RFI.

FIFTEEN MINUTE WAITING PERIOD

The mucous lining of the mouth cavity and nasal passages stores alcohol for some time after a person consumes alcohol. Normal body processes eliminate residual mouth alcohol within 15 minutes.

Monitor the subject for 15 minutes. During this time, the subject may not smoke, consume alcohol, eat, belch, vomit, use chewing tobacco, or have gum or candy in the mouth. If belching or vomiting does occur or something is found in the mouth, have it removed and wait an additional 15 minutes.

TESTING A SUBJECT WITHOUT THE PRINTER

1. Monitor the subject for 15 minutes.

2. Check the temperature of the Alco-Sensor III. The temperature of the older instruments should be at least 20° C, but not over 38°C, while the new version operates between 15° and 36° C.

3. Make sure the SET BUTTON is locked in.

4. BLANK: Press READ BUTTON for BLANK reading. The display should show .003 or less when the READ BUTTON is held down for a 10 second period.

5. SAMPLE 1: Attach a fresh mouthpiece and ask the subject to blow through the tube for as long as possible. For best results press the READ BUTTON after seven seconds of blowing. Older units: Hold the READ BUTTON until the display stops climbing. Note the maximum reading and reset the instrument by pressing the SET BUTTON. New instrument: Press and release the READ BUTTON, observe the display; when it goes from dim to bright, the maximum reading has been reached. Reset the instrument by pressing the SET BUTTON.

6. WAIT: Wait approximately two minutes.

7. BLANK: Recheck the BLANK. If not .003 or less, reset and wait another minute. Recheck BLANK, making sure that it is .003 or less.

8. SAMPLE 2: Using the same mouthpiece, obtain a second sample as described in paragraph 5, above. Note the maximum reading and reset the instrument by pressing the SET BUTTON.

9. WAIT: Wait approximately two minutes.

10. BLANK: Recheck the BLANK.

    NOTE: If the first two sample results differ by more than .020 BrAC, another (third) sample must be obtained, followed by a WAIT and a BLANK.

11. Record all results on the instrument log sheet.

12. <u>If it has been more than 24 hours since the last calibration check was performed, then another calibration check is necessary to validate the breath test for evidentiary use.</u> A copy of the calibration check will need to be included with the subject test(s).

USE OF THE RBT III-A PRINTER WITH ALCO-SENSOR III

The printer has a set program that provides the sequence of testing, the number of copies that are printed out, and the number of digits in the result (.## or .###). The program is controlled by a series of internal switches that are set at the Forensic Services Laboratory, or by a certified BTS.

TESTING A SUBJECT:

1. Observe the subject for 15 minutes.

2. Plug connector cord into the back of the ALCO-SENSOR III. Make sure you have enough paper to obtain the necessary number of printouts.

3. Check the temperature on the back of the Alco-Sensor III. The temperature of the instrument should be at least 20° C, but not over 38°C.

4. Make sure SET BUTTON is locked in.

5. Press the ON BUTTON (power indicator light should glow red):

   A. If display shows LOW BATTERY, unit needs recharging. Turn off POWER BUTTON, plug printer in with adapter, and wait about 30 minutes before trying again.

   B. If no display, proceed to Step 6.

6. Check calendar accuracy:

   Push TIME BUTTON and observe for correct data.
   1. month
   2. day
   3. year
   4. hour
   5. minute

   If any area of the calendar is not correct, follow CLOCK SETTING on page 7.

   If data is correct, proceed to Step 7.

7. Push START BUTTON and respond to directions on display.

   A. "RUN BLANK" - hold READ BUTTON down until displayed instruction disappears, then press SET BUTTON.

   B. "TEST SUBJECT" - instruct subject on how to give a proper sample and push READ BUTTON while the subject is exhaling continuously. For best results press the READ BUTTON after seven seconds of blowing. Keep READ BUTTON pressed down until "TEST SUBJECT" display disappears (note peak reading on Alco-Sensor III) and press SET BUTTON.

C. "WAIT" - display will clear after an approximate two minute wait.

D. "RUN BLANK" - hold READ BUTTON down until instruction disappears then press SET BUTTON.

E. "TEST SUBJECT" - SAMPLE 2: Using the same mouthpiece, obtain a second sample by pressing the READ BUTTON. After obtaining a sample, follow instructions on the printer by pressing down the SET BUTTON.

F. "WAIT" - approximate two minute waiting period.

G. "RUN BLANK" - hold READ BUTTON down until instruction disappears then press SET BUTTON.

8. Printout will automatically appear unless the results of the two samples are more than .020 BrAC apart. The printer program automatically monitors the results, and will ask for a third sample if needed.

NOTE: It is essential that the ALCO-SENSOR READ BUTTON be held down continuously during "TEST SUBJECT" steps otherwise the test will be rejected and a "START TEST OVER" printout will be obtained.

9. Fill in the required information on the printouts and enter the results in the instrument log.

10. <u>If it has been more than 24 hours since the last calibration check was performed, then another calibration check is necessary to validate the breath test for evidentiary use.</u> A copy of the calibration check will need to be included with the subject test(s).

THE RBT III-A PRINTER

CHANGING PAPER

The printer paper is loaded in the following manner:

1. Remove the cover by squeezing the sides while lifting at the rear.

2. Feed the paper into the front bottom edge of the paper tray.

3. Advance paper by depressing the paper button.

4. Tighten ink ribbon with thumb disc on the printer face in a clockwise direction.

5. Replace the printer cover by inserting the front of the cover into the base while squeezing the sides and pressing down at the rear.

CLOCK SETTING

With power ON, press the TIME BUTTON on the left side of the printer to verify the date and time. The clock display will rotate through MONTH, DAY, YEAR, HOUR and MINUTE twice for your confirmation. If any of these are incorrect perform the following:

Push the TIME SET BUTTON. The display will show 1-01.
-Push TIME BUTTON until proper MONTH is displayed.

Push the TIME SET BUTTON. The display will show 2-01.
-Push TIME BUTTON until proper DAY is displayed.

Push the TIME SET BUTTON. The display will show 3-90.
-Push TIME BUTTON until proper YEAR is displayed.

Push the TIME SET BUTTON. The display will show 4-00.
-Push TIME BUTTON until proper HOUR (military time) shows.

Push the TIME SET BUTTON. The display will show 5-00.
-Push TIME BUTTON until proper MINUTE shows.

The display will rotate through MONTH, DAY, YEAR, HOUR and MINUTE twice for your confirmation.

The clock in the RBT III-A printer has its own separate battery so it will maintain its time settings even if the printer is unplugged or the main rechargeable battery goes dead. The suggested life of the clock battery is 10 years. If the battery goes low the printer will print the message **REPLACE DS1287**.

SPECIAL SITUATIONS

1. "START TEST OVER" printout in place of usual printout is caused by:

   A. Premature release of READ BUTTON.
   B. RFI interference during any readout.

2. "SET AND RETEST" on the printout and a display calling for "TEST SUBJECT" is caused by a .000 to a .003 reading.

   A. This may possibly be the result of improper sampling technique. Examples could be:
      1. Set button not being depressed prior to testing.
      2. Prematurely pushing the read button.
      3. Subject not blowing into mouthpiece.

   B. If this occurs, the repeated sample result will be accepted automatically despite a low result and stored as the valid sample.

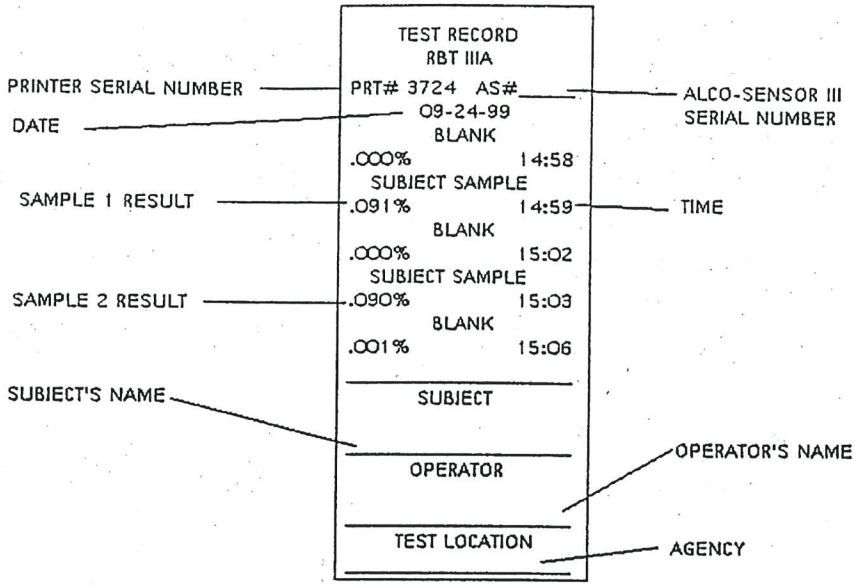
3. ABORT BUTTON ends test procedure.

4. If subject refuses to give a sample:

   A. Wait until "TEST SUBJECT" is displayed then hold the TEST REFSD button until the printer beeps.

   B. The printout will show "REFUSED" and time of refusal. Results of any samples given before the refusal will be included on the printout.

5. If ALCO-SENSOR is inoperative, any approved ALCO-SENSOR III fitted with a jack may be used in its place.



INSTRUMENT OPERATIONS LOG

INSTRUMENT SERIAL NUMBER: B 4321

LOT NUMBER: 98801

LOCATION: Elmore CSO

DATE	TIME	SUBJECT'S NAME	SUBJECT TEST RESULTS	OPERATOR'S NAME	CALIBRATION CHECK RESULTS	SIM TEMP IN RANGE (✓)	COMMENTS
6/9/99	02:10	John Smith	.180 .179	M Knight			Elmore CSO
6/9/99	0330	Jane Doe	.152/Refused	T Knopp			Mountain Home PD
6/9/99	15:27			M Knight	.080/.081	✓	Elmore CSO / Bottle 0429 / 26°C
6/20/99	20:55	John Doe	.080/.079	J Henry			ISP
6/20/99	23:32	John Smith	.111/.134/.133	J Henry			ISP
6/21/99	10.40	Bobby Childs	.030/.020	M Knight			Elmore CSO / JUV.
6/21/99	15:00			M Knight	.079/.080	✓	Elmore CSO/26°C/Bottle 0429
6/22/99	14:00	John Hansen	.210/.212	M Knight			Elmore CSO

Note: Refusals are entered in the instrument log. All other important information such as agency, NON-DUI, instrument temperature and bottle number are entered in the comments column.

CALIBRATION CHECK

A calibration check must be **within 24 hours of any Breath test which may be used for evidentiary purposes**. The results must be within +/- 10% of the known value of the standard or 0.01 whichever is greater. e.g., .070 to .090 g/210L of vapor for a .080 standard.

1. Pour the correct amount of solution into the simulator, plug it in, and allow the solution to warm for at least 15 minutes to 34°C ± 0.5°C. Check the appropriate column in the log if the simulator temperature is in the proper range.

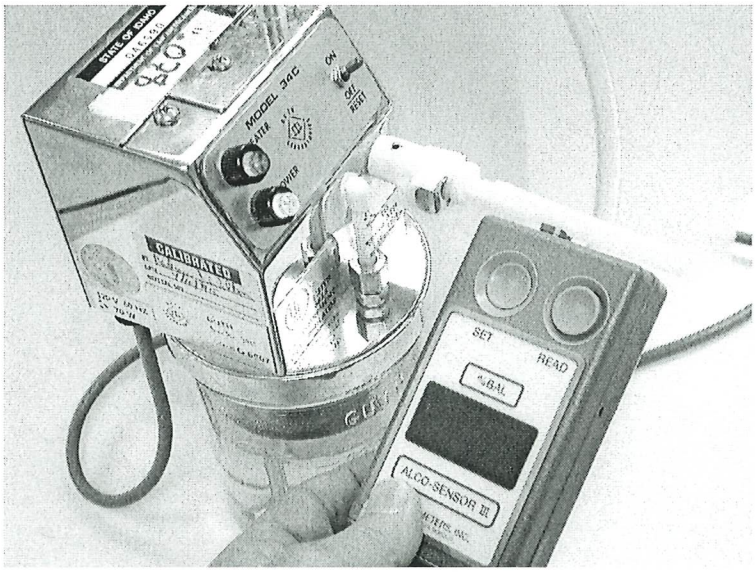
   WARNING: The simulator must contain liquid when it is plugged into an electrical outlet or the simulator will burn out.

2. Check the temperature of the Alco-Sensor III to make sure it is at least 20°C, but not over 38°C.

3. Check to see that the SET BUTTON is locked in.

4. Take a BLANK by pressing READ BUTTON. The display should show .003 or less when the READ BUTTON is held down for a 10 second period. Blow out the simulator for several seconds.

5. Attach a mouthpiece to the Alco-Sensor III and connect to the simulator vapor out port. The end of the mouthpiece can be softened by heating gently and forced onto the *vapor out* port. Sometimes the mouthpiece will split and leak vapor; if this happens use another one. If you elect to use clear tubing attached to a mouthpiece, keep the tubing **as short as possible.** Blow into the *vapor in* port of the simulator. While air is flowing through the mouthpiece, press the READ BUTTON as though you were testing a subject. Record the highest reading on the log sheet.



6. Lock down the SET BUTTON and wait approximately two (2) minutes. Remove the mouthpiece and repeat a BLANK. Replace the mouthpiece and repeat a second calibration check with the simulator. Record the highest reading on the log sheet.

7. If the results are outside the range for the calibration solution and the simulator was at 34°C± 0.5°C, the solution may be rerun. If the results after a total of three (3) runs for a solution (two tests per run) are still unsatisfactory, contact the appropriate Idaho State Police Forensic Services Laboratory for further instructions.

8. **0.20 Simulator Solution:** When a new lot of 0.08 solution is opened, *or* **at least** once per calendar month, the Alco-Sensor must be calibration checked using an approved lot of 0.20 simulator solution. If the results after a total of three (3) runs for a solution (two tests per run) are still unsatisfactory, contact the appropriate Idaho State Police Forensic Services Laboratory for further instructions.

9. **For agencies with printers**:
Attach the Alco-Sensor III to the printer and do the calibration check procedure with the TEST SUBJECT program- BLANK, TEST SUBJECT, BLANK, TEST SUBJECT, BLANK. Record all results on the instrument log and fill out the printed copies. Attach a copy of the printout to the log sheet and file them according to established guidelines as set forth by the SOP.

10. Each agency will be responsible for ordering new calibration check solutions directly from an approved vendor as needed. The target value and correct range for each lot will be issued by the Idaho State Police Forensic Services (ISPFS) each time a new batch is produced by the vendor. It is the responsibility of the operator or BTS performing the calibration check to see that the results obtained are valid and fall within the appropriate range for each lot that is produced.

OTHER METHODS OF OBTAINING A SAMPLE

If a valid breath sample cannot be obtained from the breath-testing instrument you are using, you may elect to obtain a sample using one of the following methods:

1. **A Breath Sample**: Another instrument approved for evidentiary testing in the State of Idaho may be used to obtain a sample. This does not have to be the same type of instrument that was originally used to obtain a sample. Backup instruments and neighboring agencies instruments are all good sources for obtaining a valid breath test.

2. **Blood Samples for Alcohol Determination:** Use a kit that provides 10 milligrams of sodium fluoride per cubic centimeter of blood and an anti-coagulant as required by IDAPA 11.03. The Becton Dickinson #4994, the Terumo T-100 AK (Venoject) Tri-tech BA-2ID, and the Peavey 5786 all meet this requirement. However, the Becton Dickinson 4990 does **not** meet the requirement for concentration of sodium fluoride.

NOTE: Other kits may be used if they provide the required amount of sodium fluoride and utilize a non-alcoholic swab.

The blood should be drawn only by authorized medical personnel as defined in section 18-8003 of the Idaho Code.

3. **Urine Samples for Alcohol Determination: <u>Urine alcohol results may be of questionable value</u>.**

Samples must be collected in urine collection kits supplied by ISPFS, or other suitable kits providing a tight seal and adequate volume. Proper procedure for a valid urine alcohol analysis requires the subject to "void" (empty bladder) and wait the necessary time (approx. 20 minutes) to deliver the actual evidentiary sample.

a. Note: when collecting urine for the analysis of inhalants or other drugs, it is not necessary to perform a "void" and any initial urine sample that is collected may be used for this purpose.

For best results, urine samples collected for alcohol determination should be frozen or refrigerated and delivered to the appropriate ISPFS laboratory as soon as possible.

<u>QUESTIONS AND ANSWERS</u>

Q. What should I do if I have problems running the Alco-Sensor III?

A. If you are an operator check with your agencies Breath Testing Specialist. If you are the Breath Testing Specialist call the nearest Idaho State Police Forensic Services Laboratory: Boise 884-7170, Coeur d'Alene 769-1410, or Pocatello 232-9474.

Q. Who can operate the Alco-Sensor III for legal breath testing?

A. Any individual certified as an operator by the Idaho State Police Forensic Services, may operate the Alco-Sensor III for evidentiary use. Certification will be periodically renewed and governed by policy as outlined in the SOP.

Q. Is the Alco-Sensor III an approved breath-testing device in Idaho?

A. Yes. The Alco-Sensor III was approved for direct breath alcohol testing in September 11, 1984. That approval remains continually in force. The new version is the same instrument with some modifications and is also approved. A certificate is issued with each instrument with the serial number on it and a statement of approval.

Q. Is the Moratorium on the Alco-Sensor III lifted?

A. Yes. Any agency wishing to purchase an Alco-Sensor III for evidentiary testing may, as long as all rules and regulations are followed as set forth by the SOP.

Q. Where are all breath testing records kept?

A. It is the responsibility of the person(s) in charge of the instrument to see that all pertinent records are stored and maintained in accordance with the policies and procedures for such records.

Q. Do I need to know the theory of direct breath testing so I can testify about it in court?

A. No. Your operator certification makes you qualified to use the instrument to perform breath alcohol examinations. As an operator your testimony should focus on the procedures you used to obtain the breath test.

Q. What does .888 in the Alco-Sensor display window mean?

A. On the older instruments a .888 display means that the battery is low and must be replaced. The certified operator can do this with a 9-volt alkaline battery. The new Alco-Sensors indicate a low battery with **bAT** on the display.

Q. What about acetone?

A. Acetone does not react in the fuel cell and, therefore, causes no change in the alcohol result.

Q. What is RFI?

A. Radio Frequency Interference (RFI) can cause a change in the result due to the Alco-Sensor III picking up sufficient radio waves in the environment to affect the readout. Any electrical circuit may act as an antenna in certain circumstances.

Signs of RFI are:

1. "flickering" or fluctuation of the readout and/or
2. blanks not .003 or less and/or
3. results of the two samples are not within .020 of one another and/or

4. the printer aborted the program with "START TEST OVER."

Q. Where can I get supplies if I run out?

A. Supplies can be obtained from Intoximeters, Inc. at 1-800-451-8639. However, other vendors are available.

Q. Why should the results be entered on the log sheet?

A. The log, in lieu of the printout is the official legal record of all test results. If a printer is not available, it fails to operate or if the printout is later lost or unreadable, the subject tests and calibration checks are still legally acceptable provided the results are recorded correctly on the log sheet.

Q. What should I do if the Alco-Sensor is colder then 20°C?

A. Warm the instrument. Neither the printer nor the Alco-Sensor III should be subject to extreme hot or cold conditions. The Alco-Sensor operates best at temperatures above 20°C.

INSTRUMENT OPERATIONS LOG

LOT NUMBER:_____

INSTRUMENT SERIAL NUMBER:_____

LOCATION:_____

DATE	TIME	SUBJECT 'S NAME	SUBJECT TEST RESULTS	OPERATOR'S NAME	CALIBRATION CHECK RESULTS	SIM TEMP IN RANGE (✔)	COMMENTS