

**11 CSR 50-2.403 Missouri Analyzer System (MAS) Display
and Program Requirements**

(1) This section describes the display prompts and programming criteria for the state inspection/test sequence. These items shall be standardized to facilitate training of licensed inspector mechanics. Manufacturers may propose, for state approval, alternative methodologies for the presentation of information for data entry as long as the substance and the priority of the sequence is not significantly modified.

(A) The Missouri Analyzer System (MAS) manufacturers shall utilize one (1) or more of the following options to make the analyzer more user friendly:

1. Direct cursor addressing or first letter selection versus a scrolling display;
2. Data entry using the bar code scanner on bar coded vehicle identification number (VIN) and State Highway Patrol (SHP) inspector badges;
3. Method of displaying DATA ENTRY ERROR MESSAGES; and
4. Development of HELP screens to assist inspector mechanics with data entry. Other options may be proposed for approval by state.

(B) Data entry from one (1) item to another shall not proceed until a valid entry has been made. The state inspection shall utilize vehicle identification and visual information to determine what inspection criteria and emission test standards are appropriate for the particular vehicle being inspected. Once the emissions inspection or test sequences have been initiated, the inspector mechanic shall be prohibited from editing any vehicle identification or inspection information. When editing is allowed, the inspector mechanic shall have the ability to return to a previous display prompt without depressing more than three (3) keys. At that point the inspector mechanic shall see the prior information and be permitted to insert and delete characters without having to retype the whole field.

(C) Unless otherwise specified in the programming criteria of this rule, the analyzer shall display an appropriate error message in response to an invalid or missing entry by the inspector mechanic. Only after the error message has been displayed four (4) times consecutively will the test be aborted and the analyzer returned to the Main Menu.

(D) Data that is entered using a bar code scanner shall indicate successful scanning and immediately display the data for the operator to review. The following sections include the minimum of menus manufacturers are required to provide. Manufacturers may break the menus down further to increase user friendliness or expedite certain operations. The state reserves the right to require modification of any menu it feels does not meet the minimum requirements.

(2) Main Menu. When the analyzer is turned on, the screen shall display any mail messages received overnight from the state and messages of required analyzer maintenance (for example, three (3)-day gas calibration and leak check, etc.). After the operator has confirmed that all messages have been read, the analyzer screen shall display the following menu options:

S STATE INSPECTION MENU
D DIAGNOSTIC FUNCTIONS
M MVI STATE AUDIT MENU

(A) The analyzer shall allow the inspector mechanic to activate the State Inspection Menu options by entering an S, the Diagnostic Functions by entering a D, and so forth, or by entering functional equivalents approved by the state. A brief description of each item in the menu follows.

(B) Main Menu Item Descriptions.

1. State Inspection Menu. The State Inspection Menu will list the procedures available relevant to state inspections. Once the selection S is made from the Main Menu, the operator will be prompted to enter an access number to gain access to the State Inspection Menu. The description of State Inspection Menu is contained in section (3).

2. Diagnostic Functions. The manufacturer may offer a diagnostics and repair software application to the analyzer purchaser. The scope and limitations of these applications are described in rule 11 CSR 50-4.401.

3. Motor vehicle inspection (MVI) State Audit Menu. The MVI State Audit Menu will list the procedures which are available only to state representatives and manufacturer representatives. The selection of M from the Main Menu will cause the analyzer to prompt the operator to scan for state identification to gain access to the menu. The description of the MVI State Audit Menu is included in section (4).

(3) State Inspection Menu.

(A) When the State Inspection Menu is selected from the Main Menu, the operator will be prompted to enter an inspector mechanic's ID number or scan state identification number. The analyzer shall search the file containing the authorized state representatives for a valid access code. The bar code format will be three (3) of nine (9). After the fourth failed attempt to enter a valid access code, the analyzer will return to the Main Menu.

1. When a valid ID number has been accepted by the analyzer, the screen will display the following prompt:

State Inspection Menu

1. Safety and Emissions Inspection
2. Safety Inspection only
3. Emission Inspection only
4. Reinspection
5. Low Emission Tune-up
6. Waiver
7. ID/OD Inspection
8. Trailer Verification
9. Analyzer Maintenance
10. Reprint Certificate
11. Training Mode
12. Referee Authorization
99. Return to Main Menu

Selection Option Desired; Entered Number_____

2. When the inspector mechanic has entered a valid menu option number, the analyzer shall initiate the associated procedure. If the value entered is not a valid number, an error message shall be displayed to the screen. After four (4) successive invalid entries are made, the analyzer shall automatically return to the Main Menu. If the analyzer failed a leak check or a three (3)-day gas calibration, the analyzer will

not allow the selection of options involving an emission inspection (State Inspection Menu selections 1,3,4,5 and 6).

(B) Safety and Emission Inspection sequence shall be initiated by an entry of 1 from the State Inspection Menu. This subsection will describe the programming criteria and the sequence of menus used in the Safety and Emissions Inspection. The analyzer shall initiate a new test record and record the station number, the MAS number, the software version, the inspection selected, the inspector mechanic number (as Init. Ins. Inspector Mechanic Number), the date (as Init. Insp. Date) and the time (as Start Insp. Time 1).

1. The VIN must be entered by the inspector mechanic. The VIN will be the primary means of tracking the inspection history of a vehicle. When the VIN has been entered, the number shall be displayed to the screen and the opportunity to enter a new VIN before continuing.

A. Display Prompts.

(I) Display prompt one (1). Enter the VIN for the vehicle using the bar code scanner. If the scanner is not operational, use the keyboard.

(II) Display prompt two (2). This vehicle has previously failed an initial inspection. If a new initial inspection is begun, the customer will lose his/her rights to a reinspection on the first failed inspection. Do you want to initiate a new inspection?

B. The following error messages will be displayed as indicated by the programming criteria:

(I) Error message one (1). Unable to read the VIN. Please rescan or use the keyboard;

(II) Error message two (2). Unable to read the VIN. Please use the keyboard;

(III) Error message three (3). The analyzer did not register a VIN. Please check the number before retrying;

(IV) Error message four (4). This vehicle has already passed an inspection at this station. Do you want to begin a new inspection _____; and

Certificate number_____

Inspection performed_____

Date performed_____

(V) Error message five (5). The analyzer has found a failed inspection for this vehicle. Select an option:_____ Perform a reinspection_____ Begin a new initial inspection_____ Abort and return to the Main Menu.

Certificate number_____

Inspection performed_____

Date performed_____

C. Programming criteria.

(I) The analyzer shall show display prompt one (1) on the screen. The analyzer should accept an entry of one to seventeen (1-17) consecutive numbers and letters as an acceptable VIN. If the mechanic makes an unsuccessful attempt to enter the VIN with the bar code reader, error message one (1) shall be displayed.

(II) If the inspector mechanic has a second unsuccessful attempt, error message two (2) shall be displayed and only the keyboard will be used for input. Error message two (2) shall be displayed the first three (3) times an inspector mechanic is unsuccessful at entering a VIN from the keyboard.

(III) After error message two (2) has been displayed a third time, error message three (3) shall be displayed. After displaying the error message three (3), the analyzer will return to the Main Menu.

(IV) When a VIN has been successfully entered, the analyzer shall search for the VIN in the test records in MAS.DAT with inspection disposition P, R, F, or W. If the VIN is not found by the analyzer it will proceed to the owner information section.

(V) If the VIN is found in MAS.DAT with inspection disposition P, R or W, the analyzer will display error message four (4). In error message four (4), the analyzer will present a unique list of certificate numbers, inspection types and dates

from the found test record. The inspector mechanic will be given the opportunity to print error message four (4). The inspector mechanic will be given the choice of initiating a new initial inspection or aborting the inspection. If the inspector mechanic decides to initiate a new inspection, the analyzer will copy the owner and vehicle information from the previous test record to the new test record. The inspector mechanic will be able to review the owner and vehicle information and to change the owner information and the odometer reading before continuing. Reentry of the owner and vehicle information shall not be performed.

(VI) If the VIN is found in MAS.DAT with inspection disposition F, the analyzer will display error message five (5). In error a message five (5), the analyzer will present a unique list of certificate numbers, inspection types and dates from the test records. The inspector mechanic will be given the opportunity to print error message five (5). The inspector mechanic will be given the choice of performing a reinspection, initiating a new initial inspection or aborting the inspection. If the inspector mechanic decides to perform a reinspection, the new test record will be aborted and the analyzer will use the failed initial inspection test record and the inspection selected will become a reinspection. The analyzer shall proceed to the reinspection procedure in paragraph (3)(E)2. If the inspector mechanic decides to initiate a new initial inspection, display prompt two (2) shall be displayed. If the inspector still wants to initiate a new initial inspection, the analyzer shall copy the owner and vehicle information from the previous test record to the new test record. The inspector mechanic will be able to review the owner and vehicle information and change the owner information and the odometer reading before continuing. Reentry of the owner and vehicle information shall not be performed.

2. The analyzer will prompt the inspector mechanic for the required owner information. When the entries are complete, the inspector mechanic will be given the opportunity to confirm or change the entries. When the entries are confirmed, the information will be copied to the test record, and the inspector mechanic will no longer be able to alter the owner information.

A. The following prompt will be displayed to assist the inspector mechanic in the data entry. Please enter the vehicle owner information:

Last name: _____

First name: _____

Street: _____

City:_____

County:_____

Zip code:_____

County Codes:

1. St. Louis City
2. St. Louis County
3. Jefferson County
4. St. Charles County
5. Other

B. The analyzer will display the following error messages as indicated by the programming criteria:

(I) Error message one (1). This field requires an entry;

(II) Error message two (2). You must use one of the county codes listed at the bottom of the screen; and

(III) Error message three (3). This field must be five (5) numbers.

C. Programming criteria.

(I) The analyzer shall display error message one (1) at the bottom of the screen if the inspector mechanic does not have an entry for each item.

(II) The analyzer shall display error message two (2) at the bottom of the screen if the inspector mechanic does not enter one (1) of the listed county codes.

(III) The analyzer shall display error message three (3) at the bottom of the screen if the inspector mechanic does not enter five (5) numbers for the zip code item.

3. This paragraph describes the display prompts, error messages and programming criteria for entry of the vehicle information. When the entries are complete, the inspector mechanic will be given the opportunity to confirm or change the entries. When the entries are confirmed, the information will be copied to the test record and the inspector mechanic will no

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longer be able to alter the vehicle information.

A. The following display prompts are designed to assist the inspector mechanic in the entry of the vehicle information:

(1) Display prompt one (1).

Please enter the vehicle type:_____

- A. Passenger car
- B. Light duty truck;
- C. Heavy duty truck or bus
(Licensed greater than 6000 pounds
GVW or more than 8500 pounds
GVWR);
- H. Specially constructed vehicle;
- S. School bus;
- E. Special education school bus;
- T. Trailer; and
- M. Motorcycle;

(II) Display prompt two (2). Is the licensed gross vehicle weight rating (GVWR) of this vehicle in excess of 8500 pounds?
___Y=yes,N=no

(III) Display prompt three (3). Is the licensed gross vehicle weight (GVW) of this vehicle in excess of 6000 pounds?
___Y=yes,N=no

(IV) Display prompt four (4). Please enter the fuel type:

- G. Gasoline
- P. Liquid/compressed propane gas (LPG/CNG)
- D. Dual fuel (gasoline and liquid/compressed propane gas)
- S. Diesel
- V. Electric;

(V) Display prompt five (5). This vehicle must be operated on gasoline for the emission inspection. Do you want to continue with this inspection:
___Y=yes,N=no;

(VI) Display prompt six (6). Enter the vehicle model year: 19__ Enter only the last two (2) digits of the model year.

Odometer Reading:_____ (do not enter the tenths digit)

Manufacturer's specified idle:_____RPM

Does the vehicle have dual exhaust?
___Y=yes, N=no;

(VII) Display prompt seven (7). Enter the vehicle make:_____ Select the appropriate make from the list as follows; if the make is not listed, type in the full name of the manufacturer. If it is a kit car or specially-constructed vehicle, it may conform to vehicle type H. Check section 301.010(5), RSMo. If it does, enter Spec.

Passenger Car
Make))

- AC
- Acura
- Alfa Romeo
- AMC
- Aston Martin
- Audi
- Austin
- Bentley
- Bertone
- BMW
- Bricklin
- Buick
- Cadillac
- Checker
- Chevrolet
- Chrysler
- Citroen
- Daihatsu
- Delorean
- Dodge
- Eagle
- Ferrari
- Fiat

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Ford
Geo
Honda
Hyundai
Isuzu
Jaguar
Jensen
Lamborghini
Lancia
Lincoln
Lotus
Maserati
Mazda
Mercedes Benz
Mercury
MG
Mitsubishi
Nissan (Datsun)
Nummi
Oldsmobile
Opel
Pantera
Peugot
Pinifarina
Plymouth
Pontiac
Porsche
Renault
Rolls Royce
Rover
Saab
Simca
Sterling
Subaru
Sunbeam
Suzuki
Toyota
Triumph
Volkswagen
Volvo
Yugo;

(VIII) Display prompt eight (8). Enter the vehicle make:_____ Select the appropriate make from the list as follows; if the make is not listed, type in the full name of the manufacturer. If it is a kit car or specially-constructed vehicle, it may conform to vehicle type H. Check section 301.010(5),RSMo. If it does, enter Spec.

Trucks
Make))

Chevrolet
Dodge
Ford
GMC
International Harvester
Isuzu
Jeep
Mazda
Mitsubishi
Nissan
Plymouth
Rover
Suzuki
Toyota
Volkswagen;and

(IX) Display prompt nine (9). If the vehicle make being inspected is not displayed, type in the full name of the make:_____

B. The following error messages will be displayed as indicated in the programming criteria:

(I) Error message one (1). This vehicle will be inspected as a heavy duty truck, because the licensed GVW is greater than six thousand (6000) pounds or the GVWR is greater than eight thousand five hundred (8500) pounds:

(II) Error message two (2). Missouri does not test diesel or electric-powered vehicles for emissions. Do you want to proceed with a Safety Inspection Only?;

(III) Error message three (3). The state does not require emission tests for motorcycles. Do you want to proceed with a Safety Inspection Only?;

(IV) Error message four (4). The state does not require emission tests for trailers. Do you want to proceed with a Safety Inspection Only?;

(V) Error message five (5). The odometer reading must be the mileage reading in numbers. If the mileage is not known enter: NONE;

(VI) Error message six (6). The odometer reading seems high for this vehicle. Please check and confirm the reading;

(VII) Error message seven (7). The odometer reading seems low for this vehicle. Please check and confirm the reading; and

(VIII) Error message eight (8). The state does not require emission tests for school buses. Do you want to proceed with a Safety Inspection Only?;

C. Programming criteria.

(I) Display prompt one (1) will be displayed for all vehicles. If the vehicle type is "A", the analyzer will present display prompts two (2), three (3), four (4), six (6) and seven (7) to the screen sequentially for data entry. For vehicles requiring an emission inspection and using a dual fuel system, display prompt five (5) will be used. Display prompt nine (9) will be used if the vehicle make is not included in the make list. For vehicle types "B", "C", "S", and "E" display prompt eight (8) will be used instead of prompt seven (7), and display prompt six (6) will be modified to omit the idle speed and dual exhaust queries. If the vehicle type is "H", the vehicle make is automatically SPEC and display prompt seven (7) will be omitted. If the vehicle type is "T", the analyzer will omit display prompts two (2), three (3) and four (4), and display prompt six (6) will omit the odometer, idle speed and dual exhaust queries.

(II) If the vehicle type is "C","S","E","T" or "M" and either a Safety and Emissions or Emissions Inspection Only was selected, the analyzer shall display error message three (3), four (4) or eight (8). If the inspector mechanic confirms that the vehicle type is correct, the inspection selected shall be converted to a Safety Inspection Only.

(III) If the inspector mechanic indicates that the licensed GVW is greater than six thousand (6000) pounds or the GVWR is greater than eight thousand five hundred (8500) pounds by responding YES to display prompt two (2) or three (3), the analyzer shall display error message one (1). If the inspector mechanic confirms the entry, the inspection selected shall be

converted to a Safety Inspection Only.

(IV) If the fuel type is "S" or "V", error message two (2) will be displayed.

(V) The vehicle year must be two (2) numerals and the year cannot be more than the present year plus one (1). If the year entered is seventy (70) or earlier, the analyzer shall display a message stating that this vehicle does not require an emission inspection and requesting confirmation of the entry. If the inspector mechanic confirms the entry, the inspection selected shall be converted to a Safety Inspection Only.

(VI) The odometer reading must be a numeric entry or the word NONE, None or none. The odometer reading shall be recorded to the test recorded as the numeric entry or NONE. Error message five (5) will be displayed if an invalid entry is attempted. Error message six (6) shall be displayed if the mileage is higher than ninety-nine thousand (99,000) for a vehicle five (5) years old or less. Error message seven (7) shall be displayed if the mileage is less than one hundred thousand (100,000) for a vehicle fifteen (15) years old or older.

(VII) The analyzer shall not accept an idle speed less than five hundred (500)-revolutions per minute (RPM) or more than eleven hundred (1100) RPM.

(VIII) Display prompts seven (7) and eight (8) will assist the inspector mechanic in entering the vehicle make names. This shall utilize a method, approved by the state, which maximizes user friendliness preferably via direct cursor selection or the first few letters of the name. For example, the inspector mechanic should be able to enter the first letter of the vehicle make which would cause the cursor to go the first make on the list which would also be highlighted. If that is the correct make, the Enter key would be pressed. If it is not the correct make, the inspector mechanic would at least be close and only have to move the cursor a short distance to the right one.

(IX) Display prompt nine (9) will appear whenever the vehicle make entered is not displayed. Up to twenty (20) characters of the name shall be displayed and printed on the inspection certificate and the vehicle inspection report and recorded to the test record. A minimum of two (2) characters must be entered by the inspector mechanic.

5. Emission inspection sequences. This paragraph describes the display prompts, error messages and programming criteria for the emission inspection of the vehicle. The manufacturers shall develop the displays necessary to guide the inspector mechanic through the required steps of the Missouri Emissions Inspection.

A. There are instructions to be included in the displays by the manufacturers for the emission testing sequence:

(I) The RPM detector shall be attached to the vehicle;

(II) With the engine idling and transmission in neutral, the sample probe shall be inserted into the tailpipe a minimum of sixteen inches (16").

(III) The engine shall be operated at free idle with transmission in neutral. Record exhaust concentrations after stabilized readings are obtained or at the end of thirty (30) seconds, whichever comes first. The idle speed at the time of sampling shall be recorded to the test record as Idle RPM Mode 1. If the RPM reading is not the Idle RPM target plus or minus three hundred (± 300), the inspection will be aborted with abort code R. The dilution shall be measured as the sum of the CO plus the CO₂ reading; and

(IV) The analyzer shall provide instruction for sampling a dual exhaust system if the inspector mechanic indicates the vehicle is equipped with a dual exhaust. This process shall be repeated as necessary for multiple exhaust pipes. Hardware which is capable of simultaneously sampling vehicles with multiple tailpipes may also be used. However, if this type of hardware is not used, exhaust concentrations from each pipe shall be measured within the thirty (30)-second period if stable readings cannot be obtained from both pipes before the thirty (30) seconds have elapsed. If this is not possible, the entire emission sampling procedure beginning with part (3)(B)5.A.(I) shall be repeated for the second exhaust pipe. Neither multiple readings nor simultaneous sampling hardware is necessary for exhaust systems in which the exhaust pipes originate from a common point. Results from multiple exhaust pipes shall be numerically averaged.

B. There are two (2) preconditioning sequences that will be used by the analyzer. The major instructions to be included in the displays to be developed by the manufacturers for the preconditioning sequences.

(I) Preconditioning sequence 1. The analyzer will prompt

the inspector through the steps of the preconditioning sequence and record the sequence number to the test record.

(a) Operate the vehicle at twenty-five hundred plus or minus three hundred (2500 ± 300) RPM for ninety (90) seconds with the transmission in neutral or park with parking brake set.

(b) At the end of the ninety (90)-second period, allow the vehicle to return to idle and stabilize for ten (10) seconds, but do not turn the ignition switch off.

(c) Insert the probe into the tailpipe.

(d) At the end of the ten (10)-second period, immediately proceed to the emission inspection at part (3)(A)5.A.(III).

(II) Preconditioning sequence 2. The analyzer will prompt the inspector through the steps of the preconditioning sequence and record the sequence number to the test record.

(a) Operate the vehicle at twenty-five hundred plus or minus three hundred (2500 ± 300) RPM for ninety (90) seconds with the transmission in neutral.

(b) At the end of the ninety (90)-second period, allow the vehicle to return to idle and stabilize for ten (10) seconds and turn the ignition switch off.

(c) Insert the probe into the tail pipe.

(d) Leave the ignition off for ten (10) seconds, then restart the engine and proceed immediately to the emission inspection at part (3)(B)5.A.(III).

C. The following display prompts will assist the inspector mechanic in entering the data required for the emission inspection process:

(I) Display prompt one (1). Press a key when ready to begin the emission inspection; and

(II) Display prompt two (2). The vehicle has failed the emission inspection and may require preconditioning to prevent a pattern failure. Select a preconditioning option from the following:

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Option:_____

1. 1981-1986 Fords, 1984-1985 Honda Preludes
2. All 1975 and later catalyst or oxygen sensor equipped vehicles
9. No preconditioning sequence desired. The VIC shall record a failed emission inspection

D. The following error messages shall be displayed as indicated in the programming criteria:

(I) Error message one (1). This field requires an entry; and

(II) Error message two (2). Invalid entry))You must enter one (1) of the choices listed on the screen.

E. Programming criteria.

(I) The analyzer screen shall initially display prompt one (1). When the inspector mechanic does strike a key, the time shall be recorded to the test record as Start Emis. Time 3, and the analyzer shall proceed with the emission inspection sequence described in subparagraph (3)(B)5.A.

(II) The analyzer shall record the engine RPM, the HC, the CO, the CO₂ and the O₂ (optional) as described in subparagraph (3)(B)5.A. The readings for HC and CO shall be compared to the standards listed in Appendix C at the end of 11 CSR 50-2.407. The vehicle shall fail the emissions inspection if the dilution reading (the sum of CO + CO₂) is less than seven percent (7%).

(III) The emission inspection disposition shall be P if the vehicle passes the initial emission inspection, R if the vehicle passes on a reinspection and F if it failed either an initial inspection or a reinspection. The emission inspection disposition will be identified as Emis. Result. The analyzer shall record the preconditioning option selected (if applicable), the engine RPM, the HC, the CO, the CO₂, the O₂, (optional) and the Emis. Result to the test record. On an initial inspection this data shall be recorded as Mode one (1), on a reinspection the information shall be recorded as Mode two (2) and on a Low Emission Tune-up, the information shall be recorded as Mode three (3). The time shall be recorded to the test record as End Emis. Time 4. The analyzer shall proceed to paragraph (3)(B)6. Printing the VIC.

(IV) If the vehicle fails the emission inspection, and the vehicle has not received preconditioning during this inspection, display prompt two (2) shall be shown to the screen. If the inspector mechanic does not enter a value, the analyzer shall display error message one (1) at the bottom of the screen. If the inspector mechanic enters a value that is not listed, the analyzer shall display error message two (2) at the bottom of the screen. If the inspector mechanic enters a one (1) or a two (2), the analyzer shall proceed with the preconditioning sequence as described in subsection (3)(B), and the results of the emission inspection after the preconditioning shall be written by the analyzer to the test record. If the inspector mechanic enters a nine (9), the analyzer shall proceed to paragraph (3)(B)6.- Printing the VIC.

(V) If the vehicle passes the emission inspection without preconditioning, the analyzer shall record the preconditioning sequence as nine (9).

6. Printing the VIC. The following display prompts, error messages and programming criteria will guide the inspector mechanic through the procedure of printing a certificate at the end of the inspection. Certificate paper may be reloaded during the certificate printing process providing no inspection data is lost or compromised (see Appendix A at the end of 11 CSR 50-2.407).

A. Display prompts.

(I) Display prompt one (1). Enter the sticker or decal number))_____

(II) Display prompt two (2). Do you want to print the Vehicle Inspection Certificate (VIC)?_____

B. The following error messages will be displayed as indicated in the programming criteria:

(I) Error message one (1). This field requires an entry;

(II) Error message two (2). The sticker or decal number must begin with an E for a Safety and Emissions Inspection or an Emissions Inspection Only; and

(III) Error message three (3). The sticker or decal number must NOT begin with an E for a Safety Inspection Only.

C. Programming criteria.

(I) If the analyzer determines that the vehicle did not pass all sections of the inspection, the inspection disposition is F. In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record the certificate number and the inspection disposition to the test record. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1).

(II) If the analyzer determines that the vehicle has passed all sections of the inspection, the inspection disposition is P. The analyzer will use display prompt one (1) to obtain the sticker number. In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record the certificate number, the sticker number and the inspection disposition to the test record. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1).

(III) If the inspection type is an initial Safety and Emission Inspection or Emission Inspection Only, a reinspection of a Safety and Emission Inspection or Emission Inspection Only, or a Waiver, the sticker number must begin with an E. If the inspection is of another type, the sticker number must not begin with an E. Error message two (2) or three (3) will be displayed if the sticker number is not correct.

(IV) While printing the certificate, the display shall be PRINTING CERTIFICATE.

(V) The analyzer shall then use display prompt two (2) to determine if the inspector mechanic wants an additional copy of the certificate or the VIC.

(C) The Safety Inspection Only sequence shall be initiated by an entry of 2 from the State Inspection Menu. The sequence will be very similar to that used for the Safety and Emission Inspection. This subsection will describe the differences in the programming criteria and the sequence of menus used in the Safety Inspection Only and the Safety and Emissions Inspection.

1. The VIN must be entered by the inspector mechanic. The VIN will be the primary means of tracking the inspection history of a vehicle.

A. The analyzer will display the following display prompts:

(I) Display prompt one (1).

You have selected the Safety Inspection only.
All vehicles registered in))

St. Charles County,
Jefferson County,
and St. Louis City

are required to have a Safety and Emission Inspection unless
specifically exempted in motor vehicle regulation 11 CSR 50-
2.350.

Do you wish to continue this procedure?_____

(II) Display prompt two (2). In which county is the vehicle
registered?_____

Press the Enter key when complete.

B. Programming criteria.

(I) Display prompt one (1) will be displayed to ensure that
the inspector mechanic has selected the proper inspection
sequence for the vehicle. If the inspector mechanic indicates
that the Safety Inspection Only is desired, the sequence will use
display prompt two (2) to identify the county of registry. This
county name will be recorded (up to thirteen (13) characters) in
the test record as LET Cert. Number. If the inspector mechanic
indicates at display prompt one (1) that a Safety Inspection Only
is not desired, the analyzer shall abort the inspection and
return the Main Menu. Only a response of Y or N will be accepted
for display prompt one (1).

(II) The entry of the VIN shall proceed in the same manner
as described for a Safety and Emission Inspection. This is
described in (3)(B)1.

2. This paragraph describes the entry of the required
owner information. This shall proceed in the same manner as
described for a Safety and Emission Inspection. This is
described in paragraph (3)(B)2.

3. This paragraph describes the entry of the vehicle
information. This shall proceed in the same manner as described
for a Safety and Emission Inspection. This is described in
paragraph (3)(B)3.

4. The safety inspection sequences shall proceed in the
same manner as described for a Safety and Emission Inspection.
This is described in paragraph (3)(B)4.

5. The printing of the inspection certificate shall

proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)6.

(D) Emission Inspection Only sequence shall be initiated by an entry of 3 from the State Inspection Menu. The sequence will be very similar to that used for the Safety and Emission Inspection. This subsection will describe the differences in the programming criteria and the sequence of menus used in the Emission Inspection Only and the Safety and Emissions Inspection.

1. The VIN must be entered by the inspector mechanic. The VIN will be the primary means of tracking the inspection history of a vehicle.

A. Display prompt.

You have selected the Emission Inspection only.
Only vehicles in the following counties are required to have emission inspections:

St. Charles County,
Jefferson County,
St. Louis County,
and St. Louis City

Was the vehicle purchased in one (1) of these four (4) emissions inspection areas?

B. Programming criteria. Display prompt one (1) will be displayed to confirm that the inspector mechanic has selected the proper inspection sequence for the vehicle. If the inspector mechanic indicates that the Emission Inspection Only is not desired, the inspection shall be aborted and the analyzer shall return to the Main Menu. If the inspector mechanic decides to continue with Emission Inspection Only, the entry of the VIN shall proceed in the same manner as described for a Safety and Emission Inspection. This described in paragraph (3)(B)1.

2. This paragraph describes the entry of the required owner information. This shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)2.

3. This paragraph describes the entry of the vehicle information. This shall proceed in the same manner as described for a Safety and Emission Inspection (described in paragraph (3)(B)3.) with the following exceptions. When the entries for the vehicle information are complete and displayed to the screen, the analyzer shall display an error message and prompt the inspector mechanic for correction of data if any of the following

conditions are true for the vehicle. The inspector mechanic shall also be given the option of aborting the inspection:

A. The vehicle type is not A or B. Only vehicle types A and B may receive emission inspections;

B. The GVWR is in excess of eight thousand five hundred (8500) pounds;

C. The licensed GVW is in excess of six thousand (6000) pounds;

D. The fuel type is P, S or V; and

E. The model year is nineteen hundred and seventy (1970) or older.

4. The emission inspection sequences shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)5.

5. The printing of the inspection certificate shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)6.

(E) The Reinspection sequence shall be initiated by an entry of 4 from the State Inspection Menu. This subsection will describe the differences in the programming criteria and the sequence of menus used in the Reinspection and the Safety and Emissions inspection.

1. The VIN must be entered by the inspector mechanic. The VIN will be the primary means of tracking the inspection history of a vehicle. When the VIN has been entered, the number shall be displayed to the screen and the inspector mechanic shall be given the opportunity to verify the VIN or abort the inspection.

A. Display prompt. Enter the VIN for the vehicle using the bar code scanner. If the scanner is not operational use the keyboard.

B. The following error messages will be displayed as indicated by the programming criteria:

(I) Error message one (1). Unable to read the VIN. Please rescan;

(II) Error message two (2). Unable to read the VIN. Please use the keyboard;

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(III) Error message three (3). The analyzer did not register a VIN. Please check the number before retrying;

(IV) Error message four (4). This vehicle has already passed an inspection at this station. A reinspection cannot be performed.

Certificate number_____

Inspection performed_____

Date performed_____

Press the Enter key when ready to continue;

(V) Error message five (5). The analyzer did not find initial inspection for this vehicle. Please check the following possibilities:

1. The VIN was not entered correctly;
2. More than thirty-five (35) days have passed since the initial inspection; and
3. The initial inspection was performed on a different analyzer or at a different station. Press the Enter key when ready to continue; and

(VI) Error message six (6). A reinspection cannot be performed on this vehicle if the owner and vehicle information are not the same as for the initial inspection. Press the Enter key when ready to continue.

C. Programming criteria.

(I) The analyzer shall accept an entry of one to seventeen (1-17) consecutive numbers and letters as an acceptable VIN. If the mechanic makes an unsuccessful attempt to enter the VIN with the bar code reader, error message one (1) shall be displayed.

(II) If the inspector mechanic has a second unsuccessful attempt, error message two (2) shall be displayed and only the keyboard will be used for input. Error message two (2) shall be displayed the first three (3) times an inspector mechanic is unsuccessful at entering a VIN from the keyboard.

(III) After error message two (2) has been displayed a third time, error message three (3) shall be displayed. After displaying the error message three (3), the analyzer will return to the Main Menu.

(IV) When a VIN has been successfully entered, the analyzer shall search for the VIN in the test records in MAS.DAT with inspection disposition P, R or W. If the VIN is not found by the analyzer, error message five (5) shall be displayed and the analyzer shall return to the Main Menu.

(V) If the VIN is found in MAS.DAT with inspection disposition P,R or W, the analyzer will display error message four (4). In error message four (4), the analyzer will present a unique list of certificate numbers, inspection types and dates from the found test record. The inspector mechanic will be given the opportunity to print error message four (4). When the inspector mechanic has completed viewing error message four (4), the analyzer shall return to the Main Menu.

(VI) If the VIN is found in MAS.DAT with inspection disposition F, the analyzer shall display the owner and vehicle information from the failed initial inspection test record. The inspector mechanic shall be asked to confirm the owner and vehicle information. If the information is not correct, error message six (6) shall be displayed, the inspection shall be aborted and the analyzer shall return to the Main Menu.

2. The rejection summary shall be displayed to the screen. Record time as Reinspection time five (5). If there are safety inspection items to be reinspected, the results of the reinspection will be recorded on the rejection summary screen. The rejection summary shall utilize the initial inspection results from the test record.

A. The rejection summary. You are required to enter the cost estimate for repairs if the work was performed at this station. Enter P (pass) for safety items which now pass inspection. Enter a Y when you have completed the reinspection of the safety items and have entered the cost information. Continue?

B. The estimated cost number does not have to be entered by the inspector mechanic, but the analyzer shall accept only numeric values of up to three (3) digits for the estimated cost. The safety items which now pass inspection will be changed in the test record from F to R. The time shall be recorded to the test record as End Re-Safe. Time 6.

3. The emission reinspection portion of the reinspection will be activated if the analyzer determines from the test record that the vehicle failed the initial emission inspection. The emission inspection sequences shall proceed in the same manner as described for a Safety and Emission Inspection except that the time recorded E(I) shall be Re-Emission Time 7 and the time recorded in E(III) shall be End Emission Time 8. This is described in paragraph (3)(B)5.

4. Printing the Inspection Certificate. The following display prompts, error messages and programming criteria will guide the inspector mechanic through the procedure of printing a certificate at the end of the reinspection:

A. Display prompts.

(I) Display prompt one (1). Enter the sticker or decal number:_____;

(II) Display prompt two (2). Do you want to print the Vehicle Inspection Certificate (VIC)?_____;and

(III) Display prompt three (3). Do you want to perform a Low Emission Tune-up at this time?_____Y=yes,N=no;

B. The following error messages will be displayed as indicated in the programming criteria:

(I) Error message one (1). This field requires an entry;

(II) Error message two (2). The sticker or decal number must begin with an E for a Safety and Emissions Inspection or an Emissions Inspection Only; and

(III) Error message three (3). The sticker or decal number must NOT begin with an E for a Safety Inspection Only; and

C. Programming criteria.

(I) If the analyzer determines that the vehicle did not pass all sections of the inspection, the inspection disposition is F in the test record, the analyzer shall index the number of certificates printed. The analyzer will also record the certificate number and the inspection disposition to the test record. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1).

(II) If the analyzer determines that the vehicle has passed all sections of the inspection, the inspection disposition is R. The analyzer will use display prompt one (1) to obtain the sticker number. In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record the certificate number, the sticker number and the inspection disposition to the test record. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1).

(III) If the inspection type is an initial Safety and Emission Inspection or Emission Inspection Only, a reinspection of a Safety and Emission Inspection or Emission Inspection Only, or a Waiver, the sticker number must begin with an E. If the inspection is of another type, the sticker number must not begin with an E. Error message two (2) or three (3) will be displayed if the sticker number is not correct.

(IV) While printing the certificate the display shall be PRINTING CERTIFICATE.

(V) The analyzer shall then use display prompt two (2) to determine if the inspector mechanic wants a copy of the VIC. If additional copies of the certificate are printed, the analyzer shall index the multiple certificate count in the test record to reflect the total number of copies printed.

(VI) If the vehicle passed the safety reinspection but not the emission reinspection, use display prompt three (3) to determine whether the inspector mechanic wants to perform a Low Emission Tune-up (LET). If the inspector does not want to perform the LET, the analyzer shall return to the Main Menu. If the LET option is selected, the analyzer shall proceed to the Low Emission Tune-up Procedure at paragraph (3)(F)4.

(F) The LET sequence shall be initiated by an entry of 5 from the State Inspection Menu. This subsection will describe the programming criteria and the sequence of menus used in the Low Emission Tune-up.

1. The VIN must be entered by the inspector mechanic.

- A. Display prompts.

- (I) Display prompt one (1). Enter the VIN for the vehicle using the bar code scanner.

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(II) Display prompt two (2). The analyzer was unable to find a failed inspection record in the files. The initial inspection and reinspection were not performed with this analyzer or the initial inspection occurred more than thirty-five (35) days ago. Do you want to continue with this Low Emission Tune-up?___Y=yes,N=no

(III) Display prompt three (3).

Enter the initial Inspection Certificate number:_____

Enter the Reinspection Certificate number:_____

Enter the date of the initial Inspection:_____

(IV) Display prompt four (4). The analyzer found a failed initial inspection, but not a failed reinspection for this vehicle. A Low Emission Tune-up cannot be performed until the reinspection is completed. If you believe the reinspection has already been performed, contact the State Highway Patrol. Press the Enter key when ready to continue.

B. Error messages.

(I) Error message one (1). Unable to read the VIN. Please rescan.

(II) Error message two (2). Unable to read the VIN. Please use the keyboard.

(III) Error message three (3). The analyzer did not register a VIN. Please check the number before retrying.

(IV) Error message four (4). Please use the date format MM/DD/YY: MM-two (2) numbers for the month (01 is January, 02 is February), DD-two (2) numbers for the day of the month, YY-the last two (2) numbers of the year (90 is 1990).

C. Programming criteria.

(I) The analyzer shall show display prompt one (1) on the screen. The analyzer should accept an entry of one to seventeen (1-17) consecutive numbers and letters as an acceptable VIN. If the mechanic makes an unsuccessful attempt to enter the VIN with the bar code reader, error message one (1) shall displayed.

(II) If the inspector mechanic has a second unsuccessful attempt, error message two (2) shall be displayed and only the keyboard will be used for input. Error message two (2) shall be

displayed the first three (3) times an inspector mechanic is unsuccessful at entering a VIN from the keyboard.

(III) After error message two (2) has been displayed a third time, error message three (3) shall be displayed. After displaying the error message three (3), the analyzer will return to the Main Menu.

(IV) When the VIN has been successfully entered, the analyzer shall search for a test record with the same VIN, inspection selected one (1) or three (3) and disposition F in MAS.DAT. If no record is found, the analyzer shall display prompt two (2). If the inspector mechanic decides to continue with the LET, the display prompt three (3) shall be used to obtain the initial inspection certificate number, the reinspection certificate number and the date of the initial inspection. The certificate numbers must contain thirteen (13) alphanumeric characters. The initial inspection date must be entered in the proper format. If the date is not in the correct format, error message four (4) shall be displayed. If the initial inspection date is beyond the thirty-five (35)-day limit, the LET shall be aborted. If within the thirty-five (35)-day limit, a new test record will be initiated, and will include available inspection and station information, the certificate numbers and shall be included in display prompt three (3).

(V) If a test record with the same VIN, inspection one (1) or three (3), and disposition F is found in MAS.DAT, the analyzer shall check for the presence of a reinspection certificate number (Reinsp. Cert. Number). If the test record does not contain a Reinsp. Cert. Number, display prompt four (4) shall be displayed, and the analyzer shall return to the Main Menu. If the analyzer does find Reinsp. Cert. Number, the analyzer will display the vehicle and owner information from the test record. The inspector mechanic shall be asked if the information is correct. If the inspector mechanic responds that the information is not correct, the analyzer shall display a message stating that the State Highway Patrol will have to be contacted, and the LET shall be aborted. If the inspector responds that the information is correct, the sequence shall continue at paragraph (3)(F)4.

2. This paragraph describes the entry of the required owner information. This shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)2.

3. This paragraph describes the entry of the vehicle information. This shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)3.

4. Once the owner and vehicle information have been confirmed, the analyzer will prompt the inspector mechanic through the five (5) steps of the Missouri Low Emission Tune-up procedure described in 11 CSR 50-2.410.

A. Display prompts.

(I) Display prompt one (1). Press the Enter key when ready to begin the Low Emission Tune-up.

(II) Display prompt two (2). Inspect the air filter element, air cleaner, preheated air inlet system including the thermal sensor, vacuum motor, heat stove and tubing vacuum hoses, choke and clean, repair or replace as required. Press the Enter key when ready to continue.

(III) Display prompt three (3). Except on sealed carburetors, adjust idle speed and air/fuel mixture to the manufacturer's specifications (listed on the emission control information label affixed to the vehicle). Press the Enter key when ready to continue.

(IV) Display prompt four (4). Adjust the ignition dwell or gap and ignition timing according to the manufacturer's specifications (listed on the emission control information label affixed to the vehicle). Press the Enter key when ready to continue.

(V) Display prompt five (5). Inspect the spark plugs and spark plug wires and replace these parts as required. Press the Enter key when ready to continue.

(VI) Display prompt six (6). On 1981 and newer vehicles, visually inspect the sensor and vacuum hoses for proper connection and repair or replace as required. On closed loop vehicles, inspect the feedback system operation according to the manufacturer's specifications and repair or replace as required. Press the Enter key when ready to continue.

(VII) Display prompt seven (7). Please enter the cost of this Low Emission Tune-up. The cost must reflect the total cost

to the vehicle owner including the replacement of components.
Cost: \$____.00 (whole dollars only). Press the Enter key when ready to continue.

B. Programming criteria.

(I) Time recorded as start LET Time 9)) Display prompts one through six (1-6) shall be displayed in order. When the Enter key is pressed, the analyzer shall proceed to the next prompt.

(II) The time should be recorded as Start LET Time 9. Display prompt seven (7) shall be displayed to obtain the cost information for the LET. The analyzer shall require a numeric entry for the LET cost before the analyzer will continue. The test record shall be updated. LET performed will be changed to Y, and LET repair cost will be the cost entered by the inspector mechanic.

5. The emission inspection sequences shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)5. The test record will be updated to reflect the emission results (Mode 3) and the inspection disposition. The time will be recorded in the test record as End LET Time 10.

6. Printing the Inspection Certificate. The following display prompts, error messages and programming criteria will guide the inspector mechanic through the procedure of printing a certificate at the end of the Low Emission Tune-up:

A. Display prompts.

(I) Display prompt one (1). Do you want to print the Vehicle Inspection Certificate (VIC)?_____

(II) Display prompt two (2). You must return to the initial inspection station and analyzer to receive a waiver; and

B. Programming criteria.

(I) In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record the certificate number to the test record. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1).

(II) The analyzer shall record the inspection disposition to the test record. The inspection disposition shall be L if the initial inspection occurred on this analyzer, and vehicle passed

the emission inspection. The inspection disposition shall be W if the initial inspection occurred on this analyzer, and the vehicle failed the emission inspection. The inspection disposition shall be O if the initial inspection did not occur on this analyzer.

(III) The test record shall be written to MAS.DAT. The analyzer shall display a message informing the inspector mechanic that the vehicle has completed the Low Emission Tune-up

(IV) While printing the certificate the display shall be)) PRINTING CERTIFICATE.

(V) Display prompt two (2) shall be displayed to the screen if the initial inspection did not occur on this analyzer. After the inspector mechanic has read display prompt one (1), the analyzer shall return to the Main Menu.

(VI) If the inspection did occur on this analyzer and the LET was completed, the analyzer shall automatically proceed to the waiver procedure in subsection (3)(G).

(G) The Waiver sequence shall be initiated by an entry of 6 from the State Inspection Menu. This subsection will describe the programming criteria and the sequence of menus used in the Waiver.

1. The VIN must be entered by the inspector mechanic. The entry of the VIN shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)1.

A. Display prompts.

(I) Display prompt one (1). Enter the VIN for the vehicle using the bar code scanner.

(II) Display prompt two (2). The analyzer was unable to find a failed inspection record in the files. A waiver cannot be issued without locating the failed initial inspection and reinspection records. There are several reasons why the analyzer did not find the records:

1) The initial inspection occurred more than thirty-five (35) days ago.

2) The vehicle did not first have a failed initial inspection and reinspection.

3) The inspections were performed at a different station or on a different analyzer. Press the Enter key when ready to continue.

(III) Display prompt three(3).

Did this vehicle receive a Low Emission Tune-up at another station?_____

Low Emission Tune-up performed at another station.

_____Abort and return to the Main Menu.

(IV) Display prompt four (4).

Please enter the certificate number, the date and the emission readings from the Low Emission Tune-up (LET).

LET certificate number:_____

LET date:_____

HC reading:_____

CO reading:_____%

Press the Enter key when ready to continue.

(V) Display prompt five (5). The analyzer was unable to find a failed reinspection record in the files. A waiver cannot be issued without locating the failed reinspection record. There are several reasons why the analyzer did not find the records:

1) The initial inspection occurred more than thirty-five (35) days ago.

2) The vehicle did not first have a failed reinspection. Press the Enter key when ready to continue.

B. Error messages.

(I) Error message one (1). Unable to read the VIN. Please rescan.

(II) Error message two (2). Unable to read the VIN. Please use keyboard.

(III) Error message three (3). The analyzer did not register a VIN. Please check the number before retrying.

(IV) Error message four (4).

Please use the date format MM/DD/YY))

MM))two (2) numbers for the month (01 is January, 02 is February)

DD))two (2) numbers for the day of the month

YY))the last two (2) numbers of the year (90 is 1990)

C. Programming criteria.

(I) The analyzer shall show display prompt one (1) on the screen. The analyzer should accept an entry of one to seventeen (1-17) consecutive numbers and letters as an acceptable VIN. If the mechanic makes an unsuccessful attempt to enter the VIN with the bar code reader, error message one (1) shall be displayed.

(II) If the inspector mechanic has a second unsuccessful attempt, error message two (2) shall be displayed and only the keyboard will be used for input. Error message two (2) shall be displayed the first three (3) times an inspector mechanic is unsuccessful at entering a VIN from the keyboard.

(III) After error message two (2) has been displayed a third time, error message three (3), shall be displayed. After displaying the error message three (3), the analyzer will return to the Main Menu.

(IV) When the VIN has been successfully entered, the analyzer shall search for a test record with the same VIN, inspection selected one (1) or three (3) and disposition F in MAS.DAT. If no record is found, the analyzer shall display prompt two (2). After the inspector mechanic has viewed display prompt two (2), the analyzer shall return to the Main Menu.

(V) If a test record with the same VIN, inspection selected one (1) or three (3), and disposition F is found in MAS.DAT, the analyzer shall check for the presence of a reinspection certificate number (Reinsp. Cert. Number). If the analyzer does not find a Reinsp. Cert. Number, display prompt five (5) shall be displayed, and the analyzer shall return to the Main Menu.

(VI) If a test record with the same VIN, inspection selected one (1) or three (3), and disposition F is found in MAS.DAT, and the test record does contain a Reinsp. Cert. Number, display prompt three (3) shall be displayed. Display prompt four (4) shall be used to obtain the LET certificate number, the LET date and the emission readings from the LET. The certificate number must contain thirteen (13) alphanumeric characters. The LET date must be entered in the proper format. If the date is not in the correct format, error message four (4) shall be displayed. The waiver shall be aborted if the initial inspection date is beyond

the thirty-five (35)-day limit. The emission readings must be numeric values compatible with the space allocated in the test record. The analyzer shall accept these values as entered for printing the waiver certificate and they shall be recorded to the test record.

2. Printing the certificate. The following display prompts, error messages and programming criteria will guide the inspector mechanic through the procedure of printing a certificate at the end of the waiver sequence:

A. Display prompt one (1).
Enter the sticker or decal number: _____

B. Error message one (1).
The sticker or decal number must begin with an E for a Waiver;
and

C. Programming criteria.

(I) The analyzer shall use display prompt one (1) to obtain the sticker number. The sticker number must begin with an E. Error message one (1) shall be displayed if the sticker number is not correct.

(II) In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record the certificate number to the test record. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1). While printing the certificate the display shall be PRINTING CERTIFICATE.

(III) The test record shall be written to MAS.DAT and the analyzer shall return to the Main Menu.

(H) The VIN and odometer reading verification inspection (ID/OD) sequence shall be initiated by an entry of 7 from the State Inspection Menu. This is an inspection of VIN number and plate and the odometer reading. This subsection will describe the programming criteria and the sequence of menus used in the ID/OD inspection.

1. The VIN must be entered by the inspector mechanic. The VIN will be the primary means of tracking the inspection history of a vehicle. The entry of the VIN shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)1.

2. This paragraph describes the entry of the required

owner information. This shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)2.

3. This paragraph describes the entry of the vehicle information. This shall proceed in the same manner as described for a Safety Inspection Only (described in paragraph (3)(B)3.).

4. The inspection of the VIN number and the odometer reading by the inspector mechanic shall result in the vehicle either passing or failing the ID/OD inspection.

A. Display prompt. Check the vehicle to assure that the VIN and odometer reading are correct. Reject the vehicle if the vehicle identification numbers or plate appear tampered with in any manner. Pay special attention to rivets and plate to determine that they are correct as installed by the manufacturer.

The VIN as entered is: _____
The odometer reading as entered is: _____
Does the vehicle pass this inspection? _____
P=Pass, F=Fail

B. Programming criteria.

(I) If the vehicle passes the ID/OD inspection, the analyzer shall proceed to paragraph (3)(H)5.

(II) If the vehicle does not pass the ID/OD inspection, the analyzer shall display a message stating that the vehicle has failed the ID/OD inspection. The message will inform the inspector mechanic that the State Highway Patrol (SHP) should be contacted for assistance. The message shall also appear on the face of the certificate.

5. Printing the certificate. The following display prompts, error messages and programming criteria will guide the inspector mechanic through the procedure of printing a certificate at the end of the ID/OD inspection:

A. Display prompt one (1). Enter the sticker or decal number: _____;

B. Error message one (1). The sticker or decal number must not begin with an E for an ID/OD Inspection; and.

C. Programming criteria.

(I) If the vehicle passed the inspection, the analyzer shall use display prompt one (1) to obtain the sticker number. The sticker number must not begin with an E. Error message one (1) shall be displayed if the sticker number is not correct.

(II) In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record to the test record the certificate number, the inspection disposition and the time (as End Safety Time 2). The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1). While printing the certificate the display shall be PRINTING CERTIFICATE.

(III) The test record shall be written to MAS.DAT and the analyzer shall return to the Main Menu.

(I) The Trailer Verification Inspection sequence shall be initiated by an entry of 8 from the State Inspection Menu. This is an inspection of the trailer to determine whether the trailer is homemade or a manufactured unit. This subsection will describe the programming criteria and the sequence of menus used in the Trailer Verification Inspection.

1. The analyzer will record the time to the test record as Start Insp. Time 1. The analyzer will also record all available inspection and station information.

2. This paragraph describes the entry of the required owner information. This shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)2.

3. The inspection of the trailer by the inspector mechanic shall result in the trailer either passing or failing the trailer verification inspection.

A. Display prompt. Please examine the trailer to determine if the trailer has been manufactured by a regular manufacturer or if the trailer is homemade. Is the trailer Homemade or Manufactured?_____

H= Homemade
M=Manufactured

B. Programming criteria.

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(I) If the trailer is homemade, the analyzer shall proceed to paragraph (3)(I)5.

(II) If the trailer is manufactured, the analyzer shall proceed to paragraph (3)(I)4.

4. If the trailer is manufactured, the analyzer will prompt the inspector mechanic for information on the trailer.

A. Display prompt. Please enter the following vehicle information:

Vehicle VIN:_____

Vehicle Make:_____

Vehicle Year: 19__

Press the Enter key when complete.

B. Programming criteria.

(I) The analyzer shall accept an alphanumeric entry of up to seventeen (17) characters for the VIN. The vehicle make will be comprised of up to twenty (20) alpha characters. The year must be two (2) numerals. The entries shall be recorded to the test record.

(II) The inspection shall proceed to paragraph (3)(I)5. with or without complete entries.

5. Printing the certificate. The following display prompts, error messages and programming criteria will guide the inspector mechanic through the procedure of printing a certificate at the end of the trailer verification:

A. Display prompt one (1). Enter the sticker or decal number:_____;

B. Error message one (1). The sticker or decal number must not begin with an E for a trailer verification; and

C. Programming criteria.

(I) The analyzer shall use display prompt one (1) to obtain the sticker number. The sticker number must not begin with an E. Error message one (1) shall be displayed if the sticker number is not correct.

(II) In the test record, the analyzer shall index the number of certificates printed. The analyzer will also record to the test record the certificate number, the inspection disposition and the time as End Inspection Time 2. The analyzer will immediately begin printing the certificate in the form described in 11 CSR 50-2.405(1). While printing the certificate the display shall be PRINTING CERTIFICATE.

(III) The test record shall be written to MAS.DAT and the analyzer shall return to the Main Menu.

(J) The Analyzer Maintenance Menu shall be activated by an entry of 9 from the State Inspection Menu. This will present a set of maintenance functions that may be performed by the inspector mechanic.

1. Display prompt one (1) shall be displayed to the screen. The inspector mechanic shall select from the options listed the maintenance function to be performed. Display prompt one (1); Analyzer Maintenance Menu.

1. Three (3)-day Gas Calibration and Leak Check.

2. Status Screen.

3. Change Gas Bottle

99 Return to Main Menu.

2. When the inspector mechanic has selected 1 at display prompt (1), the analyzer shall initiate a three (3)-day gas calibration and leak check sequence.

A. A three (3)-day gas calibration and leak check is required. Selection of this item shall bring up a set of both gas calibration and leak check procedures. The procedures shall be user-friendly and shall indicate every step needed to properly perform the required gas calibration and leak check (including when it is necessary to turn the gas cylinder valve on and off). Procedures shall be approved by the state. Results of the leak check and the gas calibration shall be displayed to the screen and recorded on the test calibration record. The system shall preclude state emission inspections (State Inspection Menu options 1,3,4 and 5) after seventy-two (72) hours if a gas calibration and leak check are not performed and passed. If the analyzer fails the three (3)-day gas calibration and leak check, a message shall be displayed indicating that it failed and instructing the inspector mechanic to call for repairs. Emissions-related inspection function will be locked out pending

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service repair(s).

B. When the three (3)-day gas calibration and leak check is completed, the analyzer shall return to the Analyzer Maintenance Menu (display prompt 1).

3. When the inspector mechanic has selected 2 at display prompt one (1), the analyzer shall display the Status Screen. The analyzer shall use information stored in the CAL.DAT file and other sources to generate the Status Screen.

A. The structure of the status screen))

Analyzer Status Screen

Station Number:XXXXXXX

Analyzer Number:XXXX

Propane Equivalency Factor (PEF) number:_____

Span Gas Cylinder Values: _____

Gas Calibration Limits: _____

Date and Time of the last gas calibration and leak check:
XX/XX/XX XX:XX

Number of test records remaining: XXX

Date analyzer was last serviced: XX/XX/XX

Present Date and time: XX/XX/XX XX:XX

Software Version Number: XXX

Press the Enter key when ready to continue.

B. After the inspector mechanic has pressed the Enter key the analyzer shall return to the Analyzer Maintenance Menu.

4. When the inspector mechanic has selected three (3) at display prompt one (1), the analyzer shall initiate a change gas bottle sequence.

A. Selection of this item shall bring up a gas bottle change procedures. The procedures shall be user-friendly and shall indicate every step necessary to properly perform the gas bottle change (including when it is necessary to turn the gas cylinder valve on and off). Procedures shall be approved by the state. The time and date of the gas bottle change shall be displayed to the screen and recorded to the calibration test record.

B. When the gas bottle change procedure is complete, the analyzer shall automatically begin performing a gas calibration and leak check.

C. When the analyzer has completed the gas calibration and leak check, the analyzer shall return to the analyzer shall return to the Analyzer Maintenance Menu.

5. When the inspector mechanic selects 99 from the Analyzer Maintenance Menu, the analyzer shall return to the Main Menu.

(K) The Search and Duplicate Certificate function shall be activated by an entry of 10 from the State Inspection Menu. This function shall permit the inspector mechanic to search the test records on the analyzer and print duplicate certificates.

1. Display prompt one (1) shall be displayed to the screen. The inspector mechanic shall enter information upon which the search of the test records shall be based. Display prompt one (1), Enter the information for the search:

VIN: _____

Last Name: _____

Date: ____/____/____

Certificate Number: _____

Sticker/Decal: _____

Press the Enter key when ready to begin the search or press

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(abort key) to abort.

2. The analyzer will not require the completion of all fields, but at least one (1) field must be completed to begin the search.

3. The analyzer shall search the MAS.DAT file for test records which match the conditions listed. If no matches are found, the analyzer shall give the inspector mechanic the option of searching the history file (MAS.HST) as well. When a match is found for the search condition, the operator shall be able to review the previous test records as well as those which follow the target record. The operator shall be given the option of continuing the search for the next matching test record.

4. After the analyzer has located the test record, the inspector mechanic shall be given the option of printing duplicate certificate(s) or a vehicle inspection report from the test record. When a certificate is duplicated, it shall be the same as the original except for two (2) differences. The title shall be changed to reflect that this is a duplicate (see CSR 50-2.405(1)). The date of the duplicating shall appear above the certificate date as indicated in 11 CSR 50-2.405(1).

5. When the inspector mechanic has finished printing or searching, the analyzer shall return to the Main Menu.

(L) The Training Mode function shall be activated by an entry of 11 from the State Inspection Menu. The Training Mode function shall allow the inspector mechanic to conduct training without generating a certificate. The choice of inspections shall be the same as for regular state inspections. The VIC will indicate an inspection disposition of T, and the VIC shall have the words Training Mode instead of inspection results. The inspector mechanic may select any inspection listed in the State Inspection Menu, but the inspection type shall be recorded as T.

1. The analyzer shall record the Inspector Mechanic Number, the VIN and the date and time to the test record. The analyzer shall not print a certificate.

2. When the Training Mode inspection is complete, the analyzer shall return to the Main Menu.

(M) The Referee Authorization function shall be activated by an entry of 12 from the State Inspection Menu. The Referee Authorization function shall allow the inspector mechanic to enter inspection overrides authorized by a state referee station.

1. The VIN number must be entered by the inspector mechanic to begin the referee authorization. The entry of the VIN shall proceed in the same manner as described for a Safety and Emission Inspection. This is described in paragraph (3)(B)1.

2. The analyzer shall search the test records in MAS.DAT for a test record containing the same VIN with inspection disposition F. If no record is found, the analyzer shall display an error message and return to the Main Menu. Error message: "The analyzer was unable to find a failed inspection record in the files." The Referee Authorization cannot be entered if this record is not located. The inspection may have occurred on another analyzer or at another station or the initial inspection may have occurred more than thirty-five (35) days ago. Please check the VIN again. Press the Enter key when ready to continue.

3. If the analyzer was able to find a test record with the VIN, the analyzer shall display the owner and vehicle information to the screen. The inspector mechanic shall be asked if the information is correct. If the inspector indicates that the information is not correct, the analyzer shall display a message that the State Highway Patrol will have to be contacted and the referee authorization shall be aborted.

4. If the inspector mechanic indicates that the owner and vehicle information are correct, the test record shall be updated.

A. If this is a referee authorization for an initial inspection, the date shall be recorded to the test record as Ref. Init. Ins. Date, the time as Ref. Init. Ins. Time and the inspector mechanic number as Ref. Init. Ins. Inspector Mechanic Number.

B. If this is a referee authorization for a reinspection, the date shall be recorded to the test record as Ref. Reinsp. Date, the time as Ref. Reinsp. Time and the inspector mechanic number as Ref. Reinsp. Inspector Mechanic Number.

5. The inspector mechanic shall be required to enter a referee authorization number and the changes authorized by the referee.

A. Display prompts.

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(I) Display prompt one (1). Please enter the Referee Authorization number: _____

Press the Enter key when ready to continue.

(II) Display prompt two (2). Referee Authorization. This screen will allow the entry of referee authorized changes. Change only those items authorized for override by the referee station. Enter an X in the Pass/Fail column for the items authorized for override by the referee.

Emission Inspection Summary:

<u>Rejection Code</u>	<u>Description</u>	<u>Reading</u>	<u>Standard</u>	<u>Pass/Fail</u>
XXX				F

Enter a Y when you have completed the referee overrides for a safety and emission items. Continue?

B. Programming criteria.

(I) The analyzer shall use display prompt one (1) to obtain the referee authorization number. The number must be thirteen (13) alphanumeric characters. If the entry is not valid, the analyzer shall abort the operation and return to the Main Menu. In the test record Ref. Init. Ins. Authorization shall be changed to O, and Ref. Init. Ins. Author. Number shall be changed to the number entered by the inspector mechanic if an initial inspection is being overridden. In the test record Ref. Reinsp. Authorization shall be changed to O, and Ref. Reinsp. Author. Number shall be changed to the number entered by the inspector mechanic if a reinspection is being overridden.

(II) After the inspector mechanic has successfully entered the referee authorization number, display prompt two (2) shall be displayed to the screen. Display prompt two (2) shall list the failed inspection items from the test record. The inspector will be allowed to change a failed item to an override by an X over the F in the Pass/Fail column. This is the only change permitted.

6. The analyzer shall record the referee authorizations to the test record.

A. The safety inspection items shall be changed from F to X if an initial inspection is being overridden. The safety

inspection items shall be changed from F to Y if a reinspection is being overridden. The analyzer shall change Safety Insp. Disp. from F to P if there are now no more safety items listed as F.

B. If the emission inspection result is overridden, Emis. Result Mode 1 shall be changed to X if this is for an initial inspection, and Emis Result Mode 2 shall be changed to X if this is for a reinspection.

7. The analyzer shall proceed to subparagraph (3)(M)6.A. if the referee authorization is overriding an initial inspection. The analyzer shall proceed to subparagraph (3)(M)6.B. if the referee authorization is overriding a reinspection.

A. For a referee authorization on an initial inspection, the analyzer shall determine whether the vehicle now passes on all safety and all emission inspection items.

(I) If the vehicle does not pass all safety and all emission items, the analyzer shall proceed to paragraph (3)(E)2.

(II) If the vehicle does pass all safety and all emission items, the analyzer shall print a new initial inspection certificate. The certificate shall be the same as for an initial inspection pass. The certificate number shall be the same as the Init. Cert. Number in the test record. The time and date on the certificate will be those of the referee authorization. The analyzer shall return to the Main Menu.

B. For a referee authorization on a reinspection, the analyzer shall determine whether the vehicle now passes on all safety and all emission inspection items.

(I) If the vehicle does pass all safety and all emission items, the analyzer shall print a new reinspection certificate. The certificate shall be the same as for a reinspection pass. The certificate number shall be the same as the Reinsp. Cert. Number in the test record. The time and date on the certificate will be those of the referee authorization. The analyzer shall return to the Main Menu.

(II) If the vehicle now passes on all safety inspection items, but does not pass for emissions, the analyzer shall print a new reinspection certificate. The certificate number shall be the same as for a reinspection that fails for emissions only. The certificate number shall be the same as Reinsp. Cert. Number in the test record. The time and date on the certificate shall be those of the referee authorization. The analyzer shall give

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the inspector mechanic the option of performing a Low Emission Tune-up. If the Low Emission Tune-up option is selected, the analyzer shall proceed to paragraph (3)(F)4. If the Low Emission Tune-up option is not selected, the analyzer shall return to the Main Menu.

(III) If the vehicle does not pass all safety inspection items, the analyzer shall print a new reinspection certificate. The certificate shall be the same as for a reinspection that does not pass for safety. The certificate number shall be the same as the Reinsp. Cert. Number in the test record. The time and date on the certificate will be those of the referee authorization. The analyzer shall return to the Main Menu.

(4) MVI State Audit Menu.

(A) When the MVI State Audit Menu is selected from the Main Menu, the operator will be prompted to enter or scan a state identification number. The bar code format will be three (3) of nine (9). The analyzer shall search the file containing the authorized state representatives for a valid access code. After the second failed attempt with the bar code reader or the keyboard, the analyzer shall request that only the keyboard be used. After the third failed attempt to enter a valid access code from the keyboard, the analyzer will return to the Main Menu.

1. When a valid access code has been accepted by the analyzer the screen will display the following prompt, MVI State Audit Menu

```
1   Station Summary Report
2   MVI Station Performance Report
3   MVI Analyzer Maintenance
4   Gas Audit
5   Update Station and Inspector Mechanic Information
6   Install New Data Disk
7   Reset Date and Time
8   Set Calibration Gas Limits
9   Practical/Demo Test Record
10  Lockout Analyzer
11  Perform Emergency Software Update
12  Test Record Search and Retrieval
13  Total Number of Inspections
    Initiated Since the Last Data Transfer

99  Return to Main Menu.
    Select Option Desired;
    Enter Number_____
```

2. When the inspector mechanic has entered a valid menu option number, the analyzer shall initiate the associated procedure. If the value entered is not a valid number, an error message shall be displayed to the screen. After four (4) successive invalid entries are made, the analyzer shall automatically return to the Main Menu.

(B) The Station Summary Report shall be generated when one (1) is selected from the MVI State Audit Menu.

1. The Station Summary Report shall be generated by the analyzer from the test records stored in MAS.DAT and MAS.HST. The test records included in the report are those which have been initiated in the last thirty-five (35) days (Init. Ins. Date).

2. The lockout item in the report shall indicate the lockout condition of the analyzer.

3. The report Total Initiated shall indicate the total number of inspection types which have been initiated in the thirty-five (35)-day window. The number of passes, fails and aborted inspections will be determined directly from Inspection Dispositions and Abort Codes fields of the test record. The % Fail will be calculated by dividing the number of passes for a particular inspection by the sum of the passes and fails. The number of vehicles with repair costs will be determined by checking the completed test records (no abort codes) for the presence of a value in Repair code 1.

4. The values shown in the Station Summary Report in paragraph (4)(B)5. are sample data. These values should not be taken as a typical example of data expected. It may be necessary to use more than one (1) screen to display the report.

5. The Station Summary Report.

STATION SUMMARY REPORT	Date: XXXXX	TIME: XXXX
Station number: XXXXX	Analyzer number: XXXX	Lockout:(ON or OFF)

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Total Inspection	Initiated	Pass	Fail	% Fail	Aborted Inspections	Inspections with repair costs
1. Init. Safety and Emission	1000	950	30	3.1%	20	37
1a. Passed Both	950	950	-	-	0	0
1b. Failed Both	5	-	5	-	0	4
1c. Passed Safety Only	10	-	10	-	0	7
1d. Passed Emissions Only	15	-	15	-	0	11
2. Safety Only	25	24	1	4%	0	1
3. Emission Only	6	4	1	20%	1	1
4. Reinspection	28	25	3	10.7%	0	20
4a. Re:Safety and Emis.	26	23	3	11.5%	0	18
4b. Re:Safety Only	1	1	0	0%	0	1
4c. Re:Emission Only	1	1	0	0%	0	1
5. Low Emission Tune-up	2	1	1	50%	0	2
6. Waiver	1	1	-	-	0	-
7. ID/OD	7	7	0	0%	0	-
8. Trailer Verification	6	6	0	0%	0	-
9. Duplicate Certificate	14	14	-	-	0	-

6. The operator shall have the option of printing the Station Summary Report on the certificate printer. After the printing is complete, the analyzer shall return to the MVI State Audit Menu.

(C) The MVI Station Performance Report sequence shall be initiated when 2 is selected from the MVI State Audit Menu.

1. The analyzer shall determine whether a gas calibration and leak check have been performed since the MVI State Audit Menu was accessed. If the gas calibration and leak check have been performed, the analyzer shall proceed to paragraph (4)(C)2. If the gas calibration and leak check have not been performed, the operator shall be given the option of performing the gas calibration and leak check. After the gas calibration and leak check are performed, the analyzer shall proceed to paragraph (4)(C)2. If the operator chooses not to perform the gas calibration and leak check, the analyzer shall return to the MVI State Audit Menu.

2. The analyzer shall display the MVI Station Performance Report to the Screen. The analyzer shall complete the following fields automatically: Station name, station number, today's date the time the MVI started (time the MVI State Audit Menu was activated), the date of the last report, the date of the last three (3)-day gas calibration and leak check and the access code entered to access the MVI State Audit menu.

3. The MVI Station Performance Report.

```

MVI STATION PERFORMANCE REPORT
Arrived:__:__
Station Name: XXXXXXXXXXXX
started:XX:XX
Analyzer Number:XXXXX
XXXXXXXXXX
Time
Time MVI
Station Number:
    
```

Name Person contacted: _____ Last
 Name: _____ First

Date of the last Station performance Report: XX/XX/XX
 Today's date: XX/XX/XX
 Last date the calibration and leak check: XX/XX/XX
 Date of last three day calibration and leak check: XX/XX/XX

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EVALUATION CHECKLIST: Please enter a P (pass) or F (fail) for each item

Signs	Tools	Miscellaneous
<input type="checkbox"/> Official Sign Supply	<input type="checkbox"/> Bonded Brake Gauge	<input type="checkbox"/> Sticker and/or Decal
<input type="checkbox"/> Station Permit	<input type="checkbox"/> Riveted Brake Gauge	<input type="checkbox"/> Inspector Available
<input type="checkbox"/> Inspector Mechanic Permit(s)	<input type="checkbox"/> Disc Pad Gauge	<input type="checkbox"/> Inspection Area Clean
<input type="checkbox"/> MVI-6 Poster	<input type="checkbox"/> Ball Joint Gauge	<input type="checkbox"/> Inspection Observed
Records)	<input type="checkbox"/> Lift/Jack	<input type="checkbox"/> Security (Station
Repairs	<input type="checkbox"/> Sticker/Decal Punch	<input type="checkbox"/> Authorization for
	<input type="checkbox"/> Scraper	<input type="checkbox"/> Signatures on Forms
	<input type="checkbox"/> Measuring Tape	<input type="checkbox"/> Telephone as per state regulations
	<input type="checkbox"/> Fuel Inlet Restrictor Tool	

Remarks: _____

Corrective action taken: _____
 (mark with X) Inspector Mechanic warned
 Owner/manager warned
 Lockout Issued

4. The entries made by the operator shall be written to the state audit record.

5. The operator shall be given the option of printing the MVI Station Performance Report. If the report is printed, Time Departed: shall be added to the header of the report. The time departed shall be the time the report was printed. If the report is printed the following shall be added to the footer:

Officer's Signature _____

Initials: _____

6. The analyzer shall return to the MVI State Audit Menu.

(D) The MVI Analyzer Maintenance Menu shall be activated by an entry of three (3) from the State Inspection Menu. This will present a set of maintenance functions that may be performed by the operator.

1. Display prompt one (1) shall be displayed to the screen. The operator shall select from the options listed the maintenance function to be performed. Display prompt one (1).

MVI Analyzer Maintenance Menu

1. Three (3)-day Gas Calibration and Leak Check
2. Gas Calibration
3. Leak Check
4. Status Screen

- 5. Change Gas Bottle
- 99. Return to Main Menu

2. When the operator has selected 1 at display prompt 1, the analyzer shall initiate a three (3)-day gas calibration and leak check sequence.

A. A three (3)-day gas calibration and leak check is required. Selection of this item shall bring up a set of both gas calibration and leak check procedures. The procedures shall be user friendly and shall indicate every step needed to properly perform the required gas calibration and leak check (including when it is necessary to turn the gas cylinder valve on and off). Procedures shall be approved by the state. Results of the leak check and the gas calibration shall be displayed to the screen and recorded on the test record. The system shall preclude state emission inspections (State Inspection Menu options 1,3,4,5, and 6) after seventy-two (72) hours if a gas calibration and leak check are not performed and passed. If the analyzer fails the three (3)-day gas calibration and leak check, a message shall be displayed indicating that it failed and instructing the operator to call for repairs.

B. When the three (3)-day gas calibration and leak check is completed, the analyzer shall return to the MVI Analyzer Maintenance Menu (display prompt one (1)).

3. When the operator has selected two (2) at display prompt one (1), the analyzer shall initiate a gas calibration sequence.

A. Selection of this item shall bring up a set of gas calibration procedures. The procedures shall be user-friendly and shall indicate every step needed to properly perform the gas calibration (including when it is necessary to turn the gas cylinder valve on and off). Procedures shall be approved by the state. Results of the gas calibration shall be displayed to the screen and recorded on the test record. If the analyzer fails the gas calibration, a message shall be displayed indicating that it failed and instructing the operator to call for repairs.

B. When the gas calibration is completed, the analyzer shall return to the MVI Analyzer Maintenance Menu (displayed prompt one (1)).

4. When the operator has selected three (3) at display prompt one (1), the analyzer shall initiate a leak check sequence.

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A. Selection of this item shall bring up a set of leak check procedures. The procedures shall be user-friendly and shall indicate every step needed to properly perform the leak check (including when it is necessary to turn the gas cylinder on and off). Procedures shall be approved by the state. Results of the leak check shall be displayed to the screen and recorded on the test record. If the analyzer fails the leak check, a message shall be displayed indicating that it failed and instructing the operator to call for repairs.

B. When the leak check is completed, the analyzer shall return to the MVI Analyzer Maintenance Menu (display prompt one (1)).

5. When the operator has selected 4 at display prompt one (1), the analyzer shall display the Status Screen. The analyzer shall use information stored in the CAL.DAT file and other sources to generate the Status Screen.

A. The structure of the status screen-

Analyzer Status Screen
Station Number: XXXXXXXX

Analyzer Number: XXXX

Propane Equivalency Factor (PEF)
number: _____

Span Gas Cylinder Values: _____

Gas Calibration Limits: _____

Date and Time of the last gas calibration and leak
check: XX/XX/XX X:XX
Number of test records remaining: XXX
Date analyzer was last serviced: XX/XX/XX
Present Date and Time: XX/XX/XX XX:XX
Software Version Number: XXX

Press the Enter key when ready to continue.

B. After the operator has pressed the Enter key the analyzer shall return to the MVI Analyzer Maintenance Menu.

6. When the inspector has selected 5 at display prompt one (1), the analyzer shall initiate a change gas bottle sequence.

A. Selection of this item shall bring up a set of gas bottle change procedures. The procedures shall be user friendly and shall indicate every step necessary to properly perform the gas bottle change (including when it is necessary to turn the gas cylinder valve on and off). Procedures shall be approved by the state. The time and date of the gas bottle change shall be displayed to the screen and recorded to the calibration test record.

B. When the gas bottle change procedure is complete, the analyzer shall automatically begin performing a gas calibration and leak check.

C. When the analyzer has completed the gas calibration and leak check, the analyzer shall return to the MVI State Audit Menu.

5. When the operator selects ninety-nine (99) from the MVI Analyzer Maintenance Menu, the analyzer shall return to the MVI State Audit Menu.

(E) The Gas Audit sequence shall be initiated when four (4) is selected from the MVI State Audit Menu.

1. The analyzer shall prompt the operator to press the Enter key when ready to begin the Gas Audit.

2. The analyzer shall conduct an automated electronic zero and span and then begin taking emission readings. The emission readings shall be displayed in large, easily read characters by a person with twenty twenty (20/20) vision from a distance of eight feet (8').

3. The display of the emission readings-

Sampling

Emission	Reading
HC	XXXX
CO	X.XX
CO ₂	XX.X
O ₂ (optional)	XX.X

Press the Enter key when you are finished with the Gas Audit.

4. When the Gas Audit is complete, the analyzer shall return to the MVI State Audit Menu.

(F) The Update Station and Inspector Mechanic Information sequence shall be initiated when five (5) is selected from the MVI State Audit Menu.

1. The analyzer shall display the contents of the inspector mechanic file. The analyzer shall permit the editing of the information. All inspector mechanics (at least 15) shall be displayed to the screen during editing.

2. Access codes shall be displayed as Xs. The access codes may be displayed only while holding down a key specified by the manufacturer. Changing the access codes shall be accomplished by overtyping the previous access code. During the overtyping the characters shall be displayed as Xs. Changing the access codes shall require double entry of the new access code. If the two (2) entries do not match, they shall be ignored.

3. Entries which are to be removed from the file must have all characters deleted. Partially deleted entries shall not be altered in the file.

4. The station and inspector mechanic information, Station and Inspector Mechanic Information Type over or delete information. Hold down the (specified key) key to display the access codes. At the bottom of the screen type Y to save changes or press (abort key) to abort.

Station Number: _____
 Station Name: _____

Inspector Last Name	First Name	Access Code	Soc. Sec. Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____ Save?			

5. The changes entered by the operator shall be recorded to inspector mechanic file. The analyzer shall also record the Station Number, Inspector Mechanic SSN, and a Maintenance Indicator to indicate A for add, M for modify or D for delete to the state audit file.

(G) The Install New Data Disk sequence shall be initiated when six (6) is selected from the MVI State Audit Menu.

1. The analyzer shall display instructions, on a single screen, for changing the floppy diskette. This procedure shall properly format the new diskette, and the files will be updated so the data removed on the old diskette will not be sent on the next modem transfer. The instructions must be approved by the state.

2. When the change is complete and the analyzer security devices (doors, etc.) are secure, the analyzer shall return to the MVI State Audit Menu.

(H) The Reset Date and Time sequence shall be initiated when seven (7) is selected from the MVI State Audit Menu.

1. The analyzer shall display the time and date update screen. The current time and date shall be displayed.

2. The time and date update screen__

Update of the time and date.

Month Day Year Hour:Minutes

XX XX XX XX:XX
 _ _ _ _: _

Enter the new values and press the Enter key to update the time and the date. Press the (abort key) to abort the update.

3. The time and date shall be updated when the Enter key is pressed. The analyzer shall return to the MVI State Audit Menu.

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(I) The Set Calibration Gas Limits sequence shall be initiated when eight (8) is selected from the MVI State Audit Menu.

1. The analyzer shall display the calibration gas limits used to pass/fail gas calibrations. The current and new settings shall be displayed on the update screen. Actual numerical values shall be displayed, not percentages.

2. The calibration gas tolerance screen, Calibration Gas Tolerance.

At the bottom of the screen type Y to save changes.
Press (abort key) to abort changes.

Low Range Values

Emission	Present Allowable Range	New Allowable Range
HC		
CO		
CO ₂		
O ₂ (optional)		

Mid Range Values

Emission	Present Allowable Range	New Allowable Range
HC		
CO		
CO ₂		
O ₂ (optional)		

_____Save?

3. The analyzer shall update the calibration gas limits file. The analyzer shall return to the MVI State Audit Menu.

(J) The Practical/Demo Test Record function shall be activated by an entry of nine (9) from the State Inspection Menu.

1. The analyzer shall ask the operator whether this is a practical test or a demo test.

2. This function allows the operator to have an inspector mechanic perform an inspection without generating a certificate. The choice of inspection shall be the same as for regular state inspections, but the test record shall indicate an inspection disposition of E for a practical test or D for a demo test. The VIR will indicate an inspection disposition of E or D, and the VIR shall have the words State Audit))Hands on Evaluation instead of inspection results. The inspector mechanic may select any inspection listed in the State Inspection Menu, but the inspection type shall be recorded as P for a practical test or D for a demo test.

3. The analyzer shall record the Inspector Mechanic Number, the VIN and the date and time to the test record. The analyzer shall not print a certificate.

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4. For a practical test, the analyzer shall prompt the operator for the inspector mechanic's score and for a pass/fail indicator, P for pass and F for fail. For a practical test record, the analyzer shall record the Inspector Mechanic's name and Social Security number, the MVI operator's ID and the score to the state audit file.

5. When the Practical/Demo Test Record is complete, the analyzer shall return to the MVI State Audit Menu.

(K) The Lockout MAS sequence shall be initiated when ten (10) is selected from the MVI State Audit Menu.

1. The analyzer manufacturer shall devise a method to allow the inspection operations (State Inspection Menu options 1, 2, 3, 4, 5, 6, 7, 8, 10 and 12) to be disabled and still allow all other options to work normally. The analyzer shall display a message if it is locked out.

2. The analyzer software shall allow the State highway Patrol to set or clear the lockouts on a particular analyzer using the telephone modem. The file storing the lockout codes (either a Y or N and the time, date and operator ID at the time of the change) shall be named LOCKOUT.

3. The lockout screen))

Current LOCKOUT Status: (ON or OFF).

Set LOCKOUT_____

1. ON
2. OFF

4. If the lockout status has been changed, LOCKOUT shall be updated with the status, time, date and the operator ID. The analyzer shall return to the MVI State Audit Menu.

(L) The analyzer shall perform an Emergency Software Update when eleven (11) is selected from the MVI State Audit Menu.

1. When emergency software updates are required between annual software updates, the manufacturer is responsible to develop the update and provide the update to the state on a three and one-half inch (3 1/2") floppy diskette. The state may have the SHP install the update, but reserves the right to have it done by the manufacturer. If the state performs the update, multiple copies may be required.

2. The update shall be made as simple as possible for the

operator by using display driven instructions, batch files, etc.

3. When the update is complete, the analyzer shall return to the MVI State Audit Menu.

(M) The Test Record Search and Retrieval function shall be activated by an entry of 12 from the MVI State Audit Menu. This function shall permit the operator to search the test records on the analyzer.

1. Display prompt one (1) shall be displayed to the screen. The operator shall enter information upon which the search of the test records shall be based. Display prompt one (1),

Enter the information for the search:

VIN: _____
Last Name: _____
Date: ___/___/___
Certificate Number: ___ ___ ___
Sticker/Decal: _____

Press the Enter key when ready to begin the search or press (abort key) to abort.

2. The analyzer will not require the completion of all fields, but at least one (1) field must be completed to begin the search.

3. The analyzer shall search the MAS.DAT file for test records which match the conditions listed. If no matches are found, the analyzer shall give the operator the option of searching the history file (MAS.HST) as well. When a match is found for the search condition, the operator shall be able to review the previous test records as well as those which follow the target record. The operator shall be given the option of continuing the search for the next matching test record.

4. After the analyzer has located the test record, the operator shall be given the option of printing test record on the certificate printer. The printout shall include the time and date of the printing at the top of the test record printout.

5. When the operator has finished printing or searching, the analyzer shall return to the MVI State Audit Menu.

(N) The Total Number of Inspections Initiated Since the Last Data Transfer shall be displayed when a thirteen (13) is

entered at the MVI State Audit Menu.

1. The analyzer shall calculate the total number of inspections (State Inspection Menu selections 1, 2, 3, 4, 5, 6, 7 and 8) initiated since the last data transfer. The number, which will include aborted inspections, shall be displayed as a single number to the screen.

2. After the operator has viewed the number, the analyzer shall return to the MVI state Audit Menu.

5. Vehicle information entered by the inspector mechanic shall be subject to the conditions described in subsections (5)(A) and (B). These conditions are in addition to those described in section (3).

(A) Vehicle Model Year. Model year entries past the current calendar year plus one (1), shall not be allowed.

(B) Vehicle Make.

1. If the vehicle type is an "H", the make shall be automatically set to be Spec.

2. The following display will appear whenever the vehicle make entered is not displayed: "If the vehicle make being inspected is not displayed, type in the full name of the make."

3. It is important that the inspector mechanic enter the correct vehicle make. Sometimes inspector mechanics may enter a model instead of the make, especially in the case of domestic imports. If the inspector mechanic enters any of the models listed as follows, s/he shall be prompted to enter the corresponding make. The analyzer shall make this change as user friendly as possible.

MODEL	MAKE
Arrow	Plymouth
Capri	Mercury
Cortina	Ford
Courier	Ford
Cricket	Plymouth
Datsun	Nissan
Festiva	Ford
Fiesta	Ford
Lamans	Pontiac
Luv	Chevrolet
Merkur	Mercury
Metro	Geo
Prizm	Geo
Spectrum	Chevrolet
Sprint	Chevrolet

(6) Display Features.

(A) Print Screen Capability. The MAS shall have a print screen feature which prints any current text screen by depressing no more than three (3) keys.

(B) Display During Emission Inspection. During the exhaust sampling sequence of the emission inspection, the word TESTING shall be displayed.

(C) Messages Permitted During the Emission Inspection. The analyzer shall display messages indicating excessive exhaust dilution or out of range engine speed conditions occur during the emission inspection.

(D) Information Not Permitted During the Emission Inspection. The analyzer shall not display the emission readings during the exhaust sampling sequence.

(E) Readability of Display. The display, when in the preconditioning and exhaust sampling sequences of the emission inspection, shall be readable at a distance of eight feet (8') in a building which meets OSHA lighting standards for a garage environment. Contrast shall be adjustable.

(F) Engine RPM. The analyzer shall have the capability to display the engine speed up to four (4) significant digits during the emission inspection and any other information necessary for the operator to properly conduct an emissions inspection.

(G) Emission Inspection Results.

1. At the end of the emission inspection, the display shall show, as a minimum, the following emission results. The emission standards shall also be displayed to the screen. The words PASS or FAIL shall be displayed beside each result except for CO₂ (and O₂ if purchased):

HC:	XXXX	PPM
CO:	XX.XX	%
CO ₂ :	XX.X	%
O ₂ :	XX.X	% (optional).

2. This information shall not be displayed until the test record is written and the printer has begun to print out the certificate. Do not display CO₂ or O₂ readings on vehicles passing the inspection for emissions.

(H) Hard Disk Warning Message. When data is being stored or accessed, a message shall be displayed indicating that the disk is in operation and the analyzer shall not be moved or otherwise disturbed. Following each disk read/write operation the hard disk read/write head shall be moved to a safeparked position.

(7) Inspection Certificate Number.

(A) When an inspection is complete and the logic/program indicate conditions for issuance of certificate have been met, but before the analyzer requests a sticker/decal number (if applicable), then the following prompt shall be displayed:

Are certificates in the printer ready to print?_____

Y=yes, N=no

(B) When the inspector mechanic indicates that the printer is ready to print the certificate, the analyzer shall prompt the inspector mechanic to enter the sticker/decal number if the number is required as dictated by the inspection procedure. After the number is entered, the analyzer shall immediately begin printing the certificate.

(C) The analyzer shall be programmed to allow multiple copies of certificates (in case a certificate is damaged by a printer malfunction). A flag shall be set in the test record

whenever duplicate copies of certificates are printed. The analyzer shall keep track of the additional certificates issued on the same vehicle.

(D) If the inspector mechanic enters an N indicating that the printer is not ready to print, the software shall display a prompt instructing the inspector mechanic to correct the problem and press Continue when the printer is ready. At this point, the inspector mechanic must be able to enter the certificate loading sequence to correct the misfeed or other printer problems without aborting the inspection.

(E) In analyzers provided to the state as referee station analyzers, the analyzers shall have a certificate type-through feature. This feature shall permit the referee station analyzer operator to have the ability to print a certificate for any inspection on the State Inspection Menu. This feature would allow the referee to create a duplicate certificate by typing in the minimum owner, vehicle and inspection information required to cause a certificate to be printed without performing an inspection. A certificate shall be printed and a test record shall be created. The analyzers sold to regular licensed stations SHALL NOT have this feature in their software program, even if it is suppressed. Software packages shall be demonstrated during certification and shall be assigned different version numbers.

(F) On analyzers provided to the state, the main menu prompt shall contain an option "R" in addition to the other options specified for the MAS. Option "R" shall be valid and shall attempt to execute REFEREE.EXE in the root directory of the 10 Mb partition. If the file is not there, the analyzer will return to the Main Menu. The analyzers sold to regular licensed stations SHALL NOT have this feature in their software program, in any form whatsoever. Software packages shall be demonstrated during certification and shall be assigned different version numbers.

(8) Abort Codes.

(A) One (1) byte has been provided for this entry. All of the inspection data collected up to the time the abort is initiated shall be recorded on the test record.

(B) If the emission inspection must be aborted after the sampling period has started, the latest five (5)-second average (or the average of whatever portion of the first five (5) seconds

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of the sampling period has elapsed) shall be treated as the final value. The final reading shall be recorded on the test record. Leading zeros shall be entered by the analyzer software.

(C) Aborts shall occur automatically for the reasons listed in the inspection and test procedures in 11 CSR 50-2.402 and 11 CSR 50-2.403. If a vehicle has excessive dilution or is unable to maintain RPM, the emission inspection shall be aborted. If the inspector mechanic fails to enter satisfactory vehicle information when prompted, an error message "Invalid Entry" or its equivalent will be displayed warning the inspector mechanic that the sequence will abort unless correct information is entered. During the Missouri emission test sequence, the inspector mechanic cannot interrupt or abort the exhaust emission sampling sequence by pressing the abort key and must proceed with the test to its conclusion.

(D) The abort code is R if a inspector mechanic enters an invalid code. The abort code is E if the emission inspection sequence detects excess dilution. If the analyzer aborts the inspection for any other reason, the abort code shall be C. If the inspector mechanic aborts the inspection by pressing the abort key, the abort code shall be M.

