The Connecticut Vehicle Inspection Program

CTI RECERTIFICATION TRAINING, *VERSION 1.050522*

These training materials are to be used by current certified test inspectors (CTIs) in preparation for the recertification exam. CTI licenses are valid for two years. All CTIs must renew their certifications every two years.

Table of Contents

Chapter 1: CDAS Overview

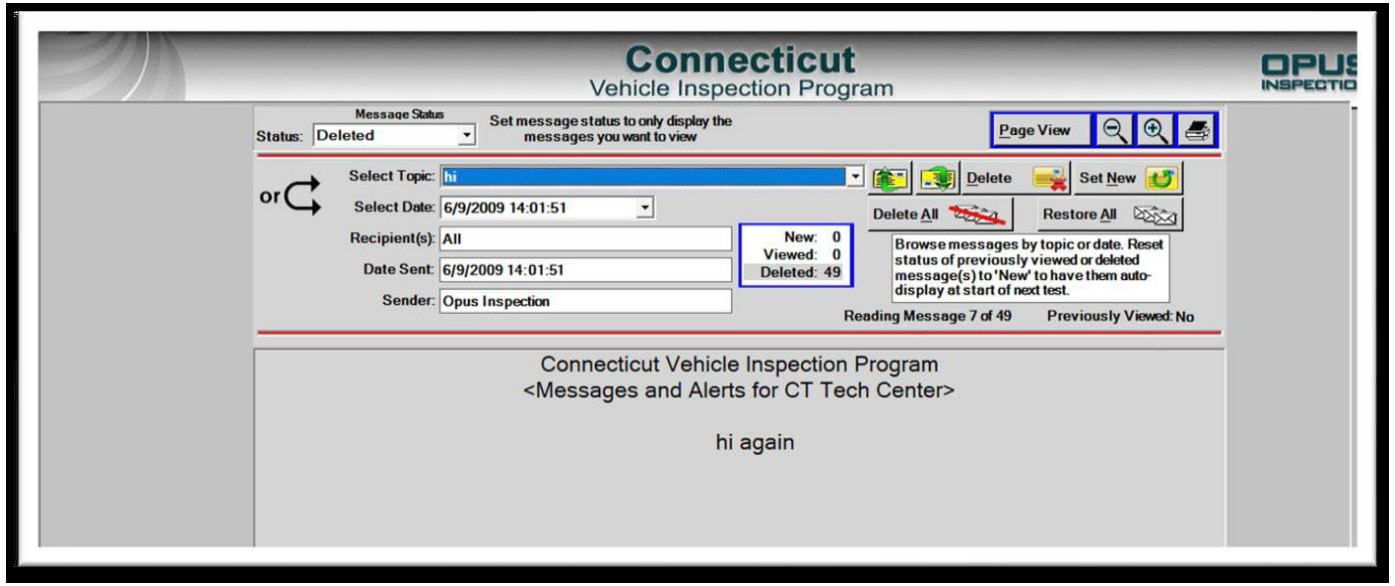
Review the basics of the Connecticut Decentralized Analyzer System (CDAS).

Important Reminders

Remember! It is your responsibility as a CTI to verify the accuracy of all vehicle data that has been collected before completing an inspection. This includes VIN, GVWR, and make and model. ***Remember that all emissions inspections are video recorded and reviewed, and failure to follow proper procedural protocols will result in monetary assessments per the Compliance Action Plan.***

Program Messages: VID Blasts

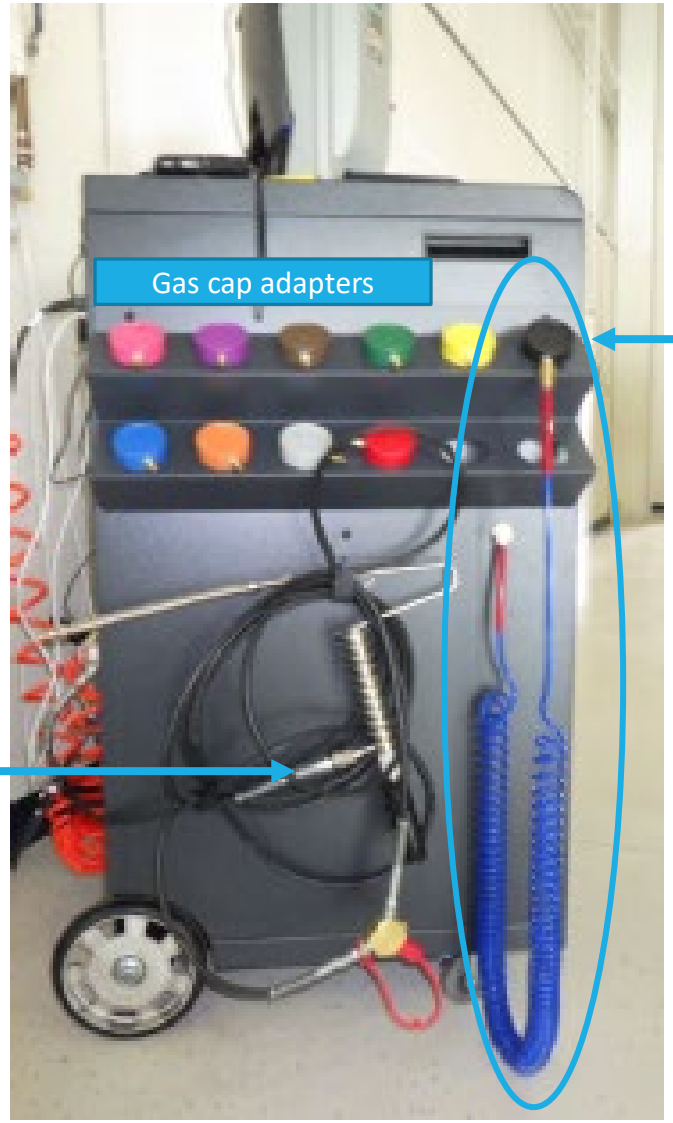
- Program messages, sometimes called ‘VID Blasts,’ are used by the DMV and Opus to communicate important program and policy messages to our network of Test Centers and CTIs. They will appear on the CDAS and should be checked immediately.
- The Test Center Agreement also requires that all Test Centers provide an email address to receive these communications.



Connecticut Decentralized Analyzer System (CDAS)

- The CDAS cabinet houses the required testing and calibration equipment necessary to perform emissions inspections.
- The CDAS equipment, its training, user support, and repair services are provided by Opus Inspection to all Test Centers and Certified Testing Inspectors (CTIs).
- The cabinet includes the following hardware necessary for testing and calibrating:
  - Monitor, keyboard, and mouse with pad
  - Printer
  - Opacity meter
  - Digital fingerprint pad/scanner
  - Monitor-mounted camera (for image capture of the authenticated user)
  - Barcode scanner
  - Pointer
  - Handheld camera (for capturing and uploading required test record images)
  - OBD cable
  - Gas cap adaptors
  - RPM cables (battery, induction, non-contact)
  - Calibration gases (high and zero)
  - Gas cap pressure test calibration tool
  - Sample probes

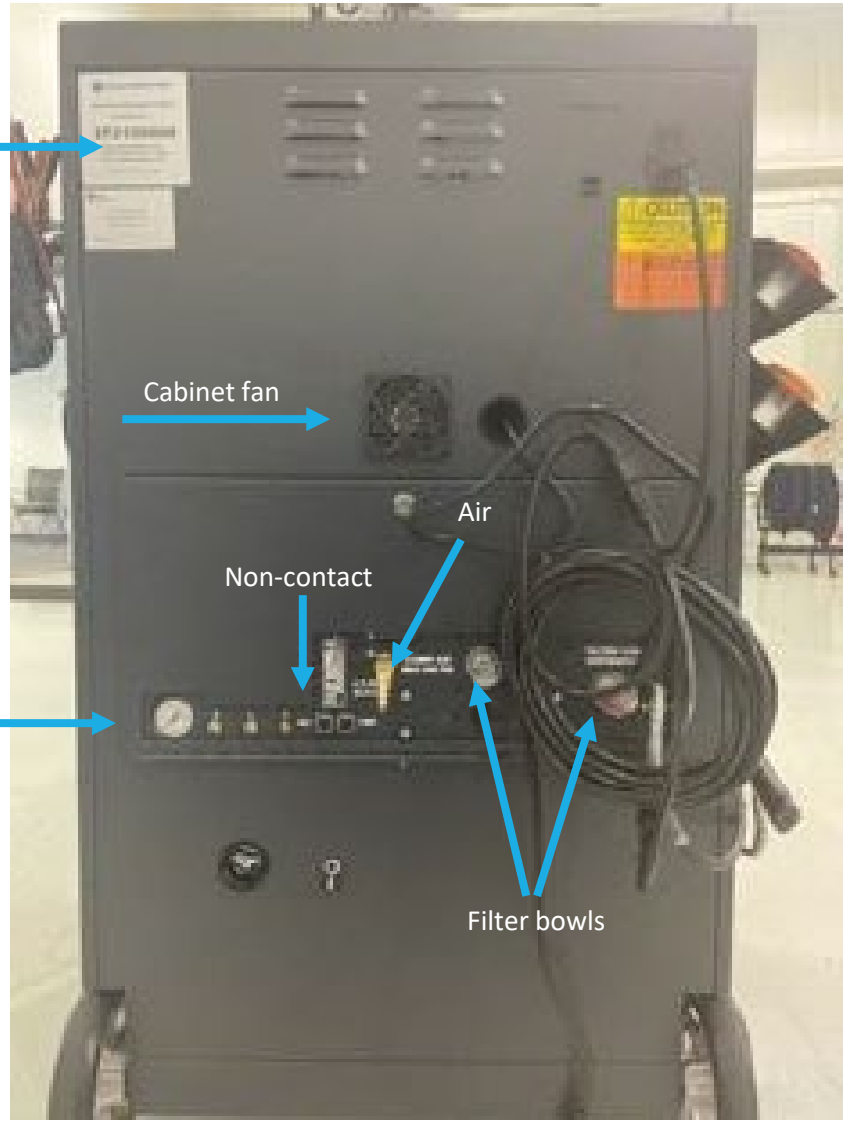
CDAS Equipment – Left and Ride Sides



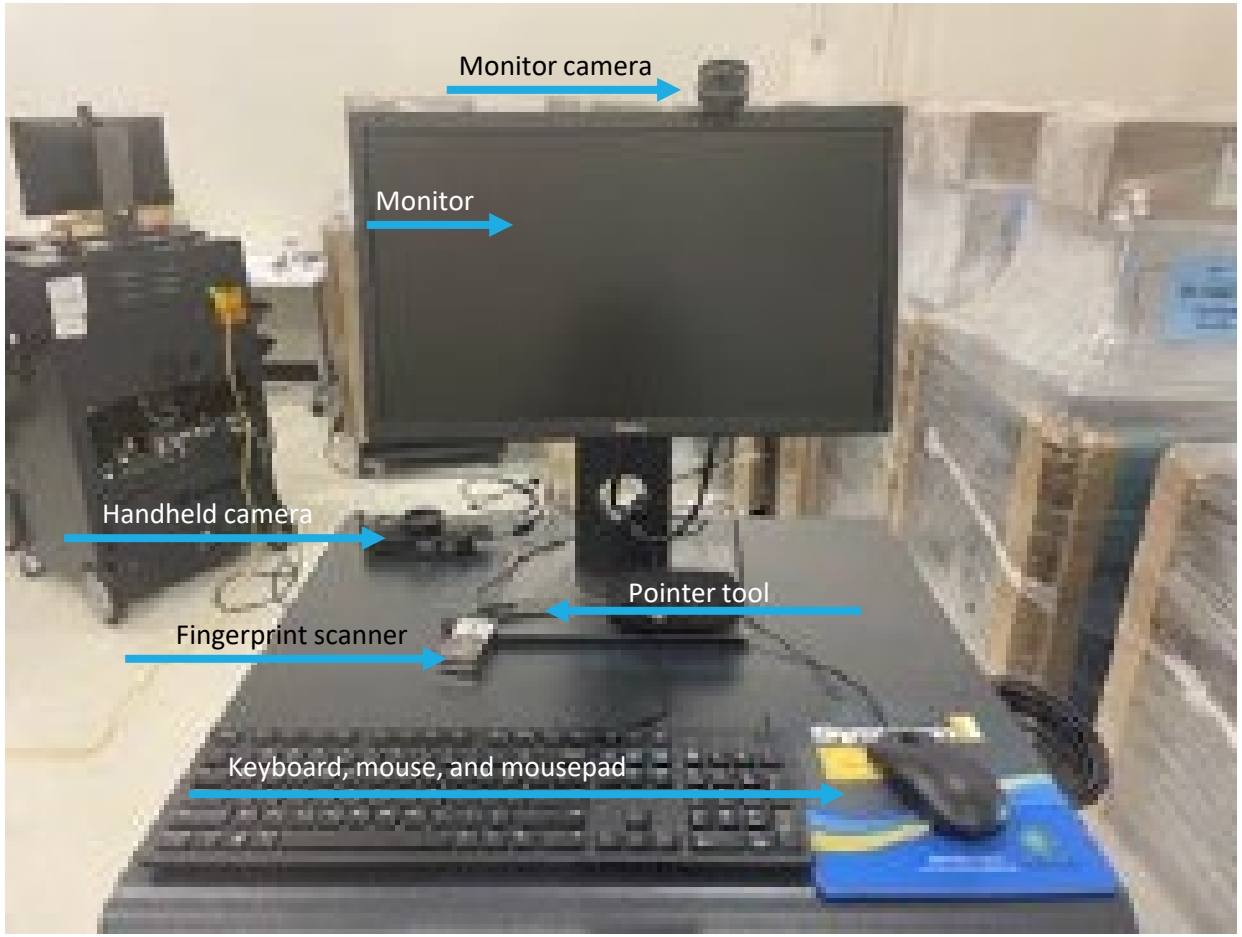
Left Side

Right Side

CDAS Equipment – Back and Top Deck



Back of CDAS



Top Deck

Equipment, continued

Opacity Meter

The opacity meter is a separate piece of equipment *not* housed on the CDAS used to measure exhaust smoke density/opacity on diesel vehicle inspections.

Printer

The CDAS unit is outfitted with an HP 404 printer, complete with starter toner and drum cartridges. Toner and drum cartridges are consumable inventory; tests center will purchase these as needed.

Equipment, continued

Monitor-mounted Camera

This is a stationary camera, which should remain in the position installed, used to capture a facial image of the logged in user of the CDAS; test record images are used to confirm user identity via fingerprint scan. Images remain part of the official test record, and should be unobstructed by hoods, hats, hair, etc. You must face the camera at the time of image capture, which occurs at the same time as the fingerprint authentication. Unprofessional, obscene, missing, or otherwise inappropriate images will not be tolerated and are subject to liquidated damages under the Compliance Action Plan.

Barcode Scanner

The barcode scanner is used to scan in the VIN as well as calibration gas bottle values.

Equipment, continued

Fingerprint Reader

The fingerprint reader allows users access to the CDAS menu functions that require user credentials. This method of user authentication ensures that credentials are not shared, and CTIs are protected against the fraudulent use of their credentials, which could lead to program violations and monetary penalties. Fraudulent use of another inspector's credentials will result in immediate expulsion from the program.

If you are having trouble getting the fingerprint reader to pick up your fingerprint, try wiping the glass with a clean towel, washing your hands, and/or placing your fingertip against your face to grab natural oils that sometimes help the reader to pick up a print.

FEATURES:

- Blue LED
- Small form factor
- Excellent image quality
- Superior ESD resistance
- Encrypted fingerprint data
- Latent print rejection
- Counterfeit finger rejection
- Rotation invariant
- Rugged
- Works well with dry, moist or rough fingerprints
- Compatible with DigitalPersona SDKs for Windows®, Linux® and Android®

Pointer Options

All stations will receive a wireless pointer

Jade RemotePoint VP4910

RemotePoint Air Point Presenter

RemotePoint Global Presenter

Ricoh Hand-Held Camera

The hand-held camera is supplied with your equipment for the capturing of three specific images required for every vehicle inspection:

- the vehicle's rear license plate
- the public VIN plate (mounted on the dashboard of the vehicle)
- the odometer reading

Once captured, you will upload the images to the test record. Although rugged, it is recommended that you use the wrist strap to prevent you from dropping the camera. Always keep connected to the charger when not in use. If you are unable to take pictures, you will not be allowed to proceed with an inspection.

Even if the vehicle is missing a license plate, you should still take the required photos.

To make sure your camera is charging, press the power button until you see a blinking green light which indicates the camera is in charging mode.

1 **Make sure that the camera is turned off and open the terminal cover.**
Move the terminal cover lock lever in the direction shown by ①, slide the cover in the direction shown by ② and open the cover in the direction shown by ③.

2 **Connect the USB cable to the power adapter.**

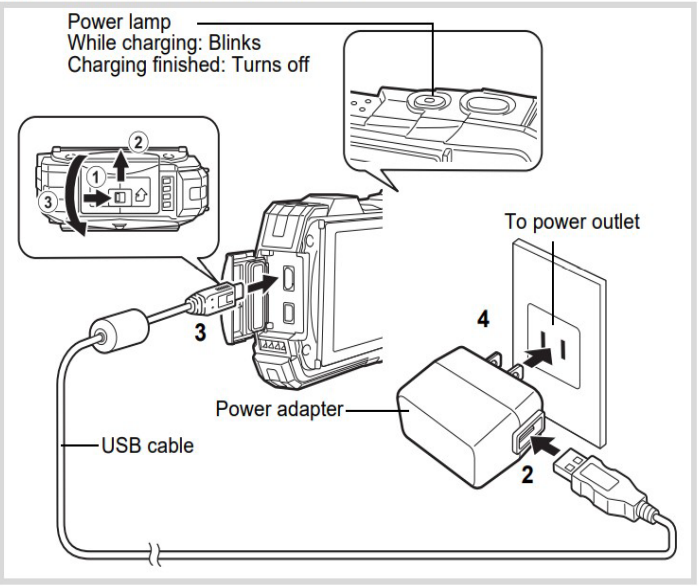
3 **Connect the USB cable to the camera.**

4 **Plug the power adapter into the power outlet.**
The power lamp blinks while charging.
When charging is finished, the power lamp turns off.
The terminal cover will not close while charging. Leave the cover open when charging and do not attempt to close it.

5 **Unplug the power adapter from the power outlet when charging is finished.**

Charging the Battery

Connect the supplied power adapter (D-PA164) to the camera and charge the battery before using it for the first time or after a long period of non-use, or when the [Battery depleted] message appears.

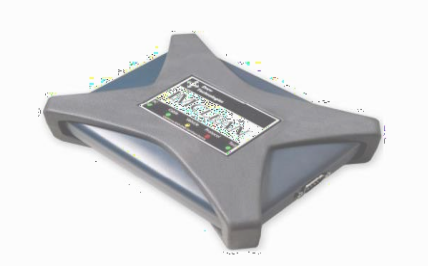


Scan QR code for full user manual PDF

On Board Diagnostics (OBD) Cable and Data Acquisition Device (DAD)

Connecticut performs OBD II Inspections on vehicle only up to 10,000 Lbs.

The OBD cable connects to the vehicle's DLC to retrieve data from the vehicle's PCM and reports the data back to the Data Acquisition Device (DAD) module. The IMclean® tool from Drew Technologies (pictured) is a DAD device designed to work with California's BAR-OIS system. This DAD can perform inspections on all OBD-compliant vehicles. The OBDII test can determine whether there is a malfunction in the components that control the vehicle's emission system through the vehicle's on-board computer.



Data Acquisition Device (DAD)

On Board Diagnostics (OBD) Cable connected to DAD unit

Gas Cap Pressure Tester and Calibration Tool

The gas cap pressure tester is located on the left side of the CDAS cabinet. This hose determines if there is a leak in the seal of the vehicle's gas cap. The adapters are for different style gas caps, although the base (black #4) adapter will fit most vehicles. If one is needed, the system will prompt you to use the recommended adapter.

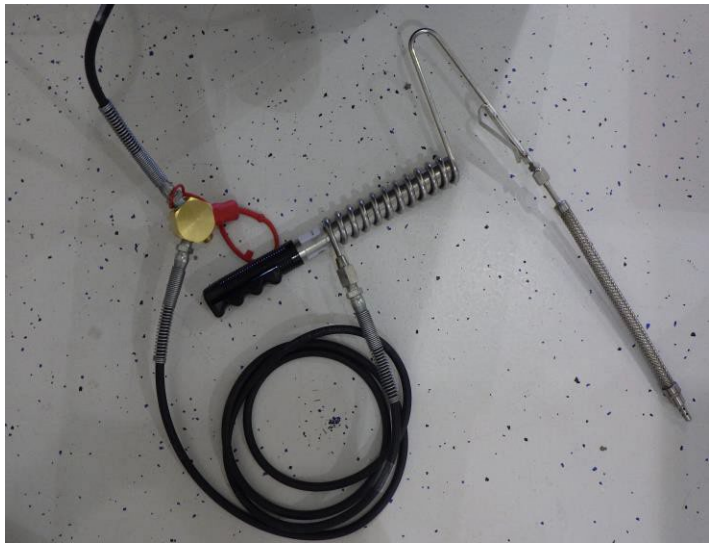
Waekon Gas Cap Calibration Tool

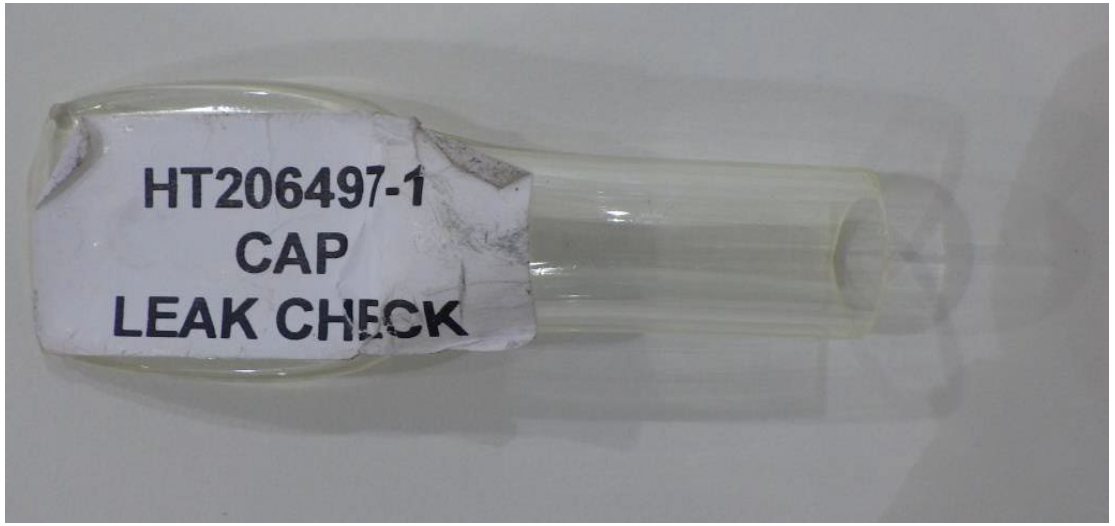
The gas cap pressure tester calibration tool will calibrate both pass and fail cap calibrations using a lever located at the top of the tool. To calibrate a pass, you will have the lever turned to the green side of the tool, and for fail you will turn it to red side (as seen in the image to the left).

There is a quick disconnect located at the bottom of the tool. At each stage of the calibration, you will release pressure by disconnecting the tool from the pressure tester hose. Follow the prompts on the screen during the calibration for instructions on when to remove the tool.

Exhaust Probe(s)

The exhaust probe's function is to measure tailpipe emissions (hydrocarbons/carbon monoxide) at cruise engine speed and then at an idle speed. The probe is inserted into the exhaust pipe (a second probe is provided for use on vehicles with dual exhaust) and during inspection will pull exhaust through a sample system located inside the CDAS cabinet. The sample system will measure the readings to ensure that the emissions meet the requirements of the program for a passing inspection result. If the readings are outside the required parameters, the vehicle will fail the inspection.





Leak Check Probe Cap

RPM Cables

RPM cables are used for obtaining RPM readings from the vehicle during a PCTSI inspection. There are three methods available for obtaining RPM:

- **Non-Contact** obtains RPM through the 12-volt accessory power outlet port (lighter port) *or* obtains RPM readings by connecting battery terminal clamps to the vehicles positive and negative battery terminal posts.
- **Contact** uses an inductive clamp that is placed on a vehicle's ignition wire.
- **OBD** is obtained through connecting to the DLC

Calibration Gases

Calibration gases are used to calibrate the gas bench located inside the CDAS cabinet. The gas bench is what measures the reading of the exhaust gas during a PCTSI emissions inspection. The following gases are used:

- High gas
- Zero air gas

The gas calibrations will ensure that the gas bench is reading the exhaust sample correctly by using a bottled gas that is of a specific grade.

Consumable Inventory

Consumables are CDAS equipment and maintenance inventory, which is your Test Center is responsible for purchasing as needed. To maintain the integrity of the CDAS unit and equipment, you must purchase these items through OPUS Inspection, as contractually obligated and detailed in the Test Center Participation Agreement. Purchase of consumable inventory from any alternate source is prohibited. If equipment failure occurs due to the use of unauthorized parts, the Test Center may be responsible for the replacement of failed equipment. A full consumable inventory part list is included in the Test Center Participation Agreement.

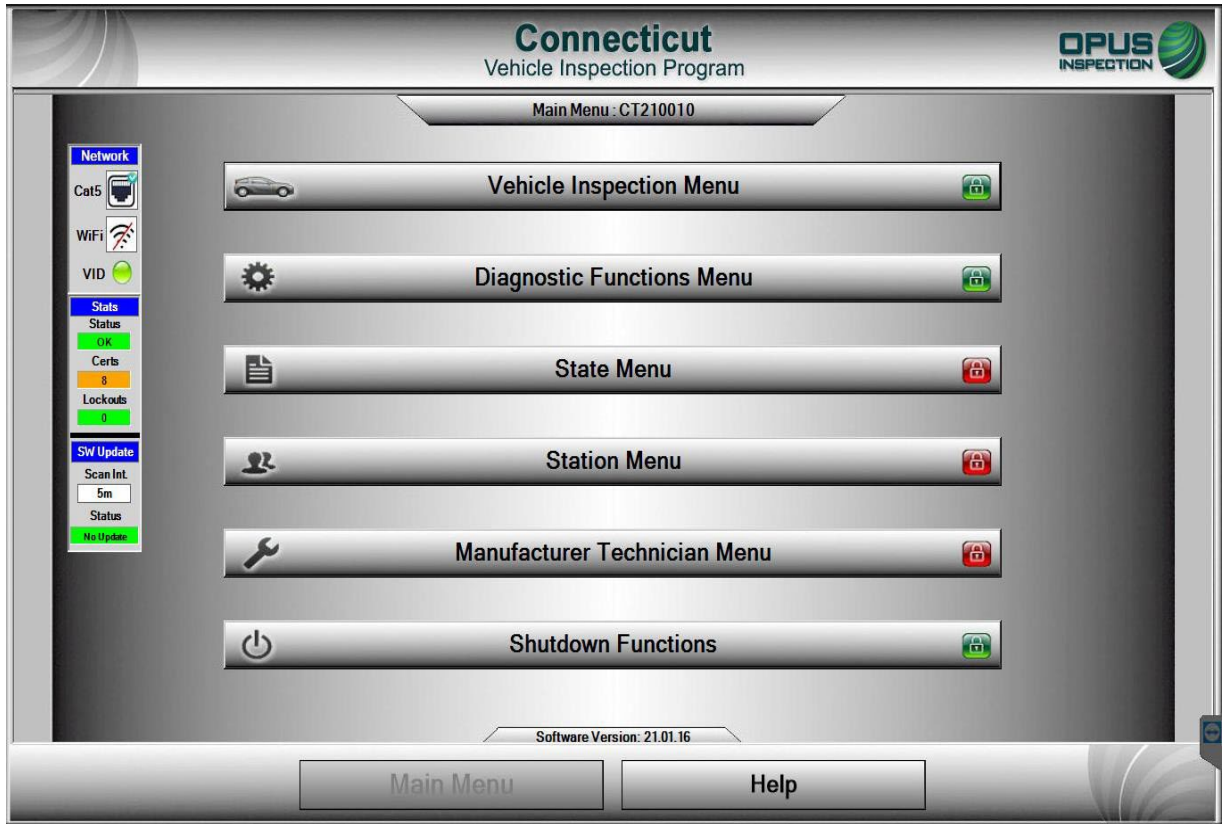
Examples of consumable parts include, but are not limited to:

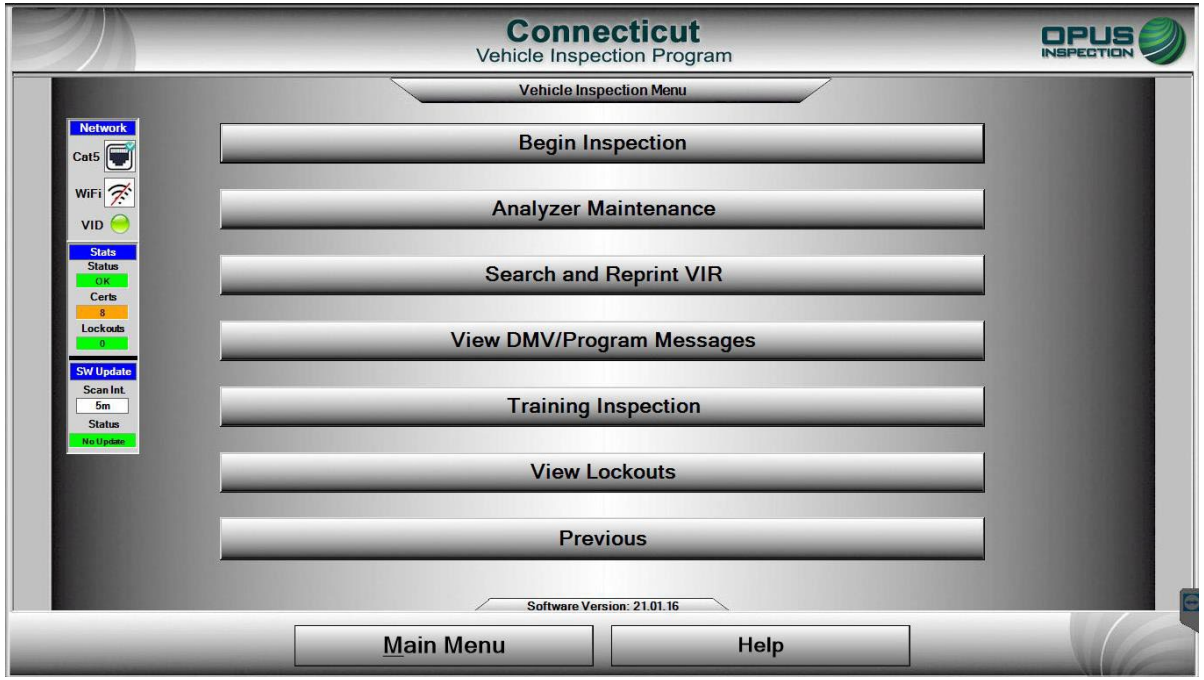
- Opacity lenses
- Filters
- Printer toner and drum cartridges
- Network cables
- High and zero air calibration gases
- Sample hose assembly
- Flexible probe tip
- Exhaust probe handle
- Exhaust hoses and Y fitting
- Exhaust hose male and female quick-disconnects
- Sample filters
- Cables (RPM & OBD)
- External power cable, 12VDC

Chapter 2: CDAS Menu Options Overview

Menus: Main Menu & Vehicle Inspection Menu

The main menu is essentially the home page of the CDAS inspection application. Some functions of the main menu will prompt for log-in while others are accessible without authentication. The status bar on the left will give you real time status of the network connection to internet and the VID. It will also show if any lockouts are present. **Certs** refers to the number of test authorizations remaining. **SW** refers to software updates; the application will automatically update new software releases. If the software update fails, a CDAS lockout will be initiated; Test Centers should contact the Opus Help Desk for resolution.

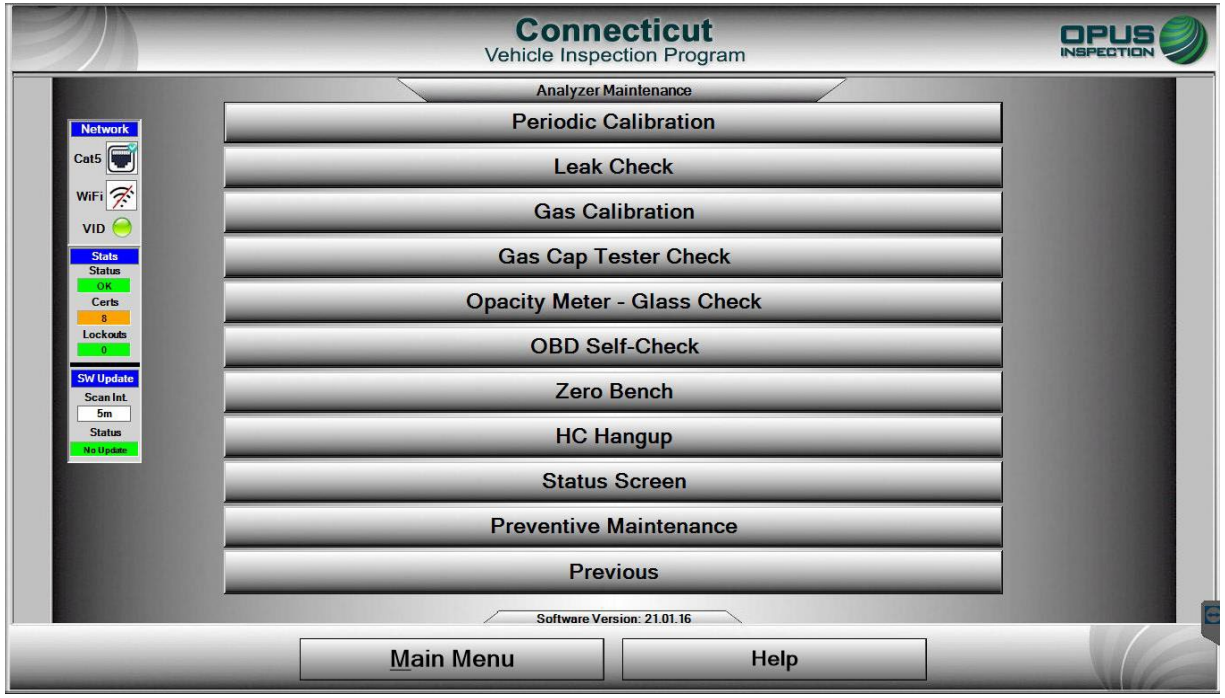


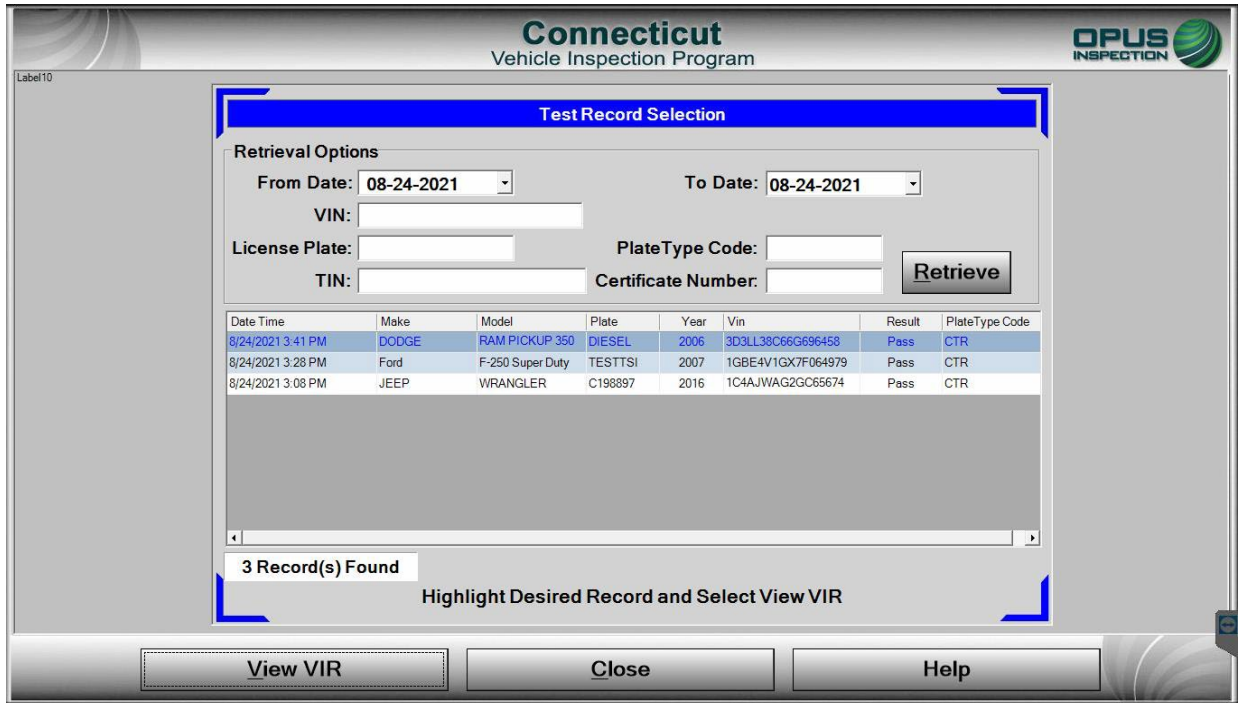


Vehicle Inspection Menu >Begin Inspection

Begin Inspection will take you to immediately begin an inspection. Inspections will be demonstrated later in this manual.

Vehicle Inspection Menu: Analyzer Maintenance & Search and Reprint VIR





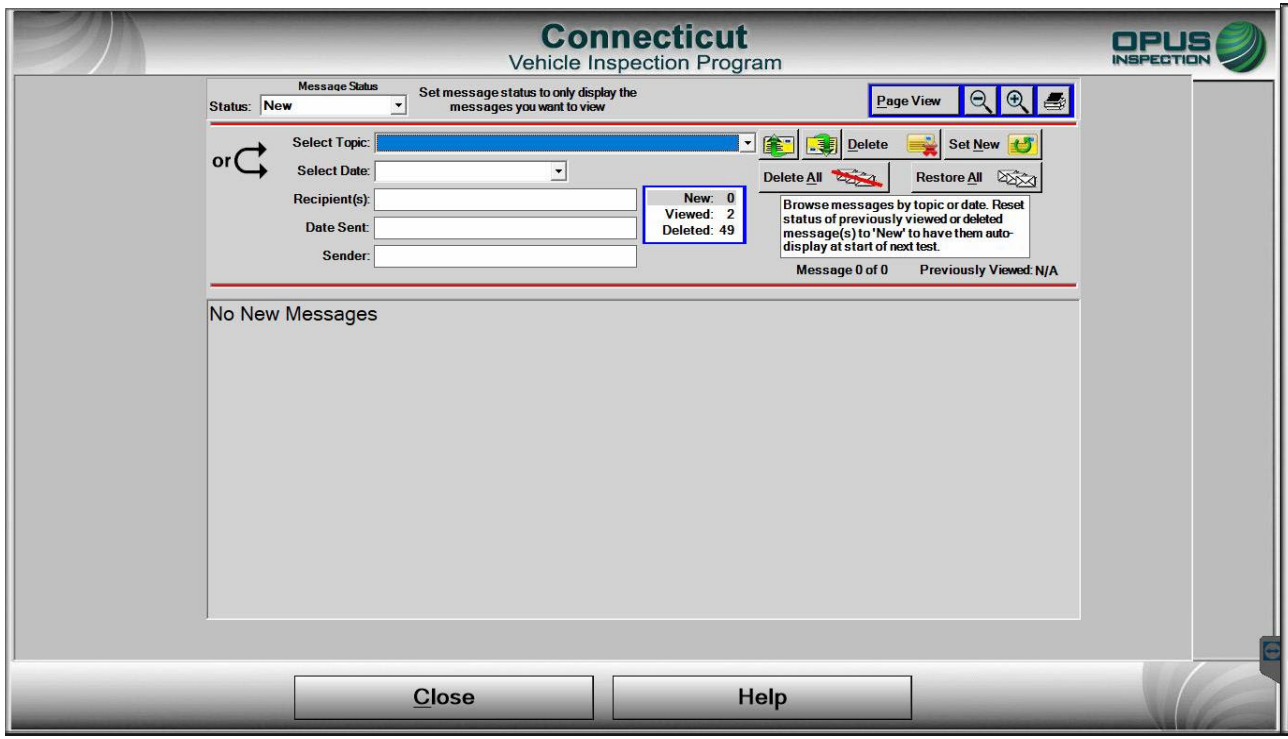
Vehicle Inspection Menu >Analyzer Maintenance

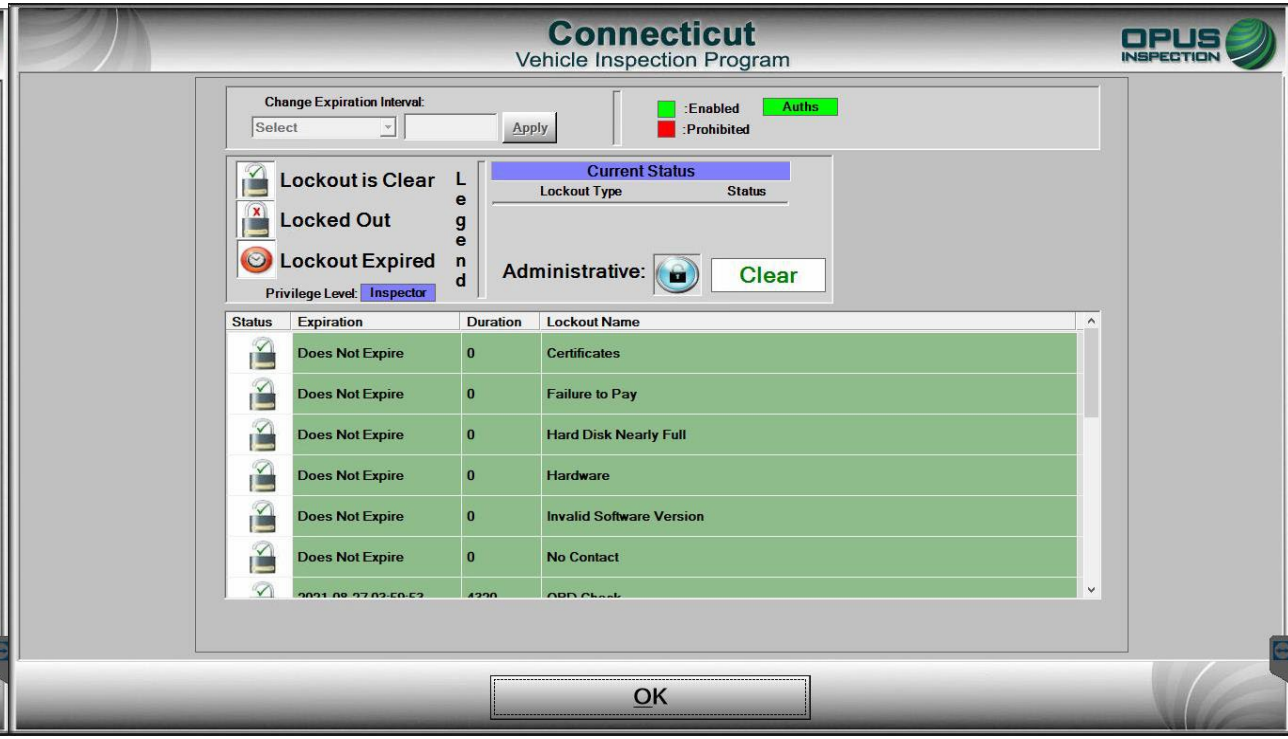
Periodic calibrations and preventative maintenance are found in the Analyzer Maintenance menu.

Vehicle Inspection Menu >Search and Reprint VIR

This menu option is used for reprinting the VIR. Reprinting a VIR for a motorist is done free of charge.

Vehicle Inspection Menu: View DMV / Program Messages & View Lockouts





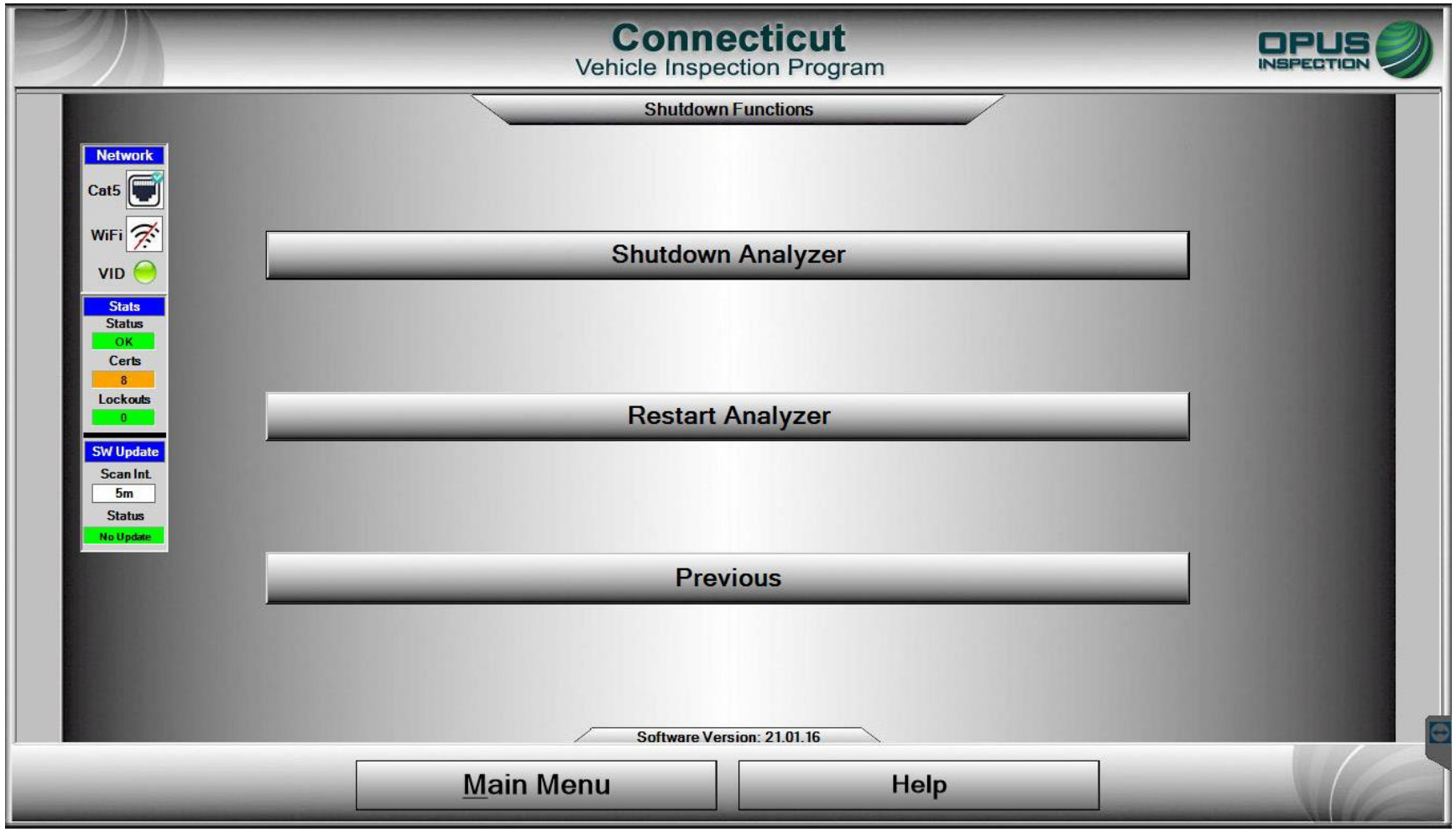
Vehicle Inspection Menu >DMV/Program Messages

Here is where you will find all DMV and program messages, including VID Blasts. New messages will appear upon login for inspectors who have not yet read them. Messages are stored and searchable.

Vehicle Inspection Menu >View Lockouts

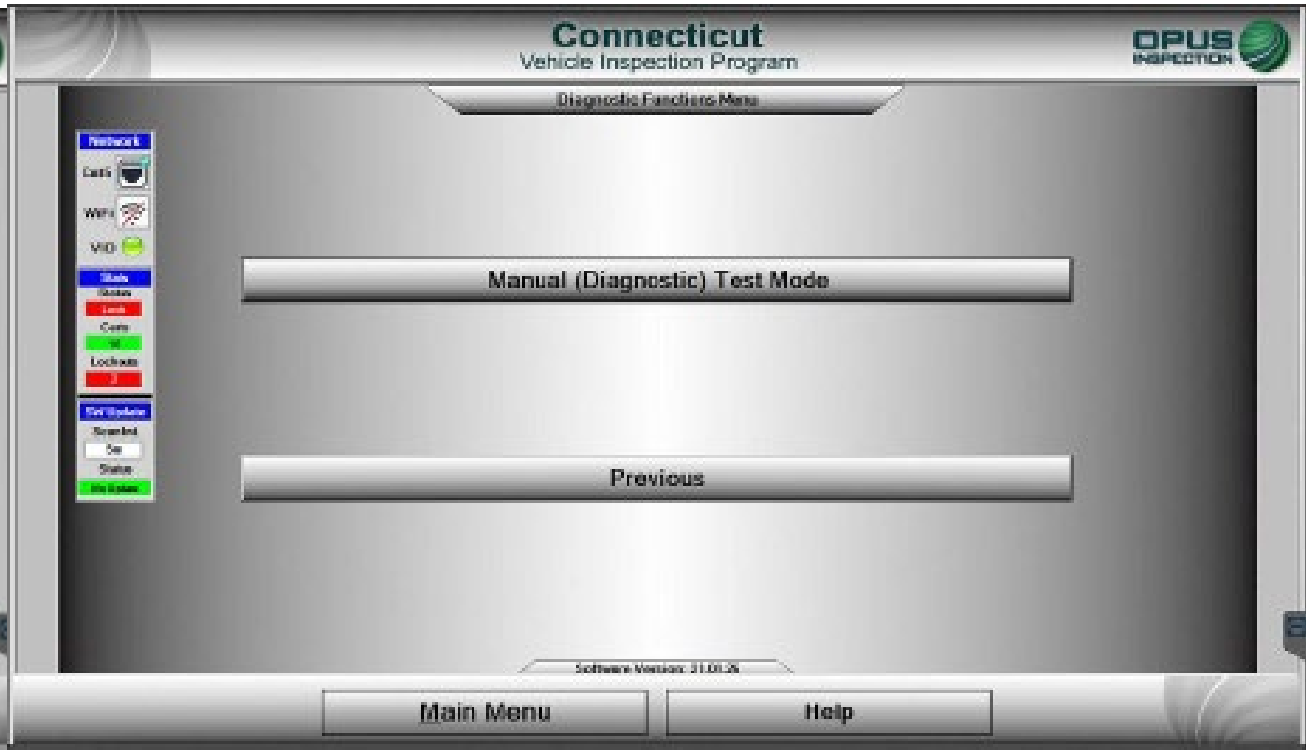
This menu is used to view CDAS lockouts that will prevent you from performing certain functions and/or inspections and must be addressed. If a lockout cannot be cleared by the inspector, such as expired calibrations, a call to the Opus Help Desk is required.

Vehicle Inspection Menu: Shutdown Functions



The shutdown function menu will allow you to properly shutdown or restart the CDAS at any point.

Main Menu: Diagnostic Functions Menu: Manual (Diagnostic) Test Mode

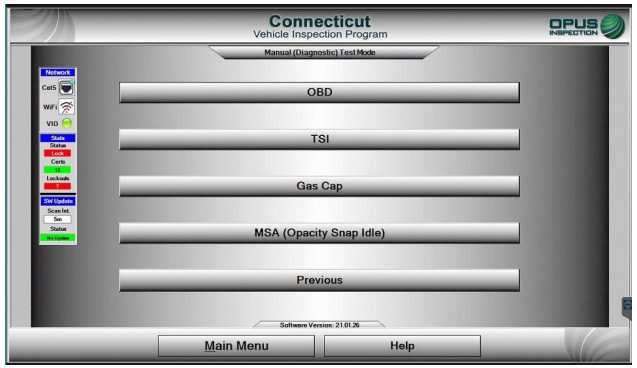


Main Menu>Diagnostic Functions Menu>Manual (Diagnostic) Mode

The Manual (Diagnostic) Test Mode Menu allows individual tests to be run outside the normal logic. Tests may be run for diagnostic purposes only and do not constitute a valid emissions inspection. **No test record is created or stored.**

Main Menu: Diagnostic Functions Menu: Manual (Diagnostic) Test Mode: OBD

1.



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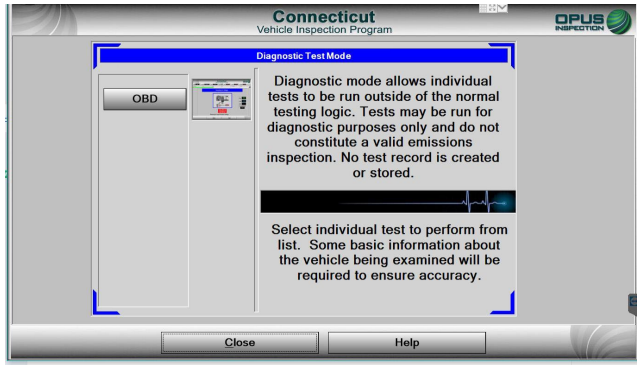

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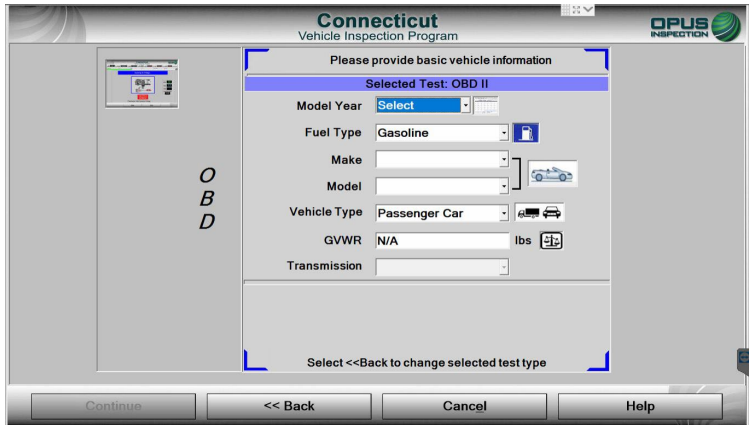

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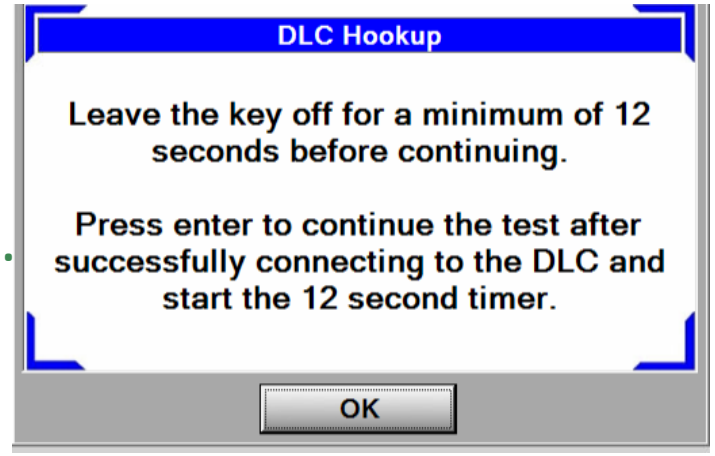

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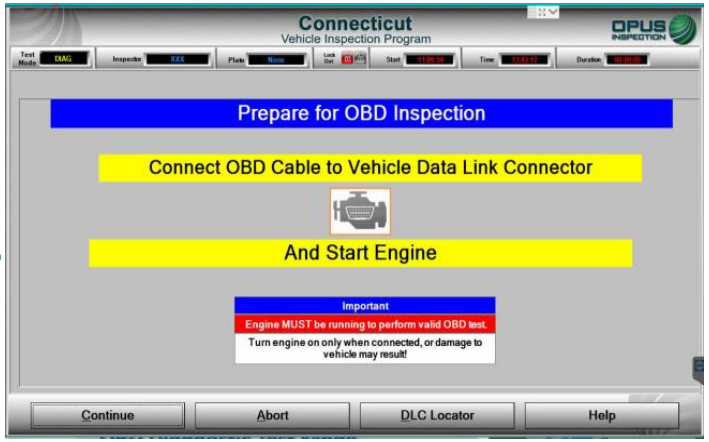
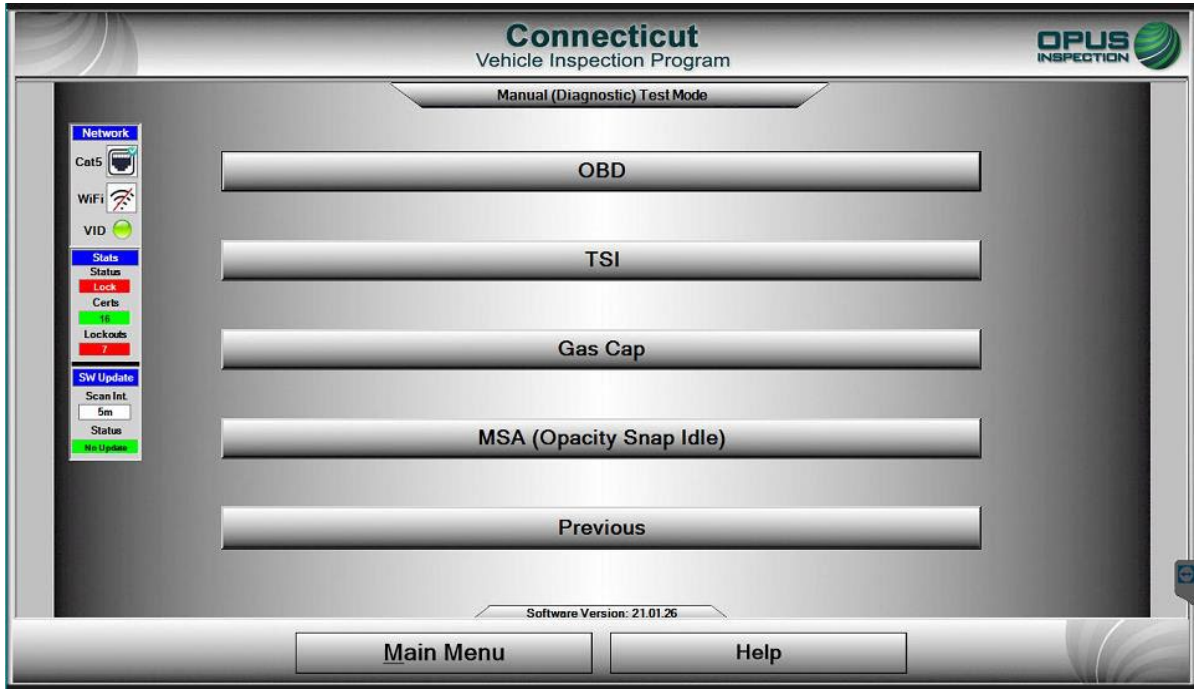


Main Menu>Diagnostic Functions Menu>Manual (Diagnostic) Test Mode>OBD

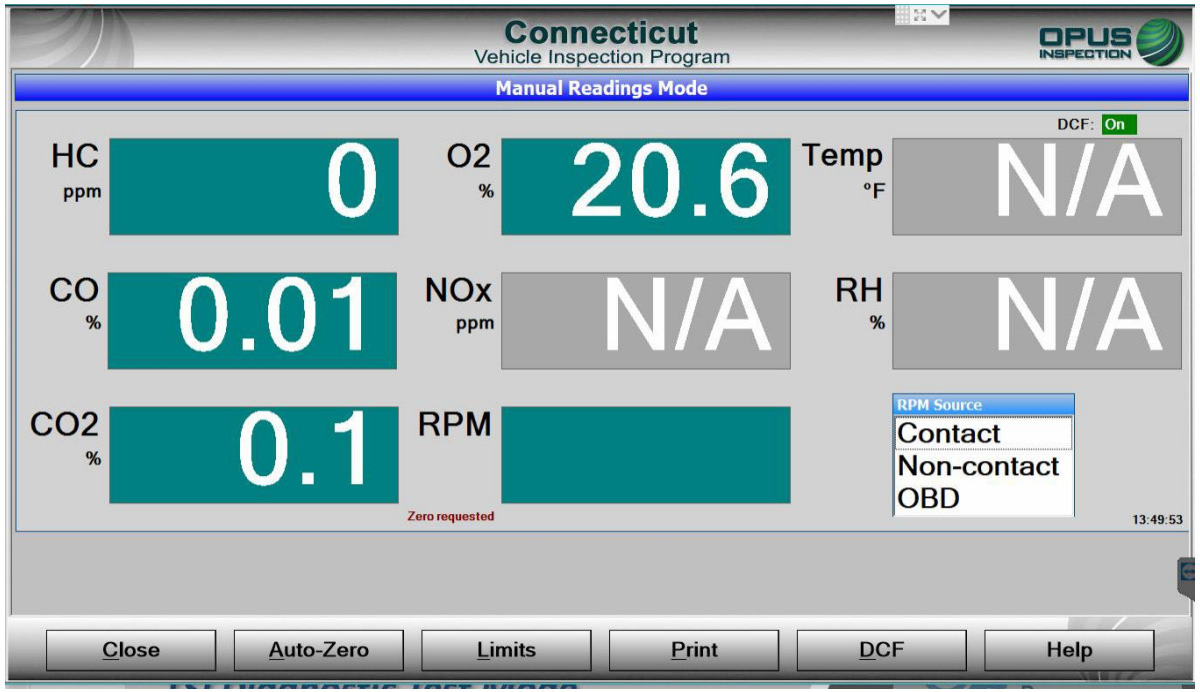
To diagnose OBD, such as communication, click on OBD, then click OK to proceed to the next slide, where you will enter requested information. Proceed to the test screen for OBD; it will have you perform a KOEO check before initiating the test.

Main Menu: Diagnostic Functions Menu: Manual (Diagnostic) Test Mode: TSI

1.



2.

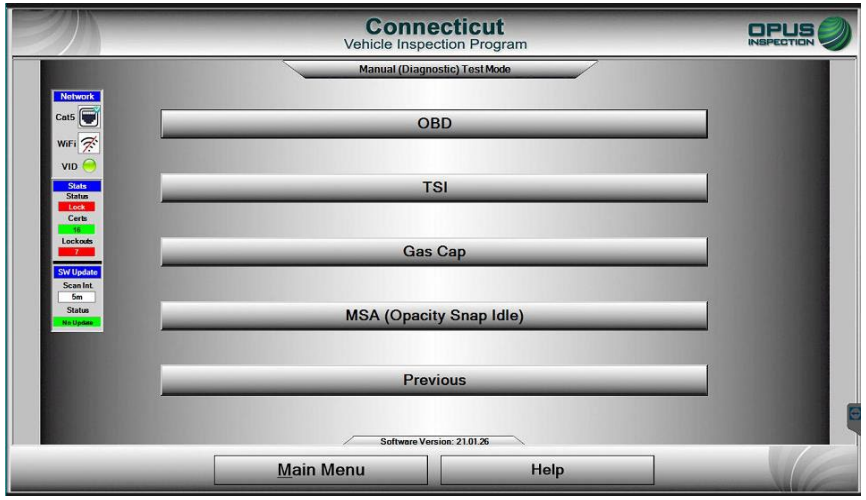


Main Menu>Diagnostic Functions Menu>Manual (Diagnostic) Test Mode>TSI

Click on TSI from the Manual (Diagnostic) Test Mode menu. The software will bring you into the manual test screen for TSI. It will have you obtain RPM; inserting the probe will give you sample exhaust readings.

Main Menu: Diagnostic Functions Menu: Manual (Diagnostic) Test Mode: Gas Cap

1.



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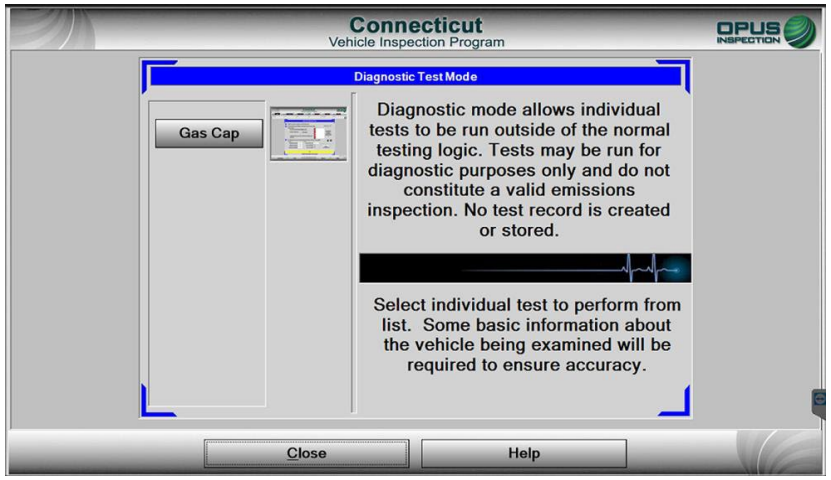

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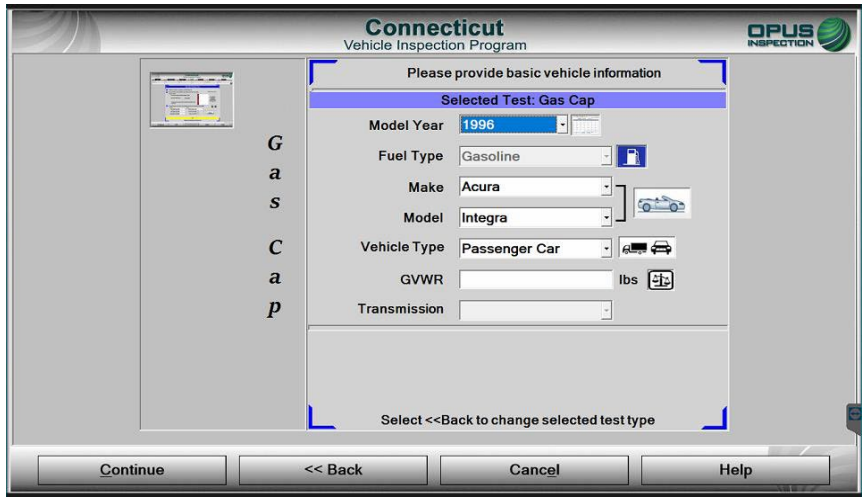

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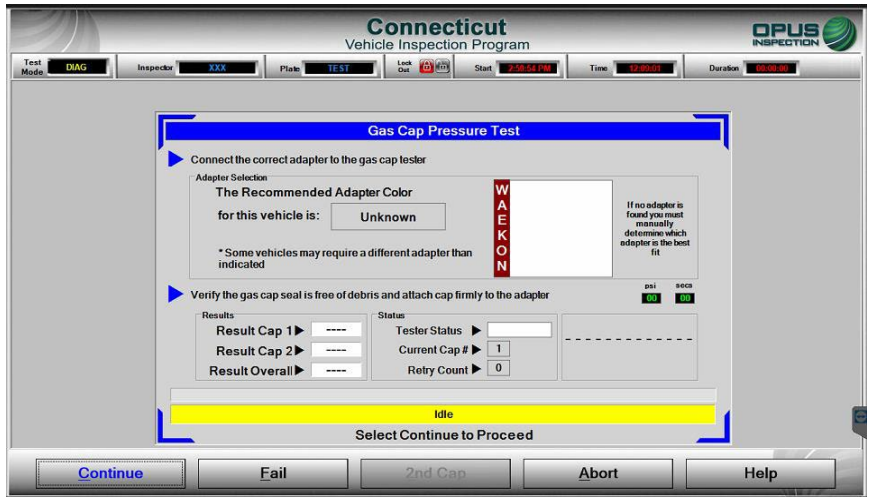
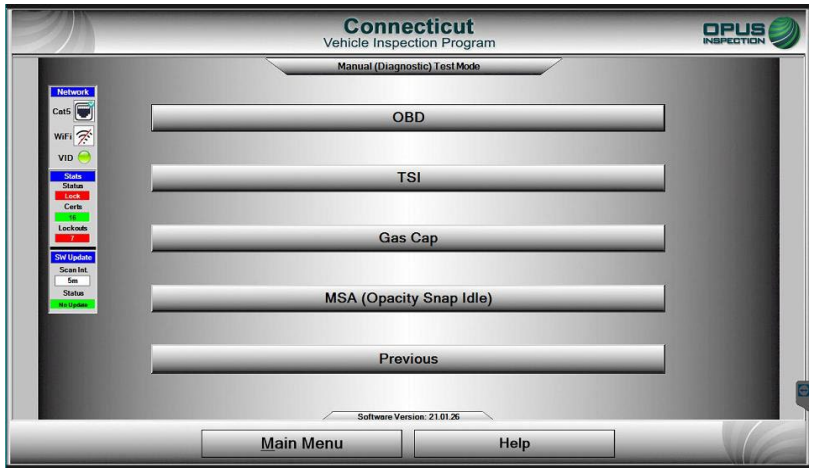


Main Menu>Diagnostic Functions Menu>Manual (Diagnostic) Test Mode>Gas Cap

To diagnose a gas cap, click on Gas Cap and then proceed to the next slide. Enter the requested information and click continue; the software will bring you to the test screen for the gas cap test.

Main Menu: Diagnostic Functions Menu: Manual (Diagnostic) Test Mode: MSA (Opacity Snap Idle)

1.



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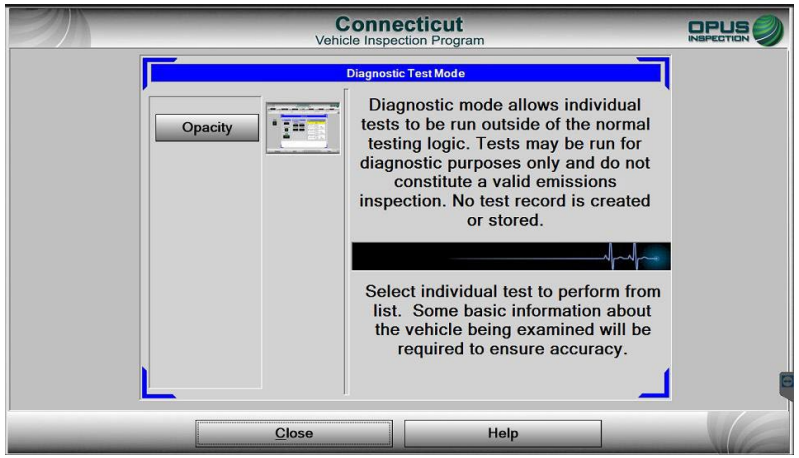

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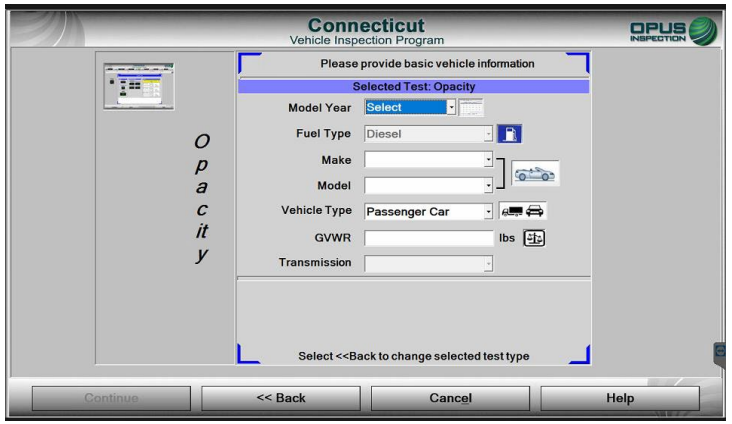

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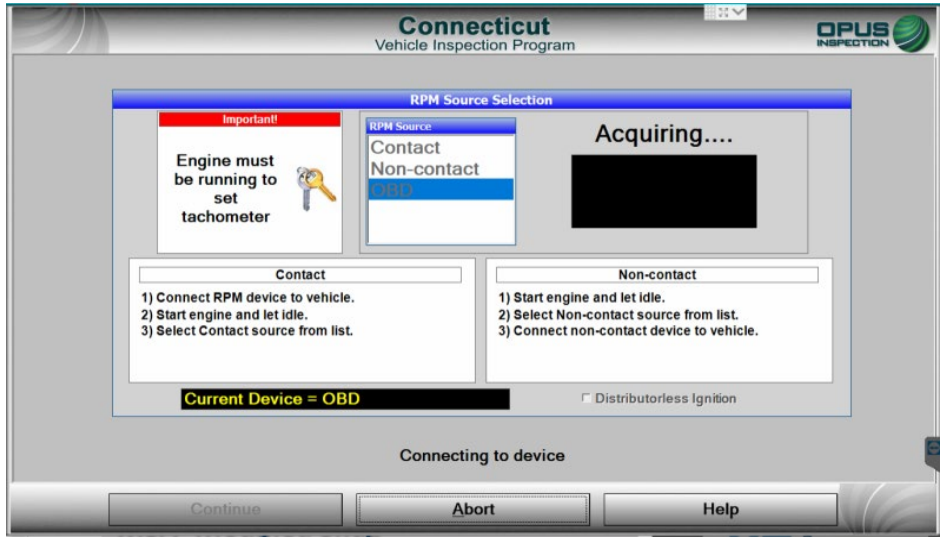

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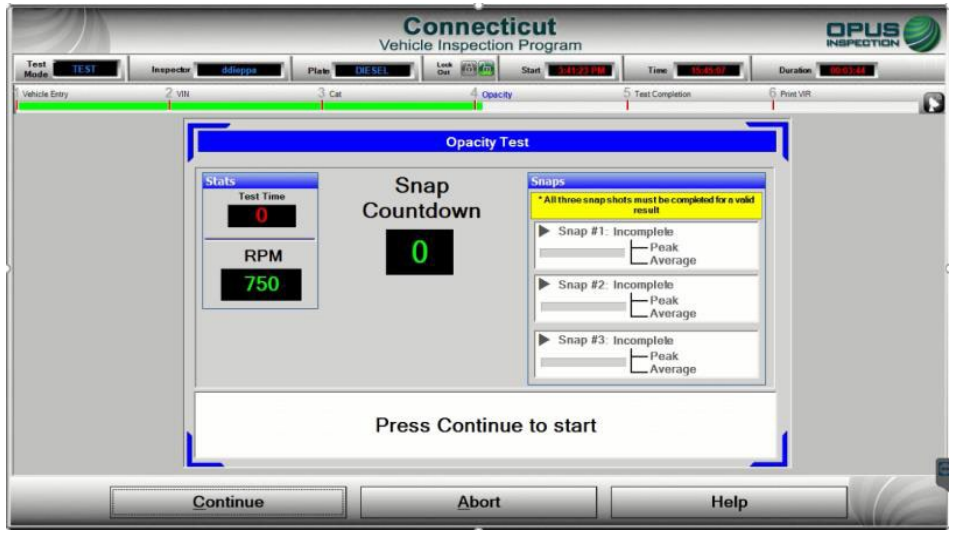
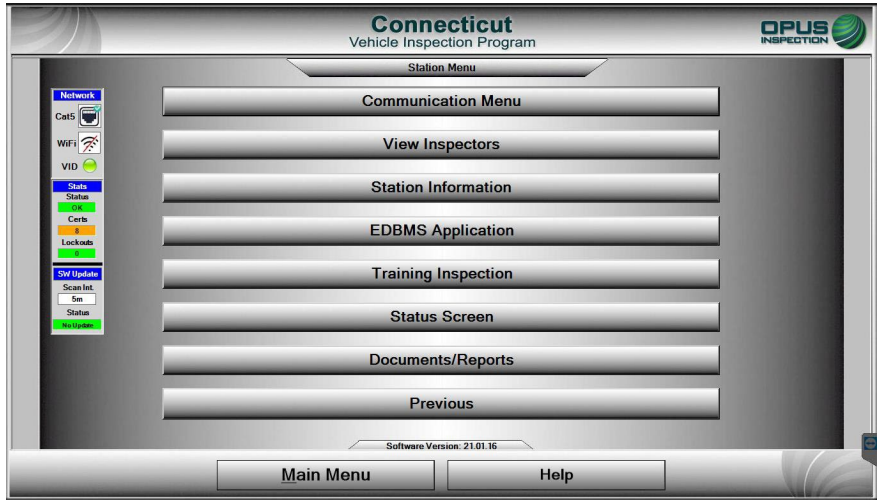


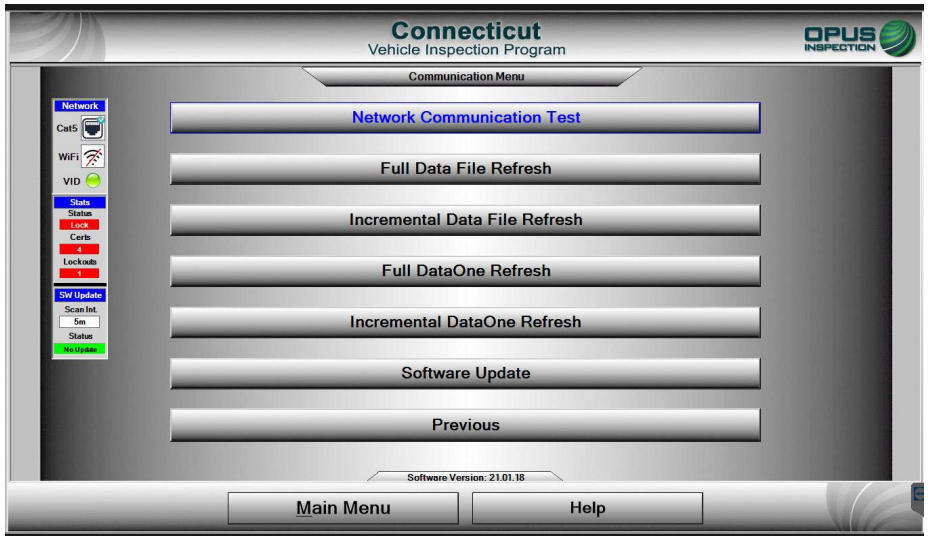
Main Menu>Diagnostic Functions Menu>Manual (Diagnostic) Test Mode>MSA

To diagnose/read a diesel exhaust sample, click on MSA (Opacity Snap Idle) and then on the following screen, again, click opacity to proceed to next slide. Enter the requested information and click continue. The software will bring you to the test screen for the gas cap test; you will be prompted to first obtain RPM, and then you will perform the snap inspection.

Main Menu: Station Menu: Communication Menu

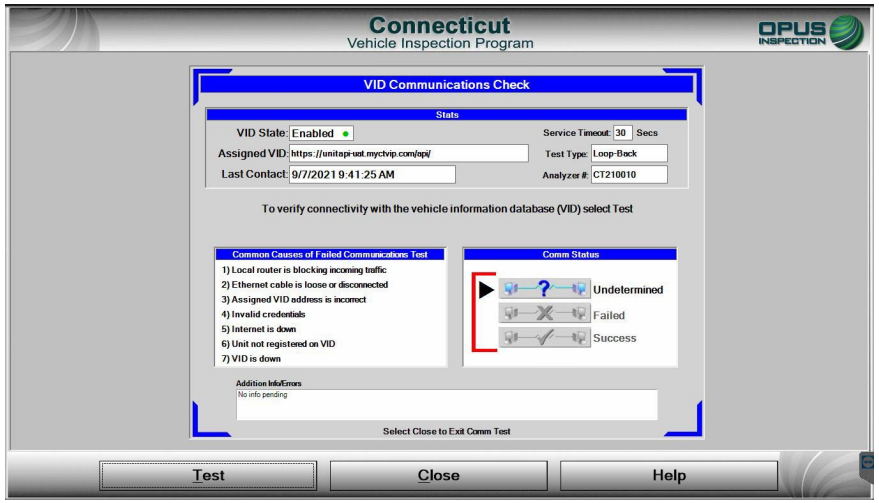


Main Menu>Station Menu



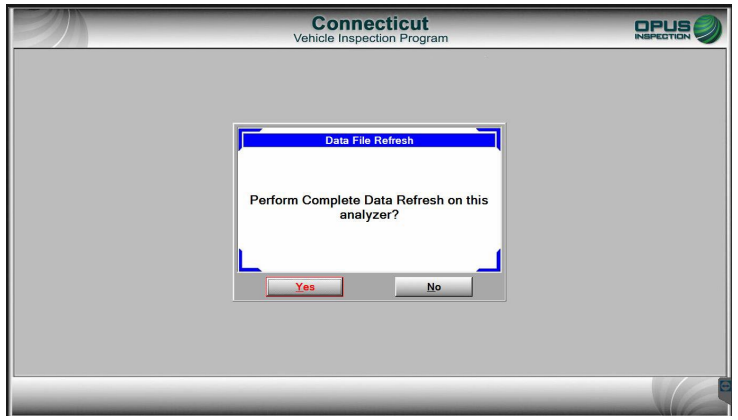
Station Menu>Communication Menu

The communication menu will allow you to troubleshoot communication issues and software updates.



Station Menu>Communication Menu>Network Communication Test

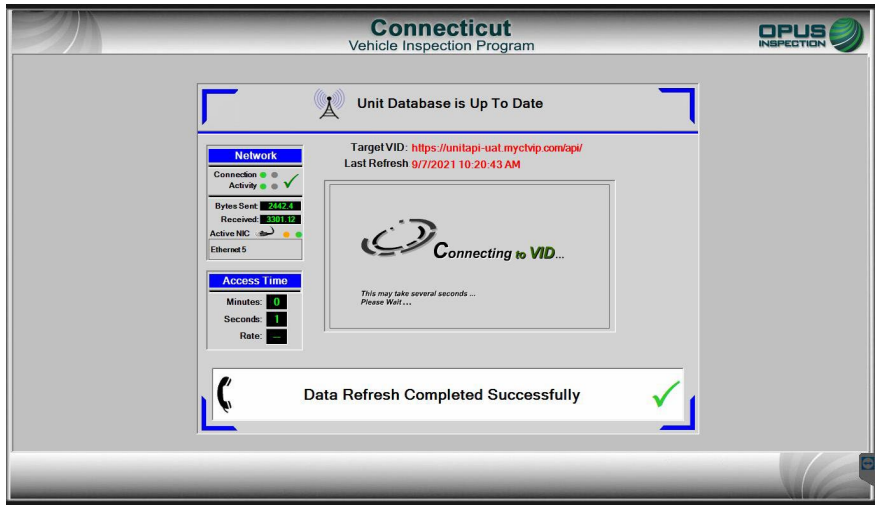
This menu option is used to test communication with the network (VID).



Station Menu>Communication Menu>Full Data File Refresh

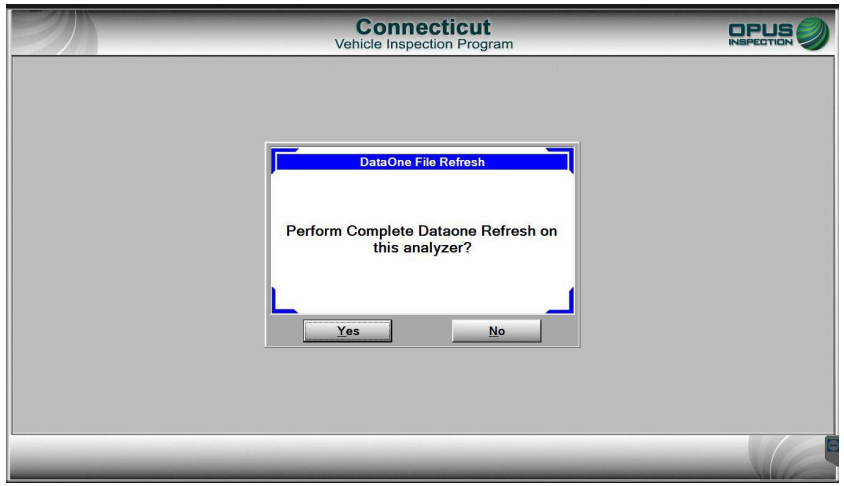
This menu option is used to ensure all official test records are uploaded to the VID; it also performs a check of configurations, data, files., etc., including CTI enrollment data.

Main Menu: Station Menu: Communication Menu



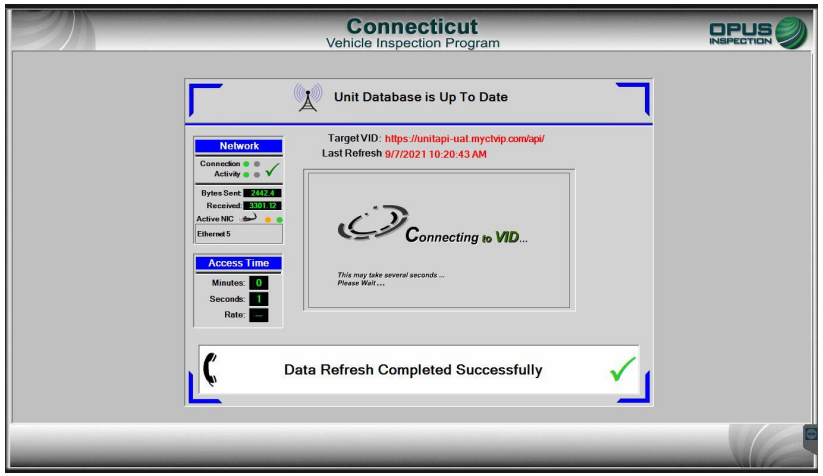
Station Menu>Communication Menu>Incremental Data File Refresh

Performs configurations of data files



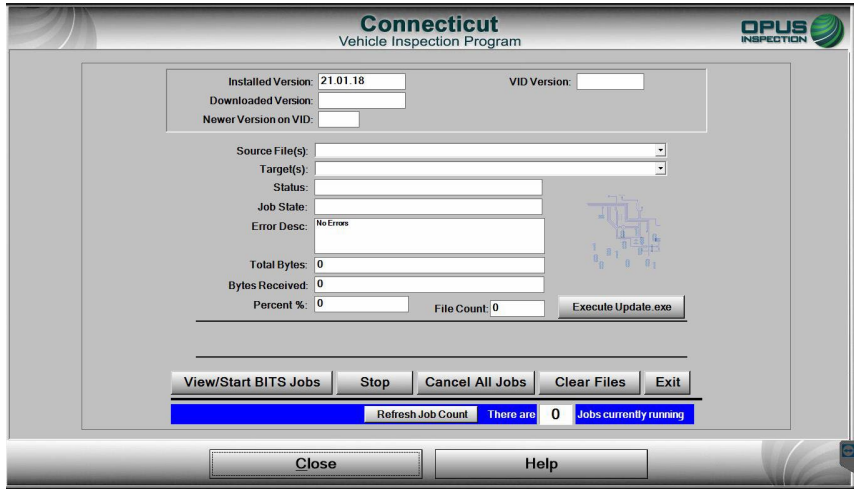
Station Menu>Communication Menu>Full DataOne Refresh

Uploads VLT data



Station Menu>Communication Menu>Incremental DataOne Refresh

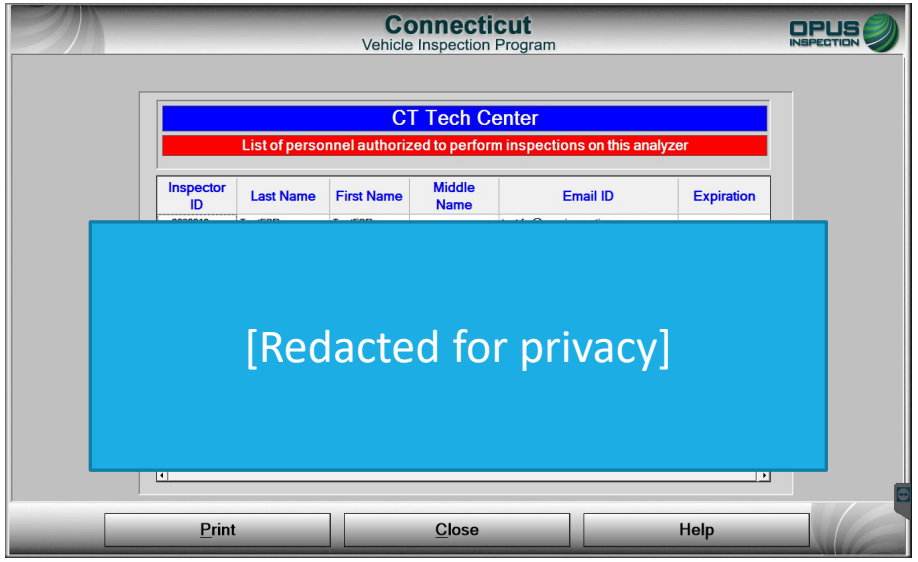
Retrieves configurations of VLT data



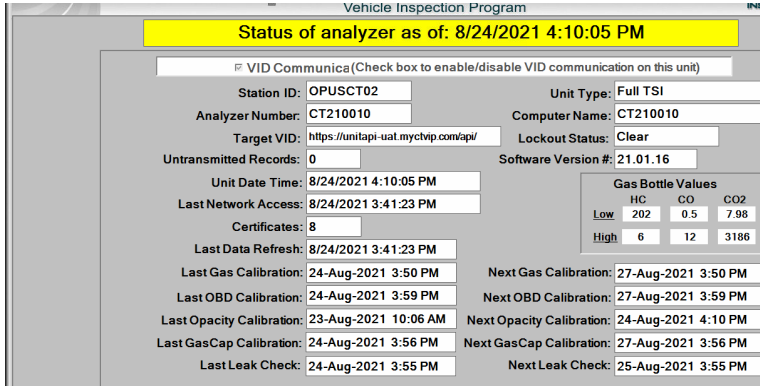
Station Menu>Communication Menu>Software Updates

This menu option will allow you to manually push an update that has failed to automatically upload.

Main Menu: Station Menu: View Inspectors



This menu option will allow you to view authorized users assigned to your station. If a change needs to be made, i.e., an inspector needs to be added or removed from employment at that Test Center, a station staffing plan form, available on ctemissions.com, must be submitted to Opus Inspection.

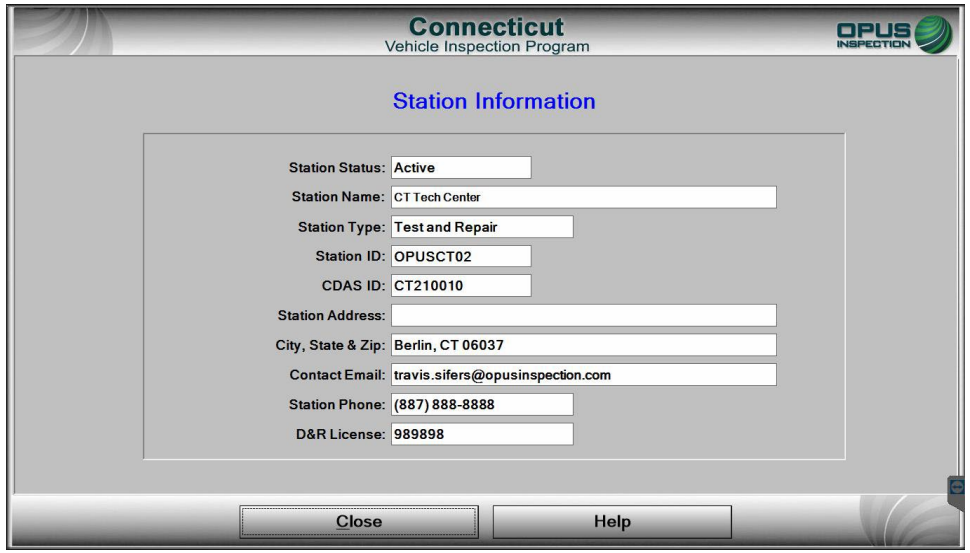


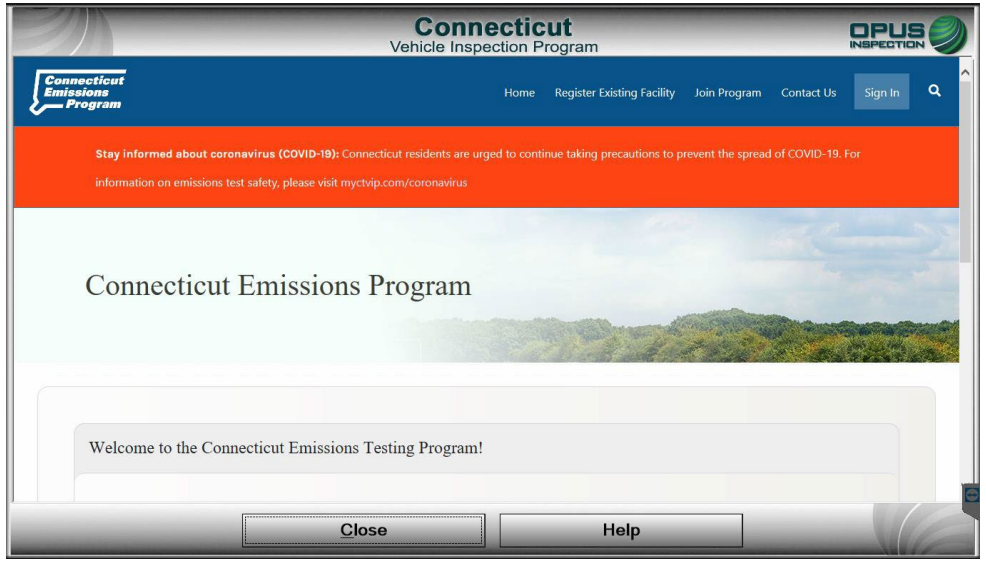
Main Menu: Station Menu: Station Information: Status Screen

The status screen reports information on software, CDAS and station identification, status of the communication to the VID, test authorizations on hand, and calibration records.

Main Menu: Station Menu: Station Information

This menu options displays detailed station contact information.

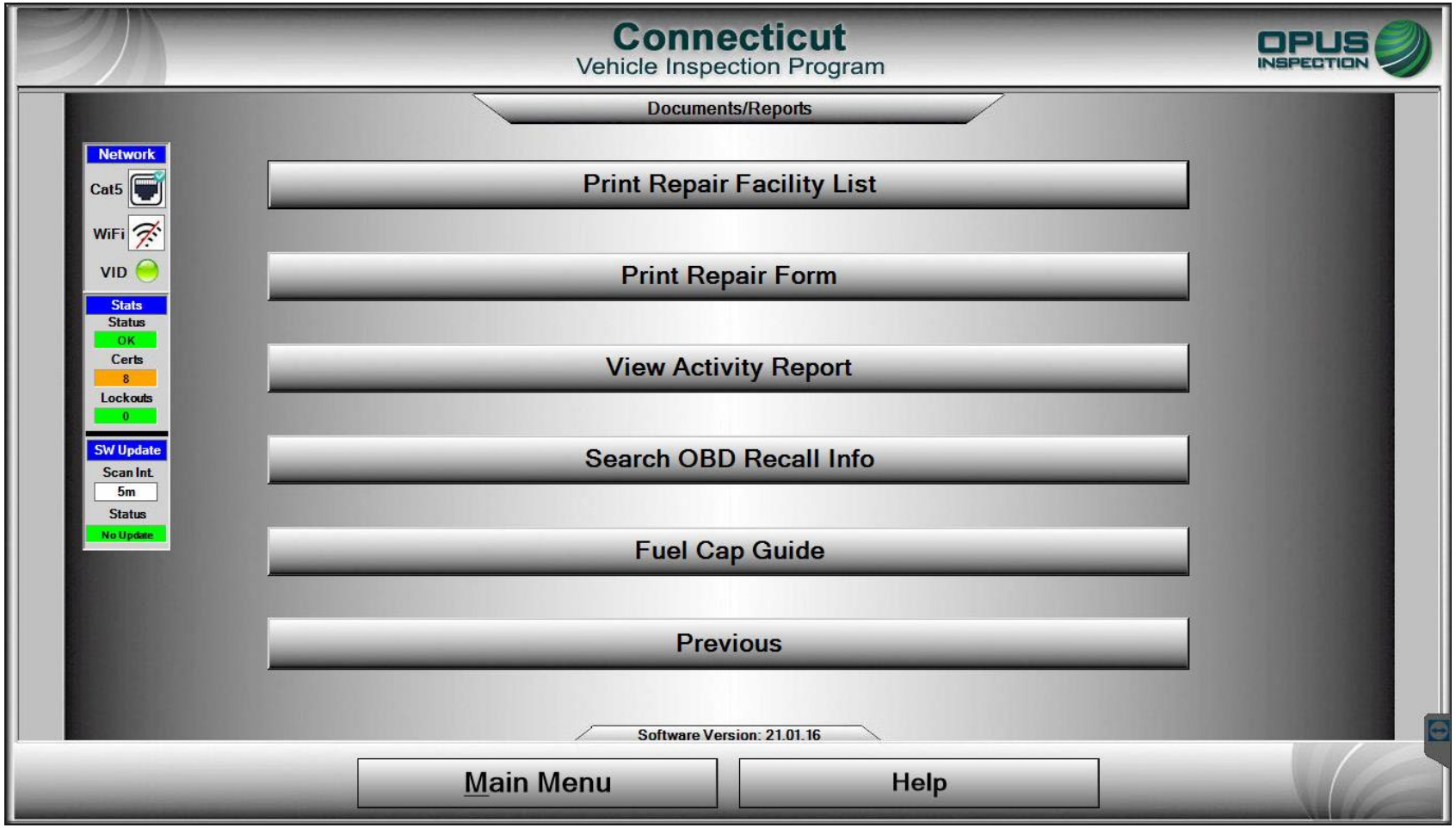




Main Menu: Station Menu: Station Information

This menu option gives you access to the EDBMS website to purchase test authorizations

Main Menu: Station Menu: Documents/Reports

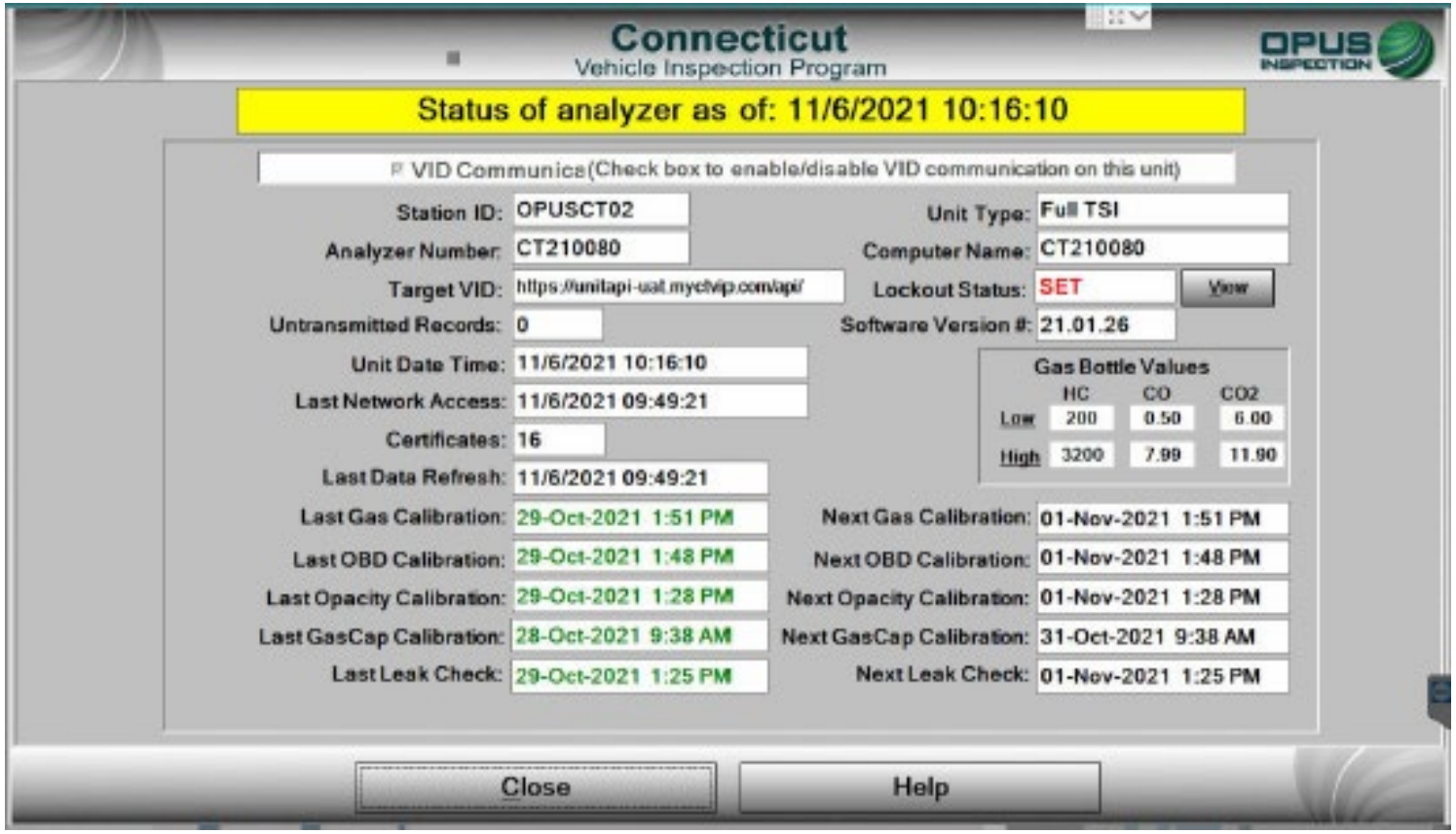


The documents/reports menu will give you access to the options as seen above. This is not a full access list to all program forms, but includes forms related to inspections. *A full list of program forms can be found on ctemissions.com.*

Main Menu: State Menu: Analyzer Maintenance: Status Screen

The status screen shows the status of the CDAS. Below is a list of what is featured in the image to the right:

- Station ID: station number
- Analyzer number: number assigned to the CDAS unit
- Target VID: the URL of the VID
- Untransmitted records: inspections that have not uploaded to the VID (stored tests)
- Unit date time: actual time
- Last network access: last pushed communication with the network
- Certificates: test authorizations remaining
- Last data refresh: last refresh of data with the VID
- Unit type: station test type (diesel/no diesel)
- Computer name: matches the CDAS number
- Lockout Status: shows the status of any lockouts on the CDAS; click view to view lock-outs
- Software version #: the version of software running on the CDAS
- Gas bottle values = stored gas bottle values entered for calibration gas bottles.



Note: Calibration statuses are shown at the bottom of the image; the left column is the date of the last calibration, and the right column is the date the next calibration is due.

Chapter 3: Inspections

Review of all types of emissions performed in the Connecticut Vehicle Inspection Program:

OBD (On-Board Diagnostic)

PCTSI (Pre-Conditioned Two-Speed Idle)

Gas Cap Pressure Leak Test

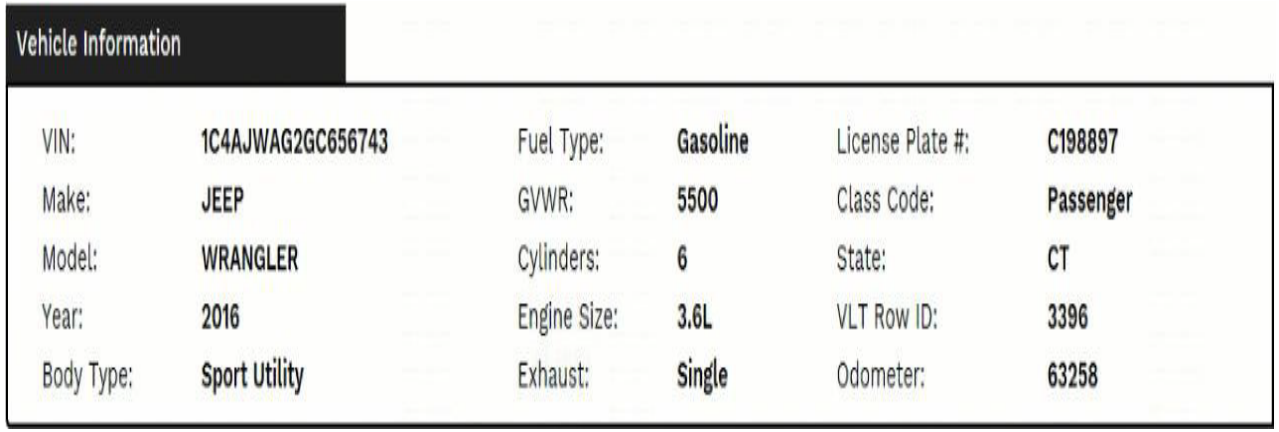
MSA (Modified Snap Acceleration Test)

Inspections: Data Entry

You will be required to collect and enter the following information from the vehicle at the start of the inspection:

- VIN
- Year, Make, Model
- Body Type
- Fuel Type
- Engine Size
- Number of Cylinders
- Exhaust (single or dual)
- License Plate
  - Number
  - Issuing State
  - Class code
- GVWR
- Odometer
- Required Images
  - Rear License Plate
  - VIN Plate (public VIN, dash mounted)
  - Manufacturer Label (door jamb)
  - Odometer Reading

If there is a missing identifier, such as a door jamb label that includes Gross Vehicle Weight Rating (GVWR), you can obtain that information by contacting the Opus Help Desk.



Vehicle Information

VIN:	1C4AJWAG2GC656743	Fuel Type:	Gasoline	License Plate #:	C198897
Make:	JEEP	GVWR:	5500	Class Code:	Passenger
Model:	WRANGLER	Cylinders:	6	State:	CT
Year:	2016	Engine Size:	3.6L	VLT Row ID:	3396
Body Type:	Sport Utility	Exhaust:	Single	Odometer:	63258

Above: This snapshot, taken from the VIR, shows the vehicle information as it was entered. This information must be verified by the inspector. Signing of the VIR indicates the inspector confirmed the accuracy of the information.

IMPORTANT REMINDER: You MUST verify the accuracy of ALL DATA COLLECTED, especially VIN, GVWR, and make and model.

Inspections: Catalytic Converter Visual Inspection

Visual verification of the catalytic converter is required on every vehicle tested, including vehicles returning for retests. The only cars on the road today that have no converters at all are:

- All-electric cars – the models that you plug in to recharge their batteries, and which use no gasoline or diesel fuel at all. (Again, all hybrid models that use gas or diesel fuel, both plug-in and non-plug-in, still use catalytic converters.)

- Fuel Cell Vehicles (FCV) or Fuel Cell Electric Vehicles (FCEV) is an electric vehicle that uses a fuel cell to power its onboard electric motor. Fuel cells in vehicles generate electricity generally using oxygen from the airand compressed hydrogen. Most fuel cell vehicles are classified as zero-emissions vehicles that emit only water and heat, therefore do not require a catalytic converter.

NOTE: you must perform the visual catalytic converter check at the time you are prompted to do so. Failure to follow proper procedures will result in a monetary assessment per the Compliance Action Plan.

There are two catalytic converter questions in each inspection:

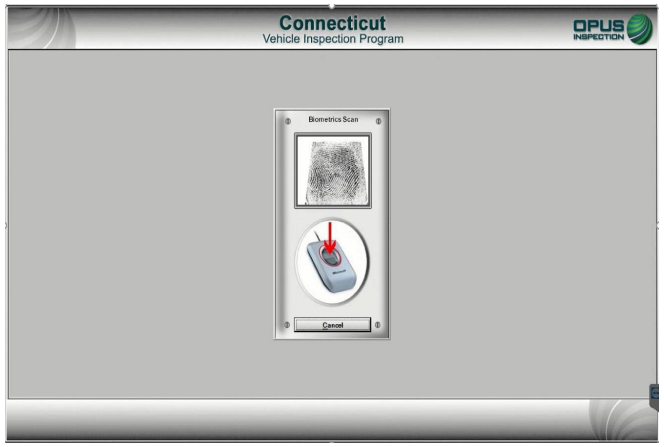
1. "Was this vehicle originally equipped with a catalytic converter as manufactured?" *Emissions regulations vary considerably from jurisdiction to jurisdiction. Most automobile spark-ignition engines in North America have been fitted with catalytic converters since 1975.*

2. Is this vehicle equipped with a properly installed catalytic converter?" *You must answer truthfully. A fraudulent response is a Program Violation and may be punishable by law.*

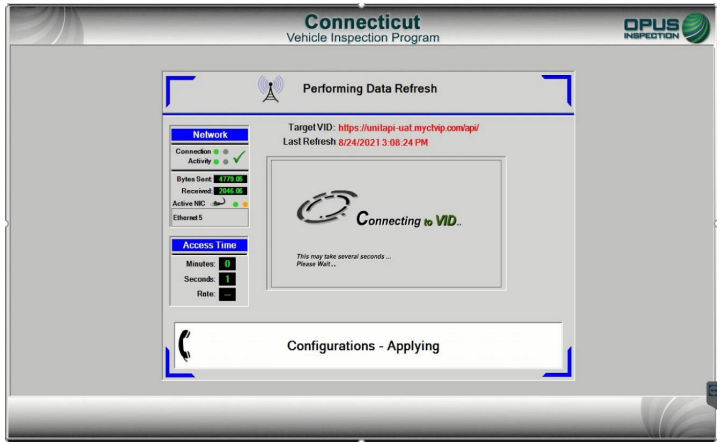
Yes: Yes, you were able to visually verify the presence and proper installation of the catalytic converter
No: No, the catalytic converter is not present, or it is visibly noticeable that it is not properly installed (connected)
Obscured: The ability to visually verify the catalytic converter is obscured by OEM equipment (undercarriage or engine compartment covers). Selecting obscured **will not** cause the vehicle to fail the test.

Inspections: Begin the Inspection

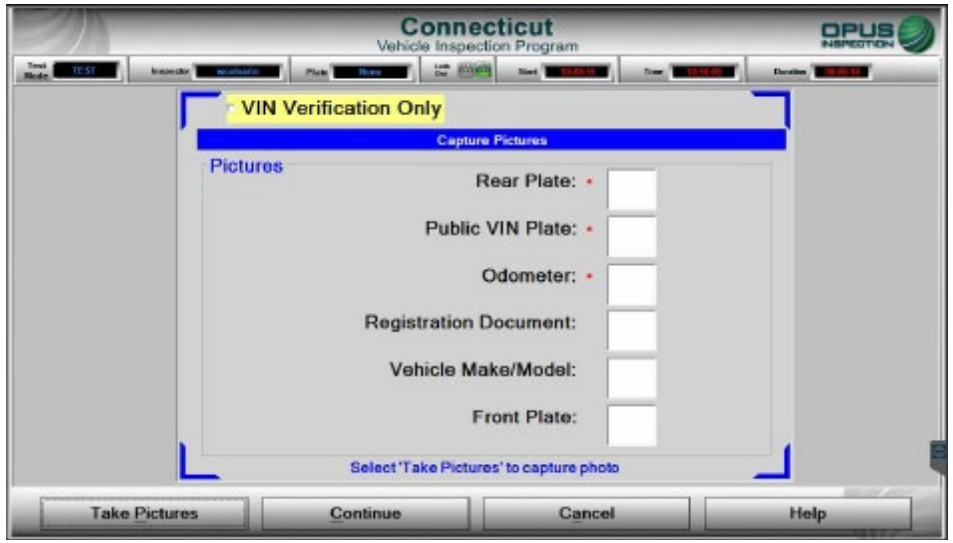
1. Begin Inspection



2. Scan Fingerprint



3. A full data file refresh occurs upon recognition of credentials



4. Upload the required images, marked with an asterisk. Click Take Pictures to proceed to the upload image screen.

Note: please be sure all images are clear and all data (i.e., VIN, plate number) is legible. Do not upload any blurry or illegible images.

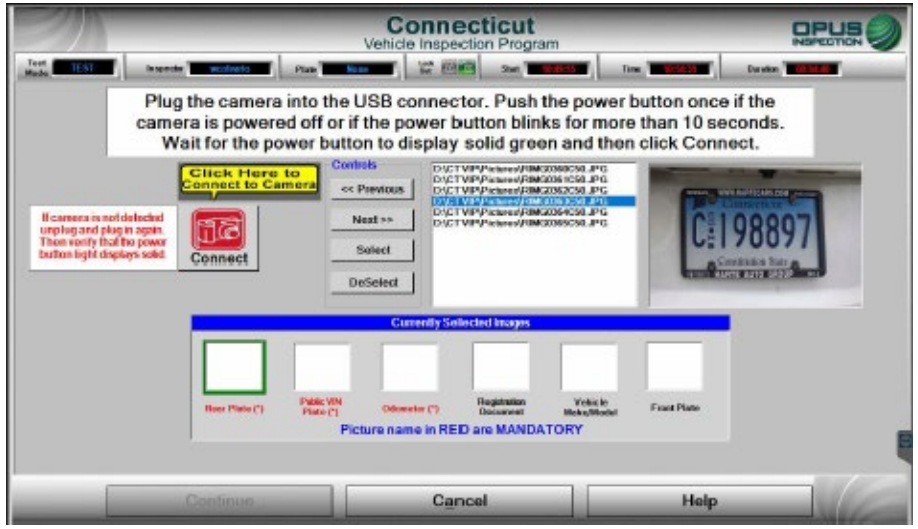
Inspections: Image Upload

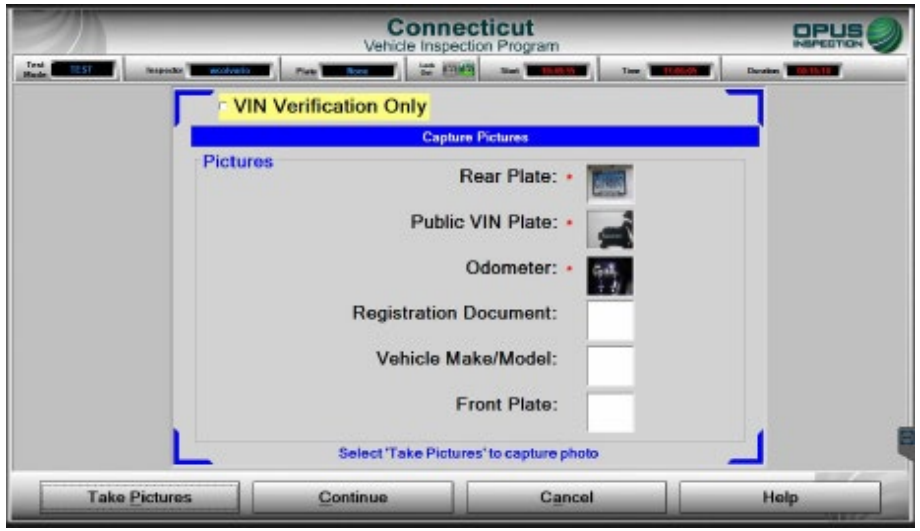
1. Once the images have been taken, connect the camera, power it on, and click Connect.

2. The image files will appear as seen in the photo to the right. Highlighting an image file will produce a preview of the image; match each image to the image description at the bottom of the page click Select.

3. Verify the images are present and accurate and continue, or adjust any errors by clicking Take Pictures to start the process over and retake all three photos. **Be sure all information is clearly visible in each photo (i.e., VIN, plate number, etc.) or else retake the photos.**

4. Click Continue to proceed to VIN entry.



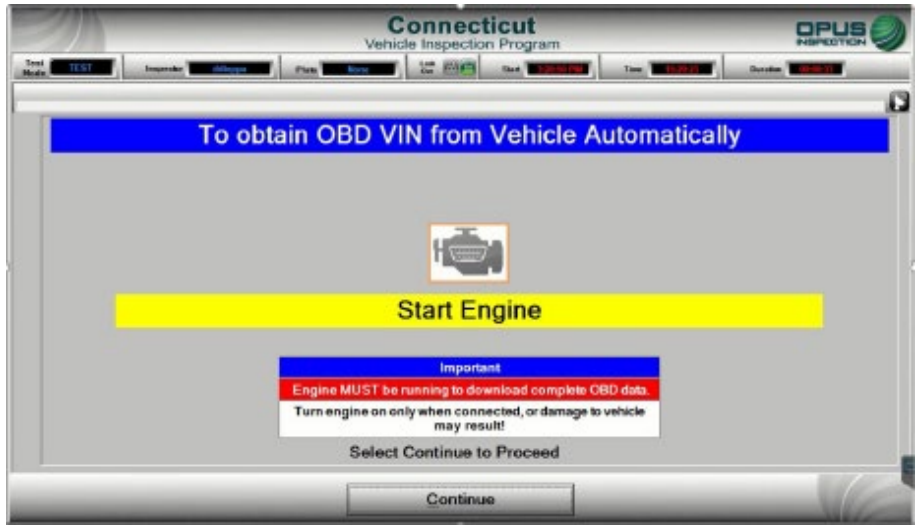


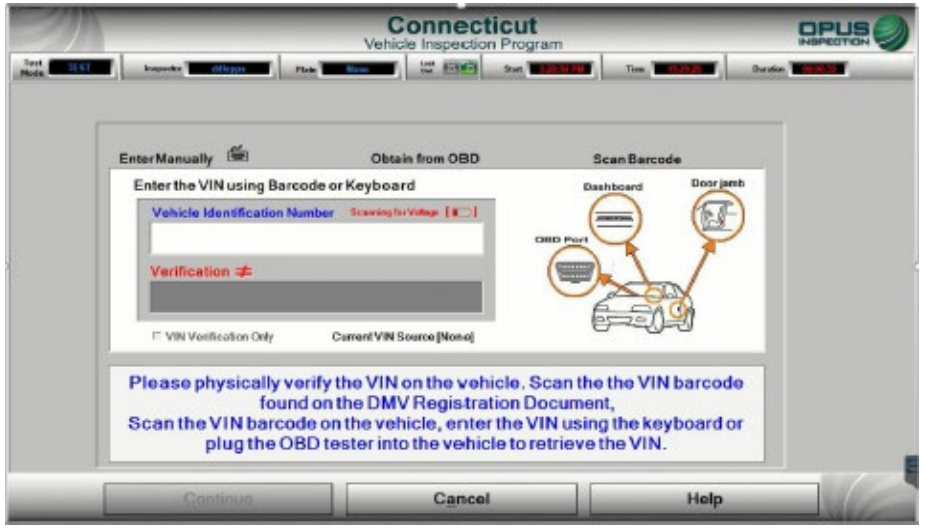
Inspections: VIN Entry

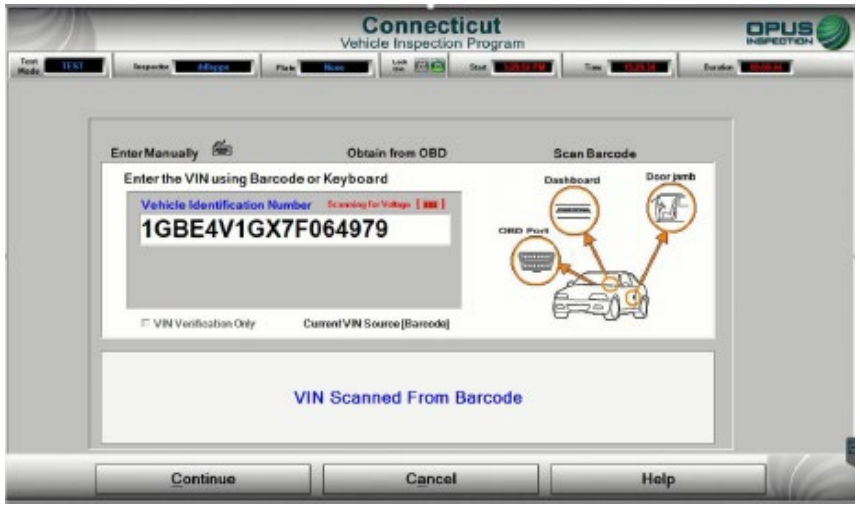
1. The software will now give an option to enter the VIN using the OBD cable. This option will collect all inspection data and will not prompt a second connection later in the inspection. Click Continue to proceed with the OBD cable connected, or without if there is no cable available.

2. The next screen will present all options for VIN entry: scan barcode, obtain from OBD, or enter manually. Your selected method will be automatically recognized.

REMEMBER:
It is your responsibility to verify accuracy of the VIN



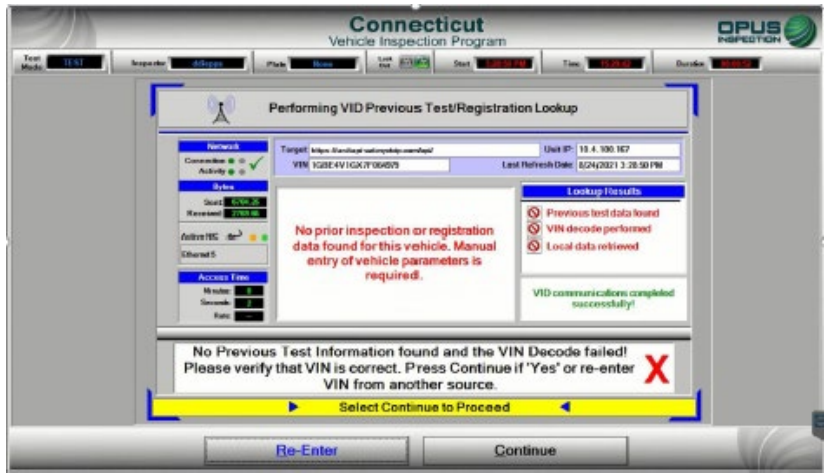




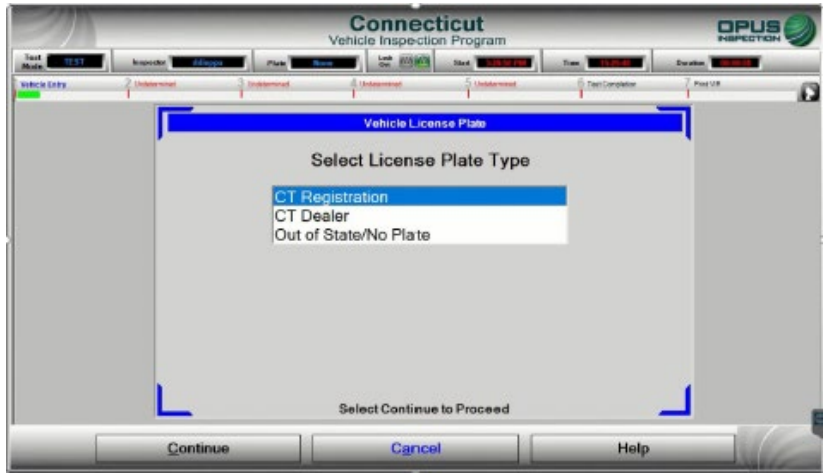
Above: In this example, the barcode was scanned from a reminder postcard, previous VIR, vehicle VIN plate, or door label.

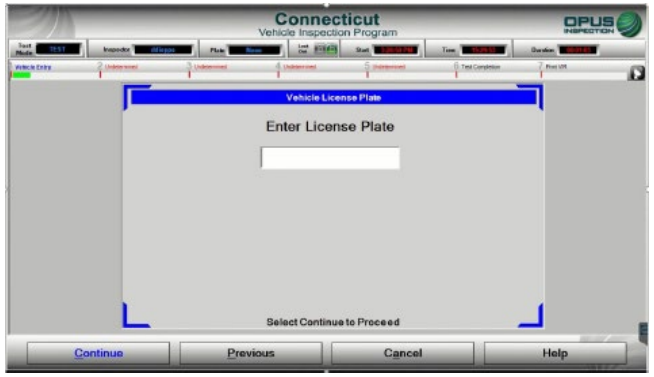
Inspections: Additional Data Entry

1. Once the VIN entry is complete, the software will perform the VID lookup and any previous Inspection data will be present if the vehicle has an inspection history.



2. In this example, with no previous test records found, you will be prompted to enter all vehicle information. First it will prompt for entry of the license plate type.

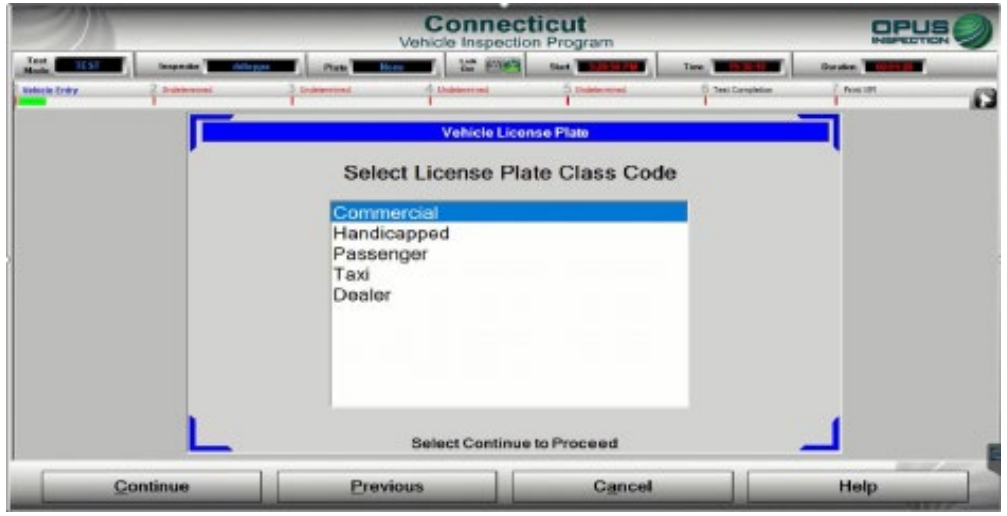




3. You will next be prompted to enter the license plate number twice.

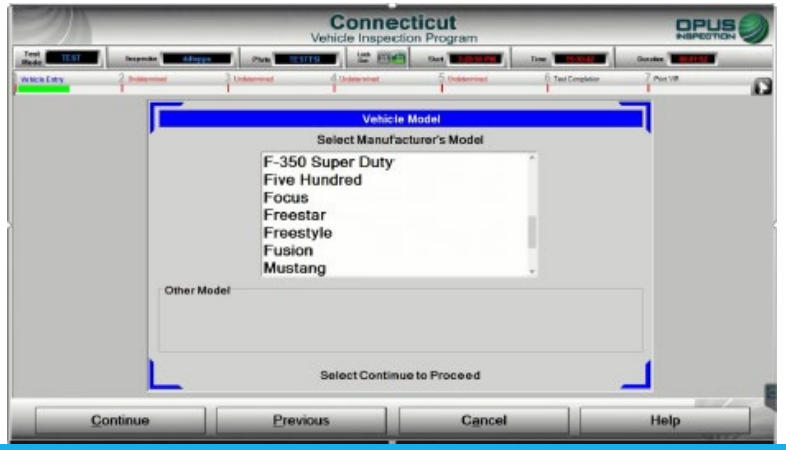
Inspections: Additional Data Entry

1. You will next be prompted to enter the license plate class code; the following photos will demonstrate data entry when the VLT provides no results upon VIN entry.



2. You will be prompted to enter the vehicle model year.

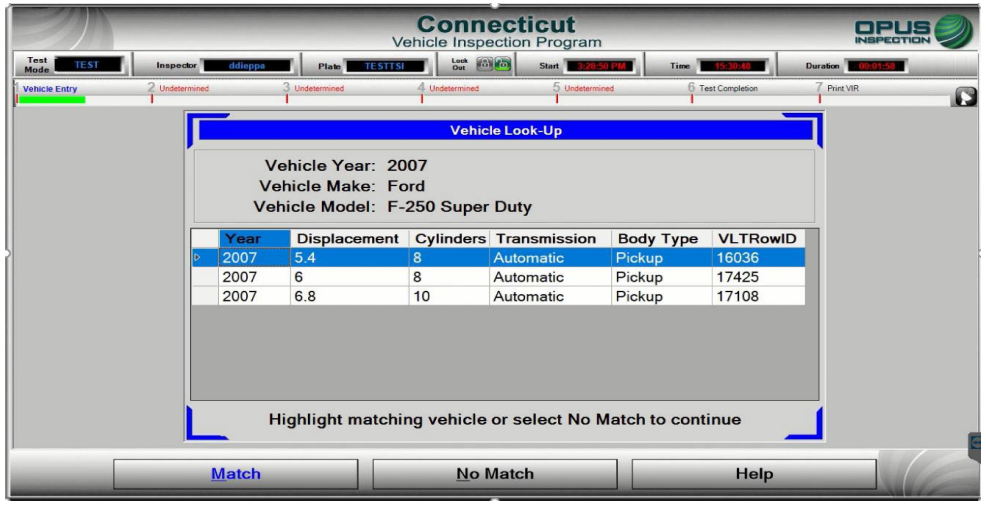
3. Next, enter the vehicle make and model, using either the quick select buttons for the most common manufacturers or by scrolling through the list of options using the arrow slides.

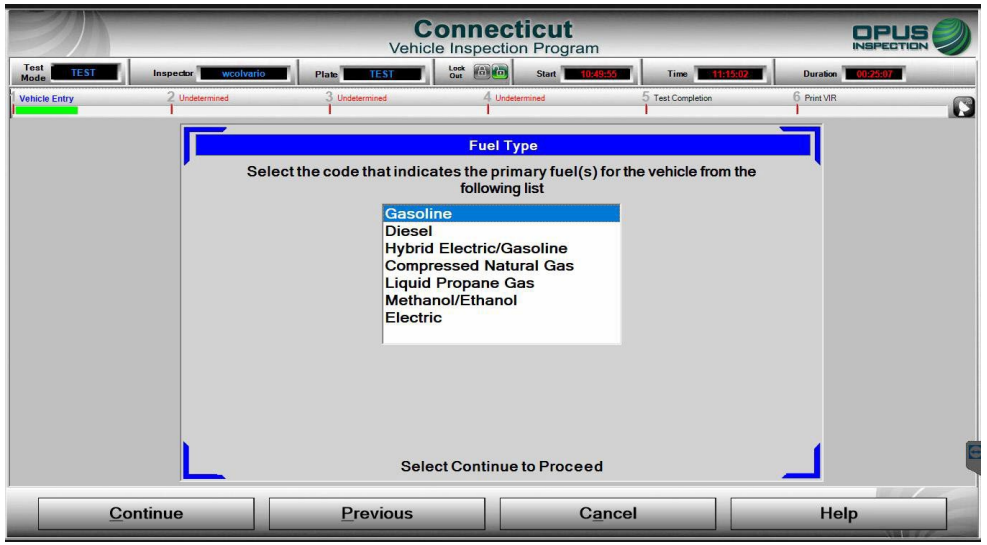


Inspections: Additional Data Entry

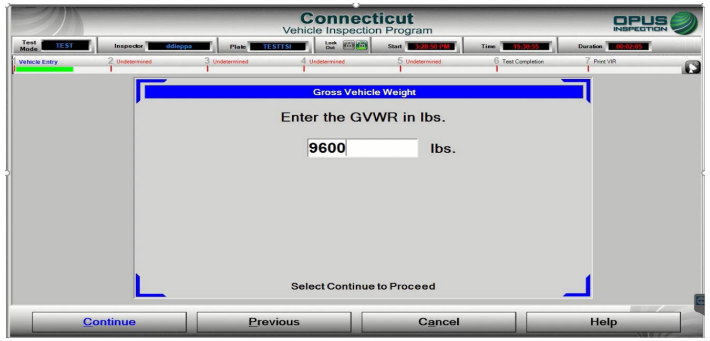
1. The vehicle look-up will provide possible matches based on the options you selected. If all of the information of a row is not a match to the vehicle, select “No Match”. You will be prompted to enter the information manually if no match is found.

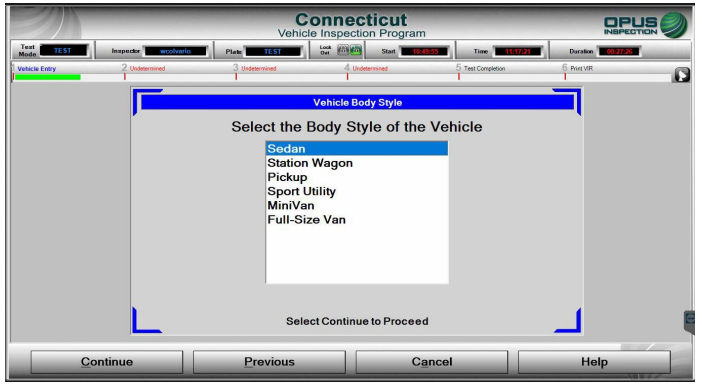
2. You may be prompted to enter fuel type. Select the appropriate fuel type from the list, then click continue to proceed.





3. Next you will enter the Gross Vehicle Weight Rating (GVWR). If you cannot obtain the GVWR from the vehicle, it may be obtained from the vehicle registration or, if necessary, a call to the Opus Help Desk. Inspection Types are partly determined by this information, and it must be correct. You may also be prompted to enter body style. Click continue to proceed.

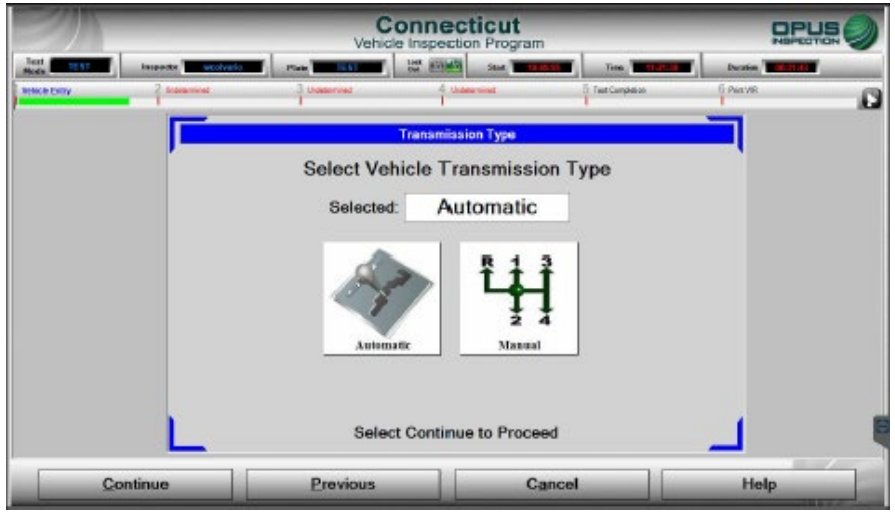


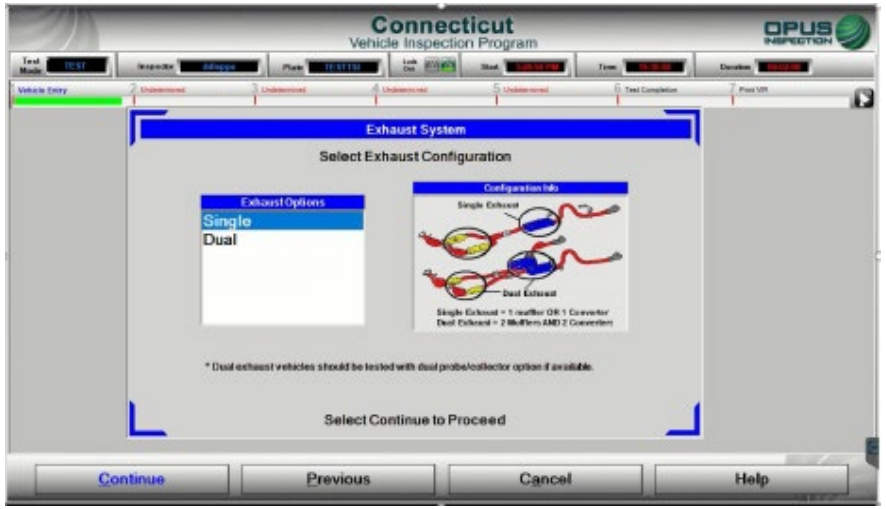


Inspections: Additional Data Entry

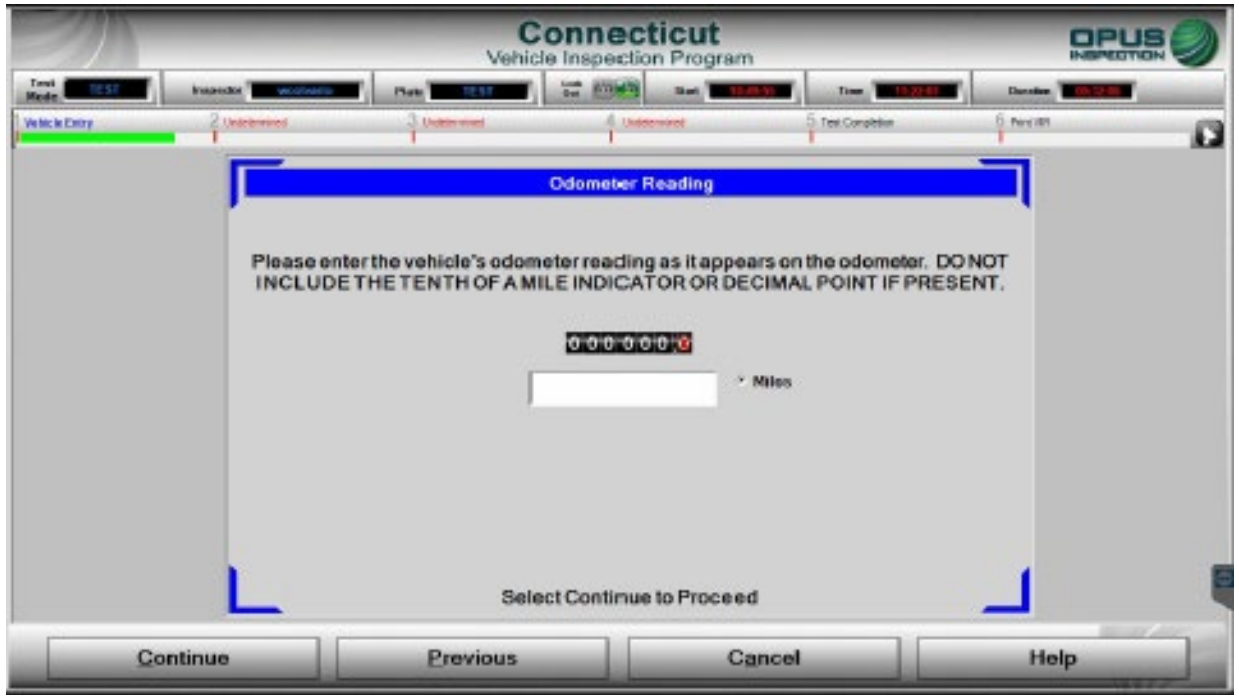
You may next be prompted to enter the following information:

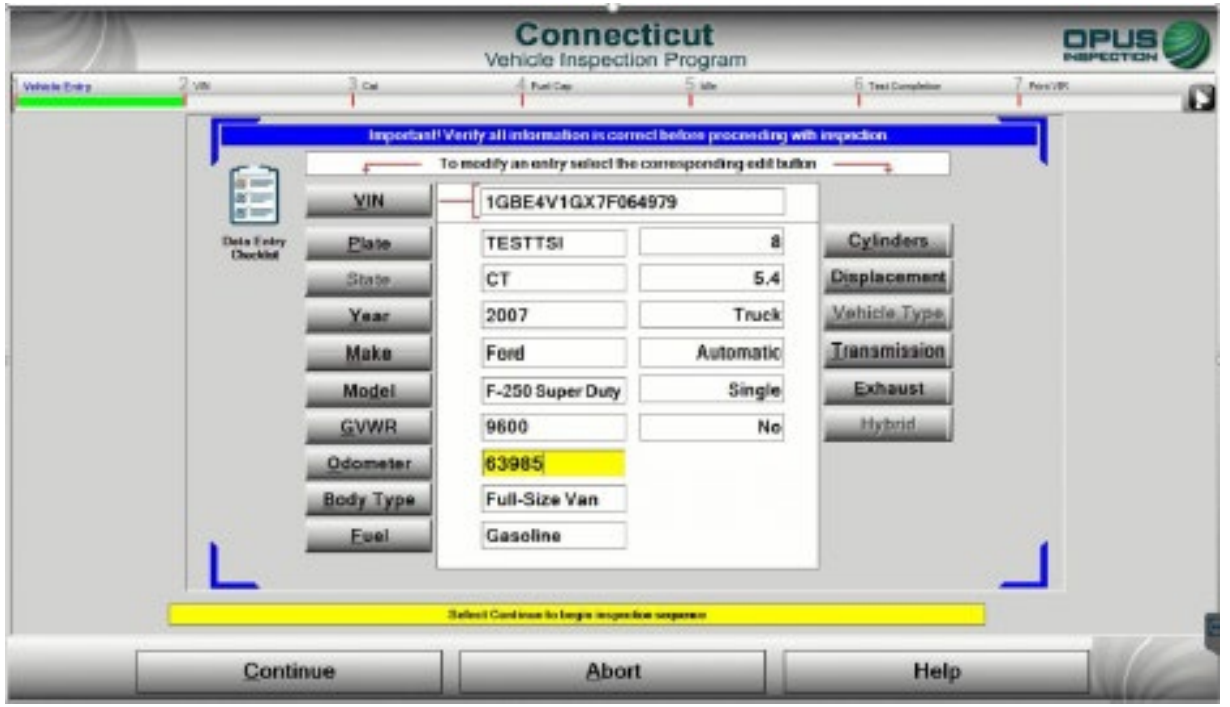
- Number of engine cylinders
- Engine displacement size
- Vehicle transmission type
- Single or Dual Exhaust





Inspections: Odometer Reading

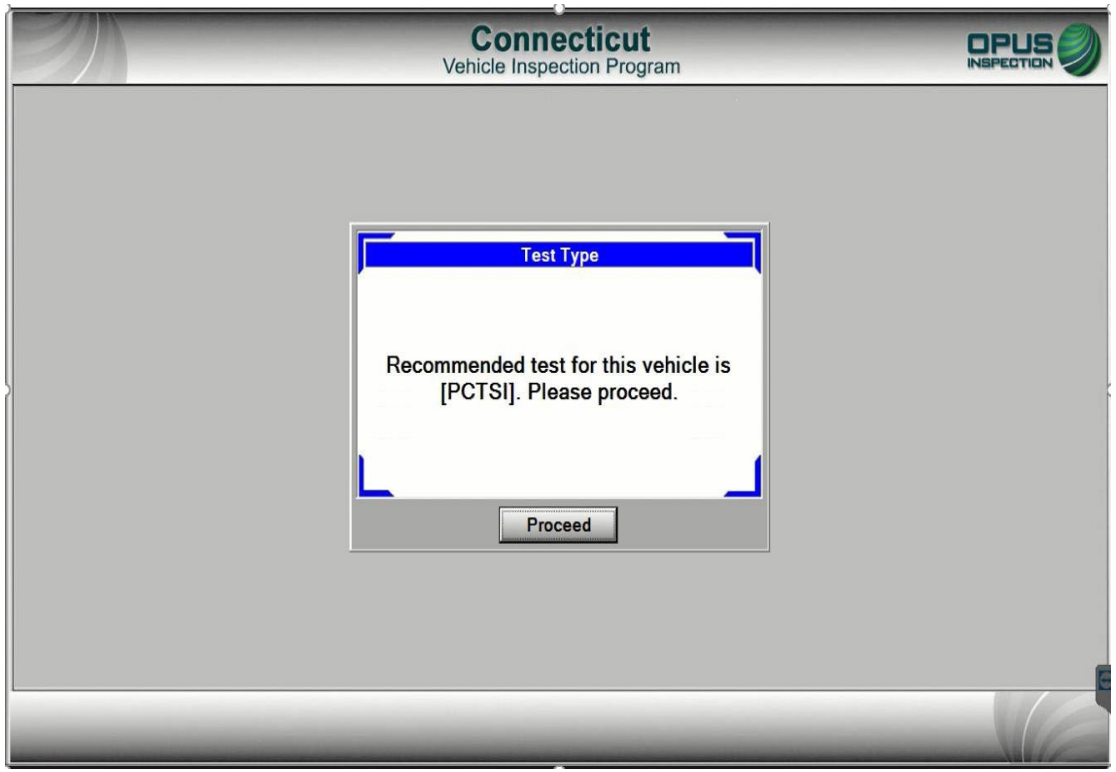


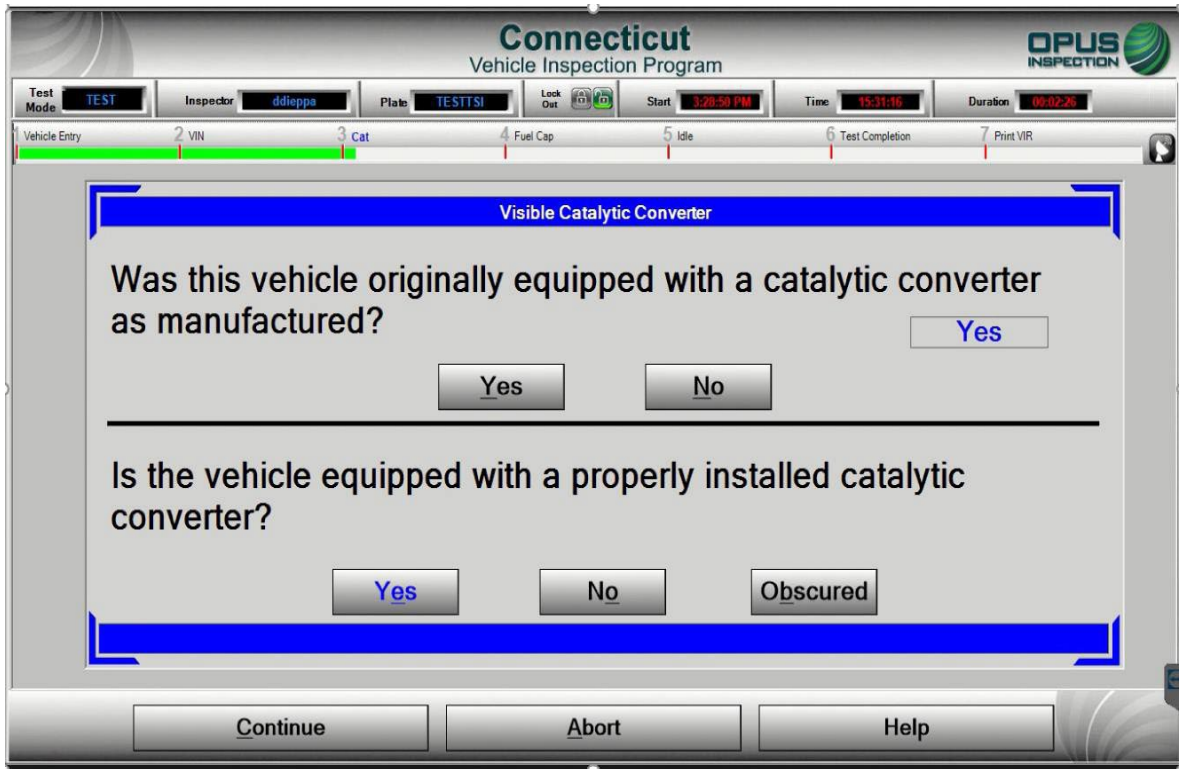


The entry of the Odometer reading is required for all inspections and is the last step of the data entry process.

At this time, all vehicle information MUST be verified. Please be sure to verify the VIN, license plate and plate class code, year, make, model, mileage, GVWR, and all vehicle specifications. You will be unable to make changes to vehicle information once the inspection type is determined. ANY ERRORS IN DATA ACCURACY THAT RESULT IN THE NEED FOR AN ADDITIONAL INSPECTION WILL BE AT THE STATION'S EXPENSE.

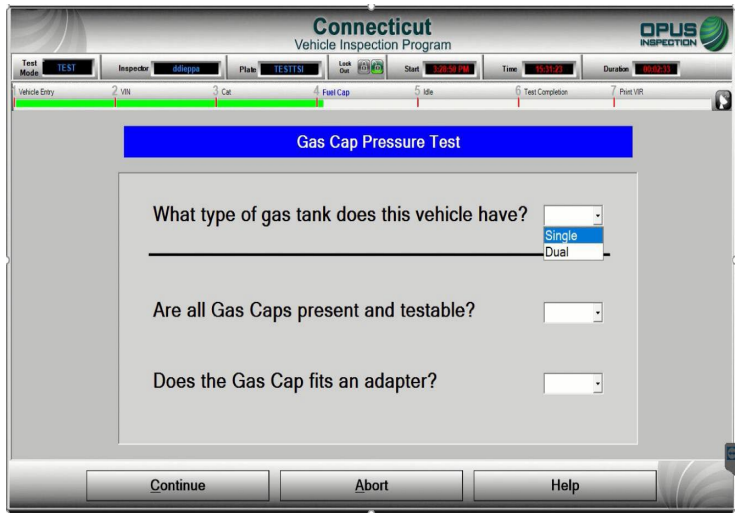
Inspections: Pre-Conditioned Two-Speed Idle (TSI)

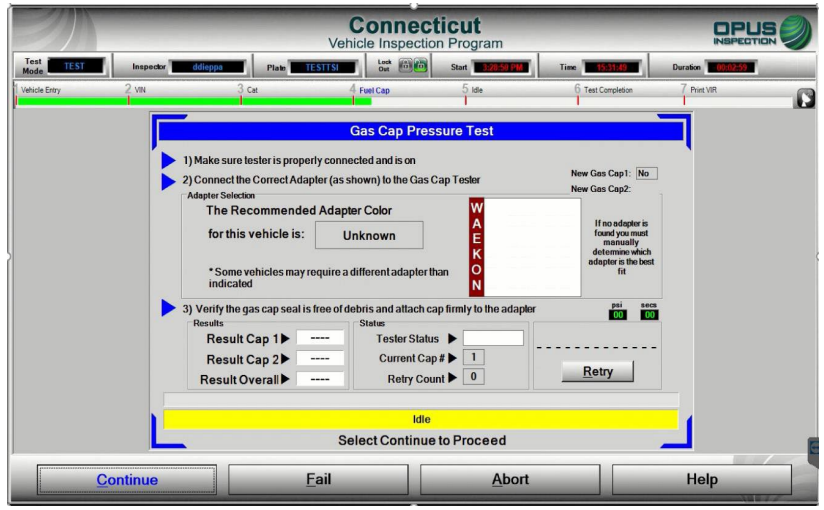


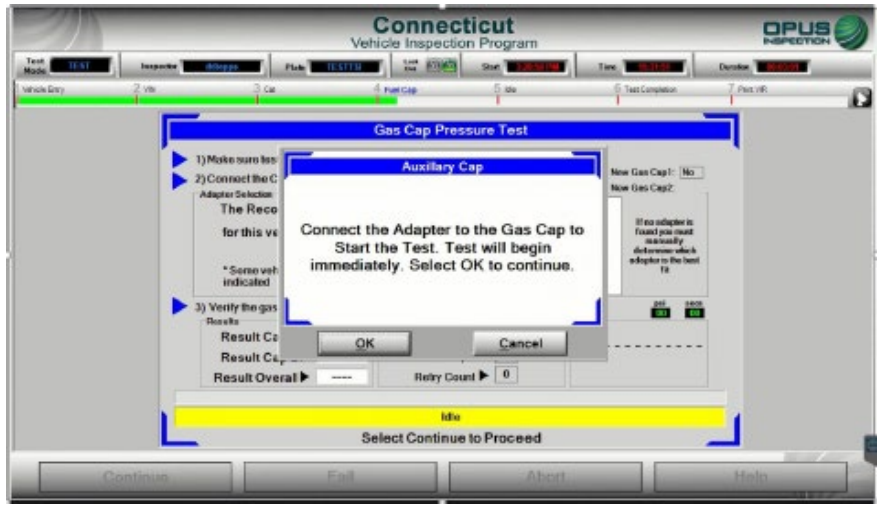


After the inspection type is determined (see above), next will be the visual catalytic converter check. Be sure to select the appropriate response, as the outcome of the test will be affected. Be SURE to perform the visual CAT check; do NOT answer without physical verification.

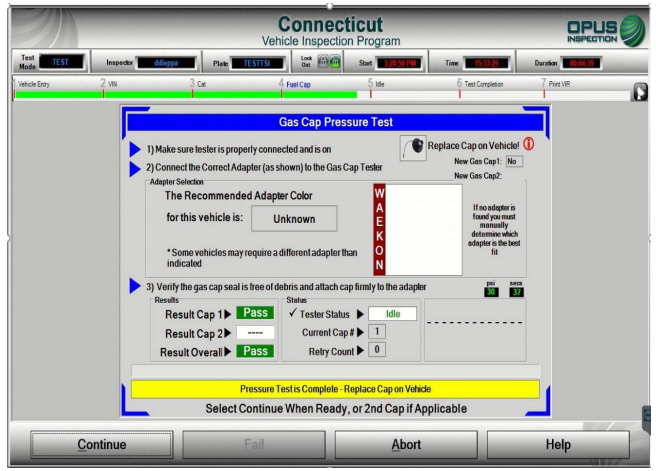
Inspections: Pre-Conditioned Two-Speed Idle (TSI)





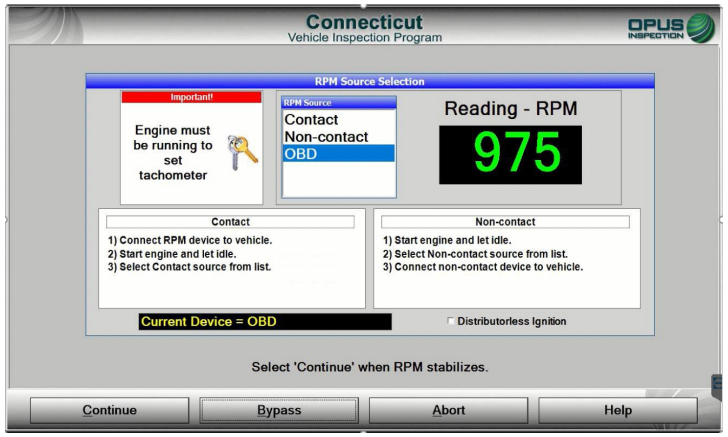


Next, the gas cap pressure test will perform a leak down test of the vehicle's gas cap. Answer all questions and proceed by clicking continue. You MUST select the appropriate response for how many tanks/gas caps the vehicle is equipped with. Vehicles with dual gas tanks MUST have both gas caps inspected. Place the gas cap on the appropriate adapter and click continue to begin the test.

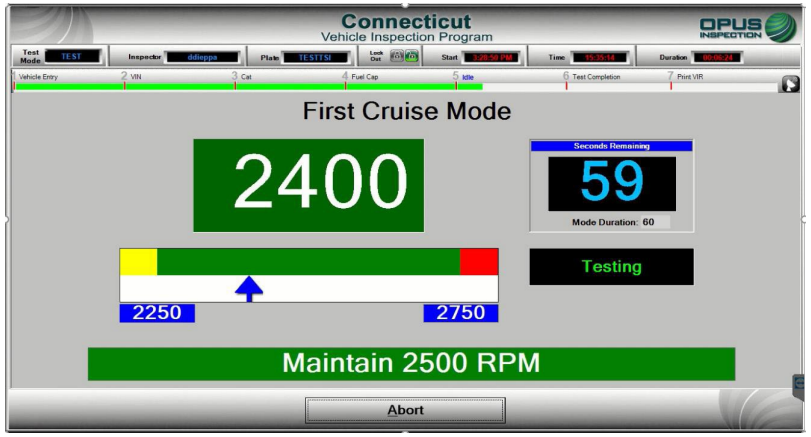


When the test is complete, remove the gas cap from the tester, return it to the vehicle, and continue.

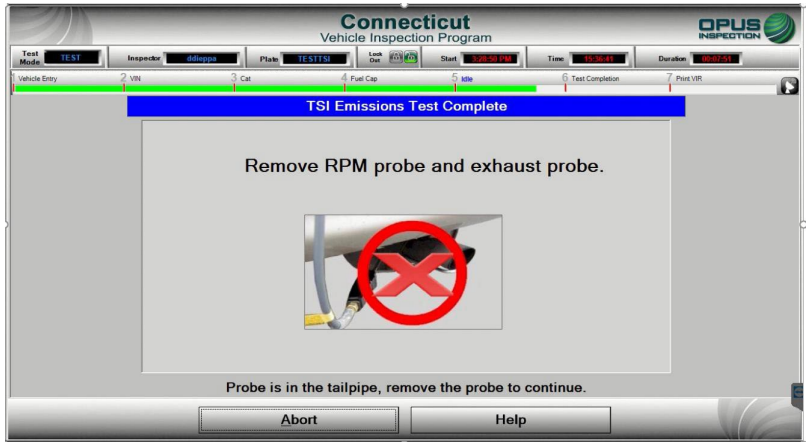
Inspections: Pre-Conditioned Two-Speed Idle (TSI)

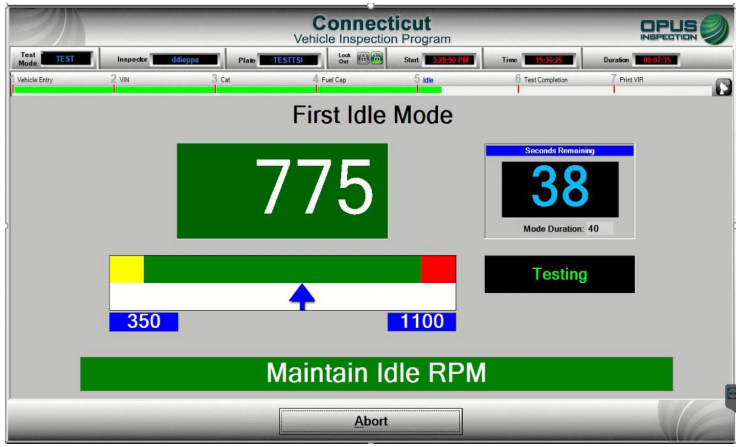


First you will capture RPM by choosing one of the methods available. You must make three attempts, using any source available before bypassing RPM. RPM bypassing is strictly monitored and bypassing without a sufficient attempt is a Program Violation subject to Monetary Assessments.



The first cruise mode will have you maintain the vehicle's RPM at 2500; the timer will indicate the time remaining for first cruise mode.

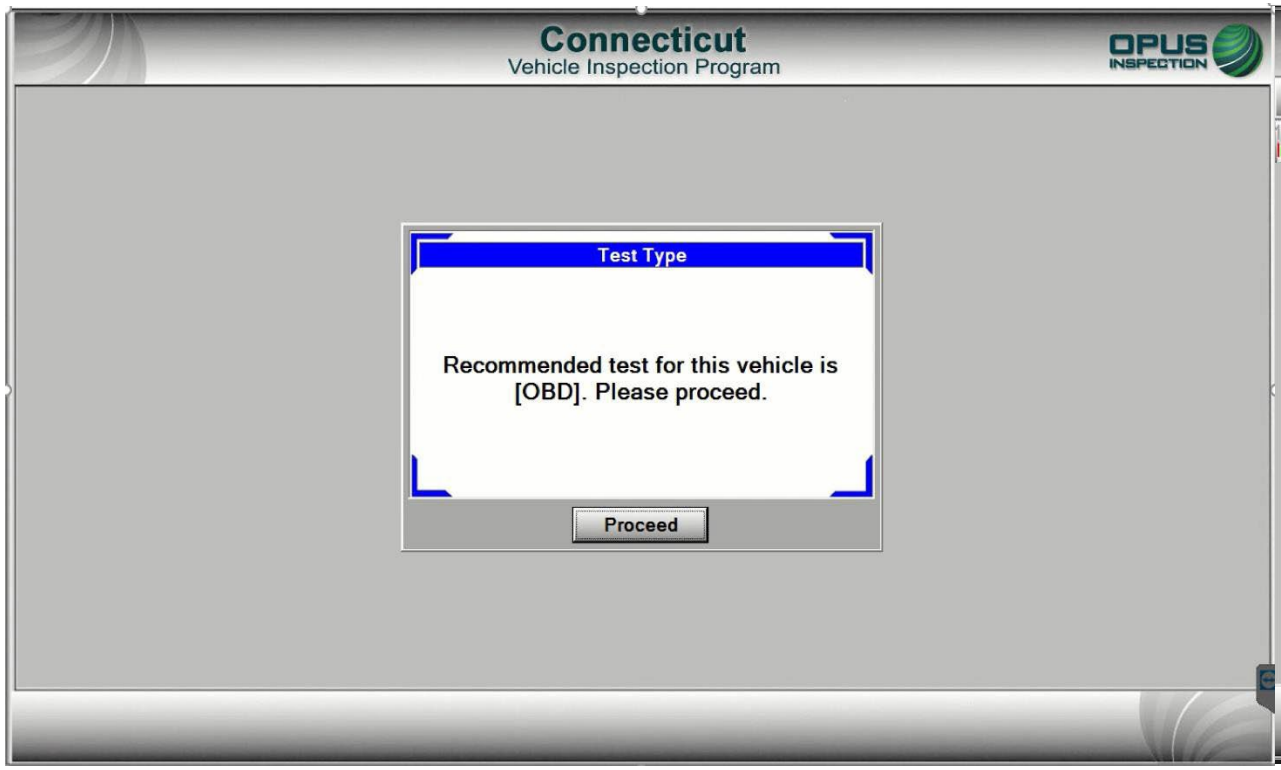


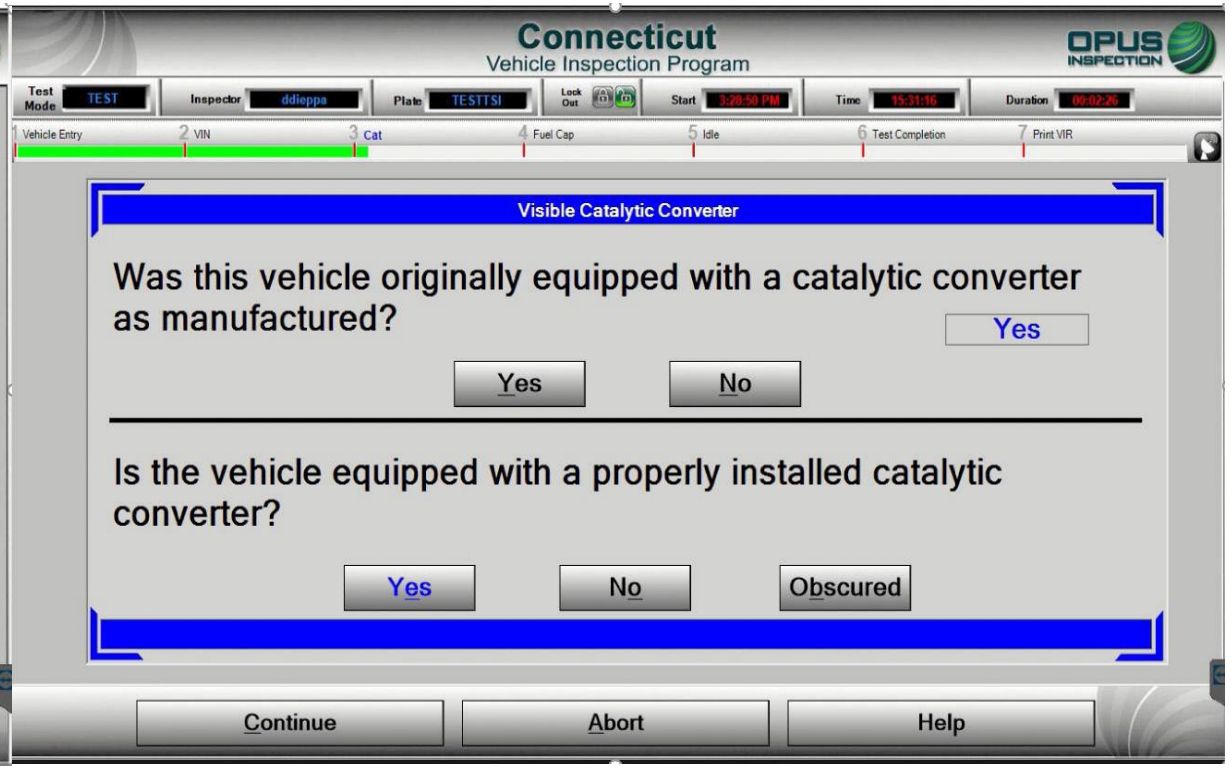


The first idle mode will measure RPM at idle. The timer will indicate the time remaining for idle mode. **The inspection will only require one cruise and one idle mode if the readings obtained are sufficient to deliver a result.*

This completes the PCTSI inspection. You will be prompted to remove RPM cables and exhaust probes before you proceed to the inspection result.

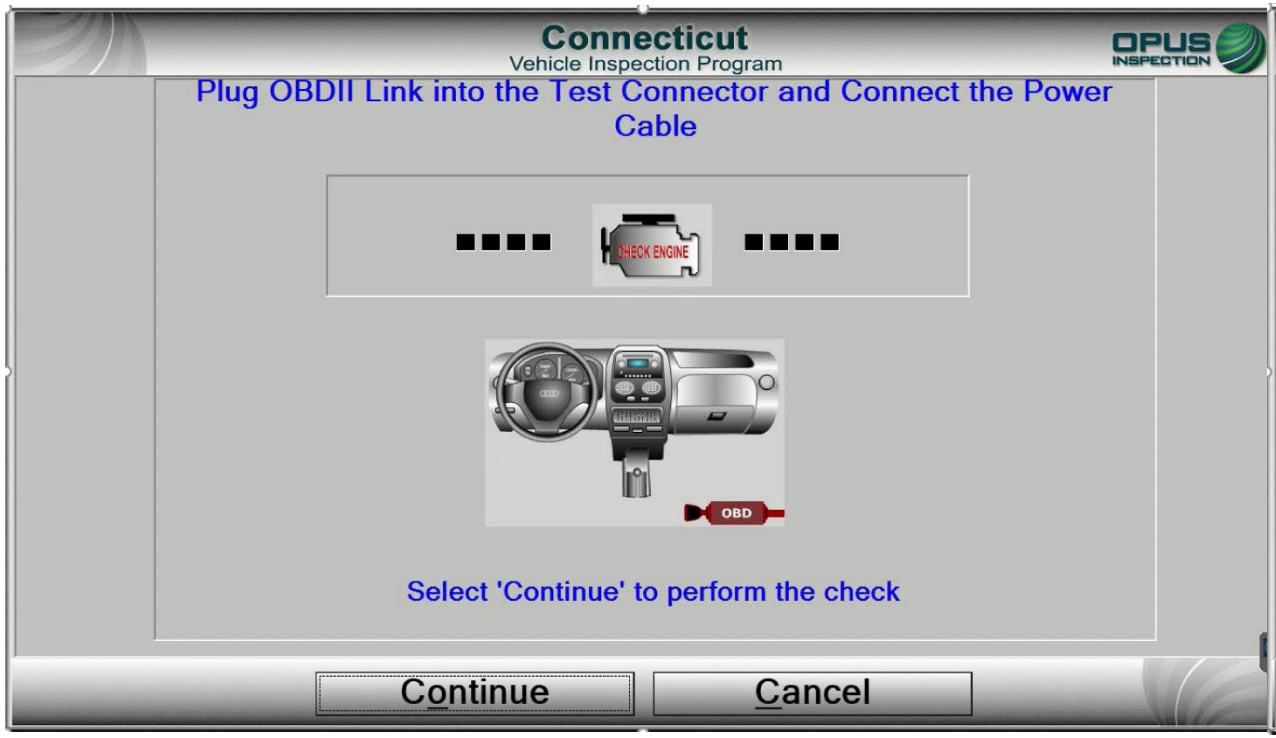
Inspections: On-Board Diagnostic (OBD)

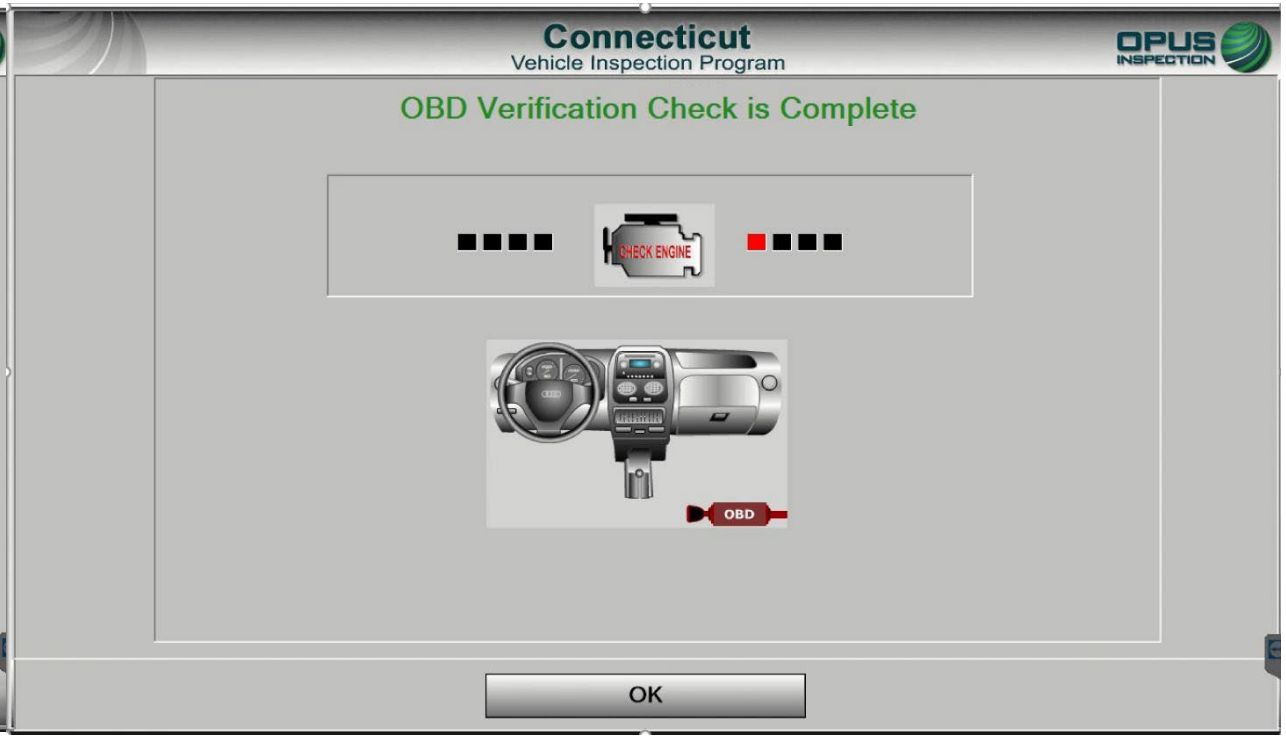




After the inspection type is determined (see above), next will be the visual catalytic converter check. Be sure to select the appropriate response, as the outcome of the test will be affected. Be SURE to perform the visual CAT check; do NOT answer without physical verification.

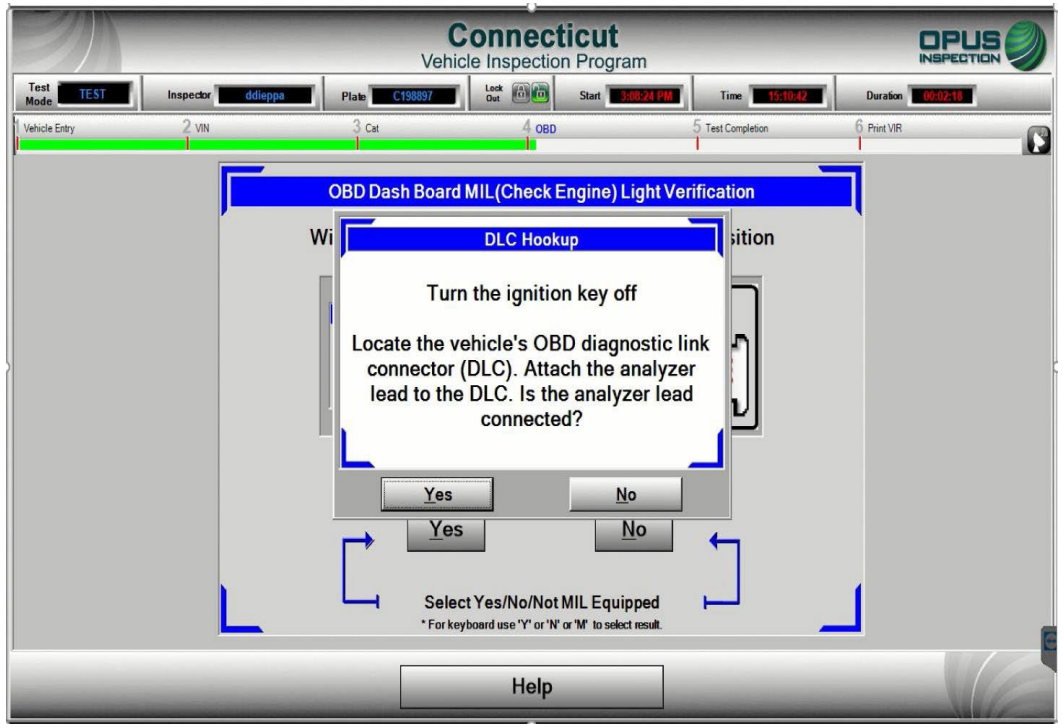
Inspections: On-Board Diagnostic (OBD)

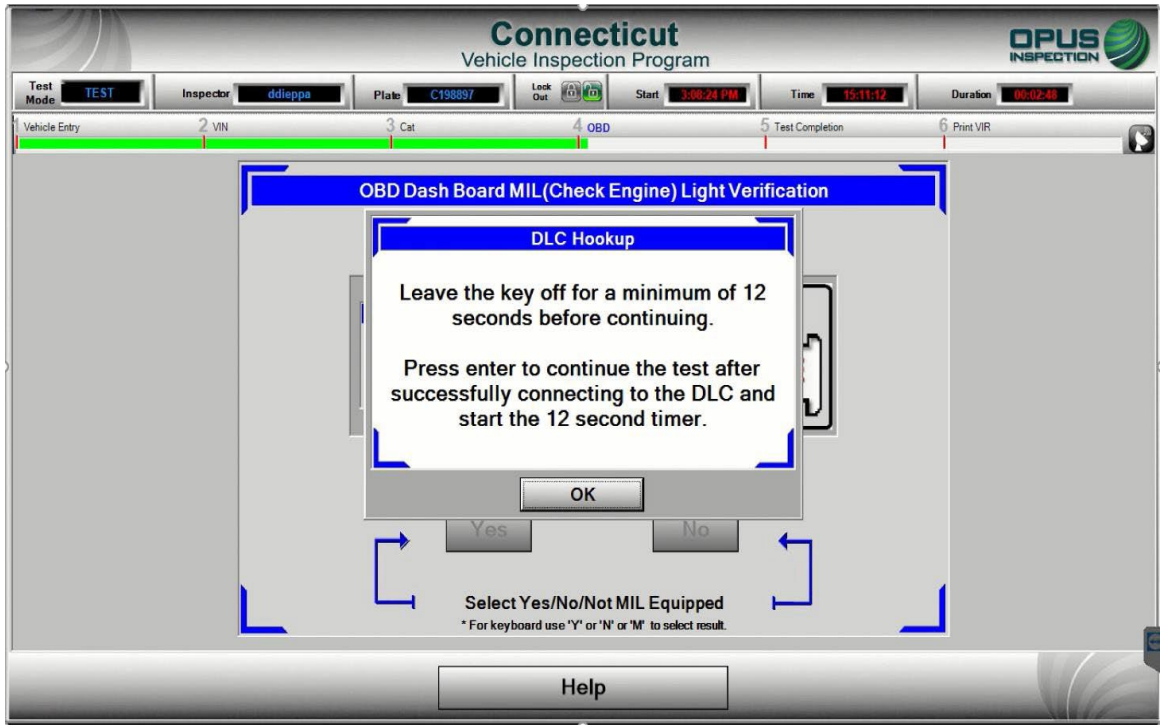




Next, connect the OBD cable to the DAD unit for a self check. The verification will complete. If there is an issue with the DAD module, check all connections and try again.

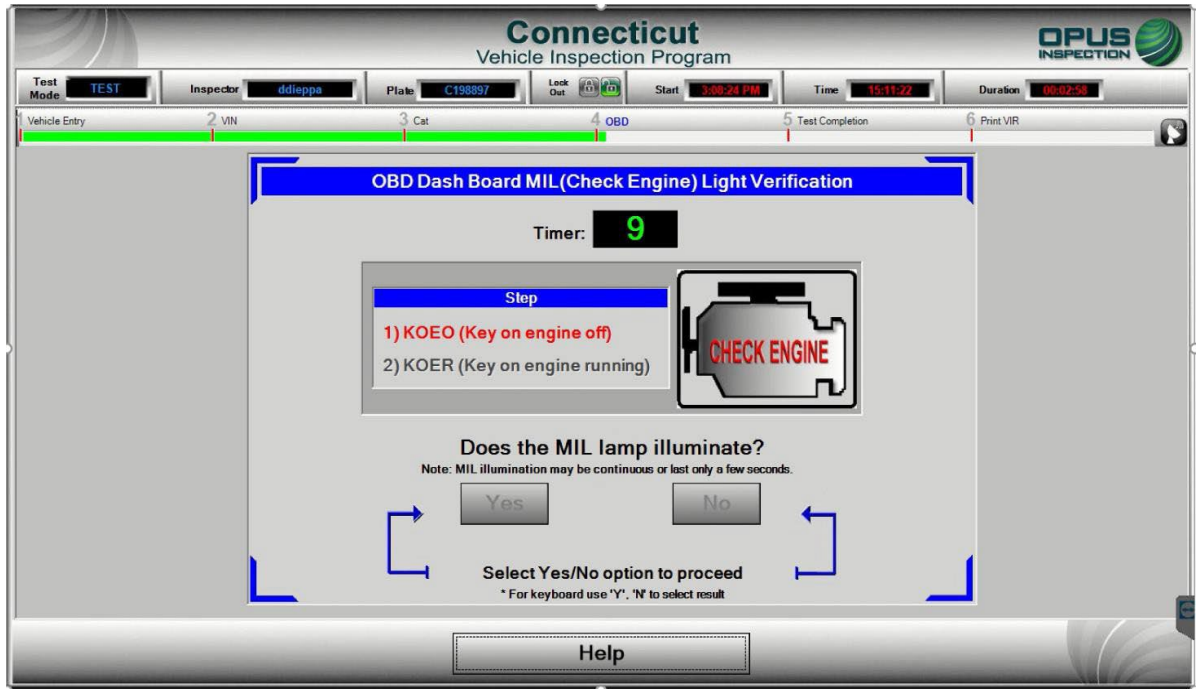
Inspections: On-Board Diagnostic (OBD)

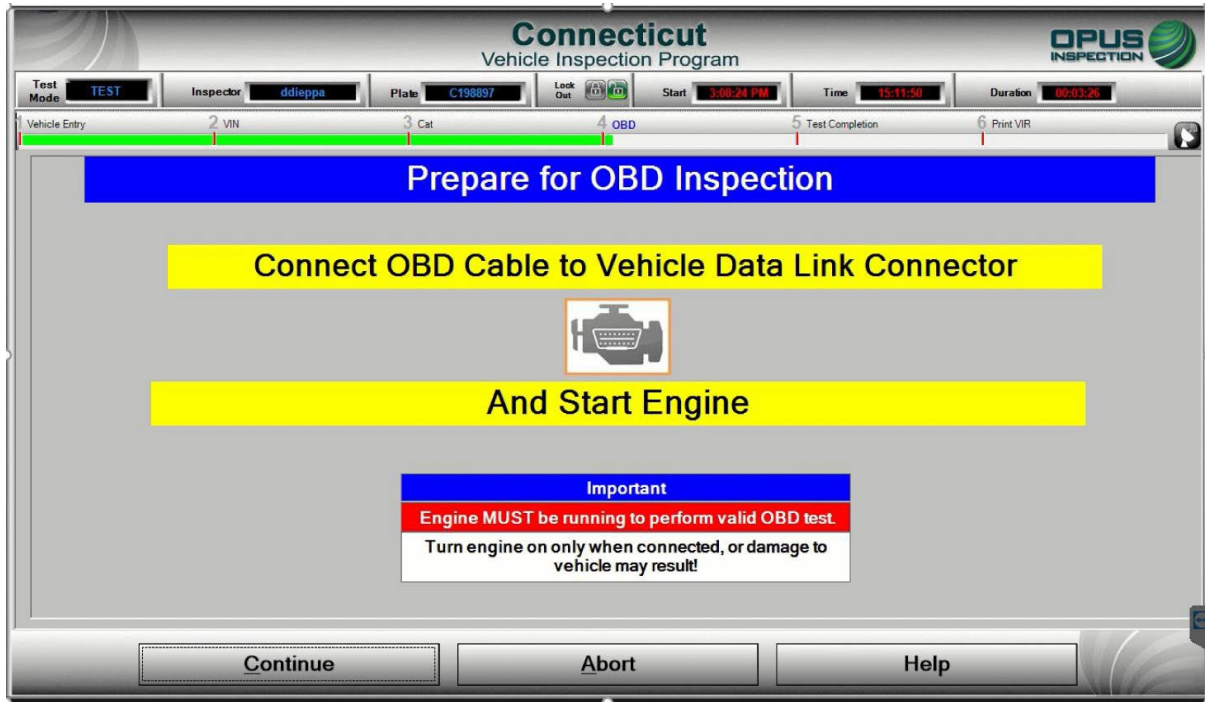




Next you will be prompted to shut the engine off and connect the OBD cable to the vehicle's DLC. You will then be prompted to verify the OBD cable is connected; upon verification, the 12-second timer will begin.

Inspections: On-Board Diagnostic (OBD)

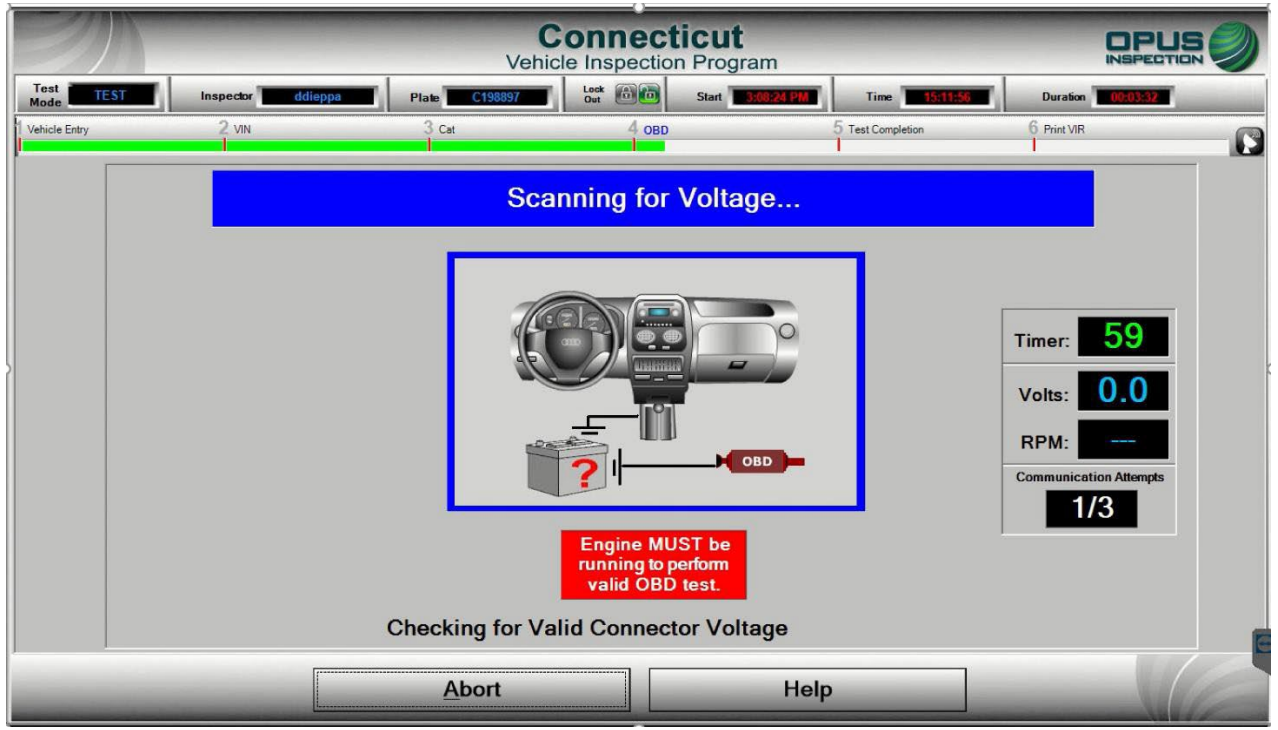




You will next be prompted to perform a Key On Engine Off (KOEO) check of the vehicle's Malfunction Indicator Lamp (MIL, also referred to as the Check Engine Light). You will then be prompted to connect the OBD cable to the vehicle's DLC. **DO NOT connect to the DLC while the vehicle's engine is running!**

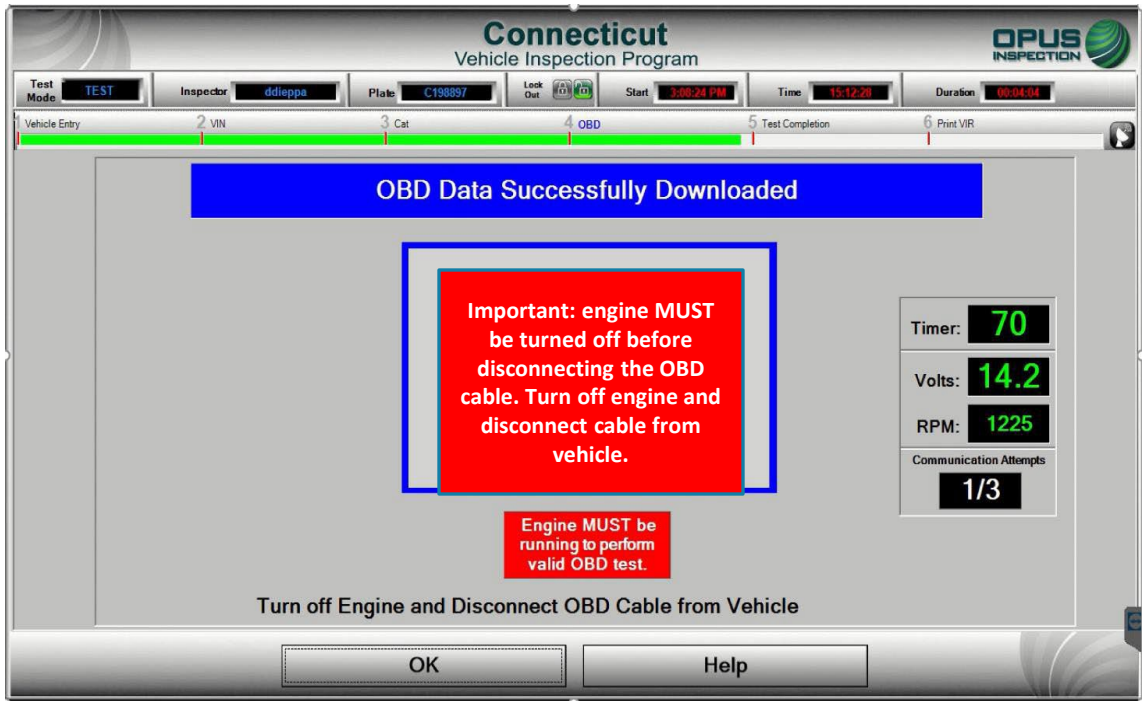
Inspections: On-Board Diagnostic (OBD)

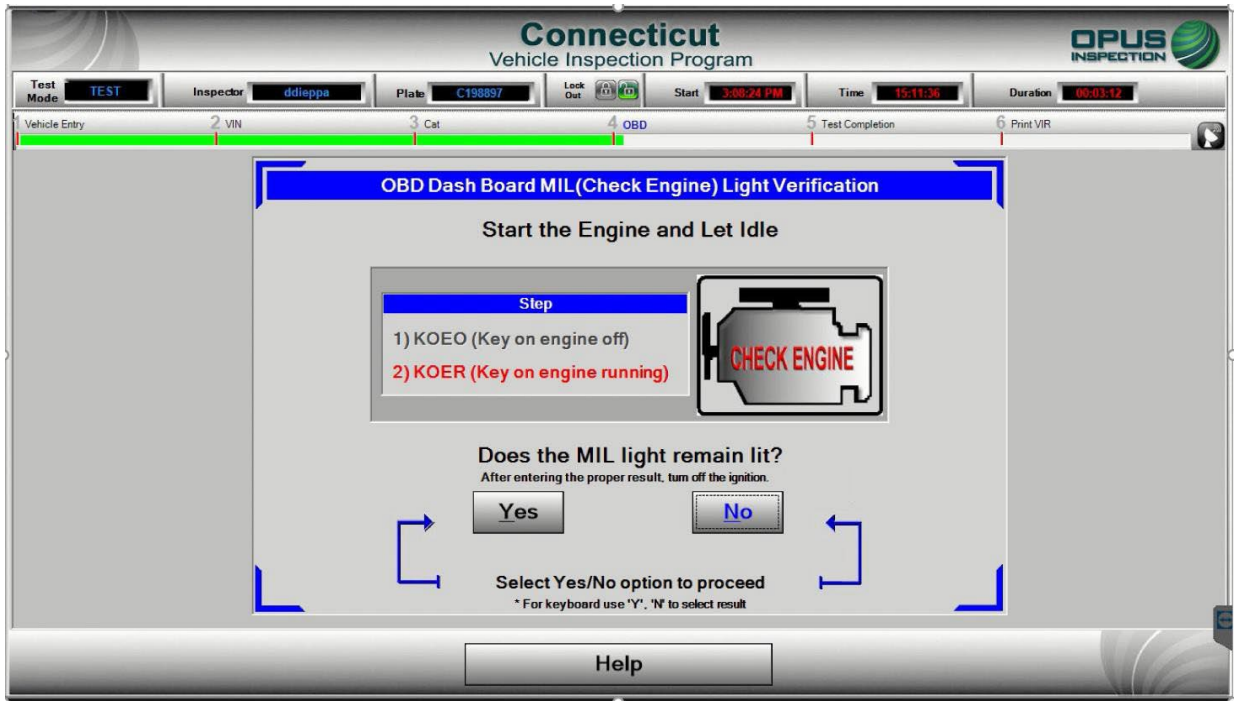
- Valid Voltage Detected - Connecting to OBD Port
- Connected to OBD Port
- Waiting for Valid Idle RPM
- Detected Valid Idle RPM
- Obtaining Readiness Monitors Status
- Obtaining Diagnostic Trouble Codes
- Obtaining Malfunction Indicator Lamp Status
- Obtaining Permanent Diagnostic Trouble Codes
- Obtaining Vehicle Identification Number



Once connected to the vehicle, the program will run through a series of protocols (above); the blue bar as shown above will display progress as the inspection continues.

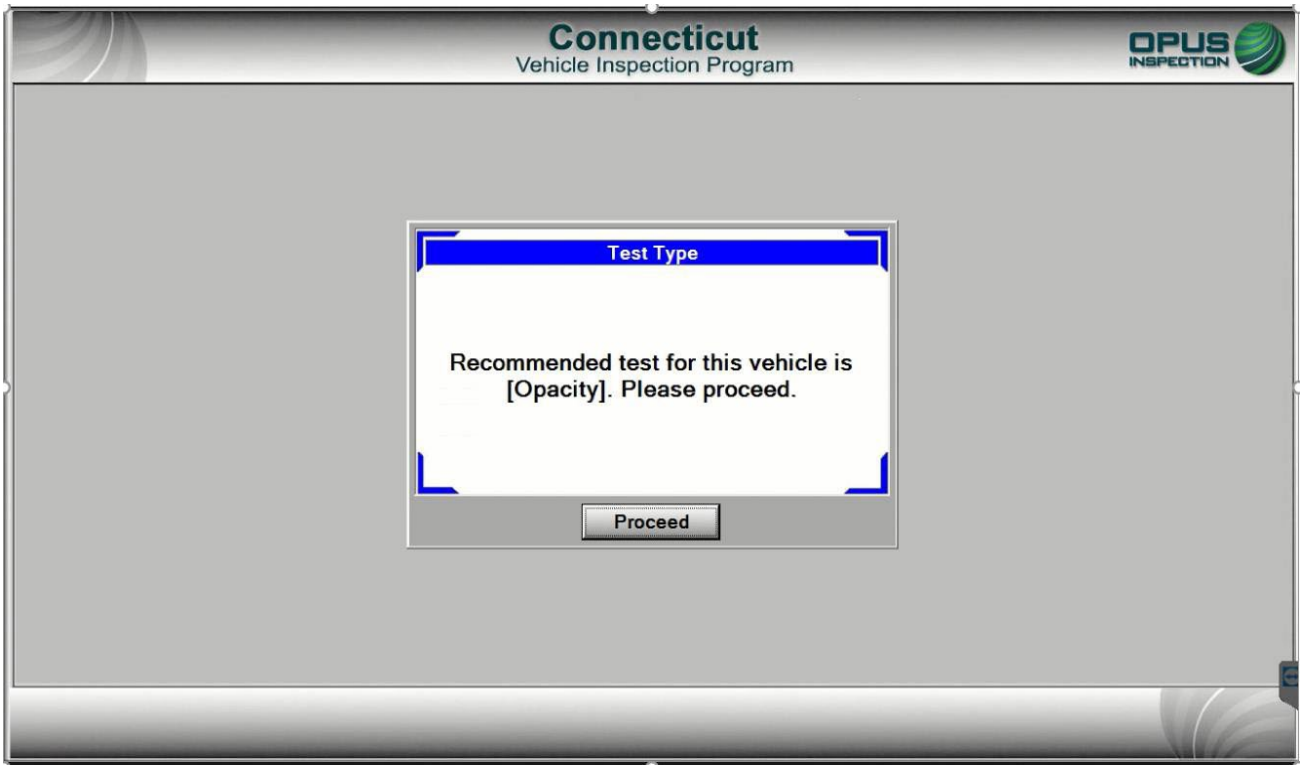
Inspections: On-Board Diagnostic (OBD)

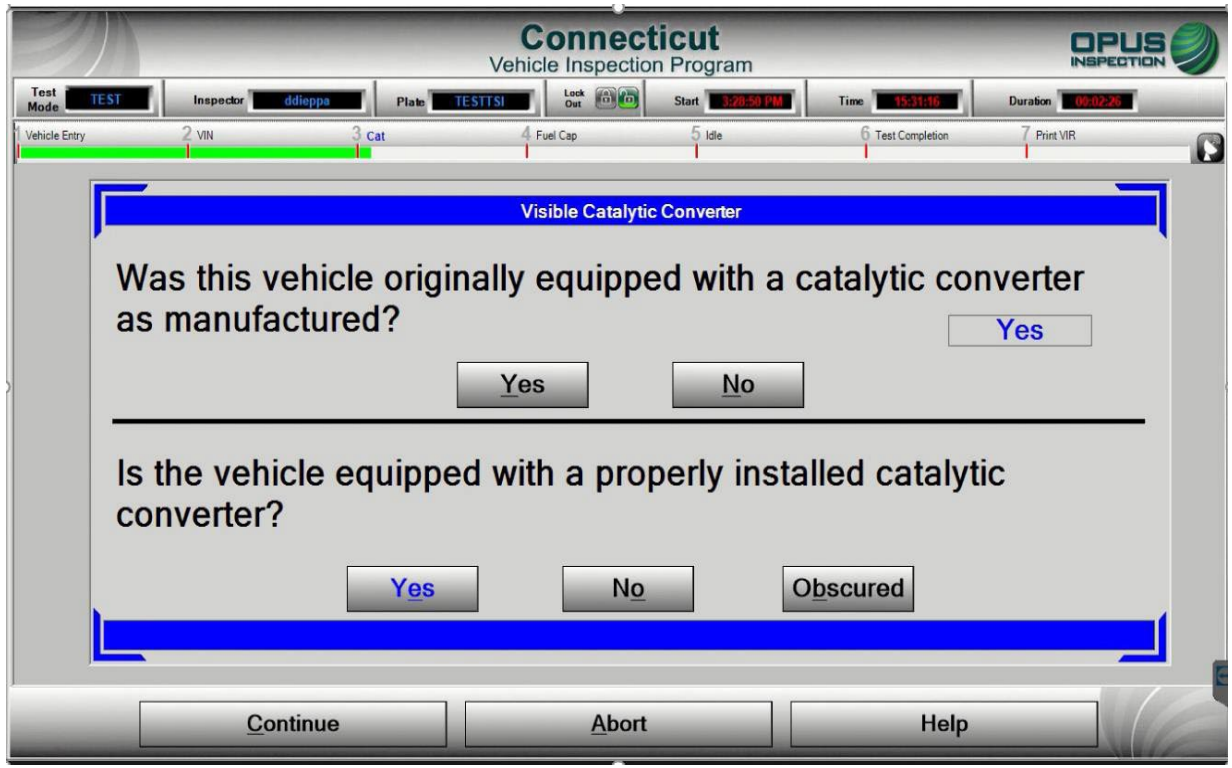




When the OBD inspection data retrieval is complete, you will be prompted to turn the engine **OFF** and disconnect the OBD cable from the vehicle's DLC. Next, perform a Key On Engine Running (KOER) check to confirm that the MIL light does not remain illuminated while the engine is running. The inspection is now complete.

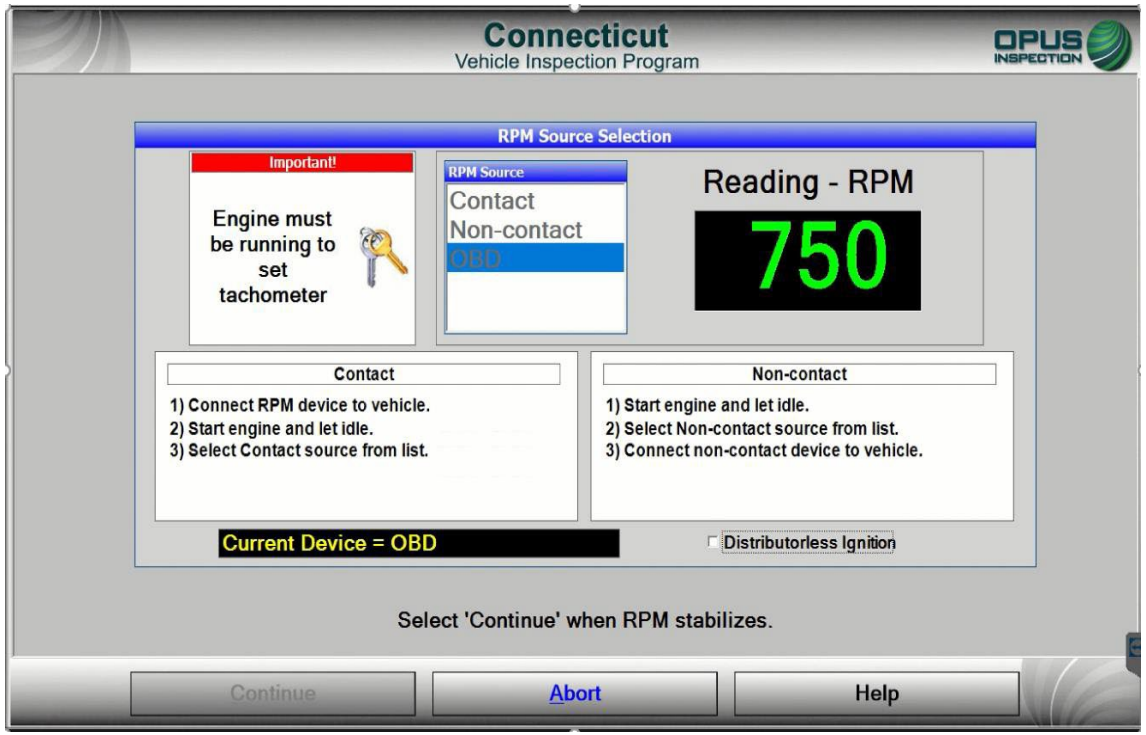
Inspections: Modified Snap Acceleration Test (Opacity)

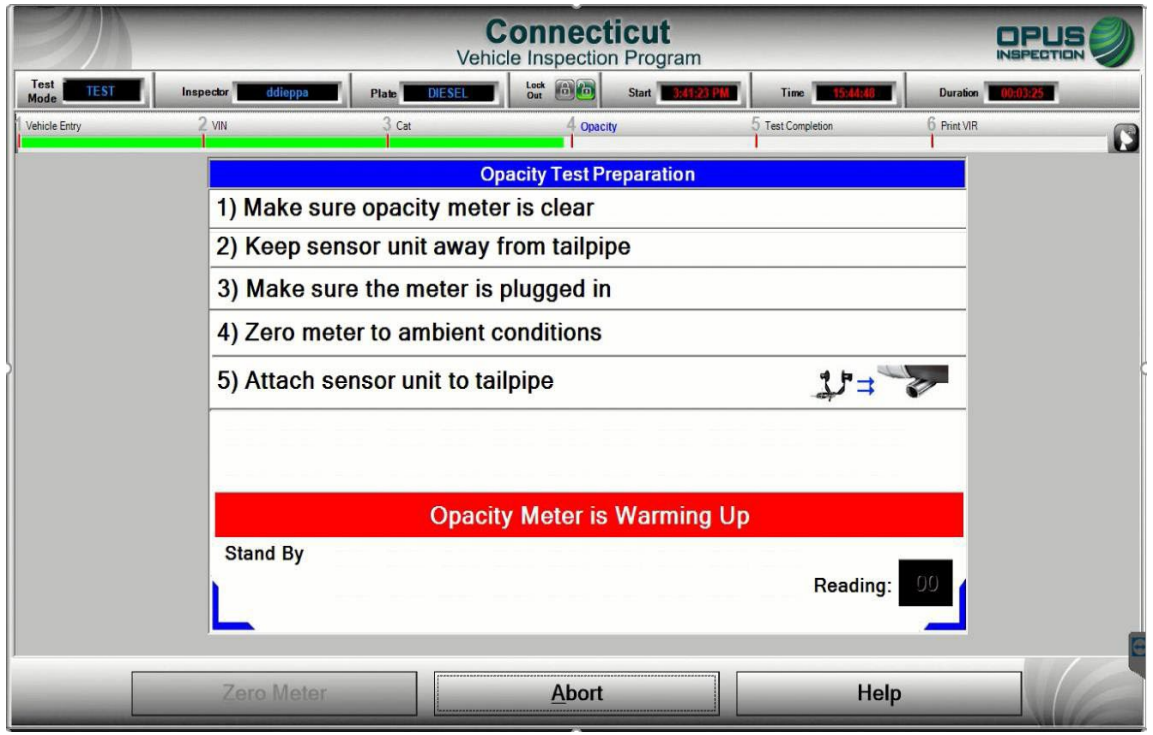




After the inspection type is determined (see above), next will be the visual catalytic converter check. Be sure to select the appropriate response, as the outcome of the test will be affected. Be SURE to perform the visual CAT check; do NOT answer without physical verification.

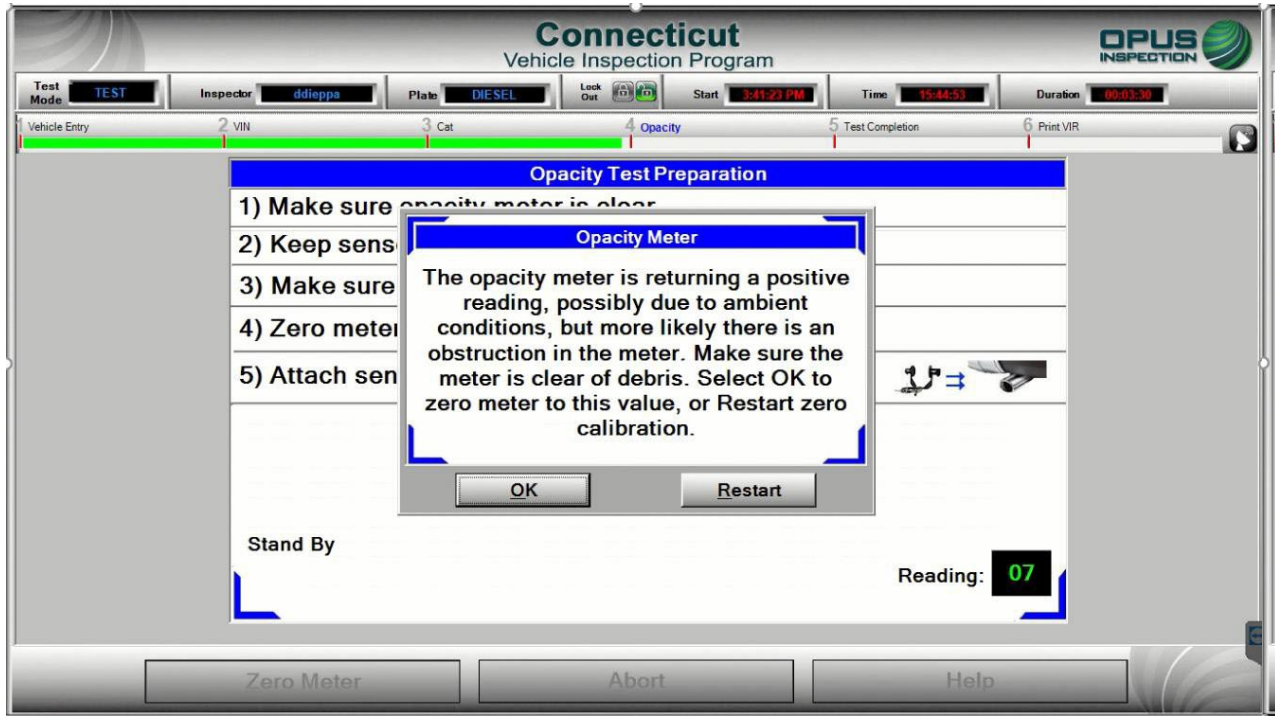
Inspections: Modified Snap Acceleration Test (Opacity)

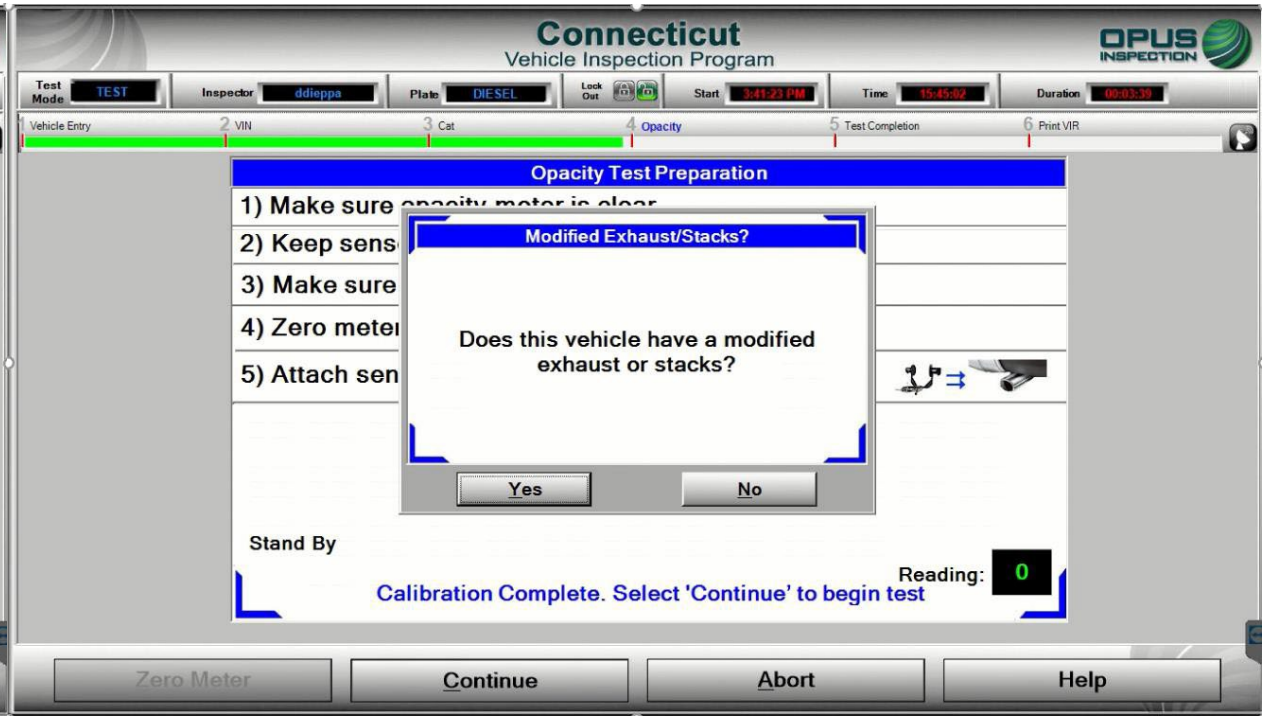




First you will capture RPM by choosing one of the available methods. You must make three attempts using any source available before bypassing RPM. Bypassing RPM is strictly monitored; bypassing without a sufficient attempt is a program violation subject to monetary assessments. Next you will be prompted to prepare the vehicle for inspection (see order of operations, above). Click continue to proceed to the inspection.

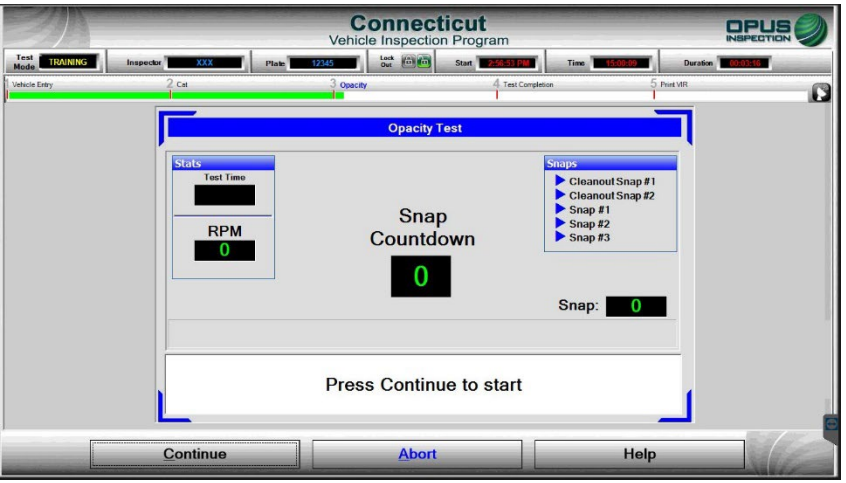
Inspections: Modified Snap Acceleration Test (Opacity)

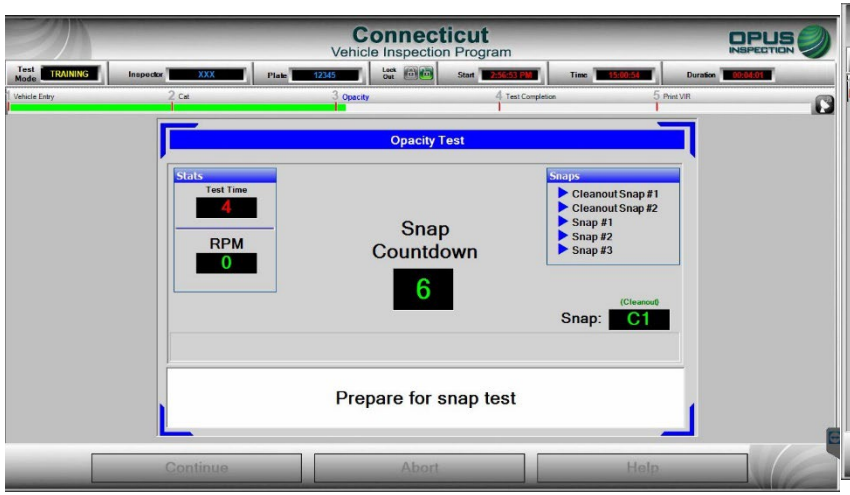


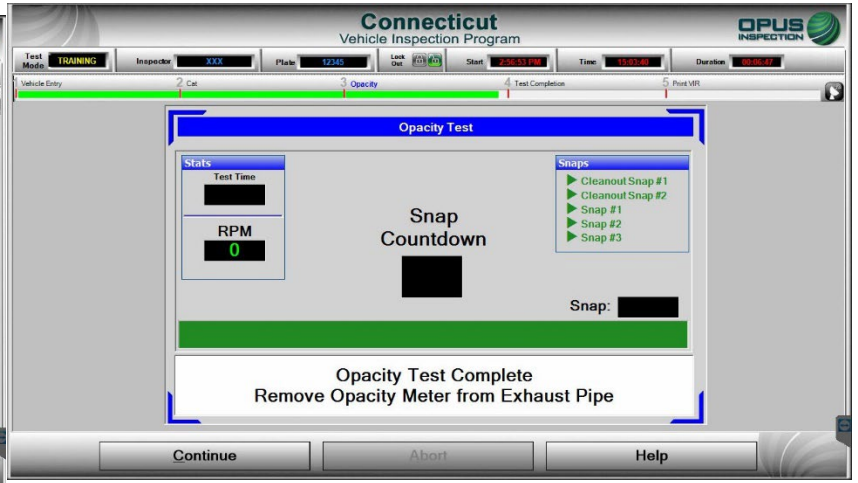


If there is an obstruction or the meter has not returned a zero result in preparation for the inspection, click OK to zero the meter. This should allow you to begin the inspection, however, you may have to exit the inspection to troubleshoot the opacity meter. Next, you will answer Yes or No to modified exhaust OR exhaust stacks.

Inspections: Modified Snap Acceleration Test (Opacity)



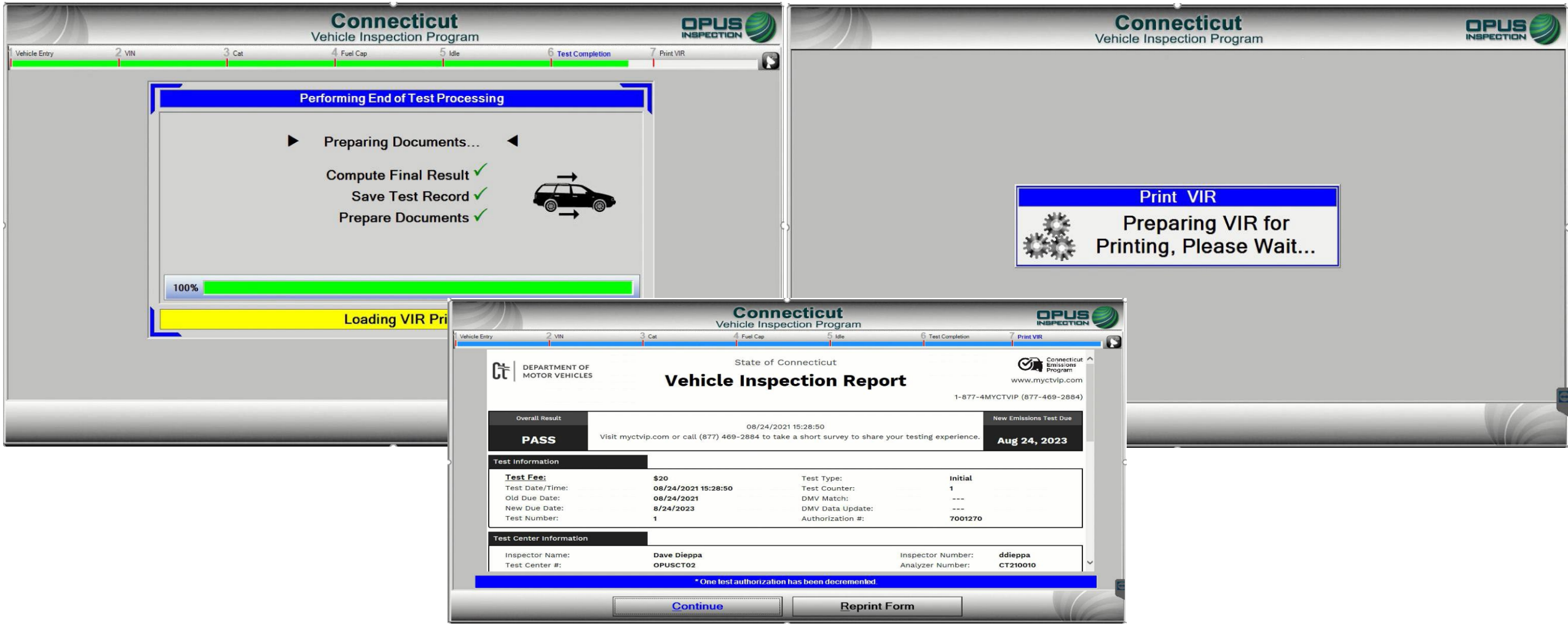




The Opacity MSA test consists of quick revs, or snaps, of the engine while the probe of the opacity meter is inserted in the tailpipe of the vehicle. Get the opacity meter set and the probe inserted into the tailpipe and hit Continue. You will see a 10 second countdown timer on the screen. At any point during the 10 seconds, step on the gas pedal to rev the engine to record each snap. You will need to do this 5 times. Two cleanout snaps are performed, followed by the 3 snaps needed for the test. Each successful snap will show as green in the Snaps box in the upper right-hand corner of the screen. **Additional snaps may be required if readings are out of tolerance range. Please follow the prompts on the screen.** Once you have successfully performed all 5 snaps and see all snaps show as green in the snaps box, hit continue to complete the test.

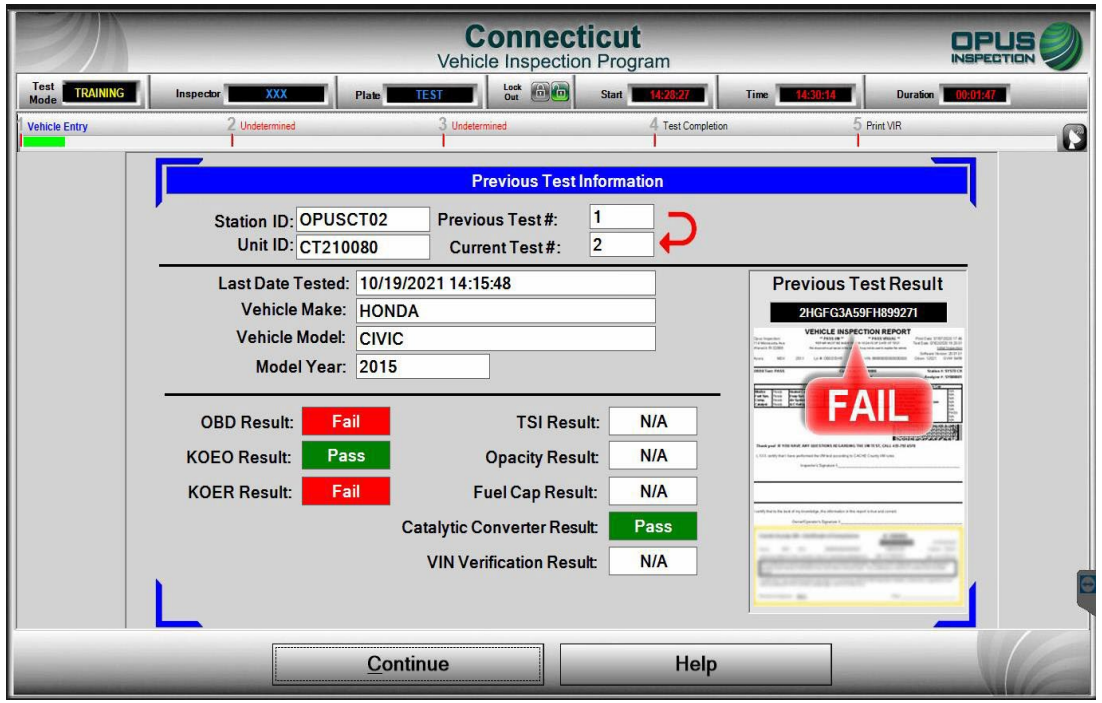
When the inspection is complete, remove the opacity meter probe from the exhaust pipe and click Continue.

End of Inspections: ALL TYPES

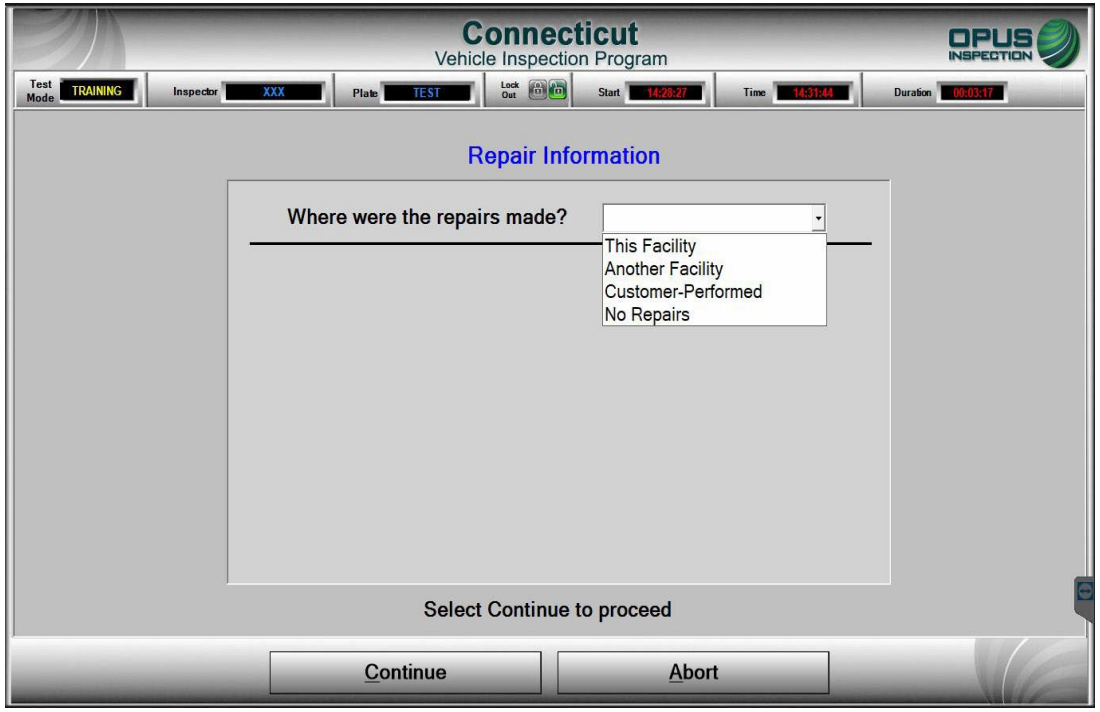


Three screens will appear when the inspection is complete, as shown above. The VIR will automatically print; there is also an available Reprint option. Click continue to exit the inspection and return to the main menu to ensure the inspection is uploaded to the VID. ***Note:** ***All VIR pages MUST be given to the motorist.***

Inspections: Retest (previous fail)

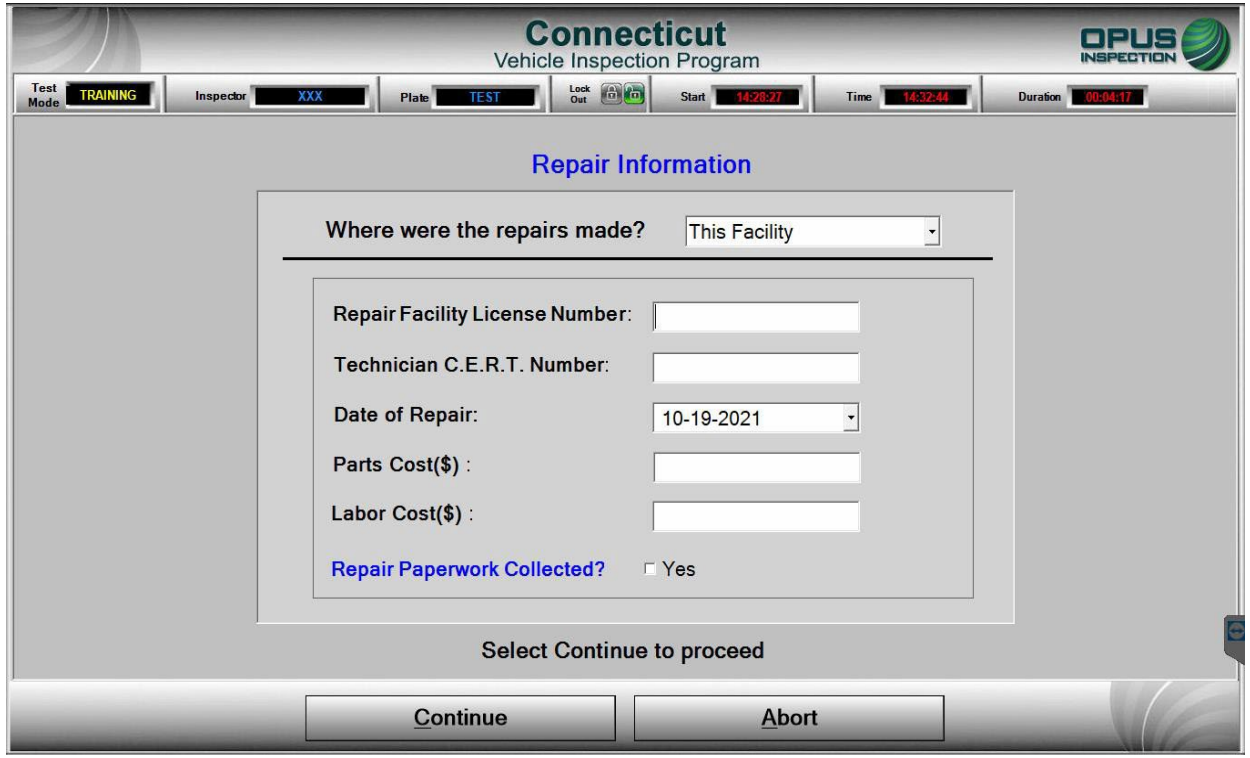


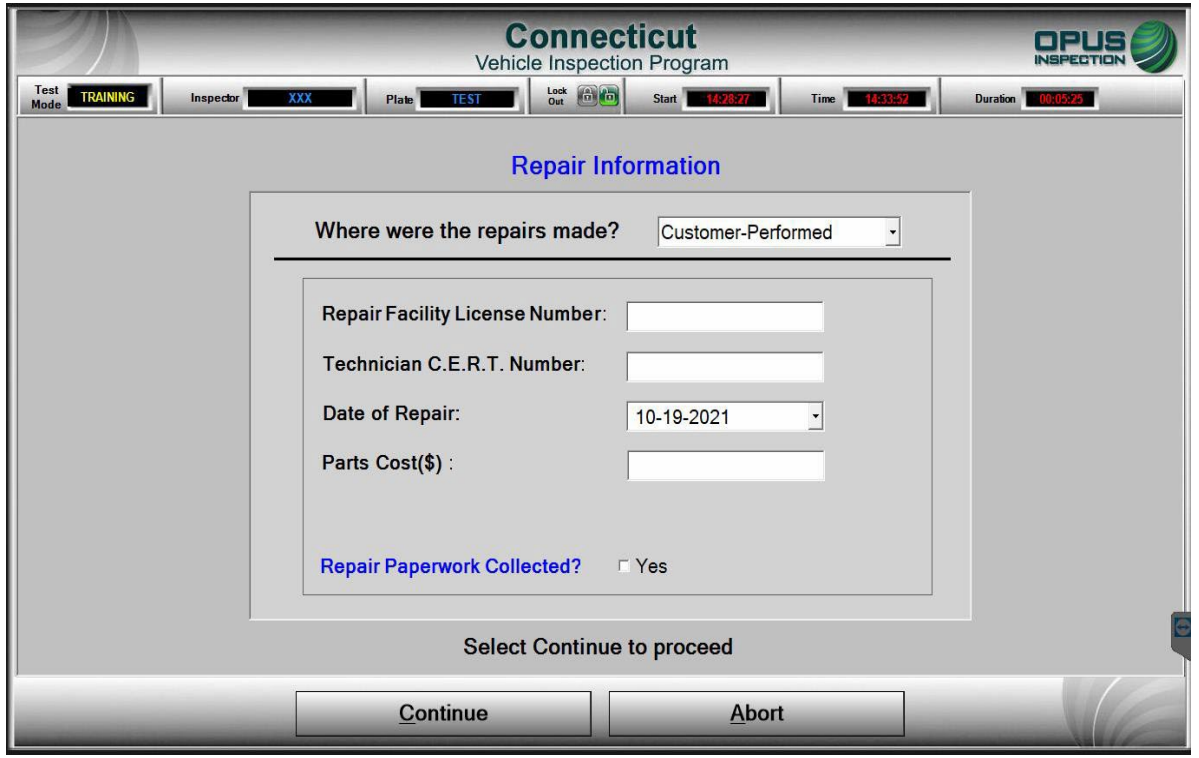
The CDAS will show you the results of the previous inspection once you have entered the VIN. If the previous inspection failed, the results will be displayed, as shown above. Collect all repair paperwork before proceeding; you will need both the Emissions Repair Form and the previous VIR.



Using the Emissions Repair Form and the previous VIR from the motorist, follow each screen prompt and enter requested information, starting with whether any repairs were made.

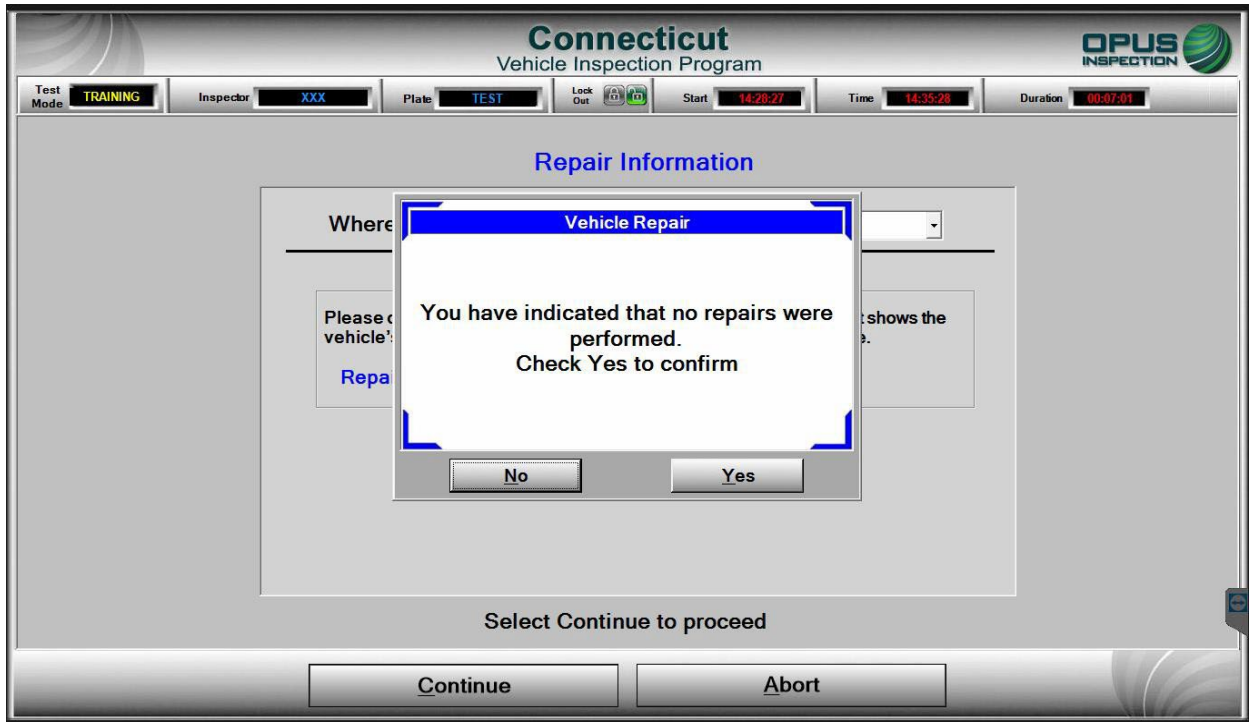
Inspections: Retest (previous fail)





Based on the Emissions Repair Form, choose the correct option (at a facility or customer-performed) from the drop-down box and enter the information from the repair form. Check yes to “Repair Data Form Collected?”

Inspections: Retest (previous fail)



If no repairs were made, select “No Repairs” from the drop-down box. Check yes to “Repair Data Form Collected?” and confirm no repairs.

Inspections: Emissions Repair Form (Retest)

When a vehicle fails, the Emissions Repair Form and Certified Emissions Repair Facility List will be printed along with the VIR.

The motorist MUST receive these documents, along with the appropriate fail brochures, and be given instruction that both the VIR and Emissions Repair Form are to be returned with the vehicle for retest.

The motorist must submit, with the current FAILED VIR, a completed Emissions Repair Form to the Test Center at the time of retest, regardless of whether any repairs have been made to the vehicle or not. Reprinted VIRs are allowed and available at any test center.

You may turn the vehicle away if a motorist returning for a retest does not provide the Emissions Repair Form. You may also print the motorist an Emissions Repair Form, at no charge, for them to complete and acknowledge (sign the form) either “no repairs made” or “self repair” and continue with the retest. If repairs were made by either a CERT or non-CERT repair facility, the motorist MUST return to that repair facility to have the form completed and signed by the technician/facility that performed the repairs.

If repairs do not correct the inspection failure, the motorist may wish to apply for a Cost Waiver. Only repairs made at a CERF (Certified Emissions Repair Facility) by a CERT (Certified Emissions Repair Technician) are eligible toward the Waiver.

Test Centers may reprint the failed VIR at no charge to the motorist.

Chapter 4: VIN Verification

VIN Verification

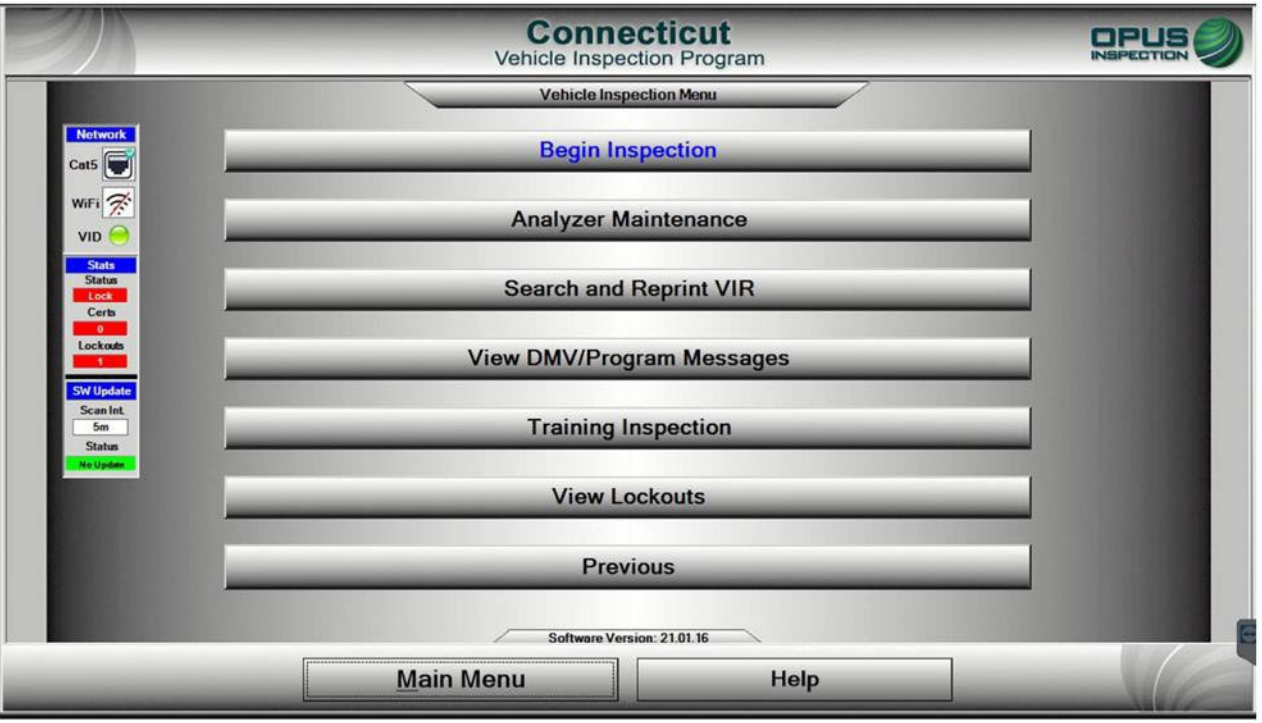
Many vehicles can have a VIN verification conducted at any test center, but some vehicles **CANNOT** and must be directed to a DMV Inspection Lane.

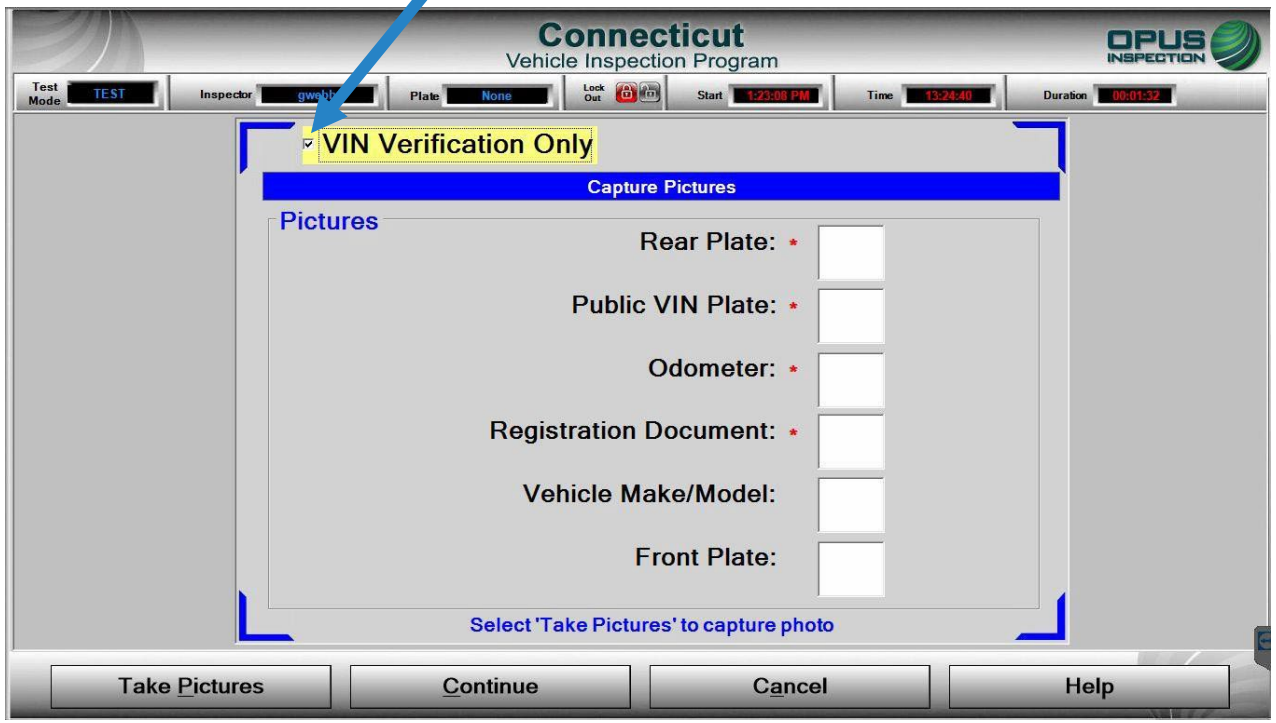
Vehicle types below **must** have a VIN verified at a **DMV Inspection Lane**; no appointment necessary:

- Vehicles that have missing, altered, or otherwise undetectable VINs **(see image, right, of altered VIN that was affixed to vehicle)**
- Composite motor vehicles or trailers, including any homemade motor vehicles or trailers, dune buggies, and kit cars
- Salvage vehicles
- Grey market vehicles (vehicles that are imported from other countries, including Canada, and may not conform to the federal safety standards)
- Amphibious vehicles or former military vehicles
- Motorcycles with model years 1980 or older
- Three-wheeled vehicles, except Harley Davidson, and Can Am (Spyder)
- Vehicles that are not listed on **our approved list of manufacturers** (except utility trailers). *****Please be sure to refer to this list often, as it changes frequently.*****
- ANY dirt bike or motorcycle that closely resembles a dirt bike regardless of whether the manufacturer is listed on the CT manufacturer's list MUST be brought to the Wethersfield DMV for a courtesy inspection

VIN Verification

Be sure to check the VIN Verification Only box at the top of the screen



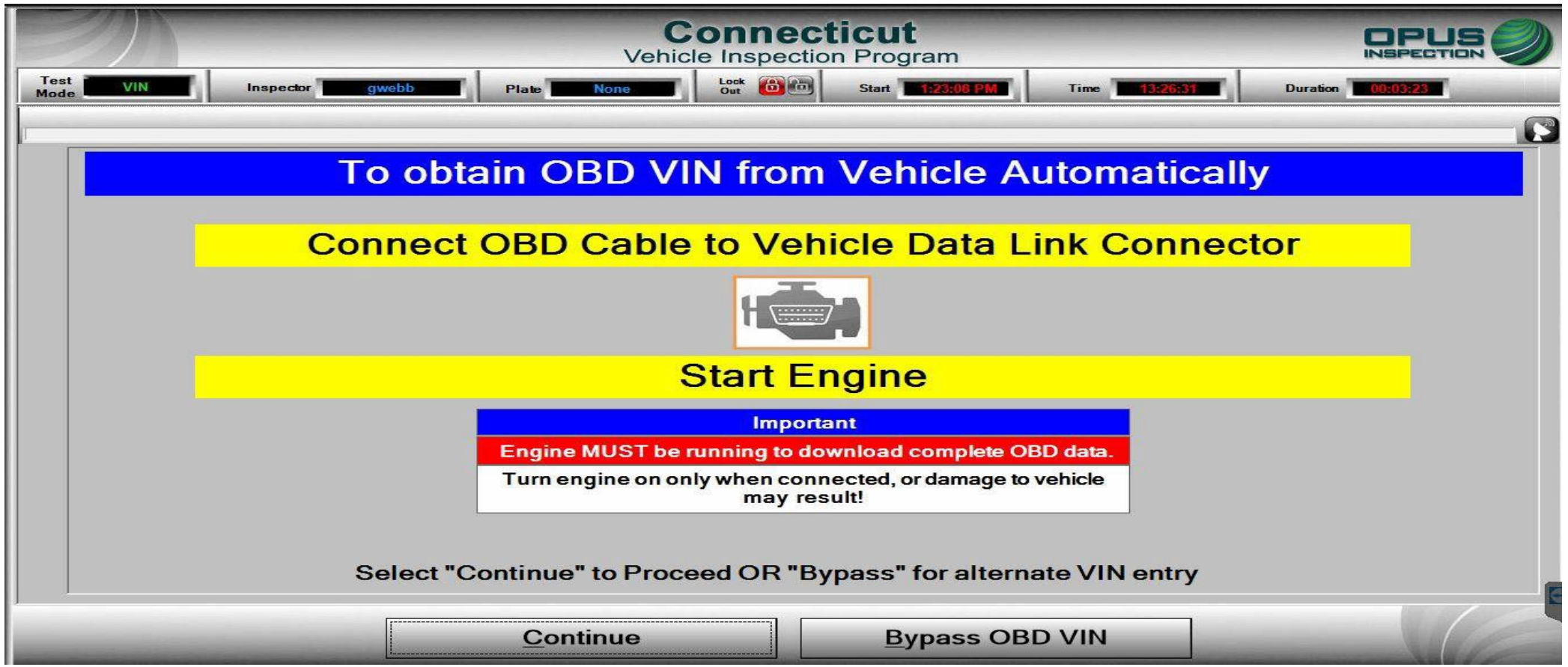


To complete a VIN Verification, start from the Main Menu >Vehicle Inspection Menu >Begin Inspection. **Be sure to check the VIN Verification Only box at the top of the screen.** Capture the required images as show above and click Take Pictures.

VIN Verification

NOTE: Be sure to capture accurate images for the VIN verification and ensure the VIN data is accurate. Above are examples of ideal image captures.

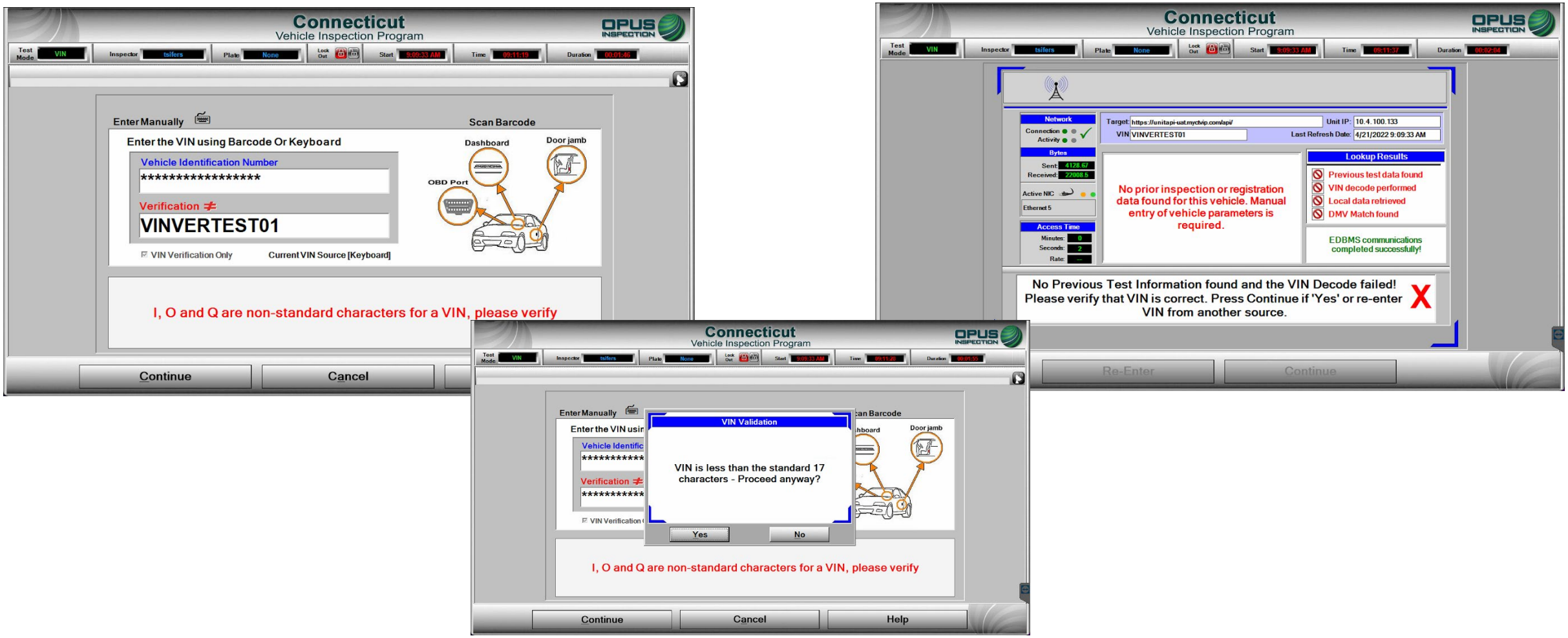
VIN Verification



If the vehicle is OBD compliant, plus the OBD cable into the DLC port and hit Continue.

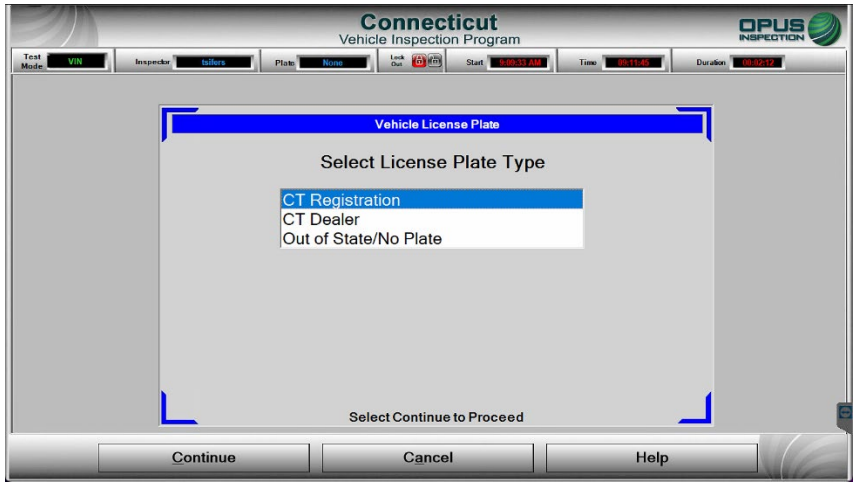
If the vehicle is not OBD compliant (i.e., a trailer or motorcycle), click the Bypass OBD VIN button to enter data manually.

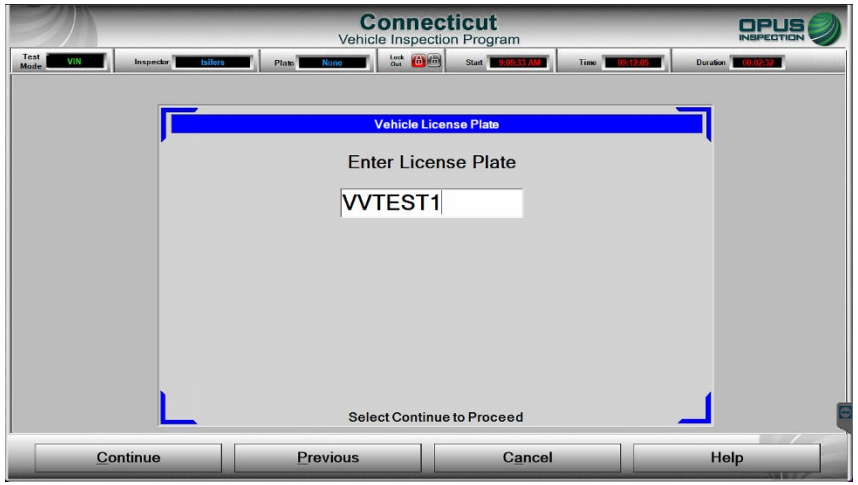
VIN Verification



Verify accuracy of VIN data (I, O, and Q are non-standard characters) or enter manually then proceed to next steps

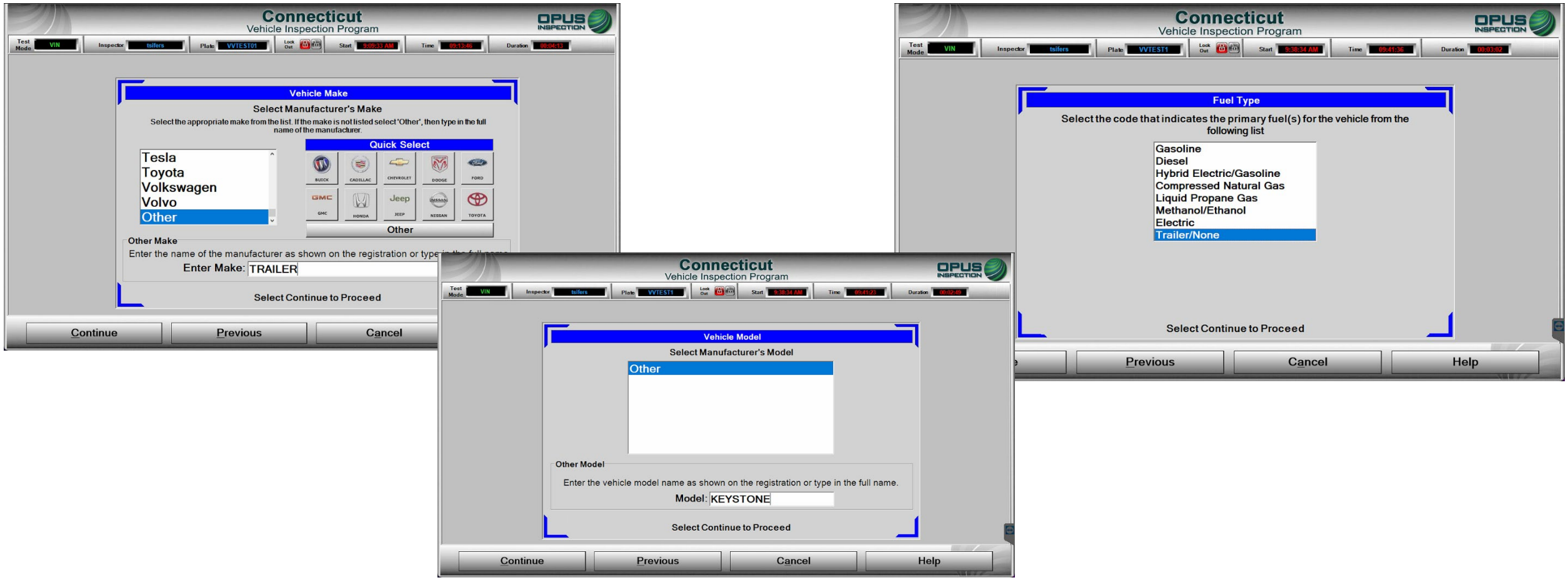
VIN Verification





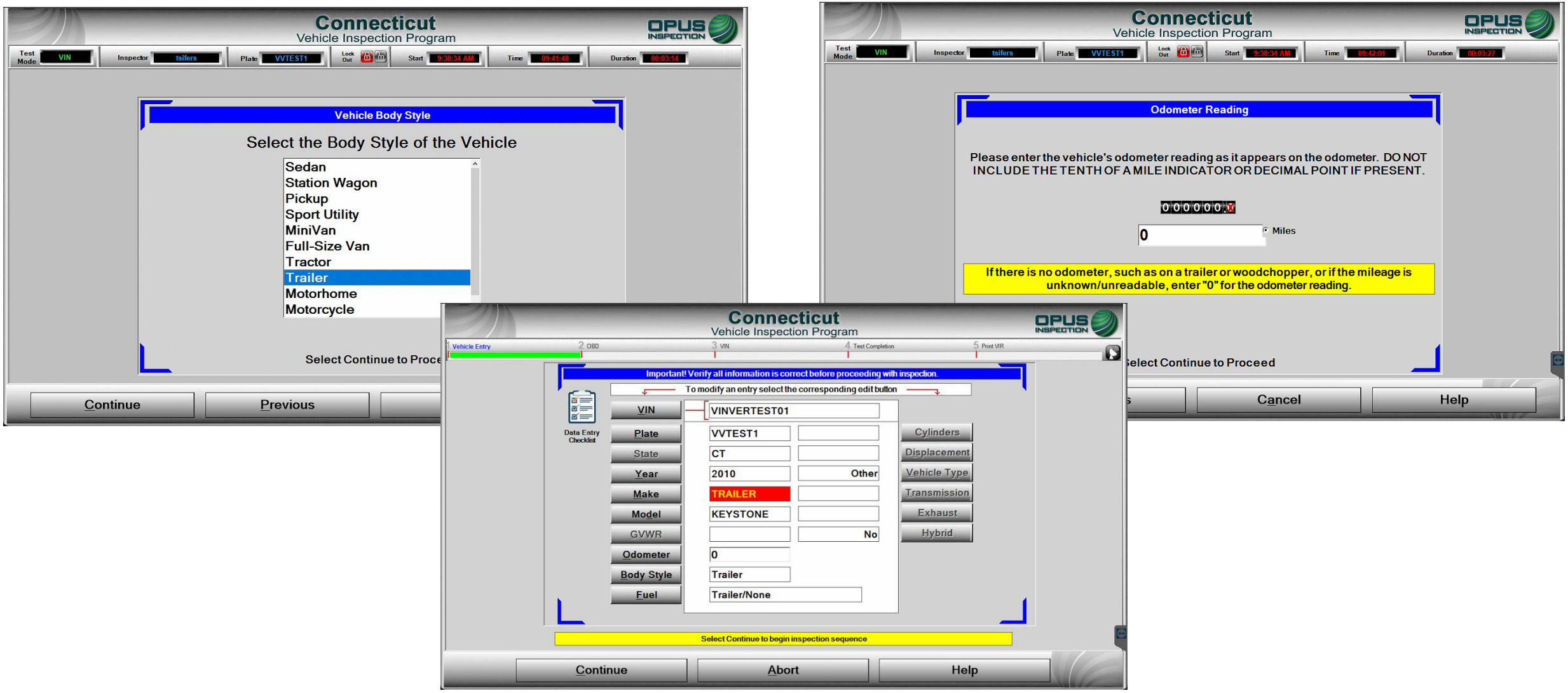
Most data on an OBD compliant vehicle will populate automatically. For manual entry on non-OBD compliant vehicles, follow the screen prompts and enter all data, being sure to confirm accuracy.

VIN Verification



In some cases (i.e., a trailer or motorcycle), you may need to manually enter information such as make, model, engine size, or weight. If you have trouble locating that information, you can ask the motorist, call the Opus Help Desk at 877-469-2884, or use this website for help: https://vpic.nhtsa.dot.gov/decoder/

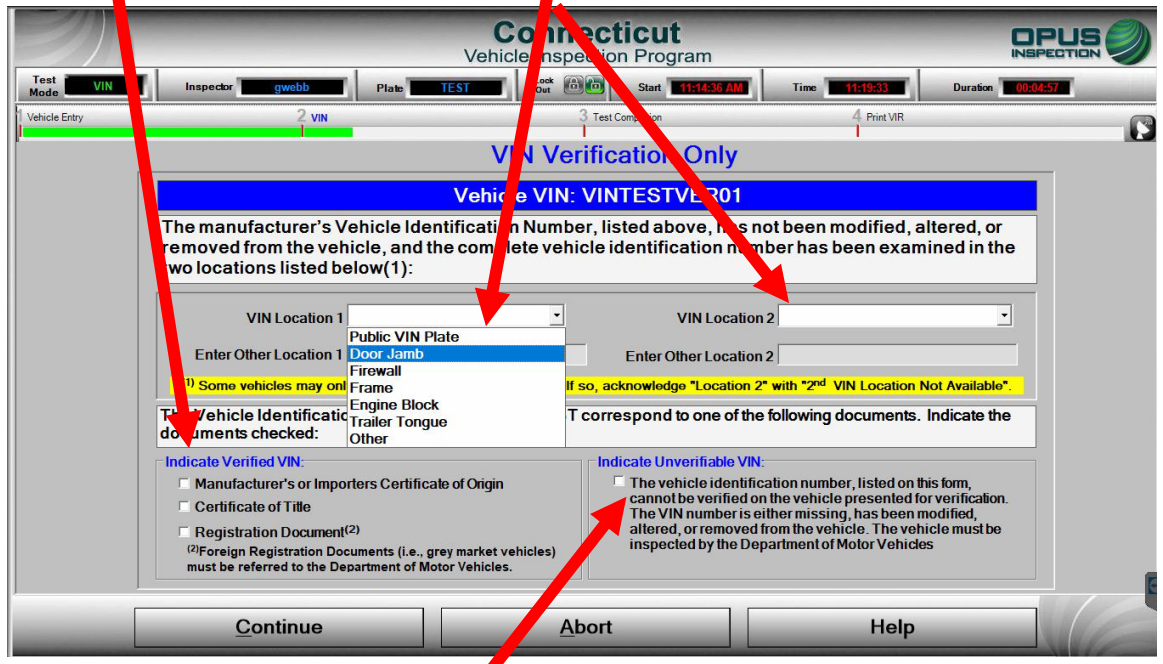
VIN Verification



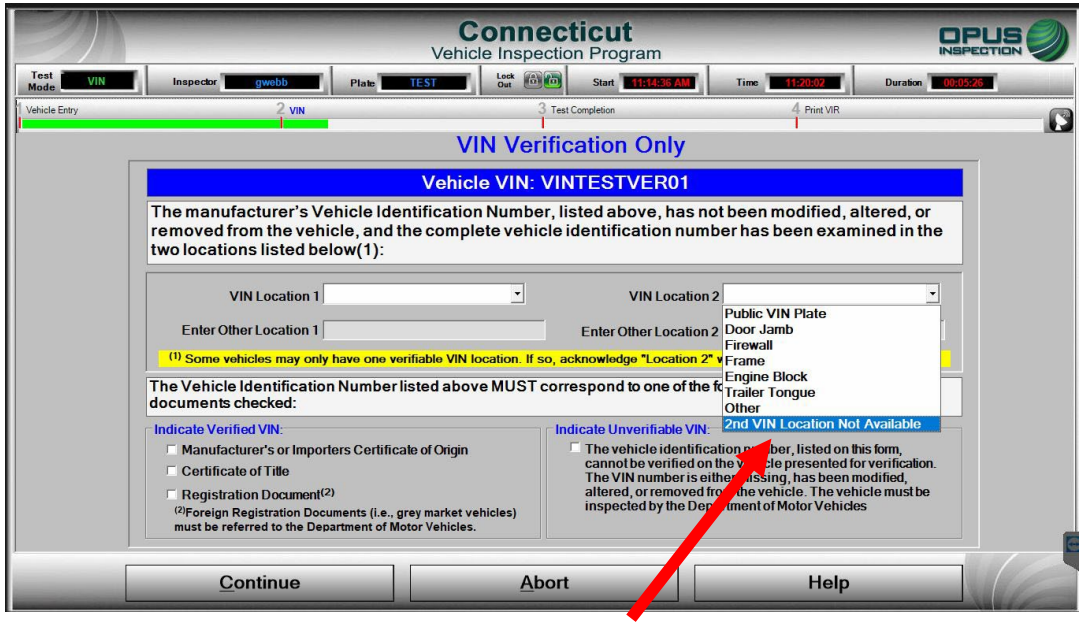
Complete data entry and verify the accuracy of all information before proceeding to the VIN verification.

VIN Verification

Be sure to confirm VIN accuracy by matching the verified VIN document (title, registration, or manufacturer's certificate) to the VIN found in two locations on the vehicle.



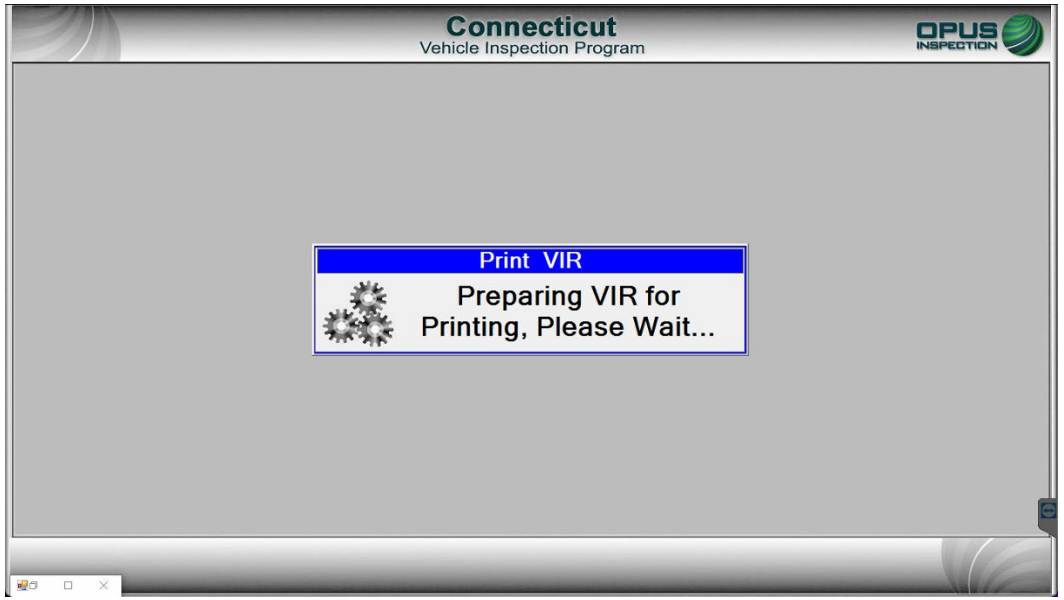
Note: If the VIN listed on the form cannot be visually verified on the vehicle (i.e., is either missing or has been modified, altered, or removed), the vehicle must be inspected by the DMV. Select that box to abort the test.

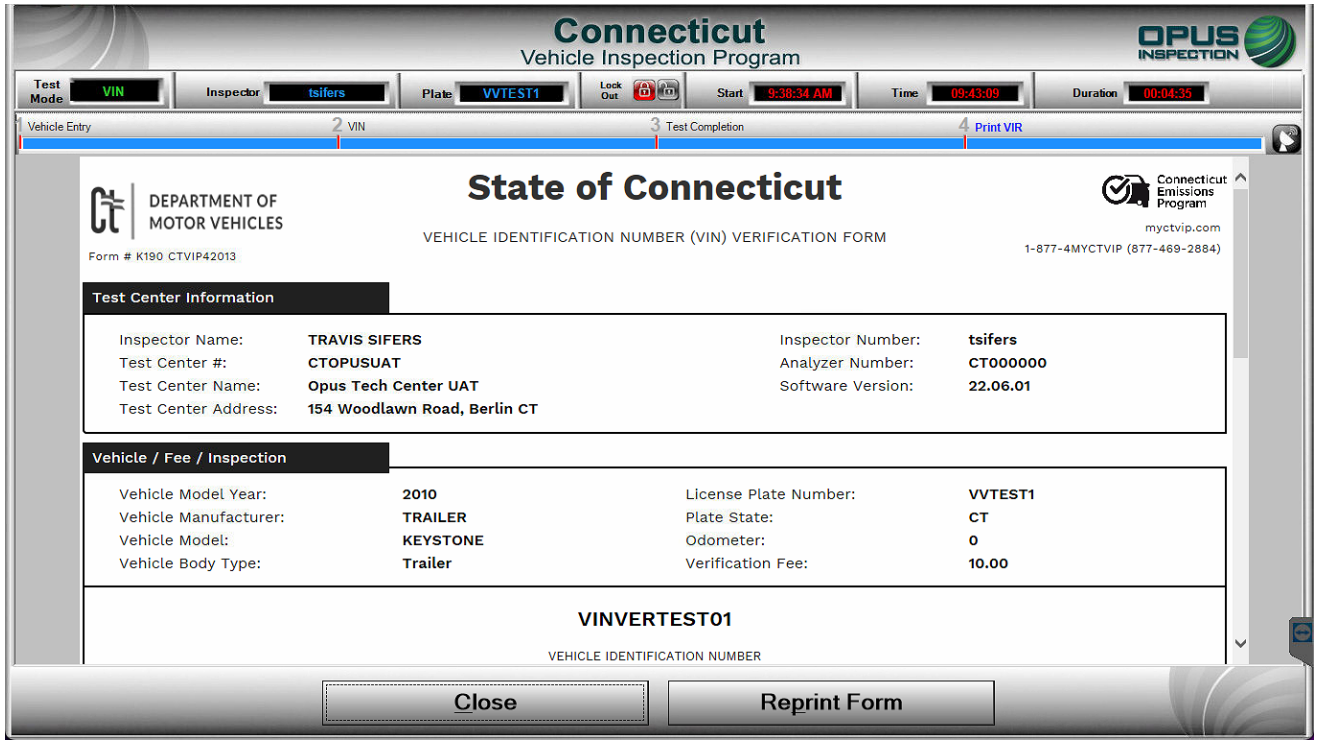


Some vehicles, such as trailers, may have only one VIN location available; be sure to select that option from the second menu.

After entering and verifying accuracy of data on this screen, clicking Continue will begin the VIN verification

VIN Verification

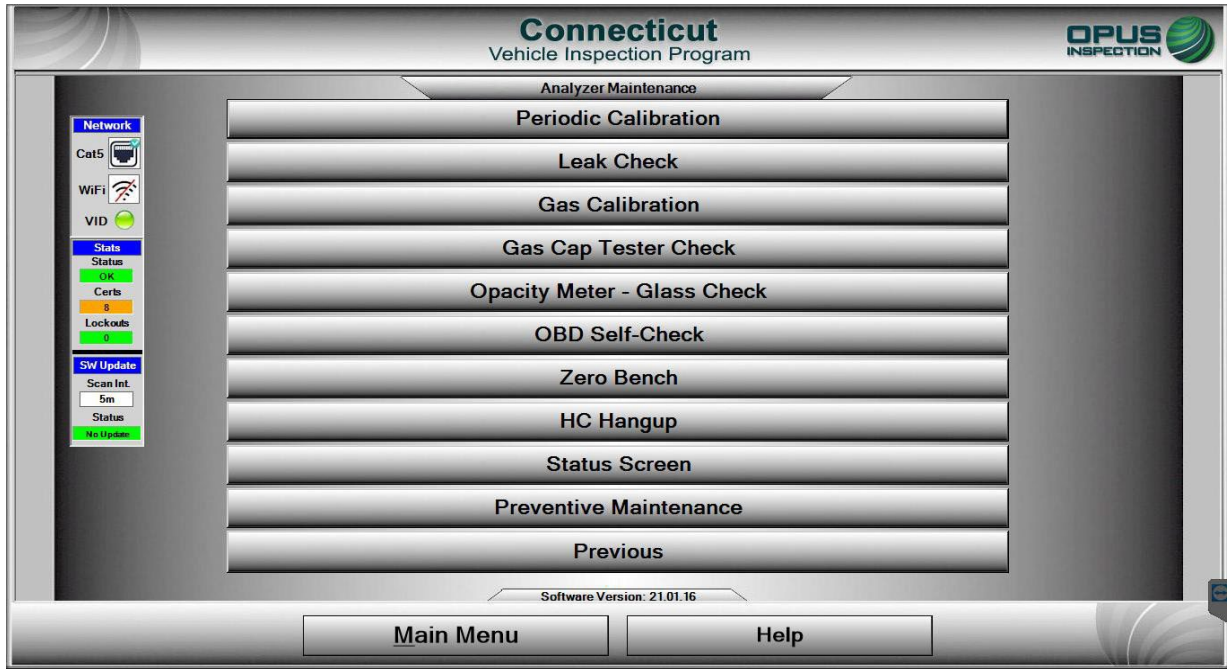




The VIR will print at the conclusion of the VIN verification. Be sure to give the VIR to the motorist.

Chapter 5: Calibrations and Maintenance

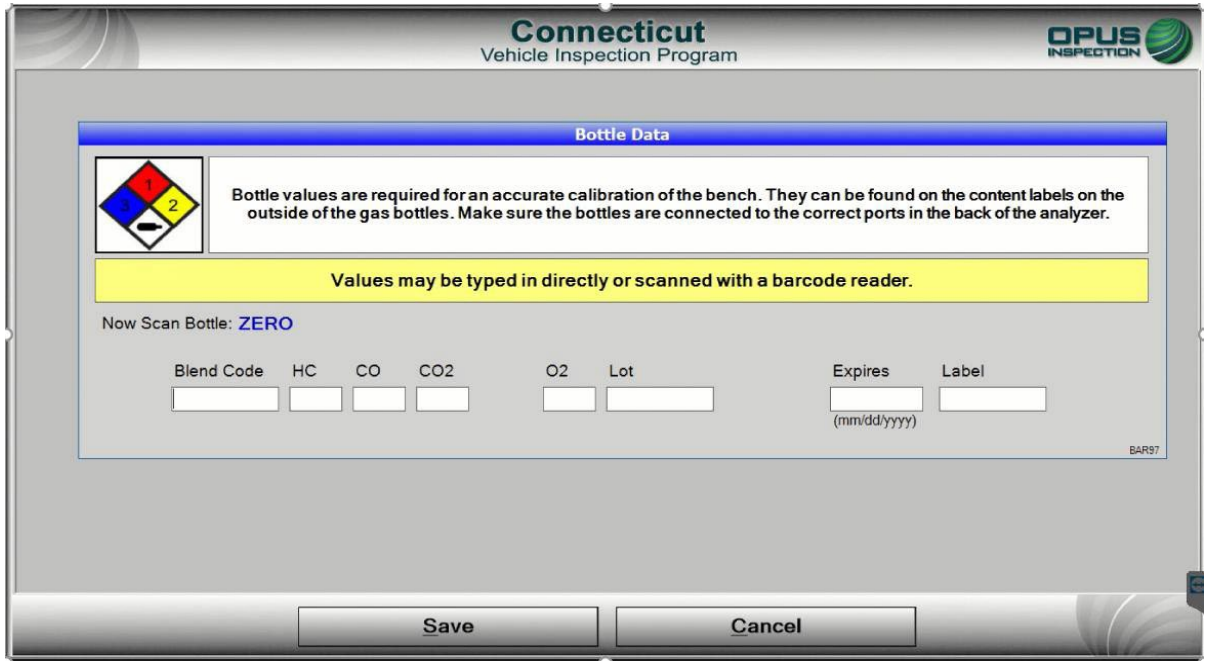
Periodic Calibrations – Every 72 Hours



Periodic calibrations are to be performed every 72 hours. All Test Centers must be ready and able to test during program operating hours. All gas bottles have an expiration date and cannot be used once expired. Modifying the expiration dates, lot numbers, or concentration values is a program violation and is strictly prohibited.

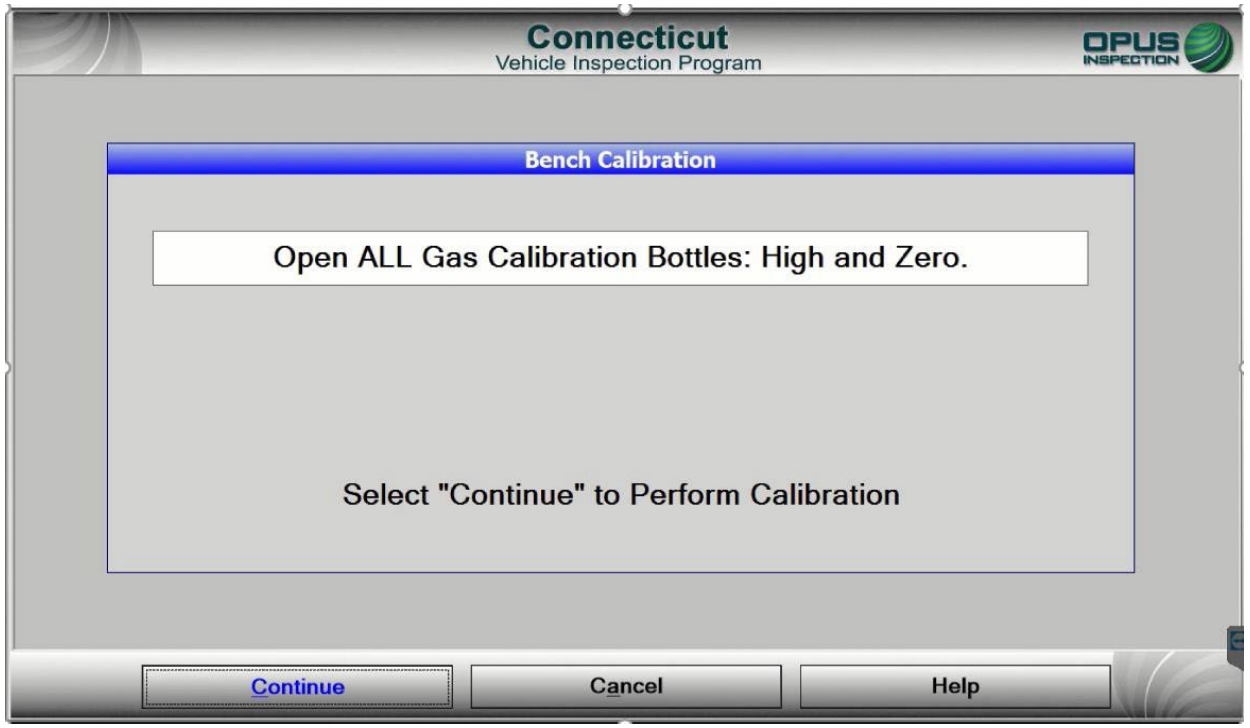
To perform calibrations from the Main Menu, click >Vehicle Inspection>Analyzer Maintenance, then select Periodic Calibrations. This will take you through complete calibrations. The option to perform individual calibrations is available as well.

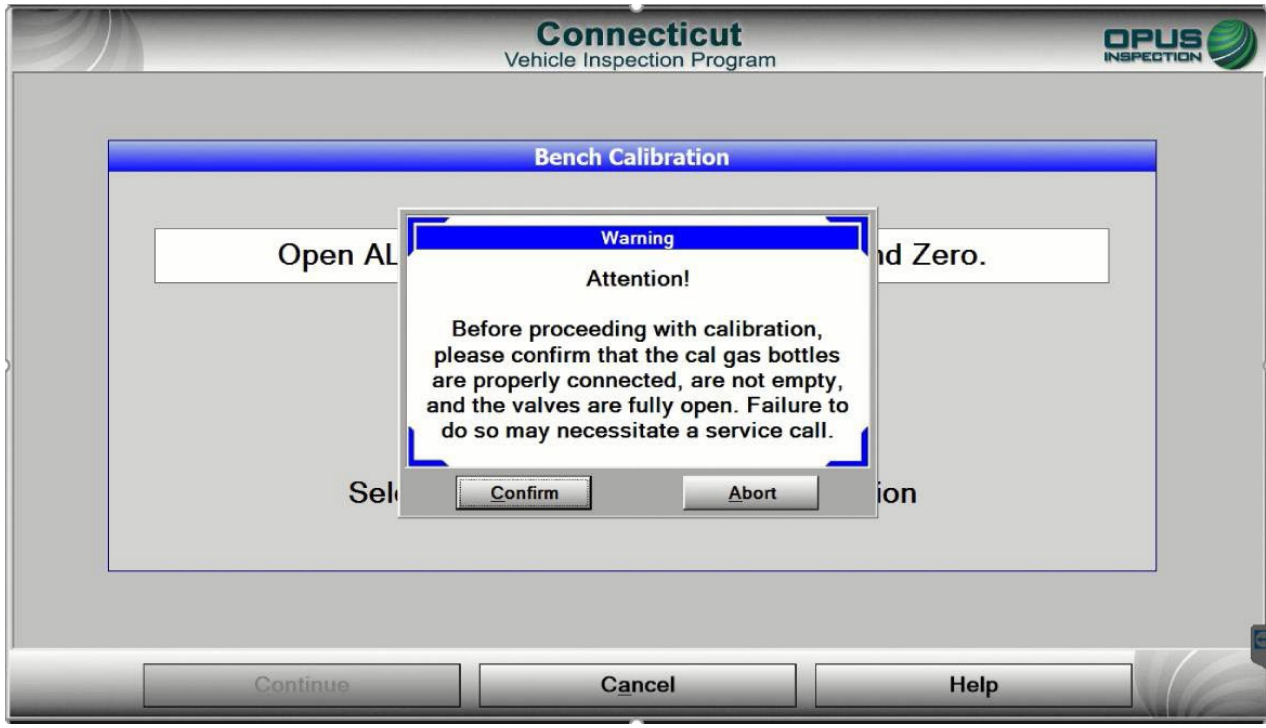
Gas Calibrations – Every 2 Weeks



Selecting Periodic Calibration will take you immediately to Gas Calibration, which should be completed every two weeks. Scan in the barcodes from the gas bottle label. Each bottle has three barcode labels, each representing specific information; values will appear in the appropriate box when scanned and when all fields are complete, the values will be saved. If the values are already populated from a previous scan, verify the values match and continue by clicking Save.

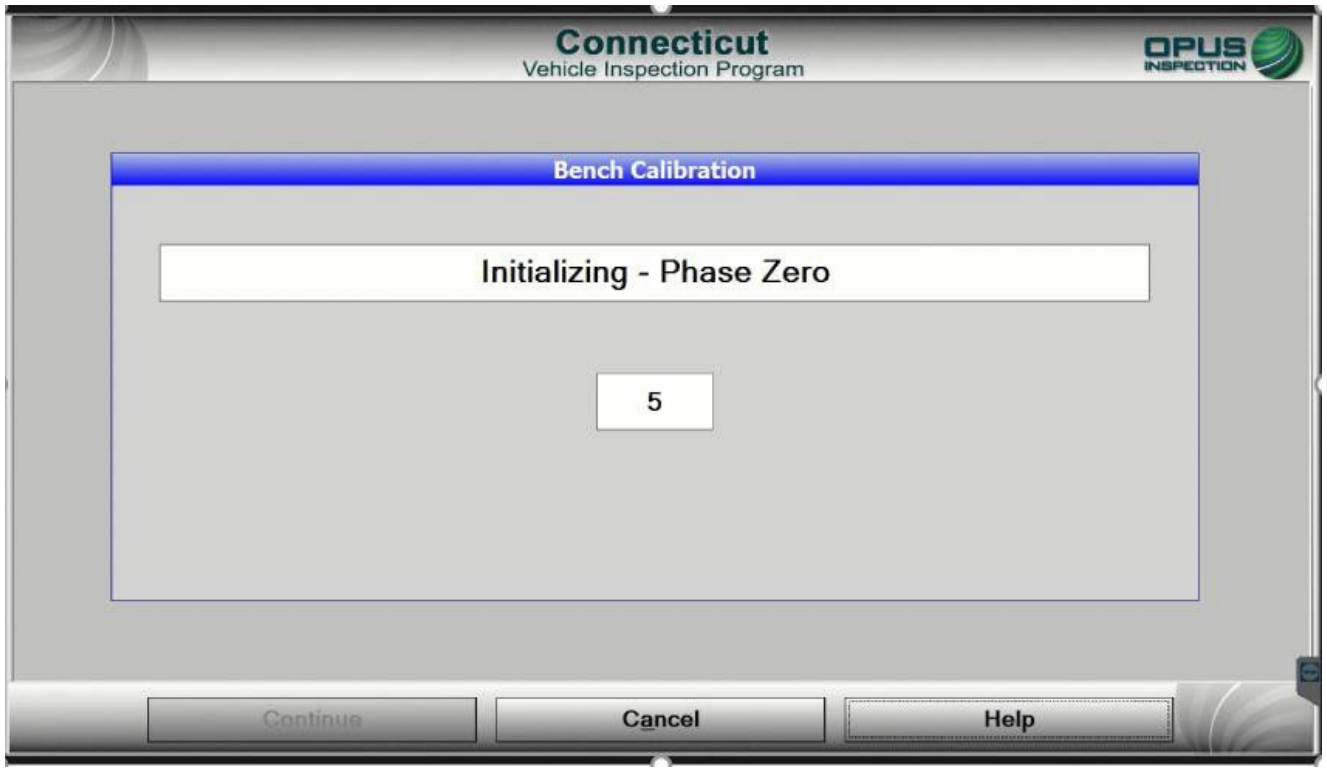
Gas Calibrations, *continued*





Open both High and Zero gas bottles. A warning will appear, prompting you to verify the gas bottles are properly connected, are not empty, and that the valves are fully open to ensure there are no issues with the calibration.

Gas Calibrations, *continued*



Initializing - Phase One

Initializing - Phase Two

Initializing - Phase Three

Auto Zero...

Flowing Low Gas

Flowing High Gas

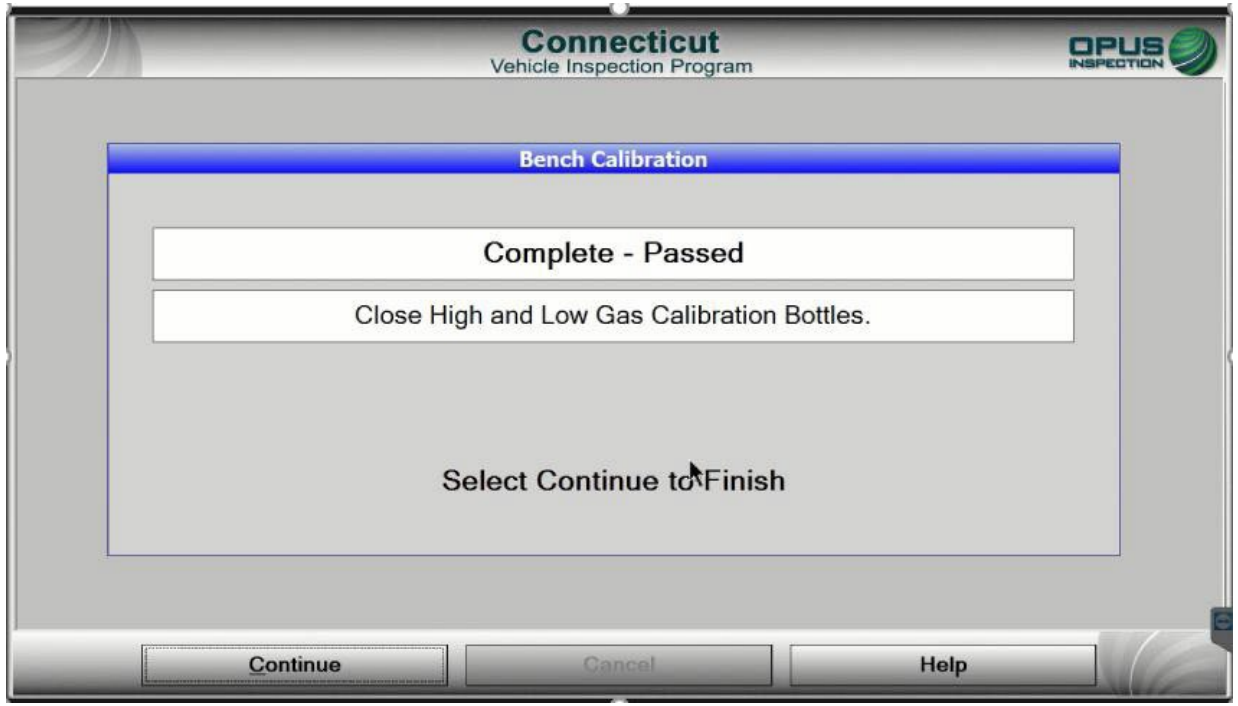
Flushing Manifold

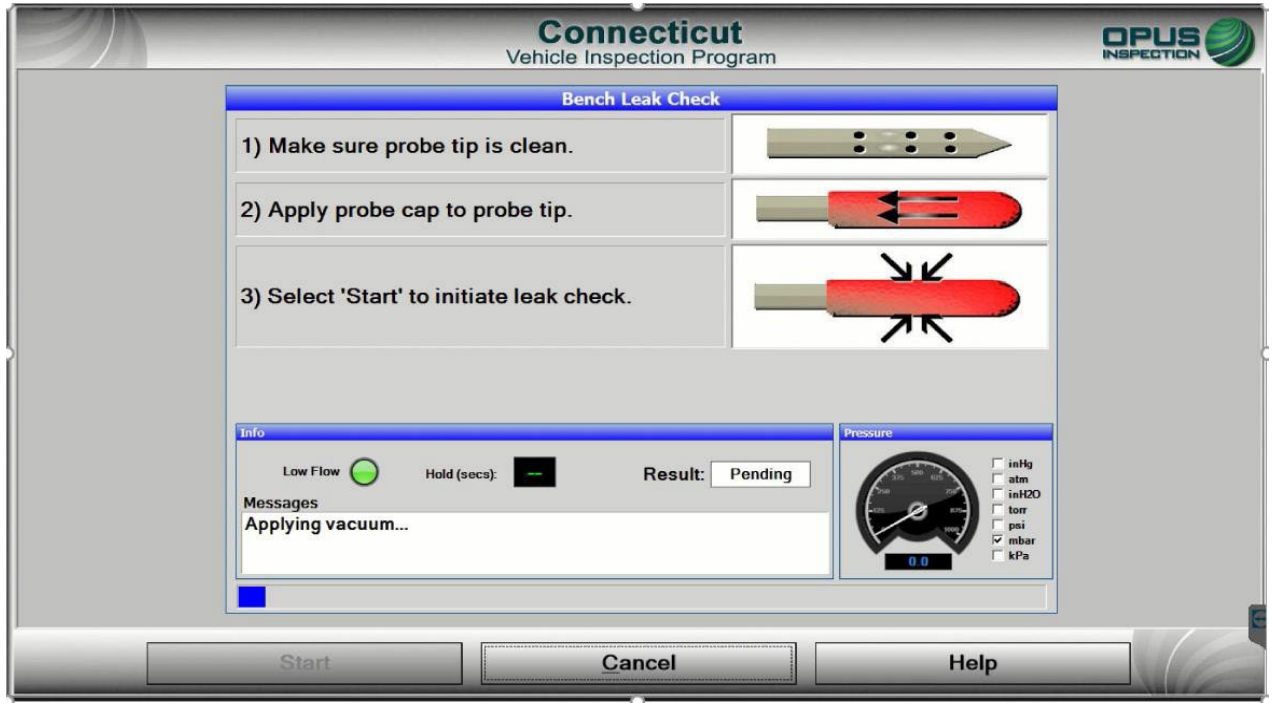
Post Calibration In Progress...

Flushing Manifold

Calibration will begin. As the Analyzer performs the calibration, the above messages will appear. Note that “Timer Pausing” is expected during the calibration.

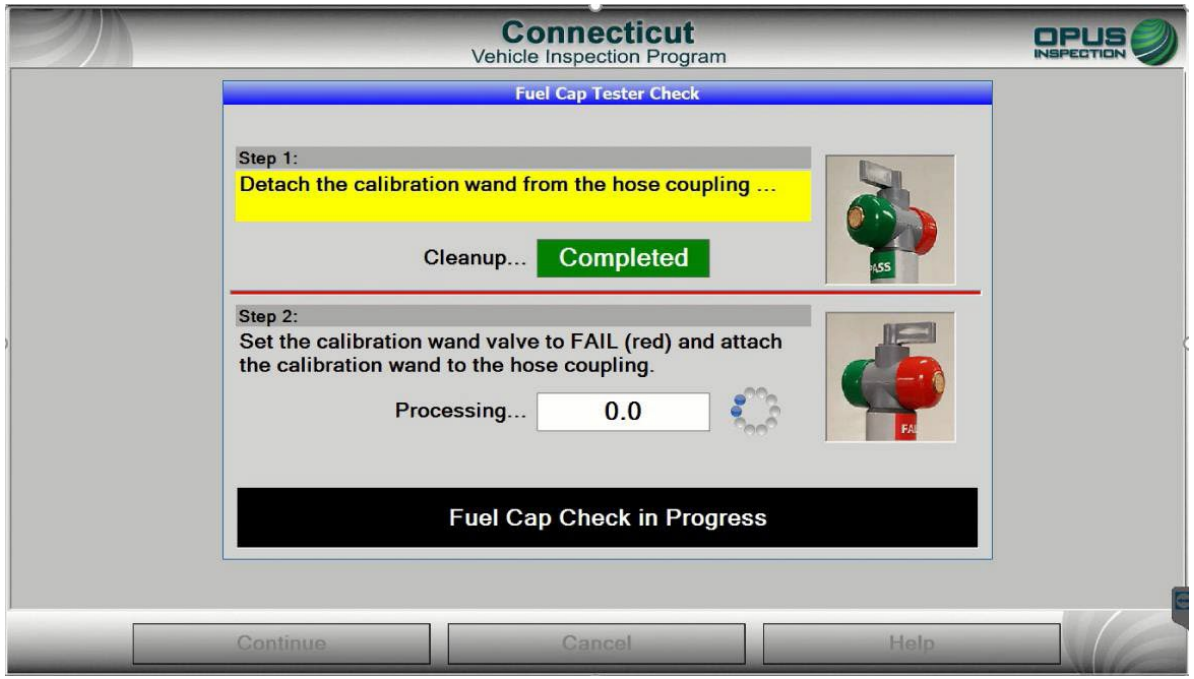
Gas Calibrations, *continued*



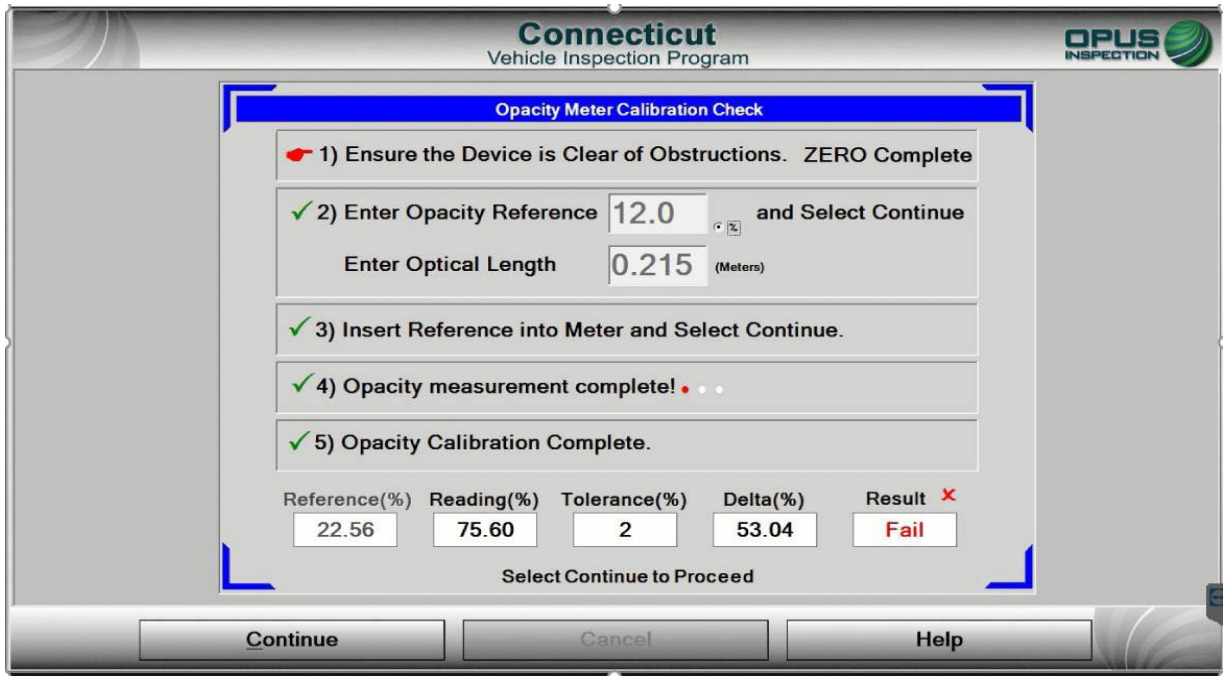


Once the calibration is complete, be sure to close the gas bottles. The leak check will be performed next; this calibration requires that only the primary hose be tested. An inspection involving a dual exhaust vehicle will prompt for a leak check of both the primary and dual hoses.

Periodic Calibrations

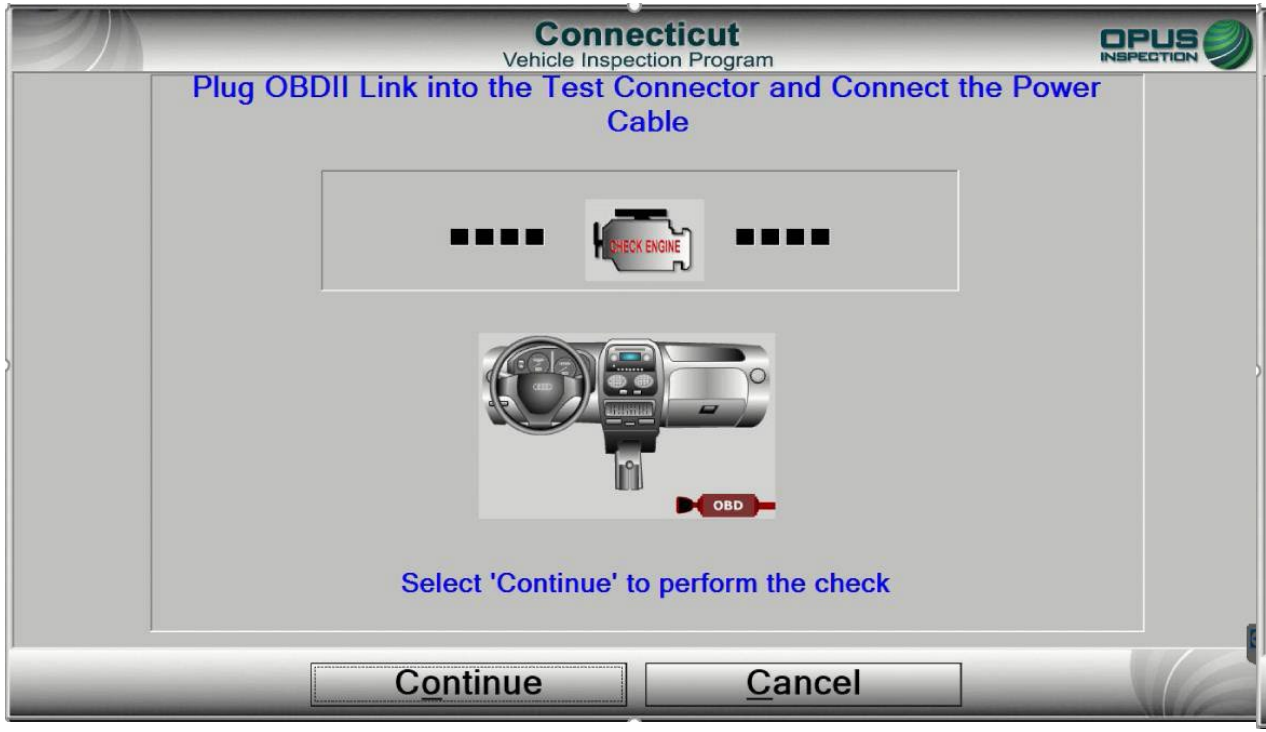


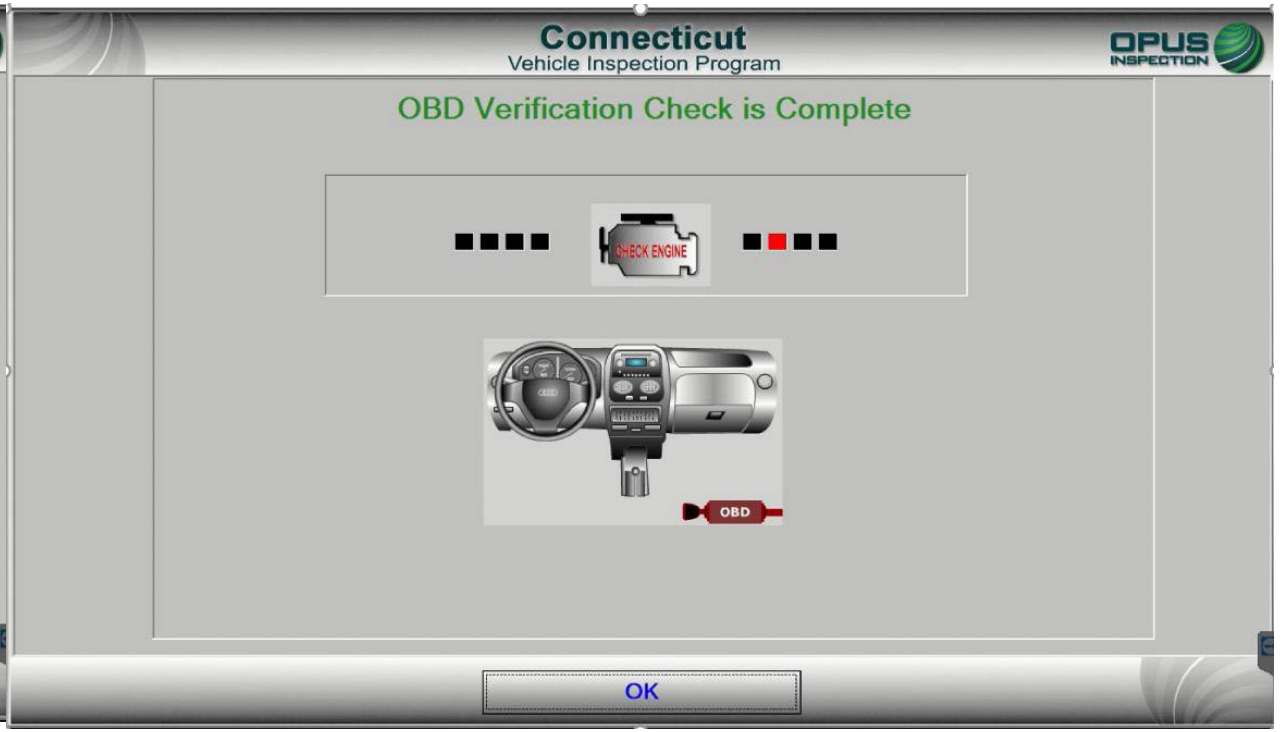
The Fuel Cap Tester Calibration has been enhanced with the Waekon calibration wand; the gas cap leak check hose connects to the bottom of the wand and the lever at the top of the wand toggles for “pass” and “fail” calibrations.



The Opacity Meter Calibration is similar to the current method, using a calibration glass to insert into the meter for readings.

Periodic Calibrations





To perform the OBD Data Acquisition Device (DAD) module self check, connect the OBD cable into the DAD module and continue. The OBD calibration completes periodic calibrations.

Preventative Maintenance

Performing preventative maintenance on the CDAS is required. If you fail to perform these maintenance tasks, the CDAS will automatically initiate a lockout until each task is complete. DO NOT acknowledge the maintenance items when prompted without performing the required action. The preventative maintenance is required to ensure the equipment continues to function as intended.

Preventative maintenance includes but is not limited to:

- Inspection of primary & secondary filter （*Replacement of the primary filter should occur every month. Replacement of the secondary filter should occur every two months. Filters may need more frequent replacement based on the volume of the PC TSI tests at your facility)*
- Inspection of the primary filter bowl for accumulation of water and draining the bowl if water is present
- Inspection of the CDAS air supply for water contamination
- Cleaning and inspection of CDAS/Analyzer and system accessories, cabinet, monitor, printer, etc.
- Inspection of RPM Leads
- Inspection of exhaust probe hose assemblies
- Inspection of OBD cables
- Inspection of gas cap adapters

Chapter 6: Program Updates

Holiday Hours

We are now allowing stations to offer emissions testing on holidays!

This is an **OPTIONAL** program enhancement. Stations may continue to remain open normal business hours of 8 a.m. to 5 p.m. Monday through Friday and 8 a.m. to 1 p.m. on Saturday.

Opus will remain closed on the following holidays and WILL NOT PROVIDE TECHNICAL OR HELP DESK SUPPORT:

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Indigenous People's Day
Thanksgiving Day
Day After Thanksgiving
Christmas

IT IS YOUR RESPONSIBILITY TO UPDATE YOUR TESTING HOURS ON THE PROGRAM WEBSITE AT CTEMISSIONS.COM IF YOU ARE INTERESTED IN TESTING ON HOLIDAYS. You may access your facility info by signing into your account.

*****Please note: technical support and the Opus Help Desk will NOT be offered during holiday hours.*****

Closures

Test Centers are STILL REQUIRED to notify Opus of any closures, but now may do so manually on ctemissions.com. **You are required to notify Opus IN ADVANCE of any closures and include your anticipated reopening date and time.** You may access your facility info to make any changes to your hours by signing into your account. It is the Test Center's responsibility to keep this information accurate and up to date, regardless of temporary/partial or long-term closures.

Extended Hours

We are now allowing stations to offer extended hours at their discretion!

This is an **OPTIONAL** program enhancement. Stations may continue to remain open normal business hours of 8 a.m. to 5 p.m. Monday through Friday and 8 a.m. to 1 p.m. on Saturday.

If interested in offering extended testing hours, stations may open for testing at 7:30 a.m. and/or extend testing until as late as 8 p.m. Monday through Friday and 6 p.m. on Saturday.

IT IS YOUR RESPONSIBILITY TO UPDATE YOUR STATION HOURS AND ANY CLOSURES ON THE PROGRAM WEBSITE AT CTEMISSIONS.COM. You may access your facility info by signing into your account.

*****Please note: technical support and the Opus Help Desk will NOT be offered during extended hours.*****

Information

Connecticut Emissions Program

OPUS

Help Desk: (877)469-2884

Website: www.ctemissions.com