Activity 06: Making DataLogger Recordings

Upon completing this activity you will be able use to M-MDS to create a Data Logger recording and then play it back.
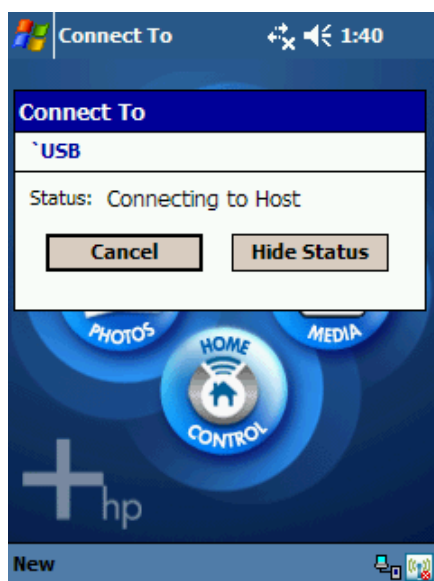
What you need to complete this activity:

- A current Mazda vehicle with Electronic Throttle Control
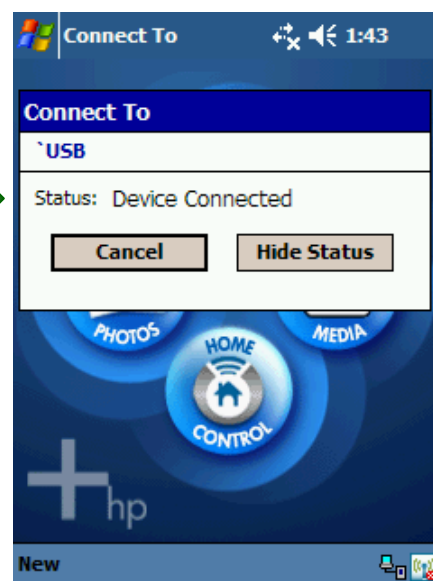- Mazda-approved PDA with PDS installed
- VCM

Procedure:

1. Connect the M-MDS data cable to DLC 2 under the dash. The PDA will turn on automatically.

   Three USB pop-up messages quickly flash on and off the PDA. You may not see the first two messages:
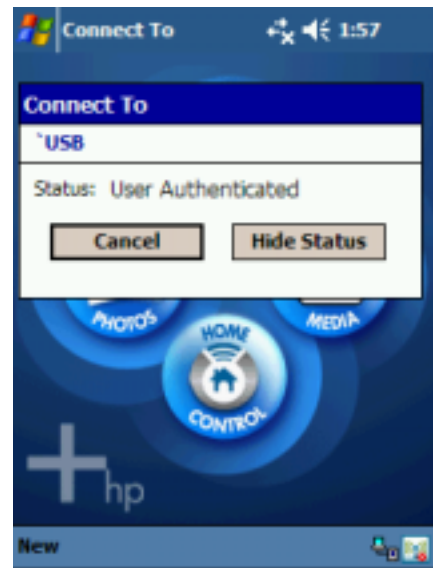

USB message 1   *USB message 2*

Activity 06
(Continued)

The third message,
"Status: User Authenticated,"
is the most important message.

USB message 3

2. Tap **Start** on the
main screen.

**Your PDA's main screen may look
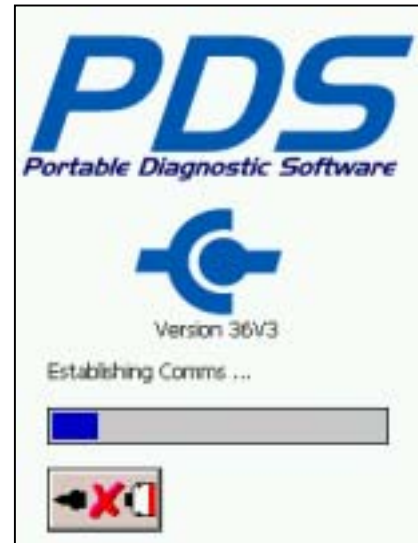slightly different than this example.**

3. Tap **PDS** on the drop-down menu.

Activity 06
(Continued)

4. The PDS Establishing Communications screen flashes on then off. This screen indicates the PDA is connecting to the VCM via the USB network.

5. Tap the **New Vehicle** icon.

6. Select **16 pin,** then tap tick.

Activity 06
(Continued)

7. Turn the ignition key to Key On Engine Off (KOEO), then tap tick.

CAUTION
If you do not turn the ignition key ON, you will need to perform a soft reset on your PDA and reboot the VCM.

i

- WARNING: To avoid possible injury, place the PDS in the vehicle so that it does not interfere with the safe operation of the vehicle. Do not place the PDS in the deployment path of any airbag and secure all cables away from the vehicle pedals and controls.
- Make connections as shown
- Set ignition switch to ON (Position II).
- Apply the parking brake.
- Apply Neutral/Park gear position

8. Watch the following Establishing Communication screen flash on then off.

i **Establishing communication to PCM**

0s   45s
Operation in progress

9. Verify the vehicle information is correct, and then tap **YES**.

? Vehicle Specification

Vehicle: MAZDA6 (North America / General)
Engine Type: AJ
Capacity: 3.0L
Transmission: Automatic
Fuel Type: Gasoline
Emission level: California or Green State US Emission
Is this correct?

NO   YES
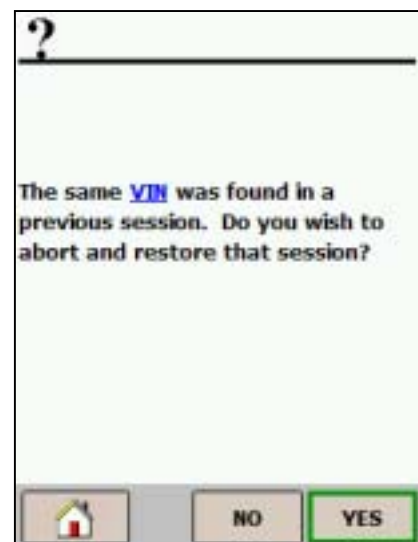
Activity 06
(Continued)

10. If desired, leave the fields empty or tap data into any of the fields, then tap tick.

NOTE
This is an optional screen and you may not see it.

11. If this screen displays, tap **NO**.

12. Tap **Module Tests** if it is not highlighted, then tap tick.
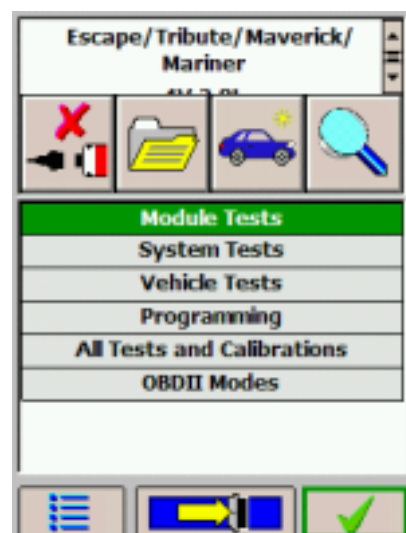
Activity 06
(Continued)

13. Tap tick.

Standard	Optional
GEM	IC
PCM	RCM
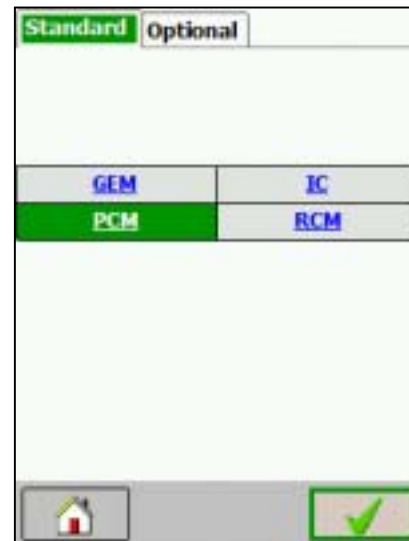
14. Tap **Data Logger**, then tap tick.
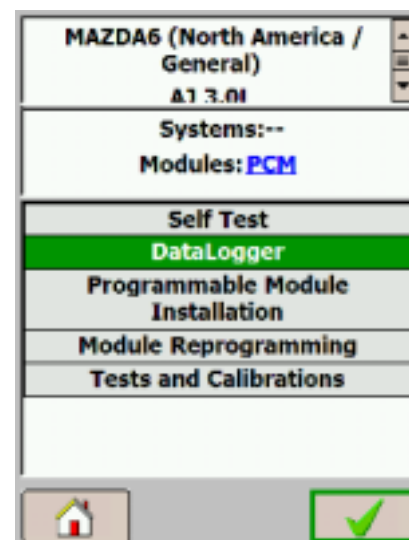
MAZDA6 (North America / General)
A1 3.0l

Systems:--
Modules: PCM

Self Test
DataLogger
Programmable Module Installation
Module Reprogramming
Tests and Calibrations

15. This screen flashes on then off.

Please wait

Activity 06
(Continued)

16. Tap **Clear** to clear preselected PIDs. Use the scroll bar on the right to view all available PIDS.

17. Select the following PIDs, then tap tick:

- APP1 (VOLT)
- APP2 (VOLT)
- TP1 (VOLT)
- TP2 (VOLT)

You are now in the active PID display. Use the scroll bar on the right to view all available PIDs as needed.

18. Slowly move the vehicle's accelerator pedal from idle to wide open and then back to idle.

19. Immediately after releasing the accelerator pedal

    tap **Data Capture** to record the data.
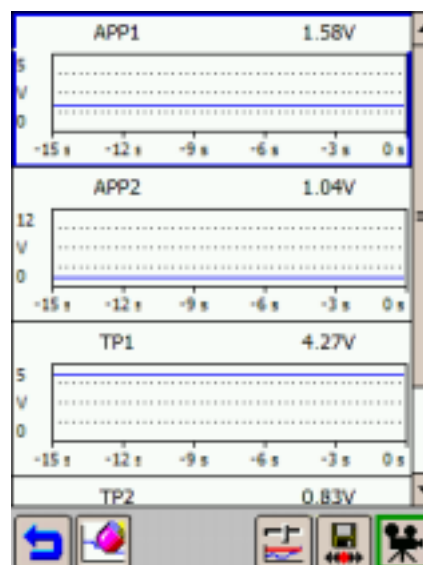
Activity 06
(Continued)

19. Tap [icon] **Playback**.

20. Tap the recording pop-up data that appears in the lower right corner.

Tap
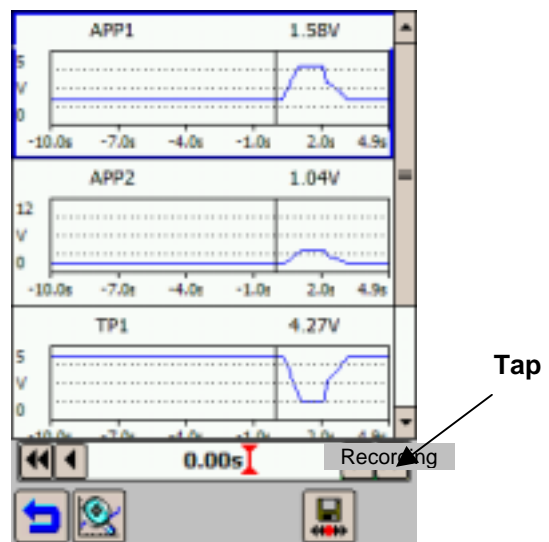
Recording

Activity 06
(Continued)

21. Your recording should look similar to this screen.

    You can scroll through the recording to view the PIDs, as needed, using any of the following three methods:

    - Tap the left and right arrows at the bottom of the recording. (A)

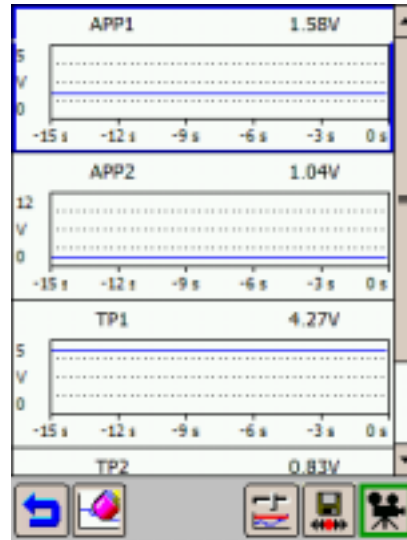   - Tap the stylus on the red vertical bar at the bottom of the recording, then drag the bar right or left with the stylus. (B)

    - Tap the scroll bar on the right, then drag the bar up or down with the stylus. (C)
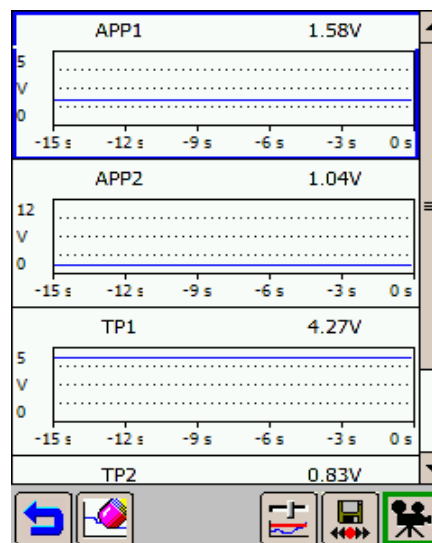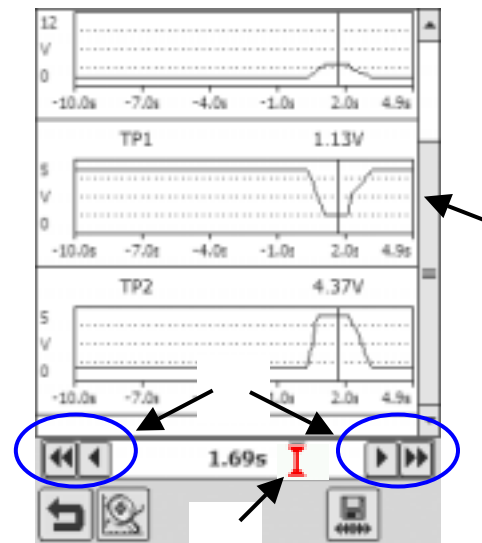
Answer the following questions from the recording you just made:

What was the APP1 voltage at idle? _____

What was the APP2 voltage at wide open throttle? _____

What was the TP1 voltage at idle? _____

What was the TP2 voltage at wide open throttle? _____

What was the total recording length? _____

Activity 06
(Continued)

22. Tap [icon] **Go to Previous Screen**.
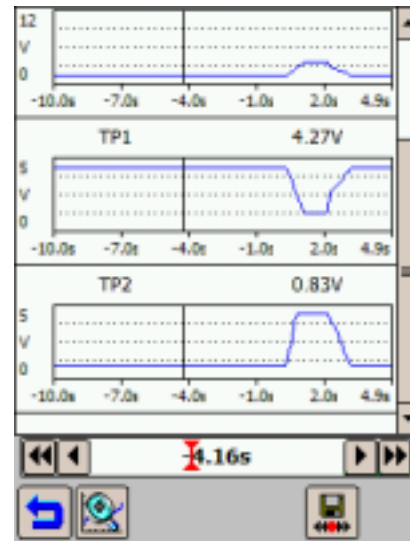
23. Tap [icon] **Go to Previous Screen**
    again.
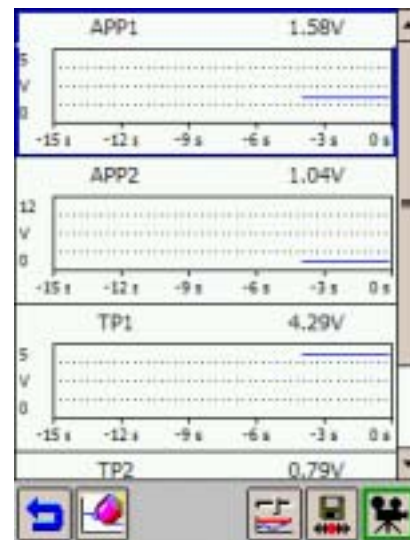
24. Tap [icon] **Go to Previous Screen**
    one more time.
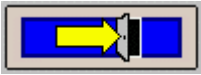
Activity 06
(Continued)

25. Tap [home icon] **Go to Previous Screen**.
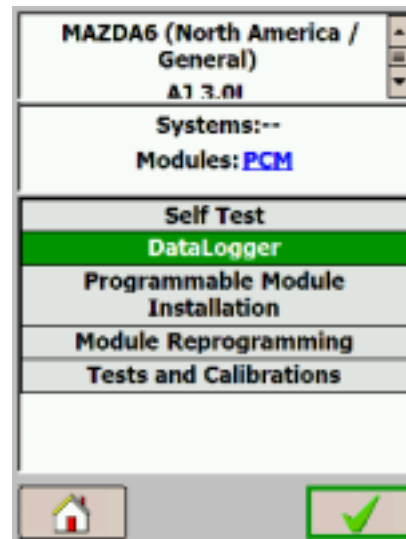
26. Tap [exit icon] **Exit PDS**.
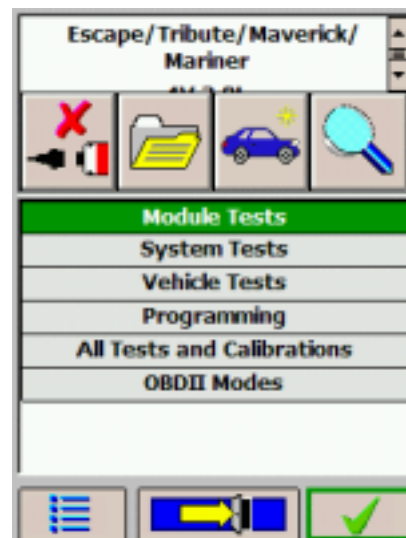
The main screen displays:

Your PDA's main screen will look slightly different than this example.

Activity 06
(Continued)

27.   Turn the ignition key OFF.

28.   Disconnect PDS from the vehicle.

29.   Turn OFF the PDA.

Conclusion:

In this activity, you used M-MDS to make a DataLogger recording and then play it back.

Instructor Sign-off: _____

Activity 07: Reprogramming / Updating a PCM

Upon completing this activity you will be able to use M-MDS to reprogram or update a PCM.

What you need to complete this activity:

- A current Mazda vehicle prepped by your instructor
- Mazda-approved PDA with PDS installed
- Mazda-approved laptop with ActiveSync installed
- High-speed internet access

Procedure:

1. Connect the M-MDS data cable to DLC 2 under the dash. The PDA will turn on automatically.

   Three USB pop-up messages quickly flash on and off the PDA. You may not see the first two messages:

USB message 1   *USB message 2*

Activity 07
(Continued)

The third message, "Status: User Authenticated," is the most important message.

USB message 3

2. Tap **Start** on the main screen.

Your PDA's main screen may look slightly different than this example.

3. Tap **PDS** from the drop-down menu.

Activity 07
(Continued)

4. The PDS Establishing Communications screen flashes on then off. This screen indicates the PDA is connecting to the VCM via the USB network.

5. Tap the **New Vehicle** icon.

6. Select **16 pin,** then tap tick.

Activity 07
(Continued)

7. Turn the ignition key to KOEO, and then tap tick.

CAUTION
If you do not turn the ignition key ON, you will need to perform a soft reset on your PDA and reboot the VCM.

8. Watch the following Establishing Communication screen flash on then off.

9. Verify the vehicle information is correct, and then tap **YES**.

Activity 07
(Continued)

10. If desired, leave the fields empty or
    tap data into any of the fields,
    then tap TICK.

NOTE
This is an optional screen and you may not see it.

11. If this screen displays,
    tap **NO**.

12. Tap **Programming** then tap tick.

Activity 07
(Continued)

13. Tap **Module Programming**, if it is not highlighted, then tap tick.
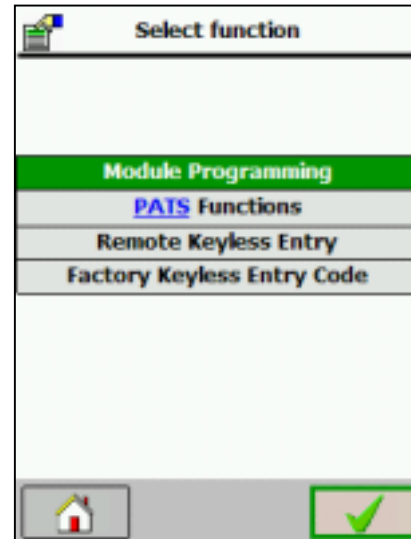
14. Tap **Module Reprogramming**, then tap tick.

15. Tap tick.

Activity 07
(Continued)

16. This screen flashes on then off.

> **Running Network Test - please wait**
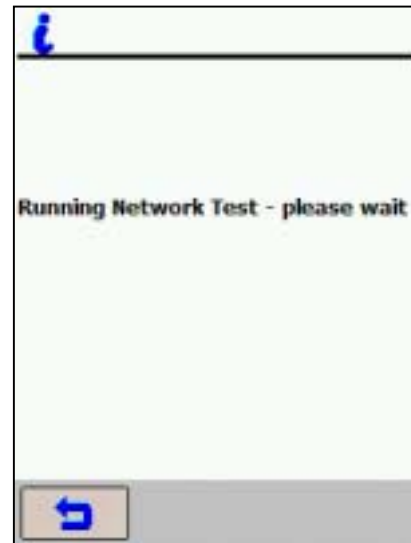
17. Tap **YES** to retrieve the current calibration file.

> A later calibration is available. Do you want to program the **PCM** with it?
> Part Number: 5L8A - 12A650 - AYA
> Filename: MBDK0B6
>
> NO   YES
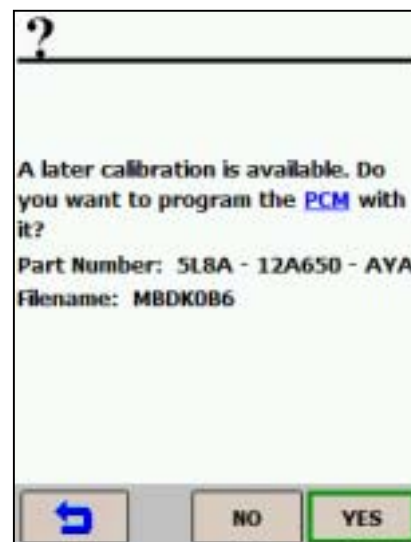
18. You may see the following screens, depending on the status of your PDS. Follow the onscreen instructions.

> **PCM Reprogramming**
>
> To retrieve the module programming file(s), please connect the PDA to the PC using the sync cradle.
> If the PDA is already in the cradle, cycle the power on the PDA.
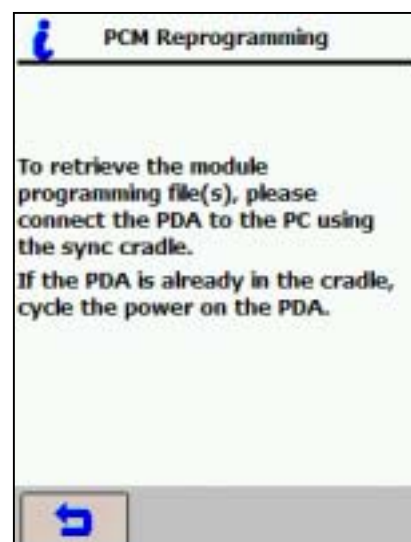
Activity 07
(Continued)

19...Reconnect the PDA to the vehicle, then tap tick.

> **NOTE**
>
> Do not tap tick until you have reconnected the PDA to the vehicle.

PCM Reprogramming

The file has been copied to the PDA. Reconnect the PDA to the vehicle.

20. Tap tick.

PCM Reprogramming

Ensure vehicle battery is in good condition and all accessories are turned off.
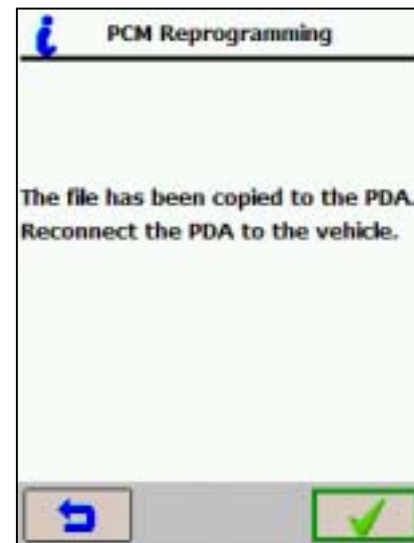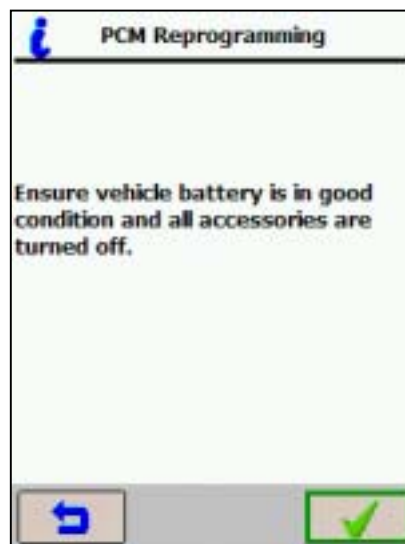
21. Tap **YES** to run a self test to identify any DTCs that may be present.

PCM Reprogramming

It is recommended that you carry out SELF TEST to identify any DTC that may be present.
• Run self test.?

NO   YES
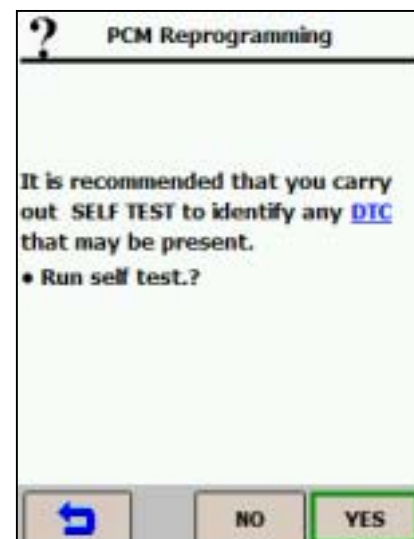
Activity 07
(Continued)

22. Tap tick.

> **PCM KOEO**
>
> The vehicle must be prepared for Self Test.
> **Instructions**
> • Do not activate vehicle switches during Test.
> Ensure the following initial conditions are met:
> • Vehicle is not moving.
> • The transmission must be in PARK or NEUTRAL on vehicles equipped with an automatic transmission.
> • Engine cooling fan may operate during selftest.

23. This screen flashes on then off.

> Performing tests - please wait
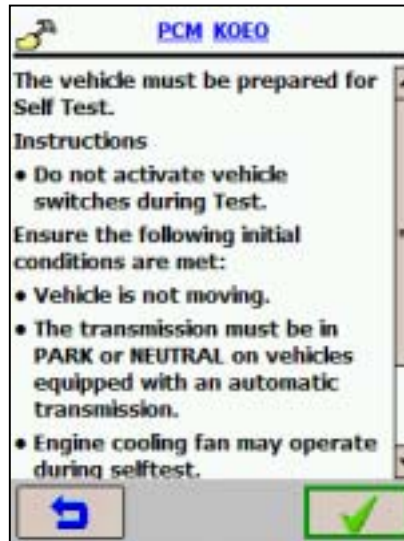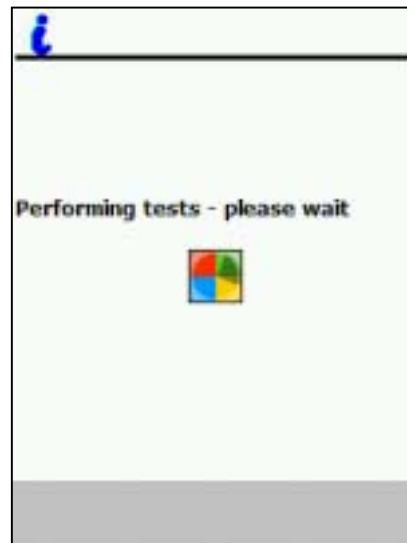
24. The vehicle you are working on may or may not have DTCs. Some DTCs must be addressed before PCM reprogramming. If you are not sure whether the DTC(s) needs to be addressed before reprogramming, ask your instructor

> **PCM**
>
> **On Demand DTC**
> No DTCs present
>
> **Helpscreen**
> Select item for more information.
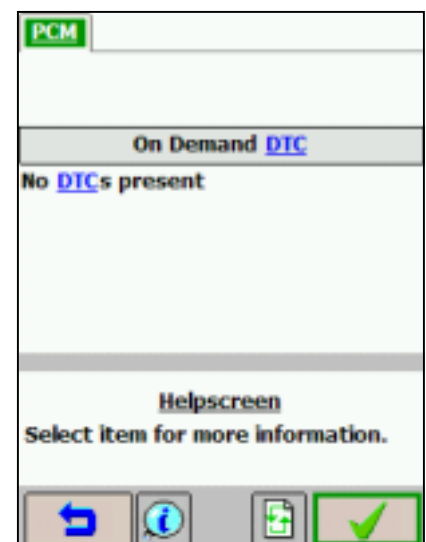
Activity 07
(Continued)

25.   Tap tick.

Select Option

The items listed below pertain to reprogramming issues related to the vehicle. Selecting one of those items will display a short description. It is recommended that outstanding TSBs and/or SSMs be reviewed before reprogramming.

M TIPS4398

SSM17794

SEVERE BACKFIRE DURING COLD START CONDITION

26.   Turn the ignition key OFF, then tap tick.

Operator Action

Set ignition switch to OFF (Position 0).
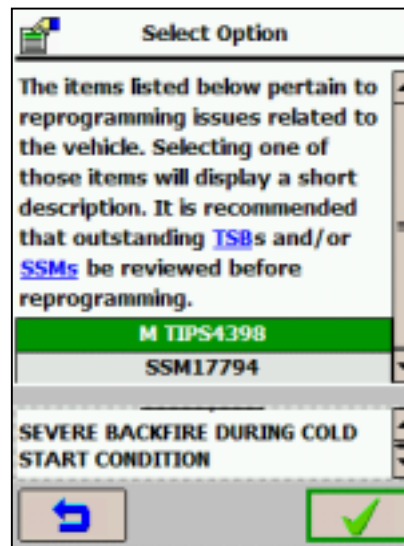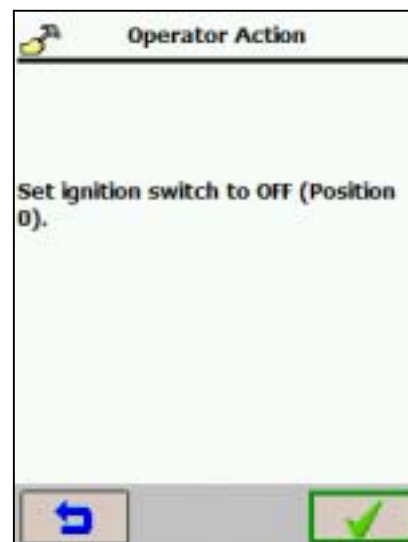
27.   Make sure a battery charger is attached to the vehicle and set it to around 15 amps.
Do not remove fuses as instructed.

Tap tick.

PCM Reprogramming

The fuel pump and engine cooling fan(s) will run during the following procedure. It is recommended that their fuses be removed to prevent electrical interference and battery drain while reprogramming.

Activity 07
(Continued)

28. Turn the ignition key ON.

Operator Action

Set ignition switch to ON (Position II).

29. This screen flashes on then off.

Module Programming

- Erase procedure in progress, please wait...
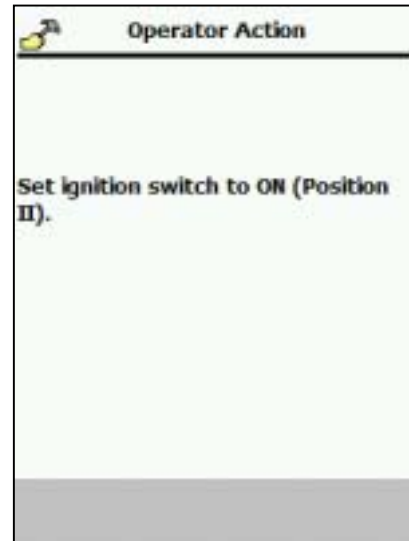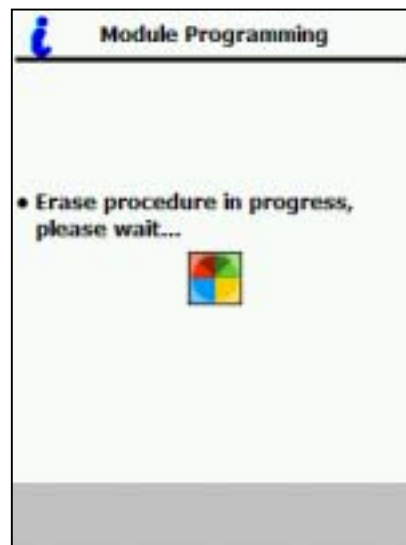
30. The blue "status bar" indicates the progress of data being downloaded to the PDS. It will take several minutes to complete this process.

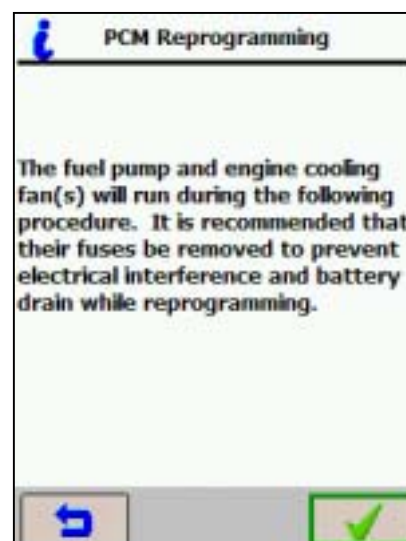**Downloading Data**

PCM Reprogramming.
Please Wait

Activity 07
(Continued)

31. Turn the ignition key OFF, then tap tick.

> **Operator Action**
>
> Set ignition switch to OFF (Position 0).
>
> ✓
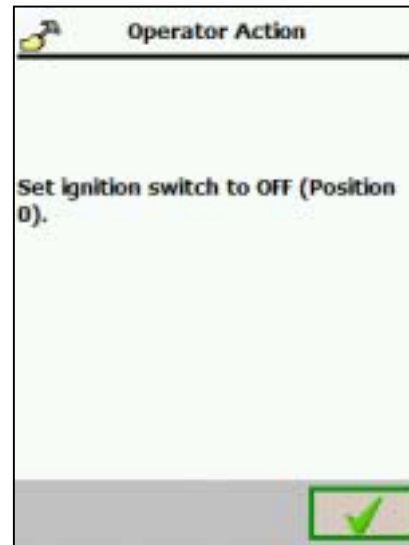
32. This screen indicates the progress of the module programming. It will take about 15 seconds.

> **Module Programming**
>
> Operation in progress
>
> 0s   15s

33. Turn the ignition key ON, then tap tick.

> **Operator Action**
>
> Set ignition switch to ON (Position II).
>
> ✓
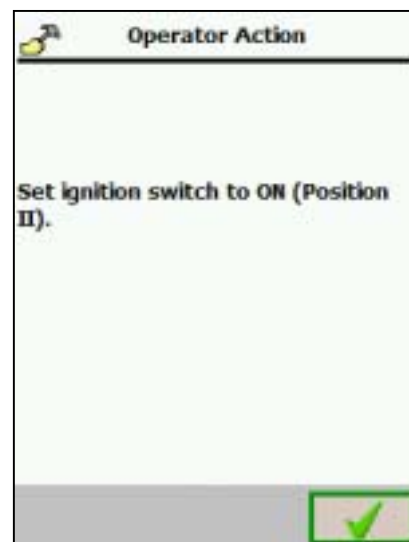
Activity 07
(Continued)

34. Turn the ignition key OFF, then tap tick.
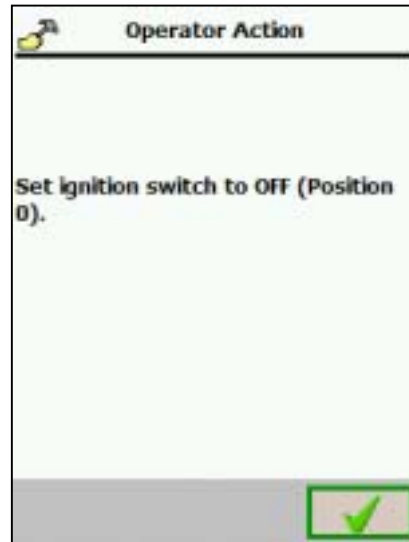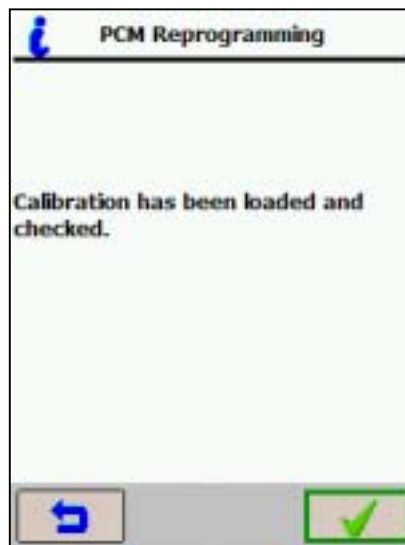
Operator Action

Set ignition switch to OFF (Position 0).

35. Tap tick.

PCM Reprogramming

Calibration has been loaded and checked.

36. Tap tick again.

PCM Reprogramming

Reinstall engine cooling fan and fuel pump fuses if removed.
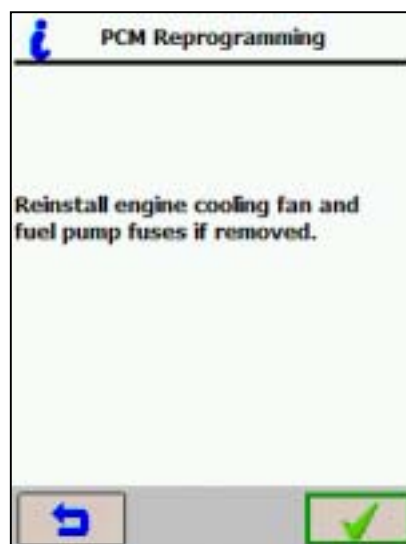
Activity 07
(Continued)

37. Follow the screen instructions to complete the PCM update label. If you are not sure where to place the label, ask your instructor.

   Tap tick.

PCM Reprogramming

If required, obtain a **PCM** reprogramming label and complete with the following data:
- DATE: 6/30/05
- PART: 5L8A - 12A650 - AYA

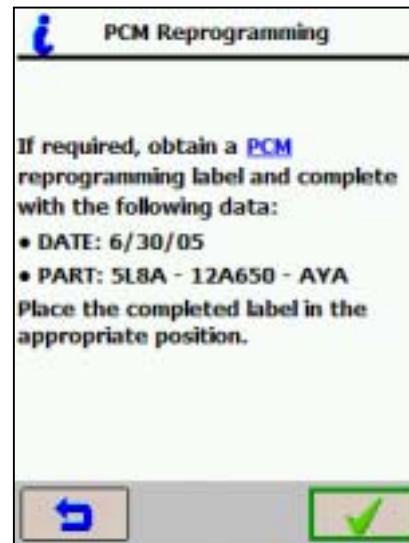Place the completed label in the appropriate position.

38. Start the engine, then tap tick.

Operator Action

Start Engine
NOTE : Do not depress the throttle pedal.
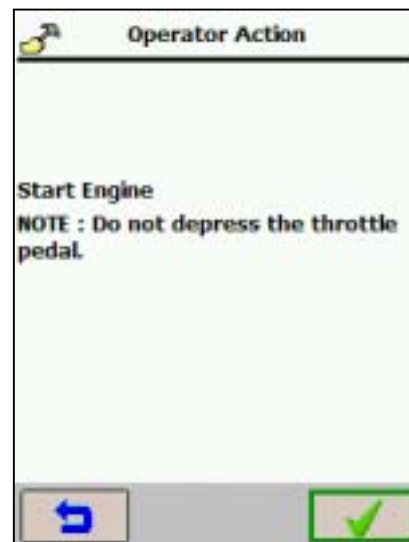
39. Turn the ignition key OFF, then tap tick.

Operator Action

Set ignition switch to OFF (Position 0).
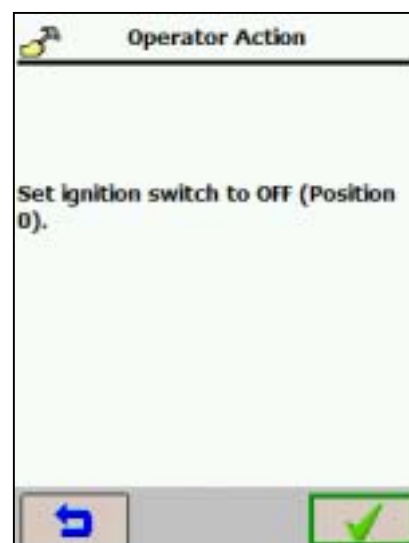
Activity 07
(Continued)

40.   Turn the ignition key ON, then tap tick.

> **Operator Action**
>
> Set ignition switch to ON (Position II).

41.   This screen flashes on then off.

> **Module Programming**
>
> **Clearing Fault Codes**
>
> Network DTCs (U-codes) may have been set during reprogramming. This test will clear Continuous Memory DTCs.
> **Note:**
> DTCs that start with 'U' are faults which occur during module-to-module communication.
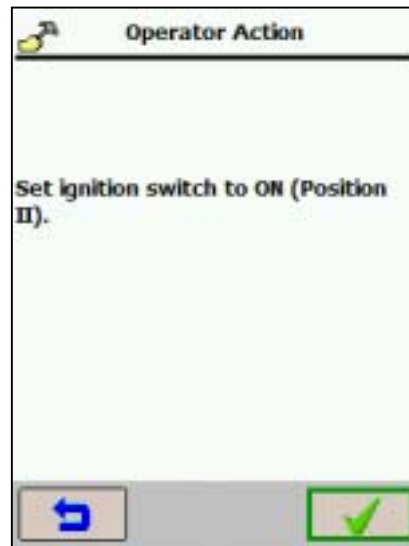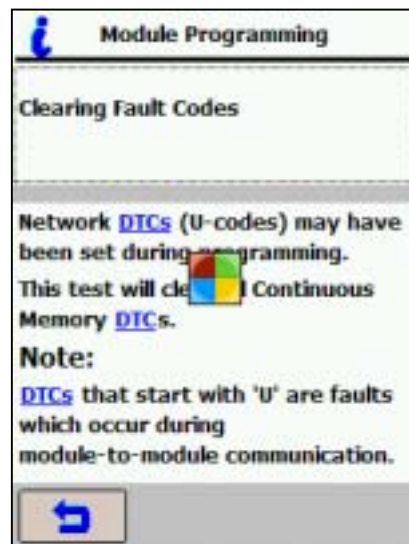
42.   Turn the ignition key OFF, then tap tick.

> **Operator Action**
>
> Set ignition switch to OFF (Position 0).
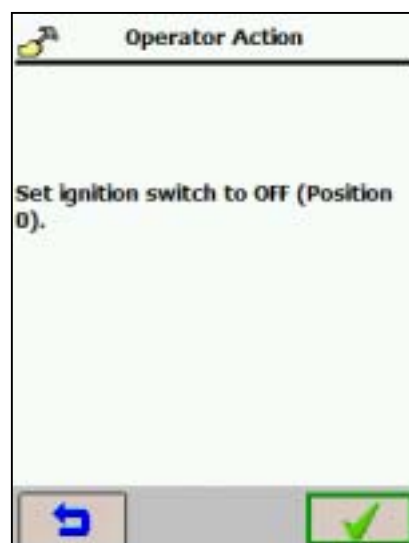
Activity 07
(Continued)

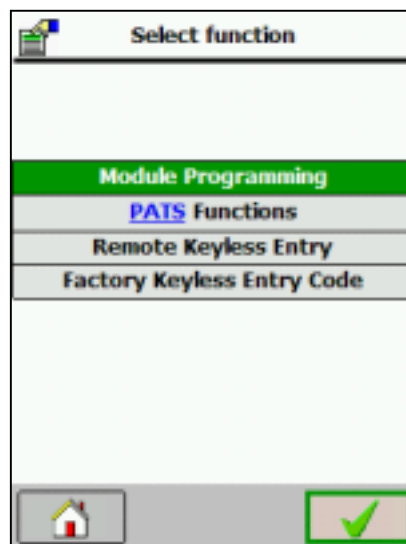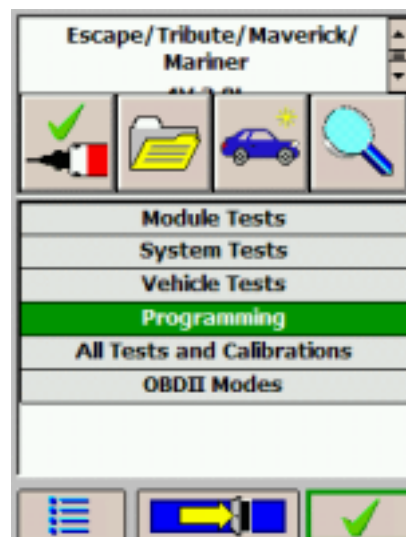43. Tap **Programmable Module Installation**, if it is not highlighted, then tap [home icon] **Go to Previous Screen**.

44. Tap **Module Programming**, if it is not highlighted, then tap [home icon] **Go to Previous Screen**.

45. Tap [blue arrow icon] **Exit PDS**.

Activity 07
(Continued)

The main screen displays:

Your PDA's main screen may look slightly different than this example.

46. Turn the ignition key OFF.

47. Disconnect PDS from the vehicle.

48. Turn OFF the PDA.

Conclusion:

In this activity, you used M-MDS to reprogram or update a PCM.

Instructor Sign-off: _____

Activity 08: Verify/Change Programmable Parameters

Upon completing this activity you will be able to View/Change Programmable Parameters on a current Mazda using M-MDS.
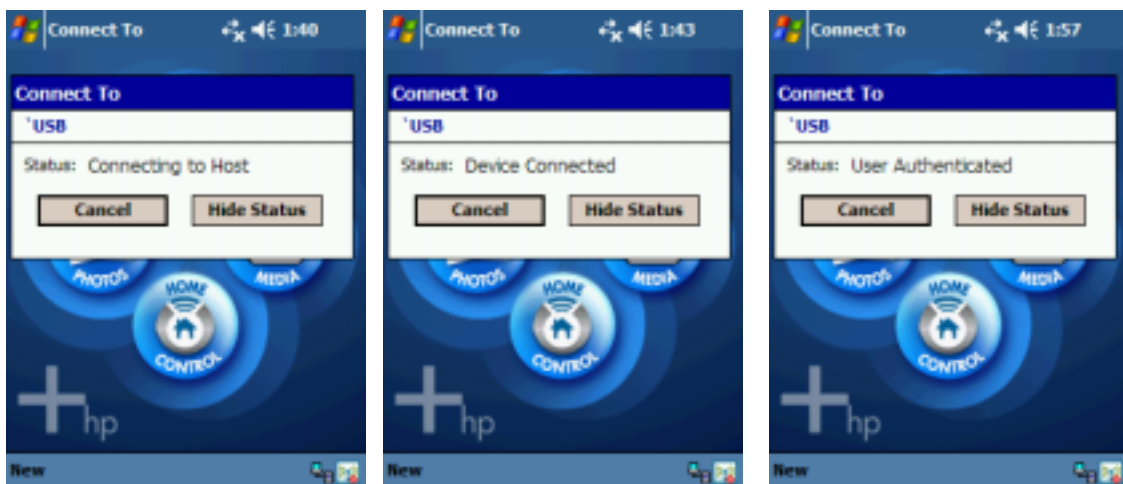
What you will need to complete this activity:
- A Current Tribute or B Series Mazda
- PDS

Connect the M-MDS data cable to DLC number 2 under the dash.
The PDA will turn on automatically.

Important!

You should see all 3 of the following USB pop up boxes. However they may "flash by" to quick to see. The most important is the 3rd one "user authenticated"

Activity 08
(Continued)

Tap Start	Tap PDS

Establishing Communications

Note:
The screen above is the PDA connecting to the VCM via the USB network.

Activity 08
(Continued)

NO VEHICLE

No Tools Available

1. Tap the blue car

16 Pin

Isuzu OEM

17 Pin

2. Tap Tick

- **WARNING: To avoid possible injury, place the PDS in the vehicle so that it does not interfere with the safe operation of the vehicle. Do not place the PDS in the deployment path of any airbag and secure all cables away from the vehicle pedals and controls.**
- **Make connections as shown**
- **Set ignition switch to ON (Position II).**
- **Apply the parking brake.**
- **Apply Neutral/Park gear position**

3. Tap Tick

Establishing communication to PCM

0s   45s

Operation in progress

4. Establishing Communication

Activity 08
(Continued)

? Vehicle Specification

Vehicle: Ranger / Mazda B-Series
Engine Type: V6 SOHC
Capacity: 4.0L
Transmission: Automatic
Fuel Type: Gasoline
Emission level: California or Green
State US Emission
Is this correct?

NO   YES

5. Tap Yes

VIN

########6PM00615

RO

Odometer

123 1 2 3 4 5 6 7 8 9 0 - = ←
Tab q w e r t y u i o p [ ]
CAP a s d f g h j k l ; '
Shift z x c v b n m , . / ↵
Ctl áü ` \   ↓ ↑ ← →

6. Tap Tick

?

The same VIN was found in a
previous session. Do you wish to
abort and restore that session?

NO   YES

7. Tap NO

Ranger / Mazda B-Series
V6 SOHC 4.0L

Module Tests
System Tests
Vehicle Tests
Programming
All Tests and Calibrations
OBDII Modes

8. Select Programming, Tap Tick

Activity 08
(Continued)

Select function	**Module Programming**
Module Programming	Programmable Module Installation
PATS Functions	Module Reprogramming
Remote Keyless Entry	Programmable Parameters

9. Tap Tick

10. Select Programmable Parameters, Tap Tick

Module Programming	
Passenger Seat Weight Sensor ReZero	
Neutral Tow Function	Running Network Test - please wait
Warning Lamps / Chimes	
Security	
Power Windows	
Tire Size / Axle Ratio	
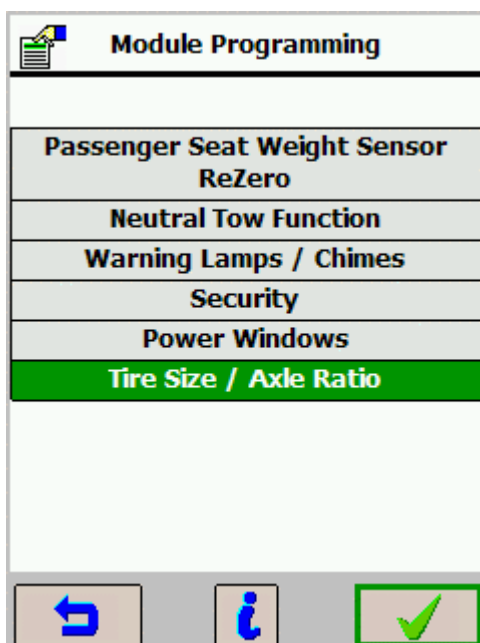
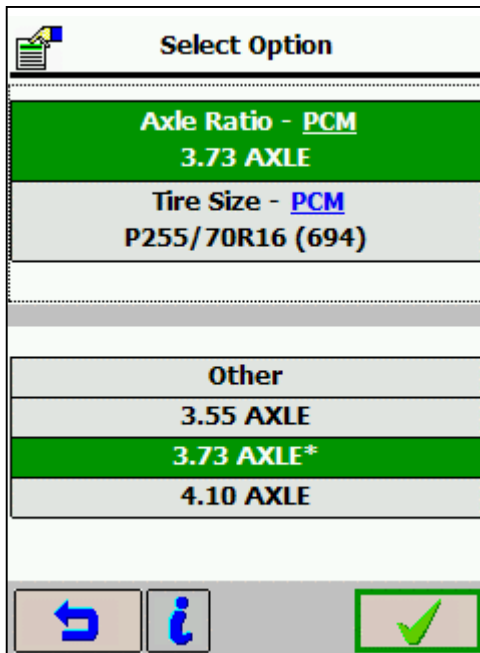**11. Select Tire Size/Axle Ratio, Tap Tick**
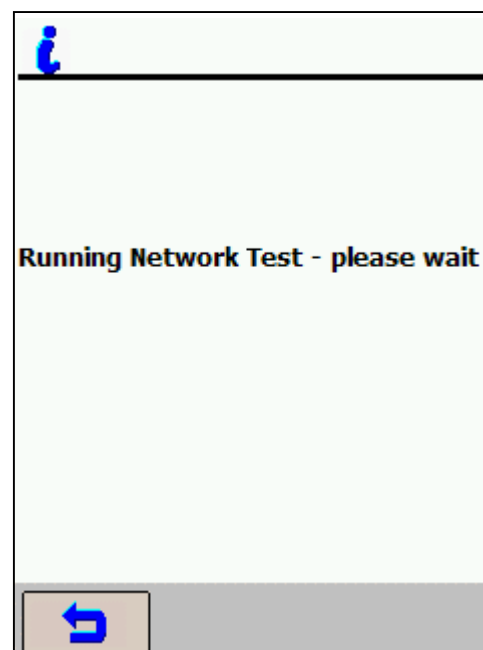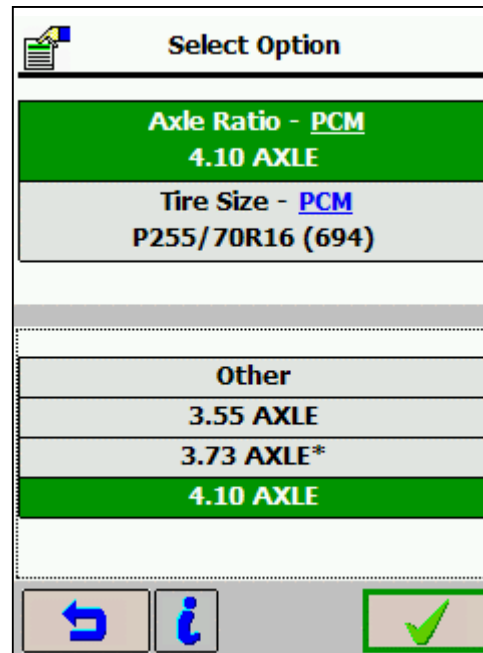
12. Please wait.

Activity 08
(Continued)

Confirm the tire size and axle ratio. If they are incorrect, select the correct size/axle ratio then Tap Tick. Verify correct information with your instructor.
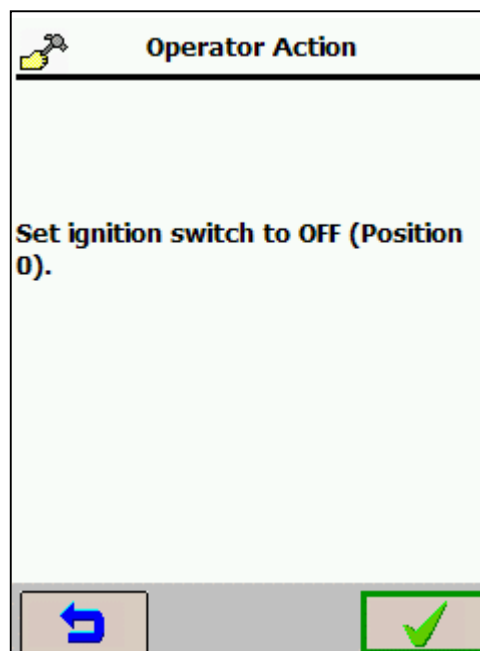
Where did you find the information?_____

Select Option	Select Option
Axle Ratio - PCM **3.73 AXLE**	**Axle Ratio - PCM** **4.10 AXLE**
Tire Size - PCM **P255/70R16 (694)**	**Tire Size - PCM** **P255/70R16 (694)**
Other	Other
3.55 AXLE	3.55 AXLE
3.73 AXLE*	3.73 AXLE*
4.10 AXLE	**4.10 AXLE**

13. If Size and Ratio is now correct, Tap Tick   **14. Tap Tick**

Operator Action
Set ignition switch to OFF (Position 0).

15. Follow prompts on screen. Tap Tick

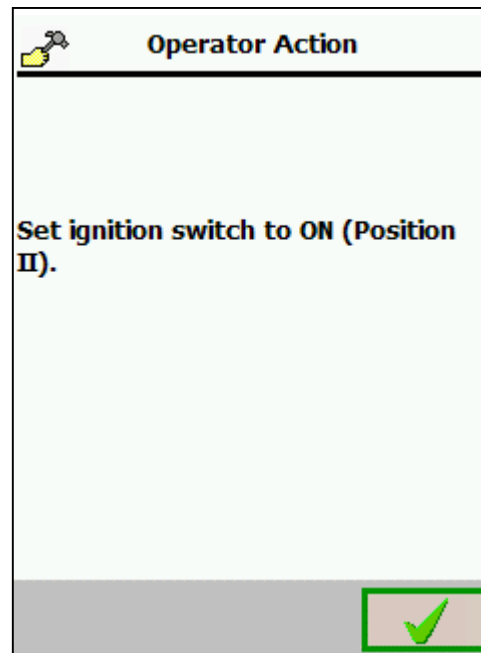**Activity 08**
(Continued)

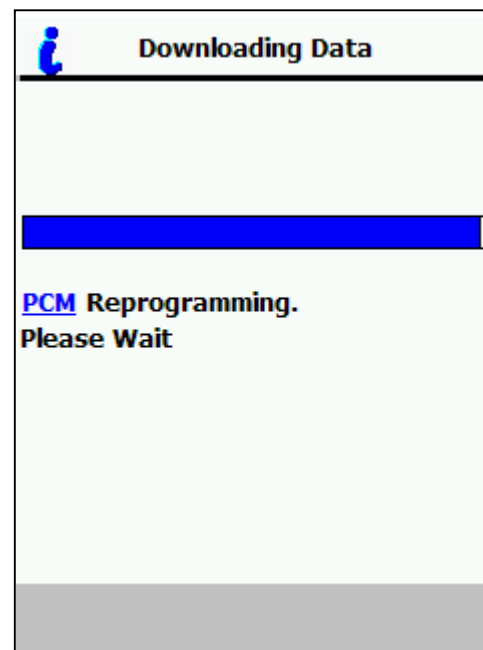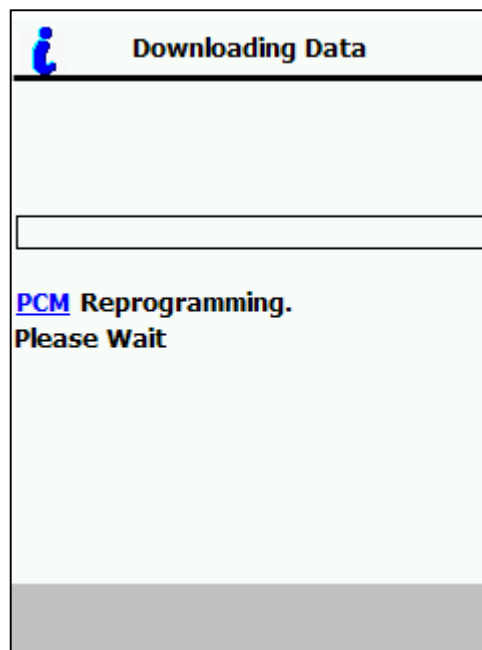<div align="center">**NOTE**</div>

Do NOT remove fuses as instructed to on the next screen. Make sure the vehicles battery is fully charged and that you have a battery charger set to around 15 amps connected to the vehicles battery.
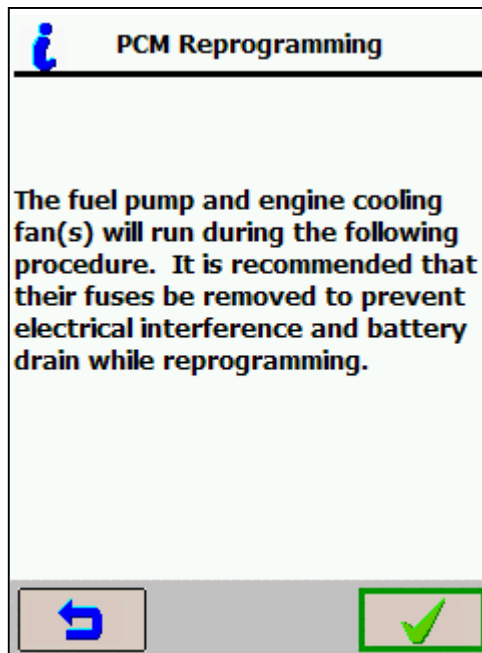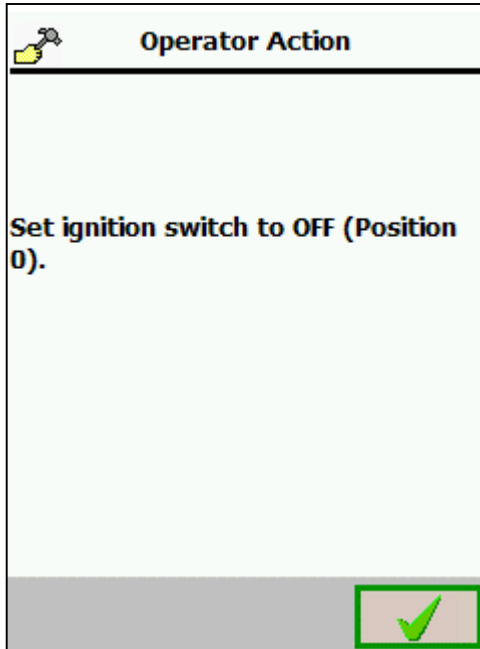
PCM Reprogramming	Operator Action
The fuel pump and engine cooling fan(s) will run during the following procedure. It is recommended that their fuses be removed to prevent electrical interference and battery drain while reprogramming.	Set ignition switch to ON (Position II).
1. Tap Tick	**2. Turn Ignition on, Tap Tick**

Downloading Data	Downloading Data
PCM Reprogramming. Please Wait	PCM Reprogramming. Please Wait

3. Wait until the screens have shown the finished reprogramming.

Activity 08
(Continued)

Operator Action	Operator Action
Set ignition switch to OFF (Position 0).	Set ignition switch to ON (Position II).
4. Turn ignition off, Tap Tick	**5. Turn ignition on, Tap Tick**
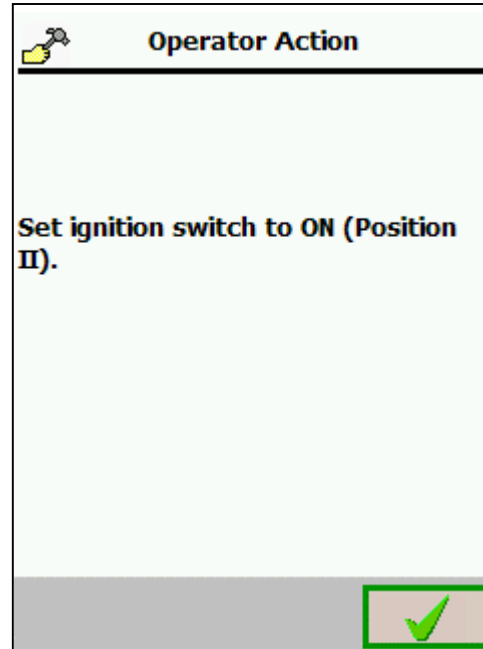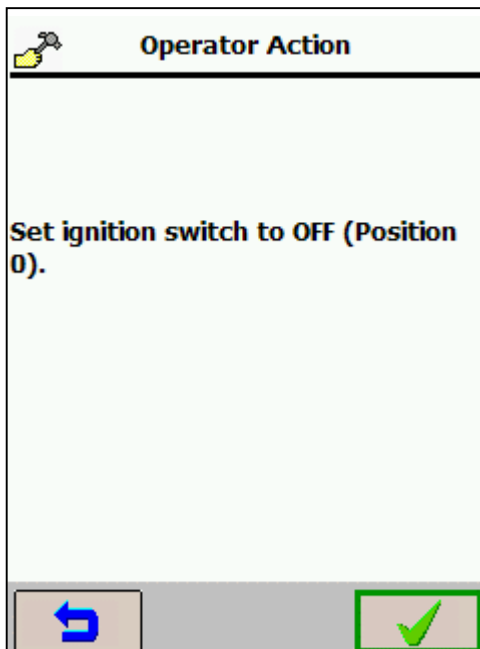
Operator Action	PCM Reprogramming
Set ignition switch to OFF (Position 0).	Calibration has been loaded and checked.
6. Turn ignition off, Tap Tick	**7. Tap Tick**

Activity 08
(Continued)

PCM Reprogramming

Reinstall engine cooling fan and fuel pump fuses if removed.

8. Tap Tick

PCM Reprogramming

If required, obtain a PCM reprogramming label and complete with the following data:

Note: A reprogramming label is not required on vehicles serviced in North America.

- DATE: 11/18/05
- PART: 6L5A - 12A650 - ACA

Place the completed label in the appropriate position.

9. Tap Tick

Operator Action

Start Engine
NOTE : Do not depress the throttle pedal.

10. Start Engine, Tap Tick

Operator Action

Set ignition switch to OFF (Position 0).

11. Turn ignition off, Tap Tick

Activity 08
(Continued)

Operator Action	Module Programming
Set ignition switch to ON (Position II).	**Clearing Fault Codes** Network DTCs (U-codes) may have been set during programming. This test will clear all Continuous Memory DTCs. **Note:** DTCs that start with 'U' are faults which occur during module-to-module communication.
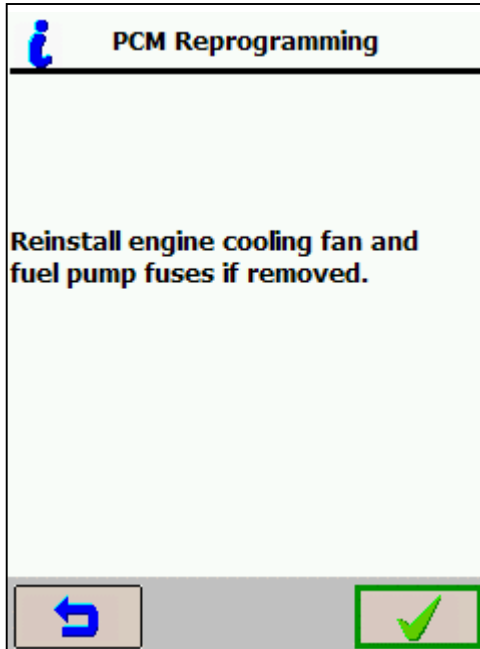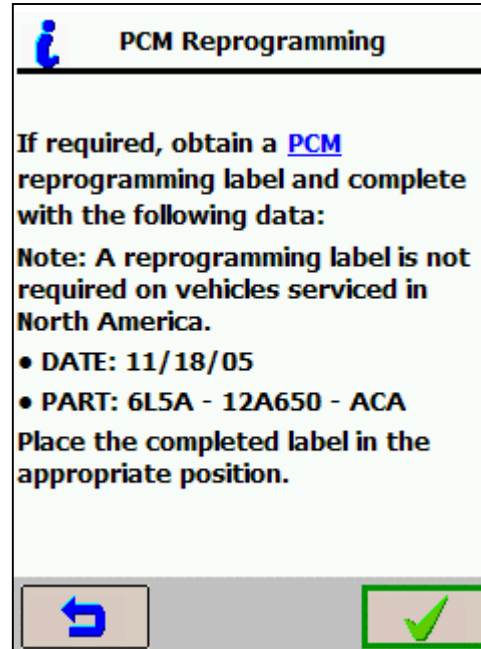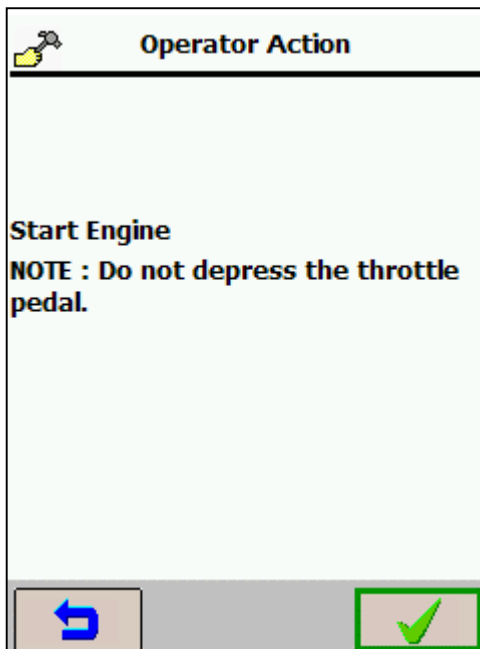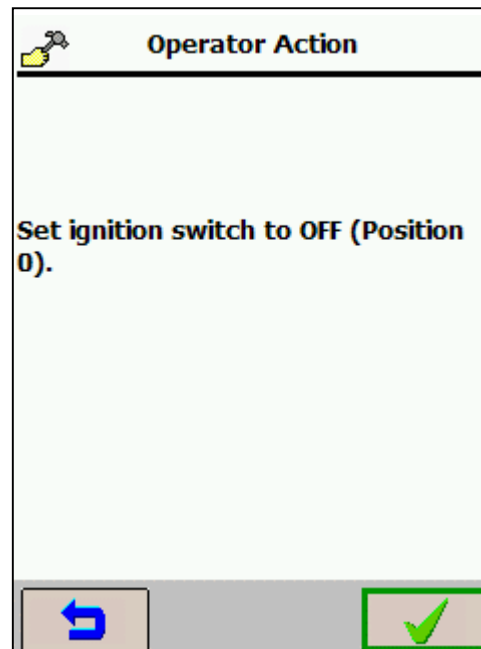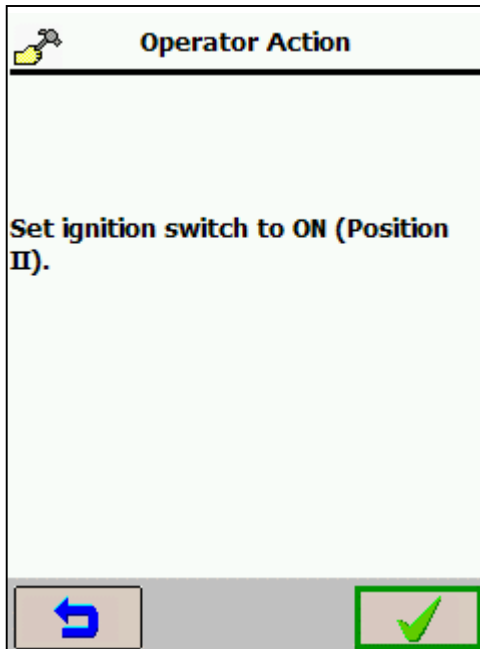
12. Turn ignition on, Tap Tick   **13. Be Patient**

Operator Action	Module Programming
Set ignition switch to OFF (Position 0).	**Programmable Module Installation** Module Reprogramming Programmable Parameters
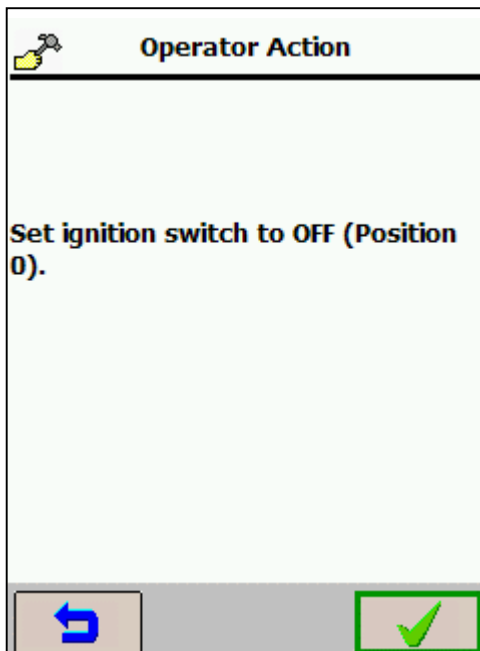
14. Turn ignition off, Tap Tick   **15. Tap Home**

Activity 08
(Continued)
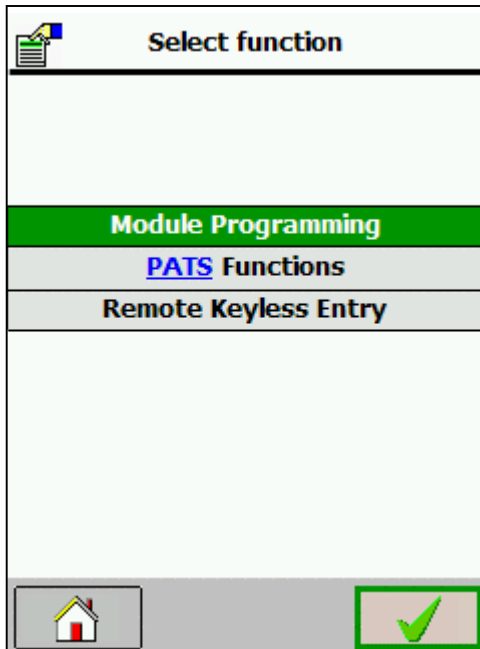
16. Tap Home
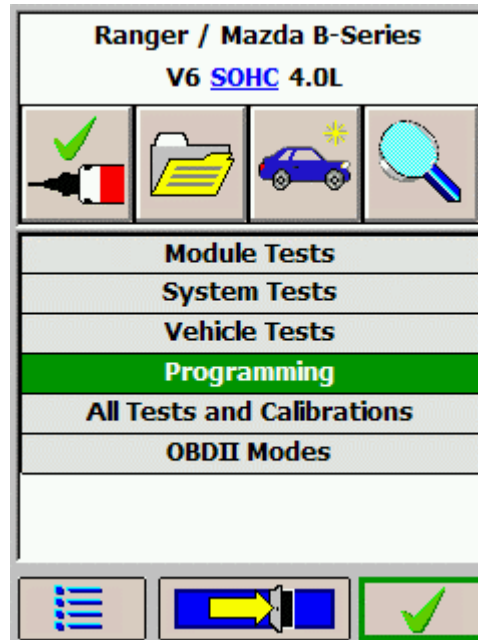
17. Tap the yellow exit arrow

18. Disconnect PDS and turn off the PDA

Instructor Sign Off: _____

Activity 09: Removing PFM & PDS from Laptop

Upon completing this activity you will be able to remove PDS and PFM from your laptop or PC.

What you need to complete this activity:

- Mazda-approved laptop or PC with ActiveSync and PDS and PFM installed
- Ask your Instructor to log in to the PC before you begin this activity

Procedure:

NOTES
You will need to perform this activity at your dealership only if the PDS software has become damaged and needs to be reloaded. Most PDS concerns can be fixed by "soft resetting" your PDA. To do this activity, you must have Administrator rights to install and remove software from the laptop or PC.

1. Left click (i.e., click) **Start** in the lower left corner of the desktop, then click **Control Panel**.

Activity 09
(Continued)

2. When the Control Panel window displays, double left click (i.e., double-click)
   Add or Remove Programs. The window may look similar to these examples:

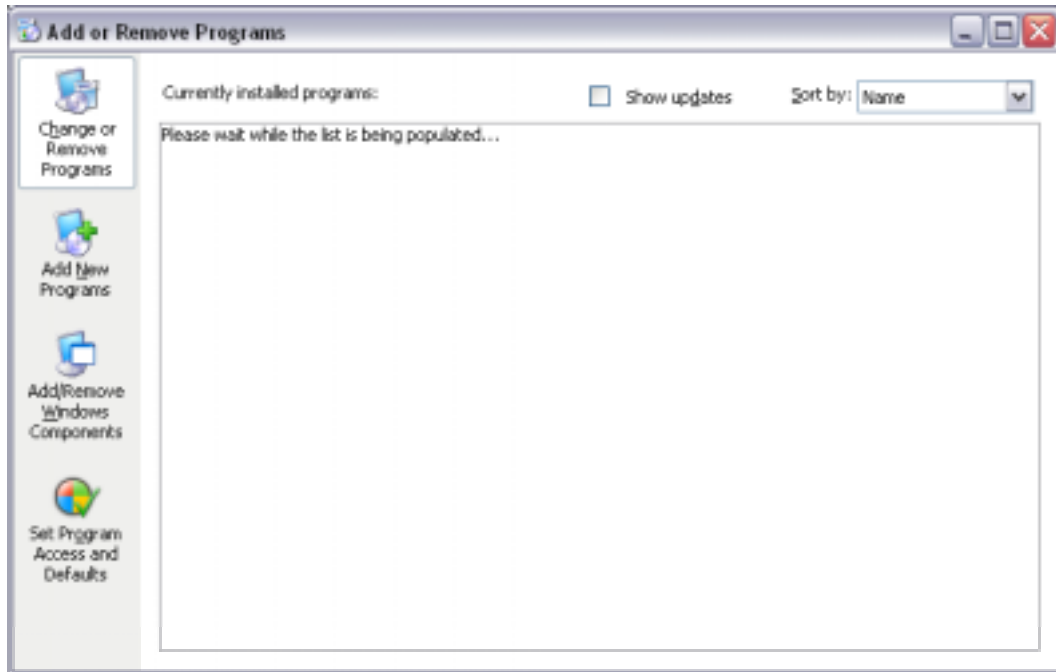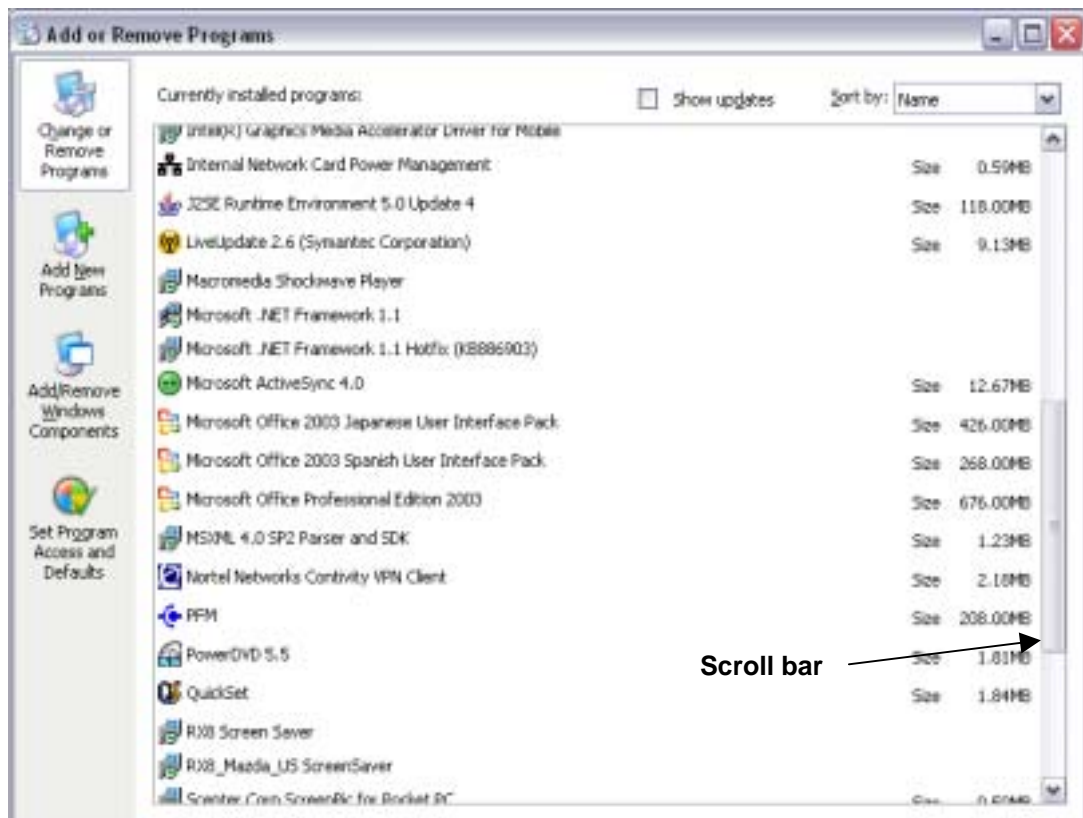   - A list of options

- OR -

   - A list of icons

Activity 09
(Continued)

3. Please wait for the list of programs to display.

4. Use the scroll bar on the right side of the Add or Remove Programs window to scroll down to **PFM**.
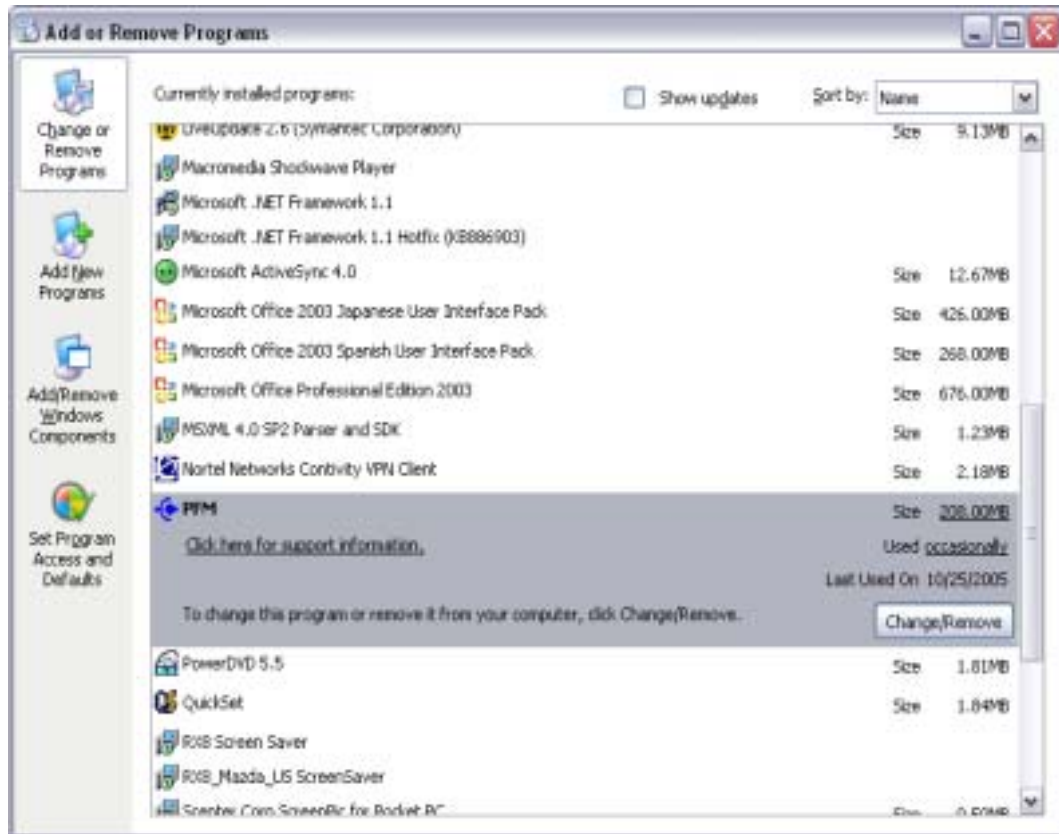
Activity 09
(Continued)

5. Click **PFM**, and then click the **Change/Remove** button.
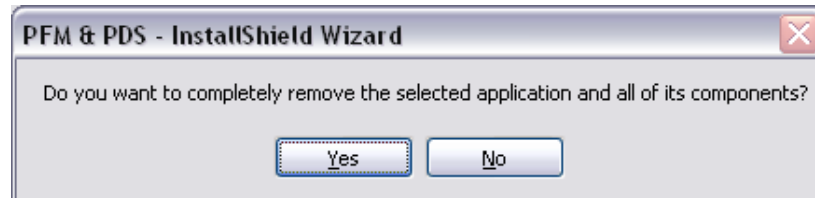

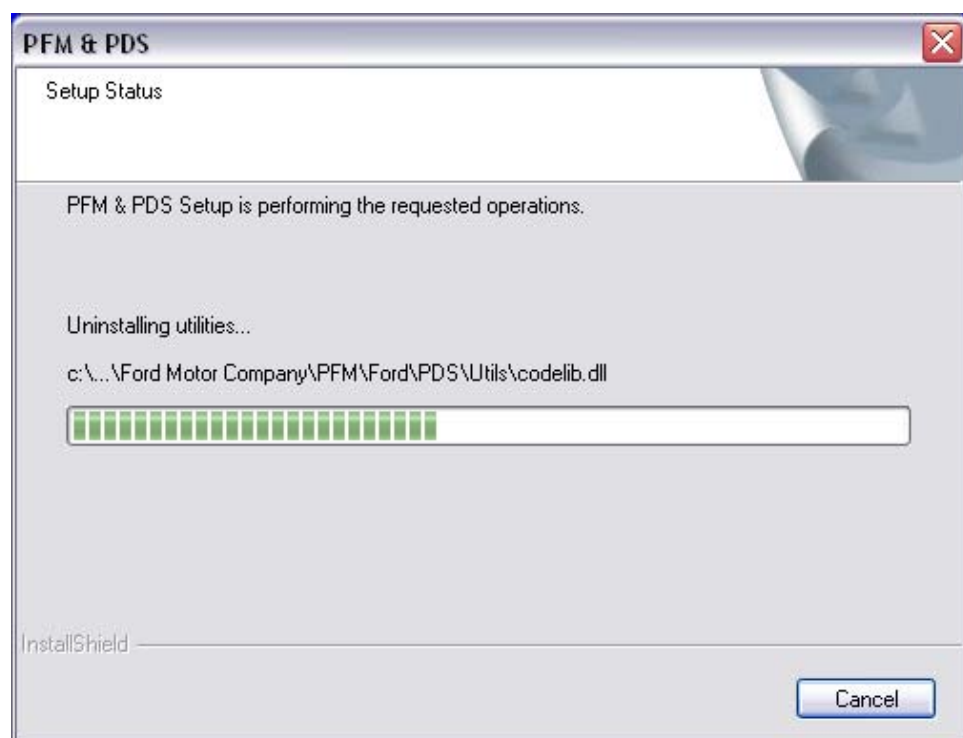6. Click the **Remove** option, and then click **Next**

Activity 09
(Continued)

7. Click **Yes**.

8. This window indicates the progress of the requested operation, removing PFM & PDS.

Activity 09
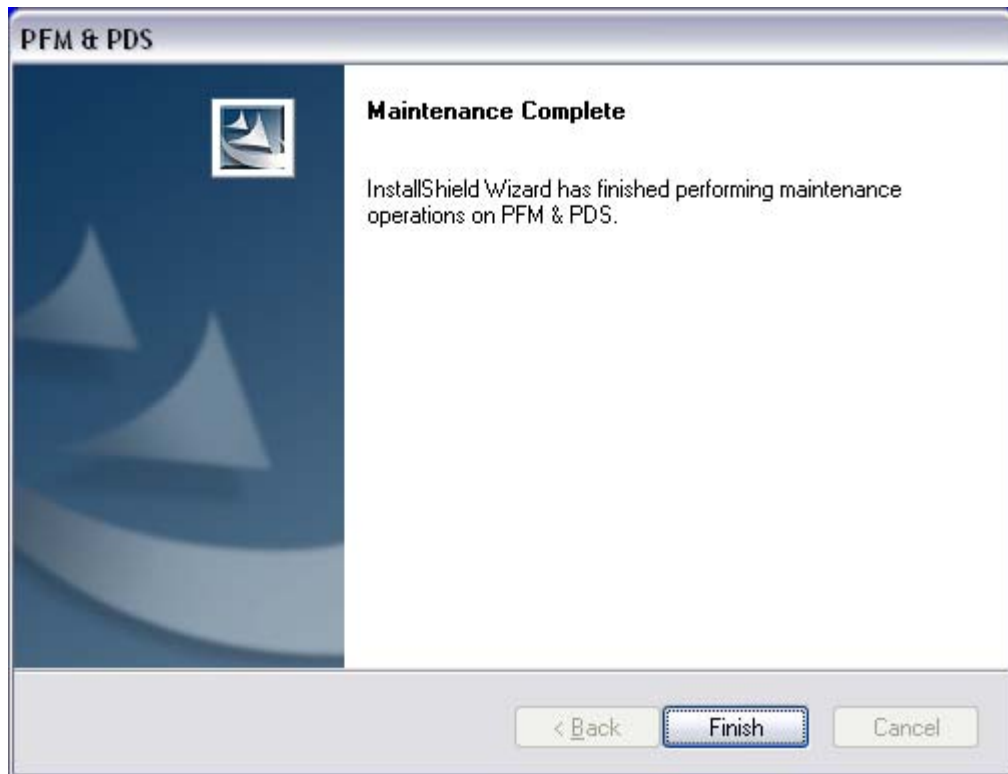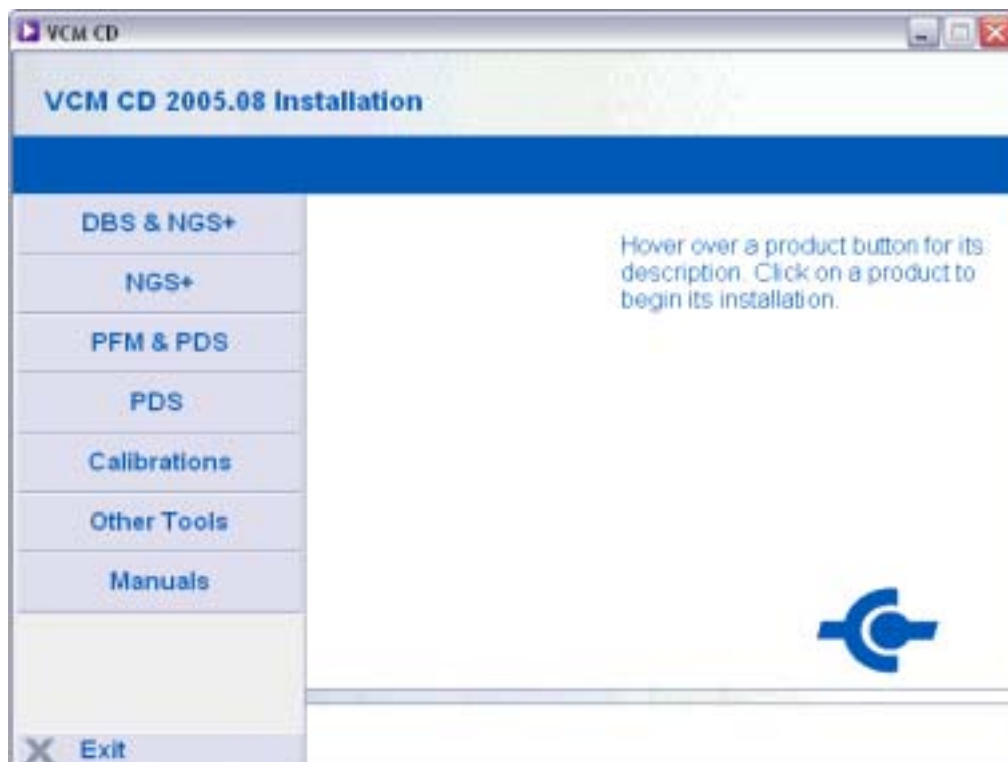(Continued)

9. Click **Finish**.

10. If the VCM CD window is open click **Exit** in the lower left corner.
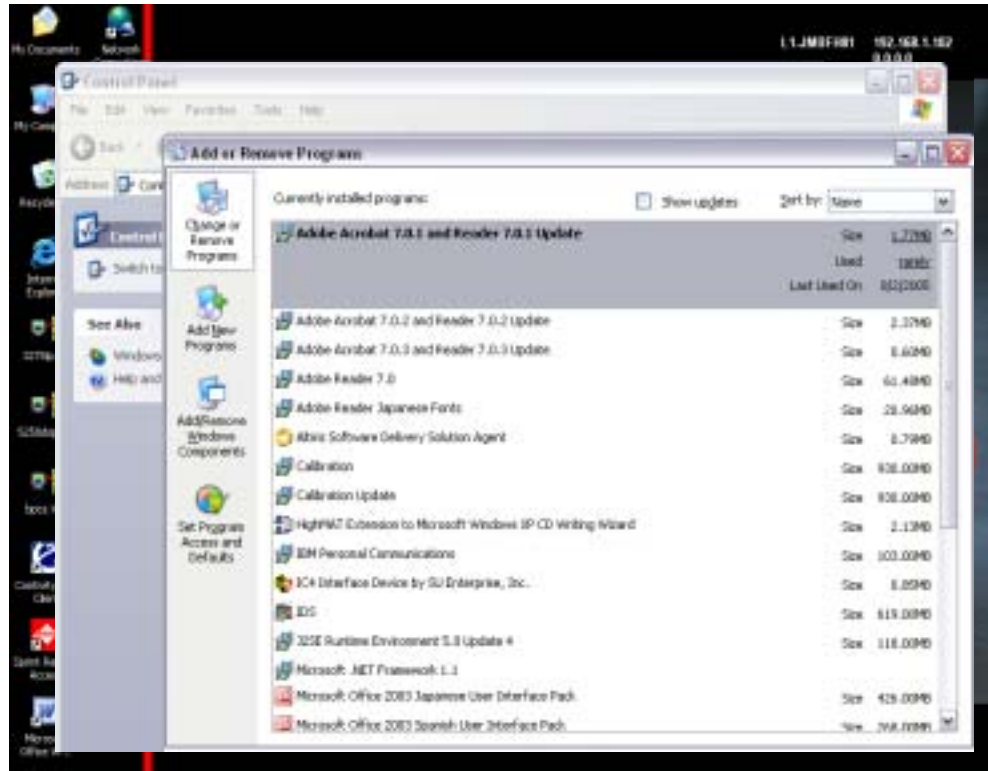
Activity 09
(Continued)

11. Close the open windows on the desktop by clicking the **X** in the upper right corner of each window.

PFM & PDS is now removed from your laptop or PC.

Conclusion:

In this activity, you removed PFM & PDS from your laptop or PC.

Instructor Sign-off: _____

Activity 10: Removing Microsoft ActiveSync

Upon completing this activity you will be able to remove Microsoft ActiveSync from your host laptop or PC.

What you need to complete this activity:

- Mazda-approved laptop or PC with ActiveSync installed
- Ask your Instructor to log in to the PC before you begin this activity

Procedure:

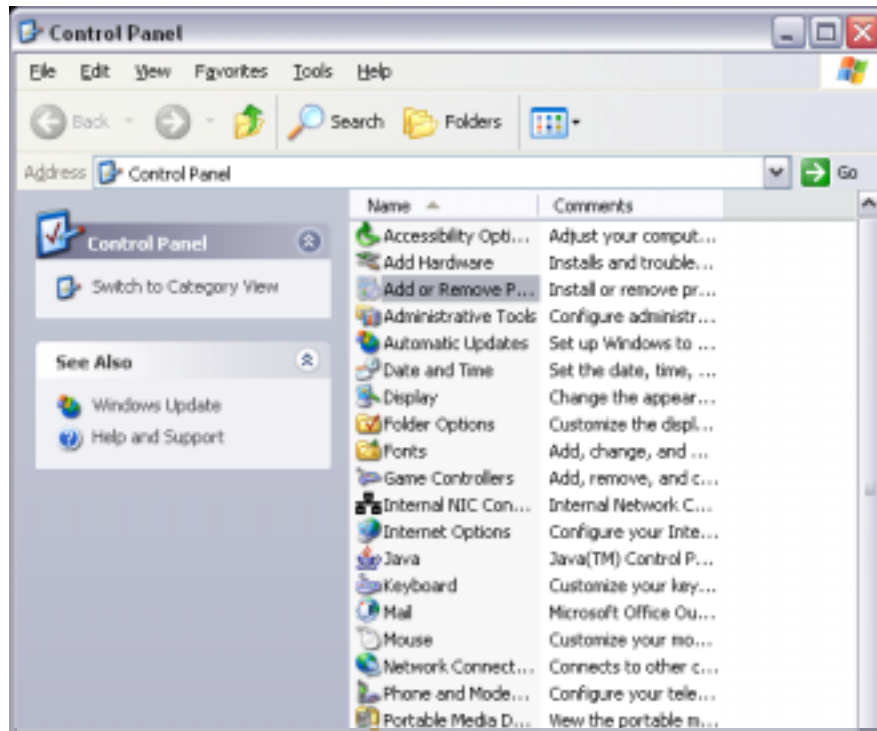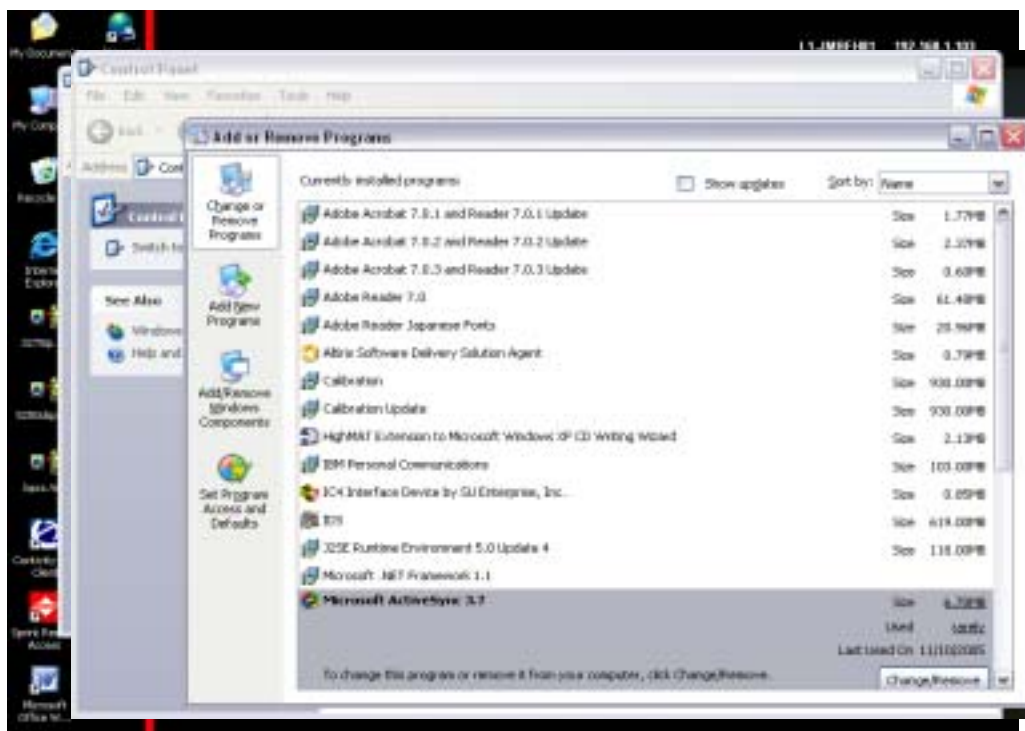| NOTES |
| --- |
| You will need to remove ActiveSync only if you are replacing or changing the PDA.

To do this activity, you must have Administrator rights to install and remove software from the laptop or PC. |

1. Click **Start**, then click **Control Panel**.

Activity 10
(Continued)

2. Double-click **Add or Remove Programs**.

3. Scroll down the Add or Remove Programs window and click **Microsoft ActiveSync**. Then click the **Change/Remove** button.
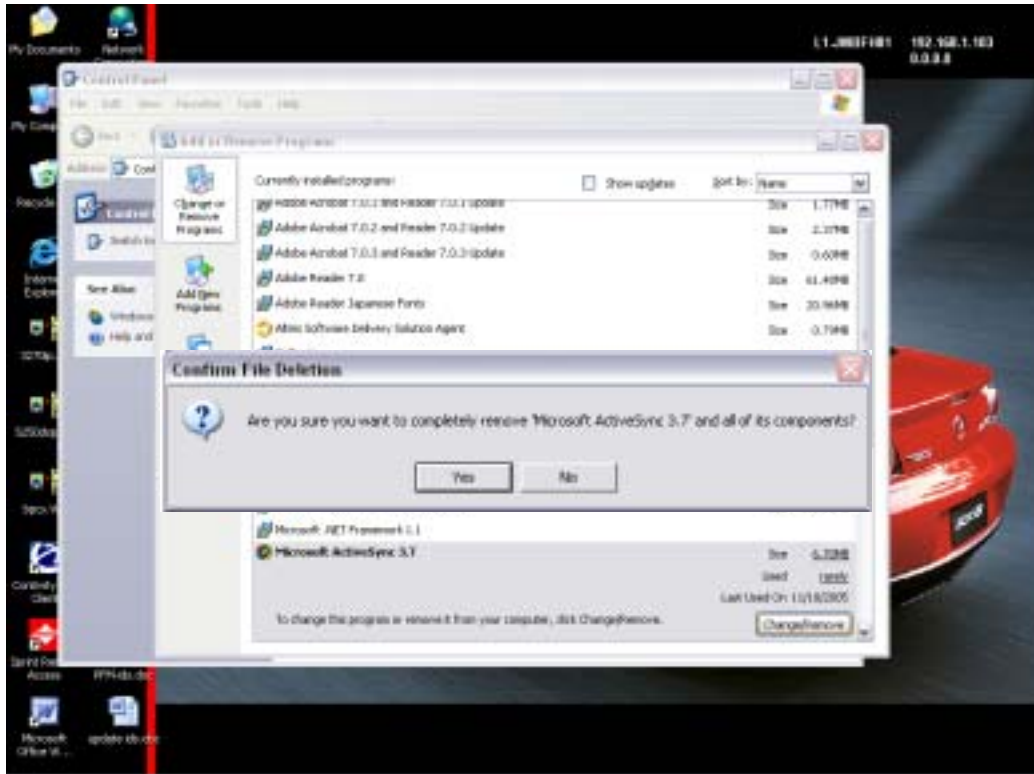
Activity 10
(Continued)

4. Click **YES** on the Confirm File Deletion pop-up message.
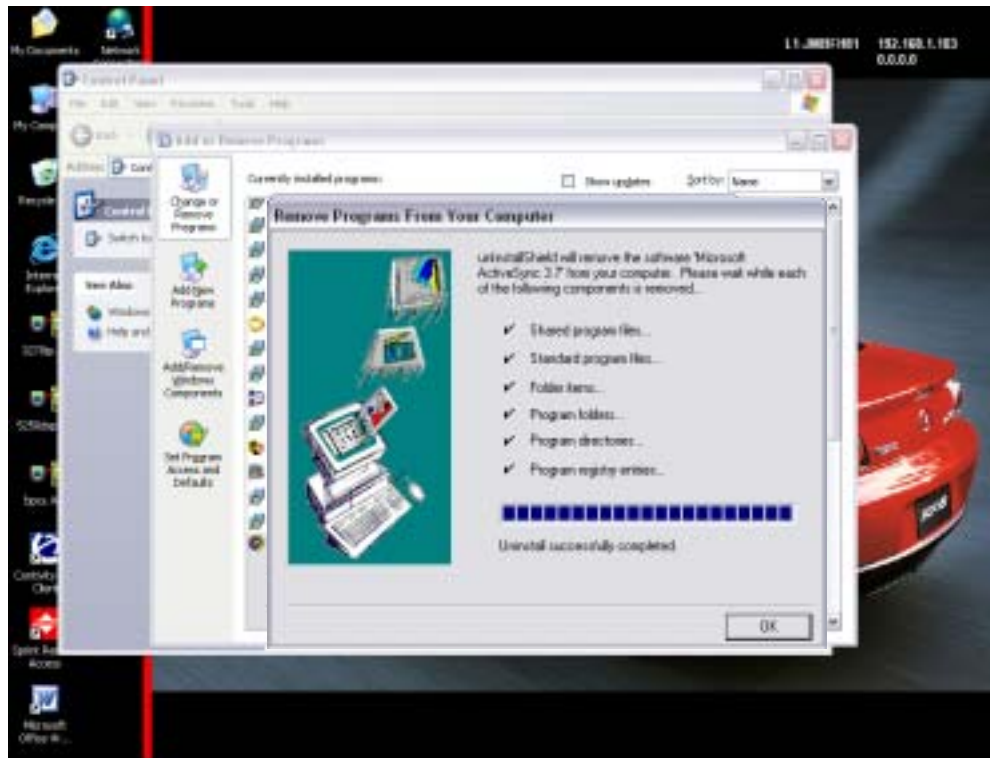

5. Click **YES** on the Confirm Deletion pop-up message.

Activity 10
(Continued)

6. Click **OK** on the Remove Programs from Your Computer window.

7. Click the **X** in the upper right corner of the open windows to get back to the desktop.

Activity 10
(Continued)

Microsoft ActiveSync is now removed from your laptop or PC.

Conclusion:

In this activity, you removed Microsoft ActiveSync from your laptop or PC. Continue with Activity 9, Installing Microsoft ActiveSync.

Instructor Sign-off: _____
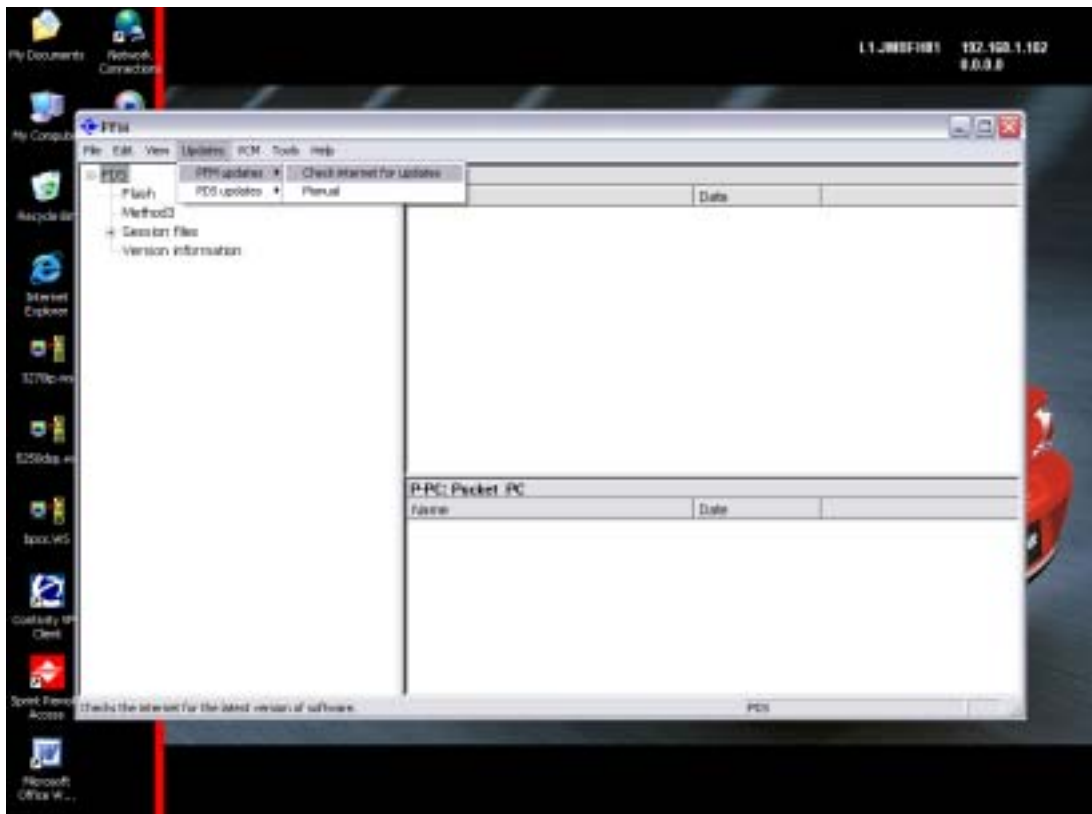
Activity 11: Updating PDS & PFM

Upon completing this activity you will be able to update PDS from the internet.
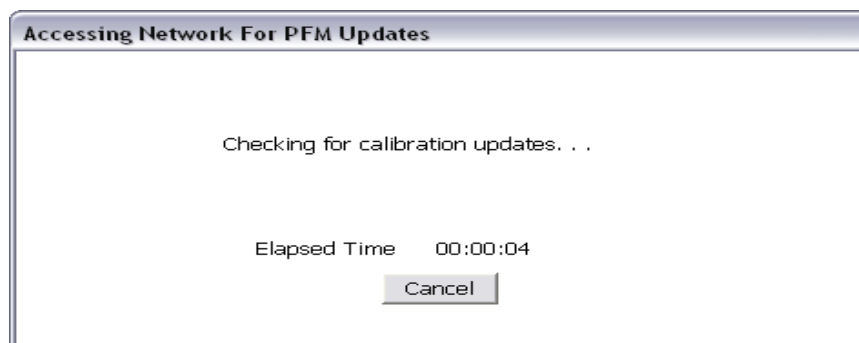
What you need to complete this activity:

- Mazda-approved laptop or PC with PDS / PFM installed
- High-speed internet access

Procedure:

1. Double-click the PFM icon on the desktop.

2. Click **Updates**, then **PFM updates**, then **Check internet for updates**.

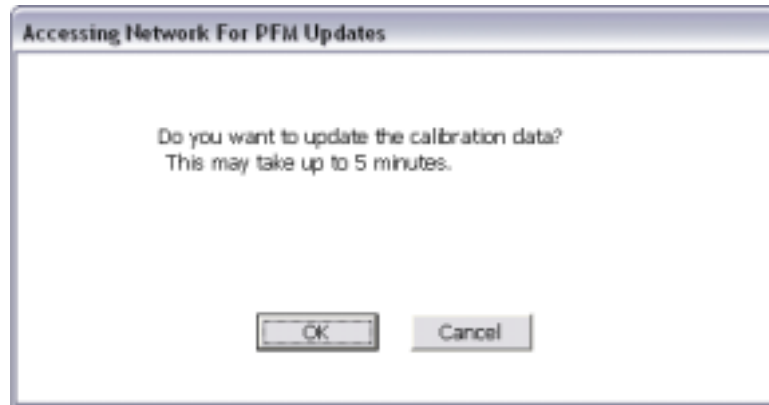3. The following screen flashes on then off.

Activity 11
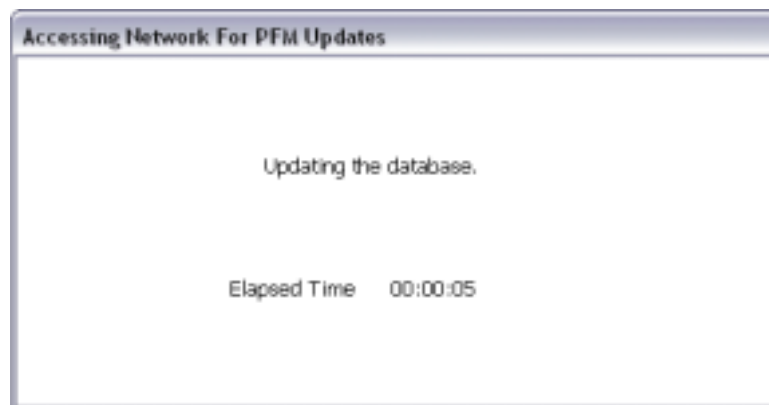(Continued)

4. Click **OK**. It usually takes less than 60 seconds to update the calibration data.

Accessing Network For PFM Updates

Do you want to update the calibration data?
This may take up to 5 minutes.

[OK]   [Cancel]

5. The following screen flashes on then off.

Accessing Network For PFM Updates

Updating the database.

Elapsed Time   00:00:05

6. Click **OK**.

Accessing Network For PFM Updates

Calibration Update : Completed

[OK]

Activity 11
(Continued)

7. Click **Version information**. You can see the version information for your Laptop and PDA (if it is in the cradle) on the right side of the screen. Note the difference between the PC and the PDA / P-PC.
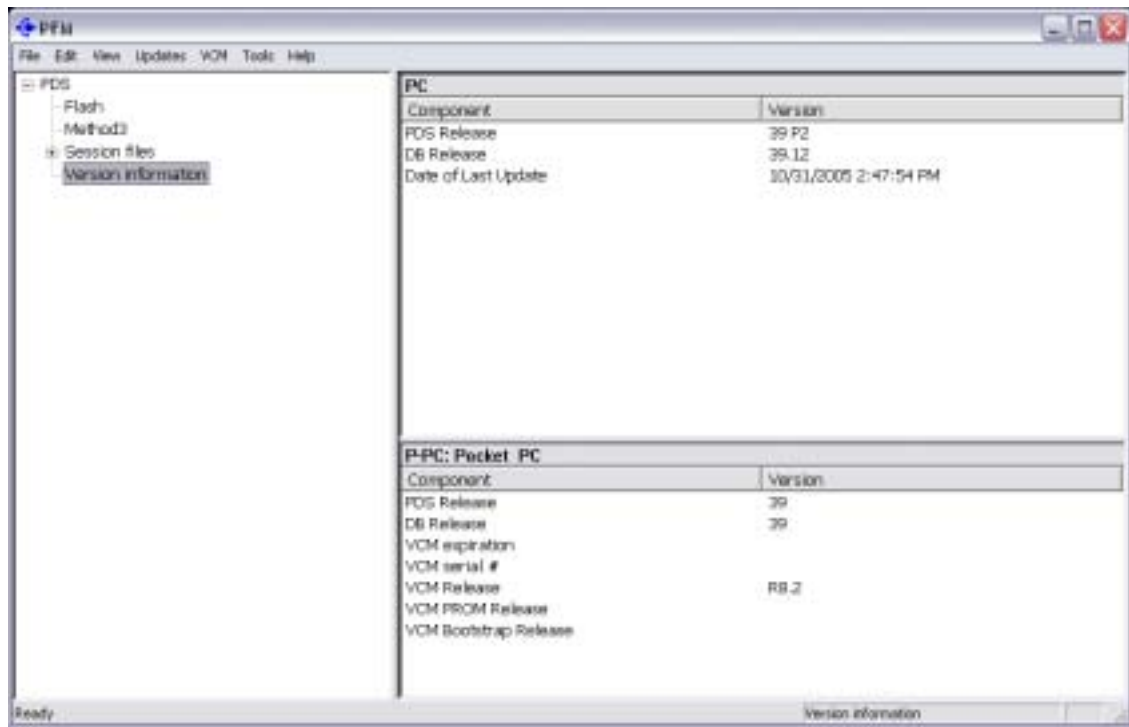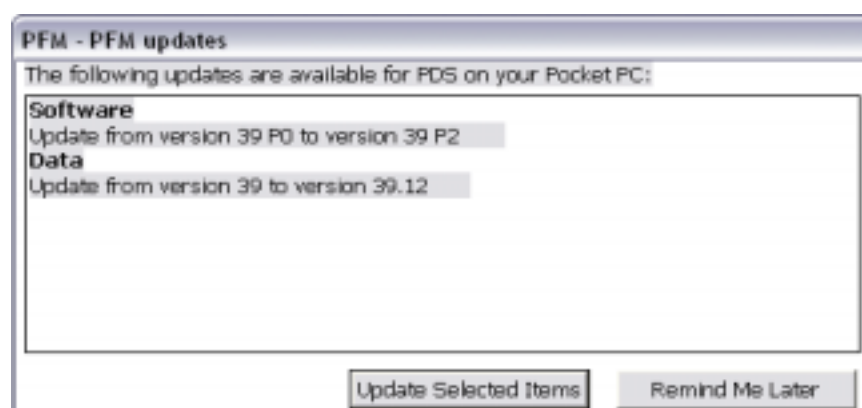

Write the version information from your Laptop / PC: _____

Write the version information from your PDA: _____

8. Occasionally you will see the following screen. This screen indicates updates and calibrations are available for PDS.
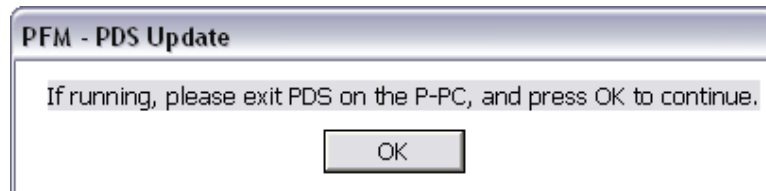
Click **Update Selected Items**.

Activity 11
(Continued)

9. Click **OK**.

PFM - PDS Update

If running, please exit PDS on the P-PC, and press OK to continue.

OK

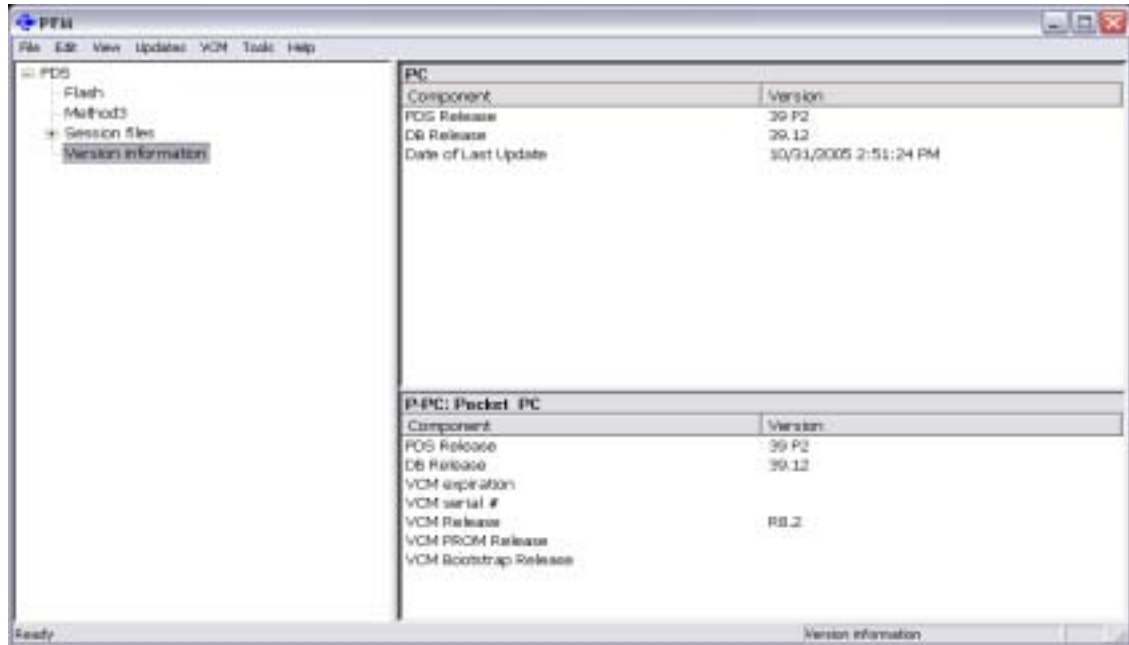| NOTE |
| --- |
| If the above pop-up message displays again, click **OK**. |

10. It will take a while to update PDS.
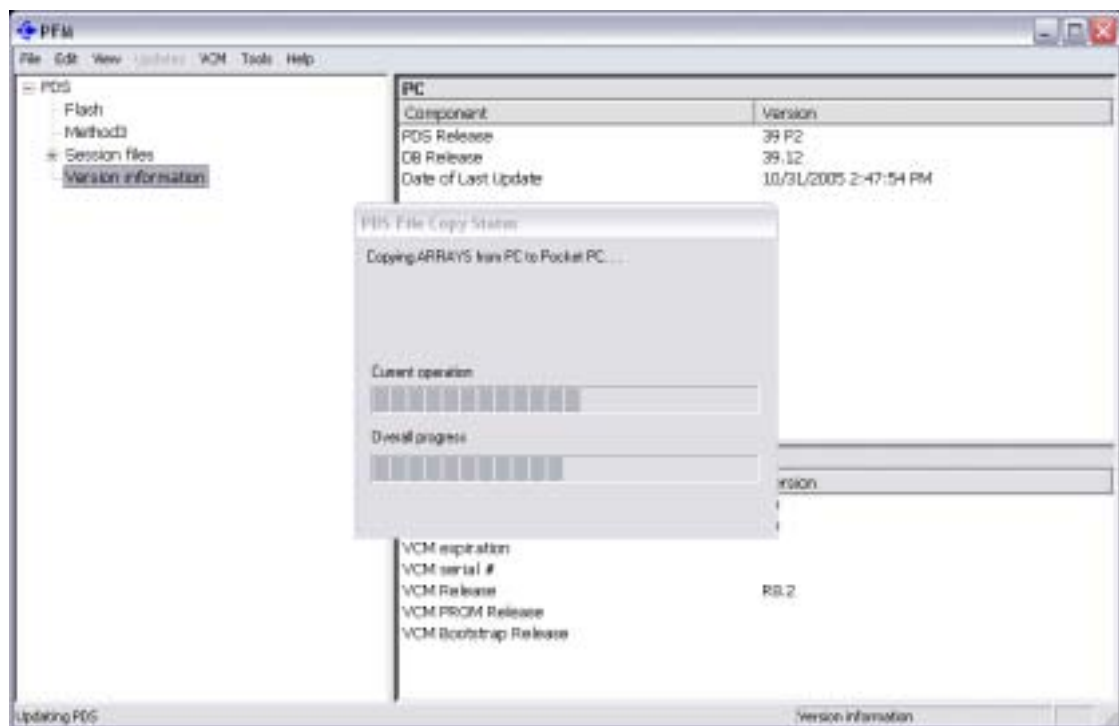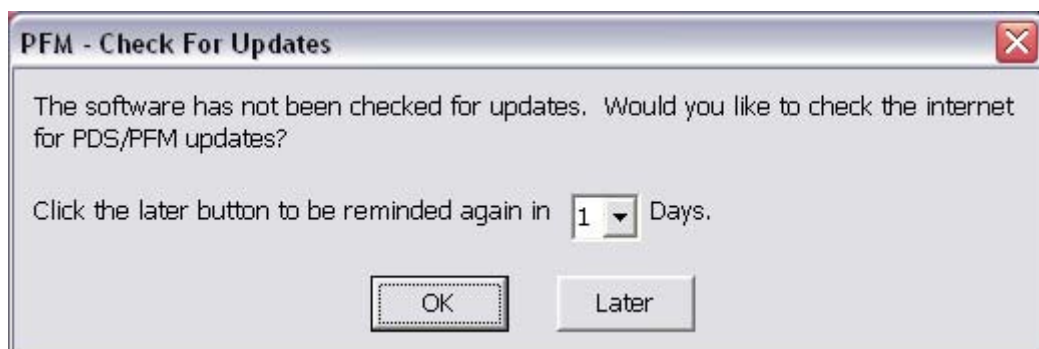
Activity 11
(Continued)

11. The PC and PDA are now at the same update level.

Write the version information from your Laptop / PC: _____

Write the version information from your PDA: _____

12. Occasionally you will see the following screen. If this screen displays, click **OK**. PFM will automatically go to the update screens in steps 10 and 11.

Conclusion:

In this activity, you updated M-MDS from the internet.

Instructor Sign-off: _____