

# Dealing with OBDII Equipment Issues

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# Presentation Outline

- **Test Equipment Issues**
- **Testing Anomalies**
- **Resources available to system developers**
- **Acceptance Tests**

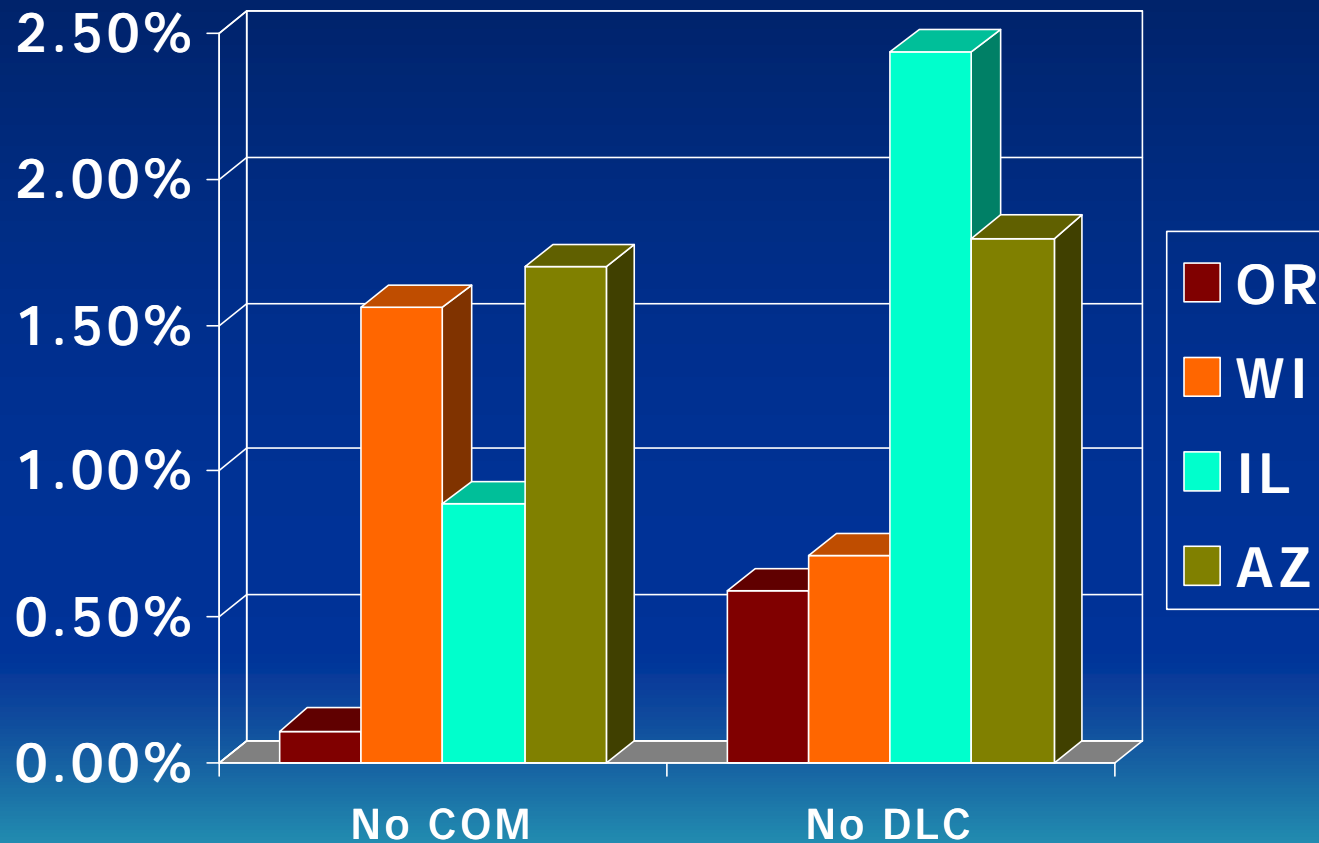
# Test Equipment Issues

- **Communication between analyzer and vehicle**
- **Incomplete Data**
  - **Readiness Codes**
  - **DTCs**
  - **MIL Command Status**

# Communication Between Analyzer And Vehicle

- “What we have here is a failure to communicate”
- Results of Oregon Tests:
  - <0.2% do not communicate; other OBDII programs show higher NO COM rates.

# % of Tests with Communication Problems



# Communication Between Analyzer And Vehicle

- Specific communication problems have been identified and solved as program proceeds.
- With OBDII analyzer systems, you cannot certify that system will talk to all vehicles.
- **You must have provisions for vehicles that do not communicate during start-up phase.**

# Incomplete Data

- Missing Readiness codes
- Missing MIL Command Results
- Missing DTCs with Commanded MILs

# Incomplete Readiness Data

- No readiness for Continuous Monitors - All say unsupported
- All monitors are unsupported
- No readiness data passed to system (other data was passed)

# Other Data Problems

No data on MIL Command Status (other data was passed)

PID Count/PCM Module ID

- What's the right PCM Module ID or PID count?

Missing DTCs

- No DTCs with commanded MILs – should vehicle fail?
- DTCs without MILs on – some inspection systems still report them

# Resources for Dealing with These Issues

- ETI/EPA/ARB flowchart is a great reference for developing systems that avoid the following problems:
  - Not communicating with vehicle
  - Recording wrong PID Count and PCM Module ID
  - Incorrectly recording readiness status
  - Incorrectly recording MIL status and DTCs

# Anomalies That System Should Identify

- Known readiness issues, e.g. 1996 Subaru that reset to not ready when engine is turned off.
- KOEO test -- light goes out too quickly (Maybe a training issue).
- MIL Commanded-On in KOEO position. (Not an issue in most areas because MIL command check is done while engine running)
- MIL Commanded Off -- Fail KOER test because vehicle turns light-on when a scan tool is connected to it or operator error. (Do we really need to do this test?)

# Fortunately, this list of Anomalies is Short!

- **A. Readiness issues** -- Vehicles that should be exempted from readiness requirements because they will frequently be not ready due to design issues:
  - 1996 Subaru (all models)
  - 1996 - 1998 Mitsubishi (all models)
  - 1996 Volvo 850 Turbo
- **B. MIL-On when scan-tool is connected** -- 1996 Mercedes – C220, E320, S320, SL320, C280
- **C. MIL commanded-on during KOEO:**
  - 1996 - 2000 Subarus
  - Some Mercedes
  - Some VWs

# How Anomalies Should Be Identified By The System

- Since broad groups of vehicles are covered (e.g. 1996 Subaru), the system does not need to go the same detail as a VRT for ASM testing.
- If you use the VRT approach, you may not exempt a problem vehicle, due to mismatching the VRT search criteria, e.g. 1799 cc engine instead of 1800 cc.

# ACCEPTANCE TESTING

- Acceptance testing of OBDII inspection equipment is a critical part of starting-up an OBDII I/M program.
- An acceptance test program (ATP) should specifically address the following:

1. System correctly works with all communication protocols.

**Thank you Ease! (I hope you'll be adding CAN.)**

2. System must properly perform the OBDII inspection as specified by the state. System must make proper pass/fail decisions based upon monitor readiness status, MIL command status, etc.
3. System correctly interfaces with the vehicle information database (VID).
4. System continues to meet existing provisions with regard to tailpipe testing for pre-1996 vehicles.

# WHAT ABOUT OBD CHEATER DEVICES?

We'll deal with them when they're  
an issue.

# Conclusions

- When in doubt pass the vehicle, especially during the Phase-In period.
- Communication problems will eventually go away, if you deal with them.
- Great guidance is available on how to perform the “Low Level” analyzer functions.
- Systems can easily deal with Testing Anomalies.
- Acceptance testing is critical.