Genisys Repair Strategies:

Using the Genisys Scan Tool with the plug-in Lab Scope Module to quickly solve a hard-to-find intermittent miss problem that only occurred under load.

Vehicle: 1999 Ford E150 Conversion Van
Engine: 5.4 V-8 with coil-on-plug system
Problem: Vehicle had a history of a bucking problem and intermittent miss under load. The van had been to multiple shops including a Ford dealer.

Background: There was no history of a MIL light, and it took multiple road tests before I was able to duplicate the bucking problem. Using the Genisys Scan Tool, I started my diagnosis with a scan for codes and found a pending code PO300 (random misfire). A review of the engine data stream didn't show any problems; and neither did running Ford's self tests.

A visual under hood inspection made me realize that hooking up an engine analyzer to look at ignition patterns would have been very time consuming. This vehicle has very limited access to the engine. I would have to remove the air filter, mass airflow sensor, and duct work. I would also have to remove the engine cover (doghouse) inside the van. I really wanted to try other methods to diagnose this in order to save some time and make the job easier.

Solving the Problem: I took another road test, this time with my Genisys hooked up and when I felt the bucking I pressed the "Record" button. On play back, a review of the data stream itself didn't show anything out of spec, but when I graphed-out the two primary Oxygen sensors, I had noticed much higher activity in the Bank 1 (right side of the engine) sensor, which could be a sign of a misfire. To verify, I quickly plugged in the Lab Scope Module and back probed both pre-cat oxygen sensors.

Sure enough, when the bucking occurred, the recording showed me that the Bank 1 oxygen sensor had a very abnormal pattern, indicating high activity. The Bank 2 oxygen sensor was normal. At this point I was confident that the problem was a miss-fire on the right side of the engine (Bank 1). My next step was to back-probe the circuits for each of the four coils on Bank 1, at the PCM, using the Genisys Lab Scope.

Once again on my road test, when the miss occurred I hit the record button. The play back file showed Coil #3 shorting out. I had located the problem—actually Genisys gets all the credit. Due to the design of this van and engine, and its aftermarket rear heater, I had to remove the engine cover to replace the coil. That turned out to be harder than the diagnosis!

Author: Kris Lewis, ASE Certified Master Technician & CAAT Automotive Trainer Saddle Brook, New Jersey