

## **LTS Field Service Reps**

Linder Technical Services is proud to introduce our latest “ Technician Service Tool” for 2004!! We have placed a Field Sales Manager, Bill Sanders, along with eight Field Sales Reps to handle our fuel service products in various areas across the U.S. This program along with our Canadian distributor, Cochrane Automotive in Toronto, Canada, widens our sales staff considerably.

What does this mean to the working technician? For starters, many that haven’t ever heard of our products will now get the information directly from one of our field service reps. In addition, most of these new reps will establish a Linder training seminar in their given areas as soon as possible. We added six more states to our 2004 schedule earlier this month. Know one of these guys? Call them and ask when the Linder Seminars will be held in your area!



***Left to right- Jerry Gross (Columbus Ohio), Bob Jerin (Cleveland Ohio), Dave Bestwick (Boston Mass & Rhode Island), Bill Sanders (Cape Girardeau Mo.), Raeford Bustle (Charlotte NC), Ned Dow (Minneapolis MN), Joe Geiman (Indianapolis Indiana), Jim Inch (Detroit MI) and Roy Lobdell (upstate NY).***

## Analysis from the “Sleuth”, Michele Winn



This month's case study is a 1991 Lincoln Town Car with a 4.6L engine and 130,000 miles on the odometer. The customer came in and requested an on-car fuel injection cleaning stating that must be what was wrong with the vehicle since he had to keep his foot on the gas pedal in order to keep it running. As I drove it into the shop, I noticed it was running very rough. I let it run while I got out the Auto Care fuel injection cleaning machine, found my quick-disconnect tools for the fuel lines and got my tools together. The longer the car ran, the worse it got. It finally got to the point where it died on its own. I could re-start it, but it would only run for a few minutes and then die again. I grabbed the NGS to check for any codes and found P0176 (Lean Bank 2) and P0172 (Lean Bank 1). Hmmmm, I guess severely restricted fuel injectors could cause a lean condition, right? Maybe the customer was right after all. Just to make myself feel better, I hooked up the fuel pressure gauge. KOEO was 38 psi (spec. is 35-40) and KOER was 33psi (spec. is 30-45). So far everything seemed in order. I decided to do one last check before doing the fuel injection cleaning. I grabbed the CODA emission analyzer and ran a quick test. Idle readings on both banks showed Lambda approaching 30% lean with an average of around 10% O2. Cruise readings showed Lambda around 20% lean. I already knew it was lean, but could the Lambda readings give me any further direction? Luckily I had the chance to have dinner with Aaron Koeppen, a technician at Falls Tire & Auto in Wisconsin. Aaron uses the CODA daily and has lots of good insight. What I learned from him makes perfect sense. If the Lambda reading got worse under cruise conditions, you would suspect a fuel delivery problem such as a weak fuel pump or possibly restricted injectors. In the case of this Lincoln, the Lambda readings improved by 10% under cruise conditions which points more toward a vacuum leak.

Either way, the customer requested a fuel injection cleaning and that's what they got. As I suspected, when the service was complete, the vehicle ran exactly the same. Now it was time to trace down the source of the problem which I thought was a vacuum leak. When the car first came in, I couldn't really "hear" a leak, but after doing the fuel injection cleaning, I thought I could hear a leak. Most of the time I have a really good ear for finding vacuum leaks (unlike Jim who has spent too many years standing right next to an air hammer!). What was bothering me was it seemed like I could hear it on BOTH sides of the engine. Sure, you're wondering at this point why I didn't just hook up a smoke machine and look for the leak that way. Well, I guess that would have been a good idea, but I could HEAR it, so it seemed like I should be able to FIND it with not too much trouble. I started looking in the area of the fuel lines and throttle body since the noise seemed to be noticeable only after the fuel service. You know how stubborn those Ford fuel lines can be, so there was a little bit of tugging going on, not to mention I had the throttle body-to-air cleaner hose off to clean the throttle plates as well. AHA! Where does this hose go????



Turns out I DID have a vacuum leak, in fact, more than one! There was a hole on the back side of the "T" which hooks onto a vacuum nipple on the passenger's side of the vehicle and there was another hole on the opposite end where it plugs onto another vacuum nipple on the driver's side of the vehicle next to the fuel lines. The hose runs from the PCV valve in the passenger's side valve cover, toward the back of the engine to the "T", under the throttle body and over to the driver's side. It's a molded plastic and rubber hose that I could only find at the dealer. Matter of fact, they said it was such a popular item they were out of stock, so I had to wait until the next day to get one.

**Throttle Linkage Vacuum Tee  
(Passenger's side rear of the engine)**

## Analysis from the “Sleuth”, (cont.)

The hose runs from the PCV valve in the passenger’s side valve cover, toward the back of the engine to the “T”, under the throttle body and over to the driver’s side. It’s a molded plastic and rubber hose that I could only find at the dealer. Matter of fact, they said it was such a popular item they were out of stock, so I had to wait until the next day to get one.

The picture below on the left shows the back side of the Tee which I couldn’t see, but I could definitely hear the leak. The picture below on the right is the other end of the hose which connects next to the fuel pressure and return lines on the driver’s side rear of the engine.



## Technician Service Training (TST)

In my travels I meet and discuss technician service training with quite a few working technicians and owners . Our local training group in the Indianapolis market place has been around since 1983 and stuck together with some changes here and there for a long time. I have shared my model for technician training programs with just about anyone who would listen.

A couple of weeks ago, Michele and I had the chance to not only visit New York city but also do some training seminars for a group called TST (Technician Service Training). WOW! It is great to see a group of working technicians and shop owners doing their own thing!

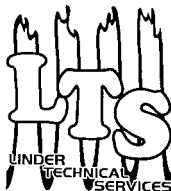
The TST group is headed up by Jerry “G” Truglia in New York and is actually the remains of the now defunct “STS” east-coast chapters. The TST operation has three working chapters: one in New York, another in New Jersey and a third one in Massachusetts. Each chapter has working board members that organize technician training one night each month with a Saturday seminar thrown in every now and then. Their main goal is to provide monthly training to working technicians at a reasonable price. (I believe the evening meetings cost members a mere \$40!) It is just great to see a group working together toward a common goal. Keep up the good work guys!!

Jim Linder

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## Reviewing the GM CSFI Units

We have written many newsletter and magazine articles about the General Motors Central Sequential Fuel Injection (CSFI) system. You know the one; it's on the 1996 through 2001 4.3L/5.0L & 5.7L that suffers from stuck poppet valves. Many of you have tried to free the poppets as recommended by G.M. and clean these units. Or maybe you have even replaced the injector-poppet for the cylinder(s) that had the misfire. Then you find in a week or two the vehicle is back in your shop again for another misfire code. You don't know what went wrong, it ran great when it left, but now you are back at square one again. Well here's what happening, CSFI is similar to the CPI system used on previous 4.3L engines. Rather than one maxi style injector feeding all the poppets and firing every crankshaft revolution, it uses one injector for each poppet that is fired sequentially. This gave the poppets a hot soak period before they fired again. This made these units susceptible to tarnish build up on the poppets and caused the poppets to stick. G.M. has even written lengthy tech bulletins about unsticking seized poppets and servicing this system but they still stick. So what is the answer? **CALL LTS @ 888-809-3835**

***LTS now has NEW replacement units that utilizes a "mini-injector" instead of a poppet valve. These units are a direct fit and very cost effective. Get yours today and get that "come-back" out of your shop!***

