Subject: FW: 2004 headlight response by NHTSA and Ford
Date: Wednesday, January 09, 2013 9:09:17 AM
Attachments: WORD.docx

From: [redacted]
Sent: Tuesday, January 08, 2013 8:45 PM

Subject: Fw: 2004 headlight response by NHTSA and Ford

----- Forwarded Message ----
From: [redacted]
To: [redacted]
Sent: Tue, January 8, 2013 3:34:54 PM
Subject: 2004 headlight response by NHTSA and Ford

I would like to take every engineer, executive, and decision maker for a ride several dark nights in my 2004 Mercury Marquis and see how they like it when the headlights go out with no notice. This problem should have been taken of by Ford and NHTSA shouldn't have the only requirement for recall is how many people died.
An ounce of prevention is worth a pound of cure.

As you can probably tell I didn't like it when my headlights went out suddenly the other night, if my wife have been driving I probably be grieving today not just fussing.

Can't somebody let all the other Ford car drivers know about this problem? If one life be saved it will be worth every dime Ford and NHTSA would have to spend.
But they just don't care.

Pass this on please.

ET
010913
SMD

Subject: FW: Left in the Dark
Date: Wednesday, January 09, 2013 9:09:31 AM

Part 2

From: [redacted]
Sent: Tuesday, January 08, 2013 8:45 PM

Subject: Fw: Left in the Dark

----- Forwarded Message ----
From: [redacted]
To: [redacted]
Sent: Tue, January 8, 2013 4:53:01 PM
Subject: Left in the Dark

Greetings.
This is to serve as information to those contacted.

A few nights ago I was driving my wife's 2004 Mercury Marquis when suddenly the headlights went out with no warning.
Seems several models of Ford Mercury Marquis /Crown Vics have this problem.
NHTSA is aware as is Ford , hundreds of other people have filed complaints with them but nothing has been done by either.
If you know anyone who owns one of these cars, please let them know of the problem, it might save their life.

Sincerely,
[redacted]

Background:

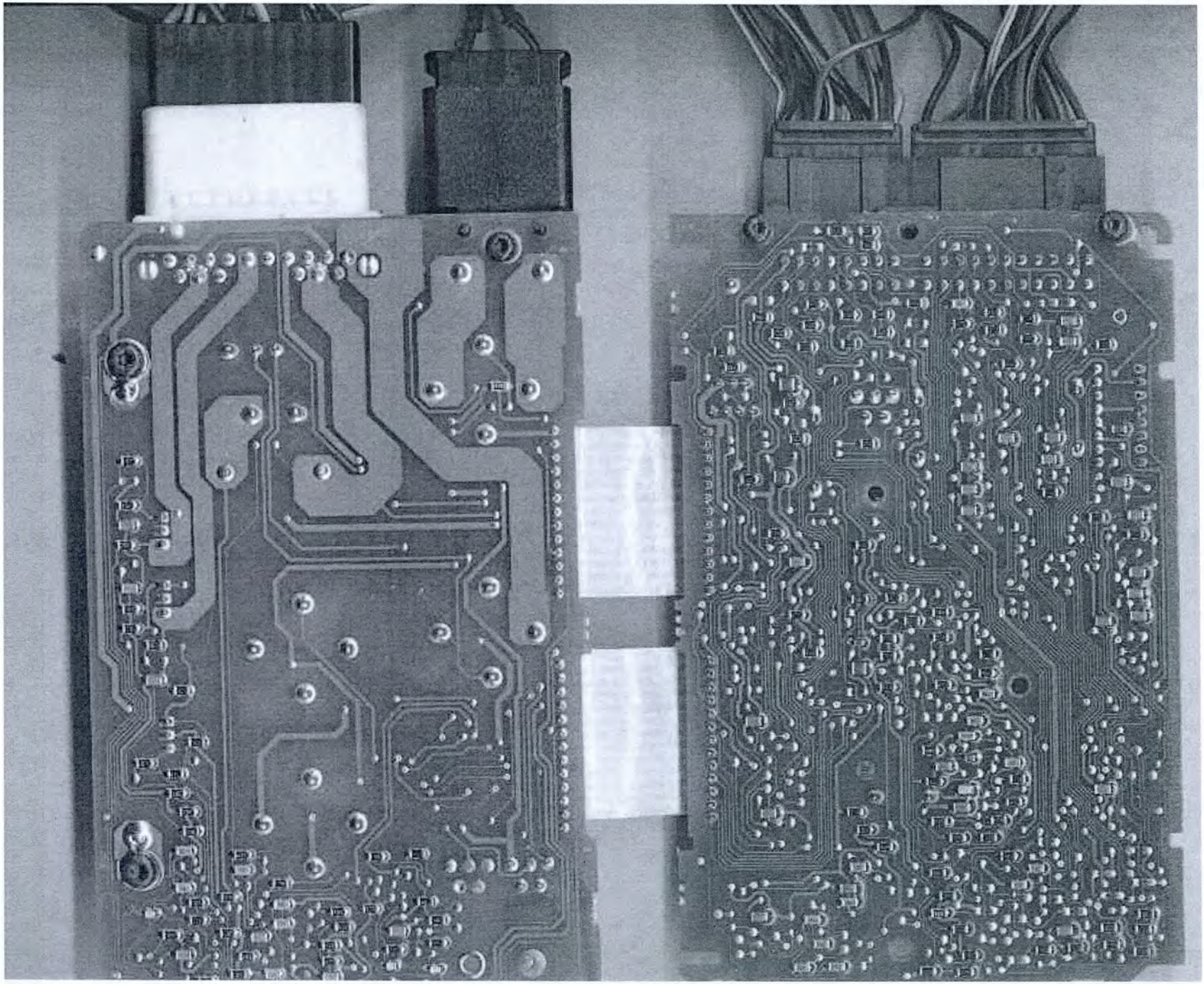
A good number of modern production passenger vehicles use some sort of computer to control the headlights, parking lights, turn signals, dome lights and other illumination. 1995 and later ford crown victorias are no exception, the only exterior lighting that is not computer controlled is the brake lights and spotlight (if so equipped). The factory service manual calls the computer in question a "Lighting Control Module" (LCM) but many mechanics refer to it as a GEM (Generic Electronic Module). The module has some nice features, like if you accidentally leave the headlights on when you shut off the ignition, the car will shut them off automatically after 10 minutes. The same is true if you leave the door ajar, the computer will automatically turn the domelight off after a predetermined interval so as not to drain the battery.

Opening a door is only an input to the computer, the computer then decides how to act on the output. In the case of police interceptors with "Dark Car" mode enabled, the response is to ignore the open door signal and not turn on the domelight. Turning on the switch to your headlights or parking lamps is likewise just a input to the computer.

Note that 1995 and later crown vics & grand marquis ***do not*** *use a conventional standalone turn signal flasher module. But this does not deter numerous aftermarket parts stores and backyard mechanics from insisting that they do. I find it humorous everytime I hear of an uninformed backyard mechanic purchasing a can flasher for $5.99 and then tearing apart half their vehicle's dashboard looking for the old one, but the vehicle owner is typically very frustrated and mutters many curse words in the process of looking for the nonexistent part. Some have also observed that the fuseblock on 95'-00' crownvics has a properly shaped place where a can flasher will fit, but there are no electrical contacts in the socket. This is because the ATC fuseblock is a common part shared among numerous vehicles and ford saw no need to redesign it until the crown vic went with mini-fuses in the 2001 model year.*

Below are a couple pictures of the circuit boards inside the lighting control module case. The smaller relay is for the turn signals, the other larger ones are for the low beam headlights, high beam headlights, parking lamps and demand lighting output. The round device labelled "TMX-06 95'G" is the seatbelt/headlight/airbag audible warning buzzer. Besides the controlling the lighting, the LCM also controls rear window defroster, but the relay for defroster is located in the engine bay and not on the LCM circuit boards like the rest of the relays.

Potter & Brumfield
VF4-11F13-Z06
12VDC
96M05
85
87
86 MEXICO 30
TMX-06
95'G



Physically Locating the LCM:

It should be noted that the pictures above show the lighting control module with it's black metal case removed. The lcm may appear smaller than the pictures above portray because the the white ribbon cable between the two circuit boards is flexible and the two circuit boards lay one on top of each other inside the case, not side by side like pictured above.
Also note that the lcm circuit boards have a "conformal coating" applied to them to inhibit corrosion of the metal parts underneath. This makes the circuit boards feel somewhat "gooey" if you touch them with your fingers and also creates a "white out" effect when taking a picture of them with a camera.

The lcm is mounted in the same location in all 1995 and later crown vics. It's under the dash, above the gas pedal in between the climate controls and steering column. If you're having trouble locating it, engage the hazard flashers and listen to where the source of the clicking sound is coming from. You can also place your keys in the ignition and open the drivers door and track down the module by listening to where the warning buzzer tone is coming from.
If you need a visual reference, pictures of a mercury grand marquis dashboard removed from the car with the lcm still attached are avaliable by clicking here.

Year to Year compatibility:

Some have asked about LCM compatibility between model years, below is a chart listing the lighting control processors used in crown victorias and grand marquis.

Service Part Number	From	To	Comments	Legacy Service Part Numbers
F6AZ-13C788-AE	1995	1997	Extra electrical connector for highbeam headlight bulbs that 1998-2002 LCM's do not have	F5AZ-13C788-A
XW7Z-13C788-BA	1998	1999	New body style with one dual filament bulb per headlight housing ID# XW7T-13C788-AA, XW7T-13C788-BA	F8AZ-13C788-AA F8AZ-13C788-BA
YW7Z-13C788-CA	2000	2000	Beltminder Introduced ID# YW7T-13C788-AA	YW7Z-13C788-BA YW7Z-13C788-BB
1W7Z-13C788-BC	2001	2002	New Airbag Restraints Control Module	1W7Z-13C788-BA 1W7Z-13C788-BB
4W7Z-13C788-BC	2003	2004	Electrical Connectors Redesigned Also used in the 2003-2004 mercury marauder	3W7Z-13C788-AA 3W7Z-13C788-

				AH 4W7Z-13C788-BB
5W7Z-13C788-AC	2005	2005	New pcm with canbus support. New steering column. Brake shift interlock solenoid now controlled directly by lcm. New key in ignition lock sensor setup. GCC overspeed function moved inside lcm instead of using external module	5W7Z-13C788-AA
7W1Z-13C788-A	2006	2007	Electrical Connectors Redesigned New can bus instrument cluster Lincoln towncar now uses the same lcm as the ford crownvic.	6W1Z-13C788-AA 6W1Z-13C788-AB 6W1Z-13C788-BA
8W7Z-13C788-C	2008	2010		8W7Z-13C788-B

- 1992-1994 crownvics do not use an lcm. The headlight switch carries the full electrical load of the headlight bulbs and parking lamps.
- 1995-1997 lcm's have one additional electrical connector on them for the highbeam circuit that the 1998 and later models do not. Additionally, 1997 and prior vics have a 4 headlight bulb system, 1998 and later ones have a 2 headlight bulb system.
- 2000 was the first year for the "belt minder" system that sounds the warning buzzer every few minutes until the driver buckles their seatbelt, it was also the first year for the all red police taillights with two bulbs fewer than its civilian counterpart. The 2000 electrical connector pinouts are identical to the 1998 and 1999 connectors.
- 2001 and 2002 crownvics use the same electrical connectors as previous years but the function of a few of the pins has changed a little due to the addition of airbag restraints control module.
- 2003 and later vehicle use connectors that have physically different dimensions than earlier vehicles did.
- Police interceptors use the same lcm's as the civilian crownvics & grandmarqs.
- Do note that the 1995-2005 crownvic/grandmarq lcm's will NOT fit in the lincoln towncar. However starting in the 2006 model year, lincoln towncars started using the same lcm as the ford crown victoria.
- An interesting microsoft excel document listing the engineering part numbers for all the 2003-2005 lcms and what the differences are between them is avaliable by clicking here.
- A document showing the configurable options inside a 2008 lcm is avaliable by clicking here.
- TSB 02-9-7 is avaliable here.
- The part numbers listed in the "Legacy Part Numbers" column have been discontinued. When you order a new lcm, you're going to recieve the one listed in the "Part Number" column unless your particular ford dealer has some old stock sitting on their parts shelves.

LCM related problems:

The buzzer inside the lcm will periodically chime if the airbag bulb in the instrument cluster has burnt out or has been removed. If you hear random chimes from the lcm, check to make sure that the airbag light turns on for a couple seconds after you start the car. Having all of the lights in the instrument cluster turn on for a couple seconds and then go off is is a built-in diagnostic procedure called bulb prove out.

If you're trying to diagnose a lighting related issue and are considering installing a used salvage yard processor, be warned that lcm's from wrecked vehicles often get damaged in the collision. According to Bluesmobile (buzsmc@infoave.net), "there is about a 90% chance of the thing being bad if it comes from a wrecked car, they get fried if any of the lights were shorted out during the wreck or if the car sustained a heavy jolt it will also fry it."

And here's another warning from the ford factory service manual for police equipment installers: "Any Auxiliary Warning Lights, controlled by the Lighting Control Module (LCM), need diode protection to prevent current spike damage to the LCM."

Erratic Turn Signals:

A few crown vic owners have reported the turn signals flashing very fast at random points in time when the climate control unit fan speed is set on "high". There is typically no set pattern to the behaviour, but it appears to occur at the greatest frequency when the vehicle is driven in stop and go traffic. I had seen this behaviour on my 98' police interceptor a couple times, but after replacing the wornout blower motor the problem started occuring almost every time I drove the vehicle and had the blower motor set on high. Further investigation revealed that I was getting close to a 2V voltage drop between the alternator output stud and some of the devices inside the car after the ignition switch when the blower motor was set on high.

Suspecting that the erratic turn signals were caused by too low of a voltage getting the multifunction switch and other ignition switched components, I decided to rewire my vehicle to test the theory. My police interceptor has two police power leads, one always hot, the other hot when the key is in the run or acc positions. First I removed the climate control head from the dash, then cut the BR/O wire in two on the back. Took one of the coil wires of a generic 30amp SPST relay and hooked it to ground, hooked the other coil wire to the BR/O wire coming out of the dash harness. Connected one terminal of the relay contacts to the constant hot police power lead and the other to the BR/O wire that ran into the climate control head. Had now reduced the load for the blower motor that flows through the ignition switch from over 20Amps to around 0.2Amps. Turn signals behave normally now. The sporadic problem of only the left turn signal indicator, not the right flashing when I engaged the hazard flashers had also corrected itself.

Further details about this topic are avaliable by clicking here.

Alternatively, some people have reported successfully restoring a normal blinking rate to their turn signals by wiring another turn signal bulb and socket in parallel with one of the existing

bulbs.

LED (Light Emitting Diode) Turn Signal Bulbs:

Installing LED turn signal "bulbs" will cause the lcm to think that a bulb has burned out because they consume very little power compared to the incandesant bulbs that the car came with from the factory. The only practical way to get the 98+ cars to work with led turn signal bulbs appears be to reinstall the original factory turn signal bulbs or rewire the dash and install an aftermarket flasher module designed to work with the LED turn signal bulbs. Be warned the rewiring project mentioned is not for someone that doesn't know how to read electrical schematics and use a soldering iron.

2003-2005 Headlight Problems

In the 2003 model year, ford went with a smaller low profile relay to control the headlights. With this change came reports of the headlights flickering or not working at all. The National Highway Traffic Safety Administration investigated lcm failures in the 2003-2005 cars that caused the headlights to work intermittently or not at all. But this investigation has been closed, and is unlikely to be reopened now since all the affected vehicles are several years old and the nhtsa realizes that cars do not last forever without requiring repairs.

The official ford solution to headlight problems caused by the lcm is to replace the whole lighting control module module with a new one. This is an easy task, but the part alone costs around $500 at your local ford dealer. A few owners of affected cars with electronics knowledge have found that they can often repair broken lcms by soldering an external headlight relay in place of the onboard broken one.

Do note that the headlight switch in the 2003-2005 cars is almost never the cause of malfunctioning headlights. But this does not deter some shadetree mechanics from replacing the headlight switch a couple times only to find that their headlights still do not work properly.

Other:

The LCM sometimes gets blamed for problems it does not cause. For instance, police departments usually have a headlight flasher installed under the hood on their patrol vehicles. Installation and removal techniques vary from department to department, but a good number use crimp on connectors which break the conductors inside the wire jacket and will also corrode over time. The multifunction switch on the steering column is also wired in series with the headlight output of the lcm, if the switch or the connectors on the switch are defective, the headlights may flicker or turn on and off at random times. The basic check here is to hook up a voltmeter or small lightbulb to the headlight output terminals of the lcm and observe the readings when the lights start malfunctioing. If you've got +12V showing at the lcm when the headlights shut off, the problem is probably not with the LCM. Alternatively, if you've got a spare known good lighting control processor around, you could install it in your vehicle and see if the problem corrects itself.