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February 10, 2011

Mr. Frank S. Borris, Director
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE, Room W45-302
Washington, DC 20590

Dear Mr. Borris:

Subject: EA10-001:NVS-212pco

This is in response to the agency's letter of January 26, 2011, outlining the Office of Defects Investigation (ODI) assessment of Engineering Analysis 10-001 into reports of inadvertent driver side frontal air bag deployments in certain 2004-2006 model year Ford F-150 trucks and requesting that Ford Motor Company (Ford) conduct a recall of 1.3 million vehicles subject to this investigation.

Ford shares the agency's concerns about automotive safety and we strive to work cooperatively with ODI to provide information and conduct tests and analyses that will help us reach an agreed conclusion to these types of investigations and we have been consistently successful in reaching joint conclusions in these instances. The letter is helpful to us in understanding the factors that the agency is weighing in making the request that Ford recall these vehicles.

However, there are factors that we have discussed with ODI during the course of this investigation that do not appear in the agency's letter and certain other of our positions that appear to be misstated in the letter that we believe are important in assessing the need for a recall.

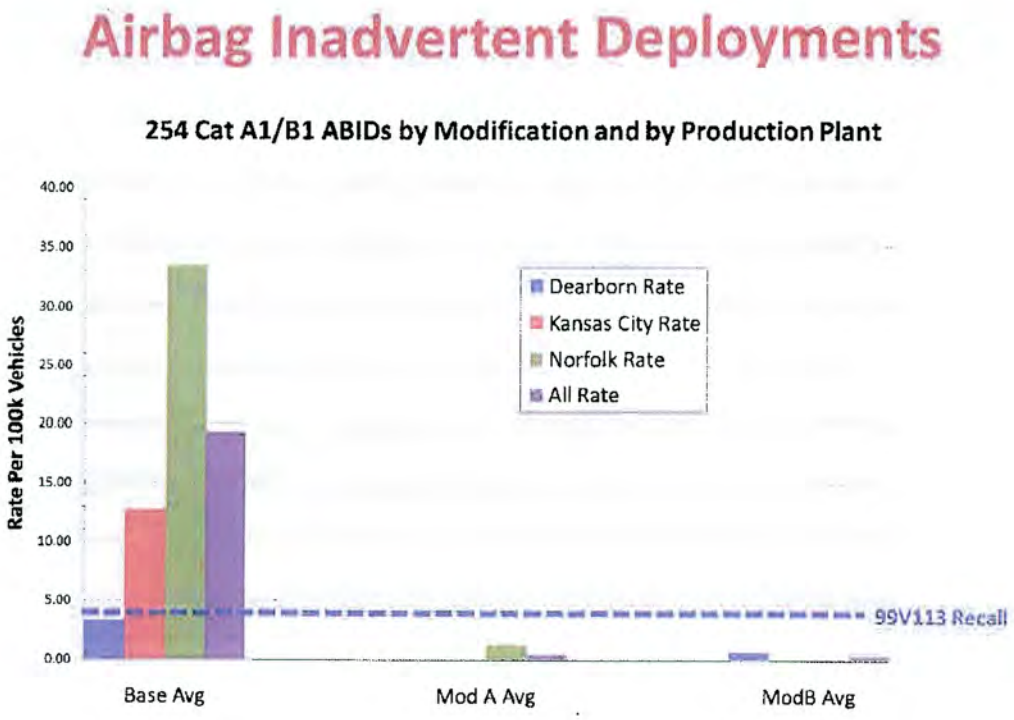
Ford's viewpoint is not based on the rate of reports alone

Ford has not taken the position "... that the incident rate is too low to warrant a recall." Our analysis is more complex and considers several factors. In our May 14, 2010, EA10-001 response, we stated "Ford continues to believe that, given the continuing low overall rate, minor nature, if any, of alleged injuries, and the sufficient and obvious warning provided by the air bag warning lamp, this condition does not present an unreasonable risk to vehicle safety." Incident rate is not the sole basis by which Ford is evaluating the allegations of inadvertent driver side frontal air bag deployments.

Ford's rate analyses are in response to NHTSA's presentation materials

In an August 30, 2010, meeting the agency presented a chart containing information about several prior safety recalls that it considered potentially relevant comparisons to this

investigation. The agency also presented the following graph specifically comparing report rates for Chrysler recall 99V113 as a reference to this investigation:

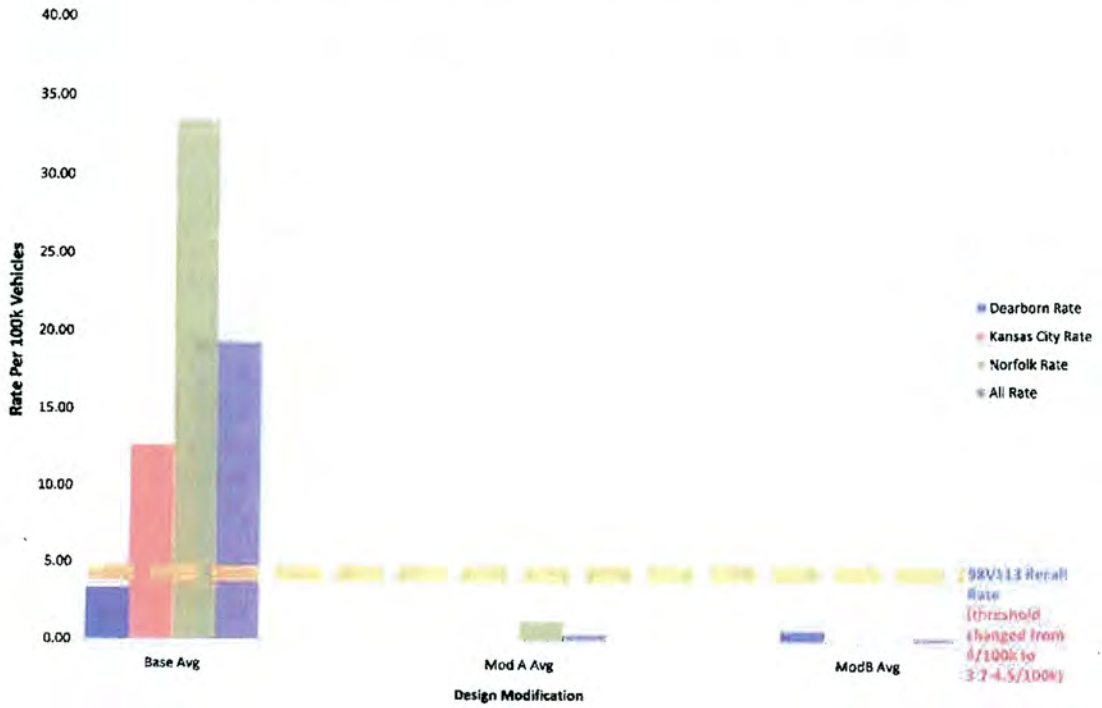


In response, Ford requested that ODI provide the documents from the Chrysler investigation so that we could fully understand "the bar" by which Ford was being measured. The Chrysler documents were provided to Ford; it was difficult for Ford to obtain accurate counts of incidents and report types because Chrysler made multiple partial submissions, often with incomplete data, and compounding the problem was that the last numbers of the VINs were redacted, complicating the process of identifying which reports were unique or duplicative. Nonetheless, Chrysler's Part 573 - Notice of Defect for 99V113 states "that it is aware of 35 customer complaints that appear to be associated with this issue." "This issue" is defined by Chrysler as "intermittent short circuit in the airbag initiator wire." In a September 21, 2010, email from agency staff, the agency confirmed that the 35 owner reports referenced in Chrysler's Part 573 letter relate to allegations of inadvertent air bag deployment where wire chaffing was identified as the root cause. Based on the above, Ford understood that the dashed line depicting the Chrysler rate on the above graph indicates that it is based on the 35 **customer complaints** related to the **wire chafe**. (Chrysler reported it did not have an easy means to search its warranty data and therefore did not do so. Similarly, based on the strong correlation between owner and field reports, we do not believe that Chrysler's field reports are generated separately from owner reports.) The Ford data shown on NHTSA's graph includes <u>all</u> data sources (warranty, field reports, owner reports, etc.) and <u>all</u> allegations of inadvertent driver side frontal air bag deployment, regardless of cause. Insofar as we are able to determine, the only data the agency has for Chrysler are those reports related directly to the intermittent short circuit in the air bag initiator wire where there was a customer complaint. It is unknown how many reports of inadvertent air bag deployment Chrysler had that were ambiguous as to cause, whereas the data provided to the agency by Ford includes all reports of inadvertent driver side frontal air bag deployment – not only those related to chafing of the clockspring jumper wire. Ford knows of no basis to conclude that Chrysler would have had only a small number of additional warranty

claims had they conducted a search, especially because their vehicles were still likely under warranty during the agency's investigation, or that they did not have a large number of ambiguous reports that would have been included in any rate calculation had the agency used the same rationale they are using in this investigation.

In a September 30, 2010, meeting with ODI, ODI again presented the Chrysler data as compared to the Ford data; however, the bar graph had been revised to add a comment indicating that the dashed line represents a threshold:

254 Cat A1/B1 ABID Comb Rate by Modification and by Production Plant

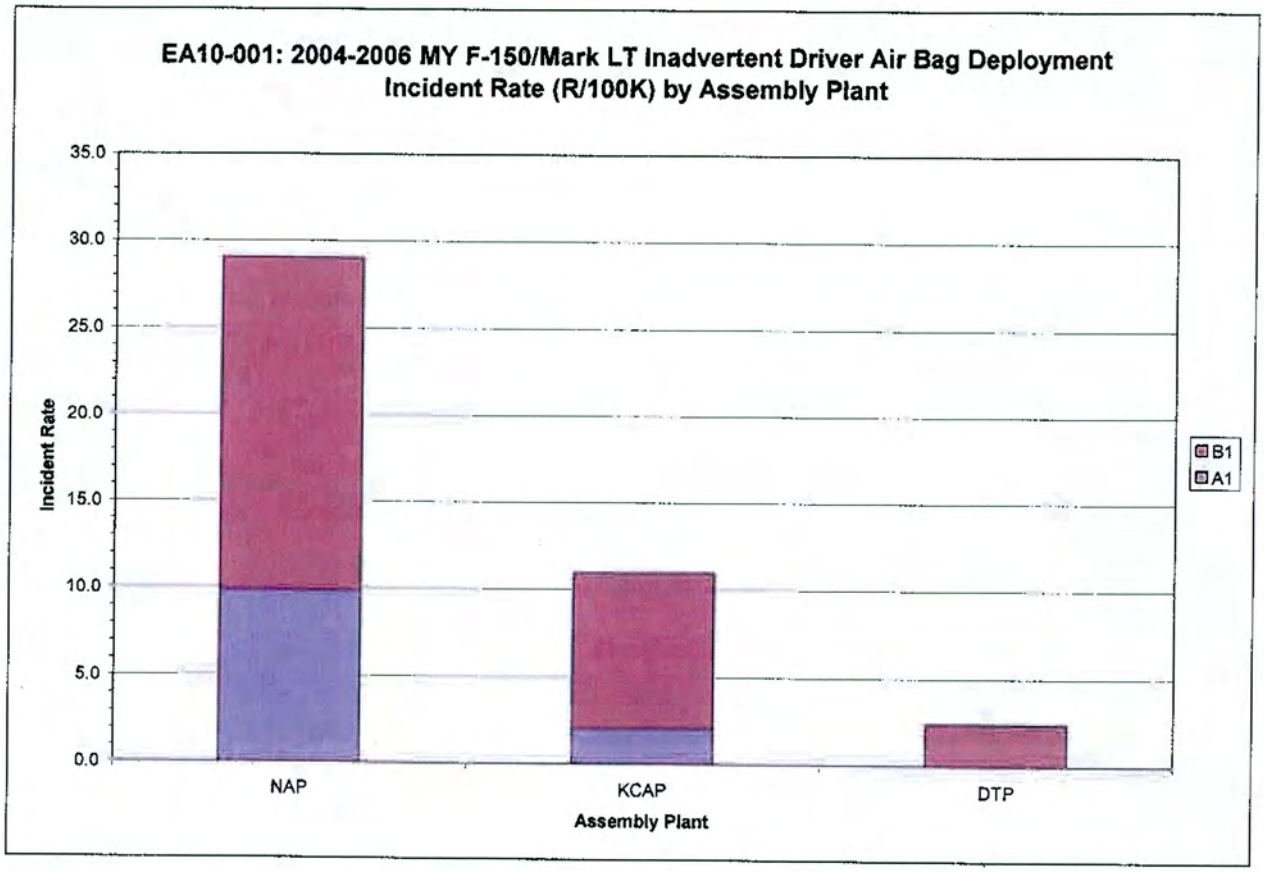


Accordingly, Ford's subsequent rate comparisons to Chrysler are based on like data. Ford undertook this analysis because the agency held the rate of reports that led to the Chrysler recall as one of its primary bases for believing Ford should conduct a recall. The agency has also indicated that it believes that the majority of Ford's ambiguous reports are related to chafing of the clockspring jumper wire and has included those reports (owner, field, and warranty) in calculating the Ford rate, and again compares that higher rate to Chrysler's data. Neither Ford nor the agency know how many ambiguous reports (or warranty claims) Chrysler may have had; thus such rate comparisons are not in any way comparing like data. Ford has been open and fully responsive to the agency's requests. We have provided all reports to the agency that either are related to the subject of this investigation or could not be ruled out as potentially related to this investigation. When asked to compare our data to that of the Chrysler investigation, we did our best to draw consistent and objective comparisons from consistent data sources. There was never an attempt to "skew" results. Rather in an attempt to understand the agency's position, Ford compared the only like data we have in this case, i.e., owner reports directly related to an identified condition.

Significant differences in driver air bag deployment rates between assembly plants

The agency's letter explained that it believes that the deployment of the driver side frontal air bag absent a crash constitutes a performance defect and that the defect's root cause is not a controlling factor in the matter of a performance defect. Based on that position, the issue of whether a performance defect exists is based on the rate of the events occurring during foreseeable use.

The agency has approached the population of 1.3 million vehicles subject to this investigation as a single population without distinctions. Throughout the course of this investigation, Ford has shared rate data that shows that the number of reports varies dramatically depending on the assembly plant at which the trucks were built and the dates on which they were built. Based on the agency's definition of the performance defect, the reports show that the trucks built at the Norfolk Assembly Plant (NAP) have a substantially higher rate of reports than the other two plants that assembled trucks in the investigation population, Kansas City Assembly Plant (KCAP) and Dearborn Truck Plant (DTP). The following graph, including all data sources, shows the differences:

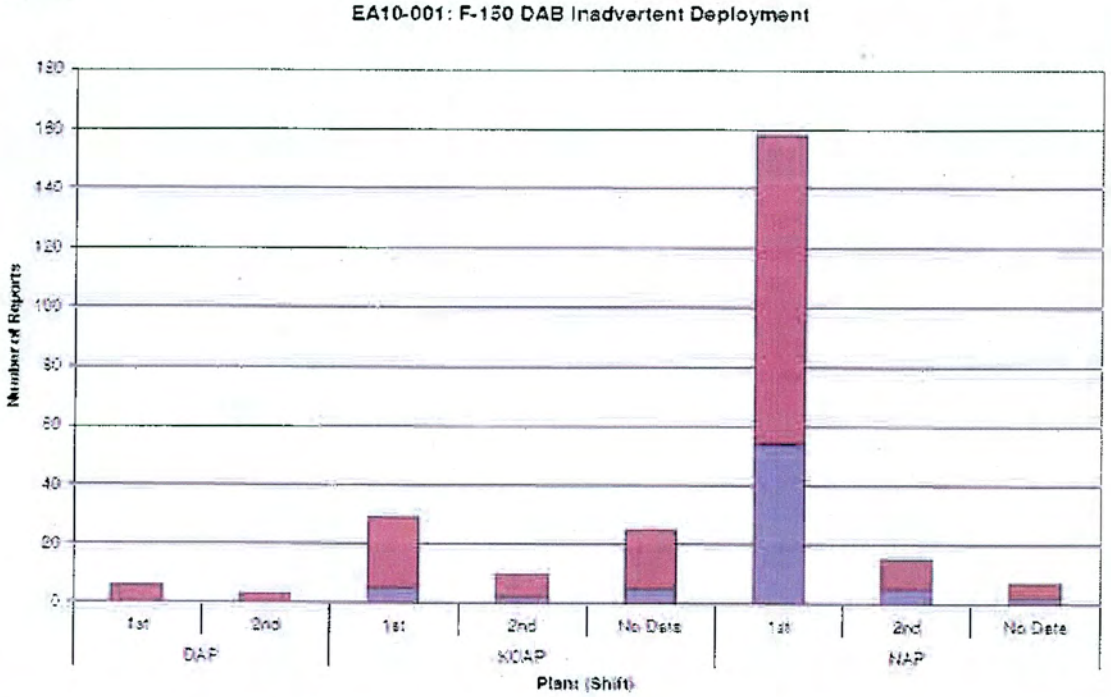


A1 - Driver side frontal air bag inadvertent deployment attributed to a clockspring jumper wire chafe

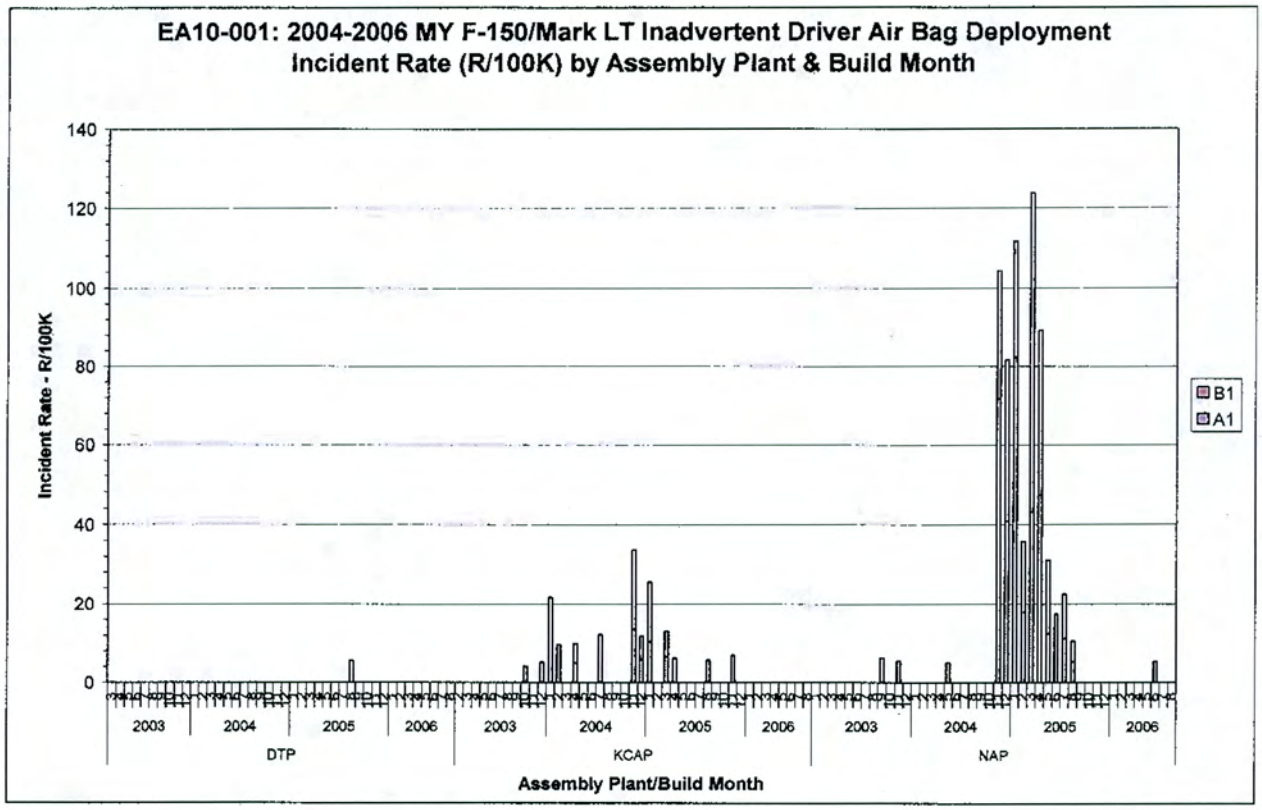
B1 - Driver side frontal air bag inadvertent deployment, ambiguous cause

We believe these data show that there are differences in the rate of the reports that indicate the population must be evaluated based on individual assembly plant production. Each plant

produced hundreds of thousands of vehicles, so the individual assembly plant vehicle populations are large enough to merit individual assessments of the existence of a performance defect. In other words, the variation in rate is not a result of a small sample size or statistical anomaly and we believe that it represents very real differences in performance; while the exact cause of these substantial differences may not be known, because there are no part differences from plant to plant, the only plausible reason is operator variability in installing the driver air bag module into the steering wheel. The graph demonstrates the operator variability at each plant, by shift.

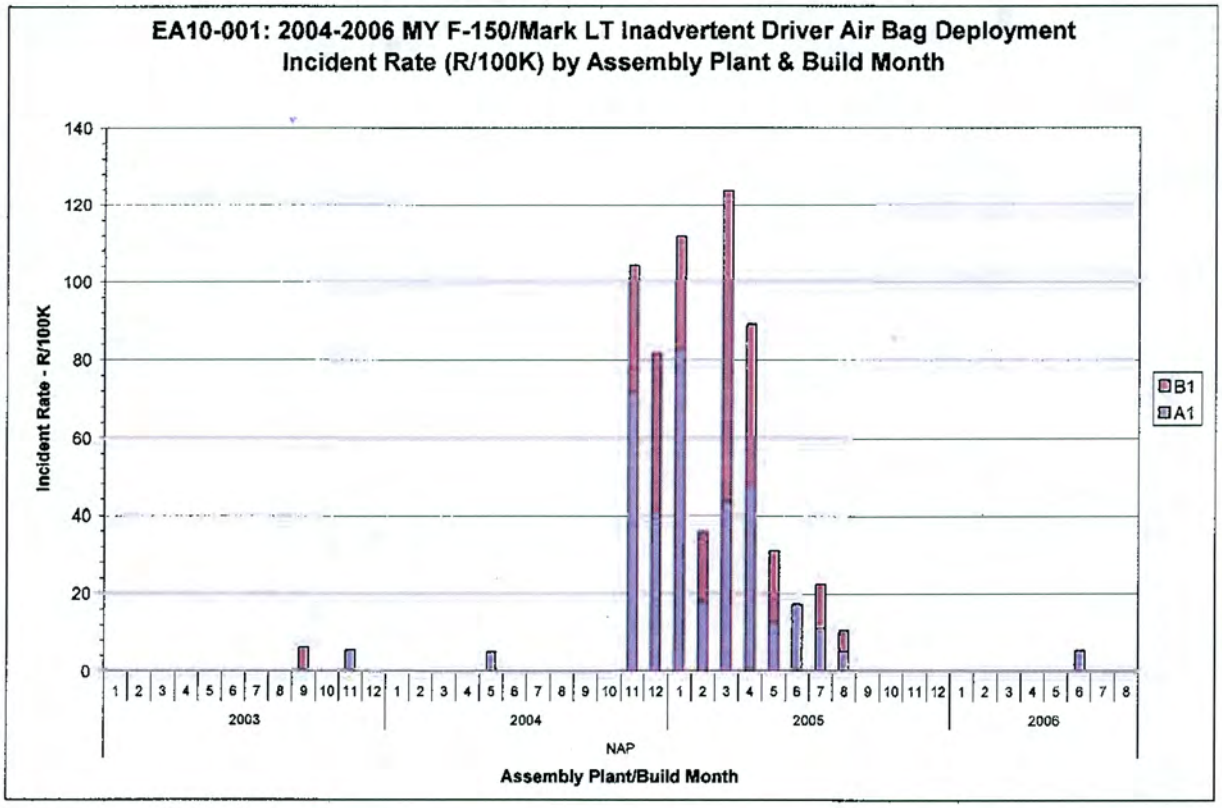


Furthermore, analyzing the report data by build date shows that certain build months have a substantially higher rate of inadvertent driver side frontal air bag deployment reports than others, while many months of production have zero reports. See graph below:



As this graph illustrates, rates vary dramatically not only by assembly plant, but also by month of production. The bulk of reports are congregated in a few months of production while there are entire months of production without any reports. These data are assembled for the in-use population of over one million vehicles, with nearly 100 billion miles traveled.

The graph below shows the highest rate of inadvertent driver side frontal air bag deployment reports (65% of all reports) occur on trucks built between November 2004 and June 2005 at the Norfolk Assembly Plant. During this build period, Norfolk built 134,625 or 10% of the entire 1.3 million population of trucks under investigation.



Normalizing the data for each plant illustrates that the rate of reports for the performance defect defined in the agency's letter is as follows:

	Job #1 2004 through 1/24/2006			11/1/2004 through 6/30/2005		
Plant	A1+B1	Volume by Plant	A1+B1 R/100K	A1+B1	Volume by Plant	A1+B1 R/100K
DTP	9	284,822	3.2	5	118,511	4.2
KCAP	65	508,624	12.8	31	132,993	23.3
NAP	180	543,104	33.1	164	134,625	121.8
Total	254	1,336,550	18.9	200	386,129	51.8

The rate of total reports from the Norfolk Assembly Plant built vehicles is almost three times more than the rate for vehicles built at the Kansas City Assembly Plant and about 11 times more than for vehicles built at the Dearborn Truck Plant. When the highest incident rate build period of November 2004 through June 2005 is compared for each plant, the rate differences are even more dramatic. The Norfolk Assembly Plant rate is more than five times higher than the Kansas City Assembly Plant rate and 29 times higher than the Dearborn Truck Plant rate. Again, we observe that there are many months of production from every assembly plant with zero reports.

These data have been provided to the agency and discussed with the ODI staff. We believe these different rates are important in assessing whether trucks built at each assembly plant all contain a performance defect. Based on the clear and substantial differences in rate between large portions of production, we believe this must be considered as a significant factor in assessing whether a performance defect exists in the entire subject population of EA10-001.

FMVSS 208 required warning lamp warns the operators

The agency's letter made no mention of the fact that the wiring chafe condition that leads to the increased number of inadvertent driver side frontal air bag deployment reports is preceded by illumination of the air bag warning lamp over a lengthy period of time. Clear and adequate warning should be a fundamental consideration in assessing whether a condition creates an unreasonable risk of accident or injury. Unlike other conditions that have been recalled in the past for inadvertent air bag deployments, the wire chafe condition will consistently illuminate the required air bag warning lamp prior to any risk that the air bag will deploy due to a short circuit caused by the wire chafe condition.

Technical analysis – The fact that there is sustained warning is not random; there are technical reasons why operators will receive a significant number of warnings before there is a risk of inadvertent driver side frontal air bag deployment. Analysis indicates that there are two scenarios that can lead to an inadvertent driver side frontal air bag deployment associated with a chafed clockspring jumper wire. The most likely scenario involves formation of a thin oxidation film layer on the exposed copper. Prior to the oxidation film layer reaching the point that it can mask a short circuit condition, the restraint control module (RCM) will detect the short circuit fault during its key-on diagnostic routine, illuminate the air bag warning lamp, and not proceed to the driver test, which is the only point at which an inadvertent driver frontal air bag deployment due to a clockspring wire chafe can occur. It takes time for this oxidation film layer to form on any copper exposed due to the chafe to the extent that it masks the short circuit condition. If the short circuit condition is masked, the RCM will complete all of its diagnostic and validation checks, including the driver test. When the driver test is conducted, the 25 volts applied to the circuit may ultimately overcome the resistance of the oxidation film layer allowing the short circuit to occur, inadvertently deploying the driver side frontal air bag. The second, and much less likely, scenario involves a precise timing sequence where the exposed copper wire experiences an intermittent short to ground due to engine or road vibration. In this instance, the clockspring jumper wire would not be in contact with the lower horn plate during the diagnostic tests (approximately 1.9 seconds) and then immediately following this initial sequence the clockspring jumper wire contacts the lower horn plate during the 65 to 115 μ seconds when the driver test occurs, producing the short circuit and inadvertently deploying the driver side frontal air bag. For a more thorough explanation of the factors and processes involved, please see Ford's PE09-046 and EA10-001 detailed technical responses.

Operators receive multiple warnings – Of the seven vehicles that had data from the vehicle downloaded where an inadvertent driver side frontal air bag deployment occurred as a result of a chafed clockspring jumper wire, operators had a minimum of 174 warning lamp illuminations prior to the air bag deployment. (These data are consistent with modules Ford read from vehicles that had an inadvertent driver side frontal air bag deployment with an unknown cause.) Many of the modules showed operators were warned hundreds of times that the air bag system needed service, prior to any deployment. Such data are consistent and explainable given the conditions that are required for these deployments to occur as explained above.

FMVSS 208 warning lamp meets the need for motor vehicle safety – FMVSS 208 S.4.5.2 requires that vehicles equipped with air bags contain a self diagnostic system and a warning lamp to indicate when it has detected that the air bag system has a malfunction. As the agency is aware, any FMVSS requirement, by definition, must "meet the need for motor vehicle safety." 49 U.S.C. 30111(a). The agency also has stated that it anticipates that drivers

understand that when the air bag lamp illuminates there is a need to seek service for the air bag system. In rulemaking assessing the need for a separate warning lamp indicator for the passenger air bag shut-off switch, the agency stated that "NHTSA believes that drivers are aware that the purpose of a telltale is to warn them of a condition that may require immediate attention." Federal Register Vol. 60, No. 99, May 23, 1995, 27236. Similarly, the agency provided guidance in an interpretation by the Chief Counsel stating,

> ...the message of the readiness indicator is that a component of an air bag system (or other occupant protection system which deploys in the event of a crash) needs the attention of an automotive expert such as a dealer. Regardless of which system is causing the indicator to signal the existence of a malfunction, we believe that when vehicle owners see the indicator provide a warning, they will understand that there is a problem with an air bag (or other occupant protection system which deploys in the event of a crash) and will take the vehicle to a dealer or repair business.

(Interpretation letter to Mr. Michael Love, Porsche Cars North America, Inc., July 30, 1996)

Unlike other situations in which warning lamps indicate that the defective condition exists and the risk is immediate, the wire chafe condition that has led to inadvertent driver side frontal air bag deployments will provide drivers many multiple warnings before the defect, an air bag deployment, can occur. Also, the warning provided is very specific. It is not an ambiguous indicator like a noise or vibration. It is a regulated warning lamp that clearly and overtly indicates the air bag system has a malfunction and needs service. Our review of warranty claims for customers seeking service in response to the air bag warning lamp shows customers responded to the air bag warning lamp over 23,000 times in this vehicle population. The agency has identified 269 air bag deployments. This data shows that the air bag warning lamp is extremely effective (98.9%) and meets the need for motor vehicle safety. It is clear that there are many multiple warnings prior to these deployments.

Effects of a recall in this vehicle population

The Safety Act requires that we take a "commonsense" approach to determining when a safety recall is required. In this vehicle population, the agency proposes that 1.3 million vehicles be recalled. Based on the field data Ford has shared with the agency, it is clear that the air bag warning lamp is effective in alerting drivers that trucks should be brought in for service. However, a small number of people have chosen to ignore multiple warnings. As we know, warnings, whether in the form of a lamp or a recall letter, will be ignored by a certain percentage of the population. At its core, a recall is a warning to owners about a potential safety defect condition. A review of recalls that affect similar owner populations shows that completion rates vary between 50% for the 1997-2003 F-Super Duty, E-Series, Excursion cam position sensor recall (07V553) to 70% for the 2005-2006 F-150, Mark LT brake booster vacuum hose recall (08V208) a year and a half after the recall was initiated.

If we assume that a recall of the 1.3 million vehicles proposed by the agency reached a 75% completion rate, 975,000 owners would be inconvenienced with a trip to the dealer. Based on the effectiveness of the air bag warning lamp, there is no reason to conclude that any of these 975,000 owners would likely ever experience an inadvertent driver side frontal air bag deployment. Essentially, the agency is requesting that Ford conduct a recall of 1.3 million

vehicles to affect the behavior of an extremely small group of owners who have shown that they habitually ignored multiple safety warnings.

Ford Position

This investigation includes several unique factors that the agency did not address in its recall request letter. The agency has defined the defect as a performance defect based on the rate of inadvertent driver side frontal air bag deployments in a given population of vehicles, regardless of cause. However, analysis of the population of trucks under investigation shows that the rate of reports is not uniform and varies substantially between assembly plants, production shifts at each plant, and by build periods. As an example, the build period at the Norfolk Assembly Plant with the highest report rate is 29 times the rate for trucks built at the Dearborn Truck Plant. It is clear that the November 2004 through June 2005 build period population at the Norfolk Assembly Plant has a unique rate of reports compared to the other trucks under investigation.

The agency's letter also did not mention that the conditions which have resulted in these deployments require a unique set of conditions that will always be preceded by multiple warnings that the air bag system requires service. This warning has proven to be effective in causing owners to seek service, while an extremely small population habitually ignored the multiple warnings. This warning is a regulated warning under FMVSS 208. We believe that these facts alone indicate that the condition does not present an unreasonable risk to motor vehicle safety.

While we are confident that the regulated warnings have proven to address any potential unreasonable risk to motor vehicle safety in this truck population, Ford will be recommending to Ford's Field Review Committee on February 14, 2011, that a recall of those trucks built at the Norfolk Assembly Plant between November 2004 and June 2005 be conducted to replace the clockspring jumper wire. In addition, we will continue to monitor the performance of the Kansas City Assembly Plant produced vehicles and update and discuss the data with the agency at six month intervals.

If the agency does not agree with Ford's proposed recall of trucks built at the Norfolk Assembly Plant between November 2004 and June 2005, we request that the agency respond to the following questions:

First, do multiple illuminations of the FMVSS 208 air bag warning lamp prior to any risk of an inadvertent air bag deployment meet the need for motor vehicle safety when an estimated 98.9% of customers respond by seeking service prior to the possibility of an inadvertent air bag deployment? Ford believes the effectiveness of the air bag warning light eliminates any unreasonable risk of accidents or injuries.

Second, does the agency have any data or analysis as to whether the extremely small population of owners who have proven that they ignore many multiple warning lamps would respond to a recall letter? The data support a conclusion that those owners who would respond to the air bag warning lamp will respond to a recall letter. For those people, the recall will provide no safety benefit. A recall of this population of vehicles only has a theoretical possibility of affecting owners who ignore multiple warning lamps.

Third, what is the agency's perspective on the markedly different performance rates between assembly plants and build periods and how does that factor into the agency's analysis of the

performance defect that was defined by the agency? Based on the agency's performance defect analysis, we do not believe a recall of the entire 1.3 million vehicles is justified.

If you have any questions or would like to further discuss, please feel free to contact me.

Sincerely,

James P. Vondale