



Wayne E. Bahr, Global Director
Automotive Safety Office
Sustainability, Environment & Safety Engineering

Fairlane Plaza South, Suite 400
330 Town Center Drive
Dearborn, MI 48126-2738

August 16, 2017

Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Administrator:

Subject: Ford Motor Company Petition for a Determination of Inconsequentiality and Request for Deferral of Determination Regarding Certain Ford Vehicles Equipped with Takata PSDI-5 Desiccated Driver Airbag Inflators

Ford Motor Company (Ford) is a domestic manufacturer of motor vehicles, incorporated under the laws of the State of Delaware, with offices at One American Road, Dearborn, Michigan.

On July 10, 2017, Takata Corporation (Takata) filed a Defect Information Report (17E-034) to address concerns shown in PSDI-5 driver airbag inflators that contain calcium sulfate as a desiccant and stated that Takata was taking this action out of an abundance of caution.

In response to Takata's equipment DIR, Ford submitted a DIR addressing vehicles equipped with desiccated PSDI-5 driver airbag inflators on July 18, 2017. In its submission, Ford informed the Agency of its intent to file a Petition for Inconsequentiality. Ford is providing a list of the vehicle models, model years, approximate production volumes, and production dates in the table below.

Vehicles	MY	Approximate Volume	Build Date Range
Ranger	2007-2011	489,326	January 9, 2006 through December 16, 2011
Fusion	2006-2012	1,555,038	March 15, 2005 through July 29, 2012
MKZ	2006-2012	219,905	March 15, 2005 through July 29, 2012
Milan	2006-2011	170,270	March 15, 2005 through June 4, 2011
Edge	2007-2010	488,827	June 15, 2006 through July 12, 2010
MKX	2007-2010	118,376	June 15, 2006 through July 12, 2010

Pursuant to Section 30118(d) of the Motor Vehicle Safety Act and related regulation at 49 C.F.R. Part 556, Ford now petitions the Administrator for relief from the notification and remedy requirements established in Sections 30118, 30119, and 30120 of the Motor Vehicle Safety Act for the reasons set forth in the attached petition.

Sincerely,



for

Wayne E. Bahr
Attachement

**FORD PETITION FOR A DETERMINATION OF INCONSEQUENTIALITY AND
REQUEST FOR DEFERRAL OF DETERMINATION REGARDING CERTAIN FORD
VEHICLES EQUIPPED WITH TAKATA PSDI-5 DESICCATED DRIVER AIRBAG
INFLATORS**

Ford Motor Company ("Ford") petitions the National Highway Traffic Safety Administration ("NHTSA") for exemption from the notification and remedy provisions of the National Traffic and Motor Vehicle Safety Act of 1966 as amended and recodified (the "Safety Act"), 49 U.S.C. §30101, *et seq.*, pursuant to 49 U.S.C. §§ 30118(d) and 30120(h) and 49 C.F.R. part 556, with respect to PSDI-5 driver airbag inflators containing calcium sulfate as a desiccant that are installed as original equipment in certain Ford vehicles. Ford requests that NHTSA allow Ford until March 31, 2018, to complete its expanded PSDI-5 inflator field study, aging assessment, and testing on additional samples and vehicle types before making a determination on this petition.

INTRODUCTION

On July 10, 2017, Takata Corporation ("Takata") submitted an equipment Defect Information Report ("DIR") to NHTSA on Takata PSDI-5 phase-stabilized ammonium nitrate ("PSAN") driver airbag inflators containing calcium sulfate as a desiccant. At NHTSA's request, Ford filed a DIR on Ford vehicles equipped with this inflator on July 18, 2017. Ford's DIR stated its intent to file a petition for a determination of inconsequentiality. The basis for this petition is that the data provided by Takata currently do not support a conclusion that the Takata PSDI-5 driver airbag inflators installed as original equipment in Ford vehicles contain a defect that presents an unreasonable risk to motor vehicle safety.

Takata's July 10, 2017 DIR is the first DIR filed for any Takata desiccated PSAN inflator. In its DIR, Takata indicated that it is "taking this action out of an abundance of caution" and is not aware of any field ruptures or laboratory test failures on any PSDI-5 inflator that uses

calcium sulfate as a desiccant. As part of a field evaluation program, Takata analyzed field returned inflators from Nissan North America Inc. ("Nissan") vehicles and Ford vehicles. Referring to the inflators from Nissan vehicles, Takata indicated in its DIR that "[s]ome of the inflators within the population analyzed show a pattern of propellant density reduction over time that is understood to predict a future risk of inflator rupture." In contrast, however, Takata's analysis of Ford field return PSDI-5 desiccated inflators does not show a similar pattern of propellant density reduction over time. Takata acknowledged in its DIR that "[i]nflator design and vehicle environment differences between the Nissan and Ford inflators/vehicles may influence their aging characteristic."

To date, Takata has evaluated over 400 PSDI-5 inflators from Ford vehicles in the field as part of the field evaluation program requested by NHTSA. Takata's evaluation of Ford inflators included live dissections and teardowns, detailed laboratory inflator constituent analysis, as well as ballistic testing without a single rupture or elevated deployment pressure or other sign of abnormal deployment. These field return parts were harvested from Ford vehicles with significant time in service – approximately eight to ten years of time in service. Takata's analysis currently shows that even the oldest of these Ford vehicles do not currently present an unreasonable risk to safety, even in the highest heat and humidity region of Florida, located in NHTSA's Zone A. Takata's available field data and engineering analysis support the conclusion that the PSDI-5 inflators in Ford vehicles are currently performing as designed in the field.

Based on Takata's testing data, there are significant differences between the inflators from Ford vehicles and the inflators from Nissan vehicles. The design differences between the inflators and vehicle environments may account for the differences in risk for degradation over time. Ford needs additional time to assess the effect of the design and vehicle differences of the

Ford inflators and their impacts on the inflator service life by gathering additional samples and conducting further engineering and aging analysis. As detailed in Ford's PSDI-5 test plan reviewed with NHTSA on July 6, 2017, Ford proposes to collect significantly more inflators from additional vehicle lines and high absolute humidity (HAH) geographic areas. Analysis on the returned parts will help Ford, the industry, and the Agency assess the effect of inflator design, vehicle type, years of exposure, and desiccant on the booster and generate system. In addition to further analysis from Takata, parts obtained from the field will also be sent to third party experts for additional independent testing and analysis.

Moreover, Ford is concurrently working with an alternative supplier to develop potential remedies and intends to have non-PSAN remedy parts validated for the subject Ford vehicles, should the remedy become necessary. The estimated availability of the remedy for Ford's July 2017 DIR coincides with the conclusion of Ford's test plan, and providing Ford with the additional time it requests will not delay Ford's efforts to develop and validate a replacement inflator as an available remedy.

Ford's DIR was filed solely in response to Takata's DIR. Ford has not determined that a defect that presents an unreasonable risk to motor vehicle safety exists in the subject vehicles, and the filing of this petition is not a concession that a defect exists in the subject vehicles. NHTSA's regulations contemplate that a manufacturer that did not itself make a safety defect determination may file a petition for a determination of inconsequentiality without having to concede the existence of the safety defect. See 49 C.F.R. §556.4(c).

BACKGROUND

Takata evaluates desiccated PSAN inflators for their safe service life

On November 3, 2015, NHTSA and Takata entered into a Consent Order regarding NHTSA's investigation of Takata airbag inflator ruptures (EA15-001). Under the terms of the Consent Order, Takata is required to conduct testing of desiccated Takata PSAN inflators for their service life and safety.

Testing of Desiccated Takata PSAN Inflators. Takata shall extend its current service life and safety testing to include testing of desiccated Takata PSAN inflators, with the cooperation of vehicle manufacturers, to determine the service life and safety of such inflators, and to determine whether, and to what extent, these inflator types suffer from a defect condition, regardless of whether it is the same or similar to the conditions at issue in the Takata [non-desiccated] DIRs. Takata shall provide frequent updates to NHTSA on the status of this effort and test results, and shall respond fully and accurately to any request for information by the agency.

Consent Order ¶ 28.

The Consent Order further provides that "if Takata has not otherwise been able to make a showing to NHTSA concerning the safety and/or service life of any of the Takata PSAN inflators to NHTSA's satisfaction by ... December 31, 2019 for desiccated Takata PSAN inflators, then the Administrator may issue one or more final orders setting forth a schedule on which Takata shall submit Defect Information Reports to the agency for the relevant Takata PSAN inflators."

Id. at ¶ 30.

The Consent Order also states that the Agency may make a determination that a defect that presents an unreasonable risk to safety exists in any Takata PSAN inflator type based upon:

(a) the occurrence of a field rupture(s) of that Takata PSAN inflator type, (b) testing data and analysis relating to the propensity for rupture of that Takata PSAN inflator type, (c) Takata's ultimate determinations concerning the safety and/or service life of any Takata PSAN inflator type, (d) the determination of root

cause of inflator ruptures by any credible source, or (e) other appropriate evidence.

Id. at ¶ 29.

The May 4, 2016 Amendment to the November 3, 2015 Consent Order notes that: “To date, there have been no test failures or field ruptures of desiccated Takata PSAN inflators, with the exception of two ruptures of desiccated side impact Takata PSAN inflators (*i.e.*, SSI-20), which were caused by an identified manufacturing issue.” Amendment ¶ 10 n. 5.

According to Takata, it has produced multiple generations of desiccated PSAN inflators. The earliest generation of desiccated PSAN inflators used calcium sulfate as a desiccant. These subject inflators were installed as original equipment in vehicles sold in the United States by Ford Motor Company, Mazda North American Operations, and Nissan North America Inc.

Ford participates in voluntary field study of non-recalled inflators

In February 2016, NHTSA asked Ford to conduct a voluntary study of desiccated inflators in the field with higher time in service, in order to support ongoing investigation of Takata desiccated inflators. In a letter from NHTSA to Ford dated February 26, 2016, NHTSA sought Ford’s assistance in an evaluation of the desiccated version of the PSDI-5 inflator type. As stated by NHTSA: “The primary purpose of this field surveillance program would be to collect a number ... of the oldest PSDI-5 driver inflators from the most severe HAH area of the US[.]” According to NHTSA, “[t]he results of the testing, which would be shared with Ford and other interested parties, would help NHTSA, as well as Ford and others, evaluate the current state of health and safety of these inflators.”

Ford confirmed its agreement to support NHTSA’s request to participate in a field surveillance study of certain non-recalled Takata inflators in connection with EA15-001. Separately, in connection with NHTSA and Takata, Nissan also initiated a project to recover and

evaluate certain Nissan vehicles equipped with their PSDI-5 inflator design that use calcium sulfate as a desiccant.

In April 2016, Ford's Field Review Committee approved a field service action (Ford 16B15) to replace Takata PSDI-5 driver airbag inflators on 2007-2008 MY Ford Ranger vehicles located in Florida, Arizona, and Michigan as part of a field return part engineering study. Ford identified vehicles that were only ever-registered in these three geographic areas: Florida (Zone A – High Humidity/High Temperature); Arizona (Zone B – Low Humidity/High Temperature); and Michigan (Zone C – High Humidity/Mild Temperatures). Ford proposed that acquiring inflators from these distinct geographic areas would provide insight on the condition and effects of climate on the generate.

From April 2016 to August 2016, Ford released a Takata PSDI-5 driver airbag inflator ("like-for-like" replacement) as a service part, worked with Takata to develop a service kit, and secured production capacity for the service kits to enable the recovery of field aged parts. In September 2016, Ford notified certain owners of 2007-2008 MY Ford Ranger vehicles located in Florida, Arizona, and Michigan of the program. In its notification, Ford informed its customers that this program is a proactive engineering study effort by Ford, in coordination with NHTSA, to gather and evaluate certain airbag inflators manufactured by Takata. Ford indicated that it was voluntarily conducting this program to obtain field parts from certain geographic locations for testing and that no defect or safety concern has been identified on these airbag inflators. By March 2017, Ford had replaced approximately 1,500 Takata PSDI-5 driver airbag inflators under the study program.

Takata's evaluation of Ford field return inflators show no inflator rupture, no pattern of density degradation, nor an increase in inflation pressure

On March 10, 2017, Takata met with Ford to discuss the results to date from its engineering analysis on the parts received. These results were previously shared with NHTSA. Takata's analysis of the returned parts assessed the effectiveness of the desiccant on the booster and generate system. Takata conducted a more detailed follow-up review of its analysis with Ford on March 28, 2017. Neither review supported a conclusion that tablet density is degrading in the inflators designed for Ford after 10 years of service.

From March 2017 to June 2017, Takata continued to test additional inflators returned from Ford vehicles in the field. These additional inflators were subjected to live dissections, including propellant analysis (chemical and dimensional), as well as ballistic testing. In June 2017, Takata reviewed the additional field return data with Ford. With respect to the inflators gathered from Ford vehicles, Takata's testing results in June 2017 remained unchanged from the data available in March 2017. Takata did not identify any pattern of generate degradation or any aggressive inflation pressures during deployment tests of these field return parts from Ford vehicles, with the increased number of samples tested.

To date, Takata has analyzed over 400 Ford field return parts from 2007-2008 MY Ford Ranger vehicles located in Florida, Arizona, and Michigan. No trend in generate density reduction was observed in the Ford data, consistent with previous reviews. No ruptures or excessive inflator chamber pressures have been observed during ballistic test deployments on the Ford parts. Primary chamber pressure measurements were within specifications on all Ford

PSDI-5 inflators during ballistic testing. Moreover, there have been no reports of inflator pressure vessel ruptures in the field.

On June 23, 2017, NHTSA's Office of Defects Investigation contacted Ford and communicated that the field data from Nissan vehicles for desiccated PSDI-5 driver airbag inflators demonstrated a trend that NHTSA felt required action, based on an observed pattern of propellant degradation and an over-pressurization of one inflator during testing. On June 28, 2017, Takata informed Ford that NHTSA directed Takata to issue an equipment DIR on Takata PSDI-5 inflators equipped with calcium sulfate.

Ford reviews its test plan for expanded study of desiccated inflators with NHTSA

On July 6, 2017, Ford met with NHTSA to review Takata's summary data on PSDI-5 inflators to date. Ford also reviewed with NHTSA plans to expand its field engineering study to additional vehicle platforms. As previously mentioned, the purpose of Ford's expansion program is to gather parts from additional vehicle lines and geographic areas for analysis in support of Ford's ongoing investigation of these inflators. Analysis on the returned parts will assess the effect of vehicle type, years of exposure, and desiccant on the booster and generate system. The goal of the program is to obtain approximately 1,000 additional Ranger, 2,500 Fusion/Milan/MKZ, and 2,500 Edge/MKX driver airbag inflators from the high temperature/high humidity areas of the United States (Zone A Gulf Coast states of the U.S. such as FL, LA, MS, AL, and TX). In addition to evaluation by Takata, Ford plans to have third party experts evaluate parts obtained from the field to provide a detailed independent analysis:

Takata files DIR "out of an abundance of caution"

On July 10, 2017, Takata submitted a DIR for all PSDI-5 inflators using calcium sulfate as a desiccant. In its DIR, Takata indicated that it is not aware of any field ruptures and has not experienced any ruptures as a result of the field evaluation program.

Nissan files DIR

On July 17, 2017, Nissan submitted a DIR. Nissan's DIR indicates: "As of June 28, 2017, Takata has conducted evaluations of 895 Nissan PSDI-5 driver air bag inflators with calcium sulfate returned from the field. The Nissan field returned inflators have had zero ruptures in ballistic test deployments and one Nissan inflator exhibited an elevated internal pressure during the deployment testing." Nissan's DIR also indicates that with respect to remedy parts, "[p]arts availability is currently under study."

Ford files DIR in response to Takata without conceding a defect exists in Ford vehicles

On July 17, 2017, Ford's Field Review Committee reviewed the concern and determined that Takata's test data and technical assessments do not indicate that the PSDI-5 inflator design in Ford vehicles currently presents a risk to safety. Ford also approved an expansion of its voluntary field study.

On July 18, 2017, Ford submitted its DIR, indicating it would file a petition for a determination of inconsequentiality. Ford's DIR identified the following vehicles equipped with the desiccated version of the PSDI-5 driver airbag inflator:

- (i) 2007-2011 model year Ford Ranger vehicles;
- (ii) 2006-2012 model year Ford Fusion and Lincoln Zephyr/MKZ vehicles;
- (iii) 2006-2011 model year Mercury Milan vehicles; and

(iv) 2007-2010 model year Ford Edge and Lincoln MKX vehicles.

On July 20, 2017, Mazda Motor Corporation ("Mazda") submitted its corresponding DIR, indicating Mazda intended to file a petition for inconsequentiality following Ford's determination. Since 2007-2011 Ford Ranger and 2007-2009 Mazda B-Series vehicles are built on identical platforms and use identical airbag inflators, Ranger data is representative of B-Series.

Ford files petition for inconsequentiality

Takata's engineering analysis and the available data indicate that the PSDI-5 inflators in Ford vehicles have not demonstrated a pattern of degradation in density. The PSDI-5 inflators in Ford vehicles have significant design differences discussed later in this document. Takata's July 10, 2017 filing does not in fact determine that the PSDI-5 inflators in Ford vehicles actually contain a defect at this time, or that they will develop one over time.

It is Ford's belief that once its engineering analysis is complete, Ford will be able to supplement or amend its petition with a complete analysis, which will allow the Agency to make a determination on all Ford vehicles equipped with the desiccated PSDI-5 driver airbag inflator. In the meantime, Ford will continue to design, develop, validate, and secure production capacity for permanent replacement driver airbag inflators. Ford's continuing inflator study will not impact the availability of permanent replacement parts should they be needed.

DISCUSSION

A. Unlike Nissan's data, Takata's analysis of Ford inflators does not show a degradation in tablet density or an increase in inflation pressure.

Takata has analyzed over 1,400 PSDI-5 driver airbag inflators (approximately 1,000 parts from the Nissan Versa program and approximately 423 parts from the Ford Ranger program). For the Ford Ranger analysis, Takata received approximately 400 parts from Ford's part harvesting program and acquired 20 parts from salvage yards, where the conditions used to store the parts cannot be determined. As part of its analysis, Takata conducted live-dissections and ballistic evaluations, which are further detailed below.

Ford also designed and manufactured an equivalent version of the Ranger for Mazda known as the "B-Series." Because 2007-2011 Ford Ranger and 2007-2009 Mazda B-Series vehicles are built on identical platforms and use identical airbag inflators, Ranger data is representative of B-Series. Ford's discussion of Takata's testing and analysis on 2007-2008 MY Ford Ranger vehicles should apply with equal force to 2007-2009 MY Mazda B-Series.

1. Live dissections were used to quantify the effects of environmental exposure, and demonstrate consistent inflator output performance.

Takata performed live-dissections of approximately 360 desiccated PSDI-5 inflators obtained from Ford's part harvesting program and from salvage yards. Takata measured auto-ignition tablet discoloration, generate density, moisture content of the inflator constituents that indicate exposure to elevated temperatures and moisture, and did not identify a reduction in density trend.

a. Visual inspections evidence time-in-service, but not tablet density loss.

Takata visually inspected the generate tablets from the primary chamber, secondary chamber, and the primary and secondary auto-ignition tables. Takata observed slight discoloration of the propellant tablets in the primary and secondary chambers. This slight discoloration indicates the propellant has been exposed to elevated temperatures and is not an indicant by itself that the propellant has degraded.

Takata also examined primary and secondary booster auto-ignition tablets for changes in color that indicates exposure to temperature cycling in the presence of moisture, but the color change cannot be used to indicate changes in density. Takata also examined primary and secondary booster auto-ignition tablets for changes in color. In the course of assessing the exposure of the tablets, Takata compares the color of the auto-ignition tablet to a chart, where a value of 1 denotes little if any discoloration indicating minimal exposure, while a value of 10 denotes a tablet that is almost black indicating severe exposure. For inflators harvested in Takata Zone 1 (South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas), the vast majority of the auto-ignition tablets' color was within the 1-3 range after seven to eleven years of vehicle service. Seven samples were in the 5-6 range.

b. Tablet density measurements do not show degradation of the propellant.

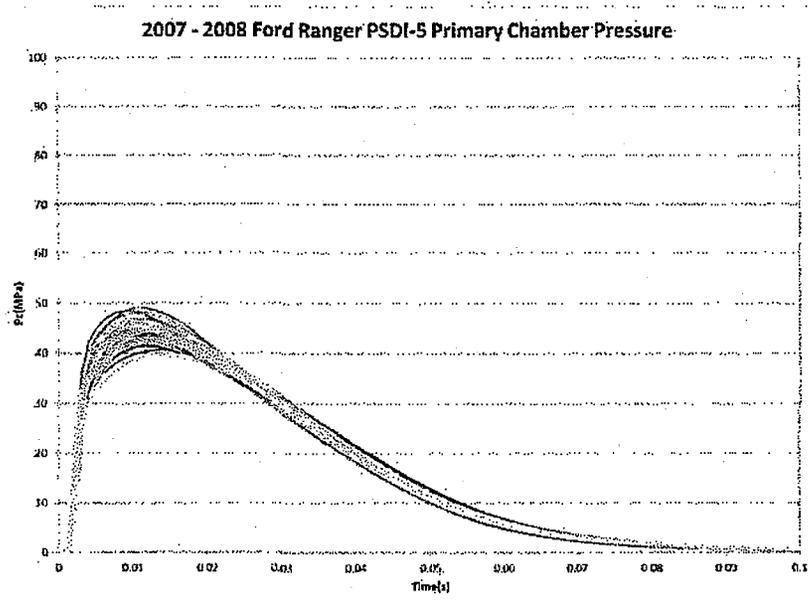
Takata measured the mass and dimensions of the propellant tablets in the primary and secondary chambers in order to calculate average tablet density. Ford notes that a small number of samples were measured with a density slightly below the minimum average tablet production specification, while a nearly equal number of samples measured densities higher than the

maximum average tablet production specification. These data do not support a conclusion that tablet density is degrading in the inflators designed for Ford after 10 years of service.

To understand these inconsistent results, it is important to understand what these measurements represent. The reported density measurement is a calculation derived from a model that assumes both (1) certain uniform characteristics of the tablets, and (2) consistent measurement accuracy between samples. The range of density measurements reported both above and below the average tablet density production specification showed a normal statistical distribution with low standard deviation. This can be explained by variability in measurement accuracy between samples. Takata's observation of no trend in density degradation is further supported by ballistic deployment test results below.

2. Ballistic deployment tests show no increase in pressure.

Takata conducted ballistic deployment tests of 47 PSDI-5 desiccated driver airbag inflators obtained from 2007 - 2008 Ford Ranger vehicles and measured a maximum primary chamber pressure of only 49.6 MPa. Although the age of these inflators can range from eight to ten years of exposure in the field, none of the inflators has exceeded the production primary chamber pressure specifications, including those harvested from salvage yards with environmental exposure that is unknown, but potentially more severe than those harvested from customer vehicles.



Consistent with the density measurements previously discussed, the primary chamber pressure plot indicates the data is consistent with data obtained from newly manufactured PSDI-5 inflators used in Ford vehicles. More importantly, the data show no increase in pressure. Additionally, Takata had not observed a pressure vessel rupture on any desiccated PSDI-5 inflator nor any pressure excursions. During the approximately 500 ballistic tests conducted on desiccated PSDI-5 field return inflators from Nissan vehicles, Takata measured one primary chamber pressure that exceeded 60 MPa. The maximum primary chamber pressure that Takata measured on the PSDI-5 inflators was approximately 15 MPa lower than on the Nissan inflator.

B. There are design differences between the inflators used in Ford vehicles versus the inflators in Nissan vehicles that may account for the performance differences.

The current results from live-dissection and ballistic deployment tests conducted by Takata on field return parts acquired from 2007-2008 MY Ford Ranger vehicles do not support conducting a safety recall on the desiccated PSDI-5 driver airbag inflators. Ford also believes there are significant design differences between the Nissan and the Ford variants of the

desiccated PSDI-5 inflator that may account for the difference in material properties of the generate and the differences in primary chamber pressure measured during ballistic deployment tests. The Ford variant of the PSDI-5 inflator has fewer potential moisture sources because they contain only two auto ignition tablets that are foil-wrapped to prevent potential moisture migration to other constituents within the inflator. The Ford variant also utilizes EPDM generate cushion material which further reduces generate movement over time, maintains generate integrity, and leads to consistent and predictable burn rates.

Takata's PSDI-5 inflator refers to a family of dual stage driver airbag inflators utilizing similar structural architecture and generate configurations. Due to differences in vehicle crash performance, packaging, and manufacturer specifications, Takata tailors their inflators to meet each vehicle manufacturer's design and test requirements. Although both dual stage driver airbag inflators use PSDI-5 designation, there are significant design differences between the Nissan and Ford versions of the PSDI-5 and are summarized in the table below.

Inflator Component	Nissan	Ford
Secondary Cup Auto-Ignition (AI-1) Tablets	3	2
Secondary Cup Auto-Ignition Auto-Ignition Seal	No	Yes
Divider Disk Foil Seal	No	Yes
Primary Cushion Material	Ceramic	EPDM
Secondary Cushion Material	Ceramic	EPDM

- The Nissan version contains three Auto-Ignition (AI-1) tablets compared to two in the Ford version of the desiccated PSDI-5 inflator. Takata has stated that moisture can be transmitted between the various constituents within the inflator (Generate – 2004, Booster – 3110, Desiccant – CaSO₄, and Auto-Ignition tablets).

The Ford version contains 33% less auto-ignition material that could be a potential moisture source.

- Additionally, the Ford PSDI-5 inflator AI-1 tablets are sealed in foil, which prevents the transfer of moisture from the Auto-Ignition tables to other constituents (Generate – 2004, Booster – 3110, or Desiccant – CaSO₄) within the inflator.
- The Ford version of the PSDI-5 inflator uses EPDM as the primary and secondary chamber cushioning material to reduce the likelihood of the generate surface to spall due to road vibration. As a result of the EPDM cushion, the generate tablets remain intact and will have a consistent and predictable burn rate.
- Another feature the Ford version of the PSDI-5 inflator was the addition of divider disk foil tape. The foil tape reduces the ability of the inflator constituents to transfer moisture amongst themselves due to temperature cycling in the presence of high humidity.

C. Ford is committed to further investigation of PSDI-5 inflators.

Takata's data show a substantial difference in the condition of desiccated PSDI-5 inflators between the Nissan and Ford designs. Ford is concerned about the changes observed in the inflators designed and used by Nissan and is committed to intensify the field sampling program. Ford is expanding the scope of the sampling and is involving leading industry experts to assess any potential risks from desiccated PSDI-5 inflators in Ford products. The details of our plan are outlined below.

1. Part Acquisition Program

Ford has approved a field part acquisition program (17B23) to gather approximately 6,000 desiccated PSDI-5 driver airbag inflators from the following vehicle lines located in the High Absolute Humidity areas of the country (Florida, Georgia, Alabama, Mississippi, Louisiana, Texas, and South Carolina):

2007-2008 MY Ford Ranger

2006-2007 MY Ford

2006-2007 MY Mercury Milan

2006-2007 MY Lincoln Zephyr/MKZ

2007-2008 MY Ford Edge

2007-2008 MY Lincoln MKX

Ford has released like-for-like Takata desiccated PSDI-5 driver airbag replacement kits for the program. Takata has committed to having the kits produced in September 2017, at which time Ford will be able to notify customers in the HAH area and request that they participate in this important engineering study.

2. Continued Inflator Testing and Engineering Analysis

Takata will continue to evaluate field return desiccated PSDI-5 driver airbag inflators. To supplement Takata's analysis and to further support Ford's ongoing investigation, Ford is engaging third party experts to analyze field return parts from Ford's expanded inflator study and provide independent technical assessments. The proposed analysis will consist of the following:

Engineering Analysis

1. *Design Comparison*— review the engineering drawings of the PSDI-5 ZN and ZQ family and compare with other families of inflators.
2. *Statistical Assessment*— conduct data analysis to determine if the inflator performance characteristics are dependent upon platform inflator age, climate or other factors.
3. *Ballistic Modeling* — conduct analysis of data from tank and heavy weight testing to investigate the sensitivity to various factors.

Testing

1. *CT Scanning* — scan the outer diameter measurements of randomly oriented 2004 domed propellant tablets;
2. *Inflator Disassembly* — disassemble the five highest and five lowest diameter from the representative populations of field return inflators.

Propellant Testing

1. *Moisture Content* — measure the quantity and distribution of moisture inside of and field return parts.
2. *Closed Bomb Burn Rate* — compare new and field return parts for signs of abnormal burning
3. *X-Ray micro Computer Tomography* — examine 2004 propellant to look for voids and high density inclusions.
4. *Thermogravimetric/Differential Scanning Calorimetry Analysis* — determine the extent of decomposition of AI-1 Propellant.

REQUEST FOR RELIEF

For the foregoing reasons, Ford requests that NHTSA determine that the condition identified in Takata's July 10, 2017 filing is inconsequential as it relates to motor vehicle safety in the subject Ford vehicles. In addition, Ford respectfully requests that NHTSA provide Ford until March 31, 2018, to complete its intensified and expanded inflator field study, aging assessment, and testing on additional samples and vehicle types to evaluate the performance of the Takata desiccated PSDI-5 driver airbag inflators before making a determination on Ford's petition.

Takata has analyzed over 400 field return PSDI-5 driver airbag inflators acquired from 2007-2008 MY Ford Ranger vehicles operated in Florida, Arizona, and Michigan. Takata's results indicate that inflators with over a decade of exposure to extreme high temperature and high absolute humidity environments are not showing a trend of degrading tablet density or increasing the risk of a high pressure deployment that could rupture the inflator. While these data are certainly good news for the safety of people currently using these Ford Rangers, the results on the Nissan design inflators are of concern to Ford. Ford is committed to expanding the scope of the field study and employing the highest level of independent technical expertise to analyze these samples and understand any potential future risks from these inflators.

Once the engineering analysis is complete, Ford will review its findings with the Agency and will supplement or amend the petition to provide a full record so that NHTSA can make its determination. Additionally, Ford will continue to design, develop, validate, and secure production capacity for the non-desiccated PSDI-5 permanent replacement inflators, should they be needed, concurrent with the evaluation program timing described above. Consistent with the

timing plan presented to the Agency on July 6, 2017, Ford estimates being able to begin producing parts by March 2018.