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WRITTEN RESPONSE OF ARC AUTOMOTIVE, INC. TO THE SEPTEMBER 5, 2023, INITIAL DECISION DOCKET NO. NHTSA-2023-0038

DECEMBER 18, 2023

ARC Automotive, Inc. ("ARC") submits this response to the September 5, 2023, Initial Decision by the National Highway Traffic Safety Administration ("NHTSA" or "Agency") in connection with the Agency's investigation of airbag inflators manufactured by ARC in EA16-003. NHTSA published the Initial Decision in the Federal Register on September 8, 2023. *Initial Decision That Certain Frontal Driver and Passenger Air Bag Inflators Manufactured by ARC Automotive Inc. and Delphi Automotive Systems LLC Contain a Safety Defect; and Scheduling of a Public Meeting*, 88 Fed. Reg. 62140 (Sep. 8, 2023) (Docket No. NHTSA-2023-0038).

EXECUTIVE SUMMARY

The safety of the motoring public is the cornerstone of ARC's business. NHTSA estimates that airbags have saved tens of thousands of lives and avoided countless serious injuries since their adoption. For more than 50 years, ARC has been dedicated to automotive safety as a leading independent designer and manufacturer of advanced airbag inflator technology. Based in Knoxville, Tennessee, ARC's culture of innovation has resulted in continuous product development and technological leadership in the design and manufacturing of advanced inflators for driver, passenger, side-impact, seat, curtain, and other airbag applications. ARC is an expert in system friendly, hybrid-inflator technology with a mission of promoting automotive safety.[1]

ARC takes any potential issue with its products very seriously, and it has devoted immense resources to investigating field ruptures and responding to inquiries from all involved parties. As discussed in further detail below, however, ARC strongly disagrees with the Agency's Initial Decision that a safety defect exists in the 52 million hybrid, toroidal driver and passenger inflators[2] produced during the 18-year period prior to the dates on which ARC first implemented the automated borescope check.[3]

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[1] ARC is a Tier 2 supplier that sells subject toroidal-shaped, hybrid inflators to Tier 1 manufacturers that produce airbag modules. The Tier 1 manufacturers supply airbag modules equipped with ARC inflators to the vehicle manufacturers. Although the vehicle manufacturers are not ARC's direct customers, multiple vehicle manufacturers worked directly with ARC during the course of NHTSA's investigation.

[2] We have not been able to reconcile the 52-million figure with ARC's records. As NHTSA notes, however, approximately 11 million of these inflators were manufactured by Delphi Automotive Systems, LLC ("Delphi"), not by ARC. ARC is not responsible for this population under the Safety Act or NHTSA's regulations, as ARC was neither the manufacturer nor importer of these 11 million inflators.

[3] ARC clarified to the Agency the dates on which it first implemented the automated borescope process on its manufacturing lines. *See* ARC Written Response to NHTSA's December 13, 2022, Information Request, Response to Req. No. 1 (submitted to NHTSA on February 28, 2023). ARC reiterated this clarification in its written response to NHTSA's Recall Request Letter (RRL) and in ARC's written response to the May 31, 2023, Special Order. *See* ARC Written Response to NHTSA's RRL at 12 n.16; ARC

As an initial matter, we note NHTSA's implicit acknowledgment in the Initial Decision that, as a manufacturer of original equipment, ARC was not the correct party for the Agency to direct its April 27, 2023, Recall Request Letter. As explained in detail in ARC's response to that letter, NHTSA's authority to require certain manufacturers to conduct safety recalls does not extend to manufacturers of original equipment, such as ARC. Rather, the Safety Act and NHTSA's implementing regulations expressly provide that *vehicle manufacturers*, not manufacturers of original equipment, shall have recall responsibility for any defects found in original equipment installed in their vehicles. Instead, the Agency's Initial Decision now seeks to (i) order ARC's twelve OEM customers to conduct a recall of vehicles equipped with the subject inflators, and (ii) order ARC to file a defect information report (which is merely an information report that, if ultimately required, would contain information that NHTSA already has in its possession). For the reasons discussed below, ARC believes that neither order is supported by the facts contained in the Agency's investigation file or by applicable law.

Despite an eight-year investigation involving numerous vehicle manufacturers and suppliers; dozens of information requests, special orders, and standing general orders; various meetings and collaborations among vehicle manufacturers, Tier 1 airbag module suppliers, NHTSA, and ARC; field recovery and testing programs; and an investigation record containing thousands of documents, the Agency does not base its current position upon objective technical or engineering conclusions regarding the existence of a defect. Rather, it offers speculation regarding a potential, non-replicable root cause related to blockage of the inflator orifice from "weld slag," which has not been determined as the root cause of any of the field failures – and, in fact, has affirmatively been *excluded* as the root cause in up to three of the field ruptures. It then draws a subjective inference that a defect exists across the 18-year inflator population.

At its core, however, NHTSA's Initial Decision boils down to a simple proposition that is unsupported by relevant case law or the investigation record: that the seven field ruptures involving these inflators somehow evidences a systemic defect among the 52 million subject driver and passenger inflators. These inflators, however, were produced over an 18-year time period, involved numerous inflator designs, were installed on dozens of different vehicles makes and models, and were produced in several different manufacturing plants, on different lines within those plants, and with different manufacturing processes. The Agency then asks ARC to prove a negative – that the 52 million inflators in this population *are not* defective.

In fact, more than half of the vehicle manufacturers identified in the Initial Decision – BMW, Ford, Hyundai, Maserati, Mercedes-Benz, Porsche, Toyota, and Tesla – have had no ruptures in the U.S. or (other than Hyundai) *globally*. Furthermore, apart from the 2009 rupture of an inflator manufactured in 2002 and installed in a MY 2002 Chrysler Town & Country, no other Chrysler/Fiat Chrysler Automobile (FCA) vehicle has experienced a rupture involving an ARC inflator produced during the 18-year period NHTSA identifies as suspect. Likewise, apart from the 2014 rupture of a 2003 inflator installed in a MY 2004 Kia Optima, Kia has not experienced any ruptures involving an ARC inflator produced during this period. Finally, the incident involving a

Written Response to May 31, 2023, Special Order, Response to Req. Nos. 7, 8. However, the Agency continues to refer to the implementation date of the automated borescope process as January 2018. ARC would like to reiterate that it began implementing the automated borescope process on lines producing PH7 inflators between August 2017 and January 2018. ARC implemented the automated borescope process on the remaining lines producing toroidal inflators between March 2018 and June 2018.

MY2016 Audi passenger inflator (manufactured in 2015) is the only U.S. incident involving an Audi vehicle.

Moreover, NHTSA's Initial Decision ignores differences in the likely root causes among the field incidents, as well as the fact that three field incidents are already subject to a recall of nearly 1 million vehicles.

The Agency attempts to support its Initial Decision by proffering an analysis of deployment rates conducted by an Agency statistician, Dr. Donna Glassbrenner. Based upon her analysis, the Agency posits that these inflators have experienced a historical "rupture rate" of 7 out of 2.6 million field deployments, and thus, it infers a future rupture rate of 1 out of 370,000 deployments. To put this rate into perspective, *the Agency's own statistical analysis using this rupture rate* predicts a total of three (3) additional ruptures from this inflator population during the next 33 years (2024 through 2056).[4] In other words, the Agency seeks to compel a recall and replacement of 52 million inflators to potentially avoid up to three additional ruptures over the next 33 years. For reasons discussed below, ARC disagrees with the Agency's statistical approach and assumptions. But even if NHTSA's prediction of three future ruptures is correct, this cannot possibly be deemed non-*de minimis* or as constituting the "unreasonable risk to motor vehicle safety" that Congress had in mind. *United States v. General Motors Corp.*, 518 F.2d 420, 436 (D.C. Cir. 1975) ("*Wheels")* ("While some margin of safety must be built-in to protect against failures during day-to-day operation, manufacturers are not required to design vehicles or components that never fail.").

NHTSA's Initial Decision appears to be based solely upon a rupture rate derived from the Agency's estimate of 2.6 million deployments within the subject population (*i.e.*, 7 ruptures / 2.6 million deployments = 0.00000269, or 0.000269 %). But this rate is faulty for several reasons. First, estimating the "rupture rate" fails to account for the overall risk to vehicle occupants, as it ignores the initial risk of being involved in a crash that commands a deployment in the first place. Furthermore, NHTSA's rupture rate makes an "apples-to-apples" comparison between ARC inflators and the recalled airbag inflators cited in the Initial Decision difficult or impossible, as the publicly available information for those recalls includes, at best, the number of ruptures and the potentially affected population. Thus, even assuming seven ruptures is the appropriate starting point (which ARC similarly disputes), the overall failure rate is 0.000013% (7 / 52,000,000 = 0.0000001346, or 0.000013%). This rate provides a basis for comparison against previously recalled inflators and more accurately models the risk to vehicle occupants.

Finally, the Agency's rupture rate fails to account for the GM recall of nearly 1 million vehicles, which removes three of the seven field ruptures from the calculation, and fails to account for the fact that at least two of the seven ruptures (involving the 2002 Town & Country and the 2010 Chevrolet Malibu) were determined to have root causes distinct from NHTSA's posited "weld slag" root cause. Factoring these two points into the analysis reduces NHTSA's "rupture rate" even further from 0.000269% to approximately 0.000078% for the *non-recall* population.

[4] Although Dr. Glassbrenner apparently conducted her analysis prior to her presentation during the October 5, 2023, public meeting, the data supporting her statistical analysis was not made available to ARC and the other manufacturers until December 4, 2023, just nine business days before the December 18, 2023, extended due date for submissions.

Thus, even assuming NHTSA's "rupture rate" (vs. the overall failure rate) is the appropriate analytical approach, applying an adjusted rupture rate of 0.000078% to the non-recall population indicates that there will be less than one (1) additional rupture over the next 33 years. And this does not take into account other shortcomings in the Agency's statistical methodology (*e.g.,* a static annual deployment rate fails to consider vehicle miles traveled, annual changes in VMT for aging vehicles, and occupancy rates) that would likely further reduce the statistically estimated number of future ruptures projected over the next three decades.

In sum, the Agency's record is devoid of any evidence, let alone *credible* evidence, that a systemic defect exists in the full inflator population or, more aptly, the population that is not already subject to a recall.[5]

I. Background and Investigation History

To put the Agency's Initial Decision and ARC's response in the proper context, we briefly summarize the nearly eight-year history of this investigation, ARC's full cooperation, and the extensive involvement among the Tier 1 suppliers and vehicle manufacturers.

A. NHTSA Initiates a Preliminary Evaluation

On July 13, 2015, NHTSA's Office of Defects Investigation (ODI) opened a Preliminary Evaluation (PE) related to driver-side inflators manufactured by ARC between 2002 and 2004. *See* NHTSA PE15-027. As stated in the opening resume, ODI opened the inquiry based on two field incidents involving alleged over pressurization of driver-side inflators, one involving a dual-level inflator design in a Model Year (MY) 2002 Chrysler Town & Country (which occurred in 2009) and one involving a single-level inflator design in a MY 2004 Kia Optima (which occurred six years later, in 2014). The opening resume further stated that the subject inflators utilize "a hybrid design that fills the airbag by releasing an inert gas mixture stored in the inflator at high pressure." *See* NHTSA's Opening Resume, PE 15-027.

During the PE phase, ARC responded to two formal information requests issued by NHTSA – (i) a July 17, 2015, information request seeking general background information on ARC, and (ii) an August 25, 2015 information request seeking detailed descriptions of ARC's design, manufacturing, and quality control processes covering driver-side inflators produced between the start of production and October 2004, as well as ARC's analysis of the two reported field failures. In addition to responding to these formal information requests, ARC initiated several in-person meetings, multiple conference calls, and numerous email exchanges with NHTSA, all to ensure that the Agency had the documents and information it needed to conduct its investigation and that the investigators understood the information provided.

[5] We note that NHTSA does not appear to have any of its own relevant expertise in inflator design, manufacturing, or friction welding upon which it could have based its Initial Decision. And, as far as ARC is aware, NHTSA has not conducted a single test of its own, and the confidential investigation materials supplied to the manufacturers in accordance with the August 24, 2024 Protective Agreement (as amended) ("Confidential File"), which NHTSA has advised contains all of the information upon which NHTSA's Initial Decision is based, does not include any evidence of independent testing or analysis. Thus, NHTSA's decision, and any findings and conclusions upon which it is based, should be accorded no deference over those of the involved manufacturers. In contrast, ARC, its Tier 1, and their vehicle manufacturer customers – each with their own deep expertise in airbag technologies – have conducted extensive root cause analyses, deployed thousands of inflators collected from the field, and evaluated ARC's manufacturing and quality processes for the subject inflators.

On July 27, 2015, NHTSA issued two standing general orders ("SGOs") under PE 15-027 (this investigation) and EA 15-005 (regarding Takata airbag inflators) directing vehicle manufacturers (SGO 2015-01) and original equipment suppliers of airbag module and inflators (SGO 2015-02) to report certain field incidents related to inflator ruptures. On August 17, 2015, NHTSA superseded SGO 2015-01 and SGO 2015-01A with SGO 2015-02 and SGO 2015-02A. Essentially, these SGOs required the identified manufacturers (including ARC) to report certain information related to alleged field ruptures of which the manufacturer received notice. ARC continues to comply with both SGOs, which remain in place today.

In March 2016, NHTSA attended an extensive, in-person briefing conducted by ARC at its offices in Knoxville, Tennessee that addressed ARC's evaluation of the potential root causes of the field incident involving the MY 2004 Kia Optima. The briefing, which representatives from the involved Tier 1 supplier (Delphi) and vehicle manufacturer (Kia) also attended, included a tour of ARC's Knoxville manufacturing lines. In the briefing, ARC shared its prior conclusion that the rupture involving the 2002 Town & Country vehicle resulted from the flash-dam pin breaking off during manufacture. Regarding the rupture in the 2004 Kia Optima, there was evidence that an external constraint on the inflator may have caused over pressurization.

Following that briefing, the Agency explored methods for collecting additional data to aid its evaluation. To this end, ODI and ARC, along with the Tier 1 suppliers and vehicle manufacturers that installed driver-side inflators from the relevant production period[6] and the same manufacturing line[7] into their products, discussed a voluntary program whereby the manufacturers would collect inflators from the field for testing. As conceived by ODI and its statisticians, the manufacturers could evaluate the potential field risk using concepts from reliability engineering by deploying inflators collected from the field to establish 99% reliability at a 99% confidence level. According to ODI, NHTSA's statisticians estimated that this target reliability and confidence level could be established for the two inflator designs (the single-level CADH and dual-level CADH inflators) by deploying 459 units of each type of inflator without rupture.

ARC, Tier 1 manufacturers, and vehicle manufacturers voluntarily agreed to conduct the field recovery program. The agreed-upon field recovery program aimed to deploy 459 single-level inflators and 459 dual-level inflators collected from salvage yards around the United States. ARC ensured the collected parts were produced relatively close in time to the production dates of the parts involved in the two field incidents under evaluation (*i.e.*, MY 2002 Chrysler Town & Country and MY 2004 Kia Optima). Initially, ARC identified the serial numbers for the 25,000 inflators produced immediately before and after each of the production dates, for a total of 100,000 serial numbers. The Tier 1 suppliers and vehicle manufacturers used the 100,000 serial numbers to trace the inflators to specific vehicle identification numbers (VINs).

[6] During the PE phase of the investigation, NHTSA focused its investigation on ARC's "compact advanced driver hybrid" (CADH) inflators that were produced from the start of production to October 2004. As NHTSA explained in its August 25, 2015, information request, "[t]his time frame is based on the dates of manufacture of the two inflators known to have ruptured in field incidents," i.e., the MY 2002 Chrysler Town & Country in Ohio and the MY 2004 Kia Optima in New Mexico that NHTSA identified in its Initial Decision.

[7] ARC manufactured the dual-level CADH inflator in the Town & Country on May 13, 2002, on Line E of ARC's Knoxville facility. ARC manufactured the single-level CADH inflator in the Kia Optima on August 27, 2003, on the same line.

After the Tier 1 and vehicle manufacturers identified relevant VINs, the manufacturers and ODI agreed to a testing process. In October 2016, ARC used a NHTSA-recommended vendor to search salvage yards for inflators. Between November and December 2016, the vendor began shipping parts to ARC's engineering lab in Knoxville, Tennessee for inspection and testing.[8] To test the inflators, ARC inspected and x-rayed each inflator,[9] deployed the inflators in test tanks, recorded whether parts ruptured during testing, and periodically shared the cumulative results with NHTSA and the other manufacturers.[10] To speed the collection of parts, two additional vendors began collecting and shipping inflators for testing in the first half of calendar year 2017.

By the fall of 2017, the program exhausted its search for the 100,000 inflator serial numbers initially targeted, but the field recovery program had not yet collected the targeted number of inflators for testing. After discussions with NHTSA and the field recovery group, the group agreed to expand the production window of inflators for testing, which allowed the vehicle manufacturers to identify additional vehicles that used subject inflators. The field recovery group and NHTSA agreed to conduct a second round of collection that included these additional vehicles. With the expanded search, the second round of collection allowed the manufacturers to collect the targeted 459 single-level and 459 dual-level inflators for testing.

On May 10, 2018, ARC finished testing all the field-collected inflators and submitted the results to NHTSA. **None** of the 918 collected inflators ruptured during the testing.[11] Accordingly, the test program fully met NHTSA's statistical demands. Specifically, the test program demonstrated with 99% reliability and 99% confidence that the inflators in the subject population would deploy without rupturing. The test results were consistent with ARC's prior analysis of production data, quality controls, and investigations of the two units from the field reports: the available data did not identify a systemic issue with these inflators. Moreover, at the time the field recovery group conducted the recovery program, inflators from this production period experienced between approximately 12 and 16 years of field exposure with no other reported ruptures. The inflators in this population are now up to 23 years old with no other reported ruptures.

Despite the foregoing, including the fact that the field recovery program satisfied the confidence and reliability levels *established by NHTSA's own statisticians* and established that the two field incidents were isolated events within the population of CADH inflators manufactured between 2000 and 2006, the Agency now alleges that the inflators produced during this seven-year period, representing millions of inflators, are defective (along with all other inflators prior to 2018) without offering any evidence beyond the fact that there were two ruptures.

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[8] ARC kicked-off testing in the field recovery processes at a meeting in Knoxville that NHTSA and representatives from the involved Tier 1 and vehicle manufacturers attended. The kick-off meeting included a live test observed by those in attendance.

[9] In accordance with the protocol agreed upon by NHTSA, ARC, and the other participating manufacturers, a subset of inflators was scanned using computerized tomography (CT) prior to deployment testing.

[10] Due to confidentiality concerns, the test program specified that each individual manufacturer's test results would be shared only with the respective manufacturer to which ARC initially supplied the inflator. However, all results were shared with NHTSA. Since then, NHTSA has provided ARC's final full set of test results to each of the vehicle manufacturers identified in its Initial Decision. *See e.g.,* File _DAB Recovery Program\Final Data Analysis\DISC-CONF BUS INFO - UPDATED - Field Recovery Data Sheet 5 10 2018.xlsx.

[11] The final data sheet for the field recovery is in "DAB\Recovery Program\CONF BUS INFO – UPDATED – Field Recovery Data Sheet 5 10 2018.xlsx."

Moreover, the only evidence in the administrative record indicates that the cause of these two ruptures did not involve blockage due to weld flash. As described below, the available evidence indicates that the Town & Country rupture was caused by a broken "flash dam" pin and that the Kia Optima rupture may have been caused by an external constraint on the inflator. NHTSA has not identified (and the Confidential File produced by NHTSA does not reveal) any contrary evidence or analysis whatsoever.

B. NHTSA Upgrades the Preliminary Evaluation to an Engineering Analysis

As the parties conducted the field recovery program, NHTSA alerted ARC to a field incident in Newfoundland, Canada involving a single-level CADH inflator in a MY 2009 Hyundai Elantra. Shortly after learning of this incident, NHTSA upgraded its investigation to an Engineering Analysis (NHTSA No. EA 16-003) and expanded the scope of its investigation to "various models equipped with ARC air bag inflators." *See* NHTSA No. EA 16-003, Opening Resume, August 4, 2016.

Transport Canada, the Canadian vehicle safety agency, obtained the vehicle and inflator involved in the Newfoundland incident and began investigating potential causes. Transport Canada's investigation included a field recovery program conducted by Transport Canada similar to the one ARC, the module suppliers, and vehicle manufacturers conducted in the United States. The Canadian regulator initially collected inflators from Canadian salvage yards for inspection, CT scanning, and deployment in a government lab. Following a recall by Hyundai's Canadian entity, Transport Canada collected recalled inflators for additional test deployments. None of the approximately 600 inflators ruptured during deployment.

On August 9, 2016, NHTSA issued a third information request to ARC, which required ARC to identify which Tier 1 customers ARC supplied toroidal inflators for use in passenger vehicles (driver and passenger) from the start of production to the date of the letter. The expansive request sought worldwide production numbers and detailed customer information including part and serial numbers, manufacturing locations and shipping addresses, as well as any information ARC had related to the intended vehicle manufacturer and the market in which the vehicles would be sold.[12]

After ARC provided a list of its Tier 1 supplier-customers in September 2016, the Agency issued a series of information requests to the Tier 1 suppliers and, subsequently, to the vehicle manufacturer customers identified by the Tier 1 suppliers. These information requests sought detailed information related to production numbers (broken out by year) for all hybrid, toroidal-shaped frontal (driver or passenger) airbag modules using ARC inflators, information necessary to identify vehicles equipped with ARC frontal (driver or passenger) inflators, and related information such as a list of all suppliers of inflators used by the manufacturers and descriptions of quality processes to ensure inflators adhered to design, performance, and test parameters. NHTSA further sought data related to any testing failures, root causes, and countermeasures implemented.

[12] ARC provided data related to CADH and PH7 inflators, as well as its DH8 hybrid inflator, a low-volume inflator not sold in the United States.

C. NHTSA Issues SGO 2016-01 and SGO 2017-01 Seeking Reports of Quality Testing that Involved Inflator Ruptures

In early September 2016, after NHTSA learned of instances of lot acceptance testing (LAT) involving poor welds on passenger hybrid 7 (PH7) inflators, NHTSA informed ARC for the first time that it wanted to receive information related to any future LAT testing that involved a potential inflator rupture.

On October 11, 2016, ARC received NHTSA's SGO 2016-01, which the Agency directed only to ARC, seeking certain information related to quality testing that involved an "inflator rupture," whether in the United States or abroad. SGO 2016-01 broadly defined inflator rupture as any incident (or alleged incident) "by which some mechanism (e.g., excessive internal pressure inside the inflator) causes the inflator body to burst or break apart at any time." SGO 2016-01 at Definition No. 3. The incidents included "all incidents or alleged incidents other than a field rupture as defined by [SGO] 2015-02A, including but not limited to ruptures occurring during testing." *Id.* Further, NHTSA broadly defined "notice" of a rupture to include information received from any source and in any form "about an incident in which an inflator ruptured or is alleged to have ruptured," but excluded "rumors or allegations from third parties that are not widely disseminated." *Id.* at Definition No. 4. The instructions also required ARC to provide an initial notice to NHTSA within 24 hours of learning of a possible rupture, including weekends and holidays. *See id.* at Instruction No. 6. Written reports using a form specified in the order were due to NHTSA within five working days of ARC's initial notice. *Id.* at Instruction No. 2.

On October 14, 2016, ARC submitted its first report to NHTSA under SGO 2016-01. Thereafter, ARC met in person with personnel from NHTSA's Office of Chief Counsel to discuss the broad requirements of the newly issued SGO. NHTSA was unwilling to narrow the broad definition of rupture to tests that involved deploying production inflators or to remove experimental inflators, pre-production inflators, experimental inflators, and inflator bodies that were not intended to be production parts. Similarly, NHTSA was unwilling to remove the 24-hour deadline for an initial notice or to extend deadlines due on weekends or holidays when the Agency was closed.[13]

ARC continued submitting reports to NHTSA under SGO 2016-01. On April 7, 2017, based upon reports submitted to NHTSA under SGO 2016-01 and discussions with ARC, NHTSA issued an amended order, SGO 2017-01, requesting additional information related to certain categories of conformance testing, as well as clarifying requested information and amending the

[13] Notably, SGO 2015-01 and SGO 2015-02 (issued on July 27, 2015) required manufacturers to report inflator ruptures that occurred in the field, and it also initially required manufacturers to submit reports within 24 hours of receiving notice of an alleged inflator rupture. *See* SGO 2015-01 at Instruction No. 1; and *see* SGO 2015-02 at Instruction No. 1. On August 17, 2015, however, NHTSA amended both SGOs and, among other changes, changed the 24-hour deadline for reports to five working days. *See* SGO 2015-01A at Instruction No. 2; and *see* SGO 2015-02A at Instruction No. 2. More than a year later, NHTSA directed only ARC to issue initial reports for all test ruptures within 24-hours of receiving notice of such ruptures, without providing any safety rationale for the onerous term. SGO 2016-01 at Instruction No. 6. NHTSA retained the 24-hour notice requirement in SGO 2017-01, also directed solely at ARC, which remains in place as of the date of this response. ARC is unaware of a similar order directed to a single manufacturer requiring reports to NHTSA for events covering products that remain in the supply chain. Note that SGO 2021-01, requiring manufacturers and operators of automated driving systems (ADS) and certain advanced driver assistance systems (ADASs), includes certain incidents involving test vehicles and only requires reports involving incidents on publicly accessible roads. *See* SGO 2021-01 (Apr. 5, 2023, Amendment) at Request Nos. 1(A) and 2(A).

requirements for additional monthly reports. *See* SGO 2017-01. The amended SGO maintained the reporting schedule, initial reports, and five-day written reports.

D. NHTSA's April 7, 2017 Special Order

Also on April 7, 2017, the Acting Chief Counsel issued an expansive special order to ARC. The special order contained 56 requests seeking a broad range of information covering all inflators ARC produced for any market in the world.[14] The requests sought detailed information about ARC's manufacturing processes, quality systems, maintenance procedures and records, machinery used in welding, quality control processes and testing, and lists of inflator ruptures in the field and during quality checks, along with any reports or analysis of these events. ARC provided thousands of documents from all manufacturing plants worldwide in its response. Following ARC's extensive response to the April 2017 Special Order, NHTSA asked only one follow-up question related to reconciling inflator quarantine numbers, never advised ARC of any conclusions the Agency reached, if any, based upon this data, and did not reference any of this data in support of its Initial Decision.

E. Collaboration Team Formed

In May 2017, at ODI's request, a group consisting of vehicle manufacturers, Tier 1 suppliers, a third-party friction welding consultant, ARC, and NHTSA formed a "Collaboration Team" (also referred to as the "ARC Joint Task Force") to investigate ruptures that occurred during certain quality tests of *passenger-side* inflators as early as January 2017. A Tier 1 supplier agreed to lead the Collaboration Team. As a party to the Collaboration Team, NHTSA had access to the confidential design and investigation information and the analyses that the Team used or generated. This information included regular updates related to the investigations into the root cause of the test-related ruptures, reviewing analysis of ARC's friction welding processes by Edison Welding Institute (EWI) (a consulting firm engaged by ARC with the approval of the collaboration team), and changes to the manufacturing processes proposed by ARC. Moreover, ODI personnel participated in the Collaboration Team conference calls, which included updates on the investigation, and the Team presented its conclusions to NHTSA in August 2018.

ARC thereafter implemented changes to the weld schedules of the existing inertia friction welding (IFW) friction welders and implemented an automated borescope inspection system on its production lines. The Collaboration Team and NHTSA identified no issues, problems, or concerns related to the weld schedule changes to the IFW systems. Subsequently, ARC invested in capital improvements through the acquisition of state-of-the-art Izumi friction welders. All participants, including NHTSA, agreed to this improvement. The Collaboration Team concluded its work without further activities. Significantly, to ARC's knowledge, during the more than five years since the Collaboration Team concluded its work, NHTSA has not asked any party to conduct a recall based upon the work of the Collaboration Team.

[14] The Special Order sought data for all inflators "regardless of the air bag's position in the vehicle (*i.e.*, whether driver, passenger, center, or rear seat and whether frontal, side, knee, curtain, or other)." April 7, 2017, Special Order, Definition No. 8.

F. NHTSA Issued Additional Information Requests

On August 18, 2020, NHTSA issued another information request to ARC seeking production information and test deployment data related to PH7 (passenger) inflators. Among this information, NHTSA requested quantities of successful deployments of PH7 inflators tested at ARC. In September 2020, NHTSA issued similar requests to the Tier 1 and vehicle manufacturers that ARC identified in its response to the August 2020 information request.

In March 2021, NHTSA informally requested that ARC update some of the data provided in its response to the August 2020 information request. ARC provided this update in April 2021.

On August 31, 2022, NHTSA held a meeting with representatives from ARC and the Tier 1 and vehicle manufacturers that used CADH or PH7 inflators. During this meeting, NHTSA outlined the history of its investigation and discussed the collection of additional data to support its investigation. To facilitate collection of this additional data, NHTSA advised that it would be issuing additional information requests seeking data for the CADH inflators, similar to the 2020 information request related to PH7 inflators, including information regarding successful test deployments and the vehicle manufacturers' opinions on quantities of successful field deployments. NHTSA issued those information requests to the involved manufacturers in December 2022, with responses due around February 2023.

In addition to the data request for successful deployments, in December 2022, NHTSA also issued an information request to ARC seeking detailed information related to process changes ARC implemented, including the automated borescope check recommended by the Collaboration Team. The information request also sought details on the borescope accept/reject quantities from the start of its use, and the dates ARC implemented the process on each manufacturing line. ARC provided its responses to both requests (*i.e.*, the CADH deployment data and borescope information) in February 2023.

On March 28, 2023, ARC received notice of an alleged inflator rupture in Michigan. On April 25, 2023, ARC and NHTSA attended a visual inspection and confirmed that ARC manufactured the inflator at issue. That same day, NHTSA notified ARC that the Agency had scheduled a Multi-disciplinary Review Panel for the following day in which ODI would recommend that the Agency issue a recall request letter ("RRL") to ARC covering the entire population of driver and passenger toroidal inflators manufactured through January 2018. The Agency's position represented an extraordinary and surprising departure from its prior acceptance of lot-specific recalls to address these extremely rare field events.

The RRL was the first time during the eight-year history of this investigation that the Agency requested that such a broad recall be conducted. No Agency representative previously even suggested to ARC (or, ARC believes, to any Tier 1 or vehicle manufacturer) that the entire population should be subject to recall.

Despite the collaborative and cooperative nature of this investigation, and for reasons still unknown to ARC, NHTSA declined to meet with ARC to discuss the basis of its tentative conclusion or ARC's views on the matter before ODI recommended that NHTSA issue the recall request letter. On April 26, 2023, the Multi-disciplinary Review Panel concurred with ODI's

recommendation, and on April 27, 2023, NHTSA issued the RRL to ARC. ARC responded to the RRL on May 11, 2023.[15]

After receiving ARC's response to the RRL, NHTSA continued to demand more information from ARC, which NHTSA did not use as part of its Initial Decision. On May 31, 2023, less than three weeks after receiving ARC's Response to the RRL, NHTSA issued a second Special Order that contained eleven separate requests, several of which required searches through large volumes of documents and multiple data systems across a number of ARC's departments. NHTSA demanded that ARC provide its responses within two weeks. NHTSA required explanations related to the number of expected inflator failures, what notice ARC gave to its customers related to these expectations, an estimate of future field ruptures, and detailed information related to the automated borescope.

On June 14, 2023, ARC submitted its responses to the May 31, 2023, Special Order. The Initial Decision did not appear to address any of ARC's responses to this second Special Order.

II. NHTSA Has Not Established a Defect in Material, Design, or Manufacturing Across the 52 million Inflators

Despite the extensive investigation outlined above, neither NHTSA nor any manufacturer has identified a systemic defect in material, design, or manufacturing in the subject inflators. The design and manufacturing processes ARC used for the subject toroidal inflators follow established industry standards and involve detailed review by, and approval from, each of its customers. NHTSA does not allege any specific defect in materials, design, or manufacturing. Instead, the Agency posits, without citing evidence or analysis, that the root cause of the field ruptures was weld flash coming loose during deployment and blocking the exit orifice. However, this root cause has been ruled out for several of the incidents cited by the Agency,[16] and ARC has been unable to replicate conditions that would result in an abnormal formation of weld flash resulting in a rupture.

[15] NHTSA posted ARC's Response to the RRL in the public investigation file, found here: https://static.nhtsa.gov/odi/inv/2016/INRR-EA16003-90616.pdf (last visited Nov 30, 2023). ARC also would like to correct a minor misstatement in Section II.D of its Response to the RRL. ARC stated, "ARC provided thousands of documents (~2 TB) from all manufacturing plants worldwide in its response." *Id.* at p. 7. ARC *did* provide thousands of documents, however, the RRL Response overstated the total data size based on the format of the files as submitted to NHTSA, which was hundreds of megabytes. The precise size of the data is immaterial to the fact that ARC provided thousands of documents collected from manufacturing plants around the world.

[16] [redacted]

When it provided the Confidential File to the manufacturers, the Agency produced a copy of the referenced minutes of its Multi-disciplinary Review Panel to the Confidential File. In a letter dated September 20, 2023 to the manufacturers, NHTSA requested that the manufacturers return all copies of the minutes on the ground that "the document is protected by the agency's deliberative process privilege, both as a draft document and a reflection of the agency's deliberative decision-making process. The document contains the give-and-take through which agencies ultimately reach their positions and reflects the views of agency staff on a multi-year investigation and why the agency should issue a recall request letter." ARC does not agree that the minutes are subject to the deliberative process privilege, but it is redacting portions of this response that quote from or paraphrase the comments of the participating NHTSA staff.

NHTSA's Initial Decision does not provide any evidence or explanation contrary to ARC's findings, and the Confidential File contains no such evidence.

A. Design and Manufacture of Toroidal Inflators

ARC has an active ISO/TS 16949 certification for quality management system requirements for the design, development, and production of automotive-related products. ARC designs its inflators, manufacturing processes, and quality controls to operate within the manufacturing and performance parameters specified by its customers. Vehicle and equipment manufacturers seek to minimize the risk of failure due to flaws in design, construction (including occasional human error on the production line) or inspection processes, including flaws that could result in the rupture of an airbag inflator.

ARC, its Tier 1 customers, and the vehicle manufacturers participate in an industry-standard Advanced Product Quality Planning (APQP) process for design and production validation when developing each ARC inflator. APQP is a structured approach utilized throughout the automotive industry that emphasizes quality and reliability from the beginning of the product design through production and continuous improvements. With each inflator design, ARC uses a step-by-step process working closely with each Tier 1 customer (that is, the airbag module manufacturers) and their customers (the vehicle manufacturers). This includes numerous validation steps, such as Concept Verification,[17] Design Verification,[18] Process Development,[19] and Production Validation.[20] Following these steps, each Tier 1 customer reviews and approves the specific inflator design with full view by the respective vehicle manufacturer. Any significant change to the inflator design, material, or manufacturing process requires re-validation. For example, ARC would go through a separate validation for each inflator series (designated by an alpha code and unique part number) as well as for each manufacturing line that will produce a particular inflator series. The Tier 1 suppliers also go through their own validation process with their vehicle manufacturer customers, which review and approve the Tier 1 suppliers' airbag module design using ARC inflators.

ARC also uses a methodical, science-based approach to evaluate any potential issues with an inflator's performance, which includes a Design Failure Mode and Effects Analysis (DFMEA) and evaluation. The specifications and quality requirements that ARC must meet are defined by its Tier 1 supplier customers and the vehicle manufacturers (through the Tier 1 suppliers). The DFMEA evaluates, at the design level, potential failure modes (such as over pressurization) and possible effects (such as ruptures). The design and production validation process also includes a Process Failure Mode and Effects Analysis (PFMEA), which evaluates each process step. The DFMEA and PFMEA identify the Risk Priority Number (RPN). The RPN assesses the severity,

[17] During Concept Verification, ARC, its Tier 1 customers, and the vehicle manufacturers determine the development goals for the design and the requirements for the inflator.

[18] During Design Verification, ARC, the Tier 1 customers, and the vehicle manufacturers verify that the design addresses the requirements for the inflator.

[19] During Process Development, ARC, the Tier 1 customers, and the vehicle manufacturers develop the manufacturing process, including quality and conformance tests for the inflator.

[20] During Production Validation, ARC builds parts to confirm that the design and manufacturing process satisfies the Tier 1 customers' and vehicle manufacturers' requirements.

occurrence, and detection of design and process failures. The RPN calculation is defined by standard industry parameters and is calculated by ARC using these parameters. To minimize the potential for manufacturing errors that could lead to failure and other risks identified in the RPN, ARC creates a Control Plan, which is shared with each of its Tier 1 supplier customers as part of the Inflator Production Part Approval Process (PPAP) for each new inflator model.

Before approving parts for production, the Tier 1 suppliers and vehicle manufacturers may review or audit the DFMEA and PFMEA evaluations and analyses, the justifications of the RPN values ARC assigned for each part, and the Control Plans to determine an acceptable RPN for each individual part the Tier 1 suppliers and vehicle manufacturers consider for purchase. Based on this information, each customer determines whether the RPN meets its requirements for production parts. The Tier 1 suppliers' and vehicle manufacturers' option to review these documents, evaluations, and justifications are not limited to the PPAP review; Tier 1 suppliers and vehicle manufacturers may further audit this information after the start of production.

The PPAP process is an industry standard approval process that, among other things, includes a standardized process for identifying, evaluating, and mitigating potential risks in mass-manufacturing vehicle components. The standardized process for identifying, evaluating, and mitigating potential risks in mass-manufacturing vehicle components includes the use of a decision tree of potential failure modes to guide a root cause analysis and facilitate consistent and thorough analysis. ARC used this decision tree in analyzing potential root causes of the field failures referenced by NHTSA.

Looking specifically at the welding process that NHTSA claims relates to the limited number of field failures, ARC welds certain subcomponents of its inflators using friction welding. This process rotates metal components at high rates using friction to heat the materials to create a bond between two or more components. This bond forms by fusing the parts together via pressure and rotation. A natural and inevitable biproduct of the bond is weld flash, which is a mixture of both component materials, and is necessary to ensure the weld properly fuses the components. The weld flash should be efficient enough to make a strong joint and should form around the full circumference of the joint.

In ARC's processes, friction welding is used to fuse a center support to upper- and lower-pressure vessels, and to form a joint at the two pressure vessels (Operation Number (OP)20 and OP50 on the CADH, and OP42 and OP50 on the PH7). Each of these welding processes has detailed specifications for the rotational speed, time, and pressures applied at the three phases of the welding process. These phases are sometimes referred to as the burn, scrub, and forge steps. During the burn phase, the materials are pressed together with enough pressure to burn off materials such as dust particles to prepare the surfaces that will be welded together. During the scrub process, the materials are pressed together with enough pressure to create sufficient friction to heat up the materials and begin melting. During the forge step, rotation of the components comes to an end and additional pressure is applied to forge the materials together and permit the temperature of the fused material to cool and harden. The entire process takes approximately 15 seconds. Several items, such as component geometry, material strength, and friction welder tooling control the weld flash generated during this process.

The volume of weld flash generated through this process is consistent within the sub-assembly. The specifications and processes for the manufacturing of ARC inflators have accept/reject criteria related to RPM, pressures, and time. ARC's manufacturing process includes automated measurements (with accept/reject limits) on the sub-assembly components, including height and parallelism (the alignment of the parts relative to one another). The manufacturing process also includes conformance checks of the measurements of the weld cross section for the sub-assemblies and visual inspections of weld flash's appearance. Additionally, ARC uses tooling at OP20 for the CADH and OP42 for the PH7 that is inserted into the exit orifice to ensure flash formations remain clear of the exit orifice.

Contrary to NHTSA's suggestion, the postulated root cause is not the result of excess weld flash. Inflators built within the friction welding specifications will result in weld flash proportionate to those limits. For the proposed failure mechanism to occur, the flash produced during manufacturing must (i) result in an abnormal formation, (ii) have a sufficiently tenuous connection to the assembly that it would come loose during deployment, and (iii) be large enough (*i.e.*, of sufficient dimensions and volume) to obstruct the flow of gas through the exit orifice for a sufficient amount of time for the internal operating pressure to increase beyond the component's structural limits.

During the Collaboration Team operations, ARC manufactured approximately 2,000 test inflators attempting to replicate an anomalous formation that would result in a rupture. ARC never successfully replicated this condition. Nonetheless, under the direction of the Collaboration Team, ARC adjusted the friction-welding specifications (the burn, scrub, and forge operations as well as the accept/reject limits for height and parallelism) based on analysis from EWI, ARC's test builds, and input from the rest of the Collaboration Team. Additionally, ARC implemented the automated borescope process to check for abnormal flash formations. These process improvements, like all material changes to production, went through a validation process prior to implementation.

As the discussion above demonstrates, ARC has cooperated extensively with ODI personnel and submitted voluminous amounts of data to the Agency. ARC has also worked extensively with its Tier 1 customers and the vehicle manufacturers throughout this investigation in an effort to determine the possible root cause(s) of the field failures. When potential issues were identified, vehicle manufacturers conducted lot-specific recalls, an approach that NHTSA expressly endorsed. As far as ARC is aware, prior to this Initial Decision, the Agency had not pressed any vehicle manufacturers utilizing ARC inflators to conduct a more expansive recall based upon these rupture events.

B. NHTSA Capriciously Ignores Design and Manufacturing Differences Among Approximately 150 Inflator Models Subject to the Initial Decision

To understand one of the fundamental errors in NHTSA's Initial Decision, it is critical to understand that its inflator population includes two separate inflator types that together consist of approximately 150 different inflator models. By lumping these inflator models together, NHTSA capriciously ignores that the CADH (a driver-side inflator) and the PH7 (a passenger-side inflator) have material differences in their design and manufacturing processes. It further ignores differences among the approximately 100 different CADH and approximately 50 different PH7

models included in this population. NHTSA's Initial Decision makes no effort to address these differences.

CADH and PH7 inflators are not interchangeable. One simple-to-understand difference demonstrates this: PH7 inflators are taller than CADH inflators.

Looking beyond these simple attributes, the performance requirements for driver-side and passenger-side airbags are different, which necessitate different designs. Further, the airbag inflator is just one component in the vehicle's airbag system, which itself is part of the vehicle's overall occupant-protection architecture. The performance requirements of a particular occupant-protection architecture must address, among many factors, the Federal motor vehicle safety standards (notably FMVSS 208) that apply to that vehicle.

As a result, ARC designs specific CADH models and PH7 models to meet the performance requirements of the airbag modules (produced by the tier 1 manufacturers) intended for a vehicle manufacturer's specific airbag system. ARC can tune the inflator model's performance by varying the diameter of the exit orifice, the propellant loads, and stored gas amounts to meet the customer's requirements. ARC identifies inflator models by a two-character code and each model must go through the design and validation process described above. As a result, as noted, there are approximately 100 different CADH models and approximately 50 different PH7 models covered by NHTSA's Initial Decision.

Approximately 145 of these different inflator models have never experienced a field rupture.[21] This difference in field experience demonstrates that there is not a systemic defect across the broad population. Yet, NHTSA's Initial Decision makes no effort to address these differences, apparently based on the assumption that because the CADH and PH7 inflators both use friction welding, all other differences are immaterial.

C. Any Incidents that May Have *Potentially* Involved Weld-Flash Concerns are Isolated and Lack a Discernible Trend

The Agency alleges that loose weld flash (or "slag" in NHTSA's description) is "a likely cause" of the inflator failures, *see* 88 Fed. Reg. at 62144, but it does so without providing a basis for this conclusion or tying any of the known field ruptures to this alleged root cause. (Again, as discussed in more detail in Section VI. below, different root causes were indicated in several of the field ruptures, while the root cause of the remaining ruptures has not been determined.)

The Collaboration Team evaluated this potential root cause of inflator ruptures that had occurred during lot acceptance testing of PH7 inflators and could not replicate manufacturing conditions that resulted in the proposed failure mode.[22] Under the direction of the Collaboration Team, ARC conducted tests to determine the root cause for the formation of abnormal weld flash sufficient to cause blockage and rupture. These tests included adjusting friction welding schedules, simulating maintenance failures, and deactivating quality checks. ***The studies and experiments***

[21] To clarify, of the approximately 150 inflator models included in the U.S. population by NHTSA, three of the field incidents involved the same inflator model.

[22] As discussed above, the Collaboration Team was a task force of Tier 1 suppliers, vehicle manufacturers, NHTSA, and ARC. NHTSA participated in the Collaboration Team's regular updates, and it received information related to the task force's work.

conducted by the Collaboration Team were unable to replicate abnormal weld flash sufficient to cause blockage that would result in an inflator rupture. Moreover, there have been several testing programs that deployed inflators collected from the field, *but not a single rupture occurred during these tests*. These testing programs include (i) ARC's Field Recovery Program for CADH inflators that deployed 918 inflators (discussed at length above), (ii) a testing program conducted by Transport Canada that mirrored the U.S. field recovery program and deployed approximately 600 inflators,[23] (iii) a program by Volkswagen Group that deployed approximately 1,000 PH7 inflators collected during a recall campaign in Europe,[24] and (iv) an ongoing collection program by General Motors ("GM"), with testing by ARC and an independent third party, that, as of March 2023, deployed approximately 400 inflators collected under Recall No. 21V-782. ***ARC is not aware of any ruptures that occurred during any of these testing programs.***

During the approximately 18-year period prior to implementing the automated borescope check, approximately 52 million of the subject inflators were produced for the U.S. market on multiple production lines across different plants.[25] These inflators were supplied to six Tier 1 suppliers and 12 vehicle manufacturers for use in dozens of vehicle models. While any field rupture is a serious matter, following the extensive investigation described above, none of these manufacturers concluded that a systemic defect exists across this broad population. Neither NHTSA nor any of the Tier 1 suppliers and 12 vehicle manufacturers has identified any safety defect based on design or manufacture common to the entire population.

In designing the CADH and PH7 inflators, ARC introduced manufacturing processes for the respective inflator types that mitigate against the risk of internal blockage of the exit orifice caused by loose weld flash. The manufacturing process includes a flash-dam pin to mitigate the risk of flash forming directly below the exit orifice. The welding processes use specifications for each inflator type to ensure that a consistent volume of weld flash is generated, and they use automated conformance checks to measure the sub-assembly's height and parallelism. Additionally, the respective inflator design includes an off-set near its exit orifice that permits flash to form into the off-set rather than directly below the exit orifice.

Neither NHTSA's Initial Decision nor its statements in the Public Meeting discussed any of these measures or explained why or how they were insufficient. NHTSA also failed to supply any support for its belief that the root cause of the field failures was loose weld flash blocking the exit orifice. NHTSA did not provide any meaningful analysis to establish (or even suggest) what manufacturing conditions could lead to weld flash formations that could come loose and block enough of the exit orifice for a sufficient amount of time to cause the inflator to over pressurize. Rather, NHTSA summarily asserts that loose weld flash is the likely cause and that "ARC's argument that the root cause 'has not been confirmed,' or purportedly is not the cause of some of the ruptures, is not a reason for delaying a recall." 88 Fed. Reg. at 62144.

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[23] *See supra* § I.B.

[24] Volkswagen Group conducted a recall of PH7 inflators following the rupture in Turkey, which ARC understands did not involve any injuries.

[25] As discussed in footnote 2, *supra*, ARC has not been able to reconcile the 52-million number cited by NHTSA. Without conceding the total population number, ARC is stating NHTSA's population number.

Here, failing to "confirm" NHTSA's purported root cause is not delaying a recall. Rather, the inability to replicate the failures and the lack of a discernible trend of failures across this expansive population and production range underscores that there is not a systemic defect that would warrant a recall. Extensive investigation of the design, manufacturing processes, root cause analyses, and replication studies lead to the same conclusion.

III. NHTSA Has Not Established that the Field Incidents Represent a Significant or Non-*De Minimis* Number of Failures

NHTSA's Initial Decision does not point to any test results, data, root cause analysis, welding study or analysis, analysis of manufacturing processes, or other engineering analysis that identify a systemic defect across this broad population. Rather, the Agency states that "[t]he fact that the subject population has experienced seven confirmed ruptures, *no matter the root cause*, warrants the initial determination of a safety defect." 88 Fed. Reg. at 62145 (emphasis added). NHTSA's conspicuous lack of technical analysis and its belief that "no matter the root cause," seven ruptures warrant an initial determination of a safety defect, makes clear that NHTSA's Initial Decision is based solely on the number of failures in the field. As the following discussion demonstrates, however, NHTSA is wrong: ***seven confirmed ruptures, no matter the root cause, does not warrant an initial determination of a safety defect***.

A. To Demonstrate a Defect in Performance, NHTSA Must Establish that the Number of Field Failures is Significant

NHTSA relies on a "performance defect" theory to assert that a defect exists in the subject inflators. *See* Initial Decision at p. 62145. ("While establishing the root cause is unnecessary for a recall determination, these ruptures certainly constitute evidence of failure in the performance of motor vehicle equipment.") A threshold inquiry in any performance defect analysis is the level of failures that will constitute a systemic defect. As NHTSA pointed out in its Initial Decision, the D.C. Circuit in *United States v. General Motors Corp.*, 518 F.2d 420 (D.C. Cir. 1975) ("*Wheels*") – upon which NHTSA bases its decision – held that a "a prima facie case of defect can be made simply by [NHTSA] showing a significant number of failures" in the subject component. *Id.* at 438. As relevant here, the court stated:

> Where the Government introduces evidence of a significant number of failures as to which causes like age and expected wear and tear have been negated, it is entitled to rely on a presumption that such failures occurred under conditions of operation that were either within the parameters specified by the manufacturer or reflect reasonably-to-be expected vehicle abuse (ordinary abuse) or failure to maintain. Where, as here, the relevant component is designed to function without replacement or repair for the life of the vehicle, a prima facie case of defect can be made simply by showing a significant number of failures.

Id. (emphasis added). Regarding the meaning of the phrase "significant number of failures," the court explained:

> We use the term "significant" to indicate that there must be a non-*de minimus* [*sic*] number of failures. The question whether a "significant" number of failures have

> taken place must be answered in terms of the facts and circumstances of each particular case. *Relevant considerations include the failure rate of the component in question, failure rates of comparable components*, and the importance of the component to the safe operation of the vehicle. The number of failures need not be and normally will not be a substantial percentage of the total number of components produced.

Id. at n.84 (emphasis added). Moreover, the Safety Act's use of the phrase "unreasonable risk" requires NHTSA to use a "'commonsense' balancing of safety benefits and economic costs." *Wheels* at 435. *Wheels* continued:

> The commonsense limitation reflects an awareness that costs must be considered in determining what safety measures are required by the Act. While some margin of safety must be built-in to protect against failures during day-to-day operation, manufacturers are not required to design vehicles or components that never fail.

Id. at 436.

Judge Leventhal, who authored the *Wheels* decision, shed further light on the meaning of the term "defect" in a separate opinion issued two years later in which he explained:

> Out of any manufacturing process, *some* products are bound to be "lemons." These failures may be due to flaws in the design, construction (including occasional human error on the production line) or inspection process. When the defects are *occasional or isolated*, the risk associated with them is part of the ordinary danger of operating an automobile; minimizing them is one aspect of the quality of a manufacturer's product which consumers choose to pay for. Total elimination of this risk would require a standard of design, construction, and testing that would produce a purchase price so prohibitive that it cannot be taken as the contemplation of Congress. And that obtains even though such a defect may be in a vital component and result in a safety risk. However, the matter stands quite differently where it appears that the defect is ***systematic*** and is ***prevalent*** in a particular class of cars.

561 F.2d 923, 929 (D.C. Cir. 1977) (Leventhal, J., dissenting in part) (emphasis added), *cert. denied*, 434 U.S. 1033 (1978).[26]

In referring to "*de minimis*," the court in *Wheels* had before it a case where there was estimated to be as many as 1,503 failures among a 200,000 vehicle population. Factoring in four wheels per vehicle (thus, 800,000 wheels), this translates to a failure rate (*i.e.*, number of failures divided by the component population) of approximately 0.19%, or 1,879 parts per million ("PPM"). This added context makes it easier to understand the analysis of a performance defect

[26] The *per curium* opinion comprises only six sentences of a 15-page opinion. The rest of the opinion consists of Judge Leventhal's partial dissent, which was largely embraced by the majority. Judge Leventhal disagreed with the majority only on the ultimate issue of whether the government was entitled to summary judgment on the issue of safety-relatedness.

undertaken by the court in *Wheels* and why the court would find the 1,879 PPM figure to be non-*de minimis*. Failure rates for other litigated cases involved similarly large numbers of failures[27]:

Product	**PPM**
Carburetors	3,487
Pitman Arms	92,392
Seat Brackets	15,131
Wheels	1,879
Windshield Wipers	218,695
X-Car[28]	13,423

In comparison, there have been seven field ruptures in the U.S. among the approximately 52 million inflators produced during the relevant 18-year time period (*i.e.*, a failure rate of 0.000013% or 0.13 PPM). To enable an apples-to-apples comparison to the rates in the cases above, the following table sets forth the failure rate of the subject inflators (Row A), as well as the "rupture rates" for the subject inflators using NHTSA's approach (Row B) and ARC's approach (C):

	Product	PPM
A	ARC Inflators Failure Rate[29]	0.13
B	ARC Inflators *Rupture Rate*[30]	2.69
C	ARC *Rupture Rate* (excluding incident unrelated to loose weld flash)[31]	1.92

[27] *See United States v. General Motors Corp.*, 417 F. Supp. 933 (D.D.C. 1976), *aff'd in part*, 565 F.2d 754 (D.C. Cir. 1977) ("*Carburetors*"), *United States v. General Motors Corp.*, 65 F.R.D. 115 (D.D.C. 1974), *rev'd*, 561 F.2d 923 (D.C. Cir. 1977) (per curiam), *cert. denied*, 434 U.S. 1033 (1978) ("*Pitman Arms*"); *United States v. Ford Motor Co.*, 421 F. Supp. 1239 (D.D.C. 1976), *on appeal*, 574 F.2d 534 (D.C. Cir. 1978) ("*Seat Brackets*"); *United States v. General Motors Corp.*, 377 F. Supp. 242 (D.D.C. 1974), *later proceeding*, 385 F. Supp. 598 (D.D.C. 1974), *rev'd*, 518 F.2d 420 (D.C. Cir. 1975) ("*Wheels*"); *United States v. Ford Motor Co.*, 453 F. Supp. 1240 (D.D.C. 1978) ("*Windshield Wipers*"); *see also United States v. General Motors Corp.*, 574 F. Supp. 1047, 1048 (D.D.C. 1983), *later proceeding*, 656 F. Supp. 1555 (D.D.C. 1987), *aff'd*, 841 F.2d 400 (D.C. Cir. 1988) ("*X-Car*"). Note that the PPMs in the following chart are derived from the failure data and populations identified in each case

[28] The D.C. Circuit upheld the District Court's holding that NHTSA "failed to carry to its ultimate burden under the [Safety] Act to demonstrate the existence of a class-wide defect."

[29] This PPM calculation is based on an estimated 52,000,000 inflators (which combines multiple CADH designs and multiple PH7 designs) and seven ruptures in the United States.

[30] This PPM is derived from NHTSA's estimate of 2.6 million deployments based on seven ruptures, which includes two field incidents that were determined not to involve weld flash. (We note that the Kia incident also did not appear to involve weld flash, but rather an external restriction, but to be conservative, we are not including it with the other two incidents for purposes of this calculation.)

[31] The Town & Country incident involved a portion of the flash dam pin that became lodged in the inflator. The Malibu incident involved a potential welding issue unrelated to blockage. *See* infra § VI.

Seven out of 52 million is several orders of magnitude less than the failure rates involved in the litigated cases, which was the context within which the "*de minimis*" standard was articulated.

In fact, well more than half of the vehicle manufacturers that NHTSA identified in its Initial Decision have never had an ARC inflator rupture in any of their vehicles. BMW, Ford, Hyundai, Maserati, Mercedes-Benz, Porsche, Toyota, and Tesla collectively have had zero (0) ruptures in the U.S. or (other than Hyundai) globally. In effect, therefore, NHTSA infers a defect in these vehicles based upon *zero failures*. NHTSA's Initial Decision is devoid of any explanation whatsoever regarding why, despite the complete absence of failures in these vehicle populations, these vehicles or the ARC inflators installed in these vehicles contain a safety-related defect.

Furthermore, three of the vehicle manufacturers have only experienced a single incident. Apart from the 2009 rupture of an inflator manufactured in 2002 and installed in a MY 2002 Chrysler Town & Country, no other Chrysler/Fiat Chrysler Automobile (FCA) vehicle has experienced a rupture involving an ARC inflator produced during the 18-year period NHTSA identifies as suspect. Likewise, apart from the 2014 rupture of a 2003 inflator installed in a MY 2004 Kia Optima, Kia has not experienced any ruptures involving an ARC inflator produced during this period. Further, the incident involving a MY2016 Audi passenger inflator (manufactured in 2015) is the only U.S. incident involving an Audi vehicle. Accordingly, these three isolated incidents are not in any way indicative of a trend in the respective vehicle manufacturers' populations.

Nor does NHTSA even attempt to address the differences among the approximately 150 different inflator models, the airbag systems in which the subject inflators were installed, the numerous makes, models and model years of vehicles that used these inflator/module combinations, and the manufacturing plants, production lines within those plants, and manufacturing processes; and NHTSA makes no attempt to explain why these differences are immaterial to its conclusion, except to assert that all the inflators have a similar shape, use friction welding, and are used in frontal airbags.

As noted above, the *Wheels* decision also requires consideration of the failure rates of comparable components,[32] but this critical piece of analysis is similarly missing from NHTSA's Initial Decision and the investigation record is devoid of any proper analysis or comparison of the performance of ARC inflators to non-ARC inflators. In footnote 4 of the Initial Decision, NHTSA generally cites to several defect information reports (DIRs) related to inflator ruptures and asserts that these DIRs establish that inflator ruptures are a safety-related defect. ARC recognizes that a field incident involving an inflator ruptures indicates a defect likely exists in that *particular* vehicle or part. Additionally, ARC has supported targeted recalls by vehicle manufacturers related to field ruptures and production lots with an identified potential risk of defect; these recalls are cited by NHTSA in footnotes 11 and 12 of the Initial Decision. NHTSA, however, conflates a defect in a particular vehicle or component with a *systemic defect* across a voluminous population of inflators installed in multiple vehicle makes and models (most of which have never experienced a rupture of an ARC inflator), while ignoring the numerous other differences outlined above. Further, while

[32] *See Wheels* at n.84 ("Relevant considerations include the failure rate of the component in question, failure rates of comparable components, and the importance of the component to the safe operation of the vehicle.").

NHTSA points to other inflator recalls, it does not describe the failure rates in those matters (let alone the "rupture rates"), nor does it present any comparable rates of inflators produced by peer manufacturers as required by established case law. This issue is addressed in more detail in Section IV., below.

B. The Failure Rate Using the Total Population and the Rupture Rate Using an Estimate of Field Deployments Are Different Ways of Presenting the Same Information

In the Initial Decision and during the October 5, 2023 Public Meeting, NHTSA stated that it is "more accurate" to consider the estimated field deployments instead of the total population when evaluating risk. NHTSA argued that using the baseline population "results in an inaccurate assessment of the risk." 88 Fed. Reg. at 62145. NHTSA reasoned that because "crashes are relatively uncommon events, the vast majority of the subject inflators have not experienced a command for deployment, and the defect manifests itself only upon air bag deployment." *Id.* Accordingly, NHTSA reasons that "the rupture rate of the subject inflators is properly estimated as the ratio of inflators ruptures to total *field air bag deployments*—not to the total subject inflator population." *Id.* (emphasis in original). ARC will use the term "failure rate" to describe the rate using the estimated vehicle population as the denominator and the term "rupture rate" to describe the rate using NHTSA's estimated number of deployments as the denominator.

Contrary to NHTSA's assertion, the failure rate (field events divided by the total inflator population)[33] and the estimated rupture rate (NHTSA's preferred metric) are simply different models for presenting the field performance. ***The accuracy of presenting this data is dependent upon what the rate will be used to determine.***

Rate analyses attempt to model complex phenomena using a simplified representation. Model methodologies vary based on, among many factors, the available data inputs, the precision and consistency of that data, the representativeness and generalizability of the data, and the objective of the analysis. A common aphorism in statistics puts its simply, all models are wrong, some models are useful.[34] NHTSA's argument muddles what the failure-rate model is useful in determining: whether there have been a significant number of failures.

In developing the *de minimis* test, *Wheels* explained the considerations that a useful model should include. "Relevant considerations include the *failure rate* of the component in question, *failure rates* of comparable components, and the importance of the component to the safe operation of the vehicle." *Wheels* at n. 84 (emphasis added). The failure rate is more useful in making peer comparisons using the available data (i.e., total populations and field failures), because the two data points have greater availability, are more likely to be representative of the peer population,

[33] Here, NHTSA estimated the total population at 52 million, which includes both ARC and Delphi inflators. As previously stated, ARC is not responsible for inflators manufactured by Delphi.

[34] This aphorism may have originated from British statistician George E.P. Box. *See*, "Robustness in the Strategy of Scientific Model Building," Technical Summary Report # 1954 (May 1979) at p. 2 ("All models are wrong but some are useful" used as a section heading), available here: https://apps.dtic.mil/sti/tr/pdf/ADA070213.pdf. "Now it would be very remarkable if any system existing in the real world could be *exactly* represented by any simple model. However, cunningly chosen parsimonious models often do provide remarkably useful approximations." *Id.* (emphasis in original).

and—by not relying on estimates derived from multiple models—the consistency of the data is easier to discern.

NHTSA, however, does not compare its calculated rupture rate to any comparable component or vehicle population. And NHTSA's rupture rate would be less useful in making peer comparison. The Agency's rupture rate uses one directly observable input (number of field events) and an estimated number (field deployments), which requires a series of assumptions based on numbers pulled from varying data sets. NHTSA does not provide an explanation as to why the data pulled from these data sets (such as the estimated annual deployment rate and vehicle survival rate) are representative of the vehicle population covered by its Initial Decision. Further, to the extent NHTSA may have considered peer vehicle rupture rates, the vehicle populations broken down by model year that would be necessary to estimate field deployments along with field ruptures for the respective populations were not provided in the Confidential File. The unavailability of the key data and uncertainty about how representative estimates would make NHTSA's rupture rate less useful in determining whether there has been a significant number of failures within the subject population.

Moreover, ARC does not agree that an estimate of field deployments in the United States more accurately represents, or is more useful in determining, the risk of an inflator rupture (presumably the "risk" NHTSA is referring to). ARC believes the failure rate is a more reliable metric for determining a performance defect and assessing the overall risk because it consists of two directly observable inputs: the number of inflators produced and the number of known field events.

Additionally, the overall "risk rate" for a typical driver or passenger must account for *both* the risk of deployment occurring in the first place *and then*, in the event of a deployment, the risk that the inflator will rupture. The failure rate accounts for both the risk of deployment and, in the event of a deployment, the risk that the inflator will rupture. Under this approach, the overall risk to a vehicle occupant at the vehicle level (which is the appropriate reference) is 0.000013%. In contrast, NHTSA's preferred rate consists of only one directly observable input (*i.e.,* number of field events).

NHTSA's preferred rate is also an estimated number derived from a series of assumptions pulled from varying data sets. NHTSA does not provide an explanation as to why the data pulled from different data sets (such as the estimated annual deployment rate and vehicle survival rate) are representative of the vehicle population covered by its Initial Decision. Nor does NHTSA explain why these estimates derived from different data sets more accurately account for the risk of deployment and then, in the event of a deployment, the risk that the inflator will rupture *in the vehicle population subject to the Initial Decision*. These assumptions also ignore critical differences discussed below.

Furthermore, neither NHTSA's Initial Decision nor its presentation in the Public Meeting compared NHTSA's "risk rate" to a peer "risk rate." NHTSA's Initial Decision simply cites a few recalls involving inflators without comparing the failure rates in those recalls to the Agency's supposedly more accurate risk rate based on the Agency's rough estimate of 2.6 million field deployments out of the approximately 52 million inflators.

Use of the total inflator population (failure rate) instead of an estimated field deployment rate (rupture rate) in analyzing risk permits proportionate comparisons to peer inflators that are subject to a defect information report. In short, the full inflator population should be used to calculate the failure rate, as it permits a more accurate comparison to peer inflator data and more appropriately compares the risk to comparable peer populations. As demonstrated in Section IV below, the failure rate of ARC inflators in this population is significantly lower than that of other inflators subject to previous defect information reports.

C. Shortcuts in NHTSA's Methodology for Estimating Field Deployments Renders its Rupture Rate and Projections of Future Ruptures Unreliable

NHTSA's Initial Decision based its "risk" analysis on data shortcuts and assumptions that render its analysis unreliable. NHTSA failed to explain why the assumptions it used to derive an annual deployment rate of 0.4% is representative of this vehicle population and why this rate would remain constant for this vehicle population between 2001 and 2056.

During the Public Meeting, NHTSA elaborated that to calculate the estimated field deployment rate, NHTSA estimated the number of subject vehicles on the road each year by subtracting the estimated number of salvaged parts from the total production volume, and multiplying that figure by 0.4%. NHTSA then added the estimated deployment rates for each year to derive the total estimated deployment rate. On December 4, 2023, NHTSA notified ARC and the other involved manufacturers that the Agency was supplementing the Confidential File to provide data to support its deployment estimates.[35]

NHTSA use an annual deployment rate of 0.4% based on estimates derived from multiple data sources. The Agency first estimated an annual rate for frontal crashes at 1.7%. NHTSA derived this estimate using light truck data from NHTSA's 2015 FARS (Fatality Analysis Reporting System); NHTSA's 2015 GES (General Estimates System); S&P Global Mobility's 2016 data on light truck registrations. The subject population here consists of a mix of passenger and light truck vehicles. NHTSA did not, however, explain why the light truck data from these sources is representative of the subject population. Similarly, NHTSA used light truck data from its 2015 CDS (Crashworthiness Data System) to estimate that 25% of towed frontal light truck impacts have a delta-V of 15 mph or more (which it presumed would result in an airbag deployment). Again, NHTSA failed to explain why this data would be representative of the subject vehicle population. Using these estimates, NHTSA derived the annual deployment rate by multiplying the two estimates (0.017 x 0.25 = 0.00425) and rounding the number down to 0.4%.

To estimate annual field deployments, NHTSA adjusted the annual vehicle population for each model using an estimated vehicle attrition rate (presumably the number of vehicles that would no longer be in service) using estimates from NHTSA's 2016 CAFE Model. *See* 88 Fed. Reg. at 62145, n.16. The 2016 CAFE Model reveals some concerns with accuracy of projections derived from this rate. First, the 2016 CAFE Model determined separate vehicle survival rates for passenger cars, vans, SUVs, pickups, and ZEVs. *See* DOT HS 812 305, CAFE Model

[35] This last-minute production was made on the due date of the first extension for comments. While the Agency did extend the date for comments to December 18, 2023, NHTSA used these calculations as the primary basis for making its September 8, 2023, Initial Decision. Yet, the Agency did not provide this information to ARC and the affected manufacturers until December 4, 2023, nearly three months later. Moreover, NHTSA provided only two weeks to review this critical information before requiring comments.

Documentation, Jul. 2016, (2016 CAFE Model Documentation) at p. 32.[36] Yet, the Agency used an average of the survival rate for passenger cars and Class 1 & 2a light trucks.[37] For example, for vehicle age five, NHTSA used the survival rate 0.9381, which is the average of the Cars survival rate (0.9450) and Class 1 & 2a light truck survival rate (0.9311). NHTSA provided no explanation for using this average for its estimate while the survival rates were not averaged in the CAFE model.

More concerning, NHTSA's estimates of field deployments involved several assumptions that render those estimates unreliable. First, the estimates use the same annual deployment rate for driver-side and passenger-side inflators and fail to address differences in passenger occupancy rates between these two seating positions.

Second, NHTSA developed its estimate of deployments by using a survival period of 37 years for all vehicles (both passenger vehicle and light trucks). However, the 2016 CAFE Model determined survival rates using maximum ages of passenger vehicles and light trucks of 30 and 37 years, respectively. Additionally, NHTSA made no adjustments for annual vehicle miles traveled over the 37 years of estimates. Yet, the 2016 CAFE Model specifically employed "the widely documented relationship between vehicle age and declining average vehicle use to estimate the number of miles that individual vehicle models are driven annually and in total over their expected lifetimes."[38] After failing to explain why data sources used for its estimates are representative and assuming away important factors like occupancy and lifetime vehicle miles traveled, NHTSA uses these questionable estimates to estimate future ruptures based on projecting deployments from 2024 to 2056, an unreasonably long period into the future to make accurate projections.

D. NHTSA Failed to Analyze Rate Differences within Subpopulations of the 52 million Inflators

Critically, NHTSA's Initial Decision did not address significant differences in the rupture rate for the vehicles recalled in Recall No. 23V334. NHTSA also improperly included two field incidents with root causes unrelated to loose weld flash. Comparing its overall population to the rupture rate of the 23V334 vehicles, as well as the rupture rates after removing the two unrelated incidents, demonstrates that the number of failures outside this recalled population is even more *de minimis*.

Using the same vehicle populations and methodology used by NHTSA, ARC calculated five rupture rates and estimated number of future ruptures to compare subpopulations:

(1) NHTSA rupture rate – the seven cited incidents against the total vehicle population (NHTSA rupture rate)

[36] A copy of the documentation can be found here https://www.nhtsa.gov/sites/nhtsa.gov/files/812305_cafe_modeldocumentation.pdf.

[37] The data chart used a single survival rate for all class 1 & 2a light trucks. *See* Confidential - Estimated air bag deployments and rupture rate and derivation of assumption - Contains CBI.xlsx, sheet "CAFE attrition model."

[38] 2016 CAFE Model Documentation at p. 34.

(2) The rupture rate after excluding the two incidents that were determined not to relate to loose weld flash against the total vehicle population

(3) The rupture rate for the vehicles subject to Recall No. 23V334 (three incidents against approximately 32,333 deployments)

(4) The rupture rate for vehicles not included in Recall No. 23V334 (including the two incidents unrelated to loose weld flash)

(5) The rupture rate for vehicles not included in Recall No. 23V334 (excluding the two incidents unrelated to loose weld flash)

	Population	**Rupture Rate**	**PPM**	**NHTSA's Crude Estimate of Future Ruptures**
1	NHTSA's Calculated Rupture Rate	0.000269%	2.69	2.94 (rounded to 3)
2	Rupture Rate (excluding incidents unrelated to loose weld flash)	0.000192%	1.92	1.88
3	Recall No. 23V334 Rupture Rate	0.00928%	92.7	3.26
4	Rupture Rate for Vehicles outside Recall No. 23V334	0.000156%	1.56	1.47
5	Rupture for Vehicles outside Recall No. 23V334 (excluding incidents unrelated to loose weld flash)	0.000078%	0.78	0.73

As the above table illustrates, the rupture rate for vehicles subject to Recall No. 23V334 is more than 30 times greater than NHTSA's overall rupture rate. Because these vehicles are already subject to a recall, NHTSA's inclusion of the recall population and the three associated ruptures within that population in its calculation of the rupture rate grossly inflates the rupture rate for the non-recall population.

NHTSA's data estimates that there will be approximately three (3) future ruptures over the next 33 years[39] based upon a rounded rupture rate of 0.0003% and multiplying the rounded rate by the number of estimated deployments between 2024 and 2056. Using the same methodology, but isolating the 23V334 population, calculating that population's rupture rate (0.00928%) and estimating that population's future deployments, NHTSA's model would suggest that there would be an estimated 3.26 future ruptures in that subpopulation. In essence, therefore, including the

[39] NHTSA rounded up the number 2.94. *See* Confidential – Estimated air bag deployments and rupture rate and derivation of assumption – Contains CBI.xlsx.

recall population in NHTSA's calculation accounts for *all* of its estimated future ruptures. Yet, this population has already been recalled.

Thus, even assuming NHTSA's "rupture rate" (vs. the overall failure rate) is the appropriate analytical approach (which ARC does not concede), applying an adjusted rupture rate of 0.000078% to the non-recall population indicates that there will be less than one (1) additional rupture over the next 33 years. And this does not take into account other shortcomings in the Agency's statistical methodology (*e.g.,* a static annual deployment rate fails to consider vehicle miles traveled, annual changes in VMT for aging vehicles, and occupancy rates) that would likely further reduce the statistically estimated number of future ruptures projected over the next three decades.

NHTSA provides no explanation as to why this intra-population difference is immaterial, when the basis for NHTSA's Initial Decision is dependent upon the failure rate and its estimated rupture rate. As the table above demonstrates, the rupture rate for the 23V334 vehicle population is the primary driver of NHTSA's rate analysis. Excluding this population from NHTSA's estimate demonstrates that the number of failures outside this population is even more *de minimis* (less than one failure project to occur in the next 33 years) and, again, that there is no systemic defect across the full population of inflators covered by NHTSA's Initial Decision.

IV. NHTSA Did Not Cite Any Peer Rates in the Initial Decision

Tellingly, and fatally, the Agency does not compare the failure rates (or rupture rates) for the defect information reports identified in footnote 4 with the failure rate (or its calculated rupture rate) for ARC inflators. As discussed, using NHTSA's estimated field deployments of 2.6 million inflators and all seven field incidents,[40] ARC inflators would have a "rupture rate" of approximately 2.69 ppm.

ARC reviewed the defect information reports for each of these recalls (as well as recalls that involved the same components based on references in the defect information reports). Appendix A provides a table that details: the NHTSA Recall Number,[41] the reporting manufacturer, the product involved, the number of ruptures identified in the report, the product population from the report, and an estimated rate in parts per million derived from the number of ruptures and product population. The inflator recalls and defect information reports identified in Appendix A primarily relate to inflator failures from two populations of inflators involving other manufacturers: the HPH-A inflator (KSS/JSS) and the FG2 Twin inflator (Autoliv). The following table lists the number of field ruptures and total reported population subject to the respective defect determinations, and calculates a failure rate in parts per million:

[40] ARC reiterates that it does not agree that seven incidents is the correct number for this calculation.

[41] ARC does not agree that all of the defect information reports referenced by NHTSA are properly referred to as recalls. Some of these reports were submitted by original equipment manufacturers, which are not conducting recalls. Without conceding a defect information report submitted by an original equipment manufacturer is a recall, ARC is following NHTSA's nomenclature in identifying these reports for ease of reference.

Vehicle/Equipment	Ruptures	Population	Rate	PPM
HPH-A	5	622,392	0.000803%	8.03
Autoliv FG2 Twin inflators	1	453,929	0.00022%	2.20
CADH and PH7 (excluding incidents unrelated to loose weld flash)	5	52 million	0.0000096%	0.096
CADH and PH7 (including unrelated ruptures)	7	52 million	0.000013%	0.13
CADH and PH7 (excluding incidents unrelated to loose weld flash)	5	2.6 million deployments	0.000192%	1.92
CADH and PH7 (excluding incidents unrelated to loose weld flash)	7	2.6 million deployments	0.000269%	2.69

The Autoliv FG2 Twin inflators had a *failure* rate of 2.20 ppm—compared to a 2.69 ppm *rupture* rate for ARC inflators using NHTSA's number of field failures (seven) and NHTSA's field deployment estimate of 2.6 million. Notably, excluding the two ruptures that were determined to be unrelated to NHTSA's posited root cause – *i.e.*, blockage caused by abnormal weld flash that came loose and blocked the exit orifice – the failure rate for CADH and PH7 inflators is 1.92, which is less than the estimated rate for FG2 Twin inflators (2.20 ppm). Excluding the Recall No. 23V334 vehicles, the rupture rate plummets to 0.78 ppm, well below either of these recalls.

Importantly, failure rates for the HPH-A inflators and the FG2 Twin inflators *are not proportionate comparisons* when using NHTSA's estimate of field deployments. The FG2 Twin rate is based on the *total vehicle population*, not the estimated number of field deployments within that population.

Furthermore, NHTSA's posited root cause in the Initial Decision – blockage caused by abnormal weld flash that came loose and blocked the exit orifice – would not involve degradation over time and, consequently, the inflators would not experience an increasing failure rate over time.[42] In contrast, the recalls related to the KSS/JSS and Autoliv inflators (and the inflators in the Takata recall) each involved inflator failures for which the manufacturers identified a common root cause that would worsen over time: degradation of propellant. For the KSS/JSS inflator (the HPH-A curtain inflator), KSS/JSS described the defect as corrosion that resulted from moisture introduced during the manufacturing process. *See* Recall No. 21E080 Defect Information Report (573 report). Similarly, Volvo stated that the propellant in the subject Autoliv inflators can decay over time after exposure to high temperatures, which can result in moisture intrusion that changes the surface area of the propellant tablets. In contrast, no such common root cause has been

[42] [redacted]

identified by NHTSA, ARC, or to ARC's knowledge, by the Tier 1 suppliers and vehicle manufacturers. And, again, at least two of the incidents identified by NHTSA have distinct root causes unrelated to NHTSA's posited cause of loose weld flash.

As the above comparison demonstrates, the combined failure rate for the CADH and PH7 inflators is significantly lower than comparable rates for the recalls cited in NHTSA's Initial Decision. NHTSA's failure to present these comparisons underscores the Agency's inability to demonstrate that the number of field incidents here supports the Initial Decision.

V. NHTSA's Comparison to the Takata Recall Request Letter is Grossly Misleading

ARC would also like to address the misleading statement NHTSA makes in footnote 4 of its Initial Decision related to NHTSA's recall request letter to Takata. NHTSA states that its recall request letter to Takata "**identified** six inflator ruptures, one less than identified here." *Id.* at 62142, n.2 (emphasis added). This is grossly misleading.

NHTSA's November 26, 2014, recall request letter to Takata simply identified six *additional* inflator ruptures that occurred in vehicles during a specific timeframe (*i.e.*, between August 2013 and August 2014). Documents in NHTSA's docket for the Coordinated Remedy indicate, however, that NHTSA was aware of at least 10 field ruptures in U.S. vehicles and one rupture in Japan by May 2014, well before NHTSA issued its November 2014 recall request letter. *See* "Supplemental Statement for the Record: NHTSA's Historical Timeline of Events regarding Takata Inflator Ruptures," Frank Borris, Acting Associate Administrator for Enforcement, Public Information Meeting: The Coordinated Remedy Proceeding on Recalled Takata Inflators (Oct. 22, 2015) (Docket No. NHTSA-2015-0055-0102).

Implying that the six *additional* ruptures NHTSA identified in its recall request letter were the sole basis for the massive recalls involving Takata inflators is transparently false. NHTSA issued the recall request letter to Takata seven months after Takata's April 11, 2013, defect information report and following a second defect information report submitted by Takata on November 10, 2014. *See* Recall No. 13E017, https://static.nhtsa.gov/odi/rcl/2013/RCDNN-13E017-5589.pdf (last checked Dec. 18, 2023) and Recall No. 14E073, https://static.nhtsa.gov/odi/rcl/2014/RCLRPT-14E073-0222.pdf (last checked Dec. 18, 2023).

The Chronology for Takata's April 2013 defect information report cited six ruptures (four in the U.S. and two in Japan) as well as "six additional incidents that occurred in salvage yards in Japan." *See id.* at p. 4, § 7 ("*Chronology*"). Moreover, in responses to information requests dated December 23, 2009, and February 19, 2010, Takata reported to NHTSA three additional ruptures in the U.S., which Takata learned of in June and August 2007. See Response to Information Request, at Req. 4 (Dec. 23, 2009) (available at: https://static.nhtsa.gov/odi/inv/2009/INRL-RQ09004-37860.pdf) (last checked Dec. 18, 2023); and Response to Information Request at Req. 4 (Feb.19, 2010) (available at: https://static.nhtsa.gov/odi/inv/2009/INRL-RQ09004-39140P.pdf) (last checked Oct. 18, 2023). NHTSA's footnote fails to mention that its recall request letter

identified six **additional** U.S. ruptures that occurred **after** Takata had submitted its April 2013 defect information report.[43]

In May 2015, just a few months after issuing its recall request letter to Takata, Takata reported at least 90 inflator ruptures to NHTSA. Beyond field incidents, Takata's May 2015 defect information reports also identified hundreds of ruptures that occurred during inflator testing. This missing context underscores the dramatic difference between the field performance of Takata inflators that prompted NHTSA's recall request to Takata and that of ARC's inflators. In comparison, NHTSA's recall request letter to ARC and its Initial Decision identify seven ruptures in the U.S. *over a 23-year period* for an alleged defect that, unlike the propellant issue in Takata, does not present an increased risk over time. The implication that NHTSA's recall request letter to Takata involved fewer field incidents than those experienced by ARC inflators is therefore factually false.

Furthermore, the defect information reports submitted by Takata and cited by NHTSA in footnote 4 of the Initial Decision refer to rupture rates that are orders of magnitude greater than the number of ruptures involving ARC inflators. The five cited Takata defect notices provide sufficient information to compare confirmed field ruptures to the inflator population. Reviewing the initial notices for NHTSA Recall Nos. 15E040, 15E041, 15E042, and 15E043; and the later, non-azide notice (NHTSA Recall No. 19E080), the rupture rates in parts per million are as follows:[44]

Recall No.	Ruptures	Pop.	Rate (PPM)
15E040	63	17.6 million	3.58
15E041	14	7.7 million	1.82
15E042	10	5.2 million	1.92
15E043	3	3.3 million	0.91
19E080	2	4.45 million	0.44

[43] Nor does the footnote mention that Takata provided inaccurate information and data from NHTSA, as evidenced by Takata's failure to cite all known ruptures in its April 11, 2013, Defect Information Report, and as evidenced by the criminal case brought against Takata by the DOJ, due to its actions throughout the course of NHTSA's investigation.

[44] ARC used the reported inflator population and calculated the rate based on the number of ruptures identified in the "Chronology" and "Approximate percentage of items of equipment estimated to actually contain the defect" sections for the respective defect information report. ARC notes that these rupture numbers were derived roughly six months after NHTSA issued its recall request letter. NHTSA opened its investigation of ARC in 2015 and issued SGO 2015-01 and 2015-02 in July 2015, requiring manufacturers to report all alleged field ruptures to NHTSA. Accordingly, ARC believes that using the number of ruptures identified in these Takata defect information reports provides a reasonable comparison that demonstrates the unprecedented demand NHTSA is making with respect to ARC inflators.

Takata Combined	**92**	**38.25 million**	**2.41**
ARC	**7**	**52 M**	**0.13**

Takata also provided data on results from ballistic testing of inflators collected from the field through prior recalls. From this information, ARC estimated the following failure rates for tested inflators:[45]

Recall No.	Test Ruptures	Est. Test Pop.	Rate (PPM)
15E040	9 (PSDI-4 and -4K)	12,466	722
15E041	56	5,911	9,474
15E042	180	8,334	21,600
15E043	20	9,804	5,100
19E080	None reported	--	--

Significantly, the failure rates for these Takata recalls related to a defect in the propellant that, under certain circumstances, could degrade over time. Accordingly, these failure rates were almost certain to increase with further exposure in the field. Indeed, NHTSA's prepared remarks for its Coordinated Remedy Hearing for the Takata-related recalls stated that as October 20, 2015, the Agency was aware of 89 driver and 32 passenger Takata inflator ruptures, 7 deaths in the U.S. and one foreign death, and 98 alleged injuries. *See* "Takata Coordinated Remedy Public Information Meeting Prepared Remarks," (Oct. 22, 2015), "Coordinated Remedy Program Proceeding: What is the status? (Frank Borris)" at p. 4 (Docket No. NHTSA-2015-0055-0103).

NHTSA has been investigating ARC inflators since July 2015 and has had Standing General Orders in place since July 2015 seeking reports of all alleged field ruptures involving inflators, including ARC products. NHTSA also issued information requests to all vehicle manufacturers that equipped ARC inflators in U.S. vehicles requesting that the vehicle manufacturers notify NHTSA of all ruptures involving ARC inflators. These efforts identified just seven field incidents out of 52 million inflators in the U.S. representing a field failure rate of 0.13 parts-per-million – just over one part for every 10 million parts produced. This rate is grossly insufficient to require the sweeping recalls that NHTSA intends to order, and it sets an unjustifiable precedent for requiring vehicle manufacturers to recall vehicles.

VI. A Common Root Cause Across the Population Has Not Been Established

Without explanation, the Agency categorically rejected the notion that isolated anomalies could occur during the inflator manufacturing process without the existence of a systemic defect. *See* 88 Fed. Reg. 62140, 62145 (Sep. 8, 2023) ("NHTSA rejects any suggestion that the seven

[45] Takata did not provide details on testing methodology, simply referring to the tests as ballistic testing and reporting the number of failures/ruptures.

inflator ruptures are in some way normal or to be expected, absent a safety defect."). NHTSA asserts that any rupture of an inflator "cannot simply be dismissed as a normal manufacturing anomaly." *Id.* To the extent that NHTSA believes that an inflator rupture is a per se safety-related defect that requires ARC, the Tier 1 manufacturers, and vehicle manufacturers to submit defect information reports, NHTSA has offered nothing to support this novel position. Instead, NHTSA states, for example, that a single rupture involving an inflator manufactured more than 20 years ago should compel a recall of potentially millions of vehicles, as indicated by the single rupture involving a Chrysler vehicle equipped with an inflator manufactured in 2002 and the single rupture involving a Kia vehicle equipped with an inflator manufactured in 2003.

While NHTSA's Initial Decision is based upon seven field ruptures that it attributes to a common root cause – weld flash that blocks the exit orifice – the Agency ignores the fact that at least two of these incidents – the MY 2002 Town & Country and the MY 2010 Chevrolet Malibu – involved distinctly different failure modes or root causes than the weld-flash concern cited by the Agency in the Initial Decision. Additionally, ARC's investigation of the incident involving the 2004 Kia Optima found evidence indicating that an *external* issue may have caused the rupture.

- ***The MY 2010 Chevrolet Malibu Inflator Rupture Had a Different Failure Mode***

ARC's analysis of the MY 2010 Chevrolet Malibu inflator (equipped with a dual-level CADH inflator manufactured in 2010) was limited to visual inspection and review of production records. ARC was not granted full access to analyze the inflator.[46] The visual inspection provided sufficient information to determine that the root cause of the inflator rupture did not relate to blockage of the exit orifice. The inflator's exit orifice had no apparent evidence of blockage.[47] Furthermore, ARC observed that separation did not occur in the center support and that the center support was not elongated, as would be the case if the inflator had over pressurized due to a blockage of the exit orifice.[48] ARC further observed no evidence of impact to the inflator manifold, which would also evidence over pressurization.[49] In contrast, the inflator equipped in the MY 2010 Chevrolet Malibu separated near the initiator holders, which is inconsistent with a rupture due to over pressurization, the failure mode that would result from blockage of the exit orifice.[50] None of the other six field incidents involved the inflator separating in this area of the inflator. Accordingly, this failure was an isolated occurrence resulting from a failure mode that is distinct from NHTSA's posited root cause.[51]

[46] *See* Files at \ _Field Incidents - SGO 2015-02\2011 Malibu - McQuaide\Preliminary Analysis.pdf at p.3.

[47] *See* Files at \ _Field Incidents - SGO 2015-02\2011 Malibu - McQuaide\2011 Malibu\2011 Malibu DAB Inflator Update NHTSA 29jan19.pdf at p. 3.

[48] *Id*.

[49] *Id*.

[50] *See* Files at \ _Field Incidents - SGO 2015-02\2011 Malibu - McQuaide\Preliminary Analysis.pdf at p. 3, and _Field Incidents - SGO 2015-02\2011 Malibu - McQuaide\2011 Malibu\2011 Malibu DAB Inflator Update NHTSA 29jan19.pdf at p. 3.

[51] [redacted]

- ***<u>The MY 2002 Chrysler Town & Country is Remote in Time and Had a Unique Root Cause</u>***

Following the MY 2002 Chrysler Town & Country incident (which involved a dual-level CADH inflator manufactured in 2002), ARC similarly conducted a root cause analysis in accordance with the processes and procedures described above and concluded that the root cause of the inflator rupture was a manufacturing anomaly that resulted in *foreign material* (not weld slag) lodged in the inflator center support. For the CADH design, the center support is friction welded to the upper pressure-vessel. During this welding process, a pin is inserted into the top of the center support so that the flash created during the welding process forms in a shape and pattern that does not restrict or block the exit orifice. After the welding operation is complete, the pin (referred to as the flash-dam pin) is removed from the top of the center support of the recently welded piece and then inserted into the next unit on the manufacturing line that will go through this friction weld process.

ARC conducted a visual inspection of photographs of the exit orifice of the inflator, which indicated that a piece of metal had been lodged near the exit orifice, likely causing the inflator to rupture.[52] Photographs of the incident part depicts material lodged near the exit orifice that resulted in over pressurization. The metal piece appeared to be a foreign material and likely the flash-dam pin. During an evaluation of the center support, the metal fragment was dislodged from the exit orifice for inspection.

ARC understands that NHTSA came to possess the center support fragments involved in this field incident several years after the incident. However, the metal fragment that had been lodged near the exit orifice was lost and could not be tested to confirm its composition. The size, shape, and appearance of the material was inconsistent with weld flash and mostly likely was a portion of the flash-dam pin. The material was not "weld slag" that resulted from abnormal weld flash.

None of the other field ruptures ARC inspected had a similar object lodged near the exit orifice. Furthermore, this incident was one of the two subjects of the Field Recovery Program conducted by the manufacturers and NHTSA.[53] As discussed above, this test program demonstrated with 99% reliability at a 99% confidence level that no systemic defect existed in this specific population.

Because none of the other field ruptures involved a similar root cause, this incident is an isolated manufacturing anomaly with a distinct root cause. This conclusion is further supported by the results of the Field Recovery Program and the fact that there have been no additional ruptures in any vehicle with this same distinct root cause. As such, the MY 2002 Chrysler Town & Country

[52] *See* Files at \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL002\IMG032\ARC_SO_Response-0066674.pdf at p. 8-9, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000122.pdf at p. 27-28, and \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 27-28.

[53] The other subject was the MY 2004 Kia Optima (New Mexico incident), discussed below.

incident cannot support NHTSA's assertion that a systemic safety related defect exists across the entire 52 million inflator population.

- ***The MY 2004 Kia Optima is Remote in Time and Involved a Different Inflator Type and Root Cause***

The April 8, 2014, incident involving a MY 2004 Kia Optima (equipped with a single-level CADH inflator manufactured in 2003) can also be distinguished from the other incidents. This is the only U.S. incident involving a *single-level* CADH inflator. Further, ARC's analysis did not find evidence of internal blockage of the exit orifice and ruled out internal blockage as the likely root cause.

ARC obtained the parts involved in the incident and, in coordination with NHTSA, the Tier 1 supplier (Delphi), and Kia, conducted a physical inspection of the inflator. The inspection protocol was discussed and approved by NHTSA, Delphi, and Kia and included inspection and analysis of the propellant, the energetics sub-assembly, the exit orifice and safety burst disk, internal exit orifice friction weld, the manifold and diffuser, and the airbag module cover.

ARC also inspected the vehicle and found unburnt propellant on the floorboard of the vehicle, propellant quenched prior to completing the combustion process, and evidence to support that the propellant combustion in process occurred at a normal burn rate.[54] ARC further observed that the energetics sub-assembly retained its paper identification label, which would be consumed by heat in a typical deployment, indicating that separation occurred prior to complete combustion, and eliminating propellant degradation as a potential root cause.[55]

ARC's inspection identified unusual pattern on the burst disc and distortion of the inflator manifold that indicated that the failure may have been caused by an external obstruction, *not* an internal blockage or restriction of the exit orifice.[56] Specifically, ARC observed a flat shape and large amount of safety burst disk remaining, indicating limited movement of the burst disk, further indicating that the failure could have been caused by an external obstruction rather than an internal

[54] *See* Files at \ ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 36, \ARC – SPECIAL ORDER – 2017 – 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 6, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 6, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 6.

[55] *See* Files at \ ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 37, ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 7, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 7, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 7.

[56] *See* Files at \ ARC – SPECIAL ORDER – 2017 – 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 40, 42, \ARC – SPECIAL ORDER – 2017 – 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 8, 10, 16, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 8, 10, 16, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 8, 10, 16.

blockage or restriction.[57] In comparison, when inflators fail due to an internal blockage or restriction, the safety burst disk fully opens.

Furthermore, ARC observed that the manifold did not open in all quadrants equally, and that damage restricted the metal movement in the lower left quadrant, possibly due to restrictions from an external source.[58] The inflator manifold opened in an unusual pattern during rupture, which has only been seen in this incident with the 2004 Kia Optima. Similarly, the inflator's manifold cover appeared to have impression marks on the outside surface of the cover similar to the pattern for the air-bag cushion, which would have been directly above the outside cover.[59] The airbag module cover also had damage that aligned with the unusual opening pattern on the manifold cover and the impression marks.[60] (ARC also notes that over approximately 10 years of its life, the subject vehicle had seven owners.[61])

Most importantly here, ***ARC's inspection of the exit orifice and friction welds did not identify any evidence of internal blockage or restriction***.

Finally, we note that the Kia inflator was a focus of the successful field recovery program discussed above.

VII. Other Factors Belie the Agency's Initial Decision that a Defect Exists Across this Population

The Agency's Initial Decision ignores other key factors that undermine its conclusion that a population-wide defect exists.

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[57] *See* Files at \ ARC – SPECIAL ORDER – 2017 – 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 38, \ARC – SPECIAL ORDER – 2017 – 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 8, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 8, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 8.

[58] *See* Files at \ ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 40, 42, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 10, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 10, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 10.

[59] *See* Files at \ ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 41, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 11, 17-19, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 11, 17-19, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 11, 17-19.

[60] *See* Files at \ ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000001.pdf at p. 40, 42, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000047.pdf at p. 11, \ARC - SPECIAL ORDER - 2017 - 20170609-INITIAL\IMAGE CONFIDENTIAL001\IMAGES\IMG001\ARC_SO_Response-0000168.pdf at p. 11, and _Field Incidents - SGO 2015-02\2004 Kia Optima - CHAVEZ\NHTSA Briefing for Chavez Kia (1 March 2016).pdf at p. 11.

[61] *See* Files at \ARC-Special ORDER – 2017 -20170609-INITIAL\IMAGE CONFIDENTIAL002\IMG031\ARC_SO_Response-0065991.pdf.

- ***Testing Programs Related to the Two Non-U.S. Incidents Referenced by NHTSA Did Not Reveal Any Defects***

NHTSA's Initial Decision referred to two field incidents that occurred outside the United States: a July 11, 2016 *single-level* CADH (driver) rupture involving a MY 2009 Hyundai Elantra in Canada and an October 16, 2017 PH7 (passenger) rupture involving a MY 2015 Volkswagen Golf in Turkey.

The incident in a MY 2009 Hyundai Elantra in Canada does not support the assertion that a systemic safety-related defect exists across the broad population of 52 million inflators in the United States. Transport Canada permitted ARC to visually inspect the component from the Canadian incident. Based on the visual inspection, ARC concluded that the damage to the inflator was consistent with a failure of the structural integrity of the inflator's center support, potentially due to internal pressure in the inflator exceeding the module's structural tolerances. ARC was not able to determine the potential cause of the structural failure. Testing by Transport Canada refutes NHTSA's assertion. Following this incident, Transport Canada instituted a field recovery program to photograph, weigh, CT-scan, and test inflators manufactured from the same respective line and manufacturing period as the Elantra inflator.[62] Transport Canada worked with Hyundai to collect field parts, and it deployed approximately 600 inflators at both a Canadian laboratory and ARC, several of which were produced on the same day or the day after the Elantra inflator.[63] None of the inflators collected in this field recovery program ruptured during deployment. Additionally, none of the inflators incorporated in vehicles in the U.S. were manufactured on the same manufacturing line as the Canadian Elantra inflator. ARC manufactured the single-level CADH inflator used in the MY2009 Elantra on a line in ARC's manufacturing facility in Xi'an, China. This manufacturing line did not produce inflators intended for the U.S. market. ARC is not aware of any inflator ruptures on Hyundai vehicles in the United States.

Similarly, the incident involving a MY 2015 Volkswagen Golf in Turkey does not indicate a systemic defect across the full 52 million population of inflators identified in the Initial Decision. Following the event, Volkswagen Group conducted an onsite inspection of the field unit and observed a broken initiator support, coining, and extreme petaling due to over pressurization, but could not identify a root cause.[64] [redacted]

[62] *See* Files at _Technical Meetings\20170330 Meeting\NHTSA Presentation March 30 2017 - Transport Canada.pdf at p. 2, 4.

[63] *See Id*. at p. 13.

[64] *See* Files at \VW-AUDI\Quarterly Meeting Presentations\2015 Golf ARC Incident-NHTSA Quarterly Meeting_20180424_Final_Confidential.pdf at p. 4.

[65] *See* Files at _Field Incidents - SGO 2015-02\2015 Golf - Turkey Incident - PAB\20180912 - VW Qtr - ARC.pdf at p. 4.

[66] *Id*.

[67] *Id*. at p. 4, 8.

[redacted] Moreover, this single-level PH7 inflator (passenger), which ARC manufactured in its Knoxville plant, was not manufactured for use in the U.S. market.[70] Thus, a systemic defect in inflators used in the U.S. market cannot be inferred from a non-U.S. incident involving a non-U.S. inflator model.

- ***The MY 2016 Audi A3 Field Rupture is the Only PH7 Field Incident in the U.S.***

The December 18, 2021, incident involving a MY 2016 Audi A3 in California involved a PH7 (*passenger*) inflator that was manufactured on October 13, 2015 in Reynosa, Mexico. Following a visual inspection of this inflator, ARC could not confirm a root cause for this incident. Furthermore, there have been no other failures involving a *passenger-side* inflator in the United States, yet NHTSA's Initial Decision does not make any distinction between the PH7 (passenger-side) inflators and the CADH (driver-side) inflators.

The order of operations related to the friction welding of the PH7 and CADH are not the same. For the PH7 passenger side inflator, ARC welds the center support to the lower pressure vessel prior to welding the upper pressure vessel to the now-combined lower pressure vessel and center support. In comparison, for the CADH driver side inflator, the order of welding operations is reversed – the center support and upper pressure vessel are welded together followed by the lower pressure vessel being welded to the combined upper pressure vessel and center support. NHTSA's Initial Decision elided these differences in manufacturing processes and simply assumed that any differences are immaterial to its conclusion.

- ***Field Ruptures Involving Three Chevrolet Traverse Vehicles***

As the Agency is fully aware, three of the seven field failures from which NHTSA attempts to infer a safety-related defect across the entire 52 million inflator population in the U.S. involved MY 2015 – 2017 Chevrolet Traverse vehicles, for which recalls have already been issued:

  - The August 15, 2021, CADH rupture occurred in a MY 2015 Chevrolet Traverse in Michigan, with an inflator manufactured on November 16, 2016.
  - The October 20, 2021, CADH rupture occurred in a MY 2015 Chevrolet Traverse in Kentucky, with an inflator manufactured on October 5, 2014.
  - The March 22, 2023, CADH rupture occurred in a 2017 Chevrolet Traverse in Michigan, with an inflator manufactured on May 2, 2016.

On March 28, 2023, NHTSA advised ARC of the third alleged inflator rupture, and on April 25, 2023, ARC (along with NHTSA, General Motors, and the Tier 1 airbag module supplier) attended a vehicle inspection. ARC visually inspected the part and confirmed that the inflator

[68] *See* Files at \ _Field Incidents - SGO 2015-02\2015 Golf - Turkey Incident - PAB\GWP Report.pdf at p. 2-3, 5-11.

[69] *Id*. at 3.

[70] Of course, if the Agency intends to rely on these non-U.S. incidents to support its "non-*de minimis*" position, these incidents must then be considered in the context of the *full worldwide population* of ARC inflators (vs. the U.S. population of 52 million).

experienced a rupture. As this was the third such incident in the same vehicle make and model, we understand that NHTSA may have had concerns regarding this particular subset of the inflator population. The investigation into these inflator ruptures continues, but to date, ARC and General Motors have not identified a root cause.

Although no root cause of the three Traverse incidents has been identified, on May 10, 2023, General Motors submitted a Part 573 Defect Information Report "out of an abundance of caution" to initiate a recall of a population of approximately 995,085 vehicles that were equipped with the "MC" inflator variant produced by ARC. *See* Recall No. 23V334. According to General Motors, this recall expanded its two prior recalls related to the first and second Traverse incidents (i.e., Recall Nos. 21V782 and 22V246). The referenced vehicle population generally corresponds with an inflator production date range of approximately 2013 to 2016.

As explained in ARC's response to the RRL, ARC understands that General Motors recalled these vehicles out of an abundance of caution to address *potential* concerns about the inflators in this population of vehicles while the manufacturers continue their comprehensive analysis of these incidents, including the continuation of a test program being conducted by an independent third-party.

NHTSA has not provided any explanation, or even a theory, regarding the disparity in rupture events between Traverse vehicles and the other vehicles represented in the 52 million inflator population. As far as ARC is aware, the Agency has made no effort to evaluate the vehicle or module characteristics that could be a potential cause or contributing factor in these (or any other) ruptures, or to eliminate these characteristics as a cause or contributing factor.

VIII. NHTSA Lacks Authority to Order ARC to Submit a Defect Information Report

NHTSA's authority to require manufacturers to conduct safety recalls does not extend to manufacturers that supply original equipment for installation in new motor vehicles. Rather, the Safety Act and NHTSA's implementing regulations expressly provide that *vehicle manufacturers*, not the manufacturer of original equipment, shall have recall responsibility for any defects found in original equipment installed in their vehicles. Indeed, the Agency now concedes that ARC does not have recall responsibility: "To be clear, the vehicle manufacturers that used the subject inflators as original equipment would be legally responsible for carrying out any recalls of those inflators, including providing notice to vehicles owners and a free remedy." 88 *Fed. Reg.* at 62145-46.

Nonetheless, NHTSA argues that the recall responsibility of the vehicle manufacturers with respect to the subject inflators does not permit ARC to avoid its regulatory responsibilities: "That does not excuse ARC – the manufacturer and designer of the inflators – from complying with its own obligations under the Safety Act and regulations." *Id*. In the Agency's view, issuing the recall request letter to ARC was consistent both with the regulatory obligations that apply to ARC under 49 C.F.R. § 573.3(f), as well as NHTSA's practice. In support, NHTSA states that it previously sent a recall request letter to Takata and that it issues a "unique recall number" for defect information reports submitted by vehicle manufacturers as well as to reports by original equipment manufacturers. *See* 88 *Fed. Reg.* at 62145.

But NHTSA's issuance of a recall request letter to Takata does not establish a practice that somehow affirms NHTSA's authority to issue a recall request letter to ARC; nor does it create a legal precedent that cures the faulty procedural posture. Further, NHTSA's position that its usage of the word "recall" to encompass both the recall obligation in the Safety Act, as well as informational notices from original equipment suppliers under 49 C.F.R. § 573.3(f), conflates the statutory obligation placed on vehicle manufacturers (and manufacturers of replacement equipment) with the reporting requirements that NHTSA promulgated under its information gathering authority. Because NHTSA continues to blur these distinctions, ARC reiterates that NHTSA's recall request letter was procedurally faulty, and that NHTSA lacks authority to order ARC to recall the subject inflators.

Section 30118(c) contains the provision that requires a manufacturer to report to NHTSA when the manufacturer identifies a safety-related defect, but that provision expressly applies only to manufacturers of motor vehicles and replacement equipment: "A manufacturer of a motor vehicle or replacement equipment shall notify the Secretary . . . if the manufacturer – (1) learns the vehicle or equipment contains a defect and *decides in good faith* that the defect is related to motor vehicle safety; or (2) decides in good faith that the vehicle or equipment does not comply with an applicable motor vehicle safety standard . . ." (Emphasis added.) Manufacturers of original equipment are not covered by this requirement. The Safety Act's use of the phrase "decides in good faith" was intended to prevent a manufacturer of vehicles or replacement equipment from avoiding this statutory requirement by failing to "decide" its vehicles or equipment contained a defect related to motor vehicle safety. These manufacturers must act in good faith in making safety defect determinations.

Again, NHTSA concedes that ARC does not have a statutory obligation to recall the subject inflators. Any "legal obligation" upon ARC relative to submitting a defect information report extends solely from the reporting requirement specified in 49 C.F.R. § 573.3(f). But this information reporting requirement is not a statutory obligation, and NHTSA derives its authority to request the defect information report from its information gathering powers under a different statutory provision, 49 U.S.C. § 30166.

The rulemaking history of Part 573 explained the differences between the vehicle manufacturer's report and the original equipment manufacturer's report. "It is readily apparent that the substantive information provided by each will differ, and in each case the information is of independent importance to the agency." 40 Fed. Reg 43227 (Sep. 19, 1975) (Notice of Proposed Rulemaking). NHTSA continued that it would not require suppliers to report where the component was only supplied to one vehicle manufacturer because "a report filed by the vehicle manufacturer alone would be sufficient to describe the defective or noncomplying equipment and to indicate the scope of any recall and remedy campaign." *Id.* Part 573 requires reporting by original equipment manufacturers to facilitate the Agency's understanding of the scope of a potential issue. It does not extend the obligation the statute's good faith obligation to make a safety defect determination.

The current language of Part 573 defect reflects this purpose. Section 573.3(e) states that, for defects determined to exist in original equipment used in the vehicles of only one vehicle manufacturer, reporting to NHTSA may be made by either the vehicle manufacturer or the manufacturer of the original equipment. Section 573.3(f) states that, for defects determined to exist in original equipment used in the vehicles of two or more manufacturers, both the equipment

manufacturer and the affected vehicle manufacturers must submit a report to NHTSA. However, these provisions merely determine which entity or entities must *notify* NHTSA if a defect is determined to exist. The language does not identify what entity must make the determination. The obligation to *determine* whether a defect exists in the first instance remains with the vehicle manufacturers (and manufacturers of replacement equipment) (per 49 U.S.C. § 30118), for the practical reasons discussed in ARC's response to the RRL (at p. 9). The provisions of Part 573 do not themselves impose an obligation on the manufacturer of the original equipment to make such a determination or to conduct a safety recall. In fact, Section 573.5, "Defect and Noncompliance Responsibility," makes this abundantly clear: "(a) Each manufacturer of a motor vehicle shall be responsible for any safety-related defect or any noncompliance determined to exist in the vehicle or in any item of original equipment."

The owner notification and recall procedures contained in 49 C.F.R. Part 577 are consistent with this regulatory scheme. First, the "Application" section (§577.3) states that these procedures apply only to manufacturers of vehicles and replacement equipment. Second, Section 577.5, which sets forth the owner notification requirements, provides:

> (a) When a manufacturer of motor vehicles or replacement equipment *determines* that any motor vehicle or item of replacement equipment produced by the manufacturer contains a defect that relates to motor vehicle safety, or fails to conform to an applicable Federal motor vehicle safety standard, the manufacturer shall provide notification in accordance with paragraph (a) of § 577.7 . . ..

(Emphasis added). Part 577 makes no reference to a manufacturer of *original equipment* determining that its equipment contains a defect. This absence reflects NHTSA's acknowledgment that manufacturers of original equipment are not statutorily required to make such determinations, leaving it to the *vehicle* manufacturers to decide whether their vehicles containing that equipment have a safety defect.[71]

ARC recognizes that Part 573 does impose a limited information reporting obligation on manufacturers of original equipment "[i]n the case of a defect or noncompliance decided to exist in original equipment installed in the vehicles of more than one manufacturer." Section 573.3(f). But again, it does not impose an affirmative obligation for such manufacturers to make safety defect determinations or to conduct safety recalls. Indeed, the passive-voice construction of § 573.3(f) intentionally obscures who or what entity "decided" a defect or noncompliance exists in the equipment and extends the reporting requirement only *after* such a determination has already

[71] There are provisions elsewhere in NHTSA's regulations that apply to manufacturers of original equipment. For example, 49 C.F.R. § 579.5 requires all manufacturers of vehicles and motor vehicle equipment (both original and replacement) to provide copies of bulletins, notices, and other communications the manufacturer sends to two or more customers, dealers, manufacturers, etc. relating to non-safety related defects (§ 579.5(a)) or relating to non-safety campaigns (§ 579.5(b)). Additionally, NHTSA's early warning reporting regulation (adopted pursuant to the TREAD Act) requires all equipment manufacturers, including original equipment suppliers, to report to NHTSA certain fatality claims and notices received by the manufacturer. 49 C.F.R. § 579.27. These obligations are likewise intended to facilitate NHTSA's investigative function. Obtaining this information from these suppliers enables NHTSA to evaluate whether the vehicles in which the equipment is installed may contain a safety-related defect or noncompliance. However, none of these provisions extend defect determination or recall obligations to original equipment manufacturers.

been made. First, *ARC* has not decided that the 52 million subject inflators identified by NHTSA contain a defect that would trigger this reporting obligation. Second, ARC not aware of determinations by two or more *vehicle manufacturers* that would trigger this reporting obligation. And third, *NHTSA* has not made a final decision that would potentially trigger ARC's reporting obligation.

In any event, we note that the reporting requirements of Section 573 are merely informational, and that ARC has already provided extensive information to NHTSA related to inflator part numbers, customers, and volumes that constitute the salient information that would be required in a report submitted under Section 573.6, if one were to be required.

Finally, the statutory provisions that authorize NHTSA to make an initial or final decision that a safety defect exists, and to order a recall, apply only to manufacturers of motor vehicles and replacement equipment. *See* 49 U.S.C. § 30118(a) and (b). Likewise, these provisions only permit a "final decision that a *motor vehicle or replacement equipment* contains a defect related to motor vehicle safety." (49 USC 30118(b)(1) (emphasis added). These statutory provisions do not extend to original equipment or to NHTSA's proposal to "order ARC to comply with the obligation to file notice of the safety defect with the agency." 88 Fed. Reg. at 62146.

IX. Conclusion

ARC has not identified a systemic defect across the subject population of CADH and PH7 inflators. The number of field incidents spanning two decades of production with field exposure of up to 23 years for some of these inflators simply does not support a finding that a systemic defect exists in the approximately 52,000,000 inflators identified by NHTSA.

NHTSA's Initial Decision also fails to demonstrate that a systemic defect exists in this population. NHTSA bases its faulty decision on an overly simplistic framework: *i.e*., that seven ruptures (which more accurately would be five) out of a total inflator population of approximately 52 million (with an estimated 2.6 million field deployments) is a "significant" number of failures that establishes a systemic defect across this entire population. Tellingly, neither NHTSA's Initial Decision nor the Confidential File provide any peer data related to failure rates or deployment rates of other inflators on the market from which an appropriate performance comparison can be made. Nor does it provide general failure rates of other safety components to demonstrate that the number of field incidents here is "significant."

NHTSA has spent more than eight years investigating ARC inflators. ARC has submitted thousands of pages of information related to inflator designs, manufacturing processes, inflator testing, and root cause analysis. ARC has spent thousands of hours cooperating with NHTSA through responding to formal and informal requests, meeting in person and virtually, and holding discussions on the phone in order to educate the Agency on all aspects of ARC's inflators. In comparison, ARC is not aware of any independent testing or root cause analyses of reported incidents conducted by NHTSA. In effect, the Initial Decision's conclusion is a tautology: NHTSA views seven incidents as more than *de minimis* because NHTSA thinks that seven failures is too many.

This framing is overly simplistic and includes incidents that are demonstrably isolated, one-off incidents. Even accepting NHTSA's overly simplistic framework (which ARC does not), as unfortunate as any failure may be, seven failures is insignificant in a population of this magnitude. Indeed, it represents an unprecedented failure rate for establishing a defect in performance.

NHTSA ignores the many differences among the inflators within this population. NHTSA ignores that this population includes two distinct inflator families, the CADH inflators (driver) and the PH7 (passenger) inflators. It ignores that within the CADH family of inflators there are approximately 100 different inflator series that can vary in exit orifice diameter, propellant loads, inert gas volumes, manufacturing facility and line, Tier 1 and vehicle manufacturer customer, and production time period. It ignores that within the PH7 family of inflators there are approximately 50 different inflator series that can vary in propellant loads, inert gas volumes, manufacturing facility and line, Tier 1 and vehicle manufacturer customer, and production time period.

NHTSA also ignores that more than half of the vehicle manufacturers included in this Initial Decision have never experienced a field rupture. NHTSA ignores that Kia and Stellantis have one failure each that occurred in vehicles manufactured nearly 20 years ago and involved failures with distinct causes from each other and from other field incidents. NHTSA ignores that the incident in the Chevrolet Malibu involved a root cause that is distinct from the other six events and was not the result of over pressurization. NHTSA ignores thousands of deployments in field collection tests that have not had a single inflator rupture. And NHTSA ignores that GM recalled nearly 1 million vehicles equipped with MC-series CADH inflators. Yet, NHTSA simply assumes that all of these differences are immaterial without stating this assumption or explaining its rationale for this assumption.

By way of the Agency's proposed Final Decision, the Agency seeks to (i) order twelve OEMs to conduct a recall of vehicles equipped with the subject inflators, and (ii) order ARC to file a defect information report. ARC believes that neither order is supported by the facts contained in the Agency's investigation file or by applicable law and, therefore, ARC respectfully requests that the Agency decline to make a Final Decision in this matter.

Respectfully submitted,

ARC Automotive, Inc.

Appendix A

In Footnote 4 of the Initial Decision, NHTSA cited four "other" (*i.e.*, non-Takata related) defect information reports:

- NHTSA Recall No. 21E080 (KSS report related to its HPH-A inflator)
- NHTSA Recall No. 21E740 (likely a typo for 21E070, an FCA report related to KSS's HPH-A inflator)
- NHTSA Recall No. 21V766 (Volvo report related to Autoliv FG2 Twin inflator)
- NHTSA Recall No. 21V800 (Volvo report related to Autoliv FG2 inflator)

ARC reviewed the defect information reports for each of the cited recall numbers (as well as defect information reports covering the same inflator built during the same time periods) and determined the subject populations and reported ruptures. The chart below derives a failure rate (ruptures divided by population). Based on these numbers, the last column lists a parts per million number for inflator ruptures:

Recall No.	Manufacturer	Inflator Involved	Ruptures	Population	Failure Rate	PPM
21E080	KSS[1]	HPH-A	5	622,392	0.000803%	8.03
20V736	GM[2]	HPH-A	2	9,279	0.021554%	215.54
21V504	GM[3]	HPH-A	3	410,019	0.000732%	7.32
21E074	FCA[4]	HPH-A	1	5,373	0.018612%	186.12
21V632	FCA[5]	HPH-A	1	217,963	0.000459%	4.59
	Total Combined	**HPH-A Total**	**5**	**622,392**	**0.000803%**	**8.03**
21V766	Volvo	Autoliv FG2 Twin	1	259,383	0.000386%	3.86
21V800	Volvo	Autoliv FG2 Twin Inflators	1	194,546	0.000514%	5.14
	Total Combined	**Autoliv FG2 Twin**[6]	**1**	**453,929**	**0.000220%**	**2.20**

[1] KSS/JSS's defect information report identified six total field incidents. *See* Recall No. 21E080 Defect Information Report (573 report) at p. 3 (Chronology). The report identified one of these incidents as occurring outside the United States. *Id.* Because the population identified in KSS/JSS's 573 report presumably is limited to the U.S. population, this calculation excluded the foreign incident from the rate.

[2] Related to Recall No. 21E080.

[3] Related to Recall No. 21E080. Recall No. 21V504 expanded Recall No. 20V736 following identification of the root cause of failure (moisture introduced during manufacturing at KSS).

[4] Related to Recall No. 21E080.

[5] Related to Recall No. 21E080.

[6] Volvo's Part 573 reports for Recall No. 21V766 and Recall No. 21V800 each refer to an alleged rupture from the same lawsuit. *See* Recall No. 21V766 Defect Information Report at p. 3 (Chronology) and Recall No. 21V800 Defect Information Report at p. 3 (Chronology). Therefore, ARC assumes one field rupture preceded these recalls and the combined population of these recalls is the correct denominator for the failure rate.