# COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

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RANKING MEMBER

# Total Recall: Internal Documents Detail Takata's Broken Safety Culture and the Need for a More Effective Recall Process

## ADDENDUM

to

Danger Behind the Wheel: The Takata Airbag Crisis and How to Fix Our Broken Auto Recall Process
June 22, 2015

OFFICE OF OVERSIGHT AND INVESTIGATIONS
MINORITY STAFF REPORT

FEBRUARY 23, 2016

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## Exhibits

## I. Overview

In June 2015, Ranking Member Bill Nelson of the Senate Committee on Commerce, Science, and Transportation (Commerce Committee or Committee) released a report detailing the findings of the Committee minority staff's investigation into the Takata airbag recalls.[1] The report highlighted a number of serious safety and quality lapses that occurred years before vehicles were first recalled.

Since the Committee minority staff's report, the Takata airbag recalls have expanded, developing into an even bigger safety crisis. According to the National Highway Traffic Safety Administration (NHTSA), as of February 11, 2016, more than 29 million inflators, approximately 23 million vehicles, and fourteen automakers were impacted. The rupturing inflators have caused at least ten deaths, including nine in the U.S., and more than 100 injuries worldwide.[2] On November 3, 2015, NHTSA issued a Consent Order to Takata intended to reduce the risk of inflator ruptures by ordering the phase-out of the use of certain ammonium nitrate-based inflators and a Coordinated Remedy Order requiring automakers to prioritize recall repairs.[3]

In addition, the Commerce Committee has continued its investigation, reviewing documents and meeting with government regulators, representatives of Takata, and affected automakers. Emails and documents reviewed by Committee minority staff reveal a culture within Takata that, at a minimum, did not prioritize the safety of its products – and perhaps operated with an utter disregard for safety. Numerous internal documents and emails reference the widespread manipulation of inflator testing results by Takata employees. In a meeting with Committee staff, Takata representatives stated that the most serious data manipulation occurred in 2000; however, emails and documents reviewed by Committee minority staff demonstrate that these data integrity issues continued even in the years after the airbag recalls began, when fatalities had been linked to rupturing airbags. Takata representatives contend that there is no link between the instances of data manipulation and the defects that are the subject of recalls.

The following additional documents uncover instances of data manipulation and illustrate the alarming extent to which Takata lacked a culture that prioritized the safety of its products.

## II. Internal Takata Documents Reveal Instances of Safety Testing Data Manipulation and a Broken Safety Culture

In 2004, an engineering manager at Takata's Armada, Michigan Plant wrote regarding a specific model of inflator, "IF we continue to humor them by sending them DV/ PV [Design Validation/Process Validation] data so they can 'selectively modify' however they see fit, the

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[1] Senate Committee on Commerce, Science, and Transportation, *Danger Behind the Wheel: The Takata Airbag Crisis and How to Fix Our Broken Auto Recall Process*, 114th Cong. (2015).

[2] *E.g.*, *Takata Air-Bag Recall Expanded as 10th Death Reported*, Bloomberg Business (Jan. 22, 2016).

[3] National Highway Traffic Safety Administration, In re: EA15-001 Air Bag Inflator Rupture, Consent Order (Nov. 3, 2015); National Highway Traffic Safety Administration, In re: Docket No. NHTSA-2015-0055, Coordinated Remedy Order (Nov. 3, 2015).

data reported to our Asian Customers will always be suspect compared with what we will have on file here. How do we make this stop?"[4] Takata representatives stated to the Committee that they could not substantiate this allegation and found no evidence that manipulation of data related to this particular inflator actually occurred.

In a 2005 memorandum to Al Bernat, group vice president of engineering and quality assurance, from Bob Schubert, an airbag production engineer, titled "Data Integrity and the PSDI5 Inflator," Bob Schubert raised serious concerns regarding the manipulation of testing data, writing, "it has come to my attention that the integrity of validation reports coming from that organization [inflator engineering] is in serious question. The key issue is that the data obtained by ASL-IO [Automotive Systems Laboratory-Inflator Organization] is not being accurately reported to the end customer."[5]

Schubert continued the memo by detailing eight specific changes made to original validation reports. "These are not trivial changes in that data clearly in violation of the customer spec is altered to meet the customer spec," Schubert wrote, adding, "[t]he data presented by IO to the customer is a clear misrepresentation of the facts."[6] These misrepresentations included tests being reported as compliant when they were not and the total elimination of testing data from reports. At times, even when the data was within the customer specifications, it was changed or deleted "without explanation."[7]

The focus of this memo, the PSDI-5 inflator, was the subject of a recall in May 2015[8] and in January 2016,[9] impacting, in total, more than 4 million inflators.[10] Takata maintains that the examples of data manipulation highlighted by Schubert in his memo are not directly related to airbag inflator ruptures or the PSDI-5 inflators currently recalled. However, this manipulation, at a minimum, clearly illustrates a culture at Takata that failed to prioritize safety.

In 2006, an engineering manager sent an email to a fellow engineering manager and directors in his inflator engineering group in which he explained, "PV [Process Validation] Reports were cherry picked and [ ] was schmoozed to accept certain deviations. [ ] and [ ] intimidated the shit out of [ ] to 'create' these wonderful fictitious PV reports [. . .]. It is yet another mess-o-shit we will be handed with no real fix possible. The plant should have been

[4] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341066) [Exhibit A].

[5] Takata Response to Senate Commerce Committee (Dec. 8, 2015) (TKH-SCS&T00341576) [Exhibit B].

[6] *Id*.

[7] *Id*. Additionally, former Takata employees have alleged that in 2000 and 2004 Mr. Bernat ordered the destruction of airbag parts that had failed performance tests. *See Takata Discarded Evidence of Airbag Ruptures as Early as 2000*, New York Times (Feb. 12, 2016).

[8] National Highway Traffic Safety Administration, Recall 15V-284 (May 13, 2015).

[9] National Highway Traffic Safety Administration, Recall 16E-005 (Jan. 25, 2016).

[10] National Highway Traffic Safety Administration, Recall 15V-284 (May 13, 2015) (159,700 vehicles potentially involved); National Highway Traffic Safety Administration, Recall 16E-005 (Jan. 25, 2016) (3.9 million vehicles potentially involved).

screaming bloody murder long ago."[11] Earlier in the same email chain, a quality manager in Mexico wrote, "But the more important thing is our records, if we go back to our record we will find a lot of failures and if the customer request records or make an audit we will have a lot of failures (Some times 38% at week of failures)[.]"[12] According to Takata, these allegations were not based on first-hand knowledge of the alleged data manipulation and are overblown.

However, documents and emails provided to Committee minority staff show that Takata continued to manipulate and alter testing data in 2010, even after recalls in 2008 and 2009 and two fatalities in 2009 linked to rupturing inflators. A presentation on an experimental inflator, SDI-X 1.7, documented the deficiencies in this inflator, which included "significantly variable hydro-burst, significantly reduced safety factor, and significant weld quality issues."[13]

The presentation continued, "TKJ [Takata Japan] was informed of these results, but altered them and reported good results to Honda. Honda now wants to implement the design….."[14] One slide, with the heading "Reporting Fidelity," compares the actual data and the data reported to Honda, which shows that data was omitted and values were fabricated.[15]

It is disturbing that data integrity issues persisted at Takata, even after recalls and fatalities in 2008 and 2009. The last slide of the presentation acknowledges a recall, explaining, "Honda has concluded that the late design change on PSDI was a significant influence to the recall issue."[16] Takata informed the Committee that this experimental inflator design never went into production.

Furthermore, documents reviewed by Committee minority staff reveal that a director within Takata's global inflator/propellant organization raised ethical concerns to a senior vice president, who, according to the director's notes, failed to address the concerns. More than four years after the first recall of Takata airbags, the director was asked in March 2013 to present information to an automaker about the range of vehicles affected by a recall. In his personal notes, which Committee minority staff reviewed, the director wrote, "I told the group that it seemed clear to me that the information used to set the range of the recall was, in one case, technically unsupportable, and in the other case, a likely misrepresentation of the production records."[17] Later in his notes, he explained, "The basis for limiting the 2002 recall population is false. It is a blatant misrepresentation of the production records"[18] and "will either generate

[11] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341071) [Exhibit C].

[12] *Id*.

[13] Takata Response to Senate Commerce Committee (Dec. 8, 2015) (TKH-SCS&T00341492) [Exhibit D].

[14] *Id*.

[15] Takata Response to Senate Commerce Committee (Dec. 8, 2015) (TKH-SCS&T00341495) [Exhibit D].

[16] Takata Response to Senate Commerce Committee (Dec. 8, 2015) (TKH-SCS&T00341499) [Exhibit D].

[17] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341394) [Exhibit E].

[18] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341400) [Exhibit E].

unnecessary recall population or fail to recall product that is suspect," which he deemed a potential "violation of our moral obligation to protect the public."[19]

According to the director's notes, he raised all these concerns with Takata's senior vice president of quality assurance and refused to sit in any meeting in which the basis of the recall boundary would be discussed.[20] In response, his senior colleague conveyed that someone else would be going in his place to present the basis for the recall to the automaker, but he did not indicate that anything would be done to correct the issues that had been raised.[21] The engineer also felt required to report his concerns to the VP of Human Resources in accordance with the Corporate Governance document.[22]

## III. Conclusion

Committee minority staff believe that the emails and other documents referenced above represent, at the very least, a failure by Takata to ensure the integrity of its testing of inflators or to respond appropriately to ethical concerns raised to senior Takata personnel. These apparent testing manipulations and the failure by Takata to address them raise concerns about the safety of all ammonium nitrate-based Takata airbag inflators. Accordingly, Committee minority staff recommend the following steps be taken to further protect consumers impacted by potentially defective Takata airbag inflators.

## IV. Minority Staff Recommendations

A. Phase Out All Takata Ammonium Nitrate-Based Inflator Production As Soon As Possible

- Under the Consent Order, Takata is permitted to continue to manufacture and sell, under existing contracts, non-desiccated ammonium nitrate-based inflators through the end of 2018. Additionally, Takata is permitted to continue to manufacture and sell, under existing contracts, desiccated ammonium nitrate-based inflators indefinitely.[23]
- To protect the public from an unreasonable risk to safety, Committee minority staff believe that NHTSA should immediately exercise its authority under the Consent Order and Coordinated Remedy to accelerate the phase-out schedule for non-desiccated ammonium nitrate-based inflators and to create a phase-out schedule for desiccated ammonium nitrate-based inflators.

[19] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341404) [Exhibit E].

[20] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341405) [Exhibit E].

[21] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341407) [Exhibit E].

[22] Takata Response to Senate Commerce Committee (Nov. 23, 2015) (TKH-SCS&T00341409) [Exhibit E].

[23] National Highway Traffic Safety Administration, In re: EA15-001 Air Bag Inflator Rupture, Consent Order, pp. 11-14 (Nov. 2, 2015).

B. NHTSA Must Take All Appropriate Action to Accelerate Production of Non-Ammonium Nitrate-Based Replacement Inflators

- A reported shortage of replacement parts has led to substantial delays in the availability of replacement parts for many consumers seeking to fix recalled vehicles.[24]
- Committee minority staff recommend that NHTSA use all existing authority to maximize the expedited production of non-ammonium nitrate-based inflators.

C. NHTSA Must More Effectively Manage the Recall Process to Avoid Consumer Confusion

- While NHTSA has issued a Consent Order and Coordinated Remedy Order in an effort to provide a "global" fix to the Takata airbag crisis, failures by NHTSA and the automakers to effectively coordinate when additional recalls are announced are causing substantial consumer confusion.[25]
- Committee minority staff believe that NHTSA, in coordination with the Takata independent monitor, should more effectively manage the announcement of recalls and recall remedies.

[24] *See Takata Shares Nosedive After Another Death Linked to Faulty Airbags*, CNNMoney (Jan. 25, 2016); *Takata's Faulty Airbags Still Exact Toll as Recalls Lag*, New York Times (Jan. 30, 2016).

[25] *See German Makers Recall 2.3 Million U.S. Vehicles for Takata Bags*, Bloomberg (Feb. 10, 2016); *Latest Airbag Advice Confuses Drivers*, NBC4 Southern California (Feb. 16, 2016).

**From:** [redacted]
**To:** [redacted]
**CC:** [redacted]
**Sent:** 8/23/2004 2:03:17 PM
**Subject:** FW: PSPI-6C

[redacted],

Hate to pile more crap on your plate, but [redacted] and I agreed to forward this to you. The scenario below speaks to how the data package shown to the Asian Customer may or may not reflect final reports here.

Not exactly sure how to stop this flow of data unless we flat out tell them NO. Then, I would assume, Mr. [redacted] would be asked to get involved.

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**From:** [redacted]
**Sent:** Monday, August 23, 2004 11:50 AM
**To:** [redacted]
**Subject:** FW: PSPI-6C
**Importance:** High

IF we continue to humor them by sending them DV/ PV data so they can "selectively modify" however they see fit, the data reported to our Asian Customers will always be suspect compared with what we will have on file here. How do we make this stop?

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**From:** [redacted]
**Sent:** Monday, August 23, 2004 9:54 AM
**To:** [redacted]; [redacted]; [redacted]; [redacted]
**Subject:** PSPI-6C
**Importance:** High

Gentlemen,
I just had an interesting conversation with [redacted] a few minutes ago concerning PSPI-6C data.

As you may already know, [redacted] previously sent out the remaining parts from the aborted DV attempted under [redacted]. 60 of these parts went through the [redacted] Thermal Shock requirements and are being tested in the shop right now. This data is supposed to be back-up data to show [redacted], on August 25th, while we get the actual DV running.

Mr. [redacted] has strongly asked me put all of the data in the [redacted] summary format (typically for DV and PV reports as I understand). He also asked me for a cover sheet. I could not tell if this was his dry humor or his arrogance, but you all can see where it's going.

As data comes in I have been asked to forward it to [redacted], [redacted] and [redacted]. I will also keep everyone else in the loop. By the way, some of the data looks good other parts not so good.

[redacted]

# Memorandum

**To:** Al Bernat

**From:** Bob Schubert

COPY TO BERNAT ON 1/4/05

**Date:** January 6, 2005

**Re:** Data Integrity and the PSDI5 Inflator

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## INTRODUCTION

In the course of my normal duties involving the inflator engineering organization, it has come to my attention that the integrity of validation reports coming from that organization is in serious question. The key issue is that the data obtained by ASL-IO is not being accurately reported to the end customer.

To support this contention, I offer the following documentary evidence. Appendix A contains a copy of the PV report written by the engineers at ASL. Appendix B contains that same report, re-written for transmission to the end customer.

This second report was portrayed as a "translation" for the Japanese customer, but in fact, the only page with Japanese characters on it is the cover page. The balance of the report is in English. In the following paragraphs, I will detail the changes made to the original report. These are not trivial changes in that data clearly in violation of the customer spec is altered to meet the customer spec.

## DATA REVIEW

In the upcoming pages, I will detail each instance of data alteration. For convenience, I've labeled each item with a number designator, and tabbed the report with the same number. Item 1 will be numbered 1A for the ASL US report, and 1B for the Japan report. In some cases, there will not be a corresponding "B" tab, since some data was eliminated from the Japan report.

## SUMMARY

The data presented by IO to the customer is a clear misrepresentation of the facts.

- The effluents are reported as compliant when they are not.
- The particulates are reported as compliant when they are not.
- The safety factor is reported as higher than measured, and is not representative of the actual safety factor since the max pressure condition (~10 ms delay) is not reported.
- 73 tests are eliminated from the US report without explanation.

<table>
<tr><th>Tab No.</th><th>US report</th><th>Japan report</th></tr>
<tr><td>1 (A only)</td><td>The US report states: Baseline Group 2… did not pass the particulate specification. All effluent tests did not pass one or more of the …specification values.</td><td>No mention of a failure to meet spec.</td></tr>
<tr><td>2</td><td>Against a specification value of 1000 mg, the following particulate measurements reported for six tests:<br><br>Test # Value Judgment<br>99121 1478 mg FAIL<br>99122 1609 mg FAIL<br>99123 1201 mg FAIL<br>99115 1237 mg FAIL<br>99116 1273 mg FAIL<br>99117 1729 mg FAIL</td><td>No data reported for any of the tests noted in the US report. Data added to the following tests:<br><br>Test # Value Judgment<br>99118 776 mg PASS<br>99119 709 mg PASS<br>99120 898 mg. PASS</td></tr>
<tr><td>3</td><td>No particulate data reported for tests 99148, 99149, or 99150.</td><td>Particulate data reported as follows:<br>Test # Value Judgment<br>99148 841 mg PASS<br>99149 547 mg PASS<br>99150 562 mg PASS</td></tr>
<tr><td>4</td><td>Regarding effluents gasses, the following values were obtained for the noted tests:<br><br>Via GasTec tubes<br><br>Test CO NO2 SO2 CL2 NH3 P/F<br>99154 190 .25 .04 0.25 25 FAIL<br>99155 220 .25 .04 0.25 25 FAIL<br>99156 220 .25 .04 0.25 25 FAIL<br>99157 230 1.0 .18 1.25 40 FAIL<br>99158 230 .5 .13 1.0 30 FAIL<br>99159 210 .75 .09 0.5 25 FAIL<br><br>Via FTIR<br><br>Test CO NO2 SO2 CL2 NH3 P/F<br>99154 220.2 0.06 .03 0 23.7 FAIL<br>99155 229.4 0.05 .03 0 25.0 FAIL<br>99156 196.6 0.20 .04 0 26.8 FAIL<br>99157 220.6 0.43 .05 0 28.2 FAIL<br>99158 230.4 0.40 .05 0 26.8 FAIL<br>99159 231.4 0.31 .04 0 27.0 FAIL</td><td>The Japan report contains the following data. There is no note as to whether it is GasTec or FTIR data.<br><br>Test CO NO2 SO2 CL2 NH3 P/F<br>99154 175.6 0 0 0 33.1 PASS<br>99155 140.0 0 0 0 27.5 PASS<br>99156 156.5 0 0 0 28.0 PASS<br>99157 168.6 .2 0 0 31.6 PASS<br>99158 142.1 .1 0 0 24.6 PASS<br>99159 135.7 .1 0 0 28.6 PASS<br><br>There is other effluent data altered for NO and HCN. Please refer to the actual reports.</td></tr>
</table>

<table>
<tr><td>5 (A only)</td><td>ASL reported effluent values on an additional 24 tests. 23 of the test were judged FAIL, and for one, no data is reported.</td><td>The Japan report includes no more effluent evaluations.</td></tr>
<tr><td>6</td><td>
<table>
<tr><th></th><th>US</th></tr>
<tr><td rowspan="15">Note: Both the US and Japan data in this report has been sorted in decending order of magnitude.</td><td>60.25</td></tr>
<tr><td>59.04</td></tr>
<tr><td>58.72</td></tr>
<tr><td>58.63</td></tr>
<tr><td>58.17</td></tr>
<tr><td>56.99</td></tr>
<tr><td>55.62</td></tr>
<tr><td>54.99</td></tr>
<tr><td>54.12</td></tr>
<tr><td>54.07</td></tr>
<tr><td>53.91</td></tr>
<tr><td>53.29</td></tr>
<tr><td>52.83</td></tr>
<tr><td>52.54</td></tr>
<tr><td>52.30</td></tr>
<tr><td>51.93</td></tr>
<tr><td>51.60</td></tr>
<tr><td>51.16</td></tr>
<tr><td>50.97</td></tr>
<tr><td>49.27</td></tr>
<tr><td>average</td><td>54.52</td></tr>
<tr><td>std dev</td><td>3.16</td></tr>
<tr><td>+3 sigma</td><td>63.99</td></tr>
<tr><td>Burst Pressure</td><td>94.00</td></tr>
<tr><td>Safety Factor</td><td>1.47</td></tr>
</table>
<br>In both the US and Japan reports, the data meets the Customer requirement for safety factor. The Japan data is altered to meet a 1.5 factor of safety required by other customers, not the customer for whom the report was written.<br><br>The max pressure was evaluated at simultaneous conditions, when the true max probably occurs at a delay of around 8-10 ms.</td><td>
<table>
<tr><th>Japan</th></tr>
<tr><td>59.20</td></tr>
<tr><td>58.00</td></tr>
<tr><td>58.00</td></tr>
<tr><td>57.80</td></tr>
<tr><td>57.20</td></tr>
<tr><td>56.20</td></tr>
<tr><td>54.80</td></tr>
<tr><td>54.70</td></tr>
<tr><td>54.20</td></tr>
<tr><td>53.60</td></tr>
<tr><td>53.50</td></tr>
<tr><td>53.40</td></tr>
<tr><td>52.90</td></tr>
<tr><td>52.40</td></tr>
<tr><td>52.30</td></tr>
<tr><td>52.20</td></tr>
<tr><td>51.90</td></tr>
<tr><td>51.70</td></tr>
<tr><td>51.70</td></tr>
<tr><td>50.70</td></tr>
<tr><td>54.32</td></tr>
<tr><td>2.56</td></tr>
<tr><td>61.99</td></tr>
<tr><td>94.00</td></tr>
<tr><td>1.52</td></tr>
</table>
</td></tr>
<tr><td>7</td><td>The US test matrix shows 265 tests.</td><td>The Japan test matrix shows 192 tests.</td></tr>
<tr><td>8</td><td>Ballistic data is reported for test number 99112.</td><td>Ballistic data is eliminated for test number 99112. Noted as NA on the test summary. This test is a high-flyer on ballistics, but meets the reported spec.</td></tr>
</table>

**From:** [redacted]
**To:** [redacted]; [redacted]; [redacted]
**Sent:** 10/19/2006 9:00:37 AM
**Subject:** RE: DCX Ballistic LAT.ppt

I have asked [redacted] for all of the DV (if any) and PV Reports.

One root cause of the challenges is the fact that we signed up to meet USCAR gates with an inflator that is not capable.
PV Reports were cherry picked and [redacted] was schmoozed to accept certain deviations. [redacted] and [redacted] intimidated the shit out of [redacted] to "create" these wonderful fictitious PV reports. The "integral flange" on these parts also contributes to variability.

It is yet another mess-o-shit we will be handed with no real fix possible.
The plant should have been screaming bloody murder long ago.

When we launched these programs in LaGrange we were on the phone with [redacted] multiple times each week because he could not meet gates. That's how far back this story goes.

Looking at [redacted]' charts, it appears there may be some process and some testing challenges as well- percentages are all over the place.

Let's talk.

-----Original Message-----
From: [redacted]
Sent: Wednesday, October 18, 2006 11:04 PM
To: [redacted]
Cc: [redacted]
Subject: Re: DCX Ballistic LAT.ppt

LAT procedures need to be revisited right now.
[redacted]: I will be in MON next week. Set up a meeting.
[redacted]: We need to talk.

-----Original Message-----
From: [redacted]
To: [redacted]
CC: [redacted]
Sent: Wed Oct 18 21:21:21 2006
Subject: FW:DCX Ballistic LAT.ppt

[redacted] this problem is happening since these two programs started ([redacted]) More that 2 Years ago (These two programs started at [redacted]), see bellow information regarding the extra cost that this represent only for Ballistic Re-Test and we are not considering additional costs like (Logistics, Procedures, Over time, Storage, etc…)

But the more important thing is our records, if we go back to our record we will find a lot of failures and if the customer request records or make an audit we will have a lot of failures (Some times 38% at week of failures)

Let us know if you need any additional information

Note: This information is from January '06 to October '06

Regards

BALLISTIC LAT FAULTS (JAN-OCT 06)

PRODUCT

CODE

Total (pieces)

total cost (dollars)

[redacted]

[redacted]

[redacted]

e-mail, permanently delete any electronic copies of this communication and destroy any paper copies.
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From: [redacted]
Sent: Wednesday, October 18, 2006 10:33 AM
To: [redacted]
Cc: [redacted]
Subject: RE: DCX Ballistic LAT.ppt

Since when do we have this issue?

How much money does this represent?

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From: [redacted]
Sent: Wednesday, October 18, 2006 2:32 AM
To: [redacted]
Cc: [redacted]
Subject: FW: DCX Ballistic LAT.ppt

FYI,

We are having a lot of Ballistics failures especially at PSDI-4 [redacted]

We really need your support on this from the design side we are Re Testing a lot of times.

Note: PSPI [redacted] is about same failure rate

Regards

TAKATA

SDI-X 1.7 Base Failure Hydro-burst

Quality First

# Issue

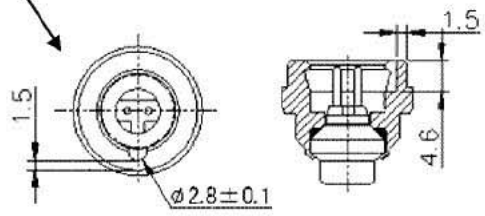
- TKH has been asked to implement a modified SDI-X 1.7 design to force the failure mode to the base side.
- TKH has evaluated a modified design, using stronger cap material and a notched body bore seal.
- The results of the evaluation showed a significantly variable hydro-burst, significantly reduced safety factor, and significant weld quality issues.
- TKJ was informed of these results, but altered them and reported good results to Honda.
- Honda now wants to implement the design.....

# Proposed Notch Configuration

Hydro-burst test series 100573E was conducted to evaluate design changes to shift the failure mode from the cap orifice to the base of the SDI-X 1.7. The following issues have been identified:

- The information between TKH and TKJ data is not consistent
  - Both data sets are sorted from low to high to illustrate the differences in the data sets
  - TKJ did not indicate the JTR number or test numbers for their data set
  - TKH does not have the supporting TKJ data
  - TKJ data provides a lower standard deviation resulting in a higher safety factor.
- TKJ has informed TKH that Honda has already accepted the proposed design. TKH is being asked to implement.

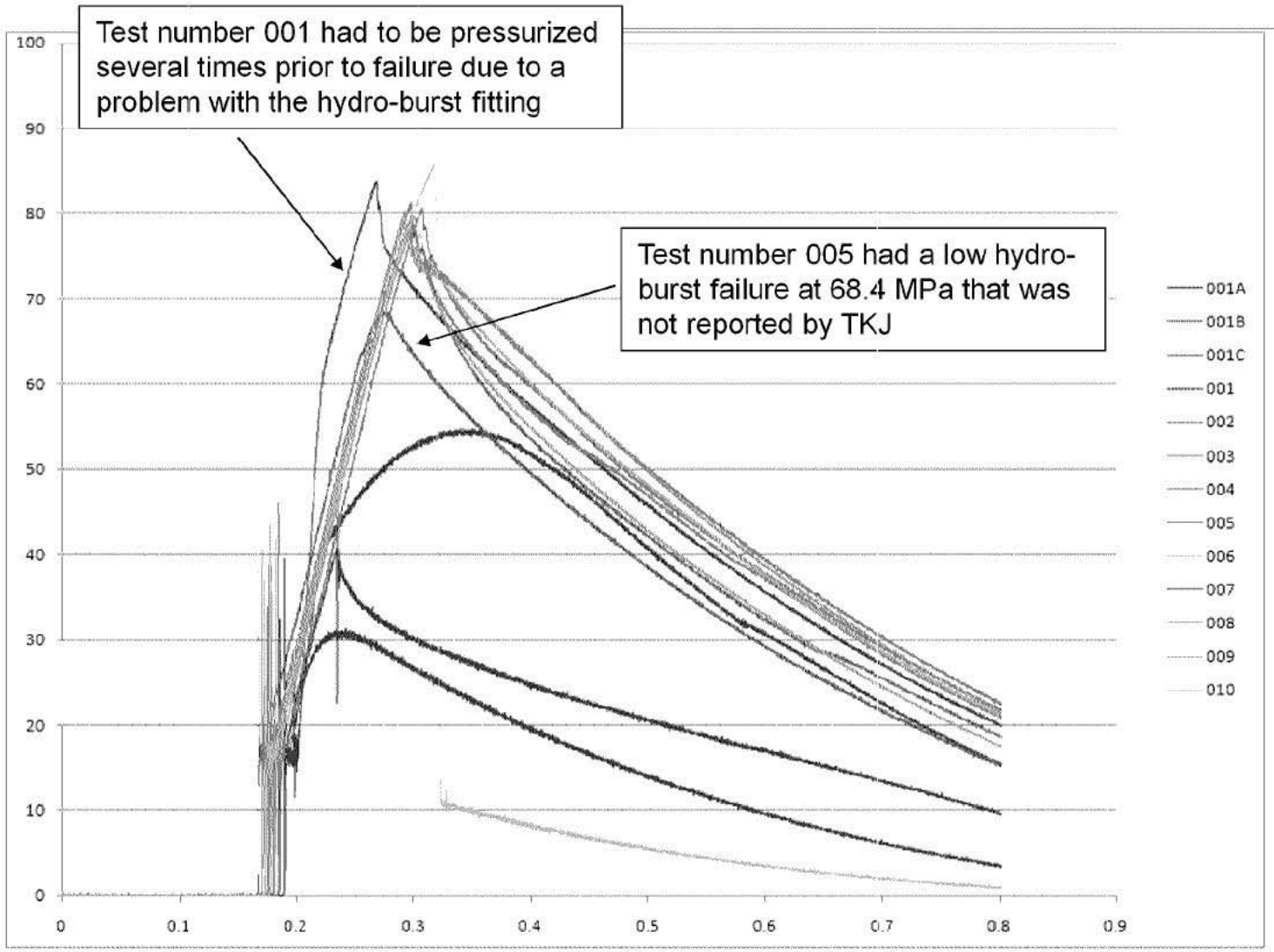
| JTR Test Number | JTR Hydro-burst BBS w/ Notch Data (MPa) | TKJ Test Number | TKJ Data (MPa) | Failure Mode |
|---|---|---|---|---|
| 100573E005 | 68.4 | N/A | 78.2 | BBS Notch |
| 100573E003 | 78.2 | | 78.4 | BBS Notch |
| 100573E009 | 78.8 | | 78.8 | BBS Notch |
| 100573E006 | 79.8 | | 79.8 | BBS Notch |
| 100573E007 | 79.8 | | 79.8 | BBS Notch |
| 100573E008 | 80.4 | | 79.8 | BBS Notch |
| 100573E004 | 80.8 | | 80.4 | BBS Notch |
| 100573E002 | 81.4 | | 80.4 | BBS Notch |
| 100573E001 | 83.9 | | 80.8 | BBS Notch |
| 100573E010 | 85.9 | | 81.4 | BBS Notch |
| Average | 79.7 | | 79.8 | |
| Standard Deviation | 4.61 | | 1.04 | |
| Ave - 3 Sigma | 65.88 | | 76.65 | |




Notch to be used in conjunction with a JFE980 cap (new cap material with a new corner radius)

TAKATA

TKH-AIO






Quality First

# Reporting Fidelity

| Actual Data | | Reported Data | |
|---|---|---|---|
| 68.4 | Data not reported | | |
| 78.2 | → | 78.2 | |
| | | 78.4 | Fabricated Value |
| 78.8 | → | 78.8 | |
| 79.8 | → | 79.8 | |
| 79.8 | → | 79.8 | |
| | | 79.8 | Fabricated Value |
| 80.4 | → | 80.4 | |
| | | 80.4 | Fabricated Value |
| 80.8 | → | 80.8 | |
| 81.4 | → | 81.4 | |
| 83.9 | Data not reported | | |
| 85.9 | Data not reported | | |
| 79.7 | Mean | 79.8 | |
| 4.61 | Std. Dev. | 1.04 | |
| 65.9 | -3 sigma | 76.7 | |

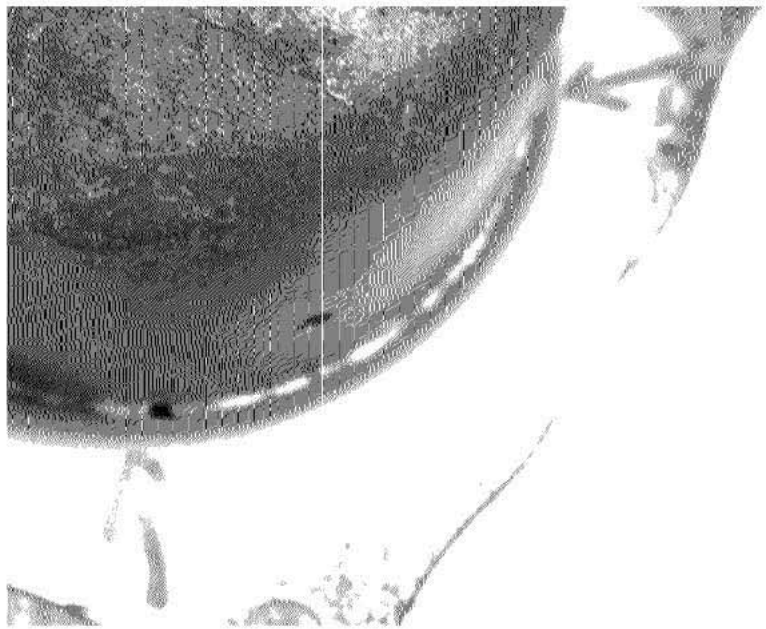
# Effect of Altered Data

- For the SDI-X 1.7, the following calculations are made:

| | |
|---|---|
| Operating Pressure: | mean – 40.8 MPA, $\sigma$ = 0.71, +3$\sigma$ = 43.0 |
| TRUE Hydroburst : | mean – 79.7 MPA, $\sigma$ = 4.6, +3$\sigma$ = 65.9 |
| Altered Hydroburst : | mean – 79.8 MPA, $\sigma$ = 1.04, +3$\sigma$ = 76.7 |
| TRUE SF | 1.53 |
| Altered SF | 1.83 |
| TRUE Honda SF | 8.33 |
| Altered Honda SF | 31.1 |

# Cap Material Issues

- New cap material proposed is causing significant welding issues. Tests at Monclova have resulted in very poor quality welds.
  - More evaluations needed to determine if the new material can be robustly welded.



# Conclusion

- Honda has requested a late design change that represents a significant modification to the inflator structure and materials in order to alter the failure mode.
- TKH has performed testing on the design (new cap material and new body bore seal notch). The conclusions were that we could not support the change.
- TKJ modified the TKH data, eliminating low and high results and substituting values closer to the mean, thus significant reducing the standard deviation (lower by 77%).
  - SF overstated (1.83 reported vs. 1.53 actual).
  - Honda SF overstated (31.1 reported vs. 8.3 actual)
- TKJ presented their fabricated data to Honda, who accepted the design change. TKJ informed TKH that they must proceed with the design, in spite of the fact that TKH stated that the modification would not work. TKJ states that all we need is hydro-burst, 85C PC, bonfire and connector pull strength as a DV to proceed.

TAKATA



# Link to Recurrence Prevention

- Honda has concluded that the late design change on PSDI was a significant influence to the recall issue.
- Takata has committed that TKJ would take a more active role in new launches to prevent late changes.
  - This is a late change pushed by TKJ.
  - The data to support the change has been fabricated by TKJ.
- TKJ reported the fabricated data to HGT, who accepted the design. Therefore, per TKJ, we must proceed since Honda has already approved.
- The design has a high likelihood of failure. There is no DOT or BAM on this design. There is no data to support this design.
- Recurrence prevention has failed.



Quality First

# Summary

# Timeline and Important Facts

- On March 12, 2013 I received a "draft" report titled To: [redacted]; Passenger Seat Inflator (SPI/PSPI/PSPIL), March 11, 2013, Takata Corporation, Quality Department
- This is a copy of the materials presented to [redacted] covering the affected range of recall for the passenger side product.
- On that same day, I was asked to use these materials as a basis for presentations to other customers – specifically [redacted] – to discuss how their products might are affected by the recall.

# Timeline, continued

- On Monday, March 18 2013, I met with [redacted], [redacted] and [redacted]. In this meeting I expressed grave concern over the contents of the presentation.
- Specifically, I told the group that it seemed clear to me that the information used to set the range of the recall was, in one case, technically unsupportable, and in the other case, a likely misrepresentation of the production records. In this meeting I expressed that if my initial concerns about the material proved true, that I would not participate in creating any materials based on the presentation in hand, nor would I sit in any meeting with customers where these materials were discussed.

# Timeline, continued

- On Tuesday, March 19, I received an e-mail from [redacted] with a draft outline of the planned customer materials we were to create.
- This draft outline included items defining the affected range.
- By Friday, March 22 I completed a review of the assumptions in the definition of the range.

# Timeline, continued

- On Monday, March 25, I attended a meeting with [redacted], [redacted] and [redacted]. I told the group that I had completed my analysis of the draft customer materials. I told the group that it was clear that the material was, in one case, technically unsupportable, and in the other, a clear misrepresentation of the production records.
- The following pages detail my concerns.

# Basis for the Recall Range

- The materials presented to [redacted] indicate two facts that influence the range of product to be recalled.
  - 1) Product produced when it can not be guaranteed that the wafer press auto-reject system was functioning.
  - 2) Product produced after inflator-line shutdowns prior to the hiring of a full-time propellant handler because the operators could have improperly stored propellant over the weekend, allowing extra exposure to moisture.
- Based on knowledge and belief, the [redacted] presentation has already occurred with the materials in question, so it is discoverable in any investigation by NHTSA. As such, all subsequent materials created and presented to other customers need to be consistent with the initial [redacted] materials.

# Conclusion One

- The basis for assuming that the range of recall is defined by the use or non-use of the Auto-reject function on the press is false.
  - The auto-reject function, in the simplest terms, rejects wafers that are either low or high weight.
    - Low weight = low force = low density
  - As such, if it were the cause, ***all low density parts from the field would also be low weight***.
  - This is clearly false. ***Almost none*** of the low density field return wafers examined by the author are low weight. To the contrary, there are full inflators demonstrating low density where all the wafers measure within the original tolerance band for weight.
- Therefore, by the evidence in hand, it is clear that the auto-reject function presence or absence is unrelated to any density degradation in the field.

[REDACTED]

# Conclusion Two

- The basis for limiting the 2002 recall population is false. It is a blatant misrepresentation of the production records.
  - The presentation shows that the three Toyota field events from 2002 were produced after a weekend or mid-week shutdown period.
  - The presentation states or implies that the propellant was brought to the line before the shutdown and mishandled over the shutdown.
- This is false. In one of the cases, there was no shutdown – production was continuous even though the presentation says it was not. In the other two, the propellant was first brought to the line 4-18 hours after the shutdown. Further, there were one to three intervening lots used after the shutdown and before the introduction of the event lot. ***In no case does the manufacturing record indicate that an event lot was introduced to the line before the shutdown, Therefore, the proposed mishandling of propellant did not occur in any of the known events.***

[REDACTED]

[REDACTED]

[REDACTED]

# Effect of relying on the presented Theories

- Product will be recalled over the range where auto-reject is not guaranteed. Since this is demonstrably not the cause of low density in the field returns, it is likely that the recall population is inappropriate.
- Product will be recalled for the sole reason that it was made after a shutdown. Since the information presented is false, relying on this will either generate unnecessary recall population or fail to recall product that is suspect.
- In both these cases, this is either a violation of fiduciary responsibilities in that money will be spent that is not necessary, or it is a violation of our moral obligation to protect the public, as suspect product may not be properly recovered from the field.

# Timeline, continued

- During the March 25 meeting, I told [redacted] in no uncertain terms that, based on the concerns outlined, I would not participate in creating any materials based on the presentation provided by TKJ and would not sit in any customer meeting where the basis of the recall boundary was discussed.
- As the purpose of the meeting was to discuss the progress on creating a presentation to [redacted], I specifically declined to participate in that exercise. [redacted] informed me that he would discuss the situation with [redacted] that evening.

# Timeline, continued

- On the morning of March 26, I sent [redacted] a note inquiring about his conversation with [redacted]. The response is below:

RE: Your call

[redacted]

Tue 3/26/2013 1:03 PM

[redacted]

[redacted]

[redacted] understands all the points ... with alternate views, chief issue is definition of boundary ... also we have a high sensitivity with [redacted] based on previous actions taken against them

[redacted]

From: [redacted]

Sent: Tuesday, March 26, 2013 9:25 AM

To: [redacted]

Subject: Your call

[redacted] information from your planned conversation with [redacted]

# Timeline, continued

- Based on the contents of the e-mail from [redacted], it is clear that he discussed my specific concerns – "he understands all the points…chief issue is the definition of the boundary"
- The response was that I would not be going to [redacted]– not that the issues would be corrected.

# Timeline, continued

- On the late afternoon of March 26, I received a call from [redacted]. In it, he informed me that [redacted] spent several hours working to convince him ([redacted]) that he should prepare and make the [redacted] presentation. [redacted] said that he never agreed to take on that role, but after the conversation while on the way out of the building, [redacted] said to him "you've made the right choice."
- In my conversation with [redacted], he said he did not make a choice, but felt he was getting railroaded into doing the presentation. Later that evening, he forwarded an e-mail from [redacted] to [redacted] indicating that he ([redacted]) had agreed to make the [redacted] presentation. [redacted] was clearly upset at the turn of events.

[redacted]

**Fwd: [redacted] Explanation**

[redacted]

Tue 3/26/2013 7:58 PM

[redacted]

My version of the discussion is different.

Begin forwarded message:

**From:** [redacted]
**Date:** March 26, 2013, 7:47:46 PM EDT
**To:** [redacted]
**Cc:** [redacted]
**Subject:** [redacted] Explanation

[redacted] has agreed to go to [redacted] and present a version of the PSPI presentation that you have provided.

We will share the proposed material with you before he presents it to [redacted]

Regards

# Bottom line

- We are obligated by our standards of business conduct to protect the broad interests of the company. Specifically, Section B of the Corporate Integrity section of the Standards of Business Conduct states: Each employee has a personal responsibility of cultivating and maintaining the Company's reputation for integrity by engaging in fair and honest dealings with customers, suppliers, and others who come into contact with the Company's operations.
- In my view, the materials presented to [redacted], and the theories presented therein, violate the above requirement in that the "facts" are misrepresented and therefore, the proposed range for field action is therefore unsupportable. Per the Corporate Governance document, I am required to report this to the VP of Human Resources.

# Follow-up 7/31/14

- This morning, I met with [redacted]. In this meeting, he informed me that he would be my boss in the newly-created Product Safety group. He asked me if I had a problem with it.
- I told him that I did, for the reason that when confronted with the information in this presentation, his solution was not to address the ethical concern, but to find someone else to create and give the presentation.
- He said that he remembered it differently.