Subject: FW: Complaint 10668373
Date: Tuesday, January 13, 2015 11:05:58 AM
Attachments: Catastrophic Failures of Interior Door Handle on 1998.pptx

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Sent: Tuesday, January 13, 2015 10:31 AM

Subject: FW: Complaint 10668373

The consumer is updating their file.

From: [redacted]
Sent: Monday, January 12, 2015 8:35 PM
To: DataQuality, DataQuality (NHTSA)
Subject: Complaint 10668373

Dear Sir or Madam,

I am attaching a document to support the defect reported to your Bureau.

I have 30 years of experience as a manufacturing and design engineer, plus as many years actively repairing vehicles.

In my review of these failures, there is a flaw in the part design which leads to the failure of the interior door handle.

If you have further questions, please do not hesitate to contact me at the number below.

Regards,

[redacted]
Sr. Manager, Cabinets Operations
CommScope, Inc.
[redacted]
[redacted]

Catastrophic Failures of Interior Door Handle on 1998 GMC Sierra

Prepared by [redacted]

Situation History

- Single owner of 1998 GMC Sierra, purchased in September 1998.
- Have experienced 7 failures of the interior left (driver) side door handle.
- All replacements have been purchased through GM dealerships.
- Last two failures were saved for analysis.
- Exhibit 06.25.10 was purchased on August 25, 2010 and failed on October 28, 2013.
- Exhibit 09.03.2013 was purchased on October 29, 2013 and failed on December 24, 2014.
- Previous five door handle failure points occurred exactly as the two failures reported in this document.
- These failures have all occurred without any indication of deterioration prior to total failure.

A potential safety risk is present should an individual experience the catastrophic failure of the interior door handle in an emergency situation.

Exhibit of Fractures

Exhibit 06.25.10 Failure

Exhibit of Fractures

Exhibit 09.03.13 Failure

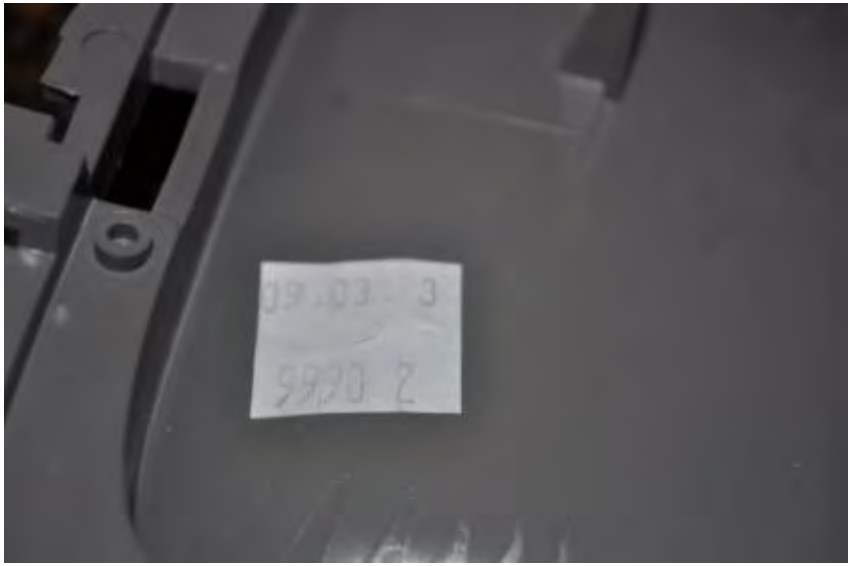


Exhibit of Fractures

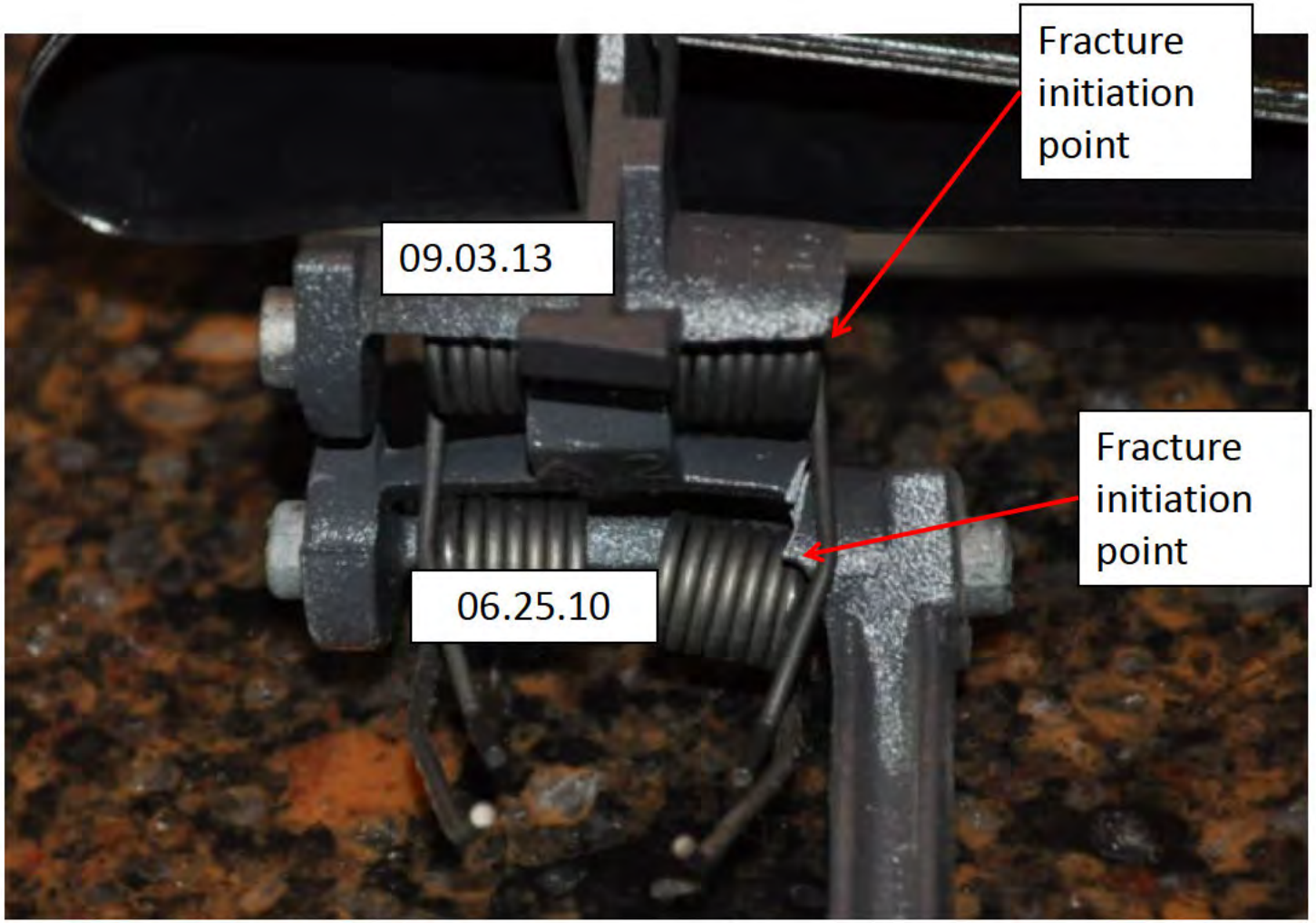
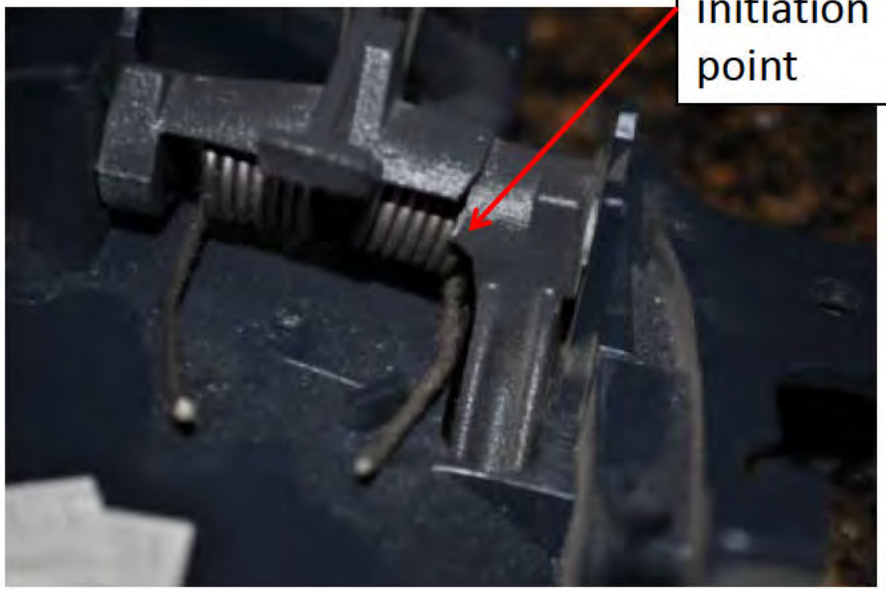
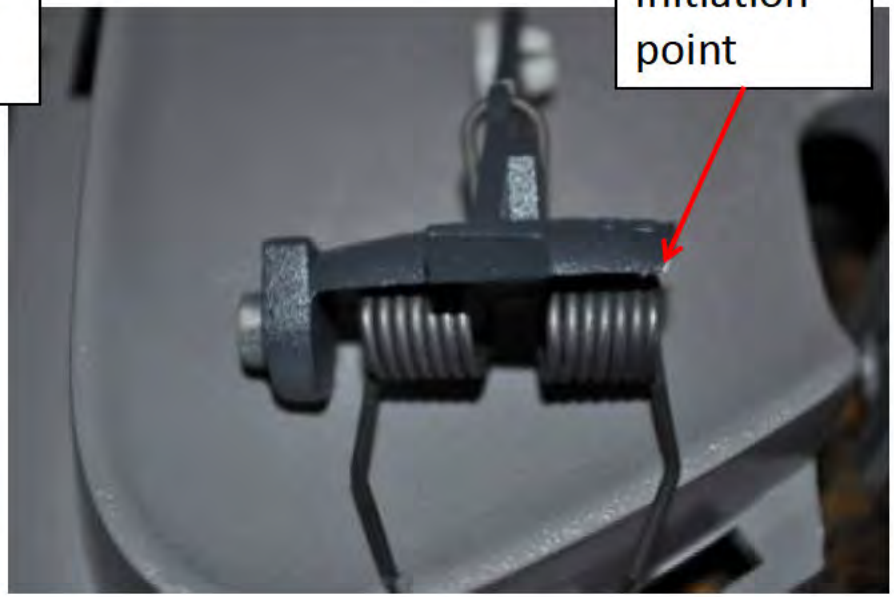


Exhibit of Fractures



06.25.10



09.03.13

Exhibit of Fractures

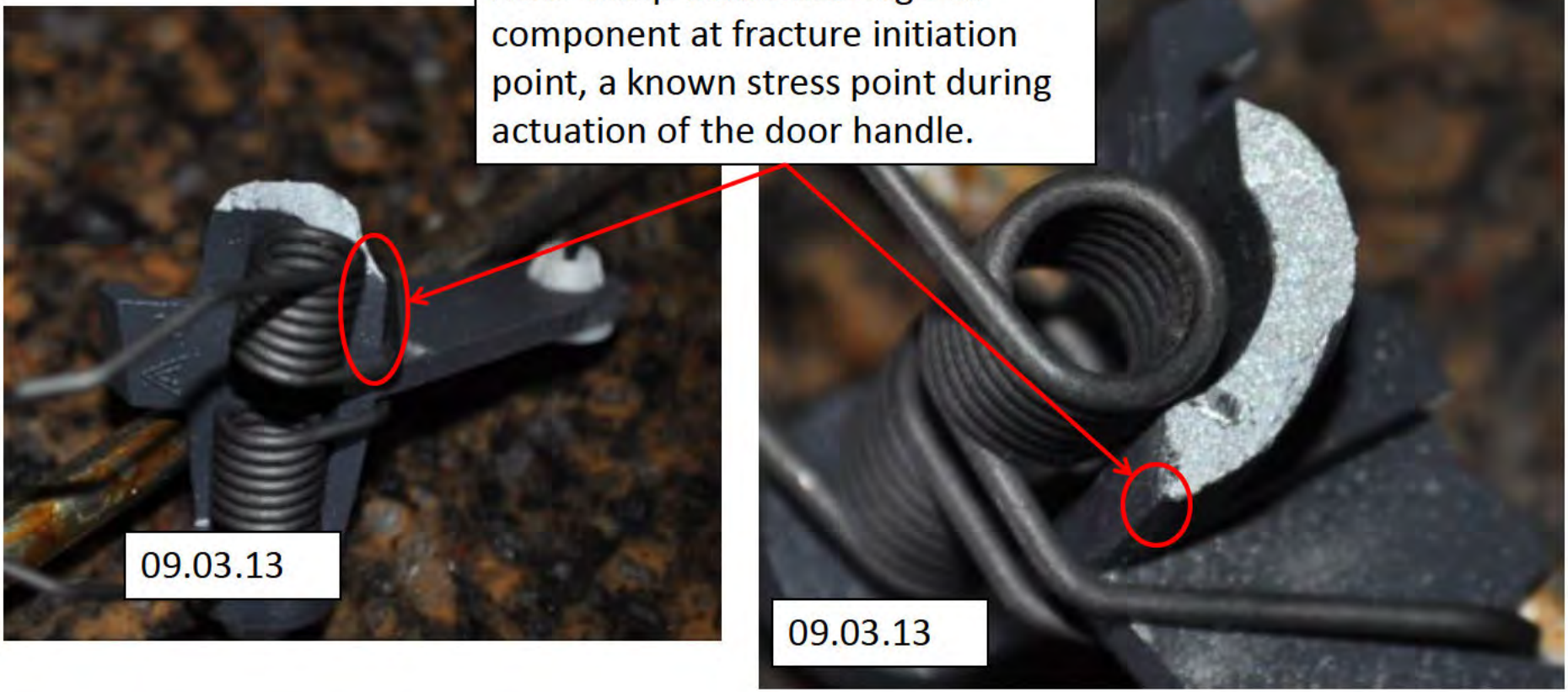


Exhibit of Fractures

Note feathered edge on component at fracture initiation point, a known stress point during actuation of the door handle.

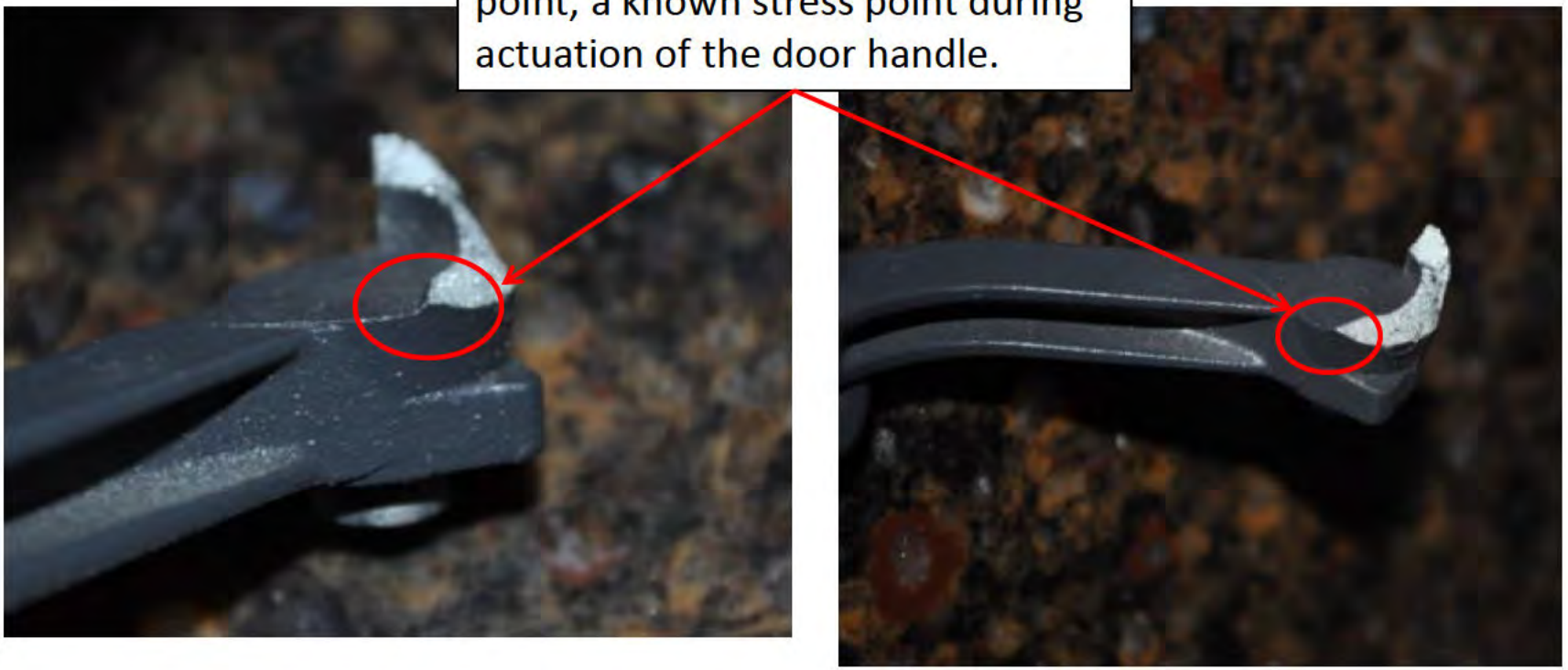
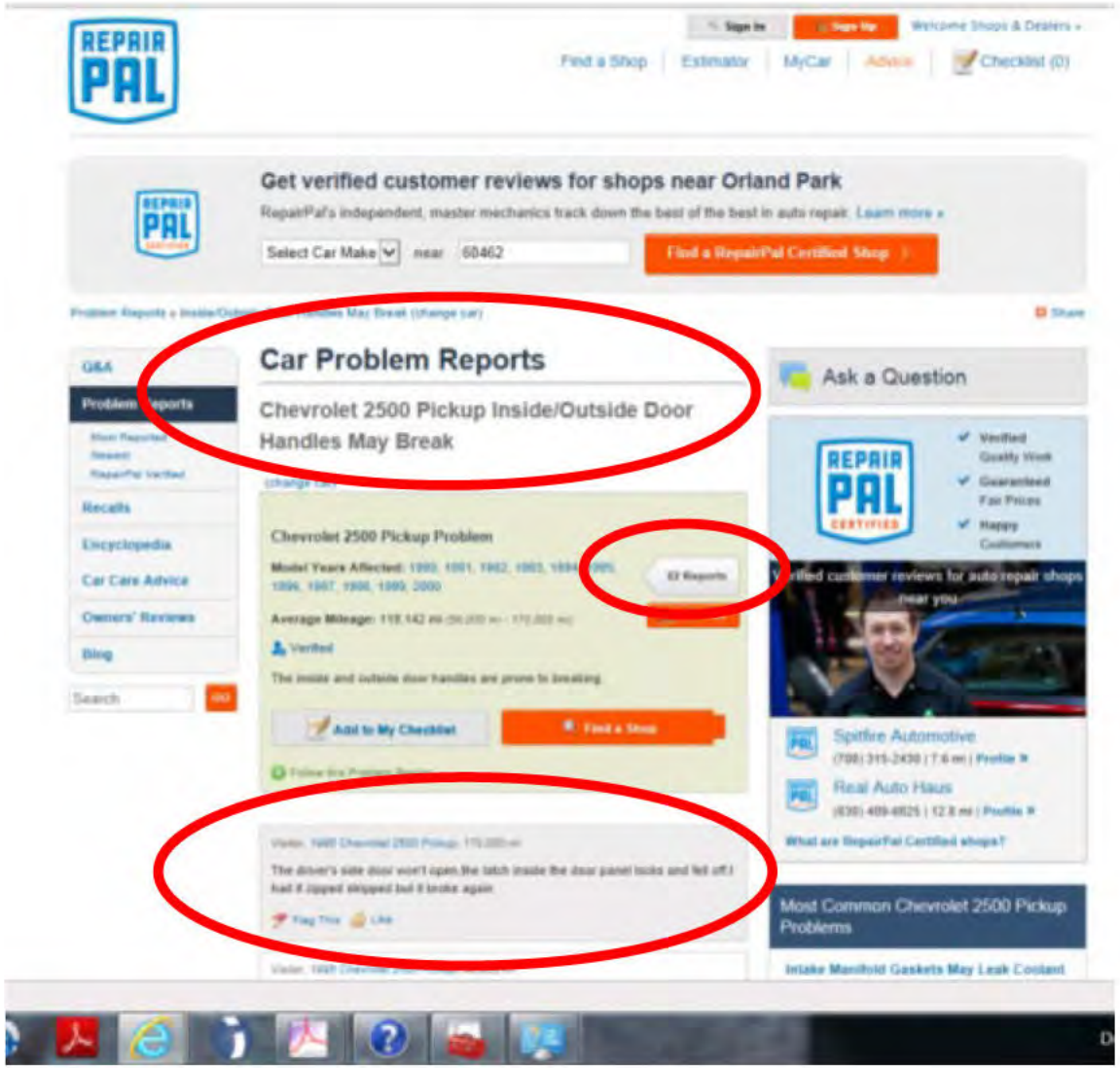


Exhibit of Fractures as reported by consumers

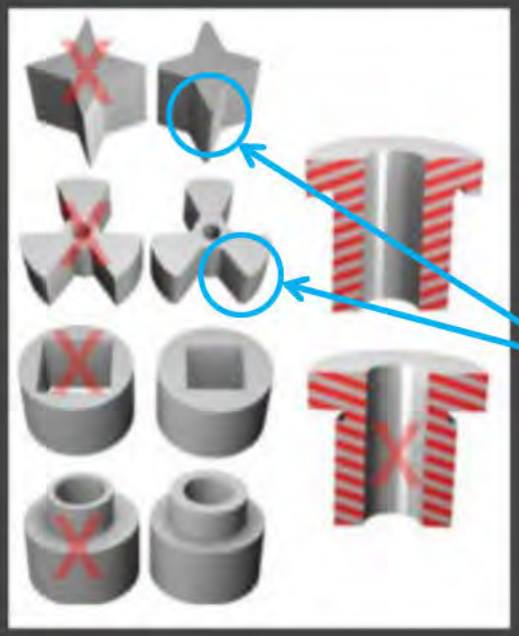
Reference: [redacted]



Powder Metal Design Principles

Reference: Powder Metallurgy Company [redacted]

- HUBS
- SLOTS AND GROOVES
- UNDESIRABLE FEATURES



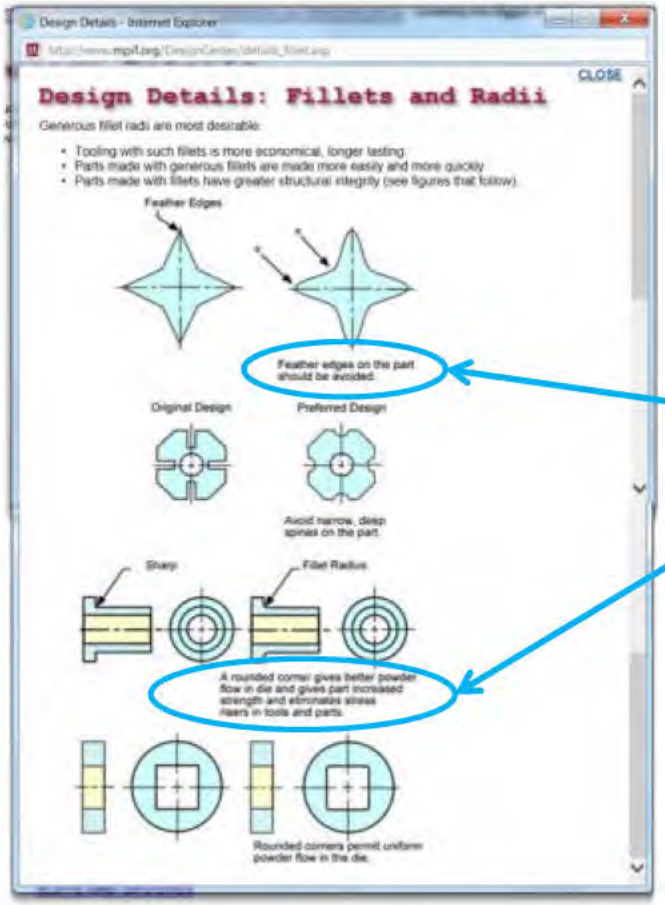
Features must be avoided that require tools with thin, weak sections or sharp inside corners, cause problems in powder fill and compaction, or make the component prone to distortion during sintering. Here are some of those problem features along with acceptable alternatives.

Note that sharp corners are undesirable and should be designed with a filet radius.

- GEARS

Powder Metal Design Principles

Reference: Metal Powder Industries Federation



Note that sharp corners are undesirable and should be designed with a filet radius.

Conclusion

- The inherent defect in the door handle design is a result of disregard to Powder Metallurgy design best practices.
- There is evidence supporting the failure of the interior door handle from other GM pick-up truck owners.
- Other owners have had repeated failures on a single vehicle with the interior door handle.

Recommendations

- Request FMEA results for the powder metallurgy (PM) design from General Motors.
- Request cycles-to-failure analysis report for the PM design from General Motors.
- Request critical-to-quality design parameters for the PM part from General Motors.
- Request sampling plan for PM product testing for validation that product meets critical-to-quality design parameters from General Motors.
- Request manufacturing quality control reports be produced for PM manufacturers from General Motors for this design.
- Request quantity of interior door handle replacements, of this design, which were performed at General Motors dealerships from General Motors.
- Request quantity of interior door handle replacements, of this design, which were sold as over the counter part sales from General Motors.