



Agility Fuel Solutions LLC

Response to NHTSA Information Request

EA16-001

January 18, 2019

Agility Fuel Solutions LLC (Agility) submits this response to the Agency's November 2, 2018 information request directed to Agility in connection with EA16-001, in which the Agency is evaluating "the integrity of the Compressed Natural Gas (CNG) fuel systems on certain model year (MY) 2014 Freightliner Business Class M2 vehicles, on substantially similar Freightliner vehicles, and on certain other medium and heavy-duty CNG peer vehicles." The investigation was prompted by an incident on April 3, 2014 in Howard, Wisconsin involving a CNG cylinder on a Freightliner Business Class M2 vehicle. The subject cylinder was manufactured by Hexagon Lincoln Inc. and the fuel system containing the cylinder was supplied by Agility. By email December 3, 2018, the due date for Agility's response was extended to January 18, 2019 from December 21, 2018.

Agility's response to this Information Request was prepared pursuant to a good faith search for the information requested. The scope of Agility's search for responsive information focused on Agility employees most likely to be knowledgeable about the subject matter of this inquiry and on review of Agility files in which responsive information ordinarily would be expected to be found and to which Agility ordinarily would refer. Although electronic information was included within the scope of its search, Agility has not attempted to retrieve from computer storage electronic files that were overwritten or deleted. To the extent that the agency's definition of "Agility" includes suppliers, contractors, and affiliated enterprises for which Agility does not exercise day-to-day operational control, we note that information belonging to such entities ordinarily is not in Agility's possession, custody, or control.

Further, the information request states that Hexagon Lincoln Inc. (the manufacturer of the CNG cylinder involved in the Howard incident) merged with Agility in 2016. NHTSA's definition of Agility states that it includes Agility Fuel Solutions LLC, Agility Fuel Systems LLC, and Hexagon Lincoln Inc. and includes all their divisions, subsidiaries and affiliated enterprises on or after January 1, 2010. Agility notes, however, that it acquired the heavy-vehicle portion of Hexagon Lincoln in 2016. All other portions of that business were not acquired by Agility and Agility does not own or control records related to non-heavy-duty vehicles. Accordingly, Agility's response does not include data related to Hexagon Lincoln's non-heavy-duty-vehicle business.

Agility is providing responsive information only insofar as such information is not subject to the attorney-client privilege or attorney work product.

Some of the information being produced pursuant to this inquiry contains confidential business information. For such information, Agility is submitting a confidential treatment request and certification herewith in accordance with 49 CFR Part 512.

Responses

Question 1:

State the number of subject components sold or distributed by Agility to date, grouped by calendar year of fuel container sale and by fuel container designation (Type 1, Type 2, Type 3 or Type 4).

Response to No. 1:

Agility is a supplier of fuel systems that are installed into vehicles. Agility does not necessarily know the market where each vehicle containing its cylinders will be sold. For this reason, Agility does not know the precise number of cylinders sold or distributed in the United States. Further, as noted above, Agility did not acquire all of Hexagon Lincoln and, therefore, does not possess records related to the non-heavy-duty portion of the business. Moreover, prior to acquiring Hexagon Lincoln, Agility purchased cylinders from Hexagon Lincoln. Accordingly, as discussed with Kyle Bowker of the Office of Defects Investigation, Agility is not including cylinders acquired from Hexagon Lincoln in the provided numbers in order to avoid double counting.

Because Agility does not consistently have reliable data as to which country a cylinder will ultimately be shipped, the collected data includes cylinders that Agility determined were shipped to the North American market (the U.S., Canada, or Mexico). Further, the data categorizes sales by those distributed by Hexagon Lincoln and those distributed by Agility. Subject to these understandings, Agility is submitting responsive data that it has identified upon its reasonable and diligent investigation. In accordance with 49 CFR Part 512, information in response to Request No. 1 is contained in Agility's request for confidential treatment in the file named "CONF BUS INFO - Request No. 1 Consolidated Sales Summary.pdf."

Question No. 2:

State the number of subject components Agility is aware of, that are alleged to have experienced Level 3 damage. For each such container, please provide:

- a. Calendar year of sale;*
- b. End-of-life date;*
- c. Calendar year the fuel container was condemned;*
- d. Fuel container designation (Type 1, Type 2, Type 3 or Type 4); and*
- e. Summary description of damage that condemned the cylinder (i.e. object impact or abrasion; fire exposure; improper repair attempt).*

Response to No. 2:

NHTSA's definition of Level 3 damage is vague and ambiguous. Also, Agility sells both cylinders and fuel systems that necessarily include cylinders. As mentioned above, Agility does not have, or in some case has limited, information regarding the markets and uses of cylinders sold separate from a system. For these cylinder sales, Agility knows the volume of sales, but that data does not distinguish between cylinders that will be installed in new vehicles or those that will go into the aftermarket sales channel. For fuel systems, Agility has warranty information, but this data does not necessarily include sufficient data to determine whether a replacement was made due to Level 3 damage. Also, Agility's data does not include the date for the parts' end-of-service life or year a cylinder may have been condemned. Due to these limitations, Agility

collected data for cylinder sales made through its Customer Care Group from August 2014 through December 31, 2018.

For approximately the past 18 months, Agility has been collecting accident information, which includes some information that summarizes alleged damage to cylinders, which would only include data for a portion of calendar year 2017 and data for full calendar year 2018. Similar information was not collected prior to that time. Agility relied on this accident information to determine whether cylinders were replaced due to an accident, with the assumption that the parts were replaced because they are no longer fit for continued service and sufficiently cannot be repaired.

Subject to these understandings, Agility is submitting responsive information that it has identified upon its reasonable and diligent investigation. In accordance with 49 CFR Part 512, information in response to Request No. 2 is contained in Agility's request for confidential treatment in the files named "Response to Request No. 2 - Cylinder L3 Damage.pdf" and summary information in the files named "CONF BUS INFO - Request 2(e) - 2017 CNG sales cylinders.xlsx" and "CONF BUS INFO - Request 2(e) - 2018 CNG sales cylinders.xlsx."

Question No. 3:

State the number of each of the following, received by Agility, or of which Agility is otherwise aware, which relate to, or may relate to, the integrity of the subject components:

- a. Reports involving a crash;*
- b. Reports involving a fire or explosion;*
- c. Reports involving injury or fatality;*
- d. Property damage claims;*
- e. Third-party arbitration proceedings where Agility is or was a party to the arbitration; and*
- f. Lawsuits, both pending and closed, in which Agility is or was a defendant or codefendant.*

For subparts "a" through "f," state the total number of each item (e.g., crash reports, injury reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a crash report and an injury report involving the same incident in which a crash occurred are to be counted as a crash report, an injury report and a lawsuit report).

In addition, for each incident related to items "a" through "f," provide a summary description of the alleged problem and causal and contributing factors and Agility's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Response to No. 3:

The phrase “relate, or may relate, to the integrity” is not defined in the information request and is vague and ambiguous. Based on discussions with ODI personnel, Agility interprets this phrase as including claims or allegations that the cylinder did not live up to its expectations and that may relate to the cylinder’s structural integrity, such as a cylinder rupture. These incidents do not include claims or allegations where the pressure relieve device (PRD) was triggered due to elevated temperatures and the system otherwise operated as designed.

Subject to this understanding, Agility provides the following:



Question No. 4:

Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 3, state the following information:

- a. Agility’s file number of other identifies used;*
- b. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;*
- c. Vehicle’s VIN;*
- d. Vehicle’s make, model and model year;*
- e. Vehicle’s hours/mileage at time of incident;*
- f. Incident date;*
- g. Report or claim date;*
- h. Whether a crash is alleged;*
- i. Whether unsecured cargo or cargo spillage is alleged;*
- j. Whether a fuel container rupture, burst or explosion is alleged;*
- k. Whether a fire is alleged;*
- l. Whether property damage is alleged;*
- m. Number of alleged injuries, if any;*
- n. Number of alleged fatalities, if any;*
- o. State the level of subject component damage alleged, reported or observed as defined by CGA C-6.4-2012 and who made the determination regarding the level*



- of subject component damage (e.g. vehicle owner, insurance company, fuel container manufacturer, fuel system integrator); and*
- p. Provide a summary of the incident, including Agility's assessment of the root cause and contributing factors.*

Provide information in Microsoft Access 2010, or a compatible file format, entitled "INCIDENT DATA."

Response to No. 4:

Subject to the understanding detailed in response to Request No. 3, Agility collected responsive information in an Excel spreadsheet, a format that is compatible with Microsoft Access. Moreover, for each of the incidents, Agility could not determine the exact person or entity that made the Level 3 damage determination. Level 3 damage was presumed due to the alleged rupture of the cylinder. In accordance with 49 CFR Part 512, information in response to Request No. 4 is contained in Agility's request for confidential treatment in the file named "Incident Data.xlsx."

Request No. 5:

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the integrity (including crashworthiness) of the subject components or the fuel systems they are part of, that have been conducted, are being conducted, are planned, or are being planned by, or for, Agility. For each such action, provide the following information:

- a. Action title or identifier;*
- b. The actual or planned start date;*
- c. The actual or expected end date;*
- d. A brief summary of the subject and objective of the action;*
- e. Engineering group(s), supplier(s), and/or third-party provider(s) responsible for designing and for conducting the action; and*
- f. A brief summary of the findings and/or conclusions resulting from the action.*

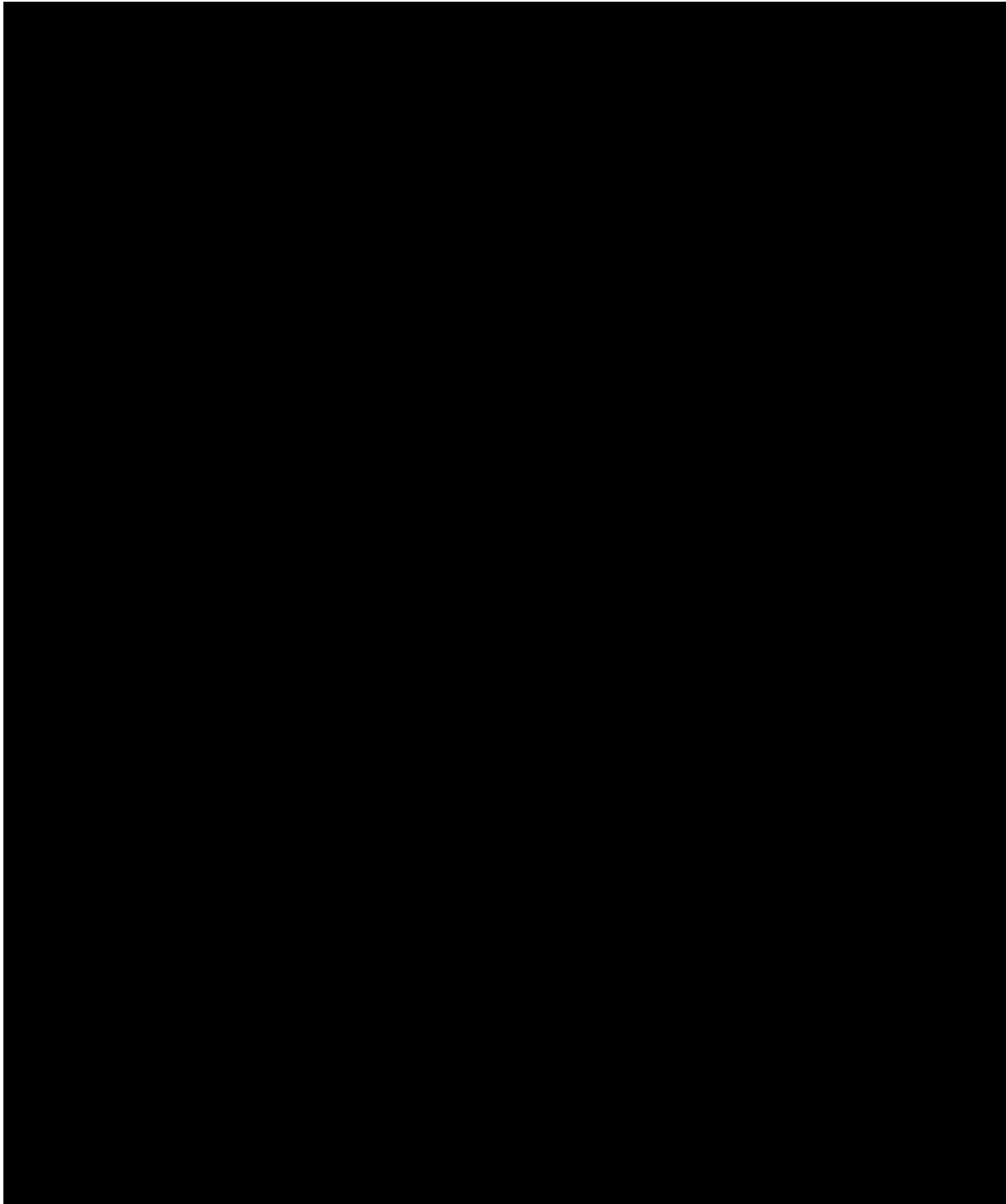
For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

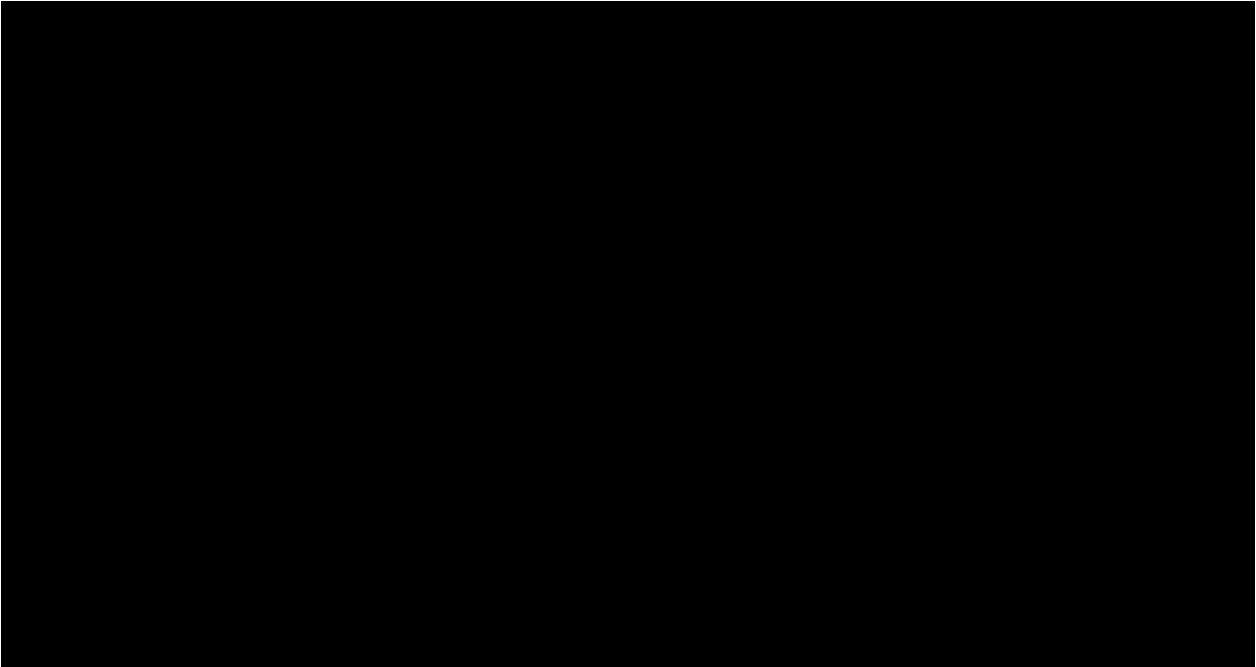
Response to No. 5:

The request for all "actions" that relate to, or may relate to, the integrity (including crashworthiness) of the subject component is overly broad and potentially would include a voluminous body of actions that could be construed as included in this request. Agility construes

Request No. 5 as not seeking testing related to safety certification, such as testing to verify compliance with Federal motor vehicle safety standards (FMVSS) 303 and 304.

Further, the Howard, Wisconsin incident described in the information request involved the 22508000 system designed and manufactured by Agility Fuel Systems and installed by Freightliner (DTNA). The design and development of this system was performed in conjunction with DTNA Engineering. Accordingly, Agility is submitting the actions for this subject system, which were performed in conjunction with DTNA Engineering for this system, that involved:





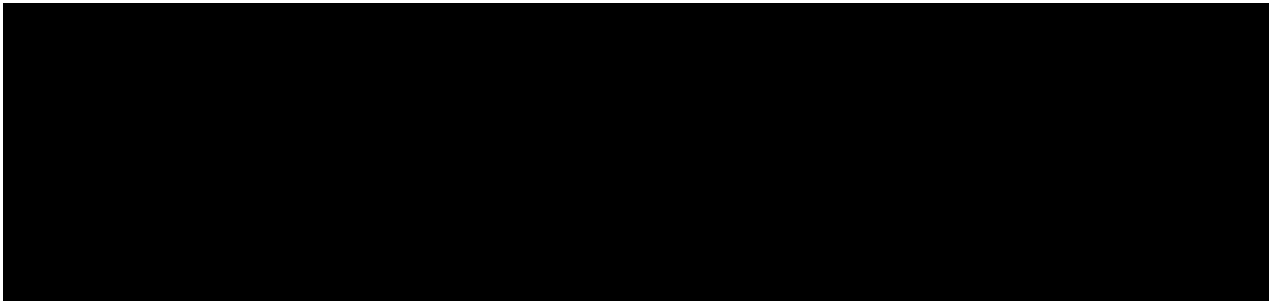
In accordance with 49 CFR Part 512, copies of documents related to these studies in response to Request No. 5 is contained in Agility's request for confidential treatment in the folder named Request 5 Attachments.

Question No. 6:

Furnish Agility's interpretation of provision in the following voluntary industry standards and what processes, including performance requirements, Agility has adopted to ensure conformance with them:

- i. CSA/ANSI NGV 2-2016 §4.1.2 "Installation requirements", specifically the section that states, "It is intended that containers be protected from accidental cargo spillage and from mechanical damage. Container locations and mountings should be designed to provide adequate impact protection to prevent container failure in a collision."; and*
- ii. NFPA 52-2016 §15.3.3.1.1 "Installation of Fuel Supply Containers", specifically the section that states "Fuel supply containers shall be protected . . . to prevent damage that occurs due to . . . accidental cargo leakage."*

Response to No. 6:



4.1.2 Installation requirements

Containers are intended to be installed on vehicles in accordance with the current edition of *NFPA 52*, and *CSA B109*; installed in vehicles certified in compliance with *FMVSS No. 303*, (*49CFR571.303*), *CMVSS 301.2*, or other equivalent standards.

This Standard contains no requirements for container integrity in a vehicle collision. It is intended that containers be protected from accidental cargo spillage and from mechanical damage. Container locations and mountings should be designed to provide adequate impact protection to prevent container failure in a collision.

Question No. 7:

Furnish Agility's assessment of the fatal incident that occurred on April 3, 2014, in Howard, Wisconsin, including:

- a. The causal or contributory factor(s);*
- b. The failure mechanism(s);*
- c. The failure mode(s);*
- d. The risk to motor vehicle safety that it poses;*
- e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the subject condition was occurring or subject component was malfunctioning;*
- f. The role of cargo securement;*
- g. The role of accidental cargo spillage; and*
- h. Agility's assessment of the incident vehicle's fuel container integrity.*

Response to No. 7:

Subparagraph a.

Based on the information available to Agility concerning the April 3, 2014 incident in Howard, Wisconsin, Agility believes the causal or contributory factor(s) included the following:

- Unsecure load - During the investigation, no evidence was observed that the forklift had been tied down, which is likely the primary cause of the incident.
- Speed of transporting truck - The passenger said the driver was pumping the air brakes, which indicates that the driver was driving too fast to make the turn. The sheriff's report calculated that the vehicle was moving at 17-22 mph at the time the tank rupture occurred and that the driver was pumping the brakes before the event. At the time of event, the brake lines may have been ruptured (at which point the brakes locked up) causing the 14 feet of skid marks.
- Whether or not parking brake was applied – Statements from incident allegedly state that the parking brake on the forklift was engaged and the shift lever in neutral, but according to information from inspectors, the parking brake would not have held the forklift in place during heavy breaking.

Subparagraph b.

Agility believes the failure mechanism(s) of the incident were the following:

- The Freightliner was transporting a large forklift truck from one facility to another about 300 yards away. When the driver braked to pull into the driveway the forklift rolled forward, with the forks facing toward the front of the vehicle. The forks impacted through the trailer wall and into the cylinder cabinet. A driver's side view appears to show that the fork carriage pushed the whole cylinder cabinet and truck cab forward. The two lower cylinders are missing from the cylinder cabinet. The bottom cylinder was impacted by a fork near the top of the sidewall and ruptured into two pieces. The next cylinder was blown clear but did not rupture. The valve from the middle cylinder was broken off when it was forced out of the neck mount. The two top cylinders remained in their mounts. The escaping gas likely pushed the cab floor almost to the windshield. The drive shaft was bent into a U and the engine blown off its mounts. Natural gas was still escaping from broken lines when the first responders arrived. One end of a cylinder was on the ground some distance from driver's side of the truck. The rupture appears to have been a clean circumferential break indicating that the helical plies failed but not the hoop plies. White glass fibers are apparent at the break.

Subparagraph c.

Agility believes the failure mode(s) of the incident were the following:

- The left fork appeared to have contacted the tank at approximately the tank's midpoint, gouging into its sidewall. The right fork appears to have made a glancing blow to the tank and was deflected towards the right side of the vehicle.
- Valves were sheared off the bottom tank. Valves on second and third tanks were bent in the tank boss and pried out of the tank, which deformed the valve stem and caused stripping of some threads. The SS fuel line connecting the bottom tank was completely severed. The pressure release device (PRD) vent-line fittings were bent and twisted out of tanks one through three.
- The aluminum frame was torn apart in several places and the tank-mounting beams and neck blocks were fractured in multiple places.
- The system mounting brackets were not deformed or harmed in any way, so the structure remained secured to the vehicle chassis.
- The tank sustained catastrophic failure – rupture of the cylinder.

Subparagraph d.

Based on observations and investigation of this incident, Agility does not believe that the fuel system or the fuel cylinders pose an unreasonable risk to motor vehicle safety. The primary cause of the failure was the failure to secure the forklift.

Subparagraph e.

Agility does not believe that its fuel system or the cylinder were malfunctioning. The failure was primarily the result of the unsecured forklift. Accordingly, Agility's system could not have warned the driver of his failure to secure the load. Following impact from the unsecured forklift, the impacted tank appeared to have a significant fuel leak resulting in a hissing sound about 20-30 seconds before rupture, which would have provided an audible warning of a potential fuel leak.

Subparagraph f.

Again, Agility believes that the failure to secure the cargo was the primary factor in the incident. Upon investigation, it was noted that U.S. DOT commercial vehicle regulations require that a load being transported must be tied down. Those regulations also contain specific performance requirements. <https://www.fmcsa.dot.gov/regulations/cargo-securement/cargo-securement-rules>. Failure to properly secure the load can create a safety risk and violates Federal Motor Carrier Safety Administration regulations. See 49 CFR 392.9. Had the forklift been properly secured, the forklift likely would not have impacted the cylinder that resulted in the incident.

Subparagraph g.

Agility is not certain what the information request means by “accidental cargo spillage.” Assuming that “accidental cargo spillage” refers to the failure to secure the forklift, it appears that the fork carriage pushed the whole cylinder cabinet and truck cab forward, which ultimately punctured a cylinder.

Subparagraph h.

Agility believes that the fuel system and the container that was impacted by the forklift were manufactured to, and complied with, all codes and standards in effect at that time. Agility does not believe the tank was defective.