

The reason given for the proposed changes is that present and anticipated traffic density and train movements do not warrant retention of the signal system.

Any interested party desiring to protest the granting of an application shall set forth specifically the grounds upon which the protest is made, and contain a concise statement of the interest of the party in the proceeding. Additionally, one copy of the protest shall be furnished to the applicant at the address listed above.

All communications concerning this proceeding should be identified by the docket number and must be submitted to the Docket Clerk, DOT Central Docket Management Facility, Room PI-401, Washington, DC 20590-0001.

Communications received within 45 days of the date of this notice will be considered by the FRA before final action is taken. Comments received after that date will be considered as far as practicable. All written communications concerning these proceedings are available for examination during regular business hours (9:00 a.m.–5:00 p.m.) at DOT Central Docket Management Facility, Room PI-401 (Plaza Level), 400 Seventh Street, SW, Washington, DC 20590-0001. All documents in the public docket are also available for inspection and copying on the internet at the docket facility's Web site at <http://dms.dot.gov>.

FRA expects to be able to determine these matters without an oral hearing. However, if a specific request for an oral hearing is accompanied by a showing that the party is unable to adequately present his or her position by written statements, an application may be set for public hearing.

Issued in Washington, D.C. on September 12, 2001.

**Grady C. Cothen, Jr.,**

*Deputy Associate Administrator for Safety Standards and Program Development.*

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## DEPARTMENT OF TRANSPORTATION

### National Highway Traffic Safety Administration

#### Denial of Motor Vehicle Defect Petition

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

**ACTION:** Denial of petition to open a defect investigation.

**SUMMARY:** This notice sets forth the reasons for the denial of a petition

submitted by Mr. John E. Ballow, dated July 20, 2000, to NHTSA under 49 U.S.C. 30162, which requested the agency to commence a proceeding to determine the existence of a defect related to motor vehicle safety in certain General Motors (GM) vehicles equipped with flex fans (part number 336032). After reviewing the petition and other information, NHTSA has concluded that further expenditure of the agency's investigative resources on the issues raised by the petition does not appear to be warranted. The agency accordingly denies the petition.

**FOR FURTHER INFORMATION CONTACT:** Mr. Frank Borris, Safety Defects Engineer, Vehicle Integrity Division, Office of Defects Investigation, NHTSA, 400 Seventh Street, SW, Washington, DC 20590. Telephone (202) 366-5202.

**SUPPLEMENTARY INFORMATION:** In a letter dated July 20, 2000, John E. Ballow, an attorney in Buffalo, New York, petitioned NHTSA to conduct an investigation of a certain GM flexible blade engine cooling fan and, if later warranted, all flexible radiator fans offered as original equipment in GM vehicles, particularly light duty trucks. The petitioner specifically identified GM Part No. 336032 and alleged that additional injuries have been caused by this component since NHTSA last considered this issue in 1996. Enclosed with the petitioner's letter were opinions and analyses from four independent experts in fan engineering, failure analysis, engine design, and human factors engineering. As an enclosure to a supplementary letter dated September 26, 2000, the petitioner provided numerous photographs depicting the severity of injuries allegedly resulting from separated flex fan blades. NHTSA's Office of Defects Investigation (ODI) conducted a Petition Analysis to determine whether to grant the petition.

The subject fan is a 7-blade, flexible blade engine cooling fan commonly referred to as a "flex fan," which was used on approximately 2.6 million GM vehicles that were produced *without* air conditioning and *with* heavy duty cooling systems. The model years and models in which the fans were used are model year (MY) 1973 through 1979 Chevrolet and GMC C/K 10, 20, and 30 series light duty trucks and the MY 1975 Chevrolet and GMC "G" van (subject vehicles). The flex fan concept was used by many vehicle manufacturers as a way to improve fuel efficiency. Like all flex fans, the subject fan has flexible metal blades, which are attached to the fan hub or "spider" by rivets, and are designed to flex or "flatten out" as the

engine speed is increased, thus reducing the load on the engine. However, the subject fans may be susceptible to fatigue failure of the blade resulting from uncontrolled flexing (bending) due to a resonant condition.

Prior to this petition, NHTSA analyzed failures of the 336032 flex fan in response to a similar petition, DP96-007. In a letter dated May 17, 1996, Mary Walsh-Dempsey, an attorney in Scranton, Pennsylvania, petitioned NHTSA to initiate a defect investigation regarding MY 1976 Chevrolet C10 trucks concerning blade separation of the same engine cooling fan (Part No. 336032). On December 3, 1996, NHTSA denied the Walsh-Dempsey petition based on evidence showing a low failure rate, along with some consideration of the subject vehicles' age and remaining useful life.

After receiving the Ballow petition, NHTSA requested certain information from GM, requested additional information from the Petitioner, searched its database for reports of fan blade separations, and reviewed the experts' reports and credentials.

The subject fan was originally produced for GM by Canadian Fram,<sup>1</sup> which ceased production in approximately 1993. It was at this time that GM made a one-time purchase to maintain an inventory for future service parts. New replacements of the subject fan are available only from GM dealerships, although used units may still be available from automotive salvage businesses. At the time of this writing, GM estimates its inventory to be approximately 500 units. Part sales of the subject fan from GM dealers over the last four calendar years (1997-2000) averaged 211 units per year.

NHTSA has identified four reports of alleged failure of the subject fan since December 3, 1996, when DP96-007 was denied. Each report alleges an injury. These incidents occurred between January 1998 and September 2000. Reports on two of these incidents were provided by GM with the remaining two coming from NHTSA's database and the petitioner. One of the GM reports includes color photographs indicating the owner was struck in the neck and shoulder, requiring hospitalization.

GM's response also included two reports prepared by Canadian Fram for Chevrolet Engineering following its analysis of failed subject fans. Each of the reports, dated June 1978 and February 1979 respectively, documents findings that:

<sup>1</sup> Canadian Fram, Ltd., was acquired by Bendix Engine Components, Ltd., which was acquired by Allied Signal, Inc., which was acquired by Siemens Automotive, Ltd.

- The failure was due to fatigue cracking;
- The crack initiated near the third rivet on the concave (engine side) of the blade under the deflection limiting cap (below the visible surface); and
- There was no evidence of prior mechanical damage.

The author of each report concluded that the failure resulted from "a resonant condition in the particular vehicle." Experts working on behalf of the Petitioner offered similar findings after examining failed subject fans. One of the experts, a recognized authority in the fan industry and author/editor of the 6th, 7th, and 8th editions of *Fan Engineering*, examined the remains of three failed subject fans. The expert reported the same findings as Canadian Fram, differing only in his belief that the resonant condition is inherent in all 336032 flex fans.

ODI reviewed documents submitted by GM which clearly indicate that fatigue failure was an issue of concern to GM engineers. Numerous tests were performed on the subject flex fan by Canadian Fram and GM Engineering between 1973 and 1979 to both validate fan performance and to measure strains imparted to the fan assembly. However, the testing methods employed by and for GM were questionable. For example, in order to measure strain on the fan blade, GM engineers instrumented the fan blades with strain gauges while rotating the subject fan on an apparatus to simulate the rotational inputs of the engine. The location of the strain gauges was determined by coating the visible surface of the subject fan blade with stresscoat<sup>2</sup> and observing the location and magnitude of cracks in the stresscoat resulting from rotating the fan at various speeds. However, as mentioned earlier, field experience has shown cracks in the subject fan blades tend to develop at a location on the blade below the visible surface. According to documents submitted by GM, all strain measurements with respect to the blade were taken only on the visible blade surface. Moreover, there is no indication that GM test engineers disassembled test specimens to inspect for the presence of cracks below the cap.

The subject fan is not the only flexible blade fan installed as original equipment by GM. In fact, it is one of a total of 38 unique part numbers for flexible blade fans representing more than 7,100,000 fans in addition to the

2,600,000 subject fans. However, the subject fan is over-represented with respect to the number of lawsuits brought against GM. ODI requested information from GM describing all lawsuits, out-of-court settlements, and offers of goodwill where GM is a party and which pertain to the performance of any GM fan, including fixed-pitch fans. GM's response includes information on 55 lawsuits alleging separation of a fan blade. Of this number, at least 49 (89%) identify the subject fan, two are unidentified, and four are other GM flex fans. None of the lawsuits, or any reports submitted by GM, allege a fan blade separation of a fixed-pitch fan.

In its response to ODI, GM attributed fan blade separation to the following:

- Reuse of fans with bent or broken blades;
- Preexisting, collision-induced damage;
- Interference with other engine compartment components;
- Water pump malfunctions; and
- Misapplication of the fan with drive train components not intended by GM.

As mentioned above, there have been four injury reports related to blade separation in the subject fan since December 3, 1996, when DP96-007 was denied. The estimated exposure based on the registered vehicle population of the subject vehicles for calendar years 1997 through May 2001 is 2.8 million vehicle years, yielding a failure rate of 0.14 per one hundred thousand vehicle years of exposure. It should be noted that this number does not represent the rate of flex fan blade separation but only the rate of reports.

Due to the potential for fatal or debilitating injuries associated with flex fan blade separation, ODI decided to enter into discussions with GM in which it urged GM to provide vehicle owners and mechanics with a warning about the safety risks. As a result of those discussions, GM agreed that it would send notification letters to owners of vehicles with the subject flex fan warning them of the potential for serious or fatal injuries resulting from flex fan blade separation and suggesting that they obtain a replacement fan.

Beginning the week of April 16, 2001, GM began mailing letters to affected owners warning of the potential for injury if failure were to occur and urging them to replace the fan regardless of its condition. The letter includes a picture and detailed description of the subject fan and reiterates that initial fatigue cracks may not be visible. In order to provide owners with some options for fan replacement, GM initiated production of a 4-blade, fixed-pitch fan (GM part number 461317) for

distribution to GM dealerships and also suggested that owners consider purchasing such fans from after-market suppliers. GM also agreed to notify its dealers to stop sale of the subject fan and return any remaining inventory to GM.

In order to further minimize the potential for future injuries related to the subject fan, ODI contacted the Governmental and Industry Relations Office of the American Recyclers Association (ARA) to increase awareness of this issue and request their assistance in informing their membership. The ARA represents approximately 2,000 member companies through direct membership and over 3,000 other companies through 52 affiliated chapters. In response to ODI's request, the ARA notified its membership via electronic mail of GM's efforts with respect to the subject flex fan and suggested that they also stop the sale of the subject flex fan. Although the GM action is not a formal safety recall, it will help to make owners aware of the potential safety problem and encourage them to replace this fan.

After reviewing the petition and its supporting materials, as well as information furnished by GM and information within the agency's possession from previous investigations and other related actions, NHTSA has concluded that further investigation of the subject vehicles concerning the alleged fan failure is not likely to lead to a decision that the vehicles contain a safety defect. This is primarily based on the very large number of exposure years and the low failure rate, the age of the vehicles (22 to 28 years old), and the actions taken by GM and ARA.

For the foregoing reasons, further expenditure of the agency's investigative resources on the allegation in the petition does not appear to be warranted. Therefore, the petition is denied.

**Authority:** 49 U.S.C. 30162(d); delegations of authority at 49 CFR 1.50 and 501.8.

**Kenneth N. Weinstein,**

*Associate Administrator for Safety Assurance.*

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<sup>2</sup> Also known as brittle lacquer, stresscoat is a liquid coating applied to a test surface and allowed to harden. As the surface is stressed during operation, cracks form in the stresscoat indicating areas of deformation (strain).