**Safety Defect and Noncompliance Report Guide for Vehicles**
**PART 573 Defect and Noncompliance Report**

**REVISION**

**On January 26, 2004, New Flyer decided that a defect which relates to motor vehicle safety exists in the motor vehicles listed below, and is furnish notification to the National Highway Traffic Safety Administration in accordance with 49 CFR Part 573 Defect and Noncompliance Reports.**

**THIS IS A REVISION to that original notification which contains details of cause and solution implementation.**

**Date this report was prepared**: 27 February, 2007

**Furnish the manufacturer's identification code for this recall (if applicable)**: NHTSA code 04V-042

**1. Identify the full corporate name of the fabricating manufacturer of the vehicle being recalled. If the recalled vehicle is imported, provide the name and mailing address of the designated agent as prescribed by 49 U.S.C. §30164.**

New Flyer Industries Canada ULC
Customer Services Head Office
25 DeBaets St.
Winnipeg, MB Canada
R2J 4G5

**Identify the corporate official, by name and title, whom the agency should contact with respect to this recall.**

Kerry Legg,
Safety and Compliance Manager
Ph. (204) 934-4876
Fax. (204) 224-0248

**Name and Title of Person who prepared this report**.

Same as above

**Signed:**

## I. Identify the Vehicle Models Involved in the Recall

**2. Identify the Vehicles Involved in the Recall:**

New Flyer 60 Foot High Floor Articulated buses manufactured between 1991 and 2007 and delivered to customers located in "Salt Belt" States, (specifically Minnesota, Iowa and New York) as specified in the 1991 Transportation Research Board report.

## II. Identify the Recall Population

**3. Furnish the total number of vehicles recalled potentially containing the defect or noncompliance.**

| Model | Year | Number of Vehicles Potentially Involved |
|---|---|---|
| D60HF | 1991-2007 | 807 |

**Total Number Potentially Affected by the Recall**: 807

**4. Furnish the approximate percentage of the total number of vehicles estimated to actually contain the defect or noncompliance**:

100%

**Identify and describe how the recall population was determined--in particular how the recalled models were selected and the basis for the beginning and final dates of manufacture of the recalled vehicles**:

All reports of center axle lock-up have been for D60HF's manufactured by New Flyer and delivered to Salt Belt States.

Manufacture of D60HF model began with a prototype in 1988, but first model was delivered to a salt belt State (Minnesota) in 1991.

No incidents of this type have been reported on this bus model in States not listed in the salt belt.

Between 1988 and 2007 a total of 1352 D60LF model buses have been built, 807 of those D60LF buses have been delivered to customers located in the States of Minnesota, Iowa, and New York. This represents 57.9 percent of total production of this model of bus, but only 4.9% of total bus production for that same time period.

## III. Describe the Defect or Noncompliance

**5. Describe the defect or noncompliance. The description should address the nature and physical location of the defect or noncompliance. Illustrations should be provided as appropriate.**

When the vehicle is parked for an extended period of time, the center axle wheel end brakes have a potential to not release.

**Describe the cause(s) of the defect or noncompliance condition.**

Five potential causes for wheel lock-up have been identified:

- Concentrations of moisture, dust, salt and certain temperatures result in the brake linings adhering to the brake drums when the brake is applied for an extended period due to corrosion formed between the drum inner surface and the metallic particles in the brake lining material.
- Slack adjuster design, creates tighter shoe to drum clearance than is required, resulting in sticking of brakes due to brake drum thermal expansion and contraction, this may be compounded by salt and debris resulting in an elevated brake operating temperature.
- Undercharged air systems, if parking brake is released and bus movement is attempted before sufficient main system air pressure is available to release and hold the spring brake off, brake drag may occur, and
- Slow releasing parking brake systems, slow application of release air may allow brake drag.

**Describe the consequence(s) of the defect or noncompliance condition.**

After vehicle has been parked for and extended period of time and while driving away from parked position, driver can lose control of the vehicle if failure of the brakes to release on the center axle is not detected.

**Identify any warning which can (a) precede or (b) occur.**

Rear (drive) axle can push the locked center axle into a 'jack-knife' situation when cornering. Driver may also perceive vehicle as having de-rated power while trying to pull away.

**If the defect or noncompliance is in a component or assembly purchased from a supplier, identify the supplier by corporate name and address.**

Arvin Meritor, 2135 W. Maple Road, Troy, MI 48084

**Identify the name and title of the chief executive officer or knowledgeable representative of the supplier:**

Niran Audimoolan,
Project Manager - Product Safety and Compliance

## IV. Provide the Chronology in Determining the Defect/Noncompliance

***If the recall is for a defect, complete item 6, otherwise item 7.***

**6. With respect to a defect, furnish a chronological summary (including dates) of all the principle events that were the basis for the determination of the defect. The summary should include, but not be limited to, the number of reports, accidents, injuries, fatalities, and warranty claims.**

Customer reported multiple incidents of center axle lock-up to New Flyer. Three of these incidents have involved a crash resulting in minor property damage. These incidents have all happened at the depot level with a professional driver at the controls, immediately after moving a vehicle which had been parked for an extended period of time.

Testing to determine cause and accepted resolution has involved more than seven different companies and several vehicle owners working in concert, and was conducted over a four year period.

During that time it was determined that wheel lock incidents have been caused by low tire-to-road friction coefficient and one or more of the following;

(a) salt accelerated corrosion of brake linings to brake drums,

(b) type of automatic brake adjuster installed resulting in reduced shoe-to-drum clearance,

(c) moving the vehicle with an undercharged air brake system, or

(d) slow release timing of the parking brake systems.

After multiple attempts to improve the design and function of the foundation brake, it has been generally agreed by all parties that only a Lock-up Prevention System will address all of these potential causes for wheel lock including those not related to the foundation brake. That the foundation brake revisions recently evaluated have improved brake performance significantly, but will not overcome all potential environmental factors associated with this wheel lock issue.

We therefore intend to incorporate changes to fine tune the function of the foundation brake, the air system, the Programmable control system, and additionally to incorporate a prevention system.

If the mechanical changes to the existing vehicle systems cannot overcome a lock-up condition after being parked for an extended period, the prevention system will re-apply the vehicle brakes and stop the vehicle in less than five feet from its initial starting point. The system would then require a maintenance function (reset) to release the brakes and move the vehicle.

**7. With respect to a noncompliance, identify and provide the test results or other data (in chronological order and including dates) on which the noncompliance was determined.**

N/A

## V. Identify the Remedy

**8. Furnish a description of the manufacturer's remedy for the defect or noncompliance. Clearly describe the differences between the recall condition and the remedy.**

The following modifications will be done to existing systems on the vehicle:

- #4 Notch automatic slack adjusters will be incorporated into the foundation brake to increase the drum to lining clearance of the automatic slack adjuster.
- Long Stroke 30 inch brake chambers will be incorporated to ensure that the stroke limit is not exceeded with the new slack adjuster..
- PLC programming will be modified to ensure full air system pressure is available to assist in park brake release, this will be displayed through operation of the existing “Low Air Pressure” indicator light on the drivers instrument panel, and driver warning buzzer. The PLC will also be reprogrammed not to allow gear selection until a minimum of required air pressure is in the main air system.
- New relay valve will be installed at the center axle. This valve will decrease park brake release times by half.

The following modifications will be done to prevent the vehicle from driving with a locked up wheel:

- A new control module will be incorporated to monitor wheel rotation speed via the ABS wheel speed sensors.
- Vehicles which do not presently have an ABS system installed (70 units out of the entire recall population) will be equipped with necessary ABS components required to operate this prevention system.
- The module will instruct PLC system to apply brake interlocks to stop the vehicle within 10 feet of initial starting point and give visual and audible warning indications to the driver in the event a wheel lock-up is detected. This warning system will only be active for a short duration after the vehicle is put in gear for the first time each day.

**Clearly describe the distinguishing characteristics of the remedy vehicle versus the recalled vehicle.**

Remedy Vehicle will have:

- Additional air system R14 relay valve located at center axle.
- #4 Notch automatic slack adjusters on center and rear axle.
- Type 30 long stroke brake chambers on center and rear axle.
- Programmable logic control module monitoring ABS sensors.
- New ABS components (sensors, speed rings and harnesses) if not already equipped with ABS.
- Revised PLC programming.

**Identify and describe how and when the recall condition was corrected in production. If the production remedy was identical to the recall remedy in the field, so state. If the product was discontinued, so state.**

There are currently no confirmed orders for this model of bus. All future production of this model bus bound for salt belt states will have recall incorporated.

## VI. Identify the Recall Schedule

**Furnish a schedule or agenda (with specific dates) for notification to other manufacturers, dealers/retailers, and purchasers. Please, identify any foreseeable problems with implementing the recall.**

Customers will be notified of the correction once confirmation of this document is received.

Recall will commence once the parts to complete the modifications are available in sufficient quantities.

Some vehicles identified in the recall population have been retired and/or scrapped.

## VII. Furnish Recall Communications

**9. Furnish a final copy of all notices, bulletins, and other communications that relate directly to the defect or noncompliance and which are sent to more than one manufacturer, distributor, or purchaser. This includes all communications (including both original and follow-up) concerning this recall from the time your company determines the defect or noncompliance condition on, not just the initial notification.** ***A DRAFT copy of the notification documents should be submitted to this office by Fax (202-366-7882) for review prior to mailing.***

**Note that these documents are to be submitted separately from those provided in accordance with Part 573.8 requirements**.