



Technical Bulletin / Safety Alert

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Rev: 0

(This document supersedes all previous versions of TBS2015-TBSA-01)

Subject: Driftrunner Axle – Steering Component Failure

Date: 10th April 2015

Applicable to: VLI Driftrunner Personnel Transport Vehicles
VLI Brumby Utility Vehicles
Design Registered Transport Braking Systems
(MDR 083991 TBS, MDR 083991 TBS-1 & MDR 096013 TBS)

Note: Minimum PPE required to carry out any inspections contained in this TBSA shall be protective clothing & footwear, safety glasses, hearing protection & any site specific requirements. A JSA or equivalent should be completed prior to performing these tasks.

Introduction:

VLI Diesel Division (VLIDD) advises the occurrence of an incident involving the failure of both front axle swivel housings (steering hubs) during operation of a VLI Driftrunner personnel transport vehicle at a NSW underground coal mine 9th November 2014.

Further details of the incident can be found in NSW Government Trade and Investment Mine Safety Alert SA15-02, published 4th March 2015, refer attached.

Subsequent to completion of a site based investigation of the incident, VLI was provided with the failed swivel housings for further analysis.

Investigation Results and Discussion:

Examination of the failed swivel housings as-received identified that both components had been previously repaired by a third party. One repair involved the weld reclamation of the bearing journal and in the other repair, the bearing journal had been machined undersize and a sleeve installed.

A metallurgical evaluation of the weld repaired swivel housing confirmed failure had initiated from the weld repair.

Visual examination of the sleeved swivel housing identified failure had initiated adjacent to the end of the sleeve.

Recommendations:

VLI does not recommend repairs to the swivel housings of any axle assemblies. VLI recommends worn or damaged swivel housings be replaced.

VLI recommends procurement and repair of axle assemblies and axle components only from the OEM to ensure consistency and quality of supply.

Please ensure this document is circulated to all relevant personnel within your organisation.

Should you have any further queries please contact your VLI Representative.

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SAFETY ALERT

In-service failure of safety critical steering component

INCIDENT

Both front steering hubs on an underground personnel transport vehicle failed in quick succession on 9 November 2014, with the vehicle coming to rest and narrowly missing contact with the roadway wall.

Photo 1: Failure to front right-hand steering knuckle



Photo 2: Close-up view of right-hand failure



CIRCUMSTANCES

At the time of the incident, the personnel transport vehicle was being driven into the mine when it suddenly pitched to one side, then the other side, with the vehicle coming to rest a short distance from the roadway wall.

The driver was travelling at a relatively low speed and was the only occupant.

INVESTIGATION

An investigation identified both the left and right stub axle steering knuckle assemblies failed. Both failures had been previously repaired. One repair was a re-weld of the stub axle. In the other repair, the stub axle was machined undersize and a repair sleeve was fitted. Other vehicles at the mine with similar axle assemblies were inspected for failings with six out of ten identified as needing replacement.

The vehicle manufacturer recommends that stub axle assemblies be replaced, not repaired.

The potential for multiple injuries in this type of incident is considered high, as personnel transport vehicles often carry passengers and travel at speed.

RECOMMENDATIONS

- The person who manages or controls personnel transport vehicles should review maintenance records and/or inspect vehicles to identify where safety critical steering components may have undergone repairs (including welding or surface reclamation). Where repairs have been identified:
 - inspect all vehicles for potential failures at the next available opportunity
 - amend inspections to specifically include periodic checking for those repaired components
 - the inspection period and method should be as stated by a competent person.
- Safety critical steering components on vehicles should be replaced if they have been damaged.
- If replacement is unreasonable, repairs (including reclamation works) on safety critical steering components should only be carried out using procedures developed by the vehicle or component manufacturer, or a qualified professional engineer. The repair procedures should be documented and should include:
 - preparation and repair methods/standards
 - materials specification
 - any need for pre and post heat treatment
 - non-destructive test methods
 - a component repair report, which is kept in the vehicle safety file
 - any recommendations for safe use and/or ongoing periodic inspections.
- The person who manages or controls the vehicles should maintain all component repair reports in the vehicle safety file.

Photo 3: Failure to stub axle left-hand side



Photo 4: Failed stub axle right-hand side



Photo 5: Stub axle re-sleeved



Photo 6: Failed stub axle



NOTE: Please ensure all relevant people in your organisation receive a copy of this safety alert, and are informed of its content and recommendations. This safety alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Signed

A handwritten signature in black ink, appearing to read 'Rob Regan', is positioned above the printed name.

Rob Regan
DIRECTOR
MINE SAFETY OPERATIONS BRANCH
NSW TRADE & INVESTMENT

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The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that information on which they rely is up to date and to check the currency of the information with the appropriate officer of the NSW Department of Trade and Investment or the user's independent advisor.