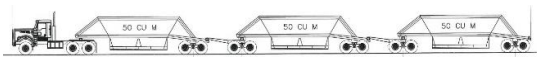


# PRESENTATION ON FAILURE OF BELLY DUMP TRAILERS

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## ABSTRACT:

*There are some forensic investigations which cross the boundaries between Mechanical and Structural Engineering. The investigation of the failures within Belly Dump Assembly's used to transport 150cu.m of product in the assembly shown in the diagram presented was investigated. The loads and general proportions of the assembly are shown pictorially in the diagram presented on the screen.*



**KEYWORDS:** Coupler Structures, Principal Stresses, Von Mises Stress, Finite Element Analysis, Dynamic Stresses.

## 1. INTRODUCTION

The load of the product in each of the Dump Trucks is of the order of 70,000kg with an all-up mass of 211,000kg. The Dump Trucks themselves weight 16,000kg each and the four wheeled assembly's called Dollies on which they seat weight 3,500kg each. It all looks very neat on the diagram and is probably easier to understand. An actual photograph of the three trailers and Dollies next to a loader are shown on the screen.



**Photograph 1:** 2 Trailers & Dollies Next to Loader

The terrain upon which this equipment operate is biscuit flat and the only sloped area is where the train discharges.

Following multiple failures of elements of the Belly Dump Trailers and Dollies a series of investigations occurred. Ours was the last investigation of which I am aware. Previous investigations included inspection of the reported failures and metallurgical testing and analysis. The failures which were occurring, in every case, were in the coupler structure between wet haul trailers or of the hitch turret. An example failure was viewed by me when

I inspected the facility and is shown on the photograph now on the screen.



**Photograph 2:** coupler structure between wet haul trailers or of the hitch turret

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