Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Aerodynamic drag on intermodal railcars PHILIP KINGHORN, DANIEL MAYNES, Brigham Young University — The aerodynamic drag associated with transport of commodities by rail is becoming increasingly important as the cost of diesel fuel increases. This study aims to increase the efficiency of intermodal cargo trains by reducing the aerodynamic drag on the load carrying cars. For intermodal railcars a significant amount of aerodynamic drag is a result of the large distance between loads that often occurs and the resulting pressure drag resulting from the separated flow. In the present study aerodynamic drag data have been obtained through wind tunnel testing on 1/29 scale models to understand the savings that may be realized by judicious modification to the size of the intermodal containers. The experiments were performed in the BYU low speed wind tunnel and the test track utilizes two leading locomotives followed by a set of five articulated well cars with double stacked containers. The drag on a representative mid-train car is measured using an isolated load cell balance and the wind tunnel speed is varied from 20 to 100 mph. We characterize the effect that the gap distance between the containers and the container size has on the aerodynamic drag of this representative rail car and investigate methods to reduce the gap distance.

Philip Kinghorn
Brigham Young University

Date submitted: 31 Jul 2014 Electronic form version 1.4