NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 30, 2015

Group Chairman's Factual Report

STRUCTURES

DCA13MA081

Attachment 10

Boeing 747-400 Frangible Cargo Sample Calculations
August 15, 2014

747 400 Frangible Calculation

The frangible volume calculation assumptions:

- •M Code Pallets (125x196)
  - •86” Height restriction forward of BA902
    - •Gross Vol. =125x86x125= 543 cu ft.
  - •96” High Pallets assume Gross Vol.=613 cu. ft.
- •TRC is centerline loaded, so the Effective Vol. =(.9)Gross Vol.
- •Cumulative Effective Vol. is the effective volume of a position and all positions forward
- •Cumulative Allowable Weight is the Allowable Weight calculated based on the Cumulative Effective Vol.

$$\text{Allowable Weight} = \frac{(\text{Effective Volume} - 6876.0)}{[(5.98786 \times 10^{-7}) \times \text{Effective Volume} + (6.57375 \times 10^{-4})]}$$

Position	Left	Right	GROSS Vol.	Effective Vo.	Cumulative Effective Vol.	Cumulative Allowable Weight**
A1	484		484	436	436	-7014111
A2	543		543	489	924	-4915377
B1		543	543	489	1413	-3633619
CL/CR	543	543	1086	977	2390	-2147542
DL/DR	543	543	1086	977	3368	-1311984
EL/ER	543	543	1086	977	4345	-776505
FL/FR	613	613	1226	1103	5449	-364140
GL/GR	613	613	1226	1103	6552	-70733
HL/HR	613	613	1226	1103	7655	148703

*543 cu. ft is the volume for a M code pallet with an 86” height restriction applied.

** Cumulative Allowable Weight Per D043U544-MASTER