CONTAINER OWNERS ASSOCIATION

COA Flexitank/Container Combination Standard Rail Impact Test Report

Name of Flexitank Company	**BLT Flexitank Industrial Co., Ltd**
COA Test reference number	**CFRA2601**

Part 1: Test Location and Conditions

Name of Test Facility	Transportation Technology Center, Inc.
Date	November 28, 2011
Weather/Temperature	Clear, 72^0F; 22^0C
Manager in Charge of Testing	Tom Feltault
Signature of Test Manager	

Part 2: Equipment being tested

A. Container

Container Information:

Container Supplied by	Denver Intermodal Express
Container Number	CAIU 2880890

CSC Plate Information

Container Manufacturer	CXIC Star Container (Qingdao) Co., Ltd. China
Date of Manufacture	5/11
Current Examination (Yes/No)	Yes
Maximum Gross Weight	30,480 kg; 67,200 lbs.
Allowable Stackable Weight	216,000 kg; 476,200 lbs.
Racking Test Load Value	15,240 kg; 33,600 lbs.
Allowable Stackable Weight (one-door off)	72,000 kg; 157,733 lbs.
Racking Test Load Value (one-door off)	7,650 kg; 16,860 lbs.
End Wall Strength (one-door off)	5,650 kg; 12,460 lbs.

Container Wall Thickness

Side Wall	
End Wall	
Doors	

B. Flexitank

Flexitank Information

Flexitank Serial Number	3154884/6109349
Flexitank Model/Name	BLT FLEXITANK

Flexitank Specifications

Volume – Nominal Capacity	24,000 liters
Volume – When Tested	23,600 liters
Number of Layers	4 layers of PE + 1 layer of PP outside

	Material	Thickness	Weight/sq metre
Layer 1	PE	125micro	
Layer 2	PE	125micro	
Layer 3	PE	125micro	
Layer 4	PE	125micro	
Layer 5	Woven PP		190g/sq meter
Layer 6			

Valve Configuration

Valve Type	Manufacturer	Model Number	Design	Size
Top	BLT		butterfly valve	3”
Bottom	BLT		ball valve	3”
Air Vent/Relief	BLT			
Other				

Bulkhead Specification

Bulkhead Type	BLT hard bulkhead design

Description of Bulkhead

6 pcs of horizontal bars + 1 pc of vertical bar	
PP hard bulkhead	
Dimensions and gauge	

Other Equipment

Securing and Lashing Equipment	2 horizontal bars at front end wall; 3 vertical bars on each side wall
Packing Materials	
Additional reinforcing	

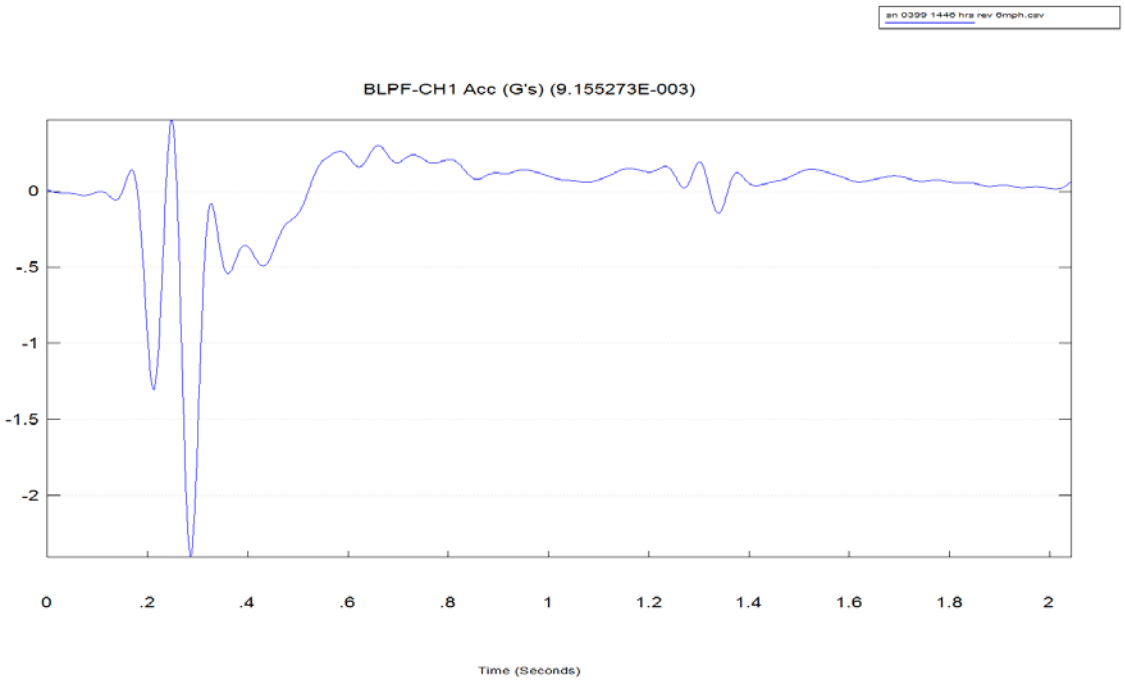
Part 3: Test Results

	after filling	(after) test 1	(after) test 2	after discharge
Acceleration		2.87	2.54	
(recommended acceleration)		(2G towards doors)	(2G towards end wall)	
Leakage	No	No	No	No
(rec. acceptance)	(no)	(no)	(no)	(no)
Side wall A	19.19	20.61	19.80	3.91
(rec. acceptance)	(40 mm)	(40 mm)	(40 mm)	(8 mm)
Side wall B	18.82	18.93	18.87	3.02
(rec. acceptance)	(40 mm)	(40 mm)	(40 mm)	(8 mm)
End wall	6.22	7.84	7.99	2.94
(rec. acceptance)	(40 mm)	(40 mm)	(40 mm)	(7 mm)
Door	0*	0*	0*	0*
(rec. acceptance)	(6 mm)	(6 mm)	(6 mm)	(6 mm)
Bulkhead	Not touching	Not touching	Not touching	Not touching
(rec. acceptance)	Not touching	Not touching	Not touching	Not touching

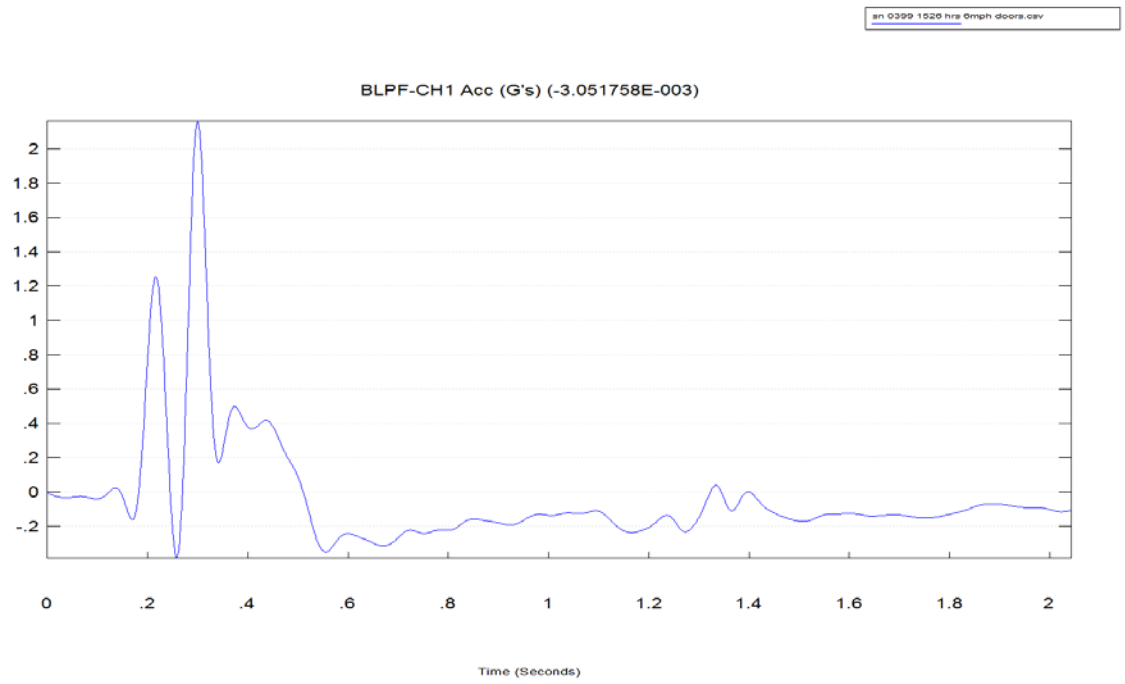
Valve	Not touching	Not touching	Not touching	Not touching
(rec. acceptance)	Not touching	Not touching	Not touching	Not touching

Further Comments

* At no time during the test did any part of the flexitank or its bulkhead come in contact with the container doors. Entire test sequence consisted of 5 impacts: 3 towards the container doors at speeds of 4.0, 6.0 and 6.0 mph; a reverse impact at 6.0 mph towards the container front end; and an additional 6.1 mph impact towards the container doors. The results of the last 2 impacts are reported herein.



Acceleration time history - 2.87 G's (peak-to-peak) to front end wall



Acceleration time history - 2.54 G's (peak-to-peak) towards doors