



CONTAINER OWNERS ASSOCIATION

COA Flexitank/Container Combination Standard Rail Impact Test Report

Name of Flexitank Company	Qingdao LET
COA Test reference number	CFRA 2622

Part 1: Test Location and Conditions

Name of Test Facility	Transportation Technology Center, Inc.
Date	June 26, 2013
Weather/Temperature	100° F. sunny
Manager in Charge of Testing	Tom Feltault
Signature of Test Manager	<i>Thomas F. Feltault</i>

Part 2: Equipment being tested

A. Container

Container Information:

Container Supplied by	Denver Intermodal Express
Container Number	CRSU 146636 22G1

CSC Plate Information

Container Manufacturer	CIMC
Date of Manufacture	10/2010
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)	134,400 lbs/60,960 kg
Racking Test Load Value (one-door off)	16,530 lbs/7,500 kg
End Wall Strength (one-door off)	12,460 lbs/5,650 kg

Container Wall Thickness

Side Wall	Not labeled
End Wall	Not labeled
Doors	Not labeled

B. Flexitank

Flexitank Information

Flexitank Serial Number	12136102
Flexitank Model/Name	LET Flexitank

Flexitank Specifications

Volume – Nominal Capacity	24,000 liters
Volume – When Tested	22,000 liters
Number of Layers	4 X PE +1 X PP Woven outer cover

	Material	Thickness	Weight/sq metre
Layer 1	PE	125 micron	
Layer 2	PE	125 micron	
Layer 3	PE	125 micron	
Layer 4	PE	125 micron	
Layer 5	Woven PP		190 g/m ²

Valve Configuration

Valve Type	Manufacturer	Model Number	Design	Size
Top	LET	none	Butterfly valve	3"
Bottom				
Air Vent/Relief				
Other				

Bulkhead Specification

Bulkhead Type	LET Design steel bulkhead
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Description of Bulkhead

5 horizontal steel bulkhead bars	
Plastic corrugated board	

Other Equipment

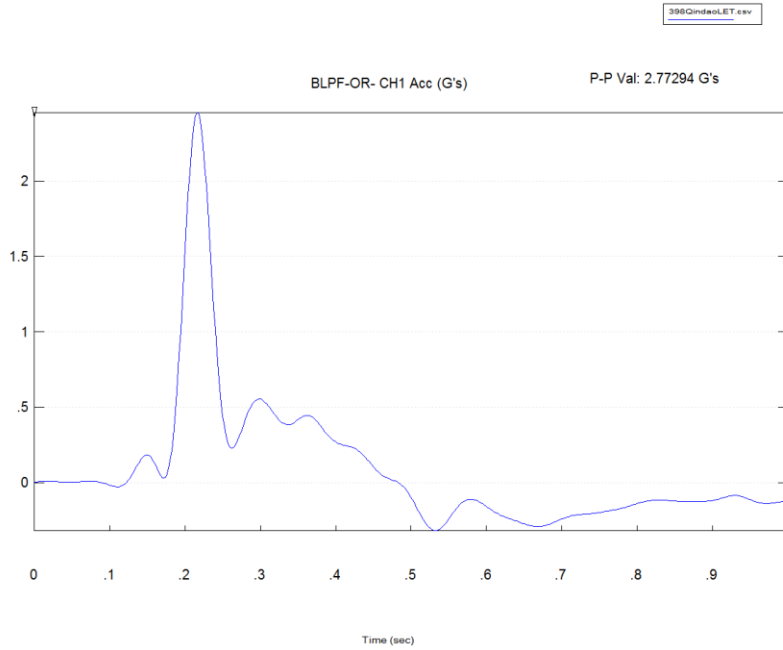
Securing and Lashing Equipment	
Packing Materials	Corrugated paper on side walls and floor
Additional reinforcing	

Part 3: Test Results

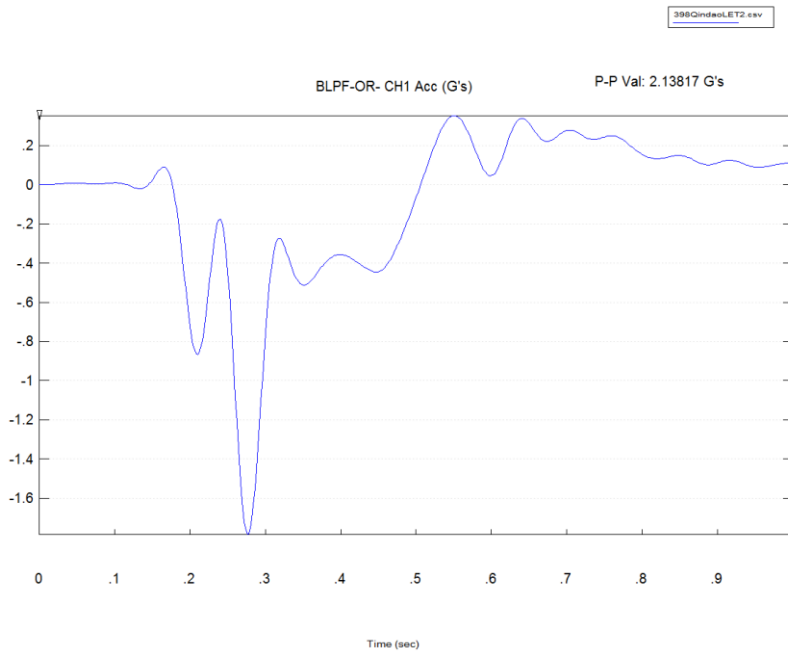
	after filling	(after) test 1	(after) test 2	after discharge
Acceleration		2.7	2.1	
(recommended acceleration)		(2G towards end wall)	(2G towards doors)	
Leakage	No	No	No	No
(rec. acceptance)	(no)	(no)	(no)	(no)
Side wall A	23.10	22.52	10.86	5.24
(rec. acceptance)	(40 mm)	(40 mm)	(40 mm)	(8 mm)
Side wall B	22.16	22.42	10.73	4.69
(rec. acceptance)	(40 mm)	(40 mm)	(40 mm)	(8 mm)
End wall	12.20	11.87	5.21	3.38
(rec. acceptance)	(40 mm)	(40 mm)	(40 mm)	(7 mm)
Door	0.00	0.00	0.00	0.00
(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

The entire test consisted of a total of 5 impacts, the last 2 of which are reported herein. At no time did the bulkhead come in contact with the container doors. No leakage or damage noted. At no time, however, did the flexitank touch the container doors.



Acceleration time history - 2.7 G's (peak-to-peak) to front end wall



Acceleration time history - 2.1 G's (peak-to-peak) towards doors