



Rail Tank Car 101

Objective



Upon the completion of this module, participants should be able to describe rail transport of hazardous materials, focusing on denatured fuel ethanol.

General Railroad Statistics



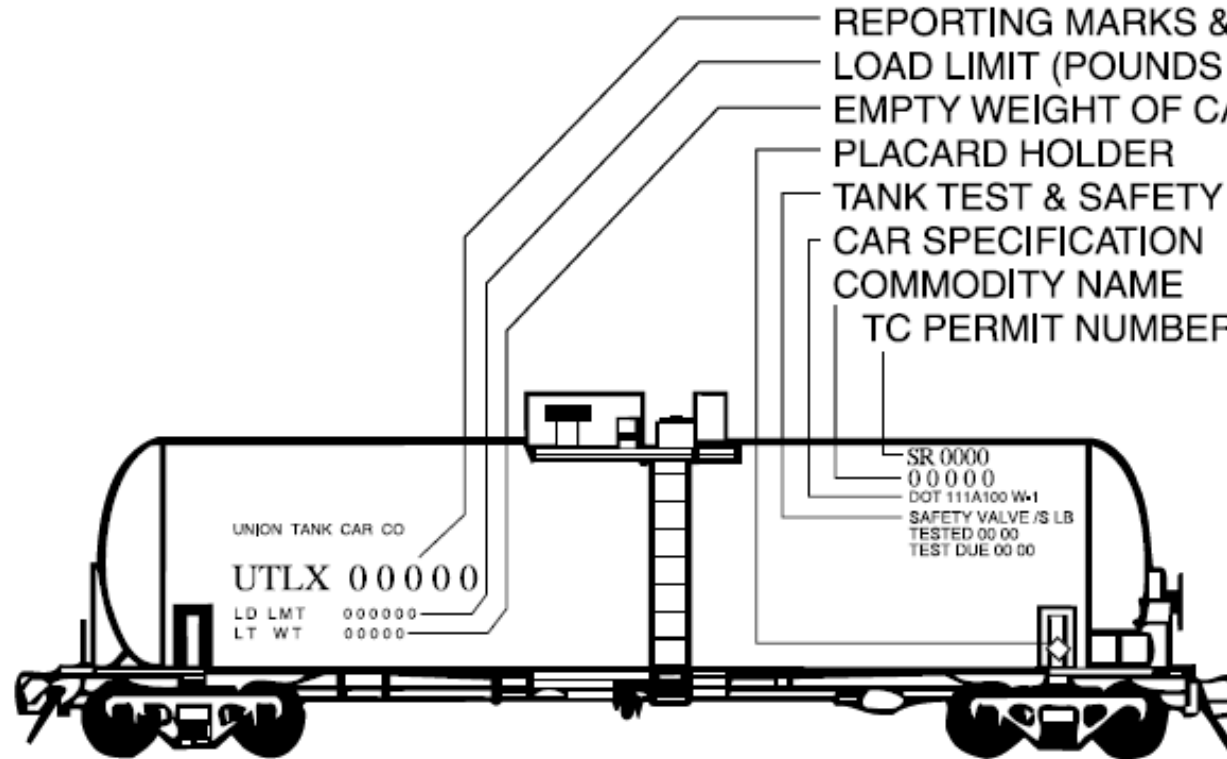
- Hundreds of operating railroads in the U.S.
- Tens of millions of railcar shipments each year
- Over a hundred thousand miles of track in U.S.
- Over a million railcars in service
- Over a hundred thousand employees

Railroad Statistics for Hazmat



- Over a million loads of hazardous materials are shipped via rail
- Ethanol is over a quarter of total number of hazmat shipments
- About three-quarters of the transportation of ethanol is conducted via rail
- Ethanol is over one percent of all railroad shipments

Initial Noticeable Characteristics



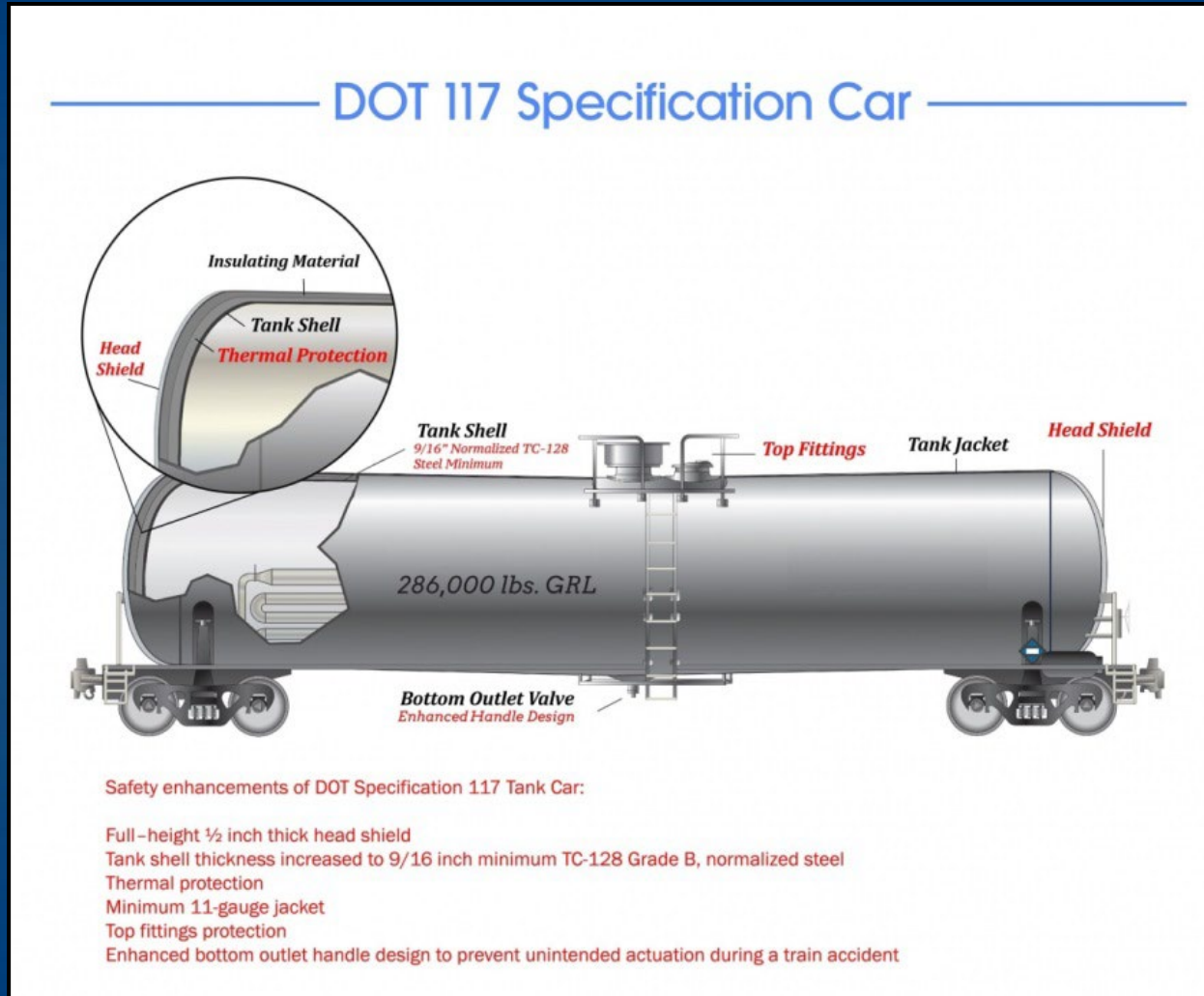
- REPORTING MARKS & CAR NUMBER
- LOAD LIMIT (POUNDS OR KG)
- EMPTY WEIGHT OF CAR
- PLACARD HOLDER
- TANK TEST & SAFETY VALVE TEST INFORMATION
- CAR SPECIFICATION
- COMMODITY NAME
- TC PERMIT NUMBER



- REPORTING MARKS & CAR NUMBER
- CAPACITY IN GALLONS OR LITERS
- PLACARD HOLDER

<http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Hazmat/ERG2012.pdf>

Transportation via Rail



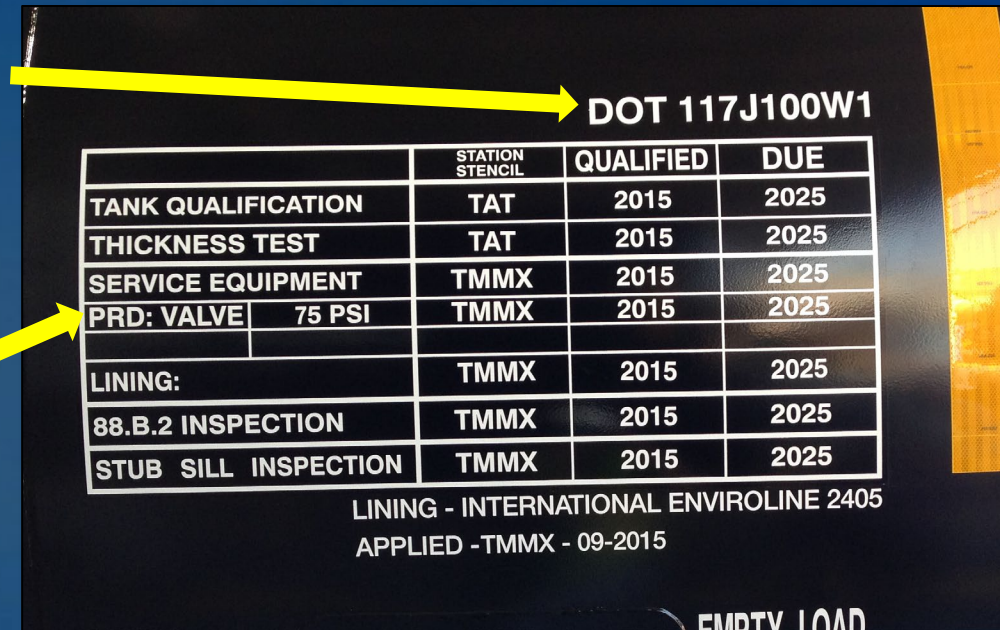
Reporting Mark & Number



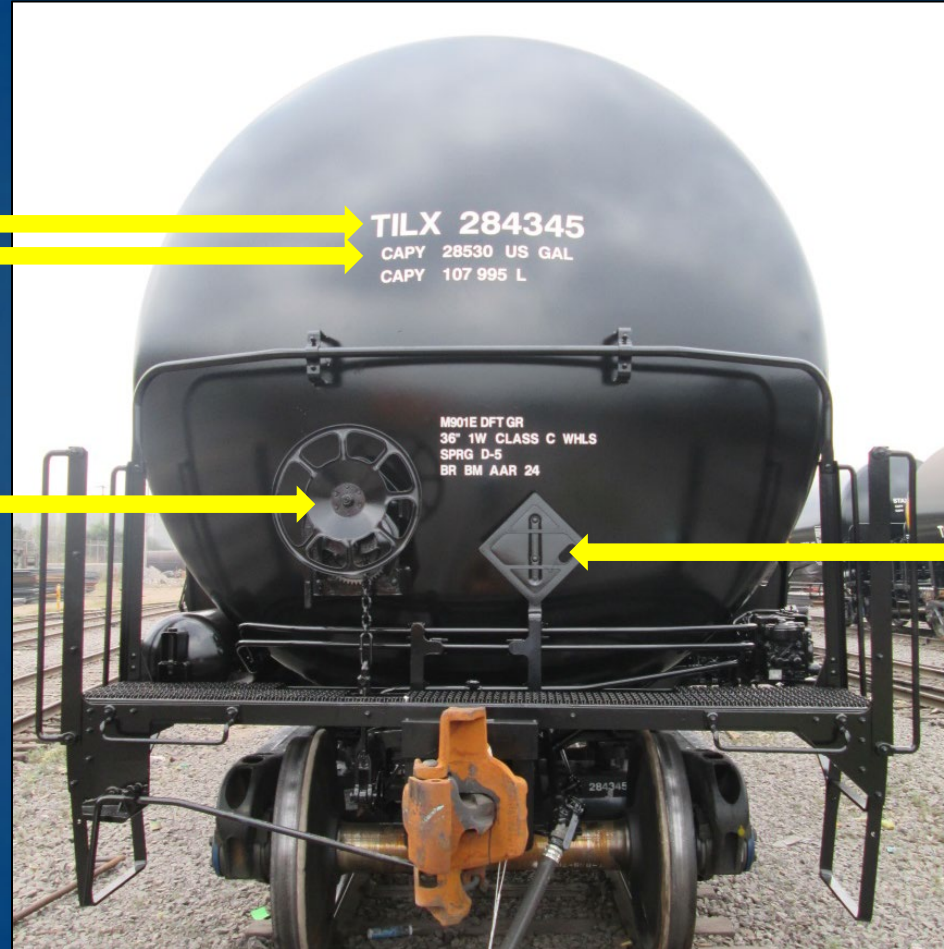
Qualification Stencil



- Specification information
- Qualification Stencil - PRD



A & B Ends



Bottom Outlet Stencil

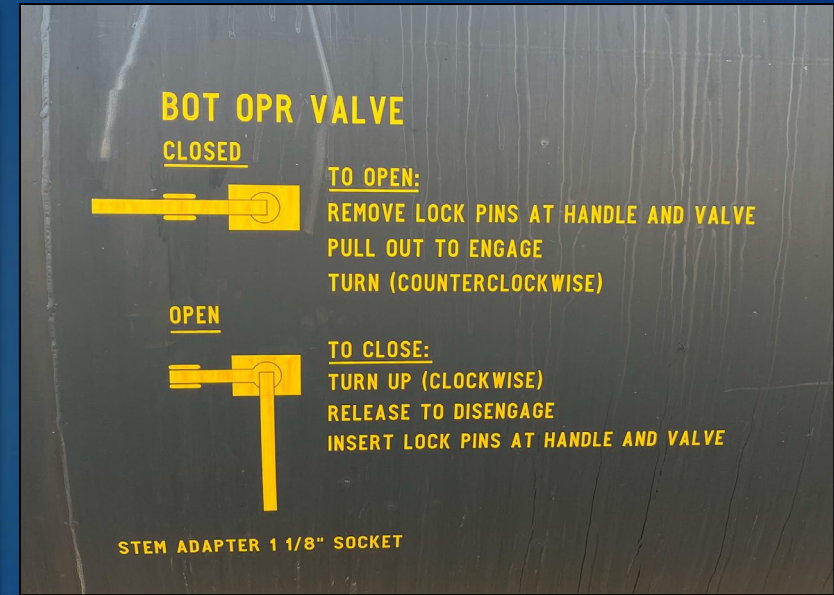


OWNERSHIP SUBJECT TO A SECURITY AGREEMENT FILED WITH THE SURFAC TRANSPORTATION BOARD

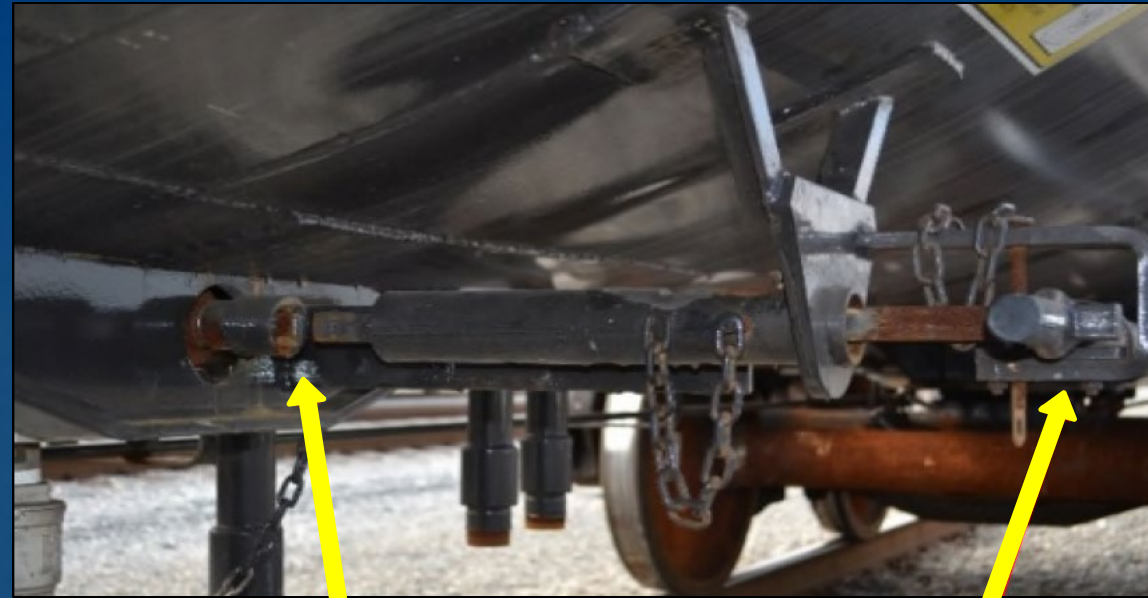
BOT OPR VALVE

HANDLE MUST BE LOCKED AND CHAINED IN CLOSED POSITION BEFORE LOADING

VENT TANK WHILE UNLOADING



Bottom Outlet Stencil



Placard Example



Key characteristics:

- Placard color
- Hazard class
- Identification number



Ethanol Placarding



Ethanol Shipping Information

Identification Number	Ethanol Concentration	Preferred Proper Shipping Name	Common Ethanol Blends
UN 1203	1% - 10%	Gasoline	E10
UN 3475	11% - 94%	Ethanol & gasoline mixture	E15-E85
UN 1987	95% - 99%	Alcohols n.o.s.	Denatured Fuel Ethanol, E95 - E98
UN 1170	100%	Ethanol <i>or</i> ethyl alcohol	E100

Brakes

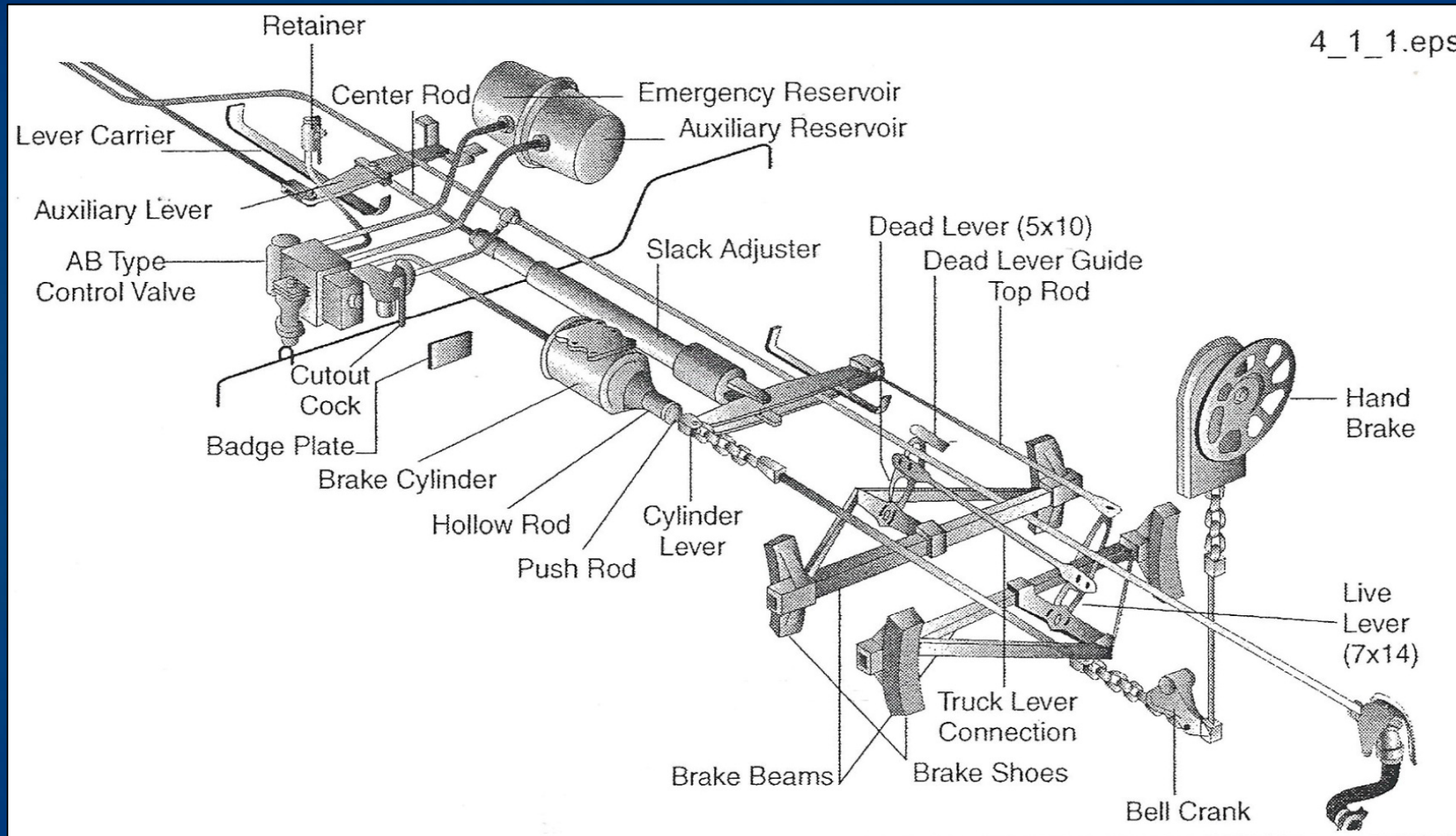


- Hand Brake
 - Holds the rail tank car in place
 - Prevents the rail tank car from moving and possibly causing further damage at incident site or harm to an emergency responder
- Air Brake
 - If there is an incident, potential for a rapid release of air causing the end of the rail tank car hose to strike an emergency responder

Hand Brake



Air Brake



Double-Shelf Couplers



Wheels Separated from Tank Car



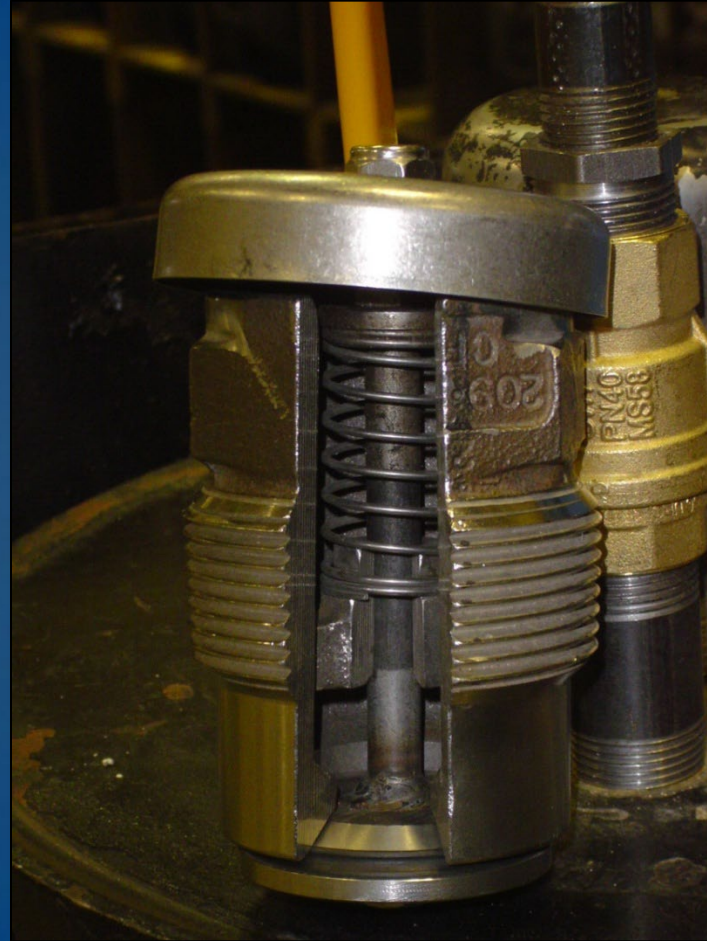
Protective Housing



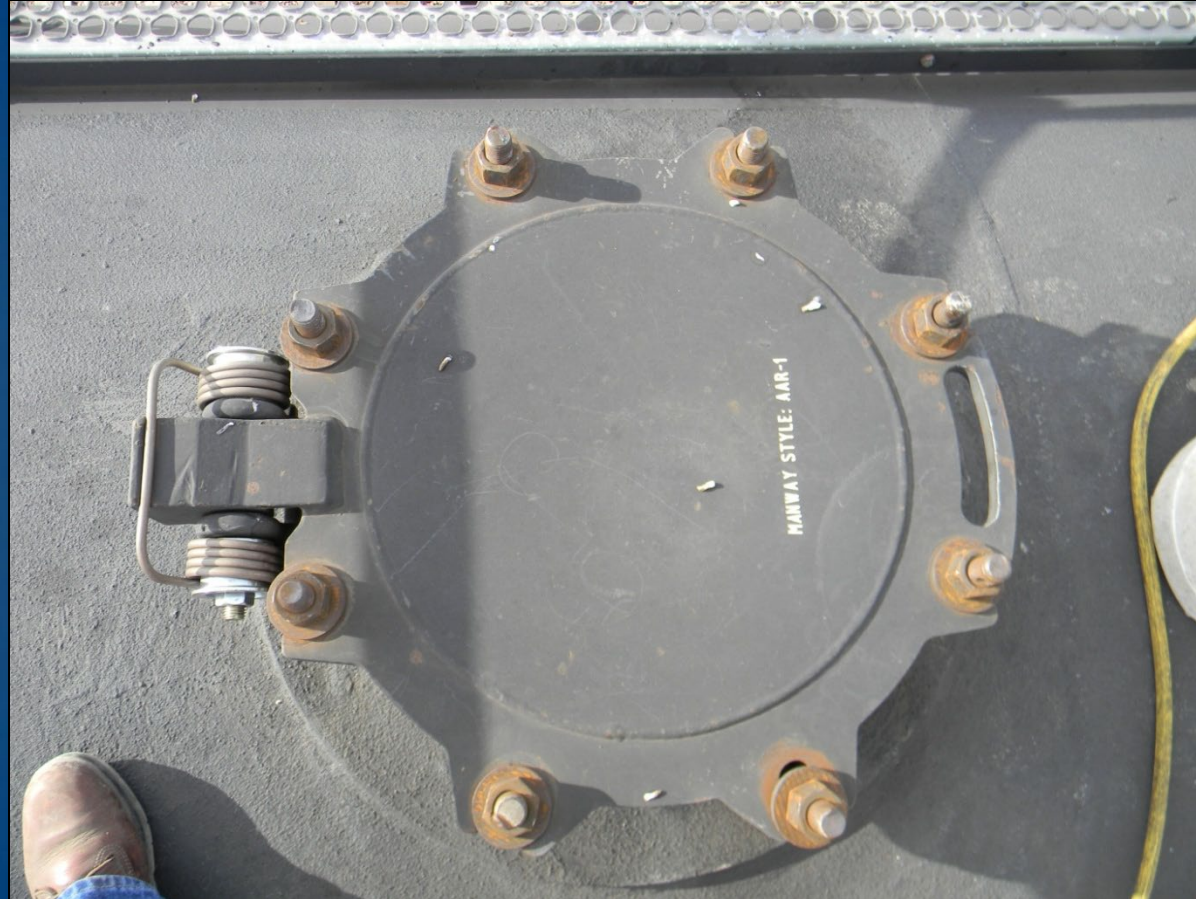
Valves



Vacuum Relief



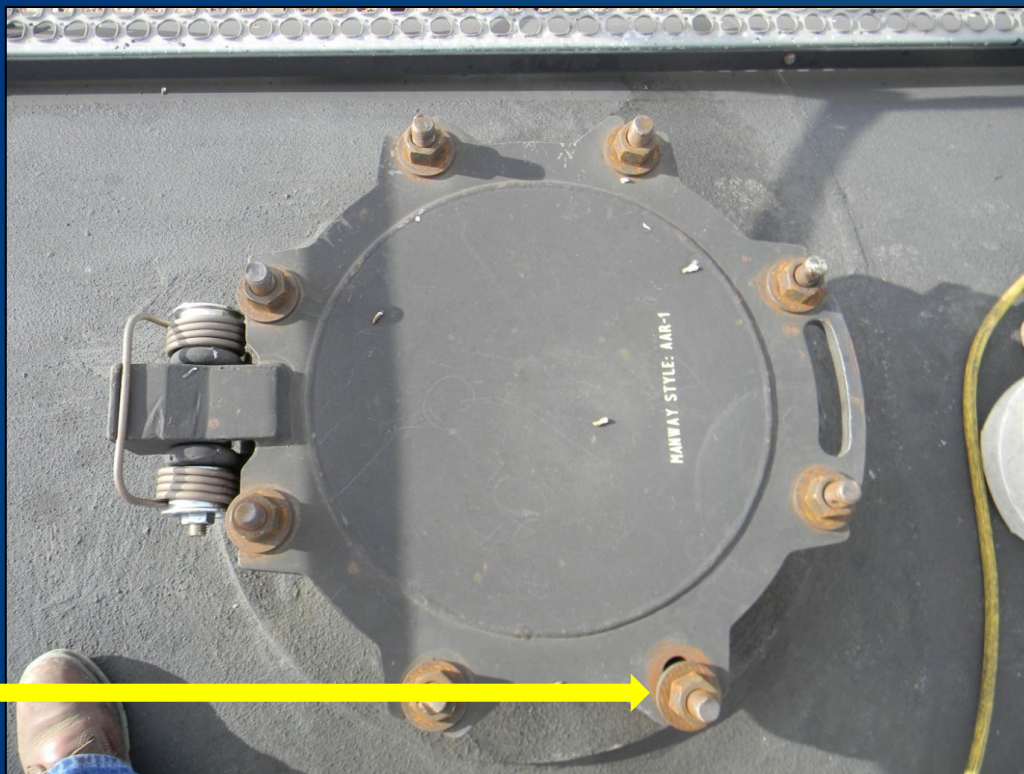
Manway



Manway – Unsecured Bolts



Manway – Loose Bolts



Top Ethanol NAR Causes / Issues



Manway

Loose bolts

Gasket deteriorated/ wrong type

Gasket misaligned

Gasket missing

Bottom outlet valve

Cap loose – valve open

Cap loose – valve closed



Shipping Papers



Placards & shipping papers example:

```
49 UTLX664230 LT25 118 FLMLIQ 240JP016 41-418-00 VENS DOLORES CA VENTURTRAN
60 MPH RESTRICTED CAR 1/TC, 160000/LB
***** UN1993
* DANGEROUS * FLAMMABLE LIQUIDS, N.O.S.
***** (XYLENE, ETHYLBENZENE)
EMERGENCY CONTACT: 3
8004249300 PG III
RQ (XYLENE, ETHYLBENZENE)
SHIPPER CONTACT
CHEMTREC CONT: CCN2407
HAZMAT STCC = 4910535
PLACARDED FLAMMABLE

50 SHPX463927 ECAL 34 240JP016 41-405-00 ZI16 DOLORES CA INEOSUSALL
60 MPH RESTRICTED CAR
51 RBOX 34565 BB5K 31 B 240CS519 PHL DELY PHL WILMINGTONCA POTENTIND
60 MPH RESTRICTED CAR
52 TCBX306114 LT28 140 FLMLIQ 235AN014 55-720-55 IND3 PARAMOUNTCA PEARSOFUL
60 MPH RESTRICTED CAR 1/CL, 189126/LB
***** UN1987
* DANGEROUS * ALCOHOLS, N.O.S.
***** 3
EMERGENCY CONTACT: PG II
18004249300 SHIPPER CONTACT
CN 671436
HAZMAT STCC = 4909152
PLACARDED FLAMMABLE

53 AMCX463217 ECAL 34 240JP016 41-405-00 ZI16 DOLORES CA INEOSUSALL
60 MPH RESTRICTED CAR
54 EQUX620935 LCAL 134 POLYET 240CS720 PHL DELY PHL REYES CA ALPHAINDMA
60 MPH RESTRICTED CAR
55 CRGX 19378 LT19 142 SYRUP 240CS720 PHL DELY PHL LYNWOOD CA CARGILL
60 MPH RESTRICTED CAR CAR IS LESS THAN 45 FEET
56 CRGX190059 LT19 142 SYRUP 240CS720 PHL DELY PHL LYNWOOD CA CARGILL
60 MPH RESTRICTED CAR CAR IS LESS THAN 45 FEET
57 AMCX104350 ECAL 33 240JP016 41-405-00 ZI16 DOLORES CA INEOSUSALL
60 MPH RESTRICTED CAR
58 AMCX104609 ECAL 33 240JP016 41-405-00 ZI16 DOLORES CA INEOSUSALL
60 MPH RESTRICTED CAR
59 AMCX104570 ECAL 33 240JP016 41-405-00 ZI16 DOLORES CA INEOSUSALL
60 MPH RESTRICTED CAR
60 AMCX104462 ECAL 34 240JP016 41-405-00 ZI16 DOLORES CA INEOSUSALL
60 MPH RESTRICTED CAR
61 GATX 76156 ET32 50 240JP016 41-929-91 IND2 DOLORES CA PHILLI66
```

Emergency
Contact
Information



EMERGENCY CONTACT:
18004249300





10:37 5G 74%

Car Lookup

Enter Equipment ID ex: RAIX1102

I am conducting a training search

Equipment ID is a set of letters (up to four) and a set of numbers (up to six) on the side of every freight railcar. To see a test railcar, please search for the following equipment ID: RAIX 1102.

RAIX 1102
LOADED
TANK CAR

Quantity: 203,510 Pound-1 Tank
UN1267
Proper Shipping Name: PETROLEUM CRUDE OIL
Hazard Class: 3
Packing Group: I

Car Lookup | Railroad Contact ... | Hazardous Materi... | Placard Reference

10:37 5G 74%

Car Lookup

RAIX1102 X

I am conducting a training search

Equipment Details [View Train](#)

HAZARDOUS

RAIX 1102
LOADED
TANK CAR

Quantity: 203,510 Pound-1 Tank
UN1267
Proper Shipping Name: PETROLEUM CRUDE OIL
Hazard Class: 3
Packing Group: I

Car Lookup | Railroad Contact ... | Hazardous Materi... | Placard Reference

10:38 5G 74%

Consist Results [Done](#)

FILTER ALL 14 Cars

[Export To CSV](#)

> 0	LOCO 1111	LOCOMOTIVE
> 0	LOCO 1112	LOCOMOTIVE
> 1	RAIX 1101	EMPTY
> 2	RAIX 1102	LOADED
> 3	RAIX 1111	LOADED
> 4	RAIX 1112	LOADED
> 5	RAIX 1113	LOADED
> 6	RAIX 1114	LOADED
> 7	RAIX 1115	EMPTY
> 8	RAIX 1116	EMPTY
> 9	RAIX 1117	LOADED
> 10	RAIX 1118	LOADED
> 11	RAIX 1119	LOADED

Car Lookup | Railroad Contact ... | Hazardous Materi... | Placard Reference

10:38 5G 74%

Consist Results [Done](#)

FILTER ALL 14 Cars

[Export To CSV](#)

7 RAIX 1115 EMPTY

EMPTY

Car Information

RAIX 1115
EMPTY
TANK CAR 111A100W1

Quantity: Net Weight: 00 Pounds
UN1170
Proper Shipping Name: ETHANOL
Hazard Class: 3
Packing Group: II

Car Lookup | Railroad Contact ... | Hazardous Materi... | Placard Reference

Additional Resources



Pipeline & Hazardous Materials Safety Admin. (PHMSA)

www.phmsa.dot.gov

Federal Railroad Administration (FRA)

www.fra.dot.gov

Association of American Railroads (AAR)

www.aar.org

Non-Accident Release Reduction Program (NAR)

www.nar.aar.com

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