

Appendix B:

Tank Car Group Examination Observations, March 3, 2015

Mount Carbon, West Virginia

NTSB # DCA15FR005

Participating Organizations:

NTSB

Federal Railroad Administration

Pipeline and Hazardous Materials Safety Administration

Transportation Safety Board of Canada

GATX Corporation

Trinity Rail

American Railcar Industries

Railway Supply Institute/Association of American Railroads

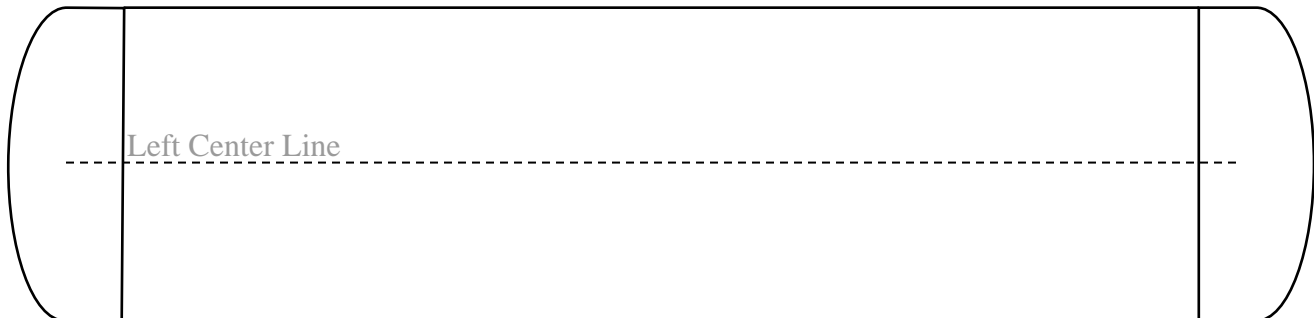
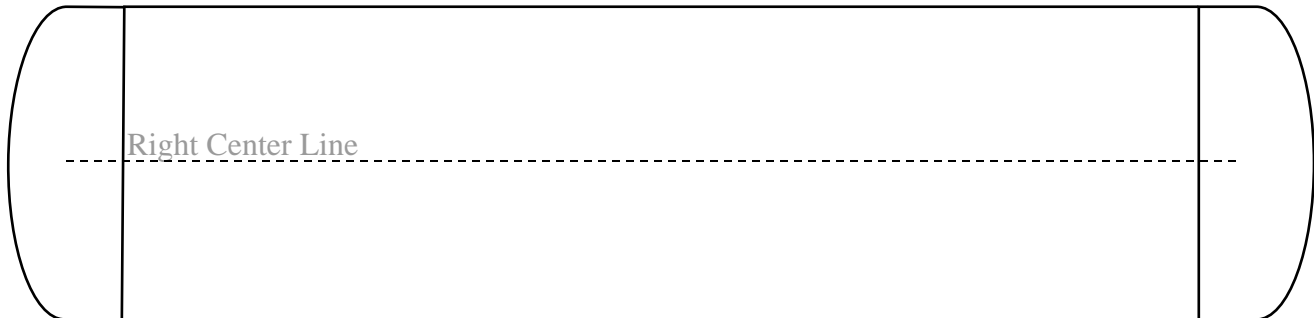
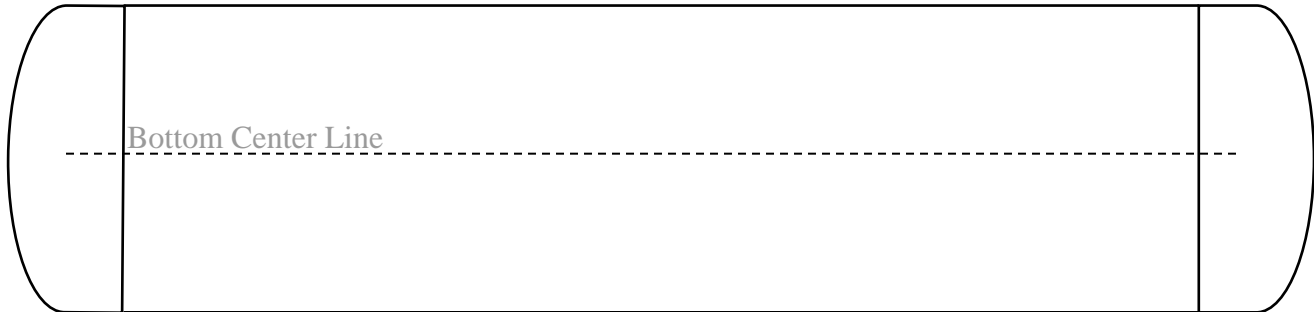
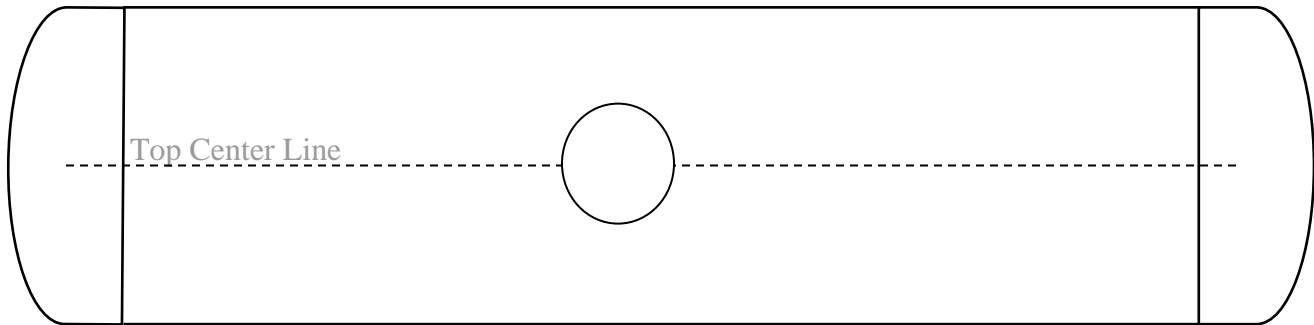
CBTX 742201 (02) Damage Assessment Notes

Reporting Marks	CBTX 742201	# 02	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	None	
Jacket	No		Breaching Damage	None	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	10/5/2012
Capacity (GAL)	31,820		LD Limit (LB)	210,700	

Indicate number on figures below within damaged areas.

A-END

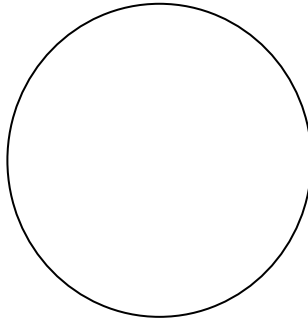
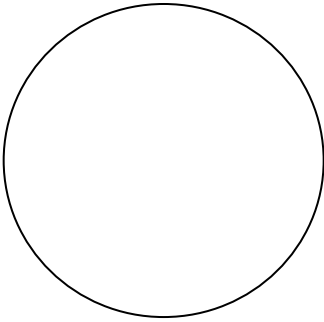

 Direction of Travel



CBTX 742201 (02) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

No derailment damage except for mechanical and safety appliances.

Other information :

CBTX 742201 came to rest on the left side in a ditch parallel to the track with the B-end facing north (trailing).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

BOV and top fittings undamaged.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.



Figure 1: Resting positions of CBTX 742201 (02), CBTX 742774 (03), CBTX 742792 (04), and GATX 286285 (05).

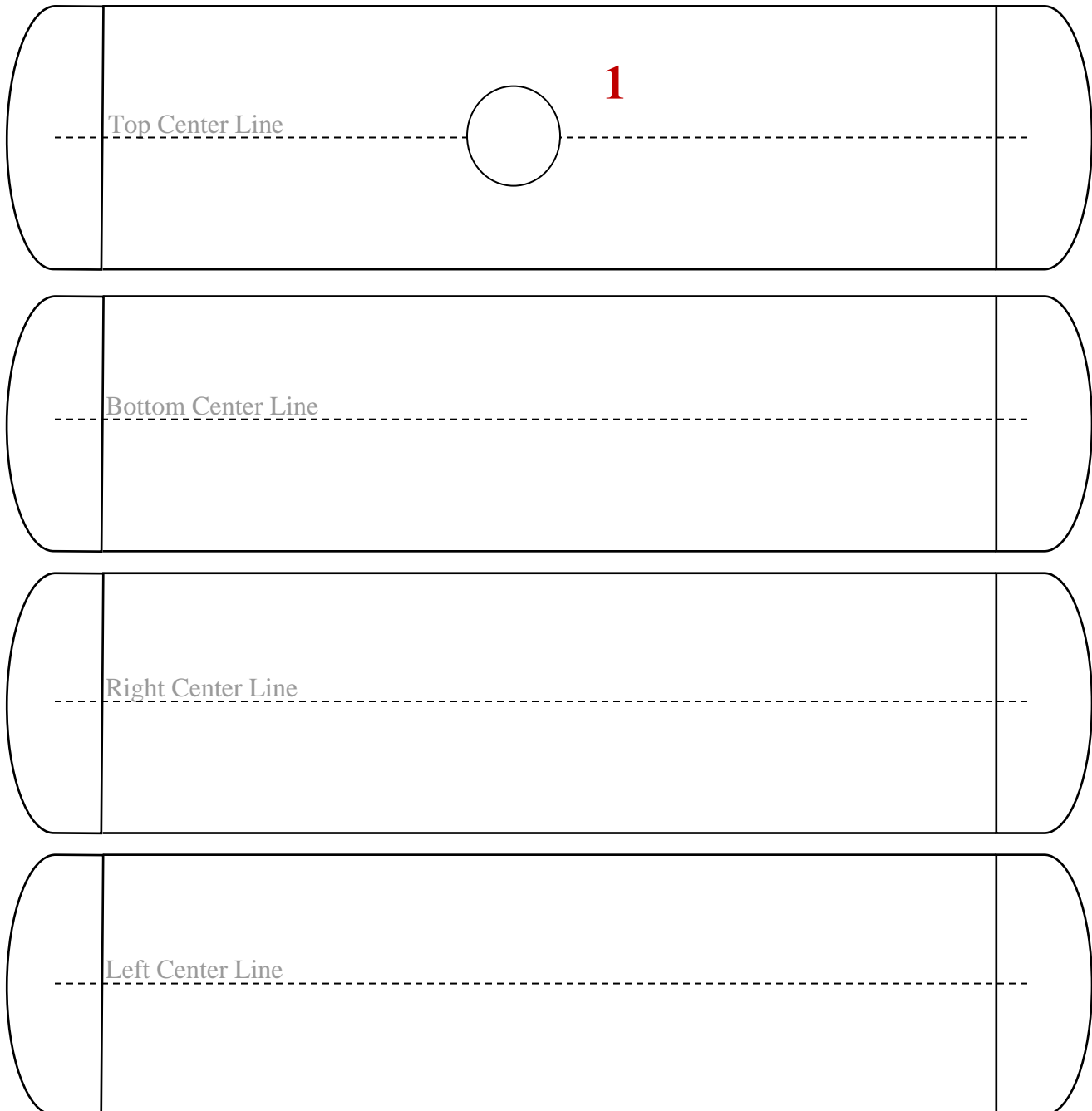
CBTX 742774 (03) Damage Assessment Notes

Reporting Marks	CBTX 742774	# 03	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	None	
Jacket	No		Breaching Damage	None	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	10/25/2012
Capacity (GAL)	31,820		LD Limit (LB)	210,500	

Indicate number on figures below within damaged areas.

A-END

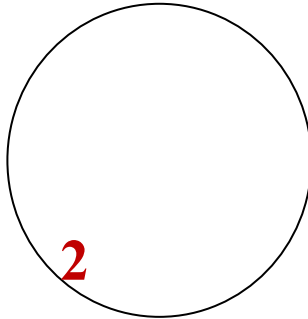
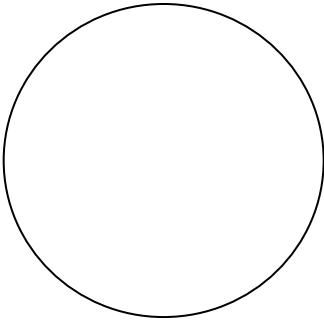
← Direction of Travel



CBTX 742774 (03) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Tank flattened entire length 1 o'clock to 2 o'clock, right side.
2. Slight dent A-end head shield.

Other information:

CBTX 742774 came to rest on the left side in a ditch parallel to the track with the B-end facing north (trailing).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

BOV and top fittings undamaged.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.



Figure 2: Resting positions of CBTX 742201 (02), CBTX 742774 (03), CBTX 742792 (04), and GATX 286285 (05).

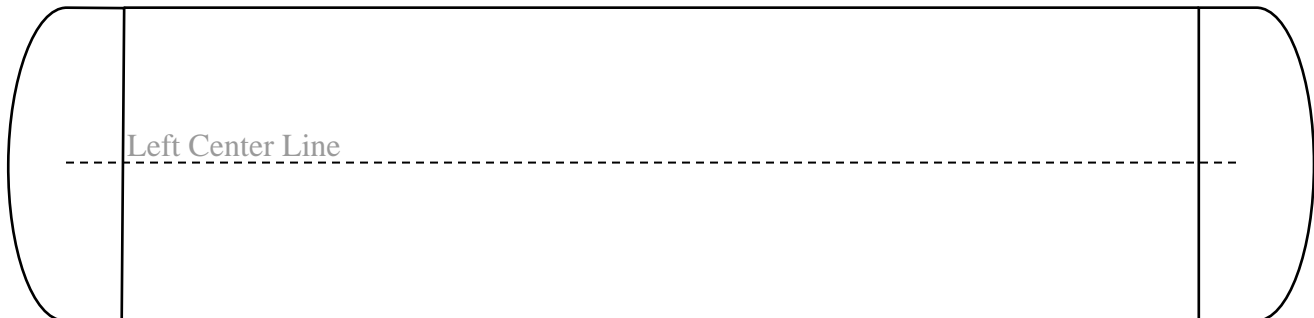
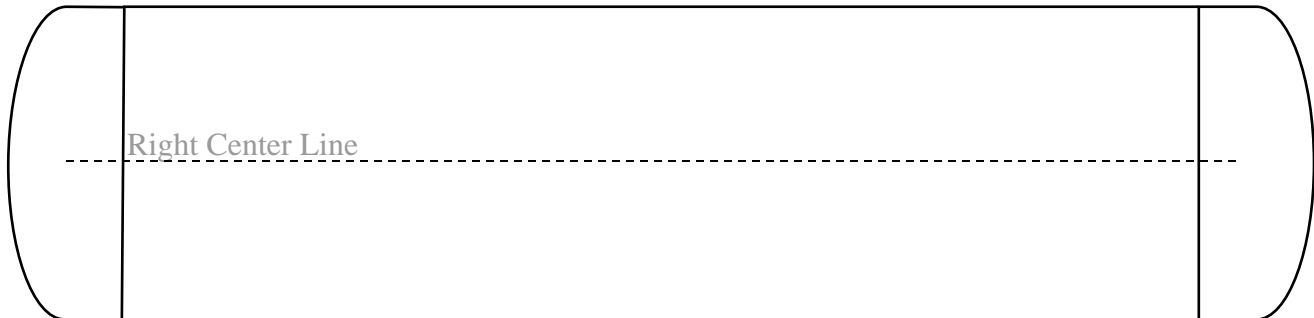
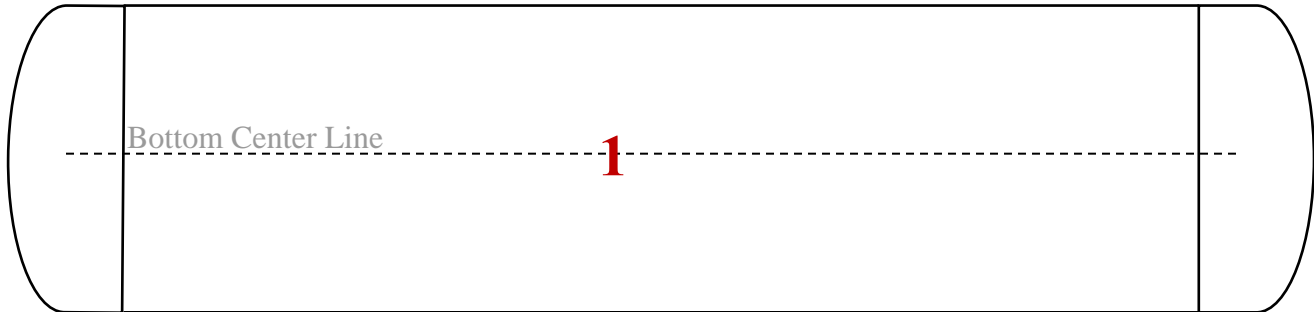
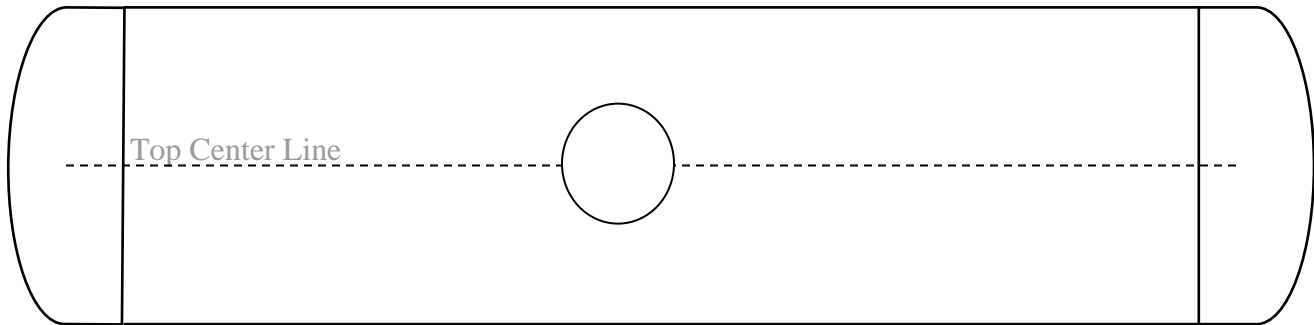
CBTX 742792 (04) Damage Assessment Notes

Reporting Marks	CBTX 742792	# 04	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product released	None	
Jacket	No		Breaching Damage	None	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	10/25/2012
Capacity (GAL)	31,820		LD Limit (LB)	210,500	

Indicate number on figures below within damaged areas.

A-END

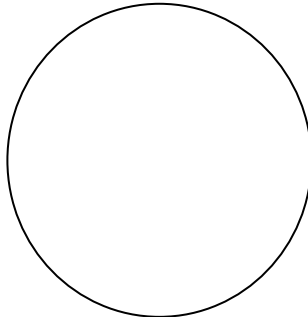
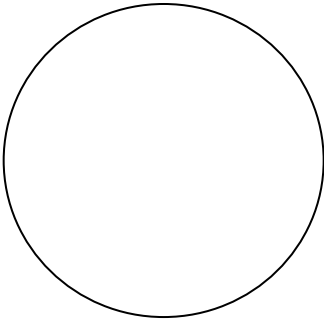
← Direction of Travel



CBTX 742792 (04) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Bottom outlet nozzle was sheared off. Bottom outlet valve itself was not damaged.

Other information:

CBTX 742792 came to rest on the left side in a ditch parallel to the track with the B-end facing north (trailing).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

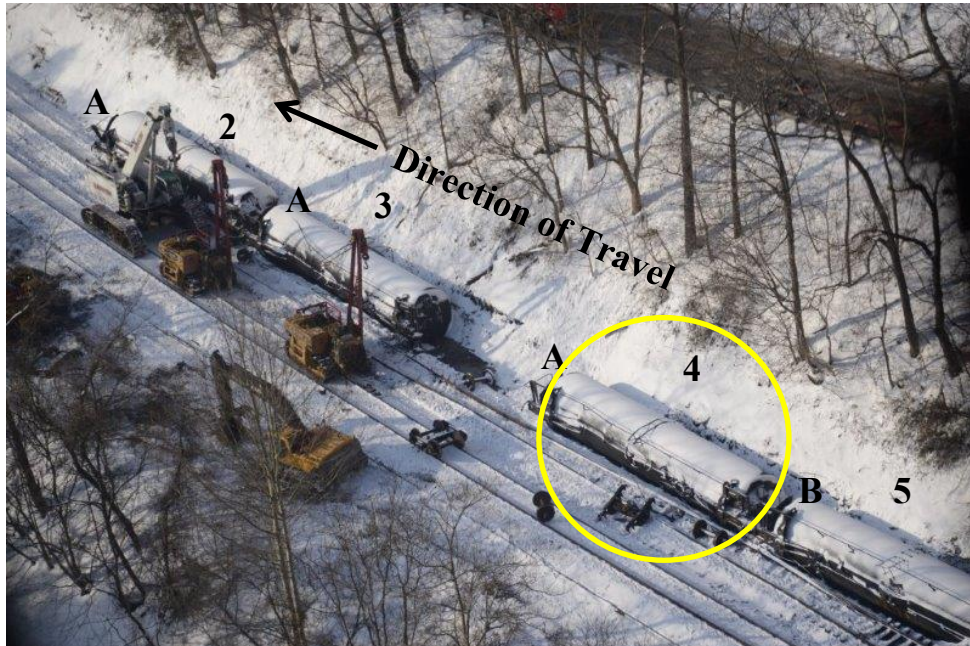


Figure 3: Resting positions of CBTX 742201 (02), CBTX 742774 (03), CBTX 742792 (04), and GATX 286285 (05).

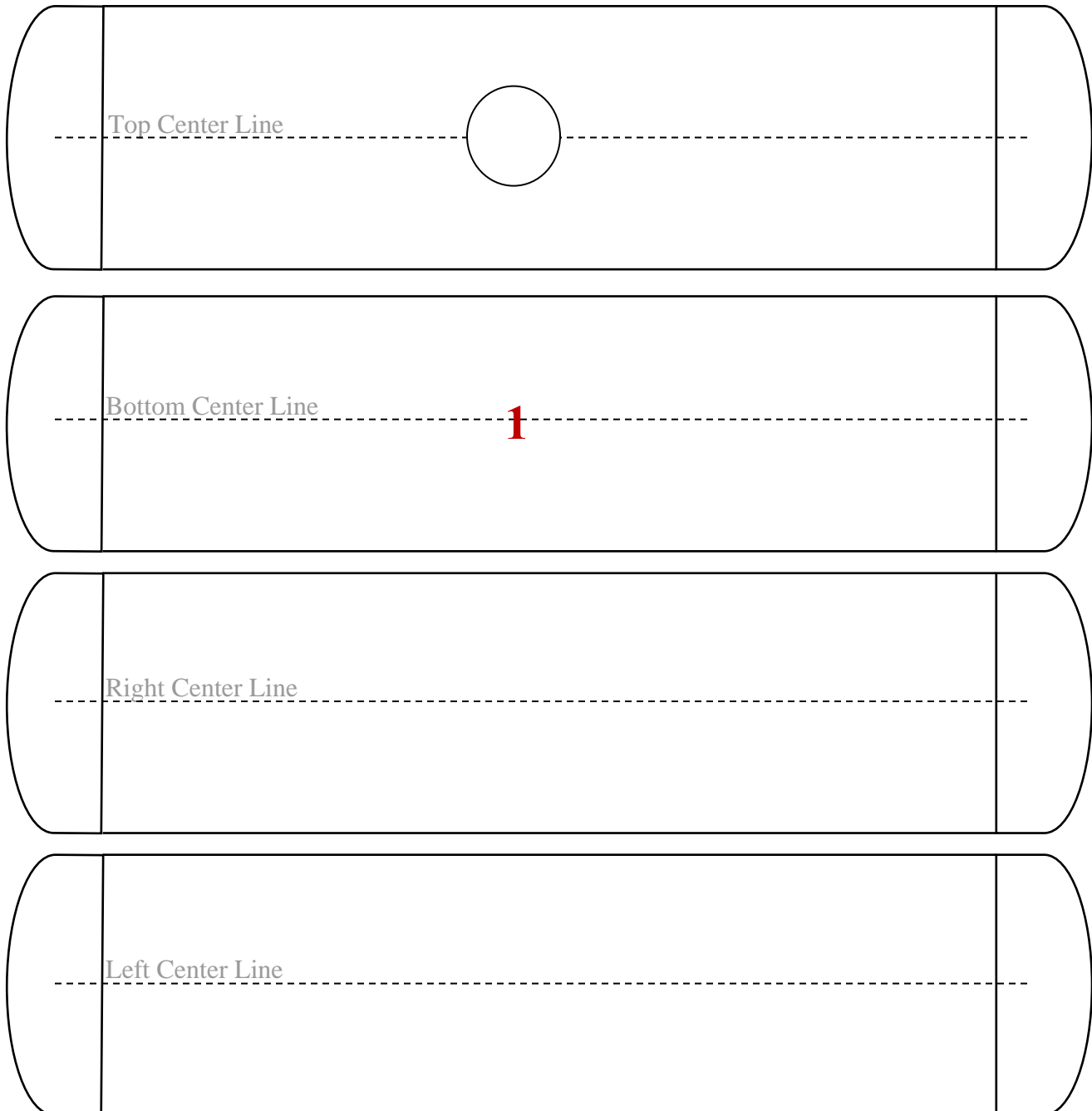
GATX 286233 (05) Damage Assessment Notes

Reporting Marks	GATX 286233		# 05	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1	
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267			Product Released	Minimal	
Jacket	No			Breaching Damage	BOV	
Car builder	Trinity	Stub Sill Design	TRN024	Built Date	9/28/2011	
Capacity (GAL)	31,770			LD Limit (LB)	211,700	

Indicate number on figures below within damaged areas.

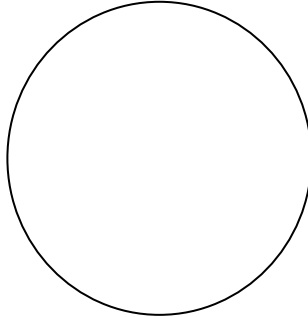
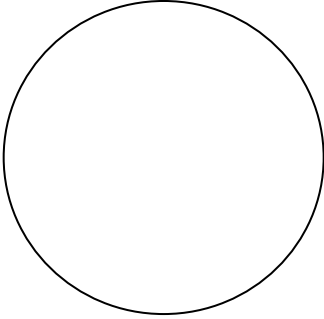
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Skid protection bent, compromising seat on flange of bottom outlet valve.

Other information:

GATX 286233 came to rest on the left side in a ditch parallel to the track with the B-end facing south (leading).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 211,700 lb. Loaded to 202,704 lb.

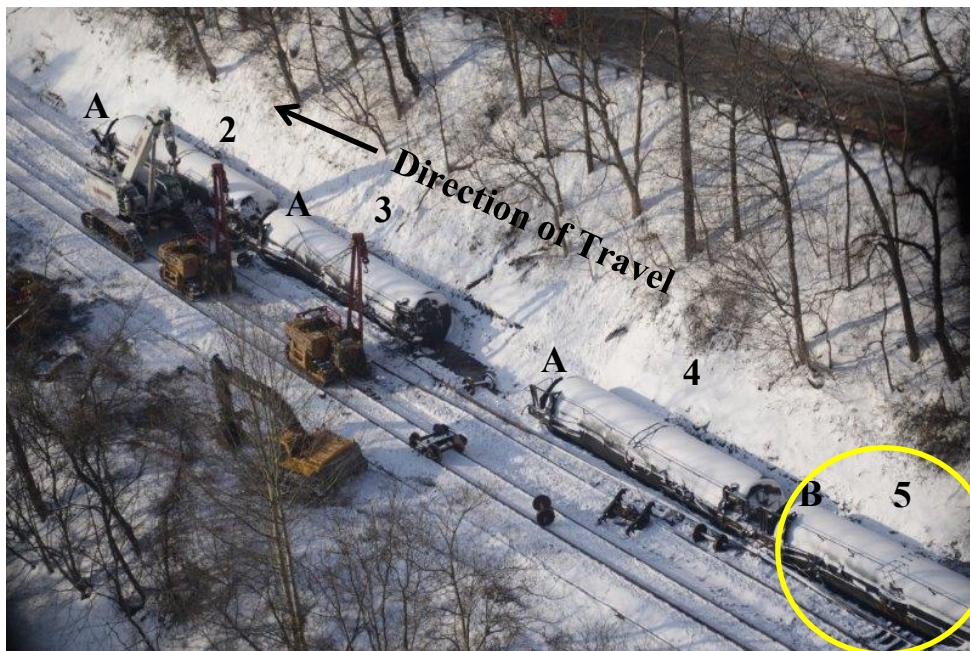


Figure 4: Resting positions of CBTX 742201 (02), CBTX 742774 (03), CBTX 742792 (04), and GATX 286285 (05).



Figure 5: GATX 286233 bent skid protection indicated by Item 1, and leaking bottom outlet valve.

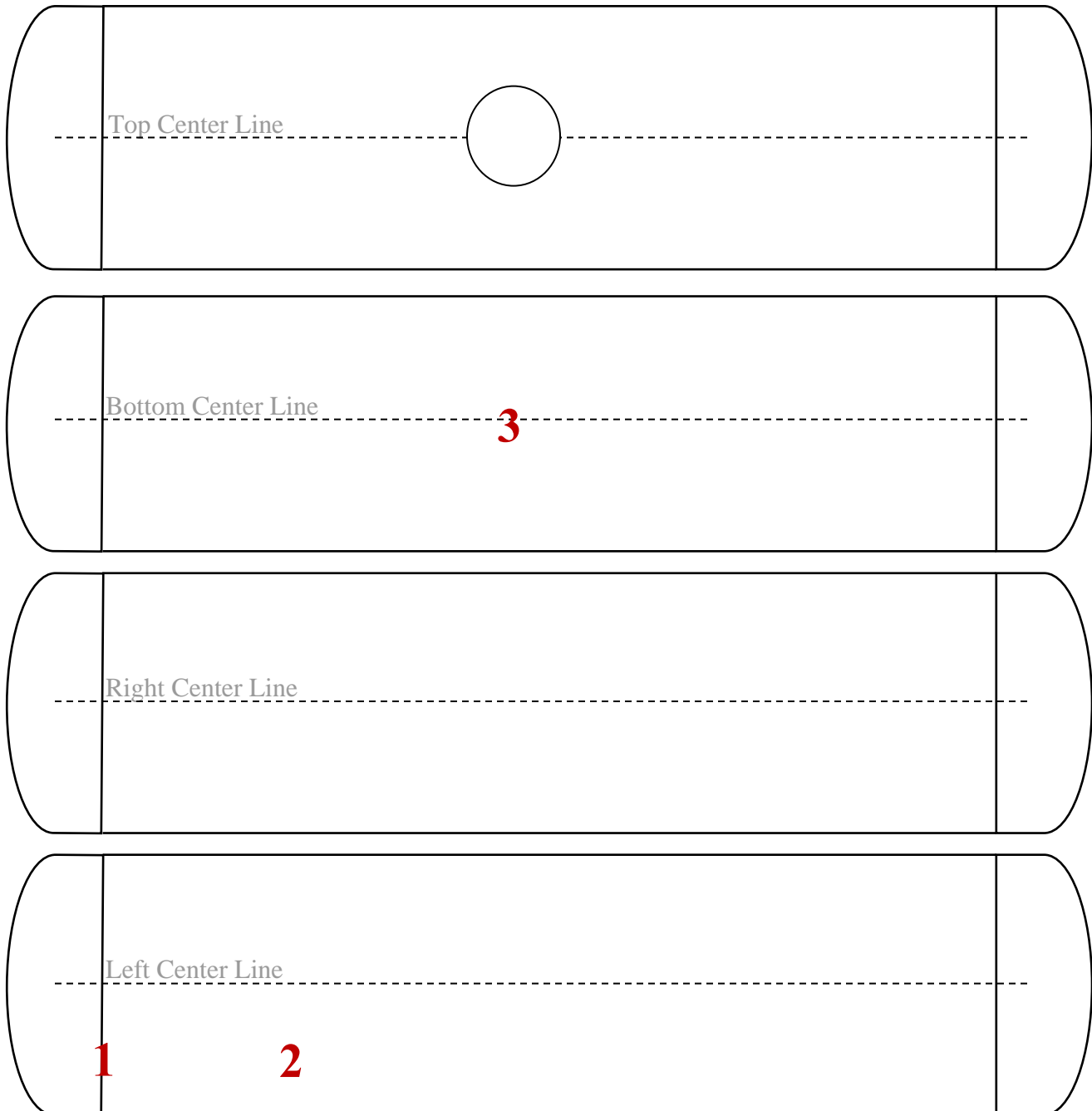
GATX 286285 (06) Damage Assessment Notes

Reporting Marks	GATX 286285		# 06	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1	
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267			Product Released	None	
Jacket	No			Breaching Damage	None	
Car builder	Trinity	Stub Sill Design	TRN024	Built Date	12/13/2011	
Capacity (GAL)	31,720			LD Limit (LB)	211,500	

Indicate number on figures below within damaged areas.

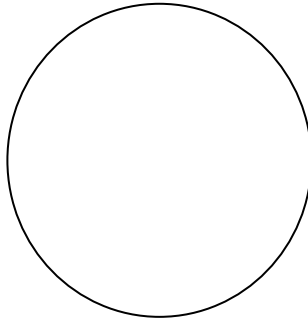
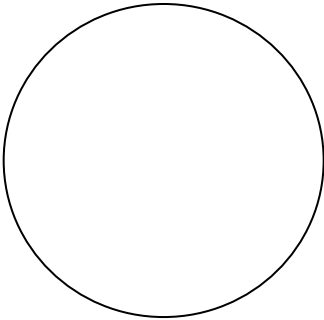
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Dent 2 ft. by 2 ft., 1.5 inches deep.
2. Dent 22 ft. longitudinal by 2 ft. transverse, 5 inches deep.
3. Bottom outlet nozzle sheared off, bottom outlet valve in good condition.

Other information:

GATX 286285 came to rest on the left side in a ditch parallel to the track with the B-end facing south (leading).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 211,500 lb. Loaded to 202,752 lb.



Figure 6: Derailed overview highlighting line no. 6.

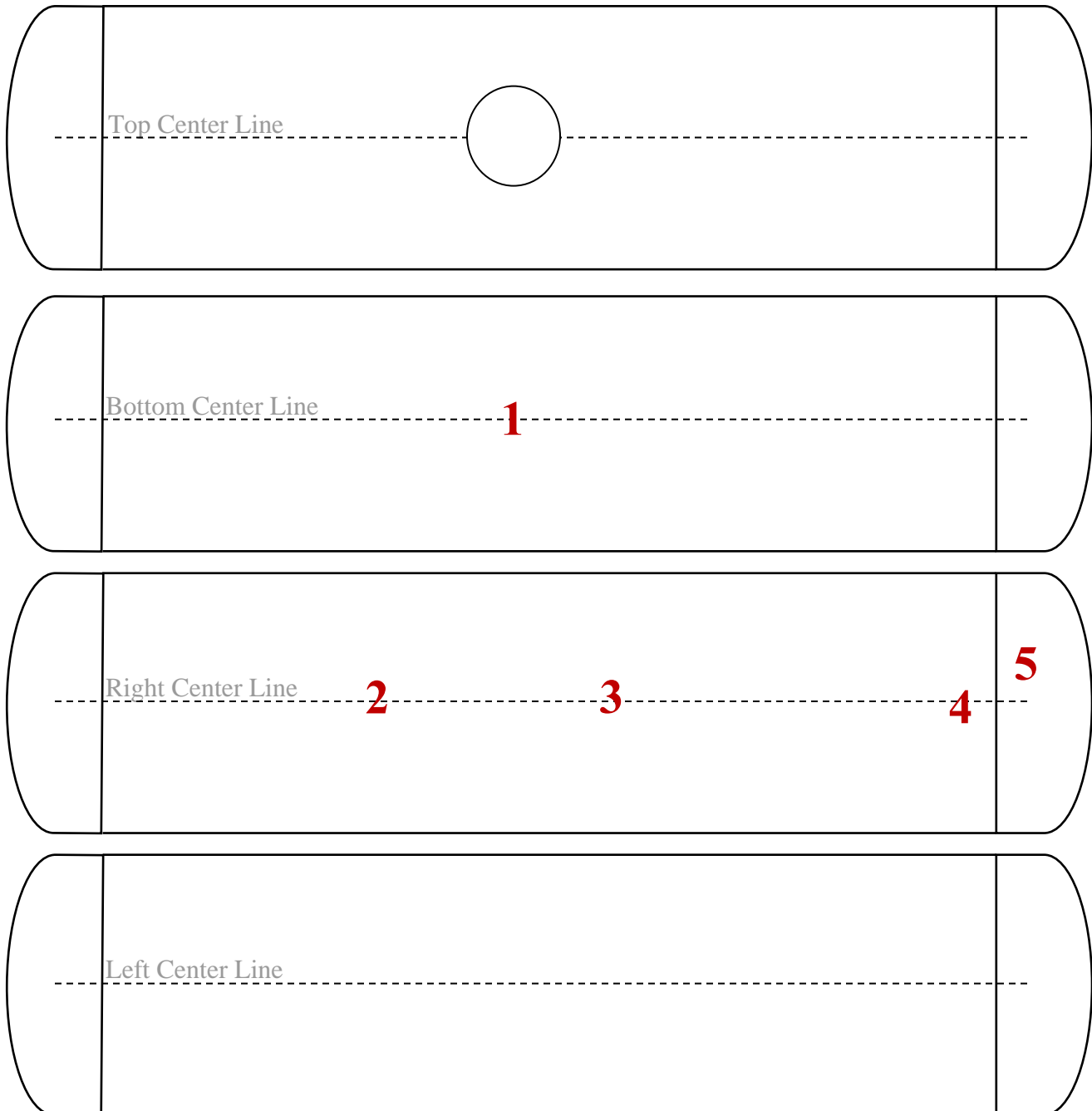
GATX 286241 (07) Damage Assessment Notes

Reporting Marks	GATX 286241		# 007	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1	
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267			Product Released	8,490 gallons	
Jacket	No			Breaching Damage	BOV open	
Car builder	Trinity	Stub Sill Design	TRN024	Built Date	9/30/2011	
Capacity (GAL)	31,790			LD Limit (LB)	211,600	

Indicate number on figures below within damaged areas.

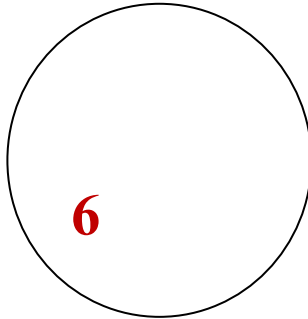
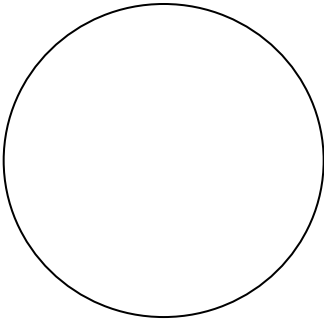
A-END

← Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Bottom outlet nozzle sheared off and bottom outlet valve was 1/8 opened at derailment site. Operating handle was broken away.
2. Dent 11 ft. longitudinal, 7 ft. transverse, 8-inches deep.
3. Flattened area 14 ft. longitudinal, 3 ft. transverse.
4. Dent 18 inches by 18 inches, 1 inch deep.
5. Dent 2 ft. longitudinal, 1 ft. transverse, 2 inches deep.
6. Dent to head shield and tank – 24 inches by 18 inches, 2 inches deep into tank head.

Other information:

GATX 286241 came to rest 45-degree angle to track with the B-end elevated and north (trailing).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 211,600 lb. Loaded to 202,448 lb.



Figure 7: Derailment overview highlighting line no. 7.



Figure 8: GATX 286241 bottom outlet valve, reclosed by response personnel.

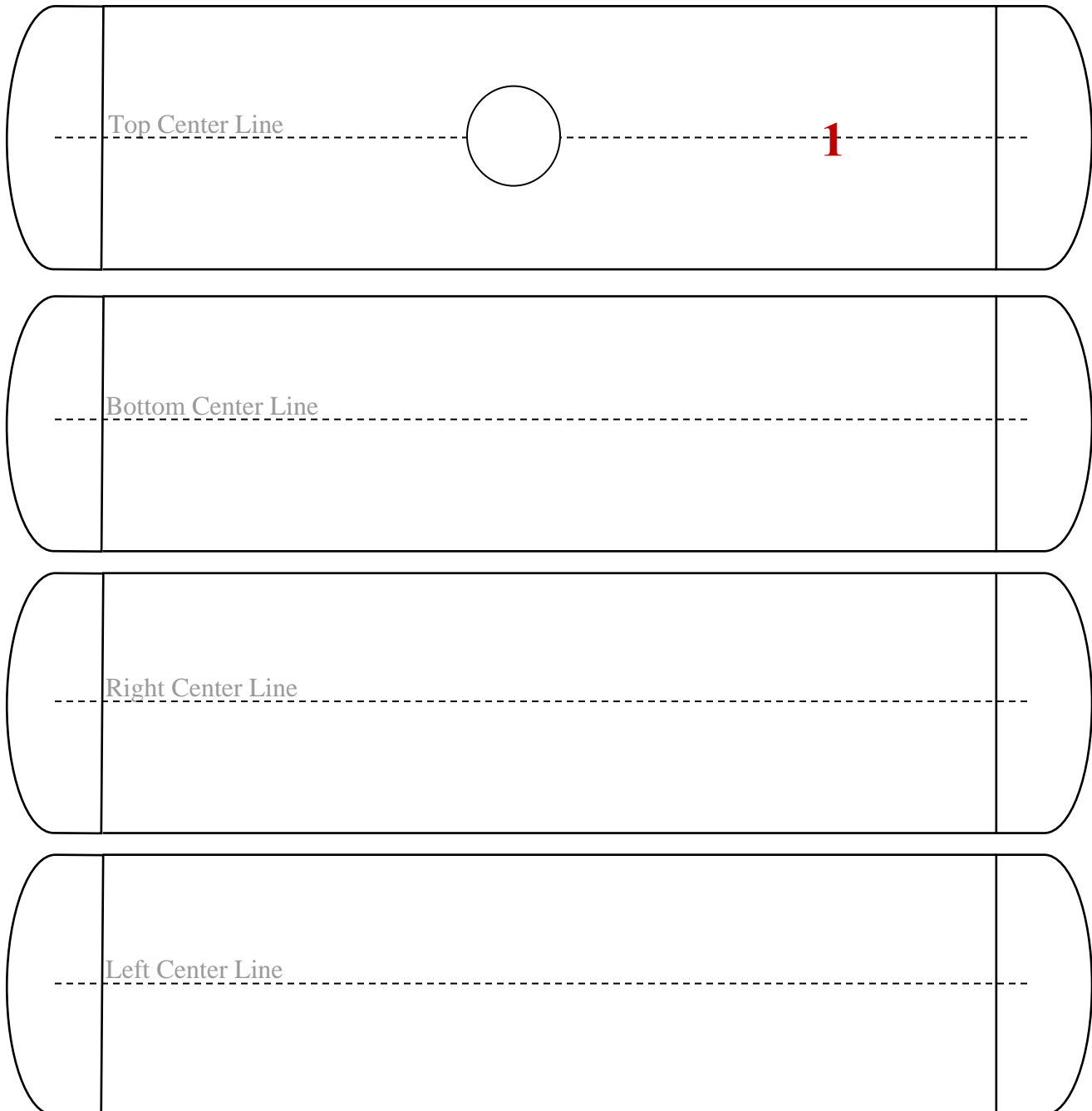
GATX 286232 (08) Damage Assessment Notes

Reporting Marks	GATX 286232	# 08	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	8,520 gallons	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	Trinity	Stub Sill Design	TRN024	Built Date	9/15/2011
Capacity (GAL)	31,820		LD Limit (LB)	211,800	

Indicate number on figures below within damaged areas.

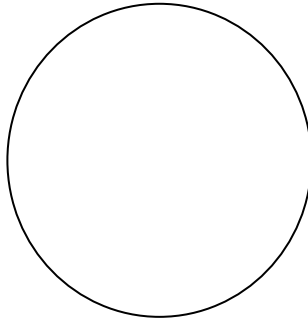
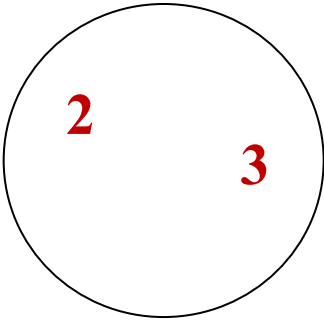
A-END

← Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 13 inches longitudinal, 1.5 inches transverse. Shell tear was surrounded by a bulge 12 ft. longitudinal, 6 ft. transverse.
2. Dent above head shield in 3.5 ft. high by 4 ft. long, 5 inches deep.
3. Right side of head shield peeled outward.

Other information:

GATX 286232 came to rest across Track 1 and 2 with the B-end north (trailing).

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 211,800 lb. Loaded to 202,827 lb.



Figure 9: Derailed overview highlighting line no. 8.



Figure 10: GATX 286232 B-end shell bulging and head damage.



Figure 11: GATX 286232 thermal tear.

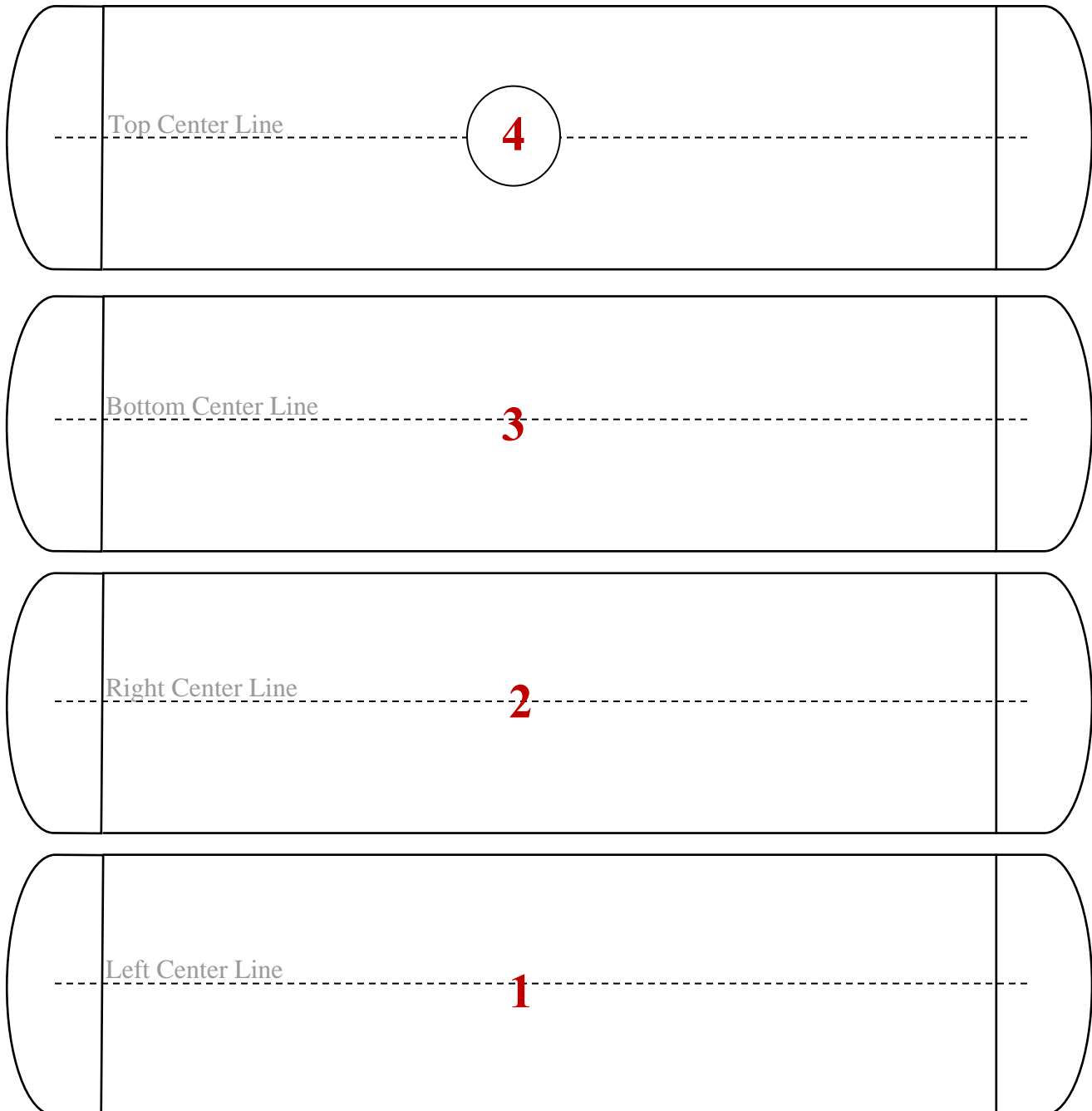
GATX 286214 (09) Damage Assessment Notes

Reporting Marks	GATX 286214		# 09	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1	
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267			Product Released	27,951 gallons	
Jacket	No			Breaching Damage	Thermal Tear	
Car builder	Trinity	Stub Sill Design		TRN024	Built Date	8/31/2011
Capacity (GAL)	31,700			LD Limit (LB)	212,100	

Indicate number on figures below within damaged areas.

A-END

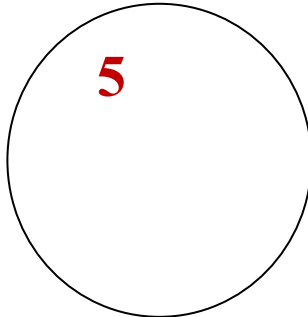
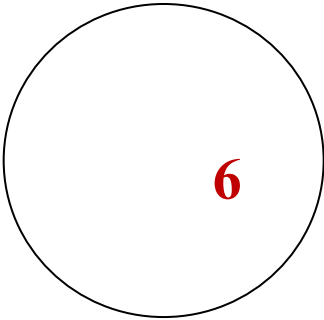
← Direction of Travel



GATX 286214 (09) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear 8 ft. longitudinal, 1.5 ft. transverse. Shell thinning measured to 0.311 inches near the center of the breach.
2. Entire right side of car was wrinkled.
3. Bottom outlet nozzle and operating handle sheared off. The BOV remained closed.
4. Top fittings and pressure relief device were heavily fire damaged.
5. Dent to head above head shield, 2.5 ft. wide, 2 ft. high, 2.5 inches deep.
6. Right half of B-end head shield pulled forward with 90 degree bend.

Other information:

GATX 286214 came to rest perpendicular to the track, with the B-end (trailing) facing west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 212,100 lb. Loaded to 201,625 lb.



Figure 12: Derailed overview highlighting line no. 9.



Figure 13: GATX 286214 thermal tear and head shield damage.



Figure 14: GATX 286214 thermal tear with material thickness measurements.

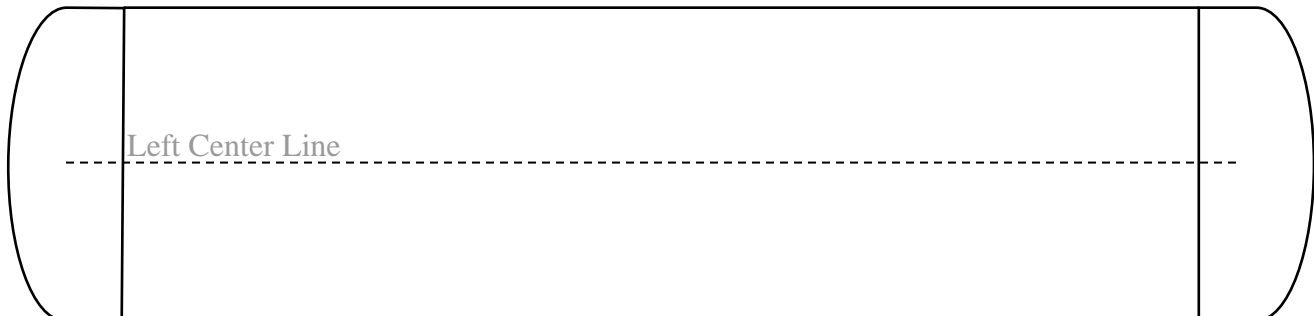
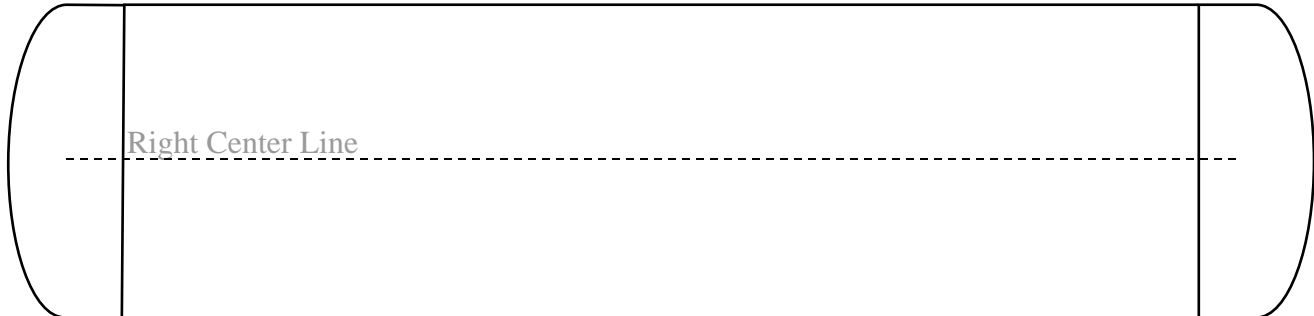
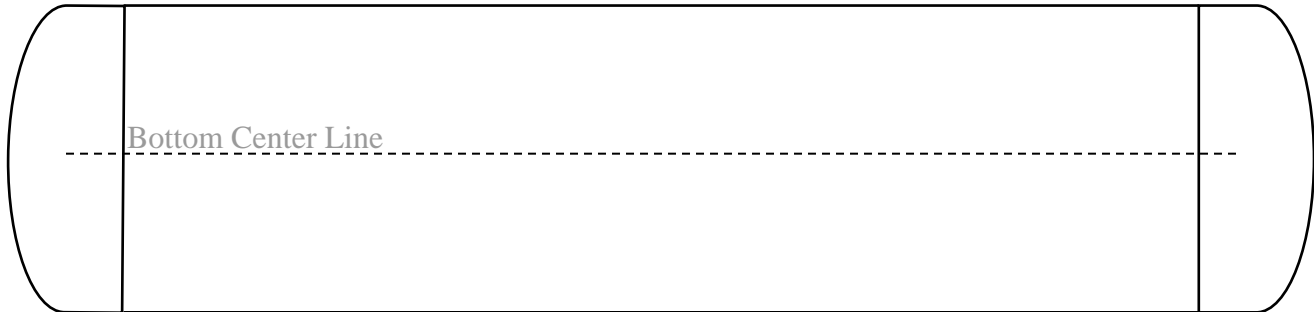
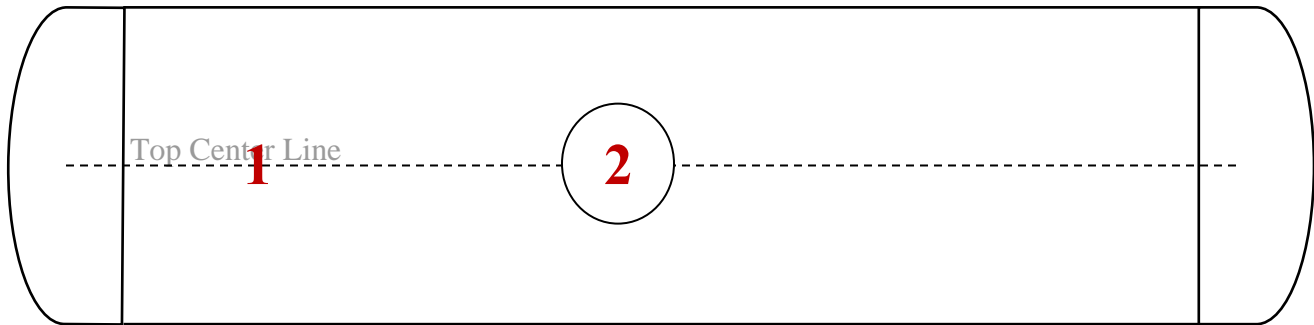
GATX 286292 (10) Damage Assessment Notes

Reporting Marks	GATX 286292		# 10	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1	
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267			Product Released	29,433 gallons	
Jacket	No			Breaching Damage	Thermal Tear	
Car builder	Trinity	Stub Sill Design		TRN024	Built Date	11/18/2011
Capacity (GAL)	31,740			LD Limit (LB)	211,400	

Indicate number on figures below within damaged areas.

A-END

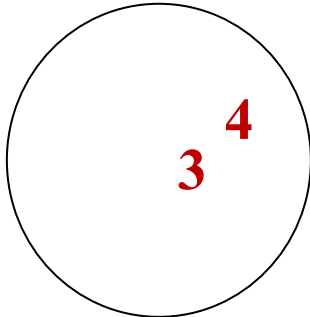
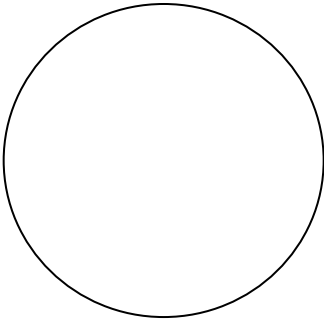
 Direction of Travel



GATX 286292 (10) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, irregular fracture 8.5 ft. longitudinal, 1.5 ft. transverse. Shell thinning measured to 0.292 inches at the center of the tear.
2. Top fittings fire damage within protective housing.
3. Hand rail punctured by impact with an object having the shape of a nut.
4. Head shield bolts missing from bracket.

Other information:

GATX 286292 came to rest on right side at 5 o'clock, perpendicular to the track, with the B-end (leading) facing west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 211,400 lb. Loaded to 201,504lb.



Figure 15: Derailed overview highlighting line no. 10.



Figure 16: GATX 286292 thermal tear with steel thickness measurements.



Figure 17: GATX 286292 thermal tear and shell bulging.

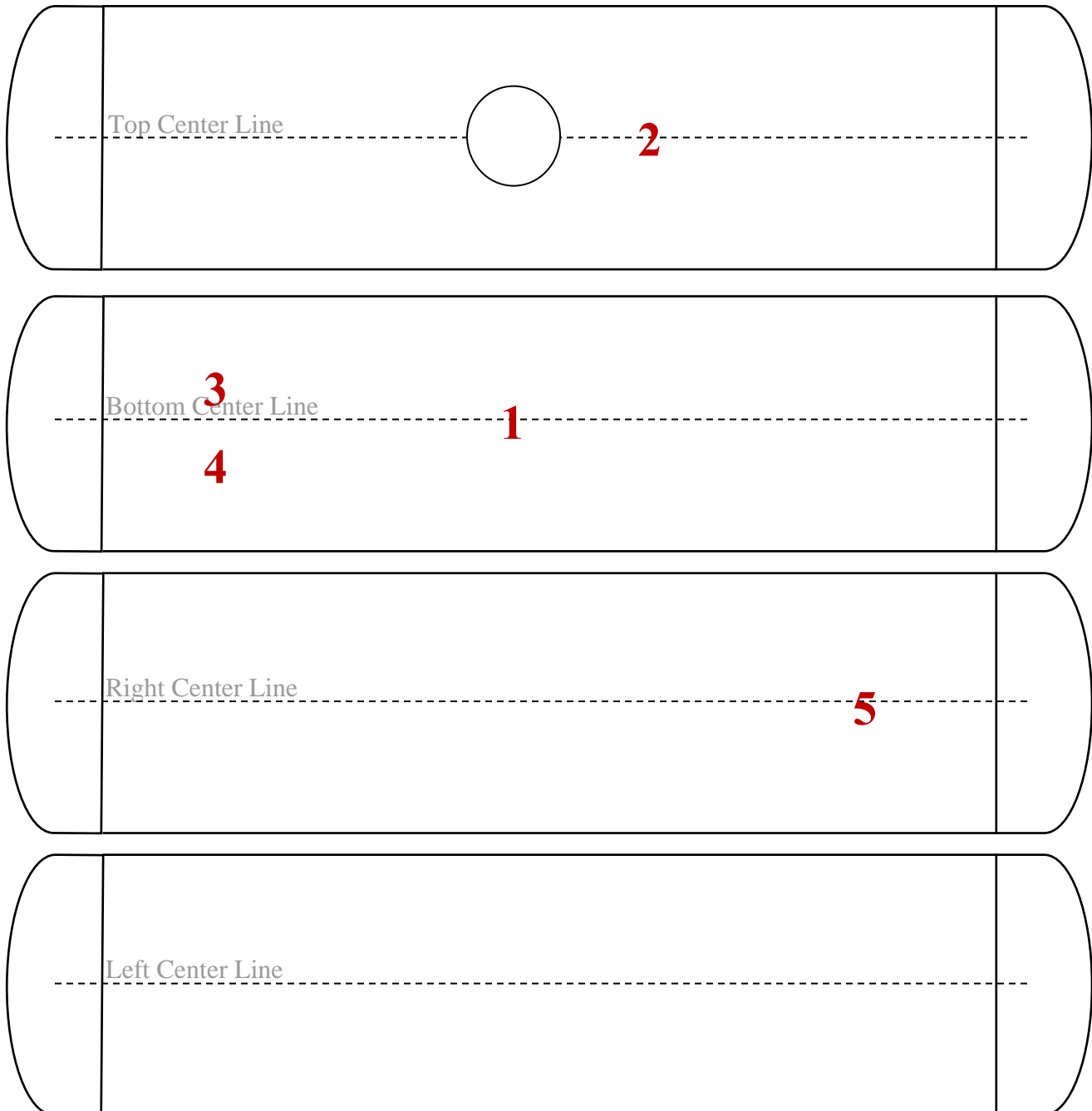
GATX 286274 (11) Damage Assessment Notes

Reporting Marks	GATX 286274		# 011	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1	
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267			Product Released	21,283 gallons	
Jacket	No			Breaching Damage	BOV Leakage	
Car builder	Trinity	Stub Sill Design	TRN024	Built Date	11/10/2011	
Capacity (GAL)	31,740			LD Limit (LB)	211,400	

Indicate number on figures below within damaged areas.

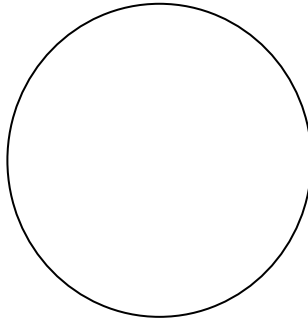
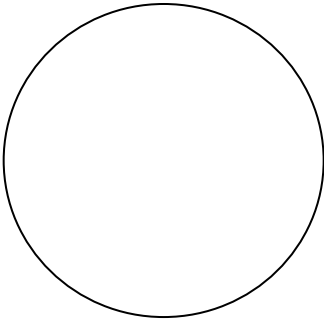
A-END

← Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Bottom outlet nozzle sheared away and ball valve leaked. Responders inserted wooden plug into opening to stop leakage.
2. Bulge with material thinning, 16 inches longitudinal, 30 inches transverse.
3. Dent, 5 ft. longitudinal, 1 ft. transverse, 3 inches deep.
4. Dent, 3 ft. by 3 ft., 1 inch deep.
5. Dent, 6 ft. by 6 ft., 5 inches deep.

Other information:

GATX 286274 came to rest on right side at 3 o'clock, perpendicular to the track, with the B-end (trailing) facing west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 165 psi start-to-discharge at 35,608 cfm.

GRL 286,000 lb. Load Limit 211,400 lb. Loaded to 201,504lb.



Figure 18: Derailed overview highlighting line no. 11.



Figure 19: GATX 286274 bottom outlet valve fitted with wooden plug and straps to secure leakage.

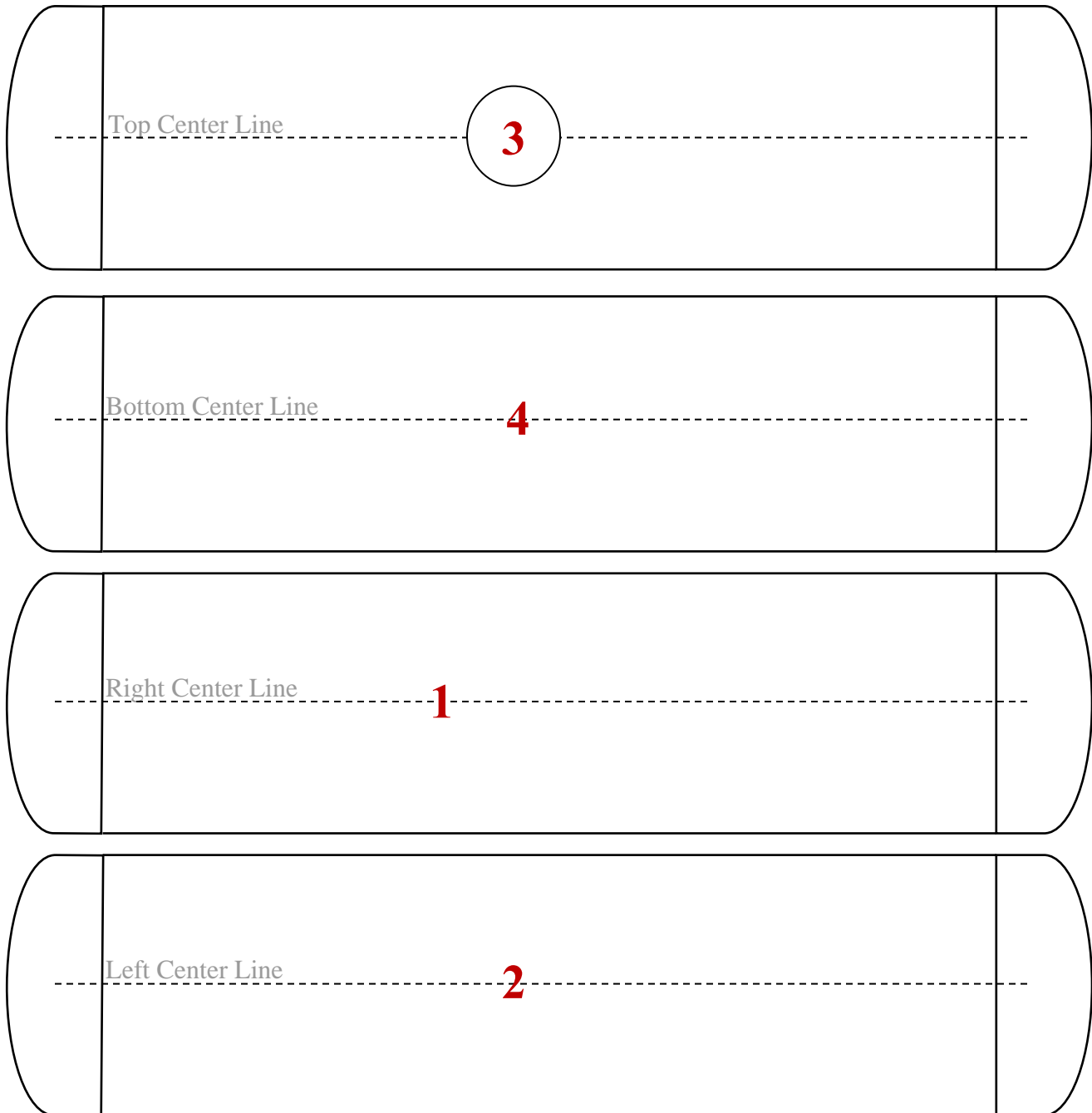
CBTX 741512 (12) Damage Assessment Notes

Reporting Marks	CBTX 741512	# 12	Car Location City/State	Mount Carbon, WV
Date inspected	3/3/2015	Railroad	CSX	DOT Specification
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	19,390 gallons
Jacket	No		Breaching Damage	Thermal Tear
Car builder	ARI	Stub Sill Design	ARI300	Built Date
Capacity (GAL)	31,800		LD Limit (LB)	211,000

Indicate number on figures below within damaged areas.

A-END

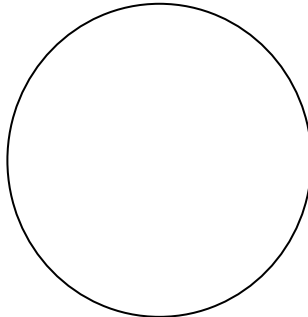
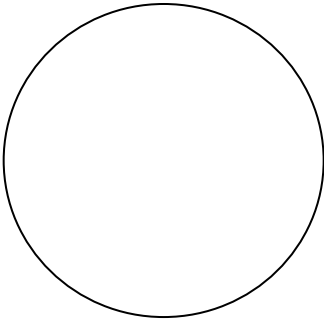
← Direction of Travel



CBTX 741512 (12) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, about 6 ft. longitudinal. Material thinning to 0.305 inch near center of tear.
2. Flattening and wrinkling of entire left side.
3. Heavy fire damage to valves and pressure relief device.
4. Bottom outlet valve fire damage to valve seat, damp with oil.

Other information:

CBTX 741512 came to rest on left side at 9 o'clock, perpendicular to the track, with the B-end (trailing) facing east.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 211,000 lb. Loaded to 202,057 lb.



Figure 20: Derailed overview highlighting line no. 12.



Figure 21: CBTX 741512 thermal tear with material thinning.

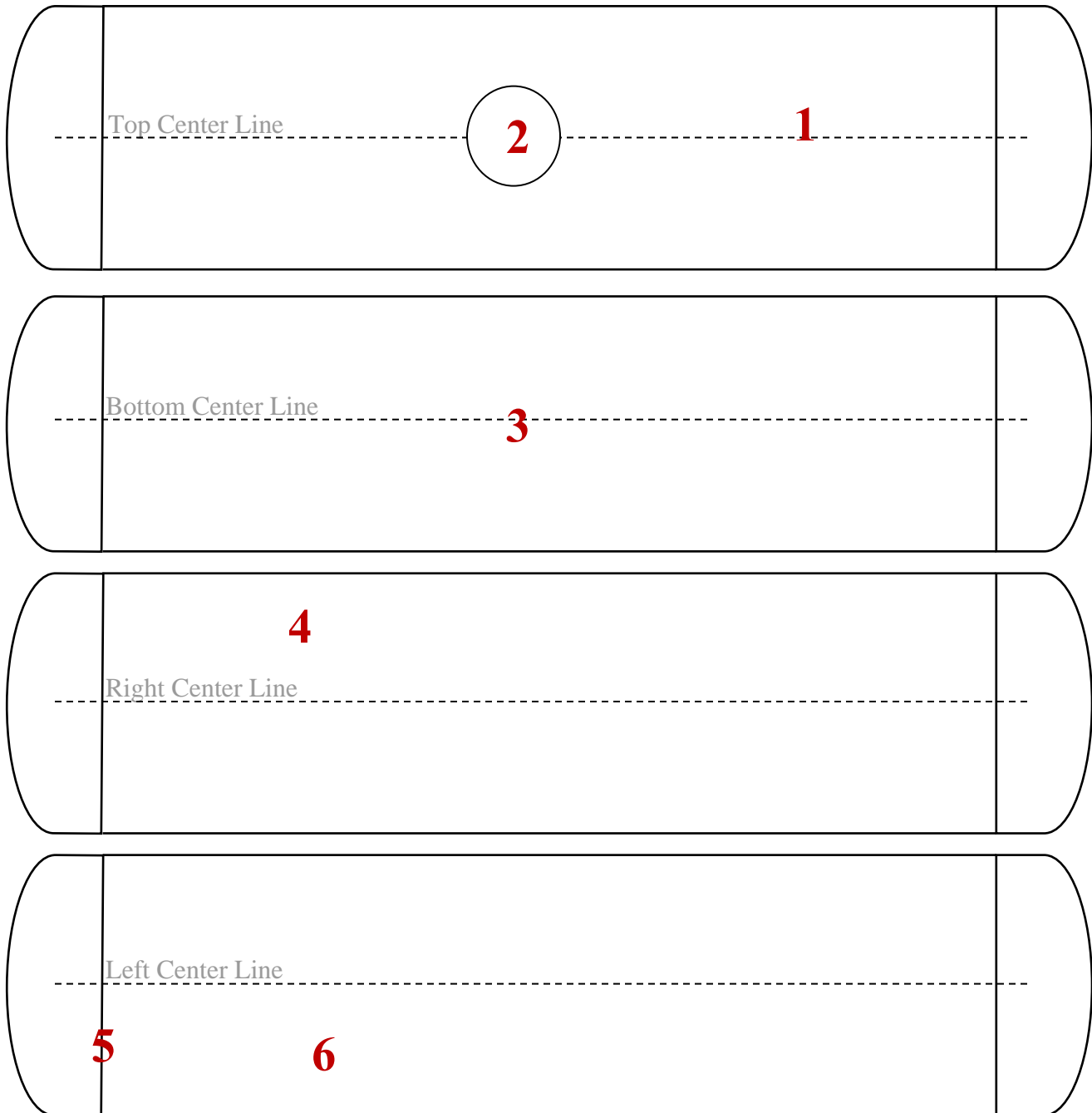
CBTX 741926 (13) Damage Assessment Notes

Reporting Marks	CBTX 7415926	# 13	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	13,180 gallons	
Jacket	No		Breaching Damage	Thermal tear, liquid line	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	9/27/2012
Capacity (GAL)	31,830		LD Limit (LB)	210,700	

Indicate number on figures below within damaged areas.

A-END

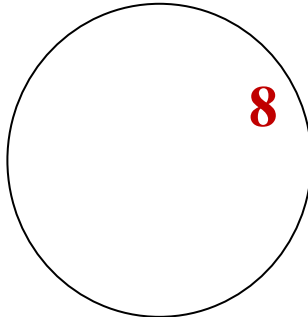
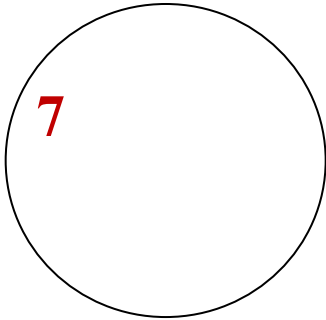
 Direction of Travel



CBTX 741926 (13) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 3 feet angular and longitudinal, 1 inch transverse. Shell thinning to 0.220 inch.
2. Liquid line siphon pipe pushed upward about 10 inches, dislodging liquid line fitting from plate.
3. BOV nozzle sheared off, valve not damaged, handle remained secured.
4. Shell wrinkled, 22 feet longitudinal, 10 feet transverse.
5. Dent, 16 inches longitudinal, 14 inches transverse, 1.5 inches deep.
6. Dent, 23 feet longitudinal, 8 feet transverse.
7. Dent, 2 feet by 2 feet, 2 inches deep.
8. Dent, rectangular at 2 o'clock position of head and across knuckle radius, 4 feet horizontal, 3 feet vertical, 12 inches deep.

Other information:

CBTX 741926 came to rest upright and perpendicular to the track, with the B-end (leading) facing east.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,700 lb. Loaded to 201,511 lb.



Figure 22: Derailed overview highlighting line no. 13.



Figure 23: Thermal tear CBTX 741926 showing shell thickness measurements.



Figure 24: Thermal tear as seen from top of car looking toward B end.



Figure 25: Liquid line upward displacement and impingement against protective housing cover.



Figure 26: Liquid line valve and flange displacement, missing flange nut.

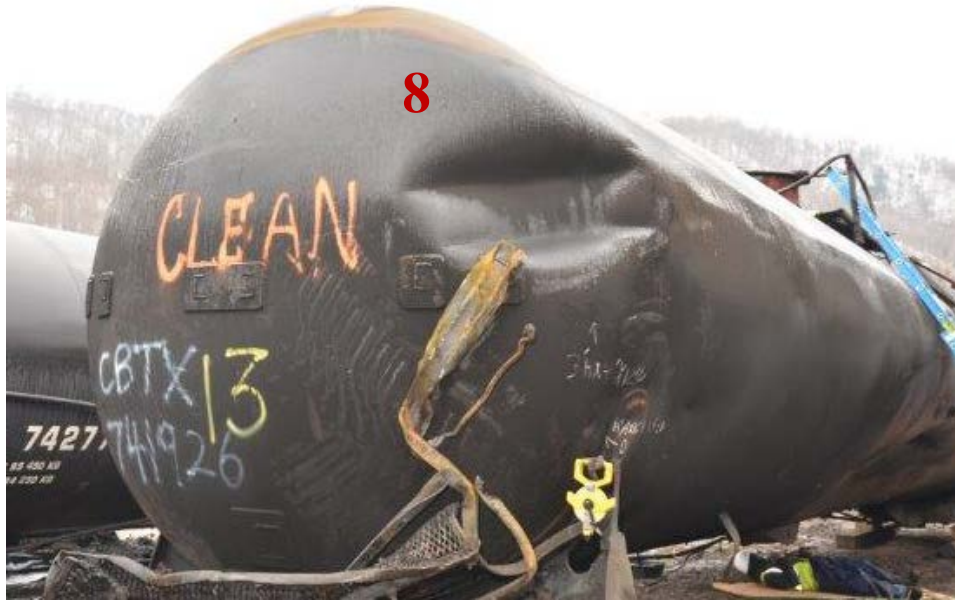


Figure 27: A-end head impact damage, half-height head shield missing.

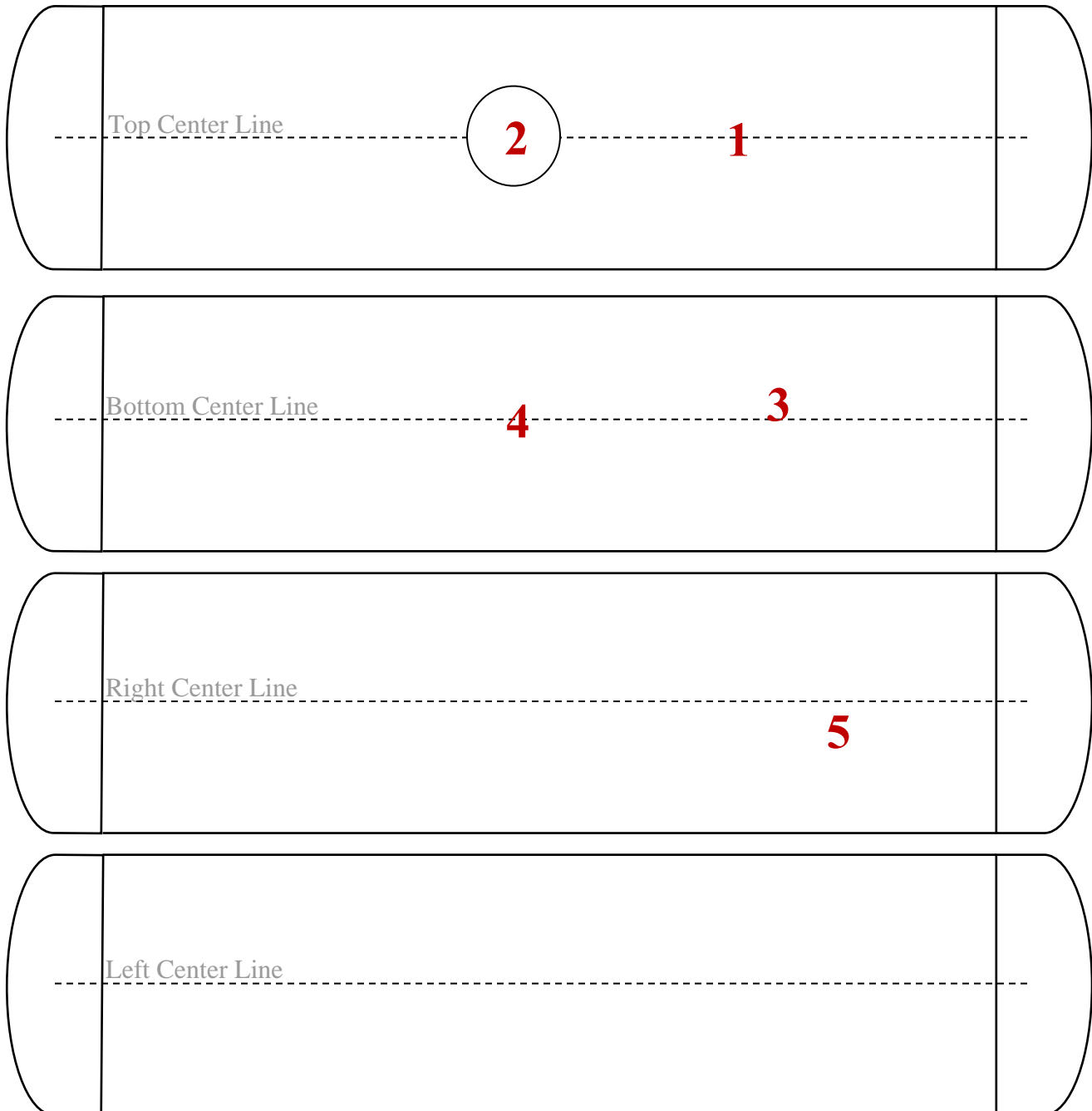
CBTX 742035 (14) Damage Assessment Notes

Reporting Marks	CBTX 742035	# 14	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	24,019 gallons	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	9/12/2012
Capacity (GAL)	31,820		LD Limit (LB)	211,200	

Indicate number on figures below within damaged areas.

A-END

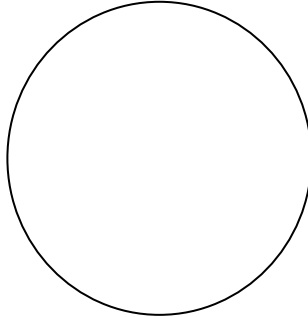
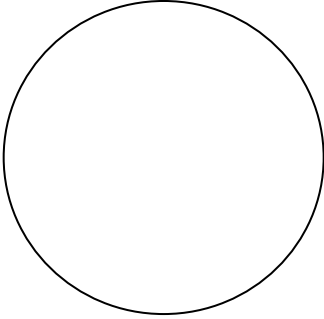
← Direction of Travel



CBTX 742035 (14) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 36 inches longitudinal, 2 inches transverse. Tear was within a bulge 10 feet longitudinal, 6 feet transverse. Severe thermal damage to surrounding shell material.
2. Protective housing cover burn-through.
3. Dent, 18 inches by 18 inches, 2 inches deep.
4. BOV nozzle sheared off, valve was closed.
5. Dent, 4 feet longitudinal, 3 feet transverse, 3 inches deep.

Other information:

CBTX 742035 came to rest upright and perpendicular to the track, with the B-end (trailing) facing east.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 211,200 lb. Loaded to 203,628 lb.

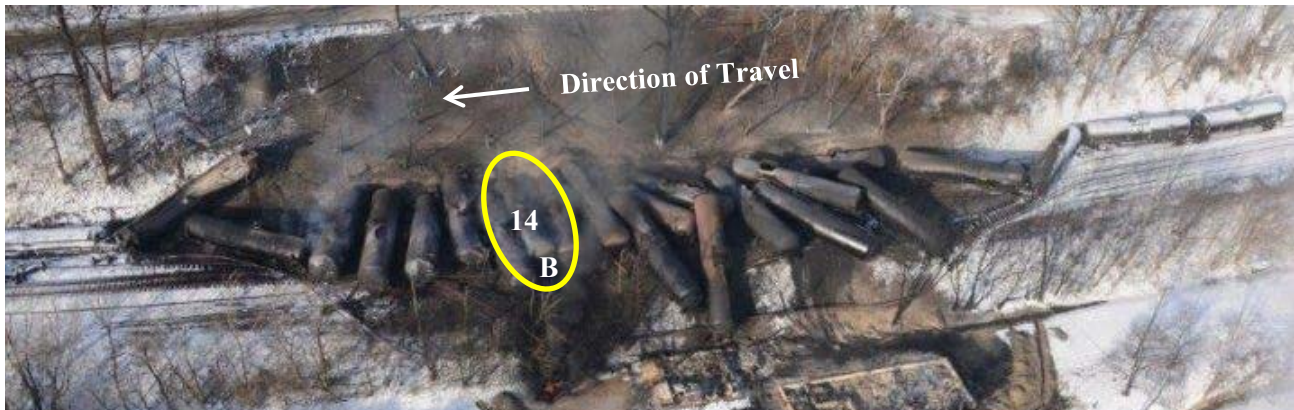


Figure 28: Derailed overview highlighting line no. 14.



Figure 29: Thermal tear on tank top looking toward B-end, and associated thermal damage to the tank shell.



Figure 30: Top fittings protective housing cover burn-through.

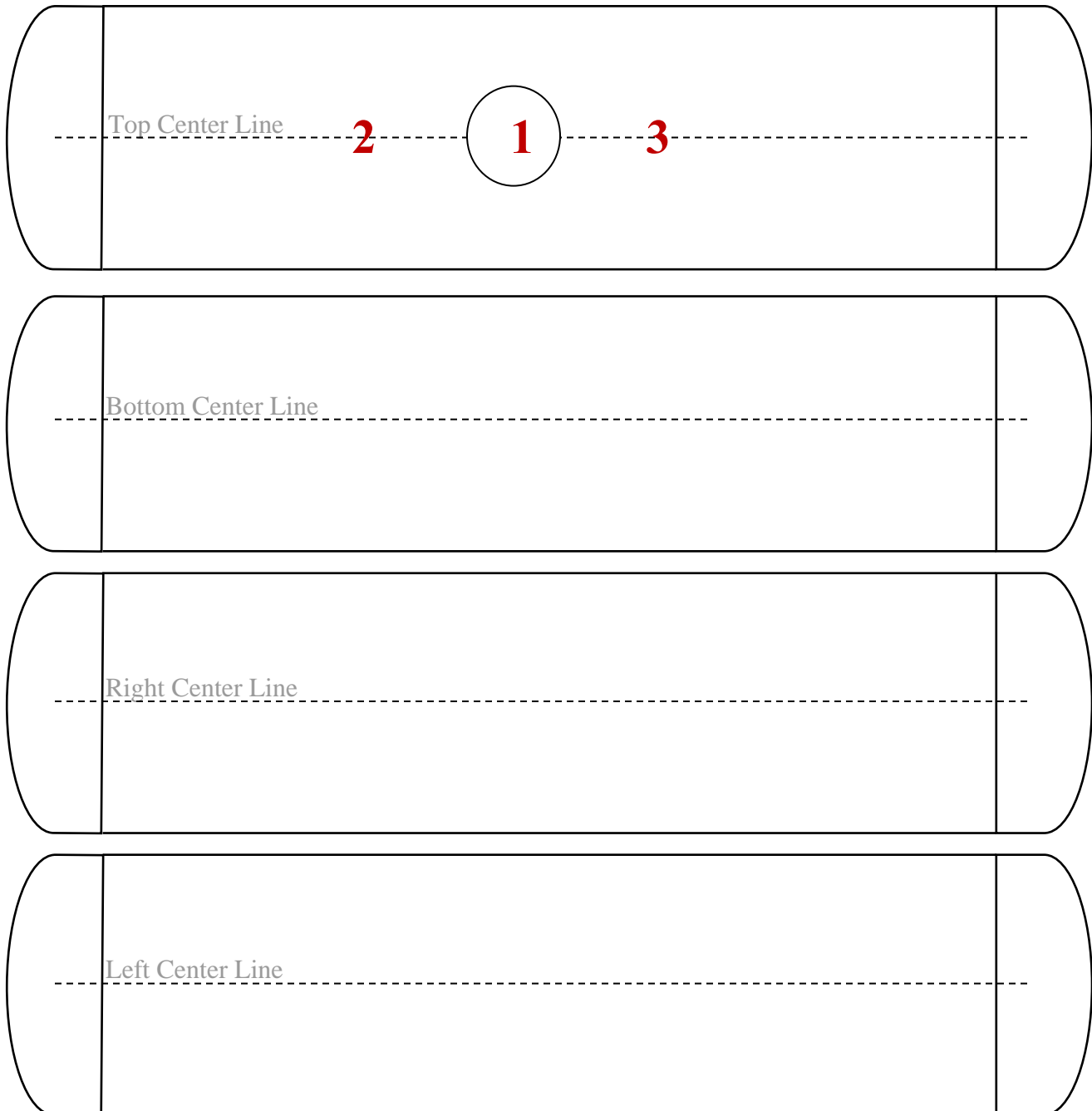
CBTX 741702 (15) Damage Assessment Notes

Reporting Marks	CBTX 741702	# 15	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	17,686 gallons	
Jacket	No		Breaching Damage	Liquid Line Dislodged	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	7/31/2012
Capacity (GAL)	31,820		LD Limit (LB)	210,600	

Indicate number on figures below within damaged areas.

A-END

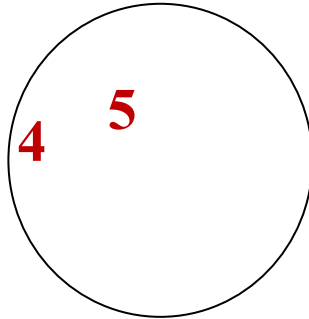
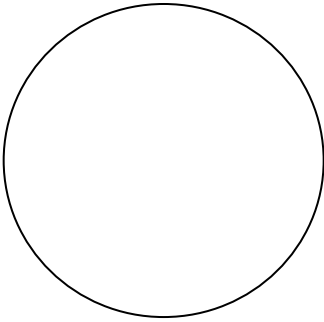
← Direction of Travel



CBTX 741702 (15) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Liquid line eduction pipe displaced upward about 5 inches. Valves within top fittings protective housing were significantly fire damaged.
2. Shell flattening, A-end top of car.
3. Shell rippling, B-end top of car.
4. Dent, 3.5 feet high, 3 feet wide, 4 inches deep.
5. Dent, 4.5 feet by 4.5 feet, 3 inches deep.

Other information:

CBTX 741702 came to rest upright and perpendicular to the track, with the B-end (trailing) facing west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,600 lb. Loaded to 201,828 lb.

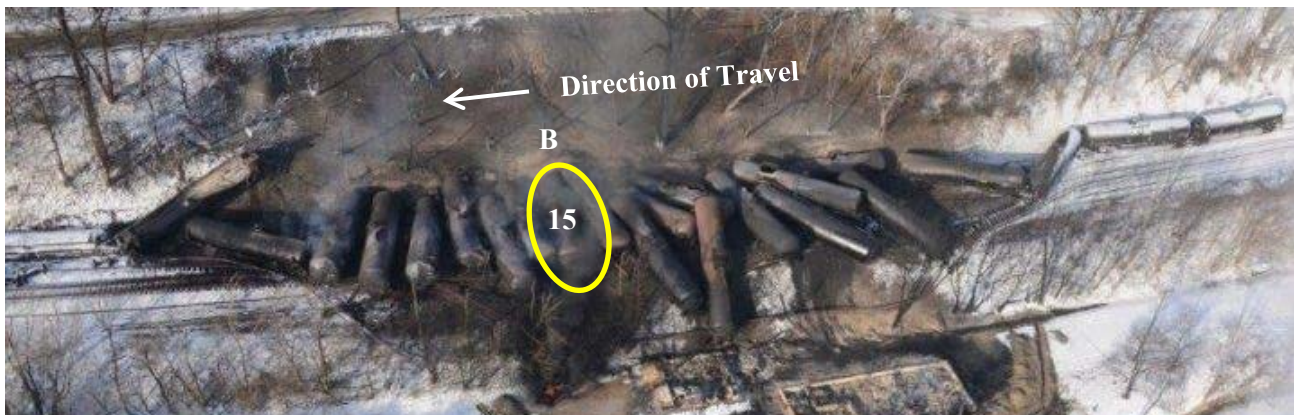


Figure 31: Derailed overview highlighting line no. 15.



Figure 32: Liquid valve displacement upward about 5 inches, open annular space between eduction pipe and plate.



Figure 33: Dent to A-head not intercepted by half-height head shield.

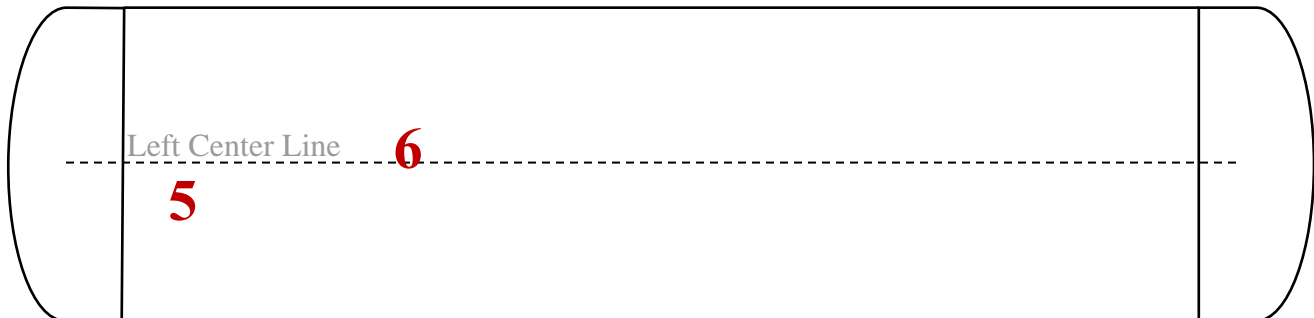
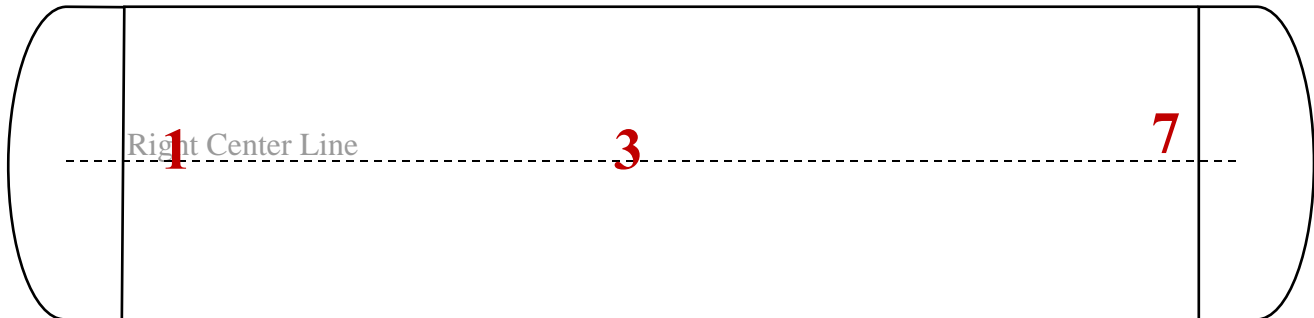
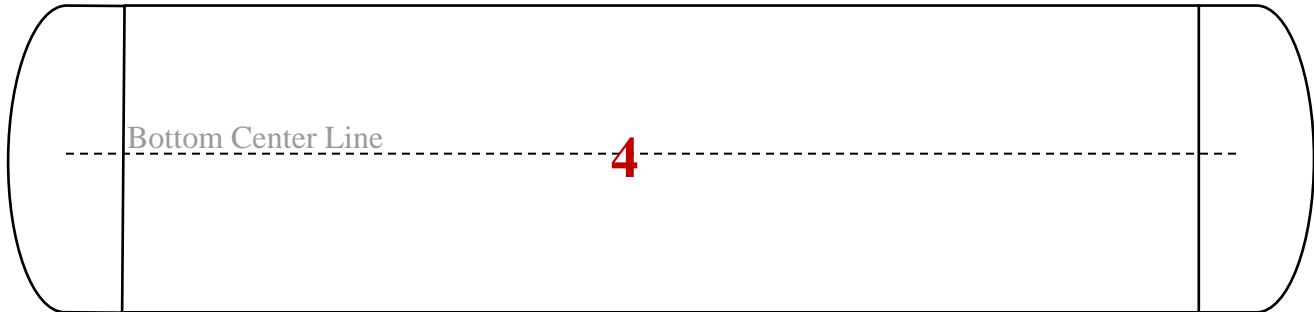
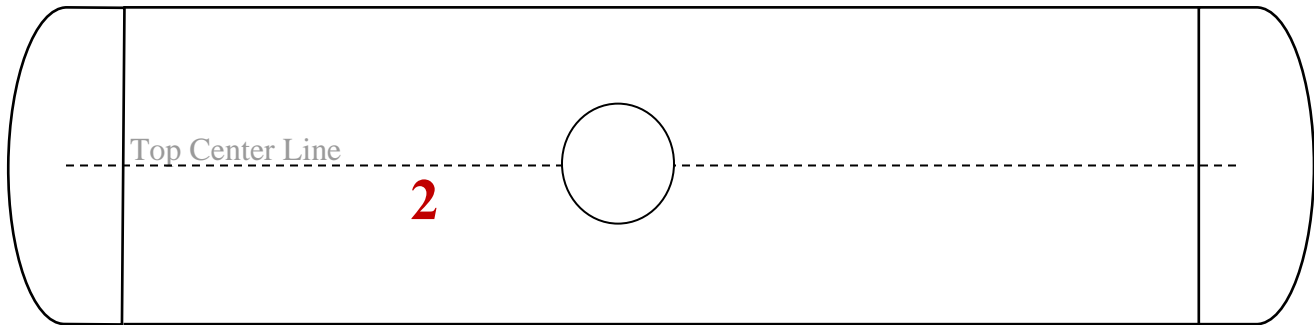
CTCX 743030 (16) Damage Assessment Notes

Reporting Marks	CTCX 743030	# 16	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	29,608 gallons	
Jacket	No		Breaching Damage	Shell Puncture	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	5/25/2012
Capacity (GAL)	31,810		LD Limit (LB)	211,400	

Indicate number on figures below within damaged areas.

A-END

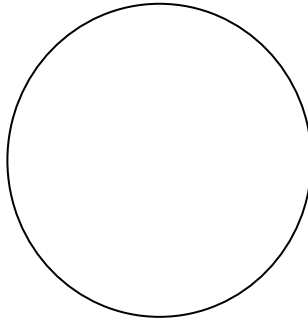
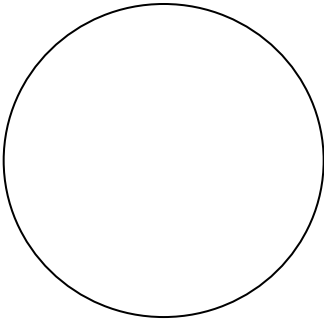
← Direction of Travel



CTCX 743030 (16) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Shell puncture, coupler impact, breach in shell 5 feet longitudinal, 4 feet transverse.
2. Flattening of the top of the tank shell from impact damage.
3. Entire right side wrinkled and crumpled.
4. BOV cap sheared off, valve and operating handle were not damaged.
5. Bolster torn from mounting pad.
6. Dent, half the length of the tank was deeply crushed.
7. Bolster web structure torn away leaving robust top structure as a hook-like protuberance.

Other information:

CTCX 743030 came to rest upright and perpendicular to the track, with the B-end (trailing) facing east.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 211,400 lb. Loaded to 203,210 lb.



Figure 34: Derailed overview highlighting line no. 16.

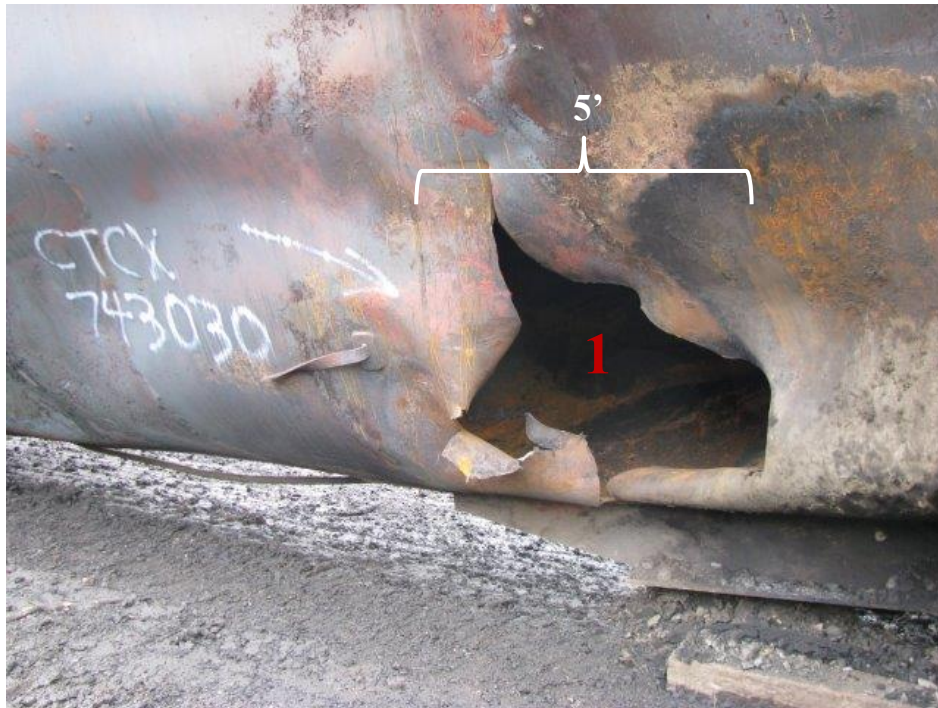


Figure 35: Puncture in right side near A-end from the coupler of an adjacent tank car.



Figure 36: Left side shell compression, and A-end head.

CTCX 743030 (16) Damage Assessment Notes



Figure 37: Left side shell compression and top flattening.



Figure 38: Upper bolster structure protuberance after bottom structure torn away at B-R end.

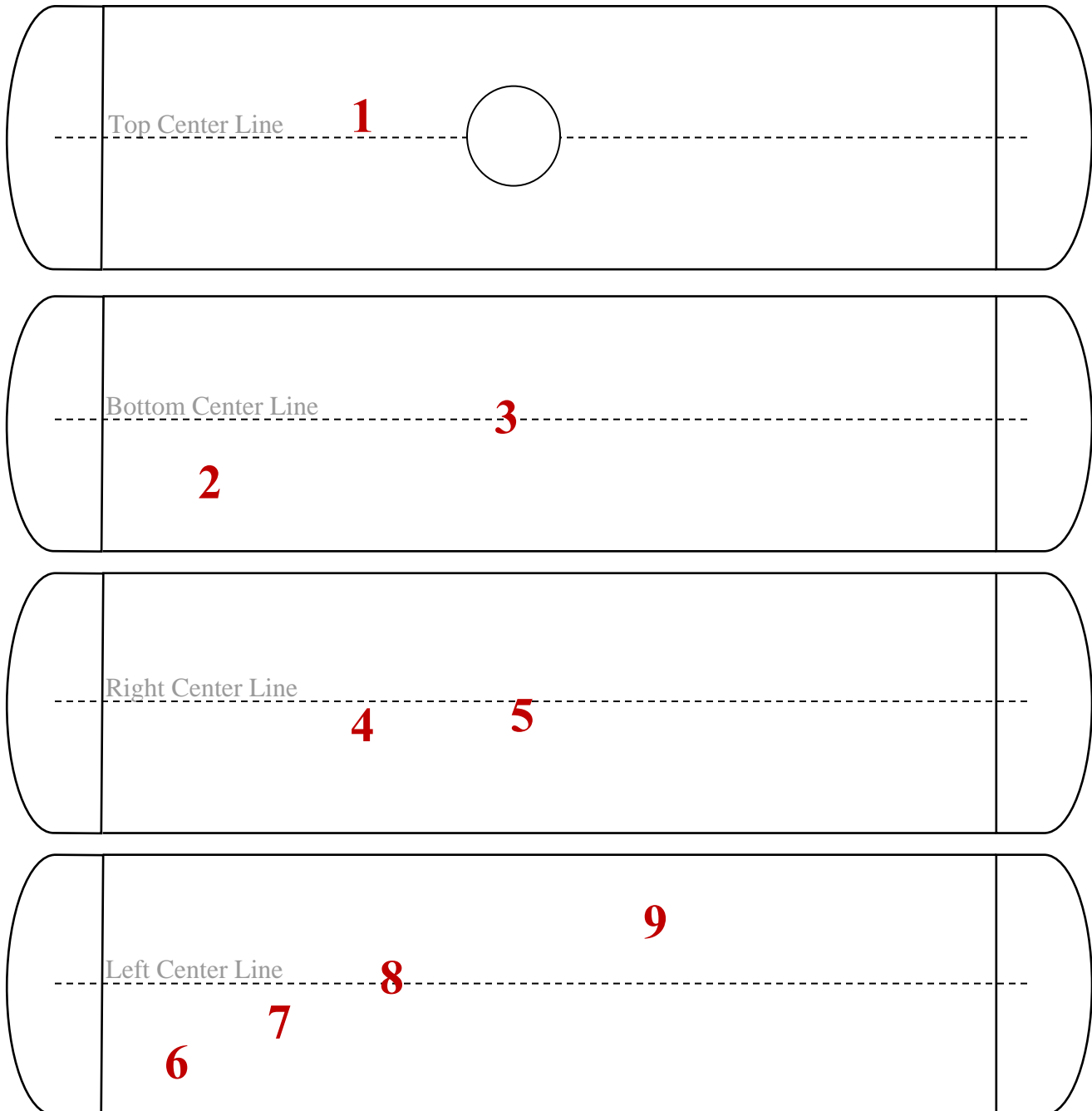
CBTX 741944 (17) Damage Assessment Notes

Reporting Marks	CBTX 741944	# 17	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	1,224 gallons	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	8/23/2012
Capacity (GAL)	31,800		LD Limit (LB)	210,700	

Indicate number on figures below within damaged areas.

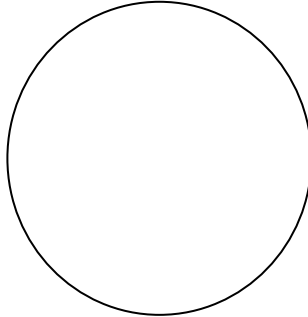
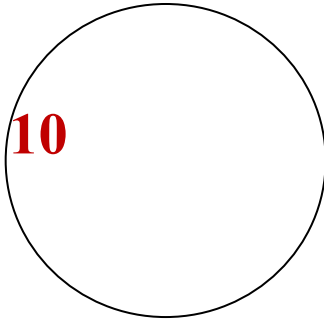
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 20 inches, two angular longitudinal segments, surrounded by a bulge 9 feet longitudinal, 7 feet transverse. Material thinning to 0.426 inch. Cracking of adjacent transverse barrel weld. Paint scorching at A-end shows car was tilted downhill toward B-end about 20 degrees.
2. Dent, 5 feet longitudinal, 3 feet transverse, 4 inches deep.
3. Dent, next to BOV, B-end side, 11 inches longitudinal.
4. Dent, 6 feet longitudinal, 2.5 feet transverse, 3 inches deep.
5. Gouges, longitudinal and parallel, 20 inches and 39 inches. One gouge cut through a transverse barrel section weld bead.
6. Dent, 6.5 feet longitudinal, 3 feet transverse, 3 inches deep.
7. Dent, 4 feet longitudinal, 3 feet transverse, 3 inches deep.
8. Dent, 2 by 2 feet, 2 inches deep.
9. Dent, 48 inches longitudinal, 32 inches transverse, 2 inches deep.
10. Dent, above B-end head shield, 30 inches high, 24 inches wide, 2 inches deep. Head shield was torn from mounting brackets.

Other information:

CBTX 741944 came to rest upright and perpendicular to the track, with the B-end (leading) down gradient and extending east over the right-of-way embankment.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,700 lb. Loaded to 201,686 lb.

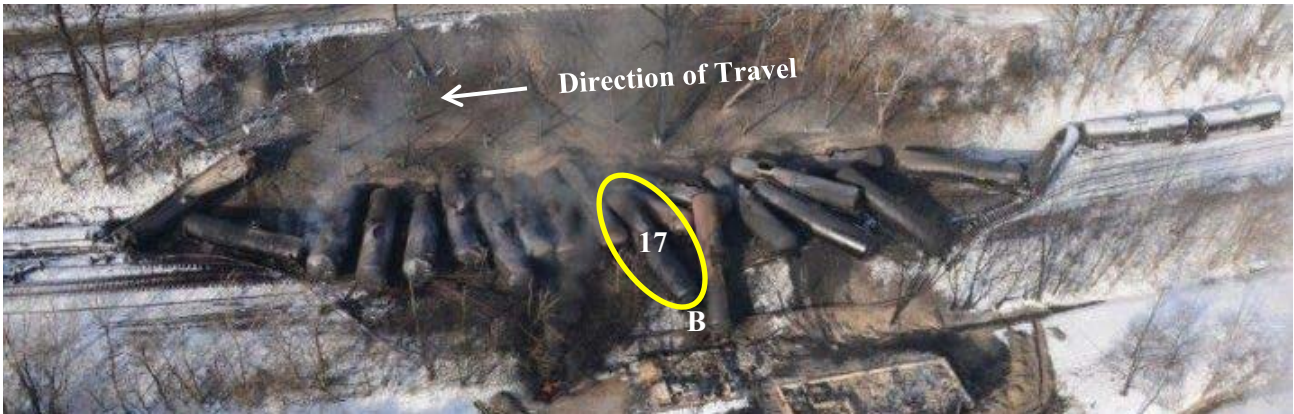


Figure 39: Derailment overview highlighting line no. 17.



Figure 40: Center of tank car pileup, highlighting line no. 17 (arrow).

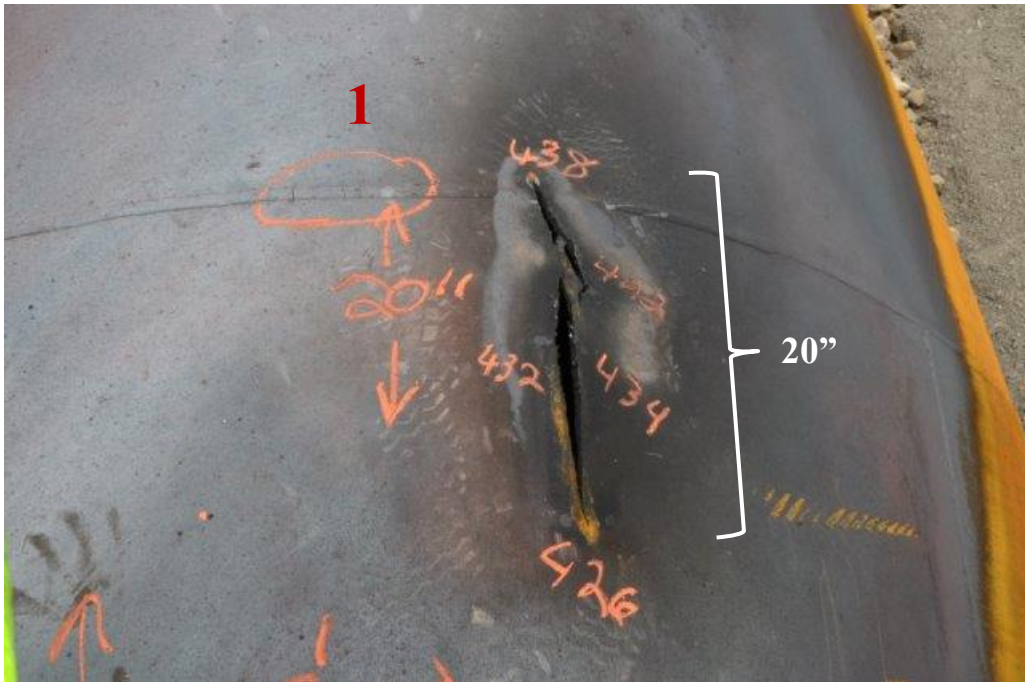


Figure 41: Thermal tear with annotated shell thickness measurements.



Figure 42: Close up of barrel section transverse weld cracks.

CBTX 741944 (17) Damage Assessment Notes



Figure 43: B-end head shield separation.



Figure 44: A-end head and vapor space bulging.

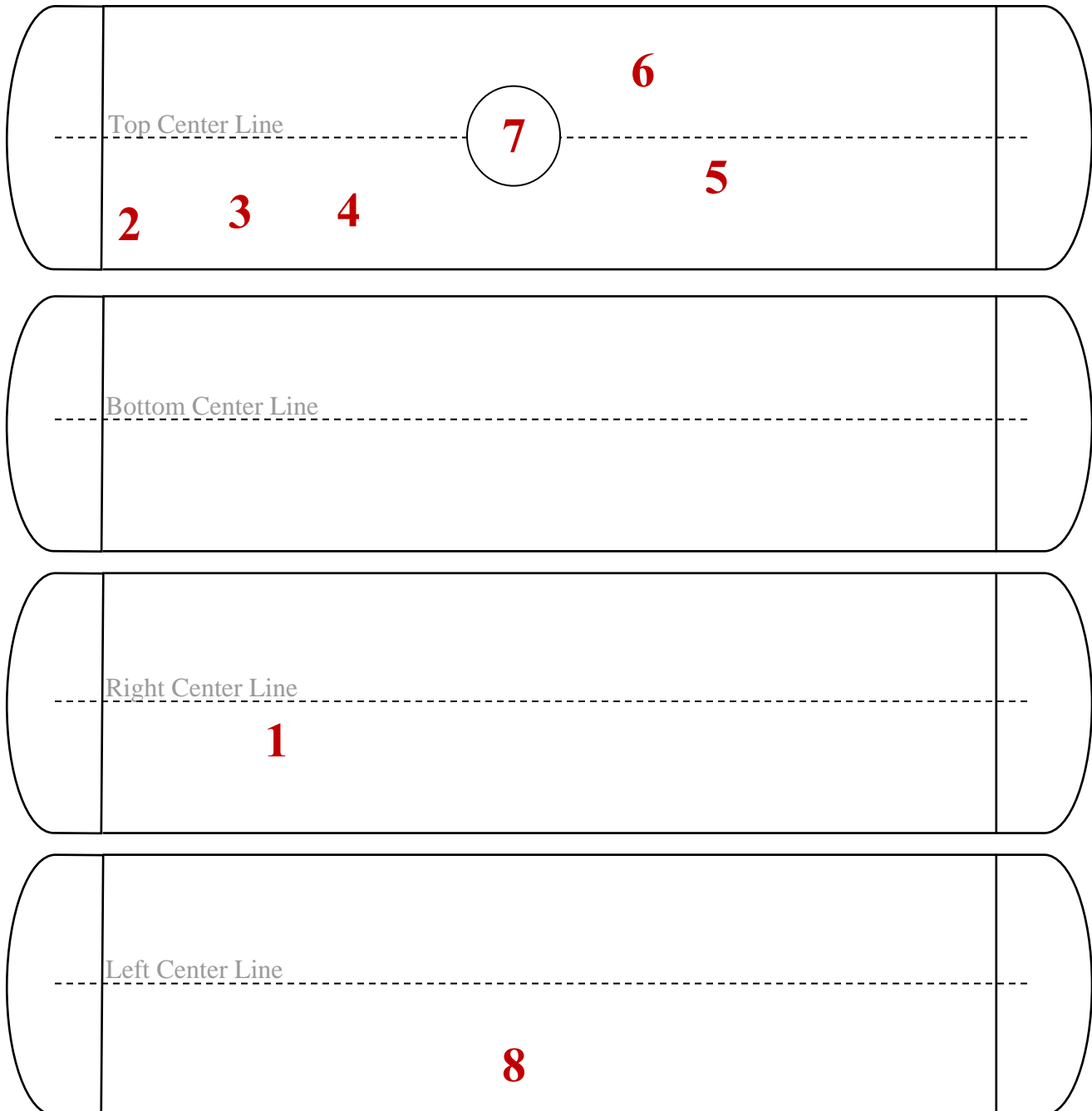
CBTX 741431 (18) Damage Assessment Notes

Reporting Marks	CBTX 741431	# 18	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	29,460	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	5/31/2012
Capacity (GAL)	31,820		LD Limit (LB)	211,000	

Indicate number on figures below within damaged areas.

A-END

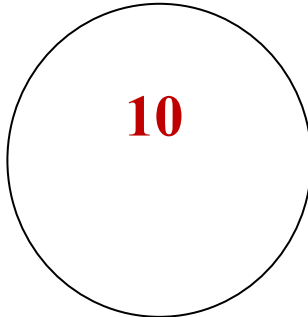
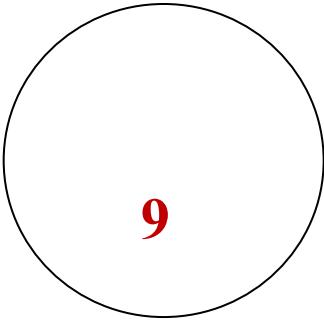
 Direction of Travel



CBTX 741431 (18) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 11 feet longitudinal, 8 feet transverse with flap of steel protruding outward from the tank. Shell thinning to 0.220 inch.
2. Body bolster (A-L) bent toward A-end.
3. Dent, 12 inches longitudinal, 2 inches transverse, 1.5 inches deep.
4. Dent, 3 feet by 3 feet, 3 inches deep.
5. Shell wrinkled, 13.3 feet longitudinal, 10.8 feet transverse.
6. Shell wrinkled, 10 feet longitudinal, 8 feet transverse.
7. Top fittings protective housing cover bent upward and PRD flapper cover extended. Heavy fire damage to valves and manway cover, thermal oxidation over surrounding shell material.
8. Dent, 4 feet longitudinal, 3 feet transverse, 2.5 inches deep.
9. Dent, B-end head below head shield (head shield missing) 4 feet by 4 feet, 7 inches deep.
10. Dents above head shield (head shield missing) 4 feet high by 3 feet wide, 2 inches deep. 20 inches high by 12 inches wide 1 inch deep.

Other information:

CBTX 741431 came to rest on its left side, perpendicular to the track, with the B-end (leading) facing west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 211,000 lb. Loaded to 202,192 lb.

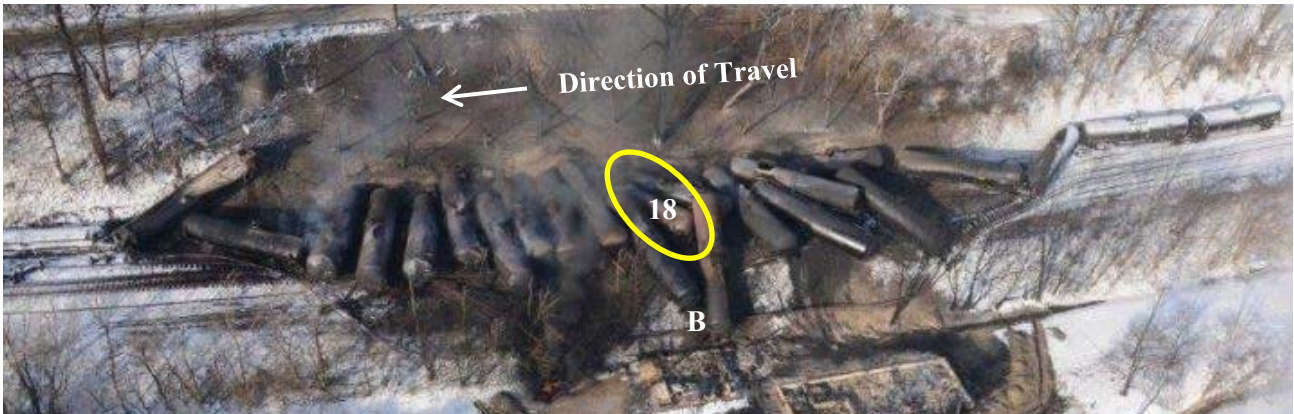


Figure 45: Derailed overview highlighting line no. 18.

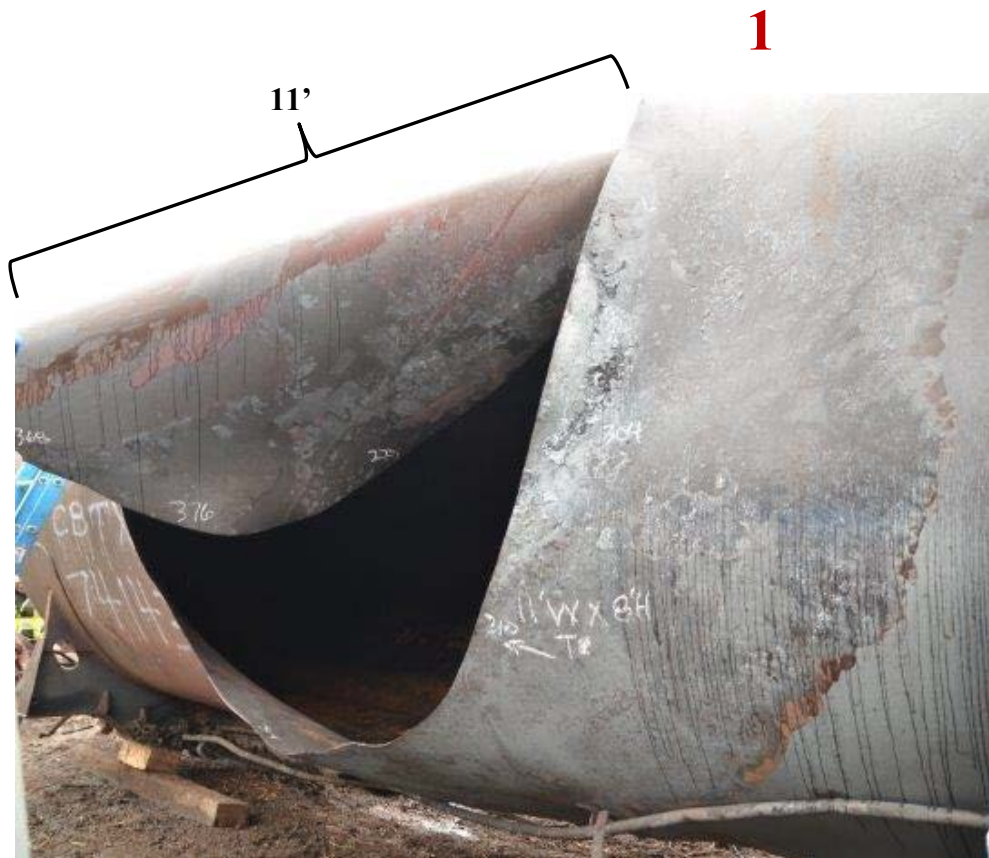


Figure 46: Thermal tear right side of tank car CBTX 741431.



Figure 47: Thermal tear as viewed toward A-end.



Figure 48: Flap of steel protruding from thermal tear (circled)



Figure 49: Top fittings protective housing thermal damage.

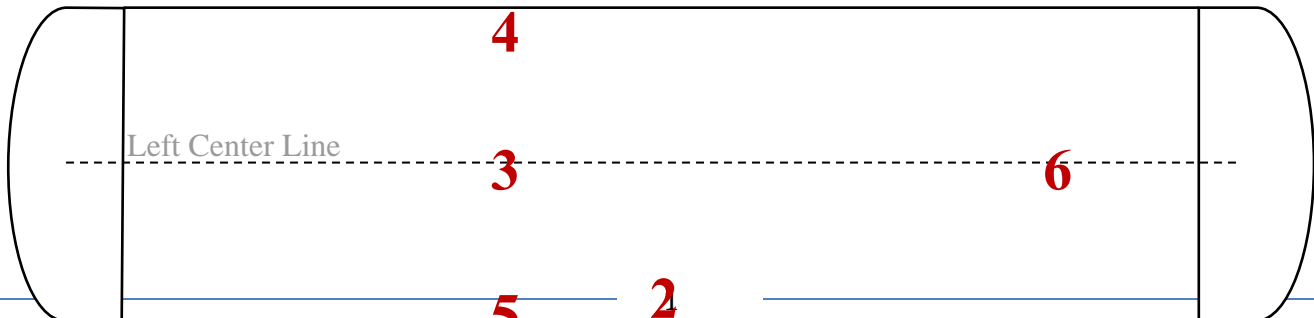
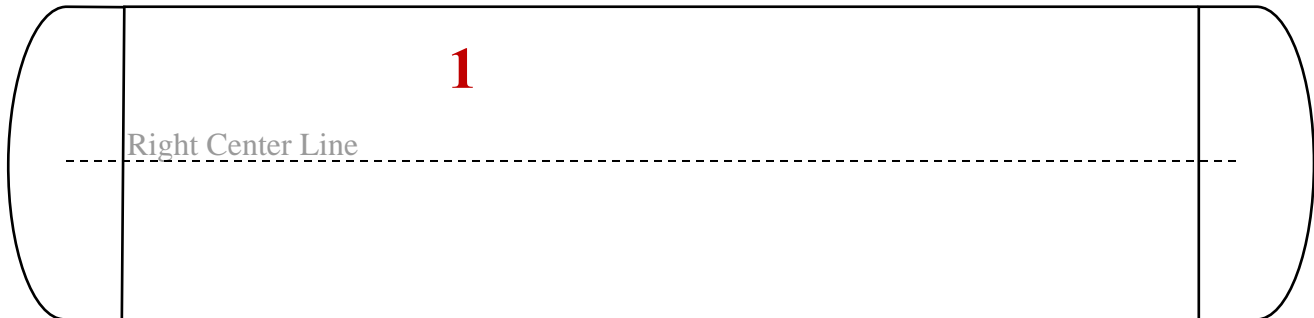
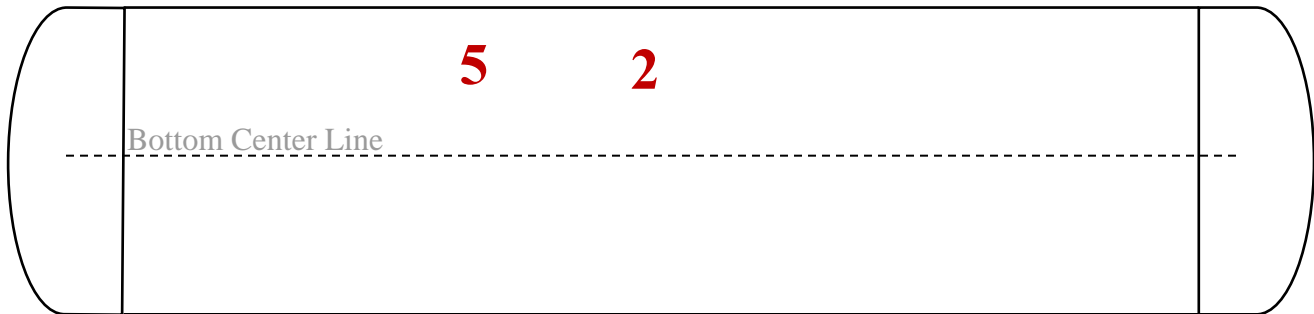
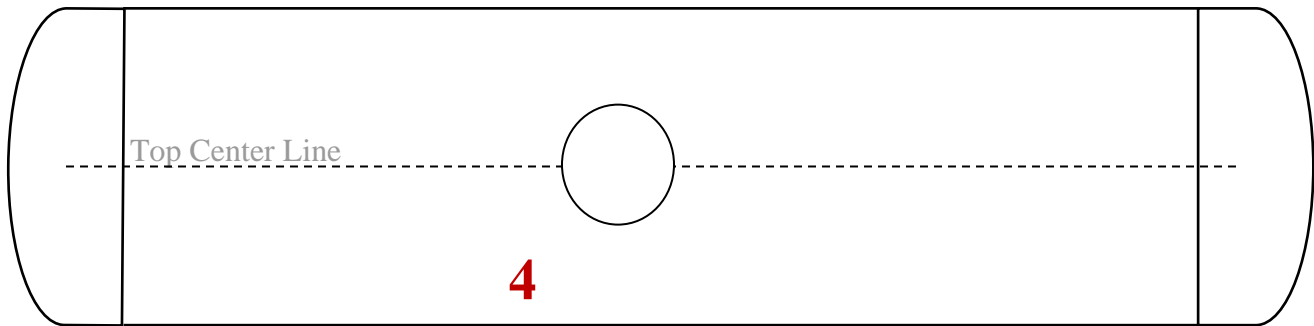
CBTX 742778 (19) Damage Assessment Notes

Reporting Marks	CBTX 742778	# 19	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	21,223 gallons	
Jacket	No		Breaching Damage	Head and Shell Puncture and Fractures	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	10/18//2012
Capacity (GAL)	31,820		LD Limit (LB)	210,500	

Indicate number on figures below within damaged areas.

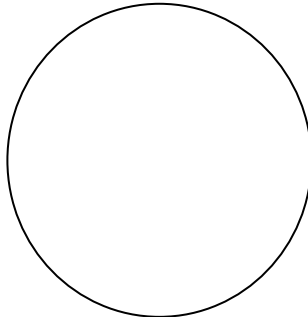
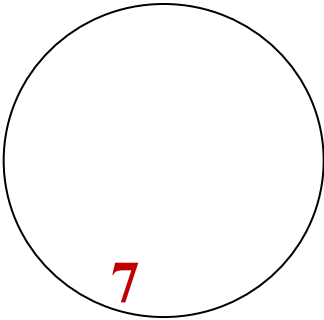
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Puncture with irregular fractures and material curling, 4 feet longitudinal, 5.5 feet transverse.
2. Dent, 14 feet longitudinal, 6 feet transverse, 10 inches deep. Gouge runs along the center of the dent.
3. Shell flattening and buckling with fractures in folded material top and bottom (items 4 and 5).
4. Fractures, two irregular fractures in folded shell material associated with shell buckling.
5. Fracture in folded shell material associated with shell buckling.
6. Dent, 7 feet longitudinal, 6 feet transverse, 7 inches deep.
7. Head shield punctured, dent to head 4 feet wide, 3 feet high, 11 inches deep. Tank head fractured at toe of left side of head pad fillet weld, with hole measuring 0.5 inches by 0.5 inches.

Other information:

CBTX 742778 came to rest upright with the A-end elevated and resting on line numbers 18 and 20, and the B-end (leading) facing west on the right-of-way embankment.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,500 lb. Loaded to 202,630 lb.



Figure 50: Derailed overview highlighting line no. 19.

CBTX 742778 (19) Damage Assessment Notes



Figure 51: Center of tank car pileup, highlighting location of CBTX 742778, line number 19 (arrow).



Figure 52: Puncture and fracture surfaces.



Figure 53: Dent and gouge in bottom left of tank car, B-end side of BOV.



Figure 54: Punctured B-end head shield, and tank head fracture (inset image).

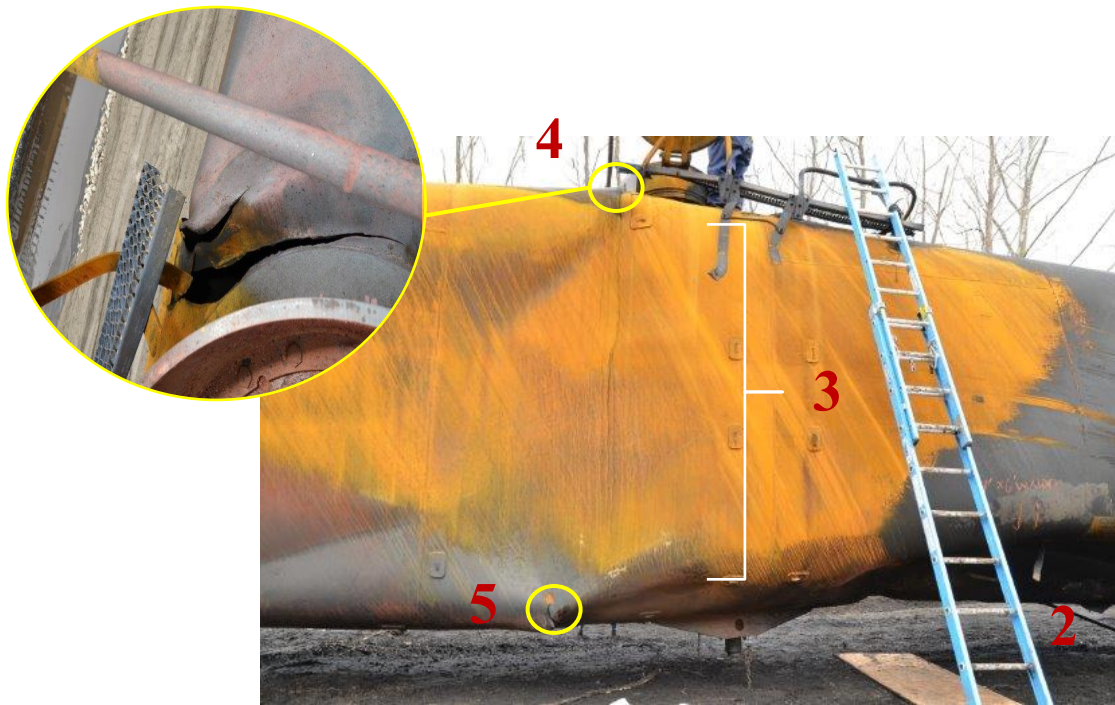


Figure 55: Flattened and buckled left side of tank car with shell fractures in folded material top and bottom.

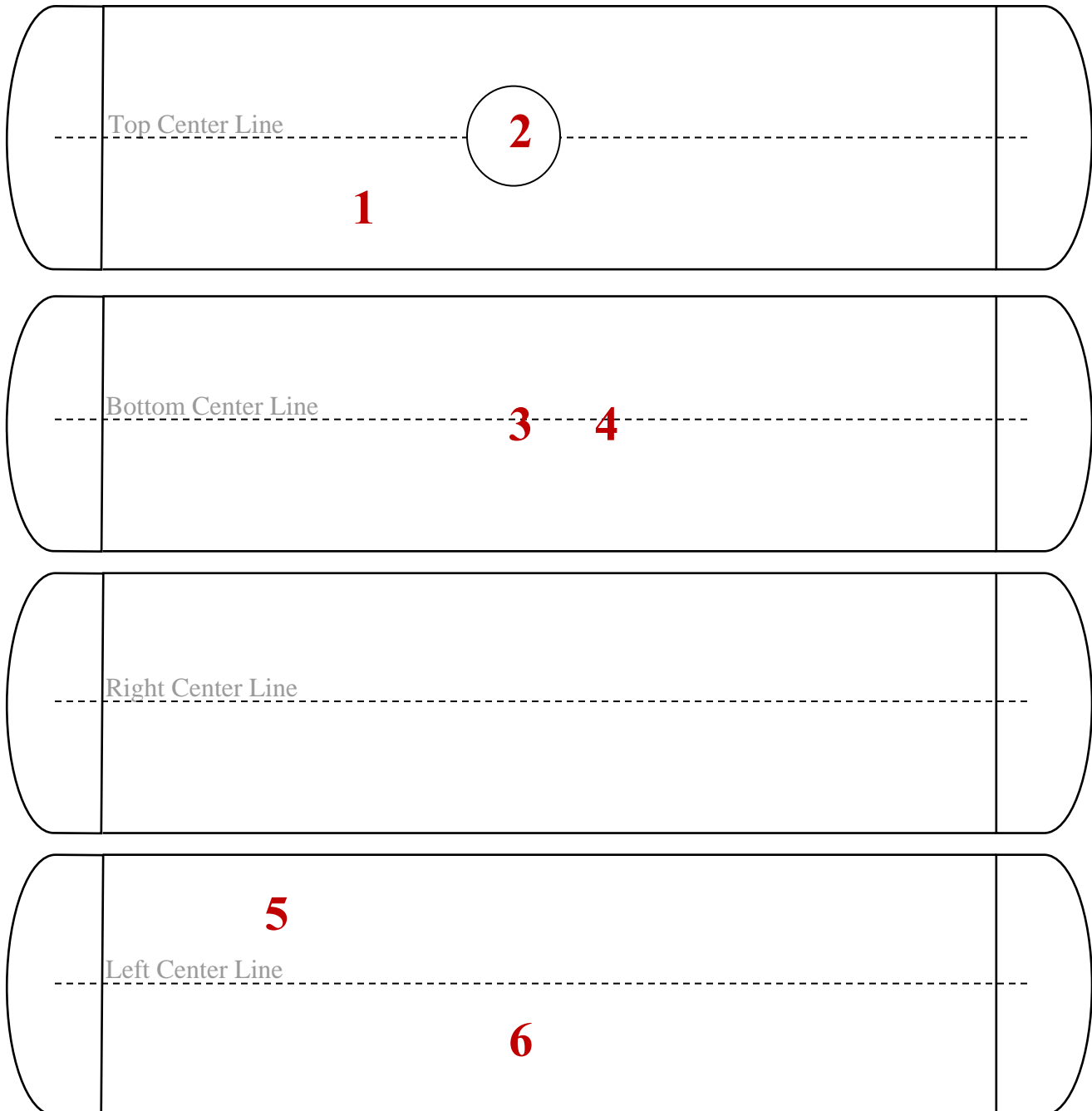
CBTX 741516 (20) Damage Assessment Notes

Reporting Marks	CBTX 741516	# 20	Car Location City/State	Mount Carbon, WV
Date inspected	3/3/2015	Railroad	CSX	DOT Specification
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	29,556 gallons
Jacket	No		Breaching Damage	Thermal Tear
Car builder	ARI	Stub Sill Design	ARI300	Built Date
Capacity (GAL)	31,810		LD Limit (LB)	211,200

Indicate number on figures below within damaged areas.

A-END

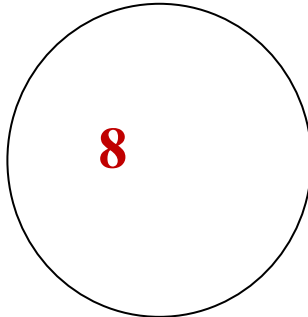
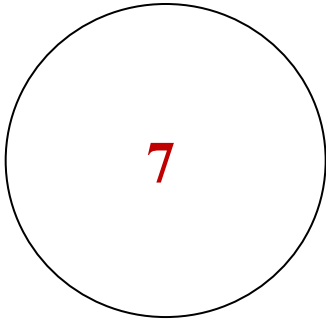
← Direction of Travel



CBTX 741516 (20) Damage Assessment Notes

B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 8 feet longitudinal, 50 inches transverse. Shell thinning to 0.340 inch.
2. Top valves intact with heavy fire damage.
3. BOV nozzle sheared off, operating handle closed.
4. Dent, 4.5 feet longitudinal, 6 feet transverse, 4 inches deep.
5. Dent, 6 feet longitudinal, 5 feet transverse, 6 inches deep.
6. Dent, 10 feet longitudinal, 6 feet transverse, 9 inches deep.
7. Dent, rounded centered on B-end head, about 6.5 feet diameter, 12 inches deep. Head shield missing.
8. Dent, rounded left side of A-end head, about 7.5 feet diameter, 18 inches deep. Head shield missing.

Other information:

CBTX 741516 came to rest upright, about 45° to the tracks, and the B-end (trailing) facing southwest.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 211,200 lb. Loaded to 202,853 lb.



Figure 56: Derailed overview highlighting line no. 20.



Figure 57: CBTX 741516 A-end head and thermal tear (circled).

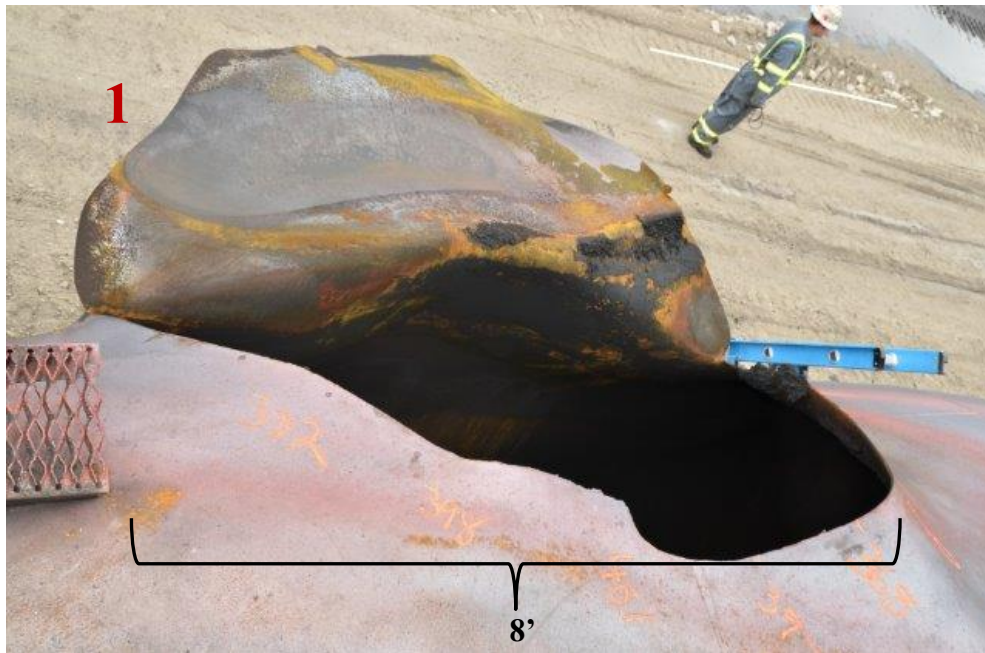


Figure 58: CBTX 741516 thermal tear as viewed from above.

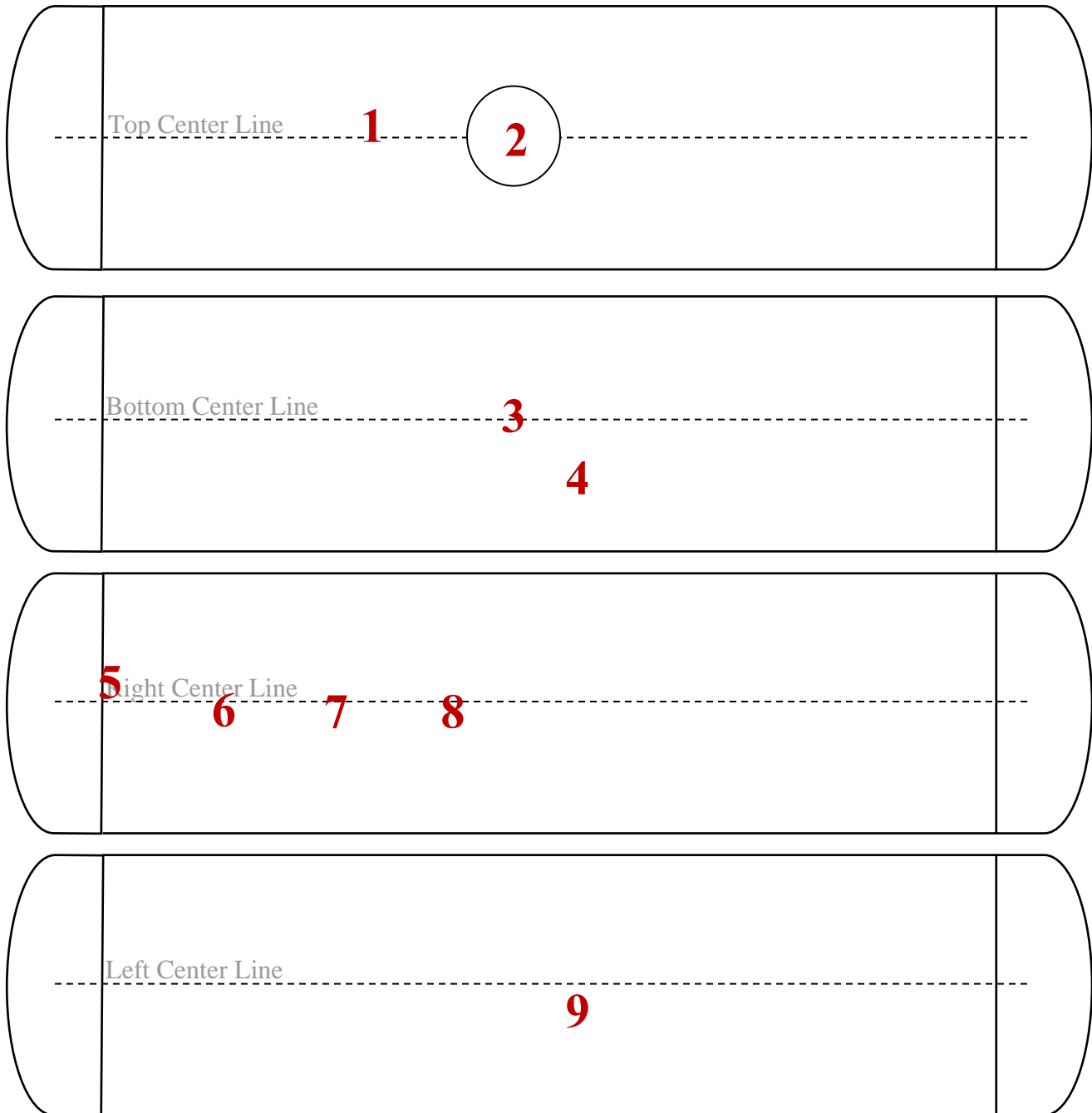
CBTX 741651 (21) Damage Assessment Notes

Reporting Marks	CBTX 741651	# 21	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released		
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	7/11//2012
Capacity (GAL)	31,820		LD Limit (LB)	210,300	

Indicate number on figures below within damaged areas.

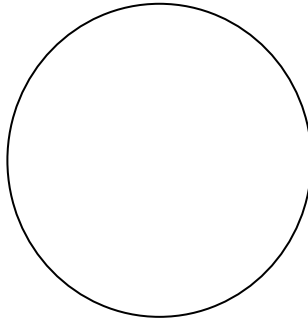
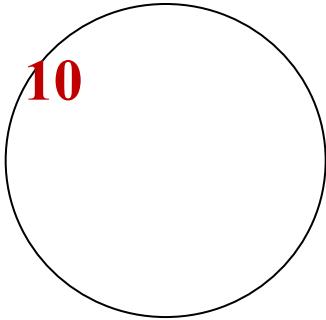
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 44 inches longitudinal, 12 inches transverse, tank thinning to 0.362 inch. Tear was located within a bulge in the tank 11 feet longitudinal, 5 feet transverse.
2. Valves and PRD were fire damaged, but intact.
3. BOV nozzle was sheared off, operating handle was secured and valve was closed.
4. Dent, 2 feet longitudinal, 2.5 feet transverse, 2 inches deep.
5. Dent, 2 feet by 2 feet, 2 inches deep.
6. Dent, 5 feet longitudinal, 4 feet transverse, 1 inch deep.
7. Dent, 3.5 feet longitudinal, 5 feet transverse, 3 inches deep.
8. Dent, 6 feet longitudinal, 4 feet transverse, 3 inches deep.
9. Dent, 19 feet longitudinal, 12 feet transverse, 6 inches deep.
10. Dent, above head shield at 10 o'clock edge, 3 feet wide, 2 feet high, 4 inches deep.

Other information:

CBTX 741651 came to rest upright, parallel to the tracks, and the B-end (leading) facing east.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,300 lb. Loaded to 201,443 lb.



Figure 59: Derailed overview highlighting line no. 21.



Figure 60: Thermal tear on top of tank car CBTX 741651.



Figure 61: Close up of thermal tear to tank car CBTX741651.

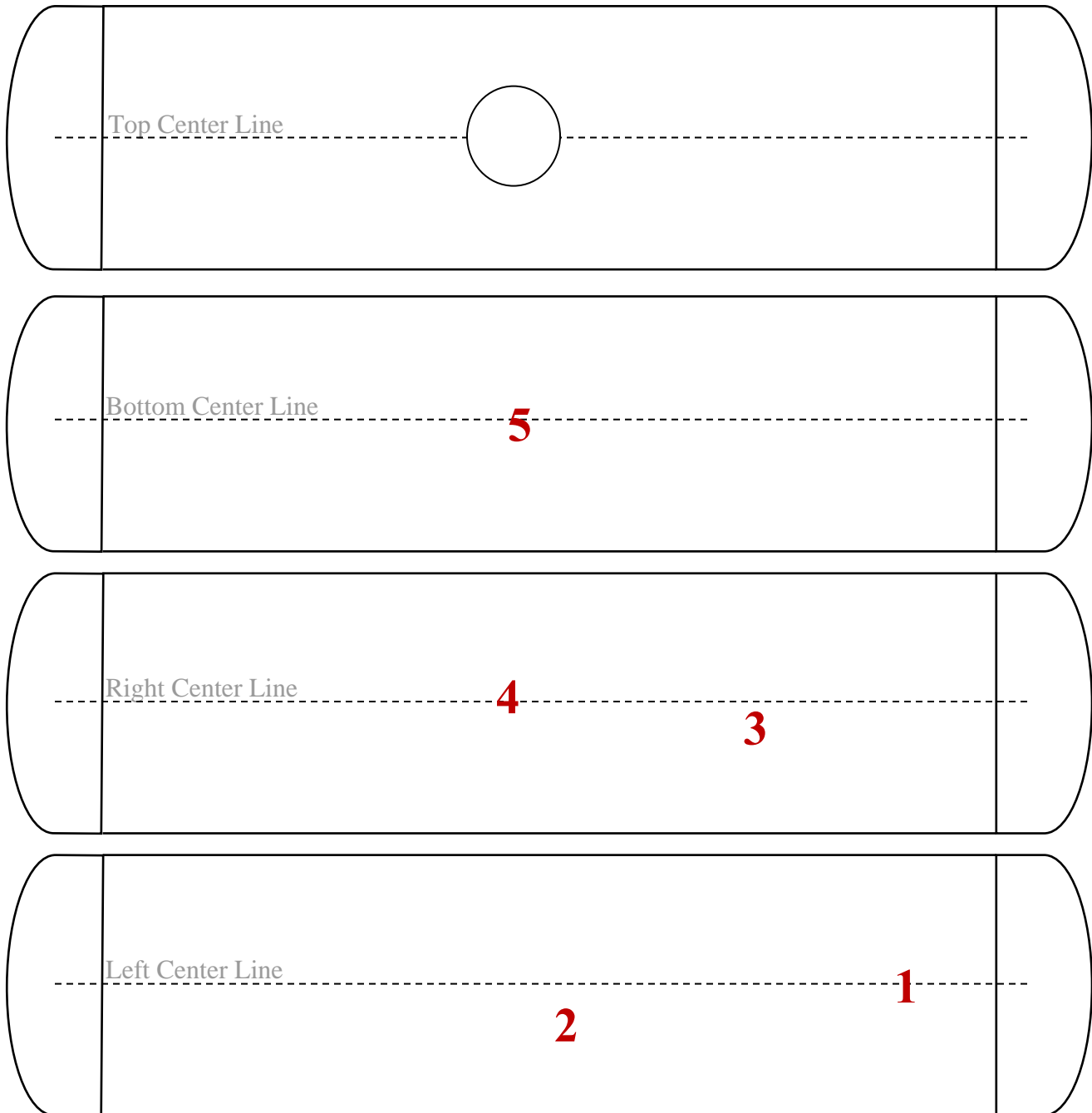
CBTX 742087 (22) Damage Assessment Notes

Reporting Marks	CBTX 742087	# 22	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	5,005 gallons	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	9/18//2012
Capacity (GAL)	31,830		LD Limit (LB)	210,300	

Indicate number on figures below within damaged areas.

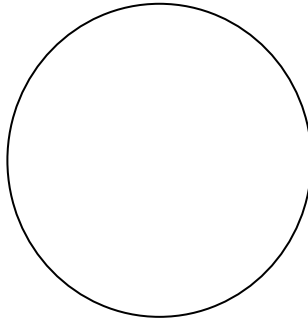
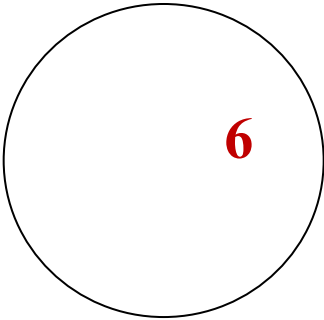
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, above B-L bolster pad, 9 inches longitudinal, 0.75 inches transverse. Shell was bulged 10 feet longitudinal, 12 feet transverse, centered on the tear. Shell thinning to 0.296 inch at edge of tear.
2. Inward shell bending with buckling near the top.
3. Dent, 11 feet longitudinal, 5 feet transverse, 4 inches deep.
4. Dent, 24 feet longitudinal, 11 feet transverse, right side shell compression with multiple scratches. Depth of dent not determined.
5. BOV nozzle sheared off, operating handle and valve intact.
6. Dent, B-end head, centered on transition between head shield and top of tank, 4 feet wide, 6 feet high. Head shield was missing.

Other information:

CBTX 742087 came to rest 90° on its right side and 45° to the direction of travel with the B-end (leading) facing south west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,300 lb. Loaded to 200,560 lb.



Figure 62: Derailed overview highlighting line no. 22.



Figure 63: CBTX 742087 thermal tear above bolster pad (circled).



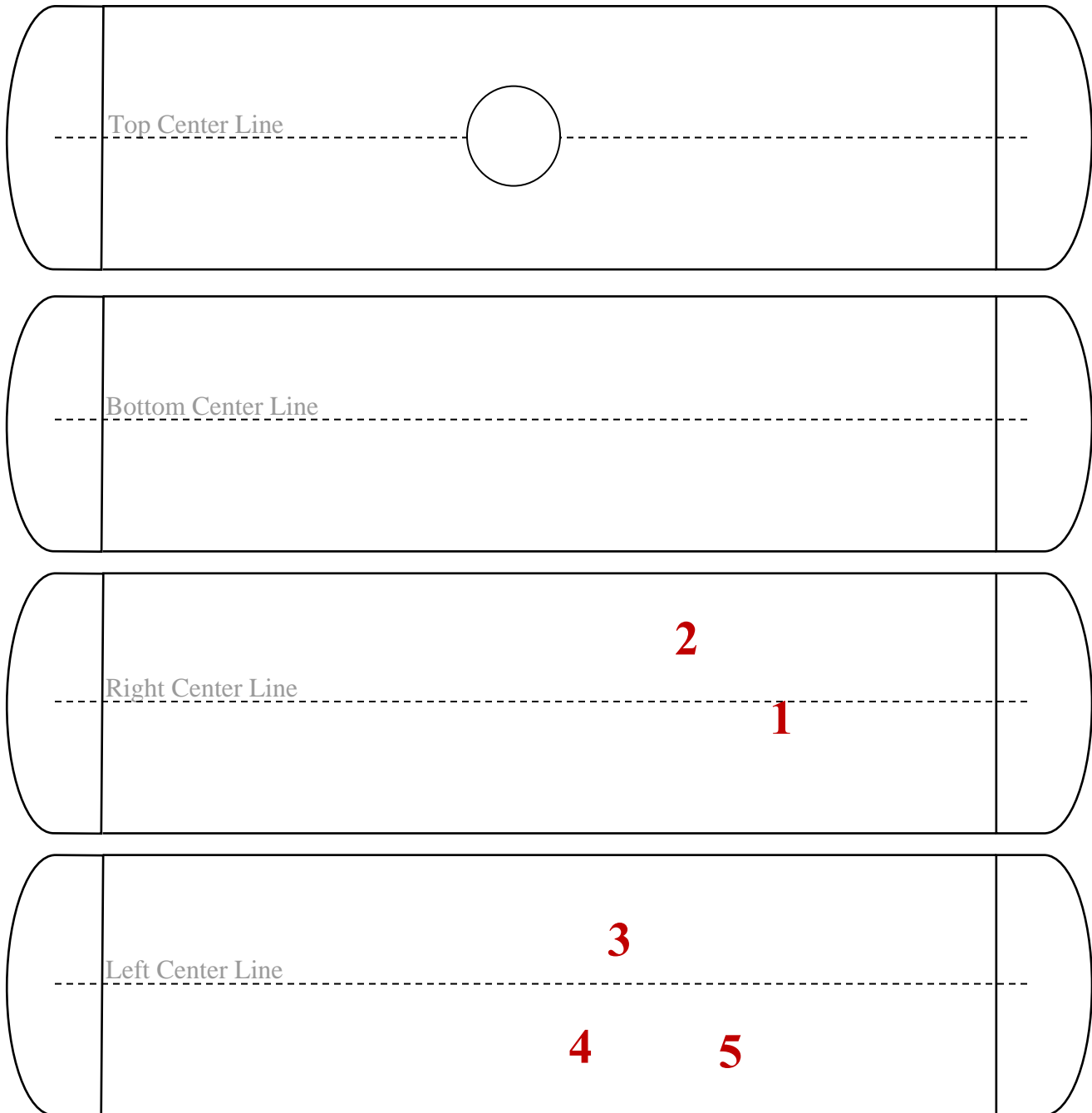
CBTX 741946 (23) Damage Assessment Notes

Reporting Marks	CBTX 741946	# 23	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	29,450 gallons	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	8/27//2012
Capacity (GAL)	31,810		LD Limit (LB)	210,900	

Indicate number on figures below within damaged areas.

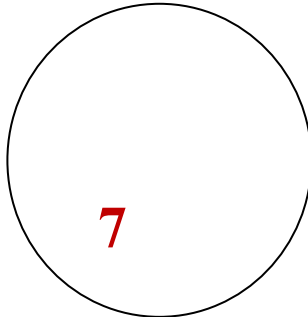
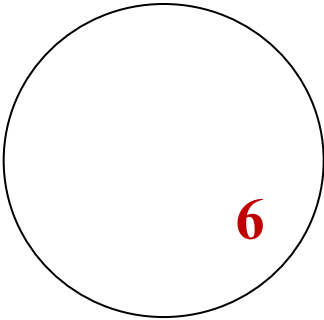
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 7 feet longitudinal, 4 feet transverse, material thinning to 0.371 inch. The tank was bulging in the vicinity of the tear. A flap of steel from the tear was protruding 90° outward from the tank.
2. Dents, 4 feet by 4 feet, 5 inches deep. Closely associated dent below, 2 feet by 2 feet, 4 inches deep.
3. Dent, 17 feet longitudinal, 8 feet transverse, 14 inches deep.
4. Dent, 5 feet longitudinal, 4 feet transverse, 8 inches deep.
5. Dent, 2 feet by 2 feet, 2 inches deep.
6. Dent, 6 feet diameter to head shield. Depth was not recorded, but no contact to tank head. Right edge of head shield was bent 90° outward.
7. Dent, 3 feet by 3 feet, 5 inches deep to head shield.

Other information:

CBTX 742087 came to rest 90° on its left side and nearly parallel to the direction of travel with the B-end (leading) facing south west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,900 lb. Loaded to 201,551 lb.



Figure 65: Derailed overview highlighting line no. 23.

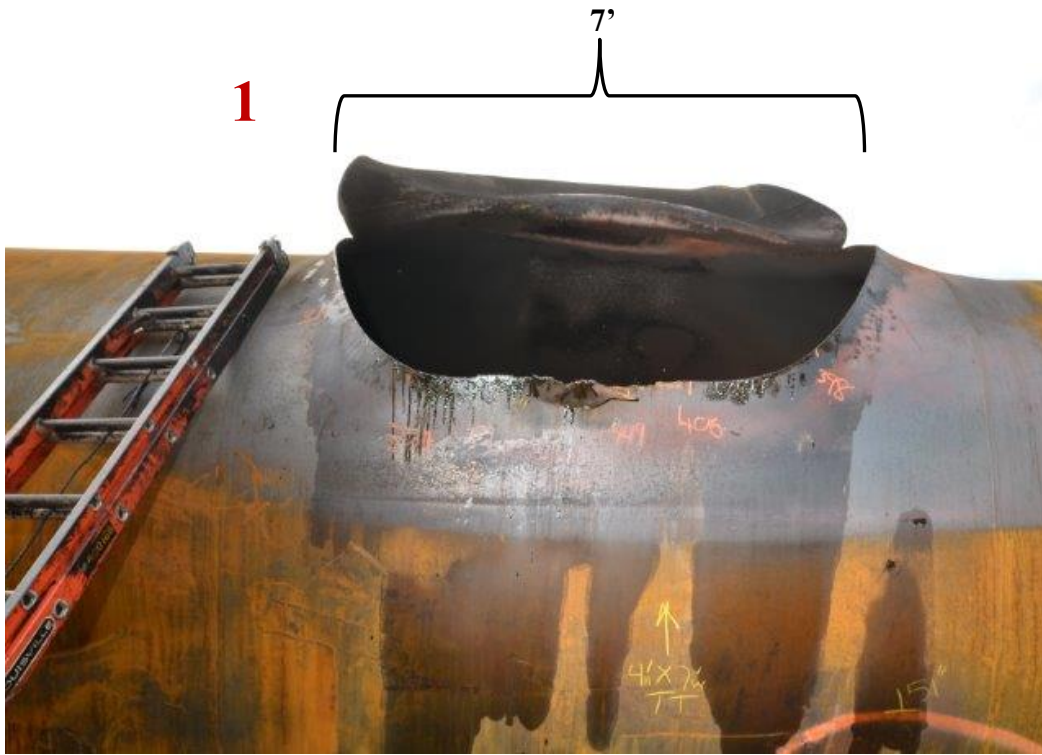


Figure 66: CBTX 741946 thermal tear with bulging and thinning shell material, B-R side.



Figure 67: Resting position of CBTX 741946 highlighting the thermal tear (circle).

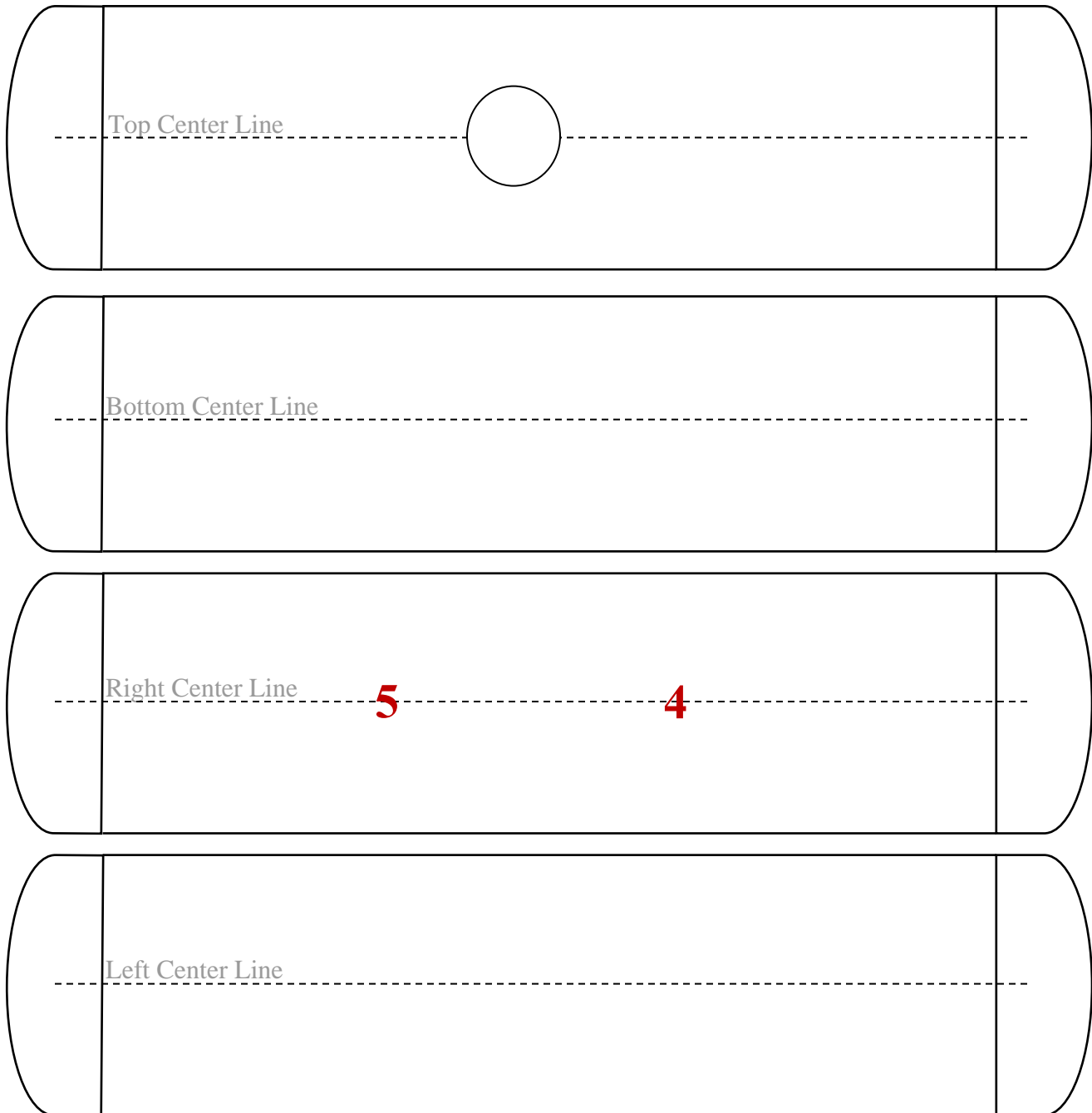
CBTX 741956 (24) Damage Assessment Notes

Reporting Marks	CBTX 741956	# 24	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	3,776 gallons	
Jacket	No		Breaching Damage	Undetermined	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	8/23//2012
Capacity (GAL)	31,790		LD Limit (LB)	210,500	

Indicate number on figures below within damaged areas.

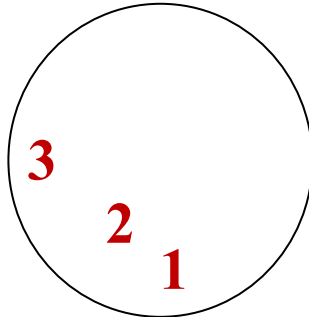
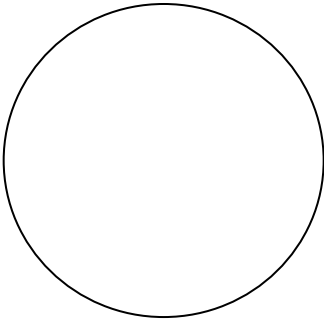
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Gouge and fracture to head shield, with dent to the tank head beneath the impact area. A-L and A-center head shield mounting bolts were broken away from bracket.
2. Dent to head shield, 4 feet by 4 feet, 2 inches deep.
3. Dent to tank head above the head shield at 9 o'clock, 2 feet wide, 1.5 feet high, 2 inches deep.
4. Dent, 9 feet longitudinal, 5 feet transverse, 3 inches deep.
5. Oily residue streamers on right side center of tank shell suggest leakage from top fittings.

Other information:

CBTX 741956 came to rest upright and nearly perpendicular to the direction of travel with the B-end (trailing) facing west.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 210,500 lb. Loaded to 201,551 lb.

Investigators were not able to find breaching damage to account for released product. Oily residue streamers were found on the right side of the car.

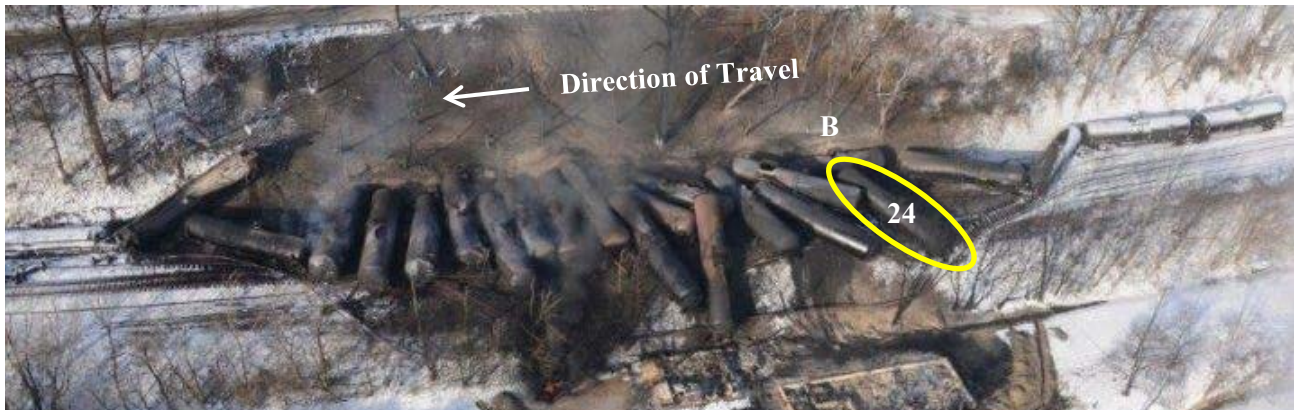


Figure 68: Derailed overview highlighting line no. 24.



Figure 69: A-end head shield impact location and fracture.



Figure 70: View between A-end head shield and tank head showing fractured head shield and impact damage to tank head (circle).

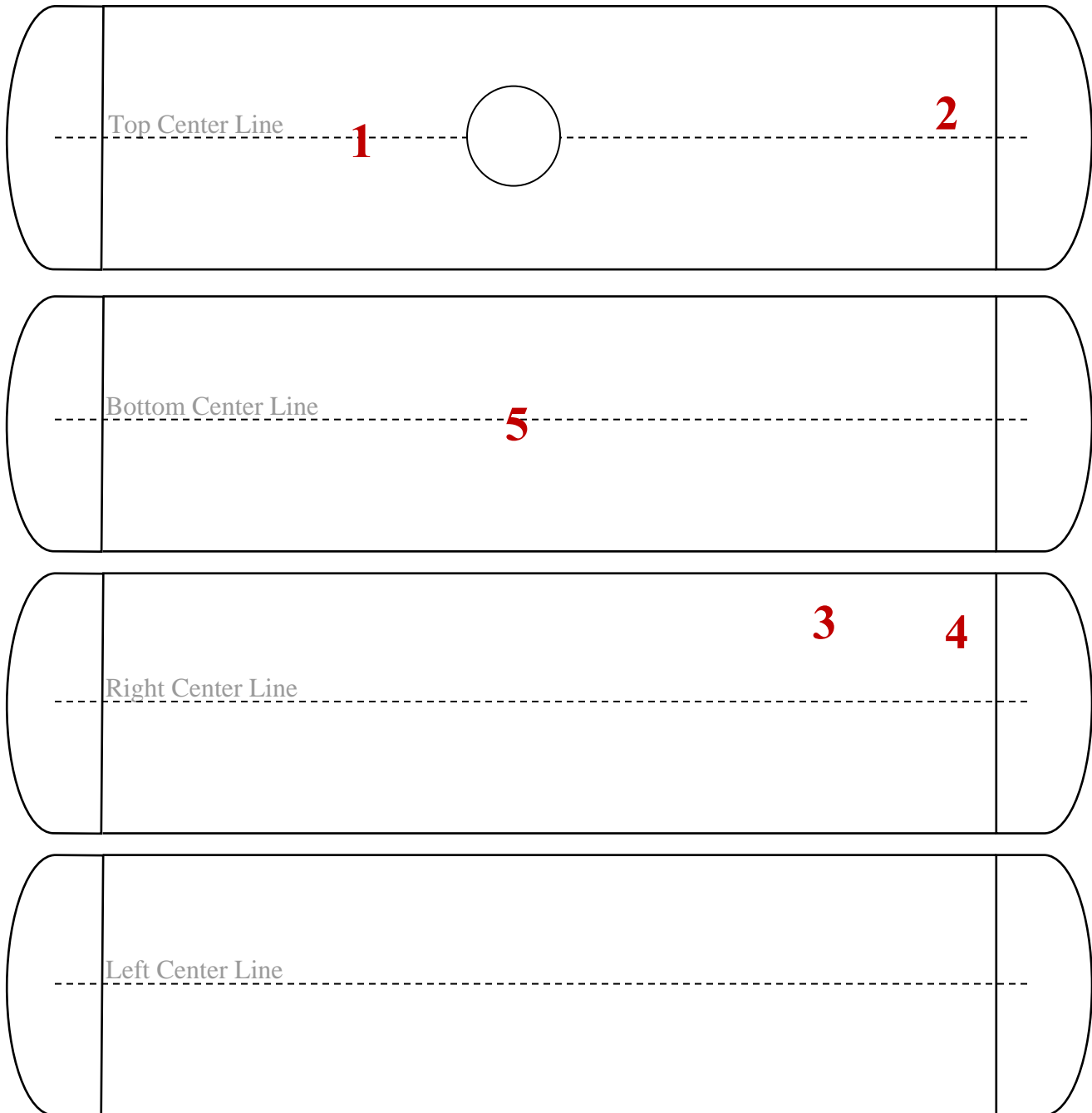
CBTX 743002 (25) Damage Assessment Notes

Reporting Marks	CTCX 743002	# 25	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	29,430 gallons	
Jacket	No		Breaching Damage	Thermal Tear	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	5/29//2012
Capacity (GAL)	31,790		LD Limit (LB)	211,100	

Indicate number on figures below within damaged areas.

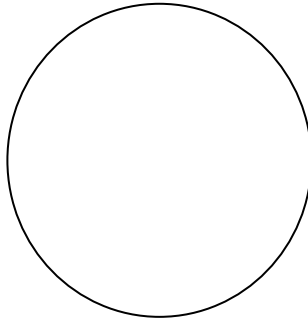
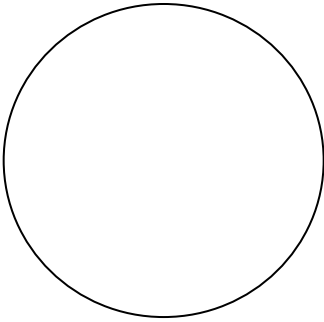
A-END

 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Thermal tear, 5 feet longitudinal, 30 inches transverse, shell thinning to 0.312 inch at edge of tear. Bulge around thermal tear was 10 feet longitudinal, 6 feet transverse.
2. Shell buckling, 16 inches longitudinal, 30 inches transverse, 1 inch high.
3. Dent, 3.5 feet longitudinal, 2 feet transverse, 1.5 inches deep.
4. Body bolster pad fillet weld failed 2 inches.
5. BOV nozzle was sheared off, operating handle was closed, valve was not damaged.

Other information:

CTCX 743002 came to rest upright and west of the tracks parallel to the direction of travel with the B-end (leading) facing south.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

GRL 286,000 lb. Load Limit 211,100 lb. Loaded to 201,416 lb.



Figure 71: Derailed overview highlighting line no. 25.

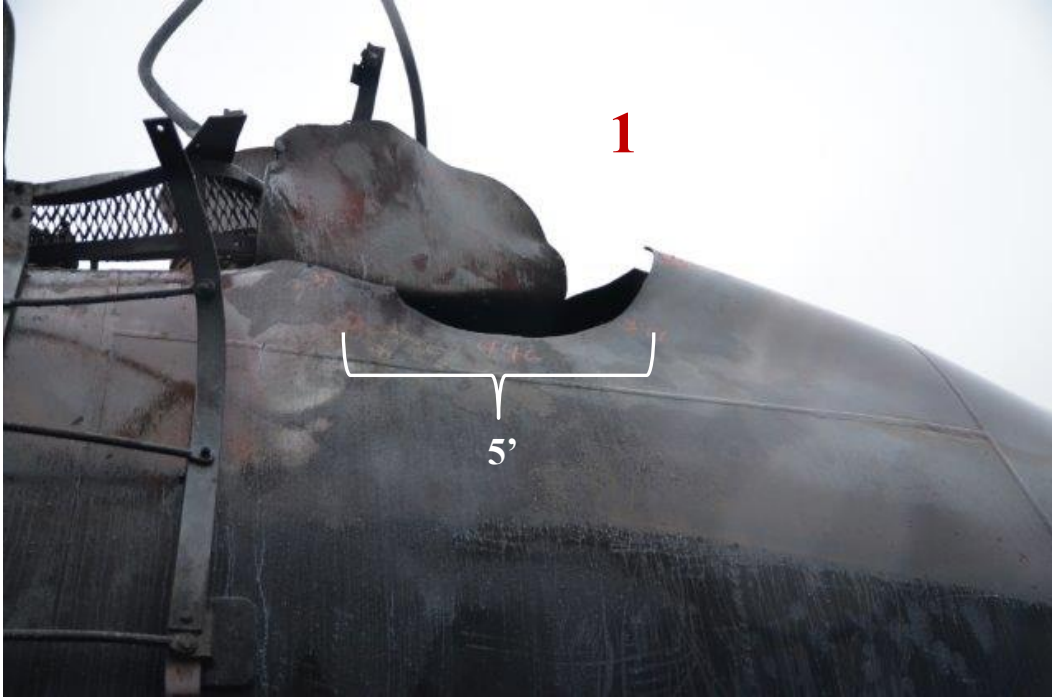


Figure 72: CBTX 743002 thermal tear near A-end center of tank car.



Figure 73: View of thermal tear from above.

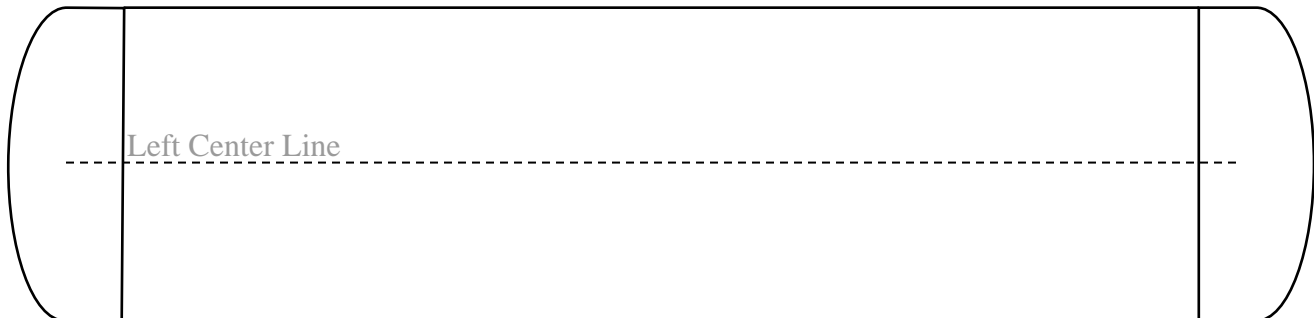
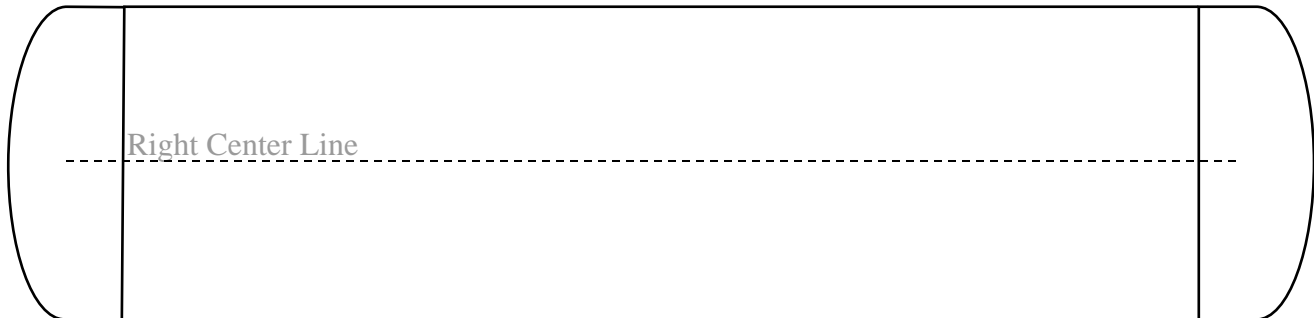
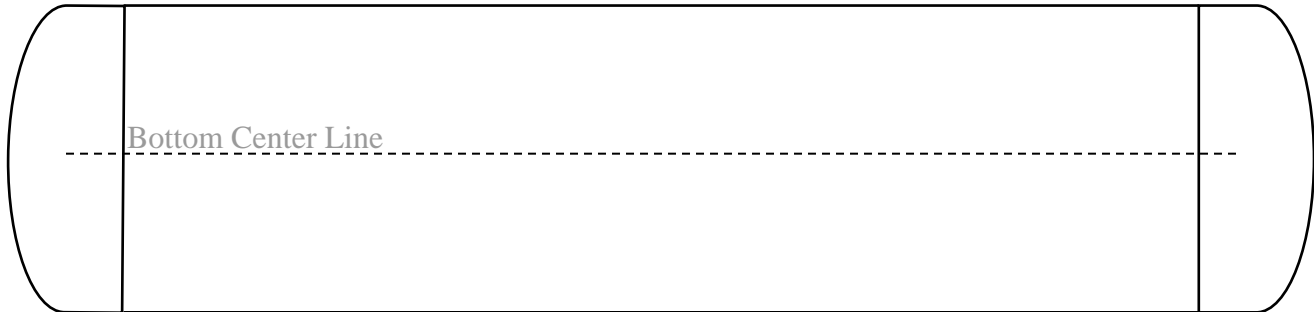
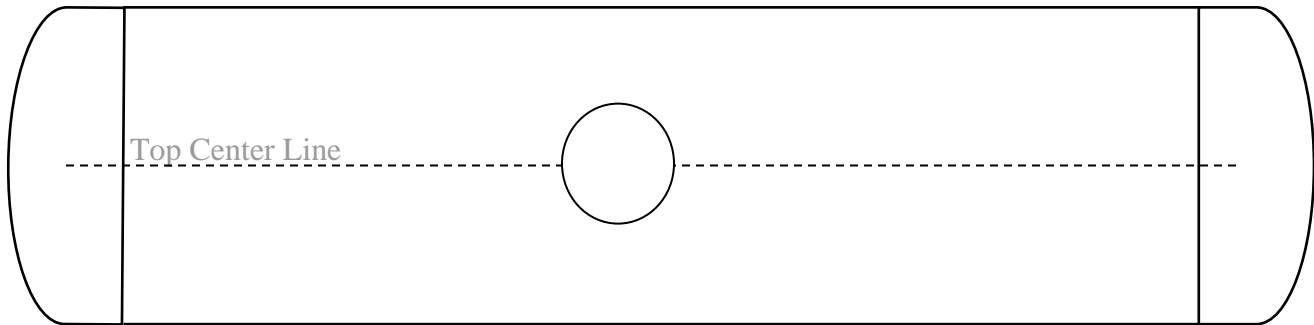
CBTX 741530 (26) Damage Assessment Notes

Reporting Marks	CBTX 741530	# 026	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111A100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	None	
Jacket	No		Breaching Damage	None	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	6/19//2012
Capacity (GAL)	31,790		LD Limit (LB)	210,800	

Indicate number on figures below within damaged areas.

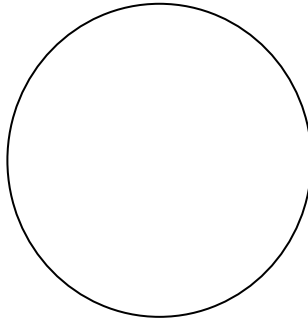
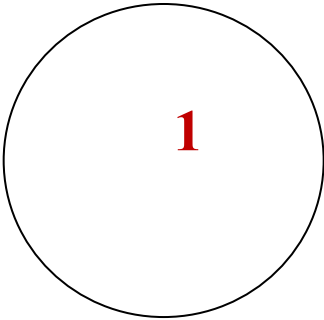
A-END

← Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Dent, rounded, 3 feet by 3 feet, 4 inches deep, above head shield.

Other information:

CBTX 741530 came to rest upright and west of the tracks parallel to the direction of travel with the B-end (trailing) facing north.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

BOV and top fittings undamaged.

GRL 286,000 lb. Load Limit 210,800 lb. Loaded to 201,774 lb.



Figure 74: Derailed overview highlighting line no. 26.



Figure 75: B-end head showing dent above head shield.

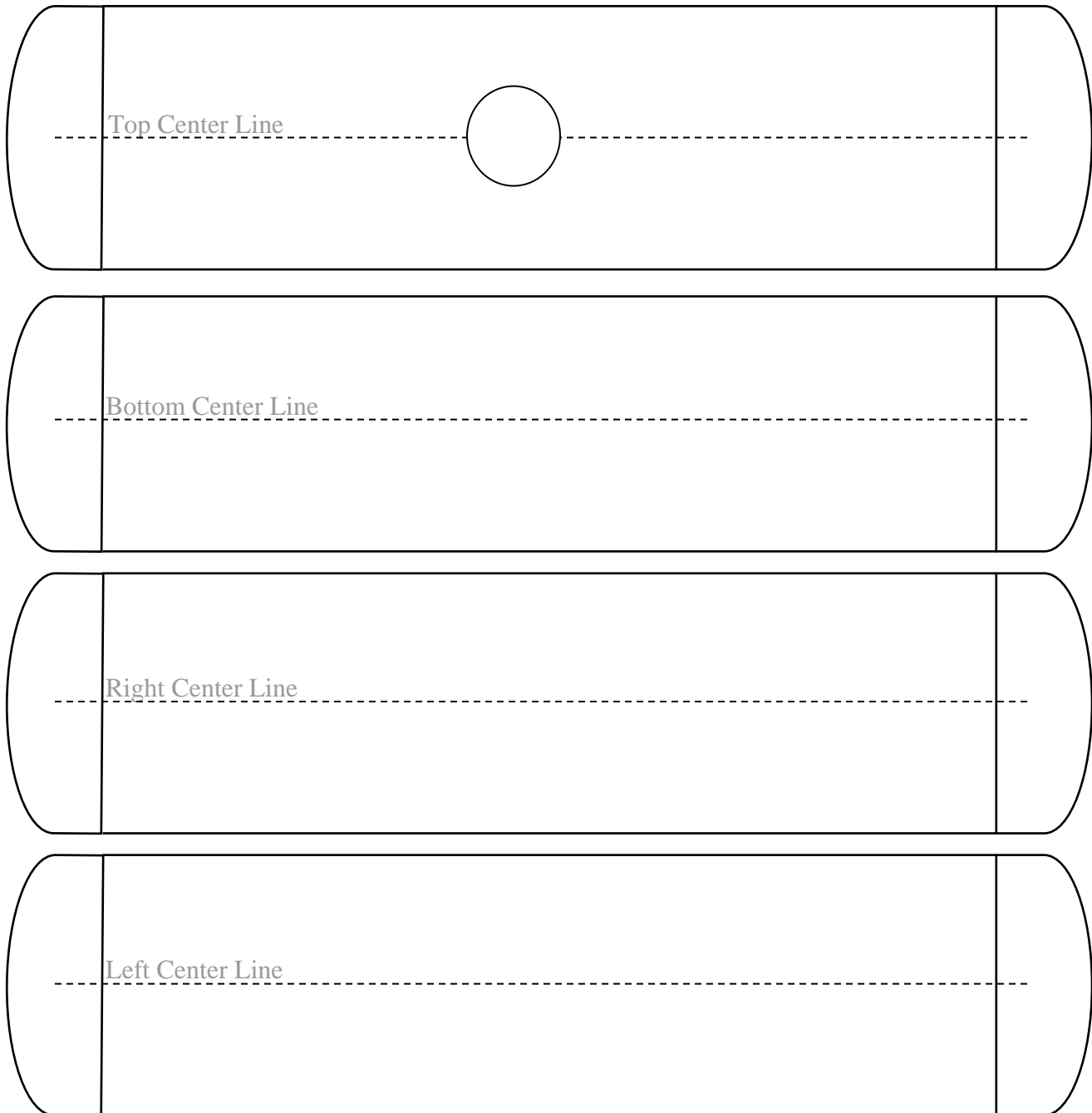
CBTX 741697 (27) Damage Assessment Notes

Reporting Marks	CBTX 741697	# 27	Car Location City/State	Mount Carbon, WV
Date inspected	3/3/2015	Railroad	CSX	DOT Specification
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	None
Jacket	No		Breaching Damage	None
Car builder	ARI	Stub Sill Design	ARI300	Built Date
Capacity (GAL)	31,800	LD Limit (LB)	210,300	7/20//2012

Indicate number on figures below within damaged areas.

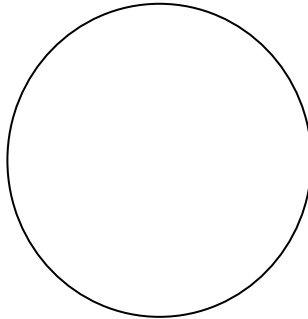
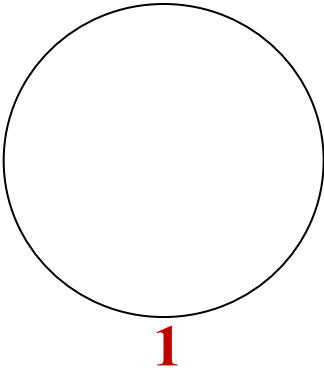
A-END


 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

1. Striker plate and top plate of B-end draft sill fractured and bent upward.

No derailment damage to tank.

Other information:

CBTX 741697 came to rest upright and west of the tracks perpendicular to the direction of travel with the B-end (leading) facing south east.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

BOV and top fittings undamaged.

GRL 286,000 lb. Load Limit 210,300 lb. Loaded to 201,484 lb.



Figure 76: Derailment overview highlighting line no. 27.

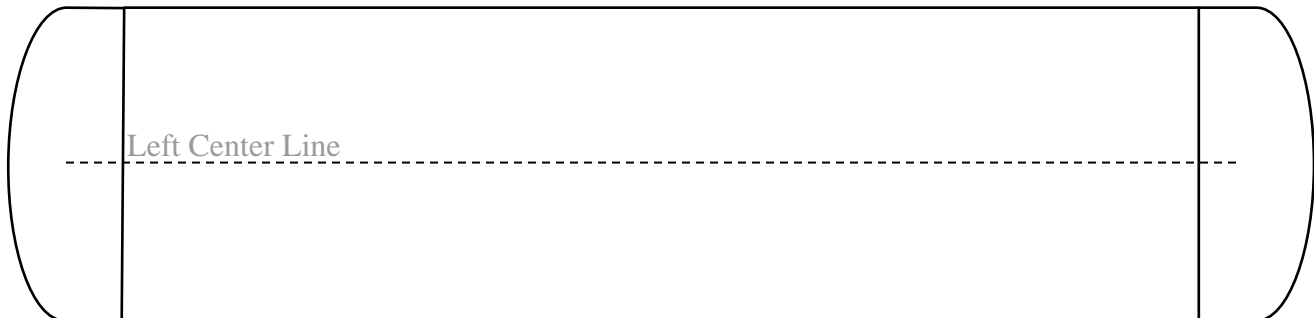
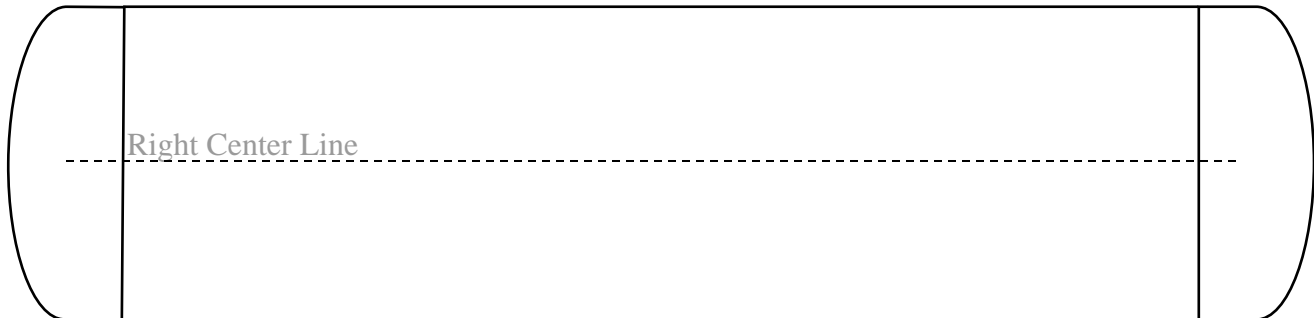
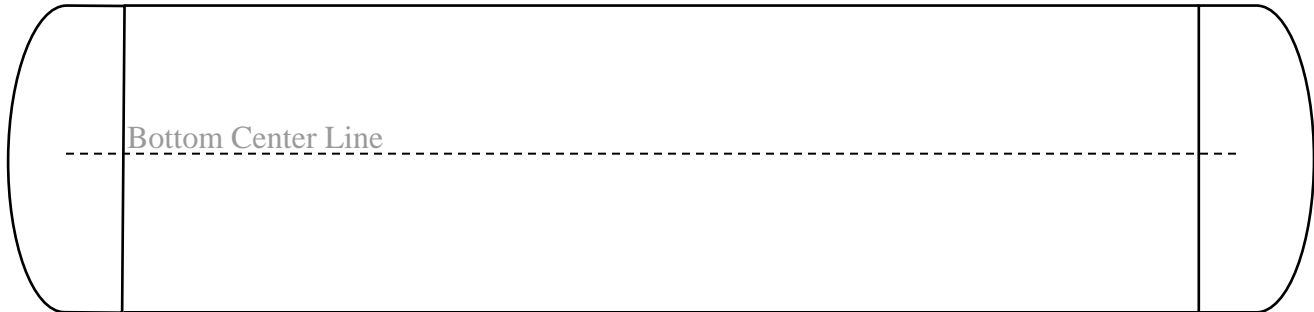
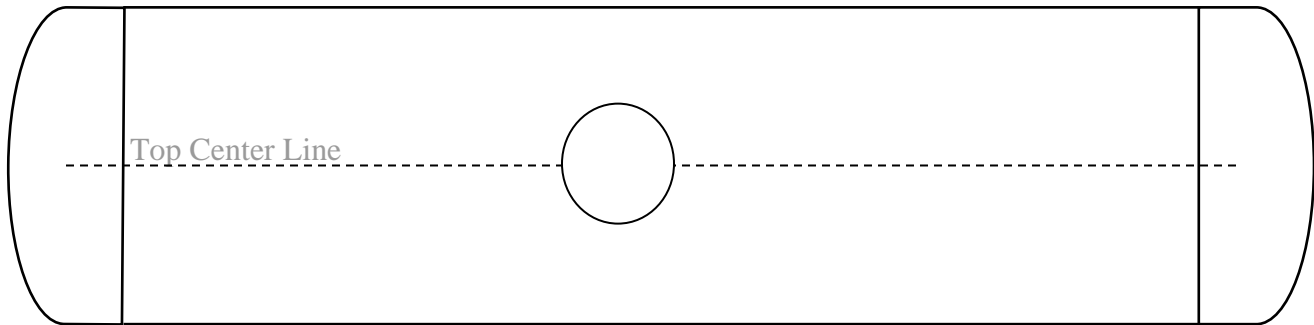
CBTX 743212 (28) Damage Assessment Notes

Reporting Marks	CBTX 743212	# 28	Car Location City/State	Mount Carbon, WV	
Date inspected	3/3/2015	Railroad	CSX	DOT Specification	DOT-111S100W1
Last Contained	Petroleum Crude Oil, 3, PGI, UN1267		Product Released	None	
Jacket	No		Breaching Damage	None	
Car builder	ARI	Stub Sill Design	ARI300	Built Date	4/18//2013
Capacity (GAL)	31,820		LD Limit (LB)	210,600	

Indicate number on figures below within damaged areas.

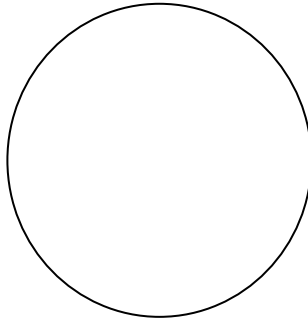
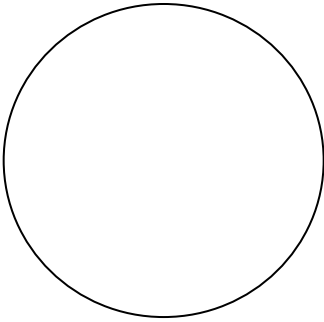
A-END


 Direction of Travel



B-Head

A-Head



	Station Stencil	Qual.	Due
Tank Qual.			
Thickness			
Serv. Equip.			
PRD			
Lining			
Rule 88			
Stub Sill			

Comments: See diagrams and figures for location of damage.

No derailment damage, with the exception of safety appliances.

Other information or description deemed pertinent by inspector:

CBTX 743212 came to rest upright and on the tracks in the direction of travel with the B-end (trailing) facing north.

0.5-inch heads and shell, AAR TC128 Gr. B normalized

Half-height 1/2 -inch steel head shields.

One pressure relief device with 75 psi start-to-discharge at 25,636 cfm.

BOV and top fittings undamaged.

GRL 286,000 lb. Load Limit 210,600 lb. Loaded to 201,983 lb.



Figure 77: Derailment overview highlighting line no. 28.