

Arch Chemicals, Inc.

Lake Charles Operations

Tank Car's  
17054, 17056, 17072,  
17073, 17074, 17075, 17077,  
17081 and 17091

External Visual  
and  
Nondestructive Examination Report  
of  
Pressure Containing Vessel

February, 2000

by

METco - Sulphur



*Nondestructive Testing Services*



*Nondestructive Testing Services*

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### **Tank Car 17072**

Same as 17054

### **Tank Car 17073**

Same as 17054

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Same as 17054

**Tank Car 17075**

Same as 17054

**Tank Car 17077**

Same as 17054

**Tank Car 17081**

Same as 17054

**Tank Car 17091**

Same as 17054

Picture of Pressure Safety Relief Valve

Arch Chemicals, Inc.

Lake Charles Operations

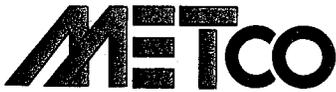
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External Visual  
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February, 2000

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*Nondestructive Testing Services*

**Project Scope:**

To perform an examination of railroad storage tank cars to determine fitness for service. The railcar rolling mechanisms were not included in this examination, only the pressure containing parts of the railcar vessel were examined.

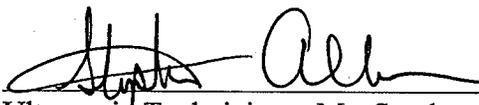
**Limitations:**

Due to safety concerns by Arch Chemicals, Inc, an internal examination will not be allowed. All examinations were performed from the outside of the vessel. Due to chemicals contained in the vessel, removal of the protective coating or major surface preparation was not performed. Report is limited to external vessel information only.

**Inspection Criteria:**

- Report relief valve information
- Field Sketch of railcar vessel with dimensions
- Visual examination of vessel
- Ultrasonic Thickness Measurements of pressure containing members
- Ultrasonic Shear Wave Examination of accessible full penetration welds
- Photographs of Tank Cars
- Engineering Calculations of Maximum Allowable Working Pressure (MAWP)  
Provided by PE under separate cover.

METco – Sulphur Personal

  
Date: 3/2/00  
Ultrasonic Technician – Mr. Stephen Allen Ultrasonic Level II (thickness)

  
Date: 3/2/00  
API – 510 Inspector – Mr. David E. Savoy API # 1514

Information provided by Arch

as of 11/16/26

UDMH/AH MIX TANK CARS

Dot Specification	103AALM
Metal	Aluminum
Tank Pressure Rating	60 psi
Safety Valve	35 psi
Retest: Tank/Safety Valve	1 yr/1 yr
COT & S	4 yrs/2 yrs repack
FRA Test	4 yrs
Capacity	50,000 lbs

6 TC's @ AFRPL  
5 Full  
1 CAFE CAR

---

8 TC's @ CCAFS

15 TC's @ Olin

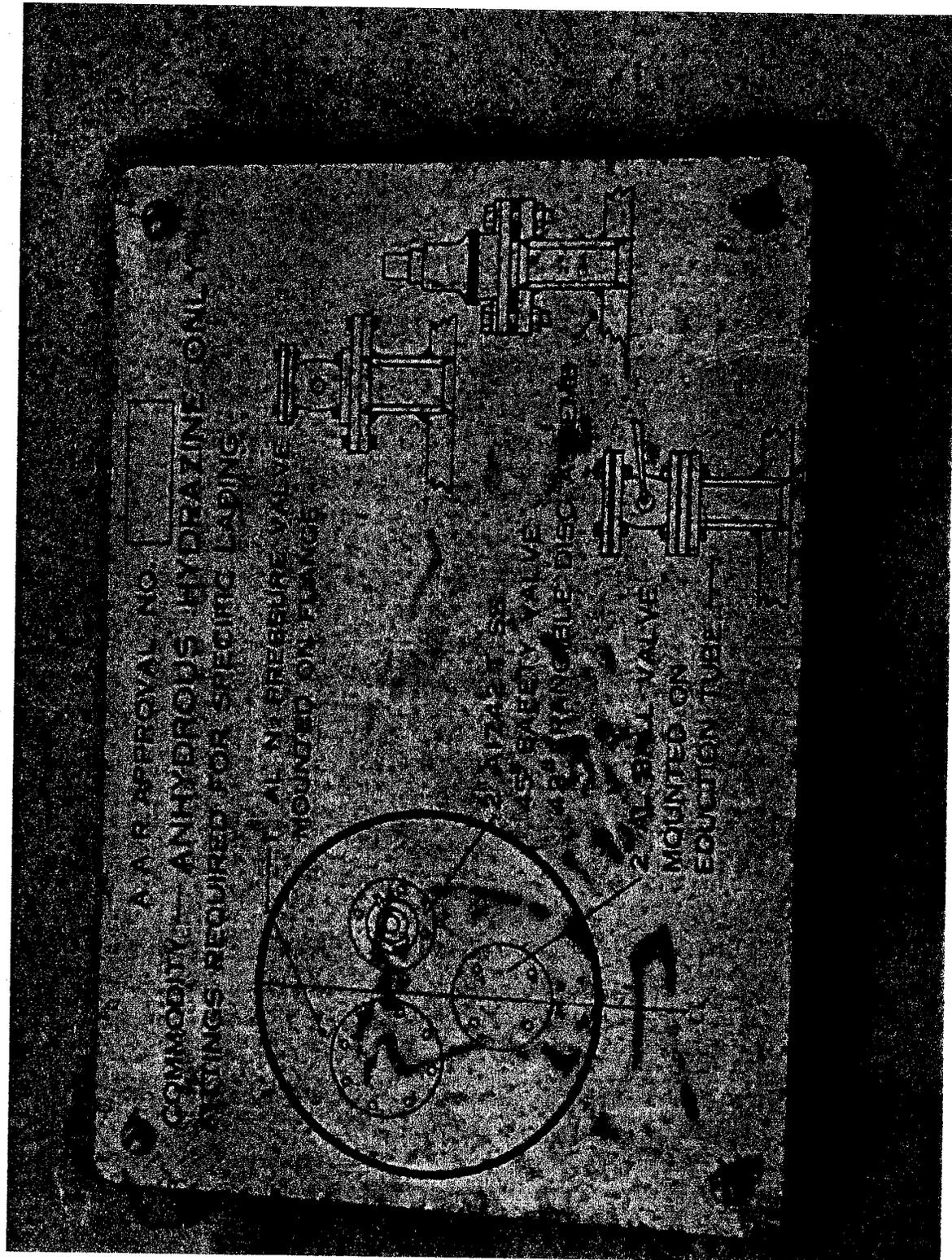
RAIL CAR	DATE OF MANUF.	
17069	10/53	AFRPL
17070	10/53	Olin
17071	10/53	CCAFS
17072	10/53	Olin
17073	10/53	Olin
17074	10/53	Olin
17075	10/53	CCAFS
17076	9/53	Olin
17077	10/53	Olin
17078	10/53	CCAFS
17080	10/53	AFRPL
17081	10/53	Olin
17090	2/55	
17092	3/49	
17093	3/49	
17094	3/49	

10 ± 5 PSIG GN2 BLANKET  
30 JAMESBURY BALL VALVE

RAIL CAR	DATE OF MANUF.	
17040	1/53	CCAFS
17051	9/53	Olin
17053	10/53	CCAFS
17054	9/53	Olin
17055	9/53	Olin
17057	9/53	AFRPL
17058	9/53	Olin
17059	9/53	AFRPL
17060	9/53	Olin
17061	9/53	Olin
17062	9/53	Olin
17063	9/53	CCAFS
17064	9/53	Olin
17065	9/53	CCAFS
17066	3/53	AFRPL
17067	9/53	AFRPL
17068	9/53	CCAFS

7,000 GALLON CAPACITY (59,000 LBS)  
32' 9" L OVER STREAMS  
36' 3" L PULLING FACE  
TOP LOADING / UNLOADING

# Tank Car Nozzle Information Plate



## DISCLAIMER

Services provided are performed by competent inspectors qualified in accordance with SNT-TC-1A. The services were provided at the request of the client. Our inspectors provided this service with a degree of skill normally exercised under similar circumstances. No warranties, expressed or implied are made by METco. Any repairs, alterations, or replacements made to the material(s) inspected are made at the sole discretion of the CLIENT.

Our letters and reports are for the exclusive use of the CLIENT. The use of our name must receive our prior written approval. Our letters and reports apply only to the material(s) tested and/or inspected and are not necessarily indicative of the qualities of apparently identical or similar materials.

We believe that METco is the best choice for all your inspection needs. METco strives to achieve and maintain undisputed leadership in the materials evaluation field by serving our clients to the highest professional standard.

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17054
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17054
REL #:	8256 A
PSI #:	806193
Set Pressure:	35 lbs on 6/12/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be good working condition. No external plate buckles or deformities were noted.

Tank car external coating is faded. Paint has chalky residue, top portion of vessel has red paint which appears to be primer.

All External attachments for handrails and walkways are in usable condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .612" is located on Shell Plate 1 - TML-5.

### Heads

Minimum thickness .600" is located on Head B - TML-39.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

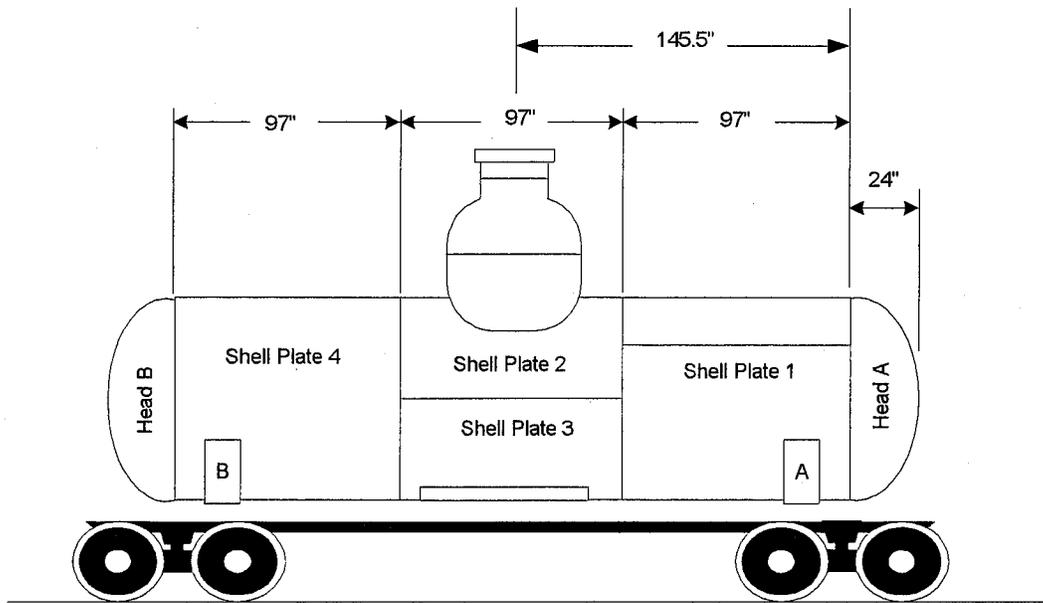
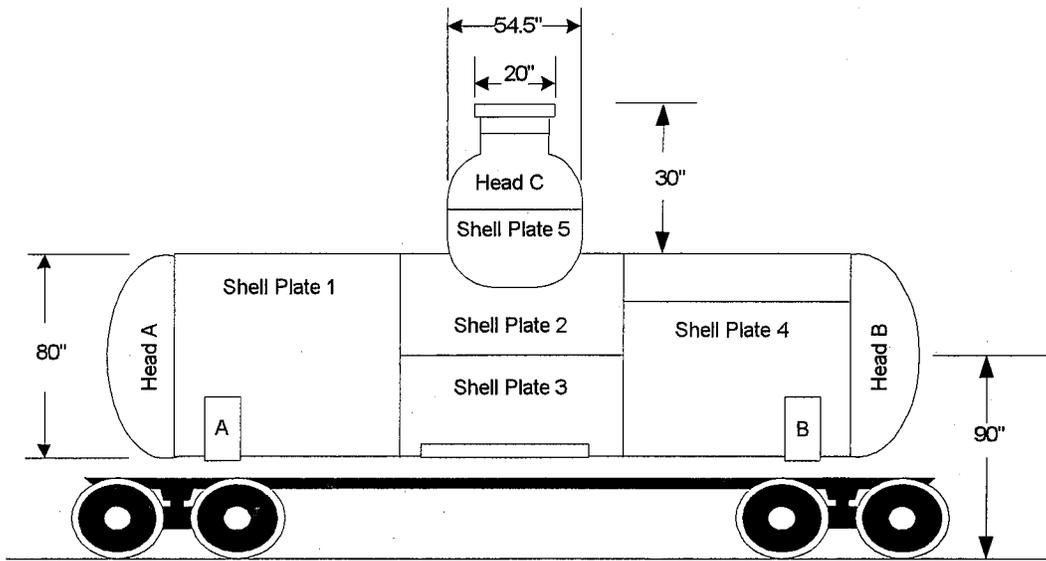
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

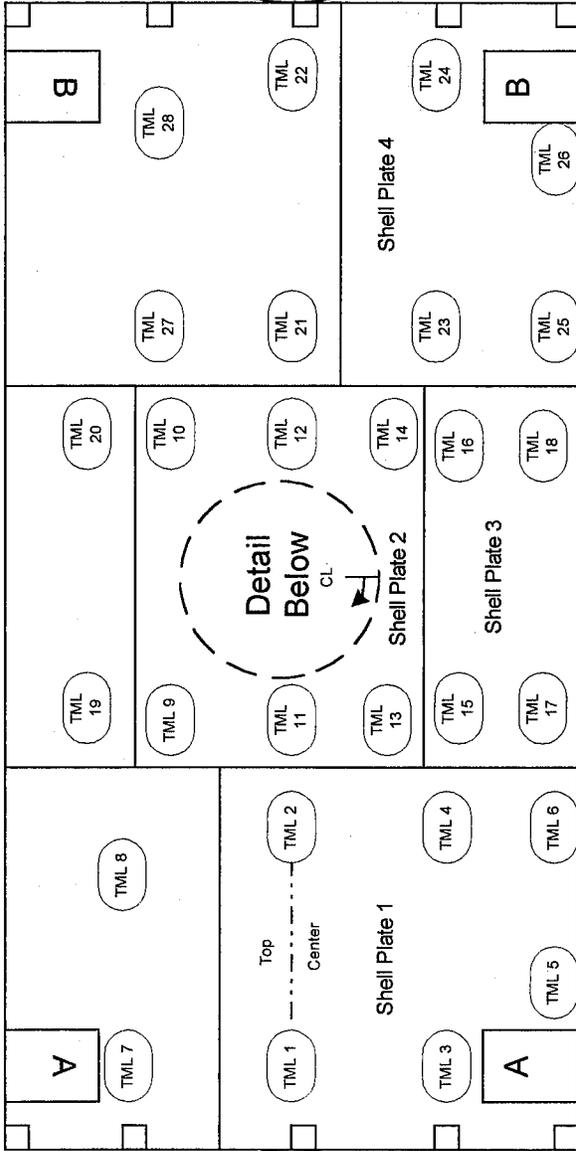
# Tank Car - 17054



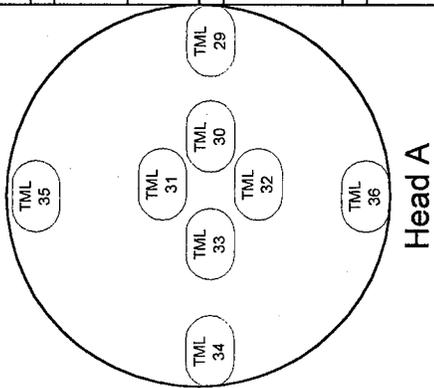
## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.

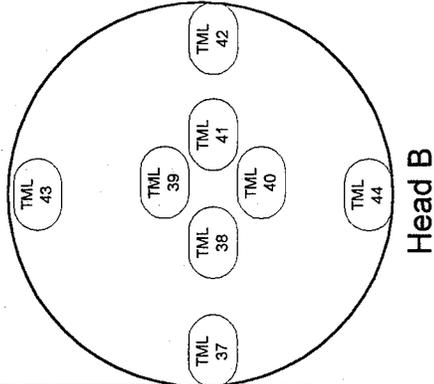
Bottom Center



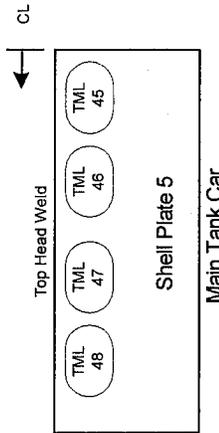
Bottom Center



Head A



Head B

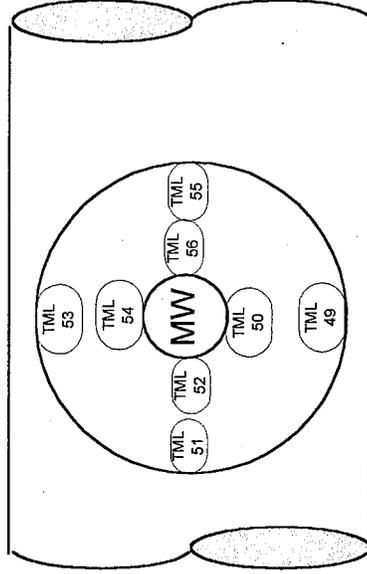


Top Head Weld

Shell Plate 5

Main Tank Car

← Head A



Top Head C

Location of Thickness Measurement Locations (TML)

# Tank Car - 17054

# Thickness Measurement Readings

## Tank Car - 17054

### Shell Plate 1:

Top Center	TML-1	.623	TML-2	.622
Side A-B	TML-3	.622	TML-4	.626
Bottom Center	TML-5	.612	TML-6	.618
Side B-A	TML-7	.620	TML-8	.623

### Shell Plate 2

Side B-A	TML-9	1.256	TML-10	1.249
Top Center	TML-11	1.252	TML-12	1.254
Side A-B	TML-13	1.282	TML-14	1.297

### Shell Plate 3

Side A-B	TML-15	.622	TML-16	.623
Bottom Center	TML-17	.620	TML-18	.620
Side B-A	TML-19	.620	TML-20	.620

### Shell Plate 4

Top Center	TML-21	.632	TML-22	.627
Side A-B	TML-23	.630	TML-24	.631
Bottom Center	TML-25	.624	TML-26	.620
Side B-A	TML-27	.631	TML-28	.624

### Head A

TML-29	.622	TML-33	.631
TML-30	.628	TML-34	.637
TML-31	.628	TML-35	.638
TML-32	.629	TML-36	.633

### Head B

TML-37	.630	TML-41	.632
TML-38	.630	TML-42	.632
TML-39	.600	TML-43	.650
TML-40	.624	TML-44	.630

### Shell Plate 5

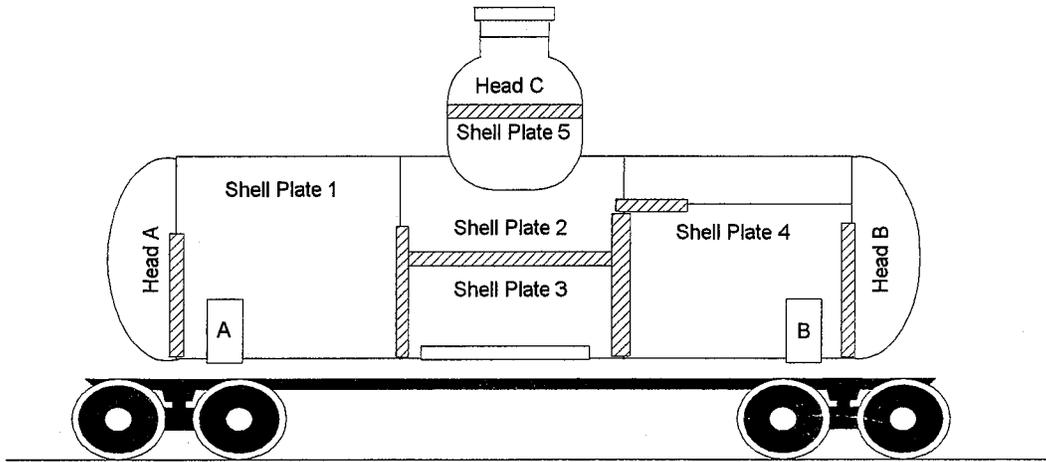
Center Line	TML-45	1.059
Head A Side	TML-46	1.040
Opposite CL	TML-48	1.030
Head B Side	TML-48	1.043

### Top Head C

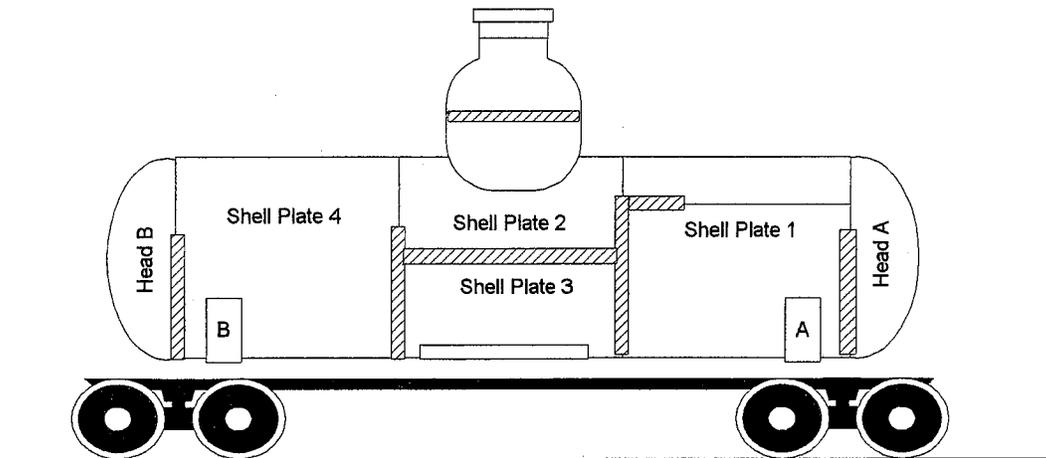
TML-49	.793	TML-53	.797
TML-50	.672	TML-54	.715
TML-51	.793	TML-55	.650
TML-52	.690	TML-56	.803

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

# Tank Car - 17054



 Indicates Areas Where UT Shear Wave Examination were performed.



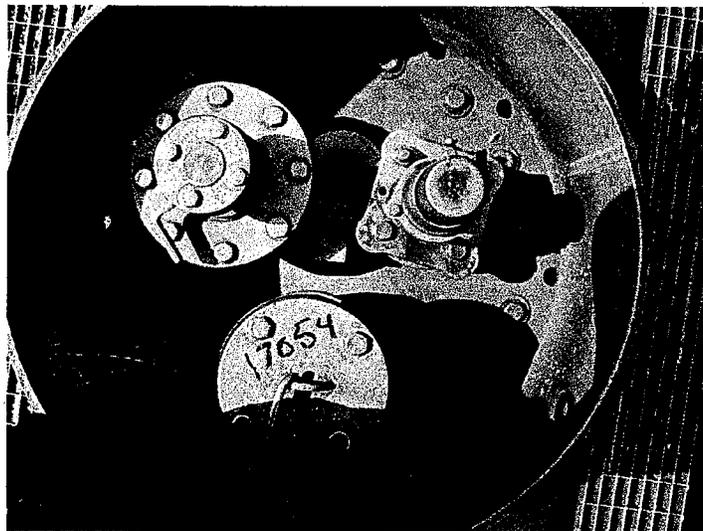
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

# Tank Car 17054



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1



Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005



Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17056
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17060
REL #:	8256 A
PSI #:	806194
Set Pressure:	35 lbs on 6/13/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint has chalky residue but appears to be adhered well.

All external attachments for handrails and walkways are in good condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .593" is located on Shell Plate 1 - TML-3.

### Heads

Minimum thickness .590" is located on Head A - TML-30.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

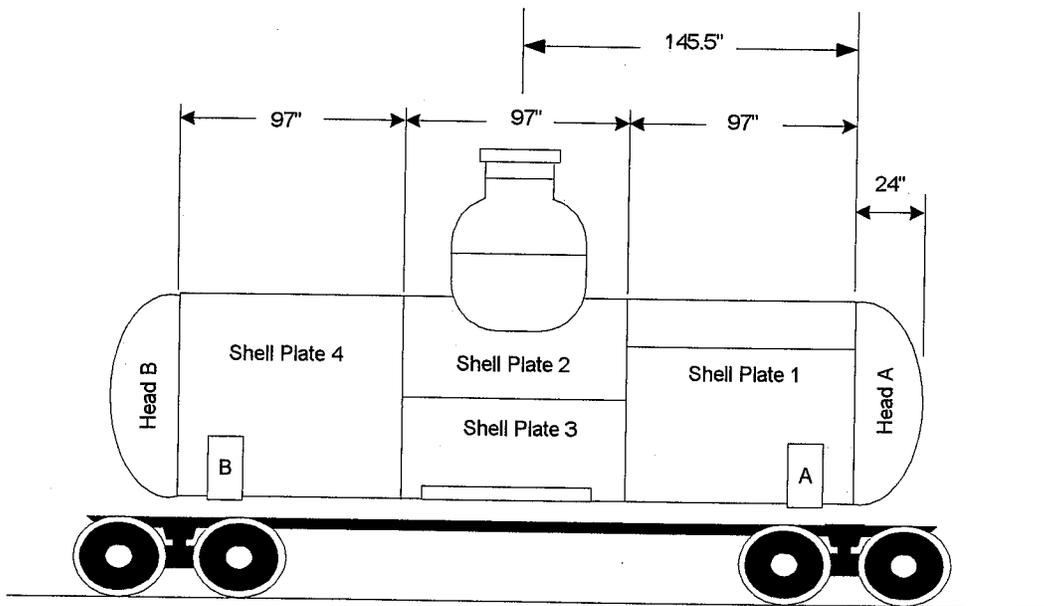
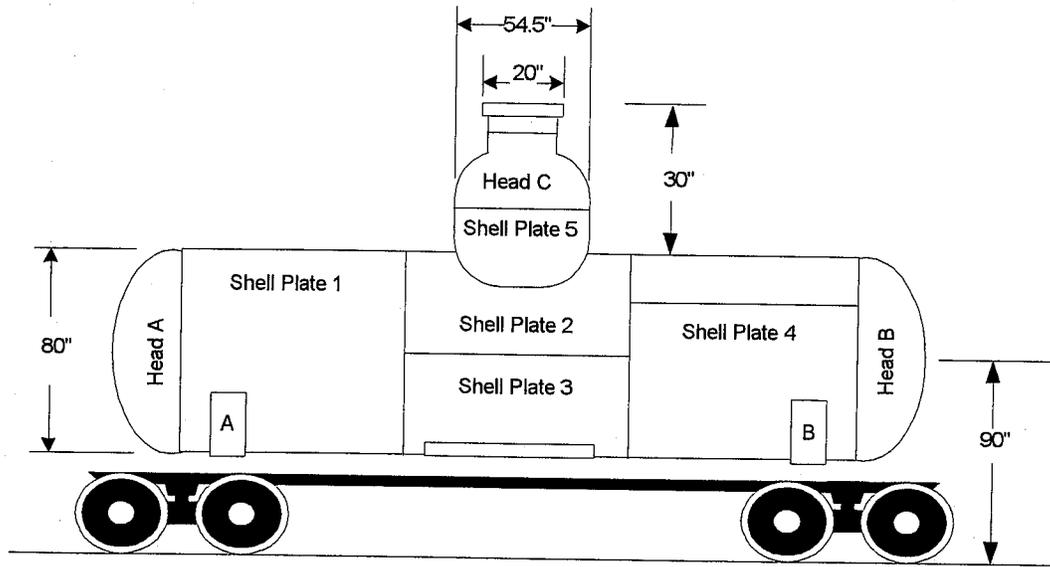
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

# Tank Car - 17056



## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.

# Thickness Measurement Readings

## Tank Car - 17056

### Shell Plate 1:

Top Center	TML-1	.630	TML-2	.637
Side A-B	TML-3	.593	TML-4	.604
Bottom Center	TML-5	.590	TML-6	.599
Side B-A	TML-7	.594	TML-8	.599

### Shell Plate 2

Side B-A	TML-9	1.258	TML-10	1.251
Top Center	TML-11	N/A	TML-12	N/A
Side A-B	TML-13	1.254	TML-14	1.246

### Shell Plate 3

Side A-B	TML-15	.631	TML-16	.637
Bottom Center	TML-17	.631	TML-18	.632
Side B-A	TML-19	.634	TML-20	.635

### Shell Plate 4

Top Center	TML-21	.621	TML-22	.625
Side A-B	TML-23	.619	TML-24	.627
Bottom Center	TML-25	.618	TML-26	.626
Side B-A	TML-27	.618	TML-28	.627

### Head A

TML-29	.630	TML-33	.605
TML-30	.590	TML-34	.625
TML-31	.609	TML-35	.637
TML-32	.610	TML-36	.644

### Head B

TML-37	.625	TML-41	.616
TML-38	.600	TML-42	.640
TML-39	.613	TML-43	.654
TML-40	.613	TML-44	.643

### Shell Plate 5

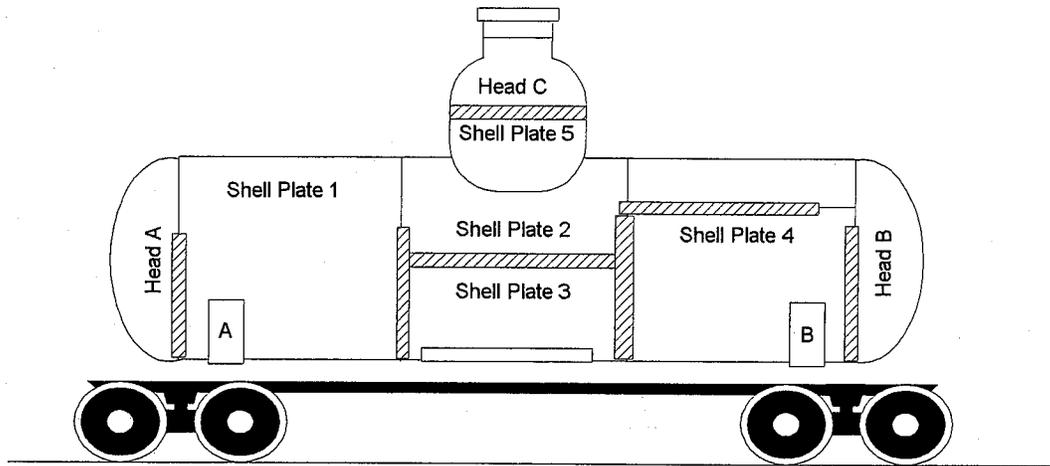
Center Line	TML-45	1.081
Head A Side	TML-46	1.043
Opposite CL	TML-48	1.066
Head B Side	TML-48	1.023

### Top Head C

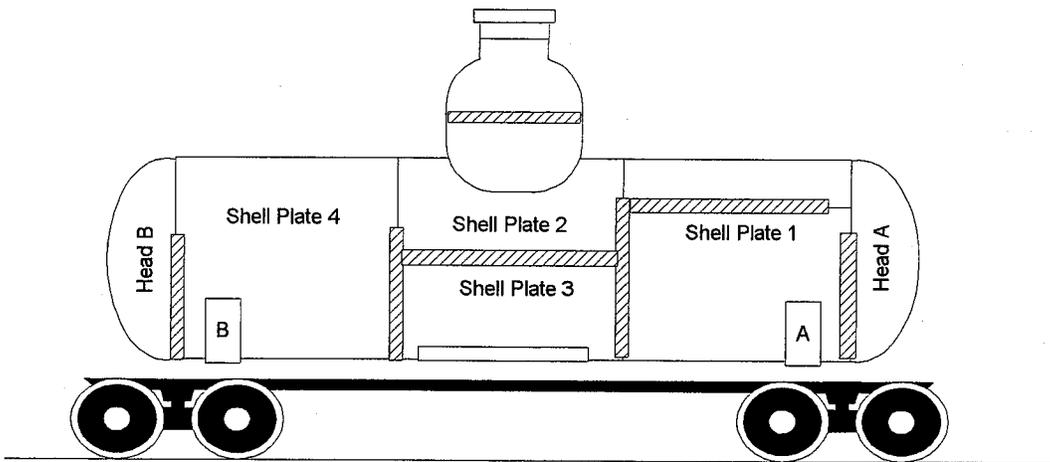
TML-49	.806	TML-53	.806
TML-50	.708	TML-54	.680
TML-51	.809	TML-55	.806
TML-52	.687	TML-56	.708

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature. N/A readings on shell plate number 2, black non-skid coating on top of rail car obstructing TML point.

# Tank Car - 17056



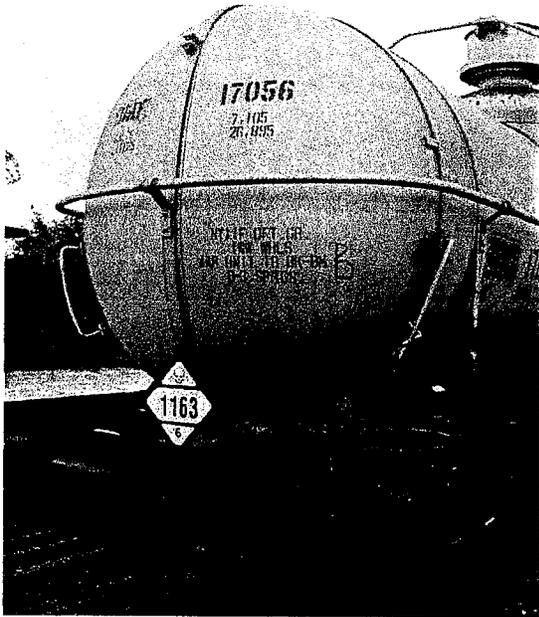
 Indicates Areas Where UT Shear Wave Examination were performed.



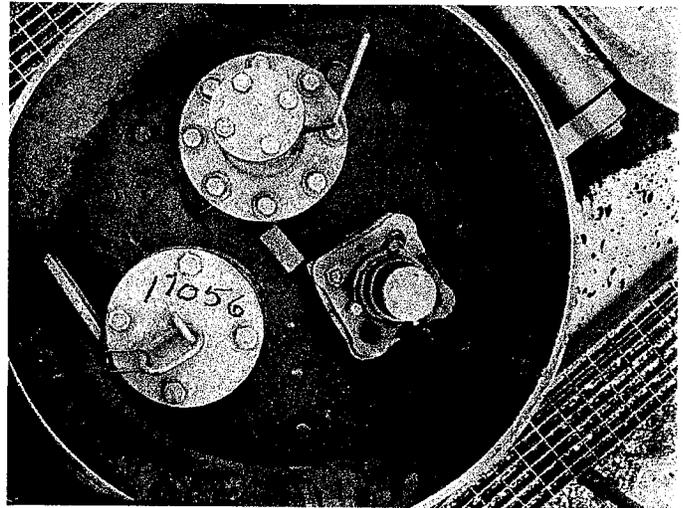
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

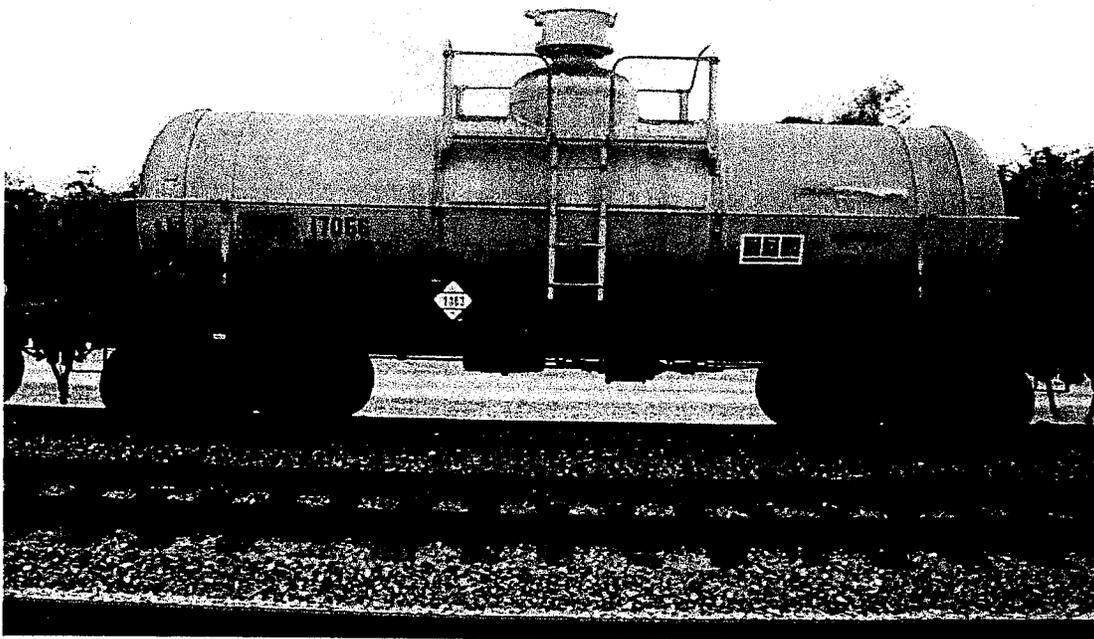
# Tank Car 17056



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

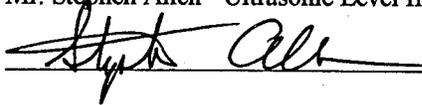
Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

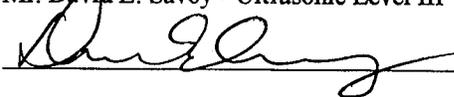
Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17072
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17072
REL #:	8241 I
PSI #:	80638
Set Pressure:	35 lbs on 6/8/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be in good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint has chalky residue but appears to be adhered well.

All external attachments for handrails and walkways are in good condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .594" is located on shell plate 3 - TML-15.

### Heads

Minimum thickness .602" is located on Head A - TML-31.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

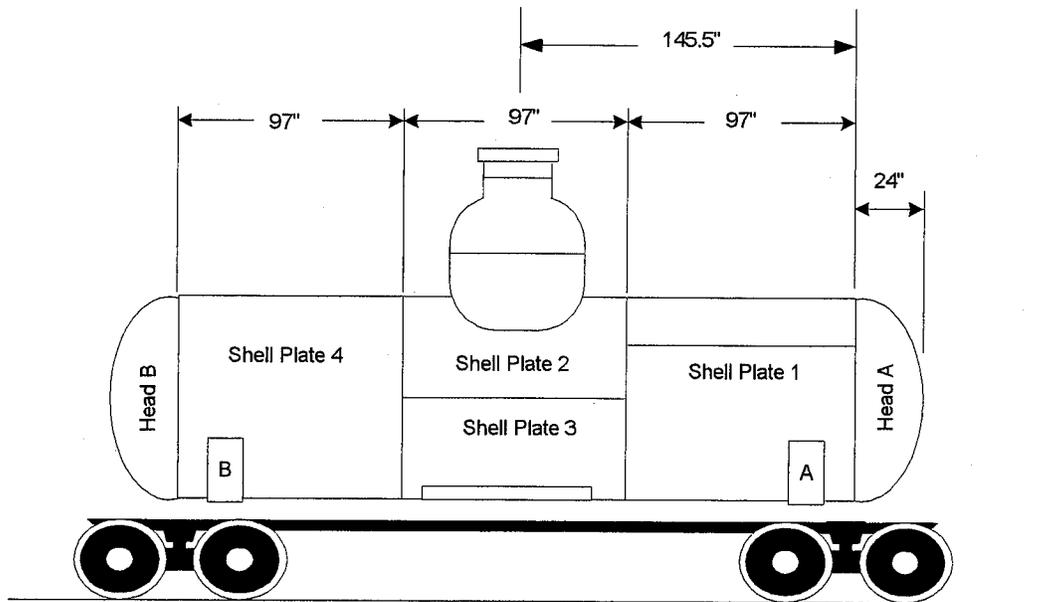
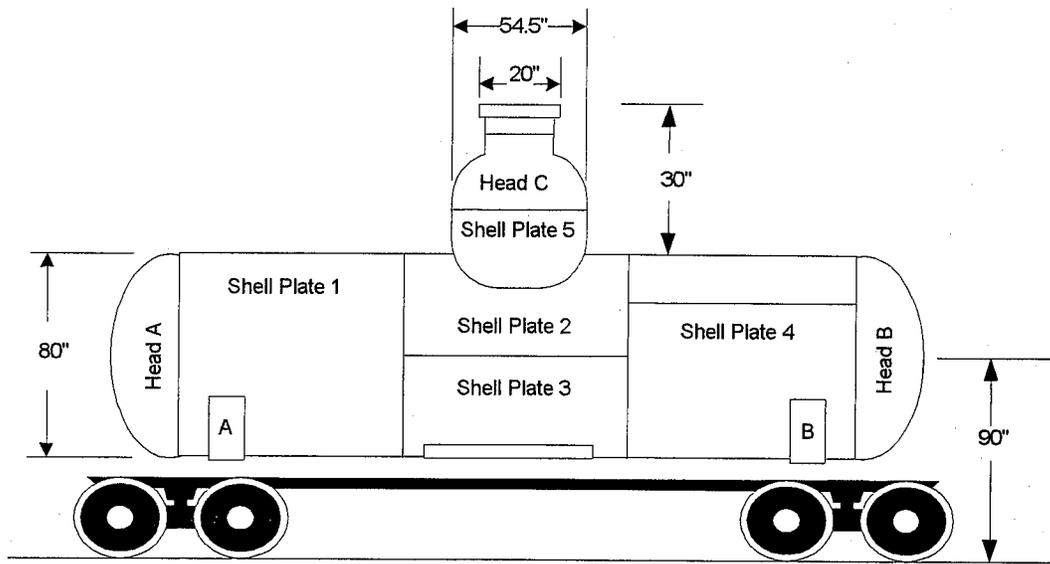
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination were performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

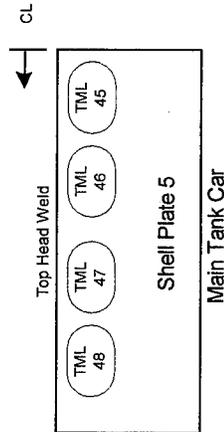
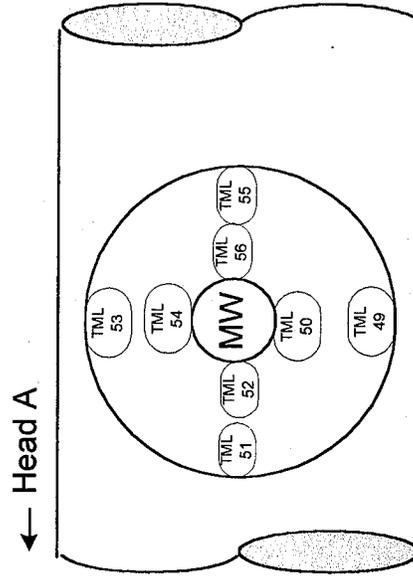
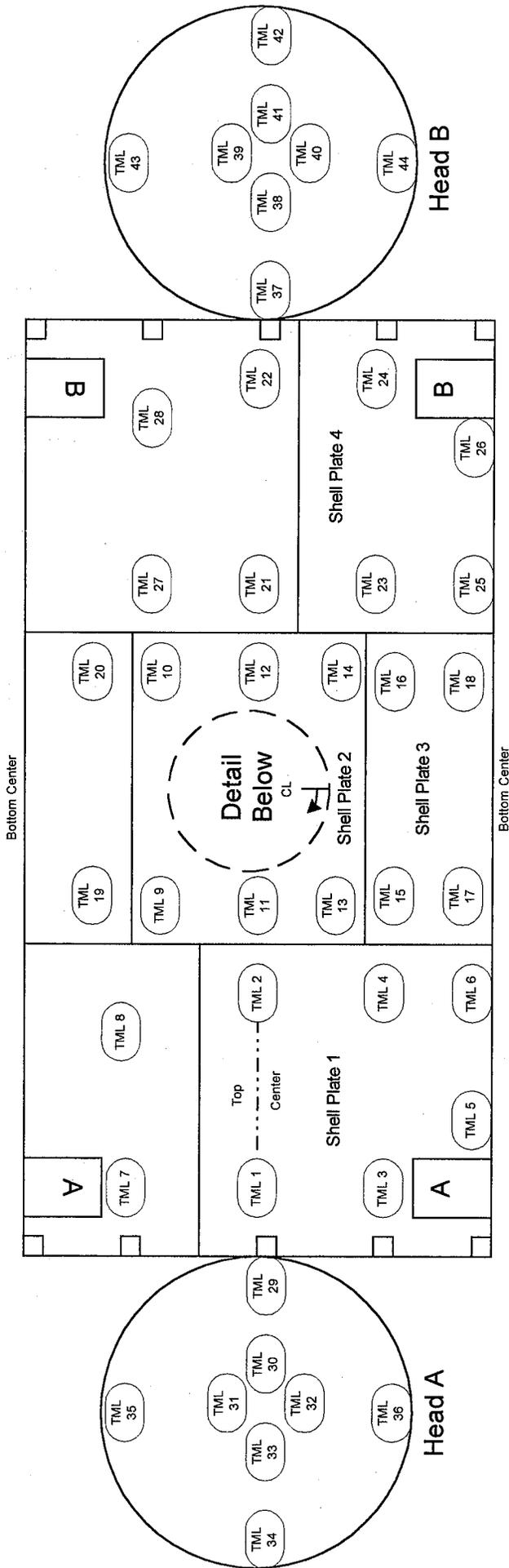
Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

# Tank Car - 17072



## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.



Location of Thickness Measurement Locations (TML)

Tank Car - 17072

# Thickness Measurement Readings

## Tank Car - 17072

### Shell Plate 1:

Top Center	TML-1	.619	TML-2	.616
Side A-B	TML-3	.614	TML-4	.617
Bottom Center	TML-5	.614	TML-6	.613
Side B-A	TML-7	.620	TML-8	.617

### Shell Plate 2

Side B-A	TML-9	1.236	TML-10	1.232
Top Center	TML-11	N/A	TML-12	N/A
Side A-B	TML-13	1.238	TML-14	1.231

### Shell Plate 3

Side A-B	TML-15	.594	TML-16	.601
Bottom Center	TML-17	.596	TML-18	.599
Side B-A	TML-19	.597	TML-20	.595

### Shell Plate 4

Top Center	TML-21	.620	TML-22	.625
Side A-B	TML-23	.616	TML-24	.619
Bottom Center	TML-25	.619	TML-26	.614
Side B-A	TML-27	.619	TML-28	.619

### Head A

TML-29	.643	TML-33	.608
TML-30	.610	TML-34	.657
TML-31	.602	TML-35	.641
TML-32	.609	TML-36	.639

### Head B

TML-37	.654	TML-41	.644
TML-38	.641	TML-42	.663
TML-39	.638	TML-43	.648
TML-40	.638	TML-44	.667

### Shell Plate 5

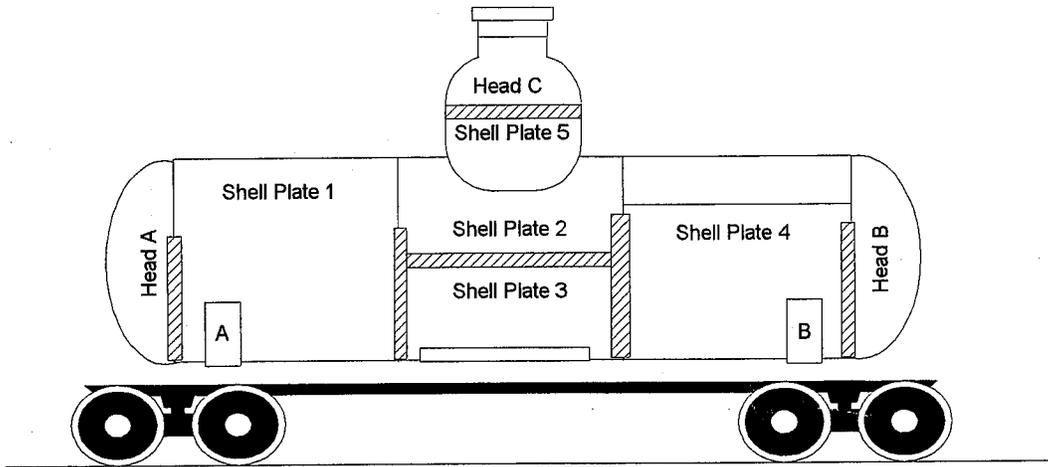
Center Line	TML-45	1.073
Head A Side	TML-46	1.007
Opposite CL	TML-48	1.048
Head B Side	TML-48	1.010

### Top Head C

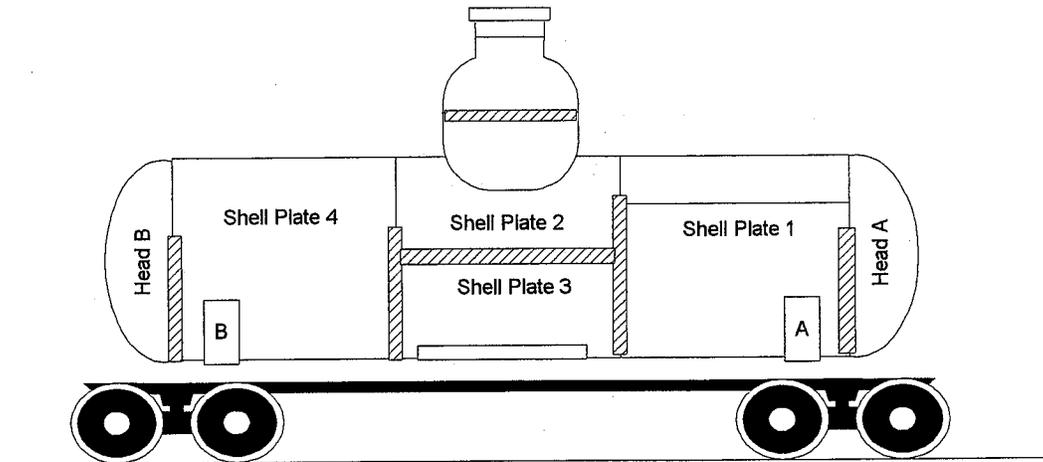
TML-49	.816	TML-53	.808
TML-50	.687	TML-54	.688
TML-51	.824	TML-55	.808
TML-52	.678	TML-56	.680

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature. N/A readings on shell plate number 2, black non-skid coating on top of rail car obstructing TML point.

# Tank Car - 17072



 Indicates Areas Where UT Shear Wave Examination were performed.



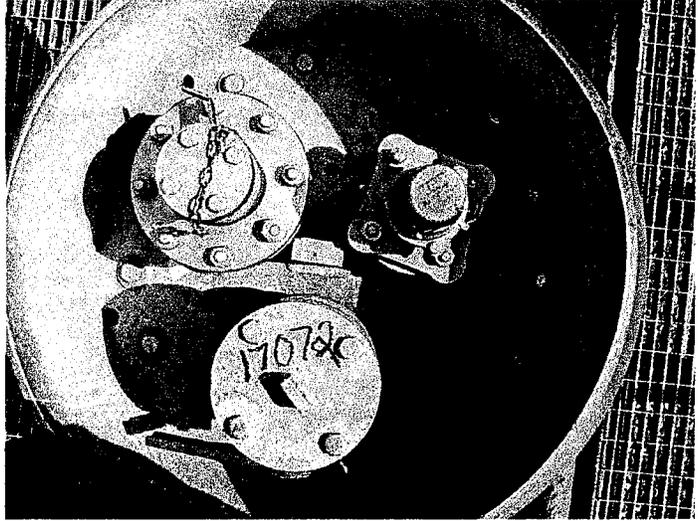
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

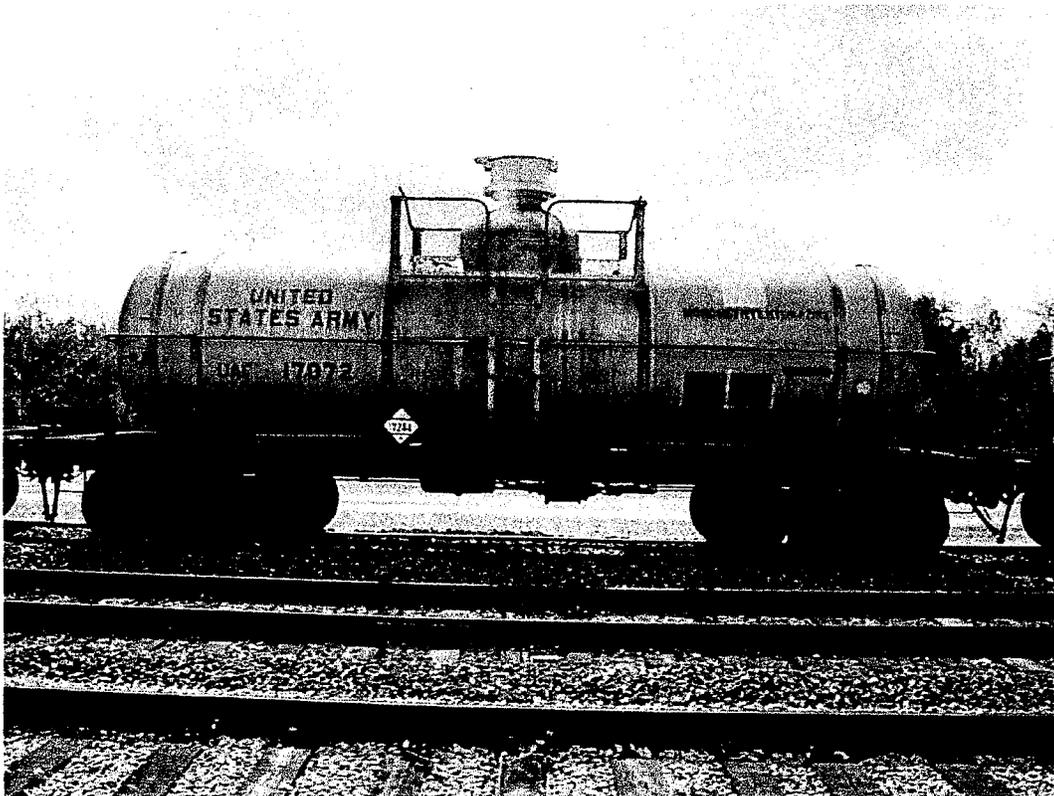
# Tank Car 17072



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

Unit: Panametrics

Model: 36 DL Plus

S/N: 97039012

Calibration Due Date: 1/19/2001

Couplant: Ultragel

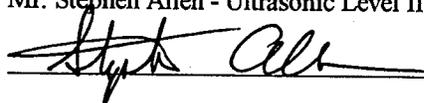
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

Unit: Panametrics

Model: Epoch III

S/N: 98280703

Calibration Due Date: 5/20/00

Couplant: Ultragel

Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.

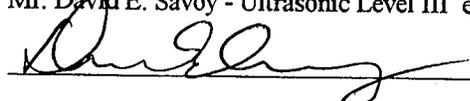
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17073
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17073
REL #:	8256 A
PSI #:	806192
Set Pressure:	35 lbs on 6/13/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be in good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint has chalky residue but appears to be adhered well.

All external attachments for handrails and walkways are in good condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .600" is located on Shell Plate 3 - TML-17, 18 & 19.

### Heads

Minimum thickness .592" is located on Head B - TML-38.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

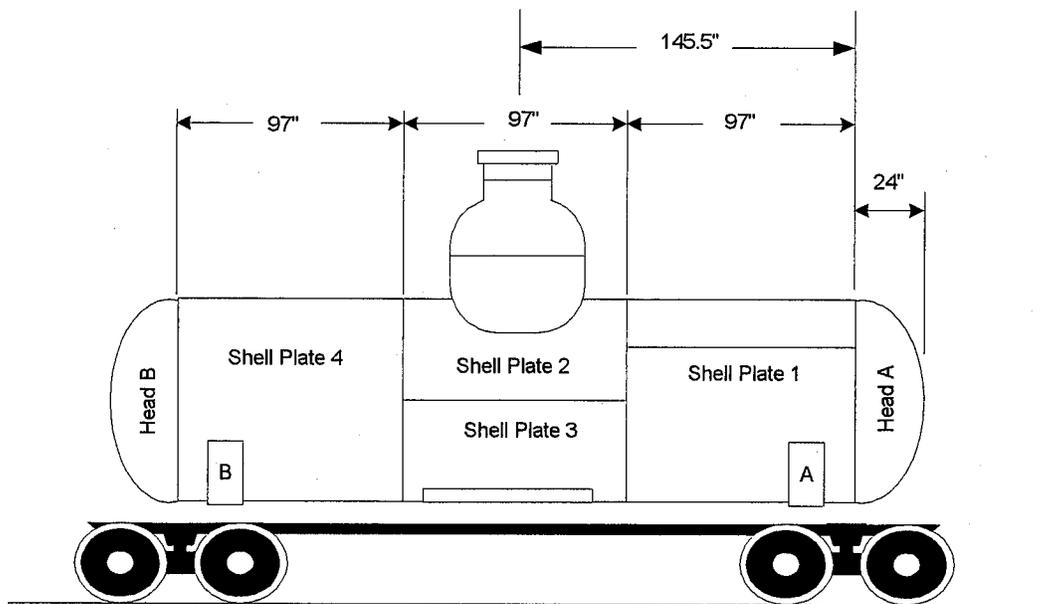
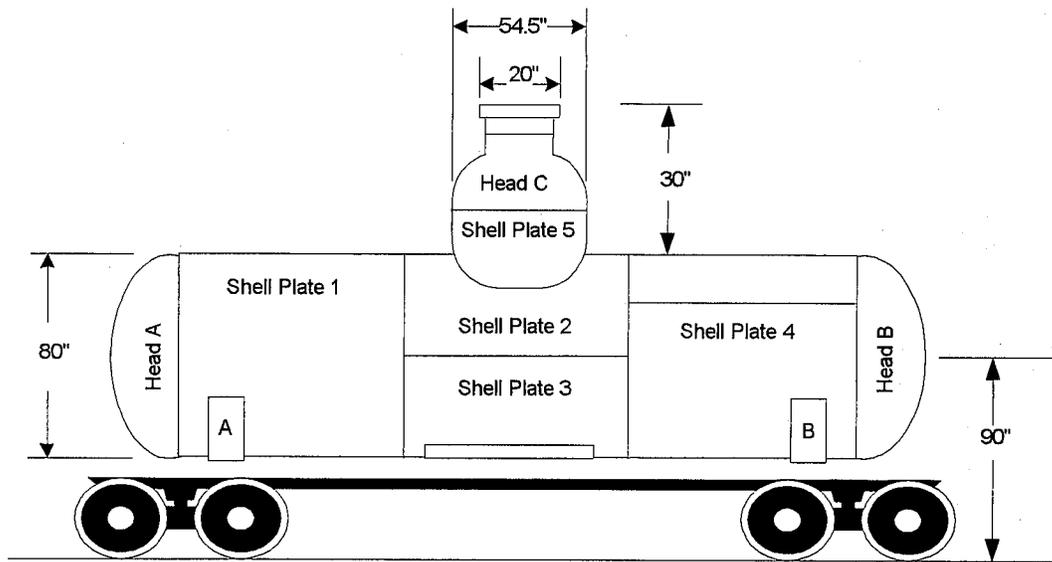
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

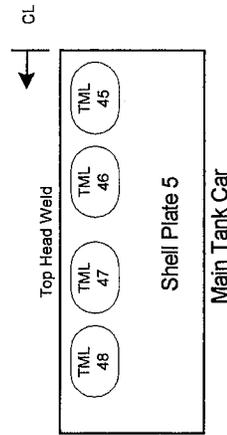
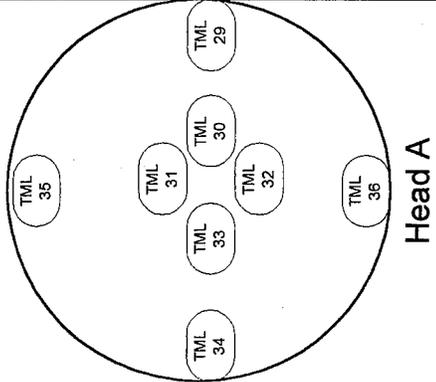
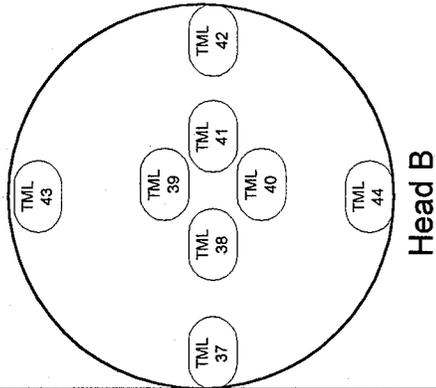
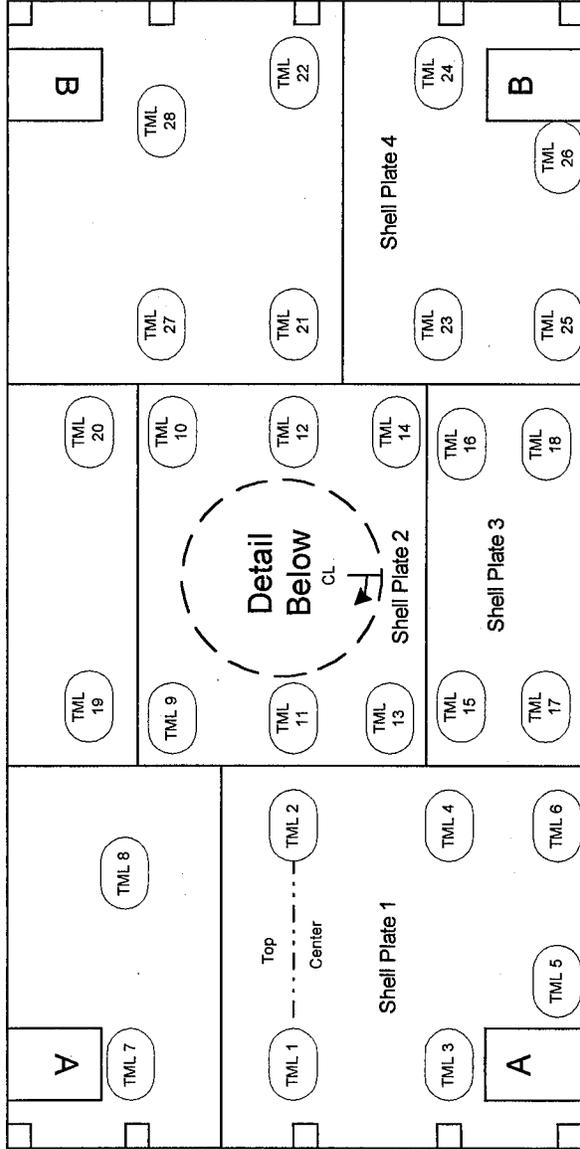
# Tank Car - 17073



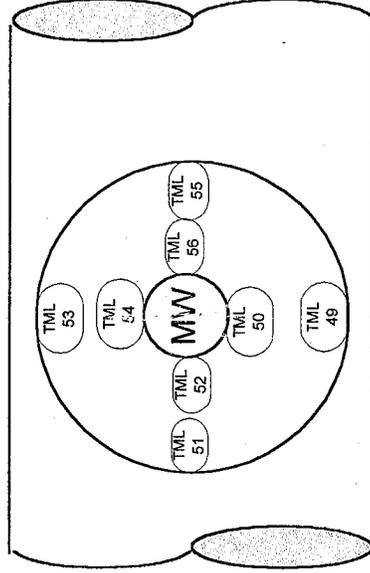
## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.

Bottom Center



← Head A



Top Head C

Location of Thickness Measurement Locations (TML)

# Tank Car - 17073

# Thickness Measurement Readings

## Tank Car - 17073

### Shell Plate 1:

Top Center	TML-1	.624	TML-2	.614
Side A-B	TML-3	.621	TML-4	.616
Bottom Center	TML-5	.621	TML-6	.612
Side B-A	TML-7	.625	TML-8	.615

### Shell Plate 2

Side B-A	TML-9	1.254	TML-10	1.246
Top Center	TML-11	N/A	TML-12	N/A
Side A-B	TML-13	1.254	TML-14	1.254

### Shell Plate 3

Side A-B	TML-15	.640	TML-16	.623
Bottom Center	TML-17	.600	TML-18	.600
Side B-A	TML-19	.600	TML-20	.601

### Shell Plate 4

Top Center	TML-21	.619	TML-22	.622
Side A-B	TML-23	.631	TML-24	.620
Bottom Center	TML-25	.614	TML-26	.620
Side B-A	TML-27	.619	TML-28	.622

### Head A

TML-29	.628	TML-33	.605
TML-30	.640	TML-34	.620
TML-31	.635	TML-35	.640
TML-32	.632	TML-36	.614

### Head B

TML-37	.642	TML-41	.626
TML-38	.592	TML-42	.630
TML-39	.618	TML-43	.650
TML-40	.615	TML-44	.625

### Shell Plate 5

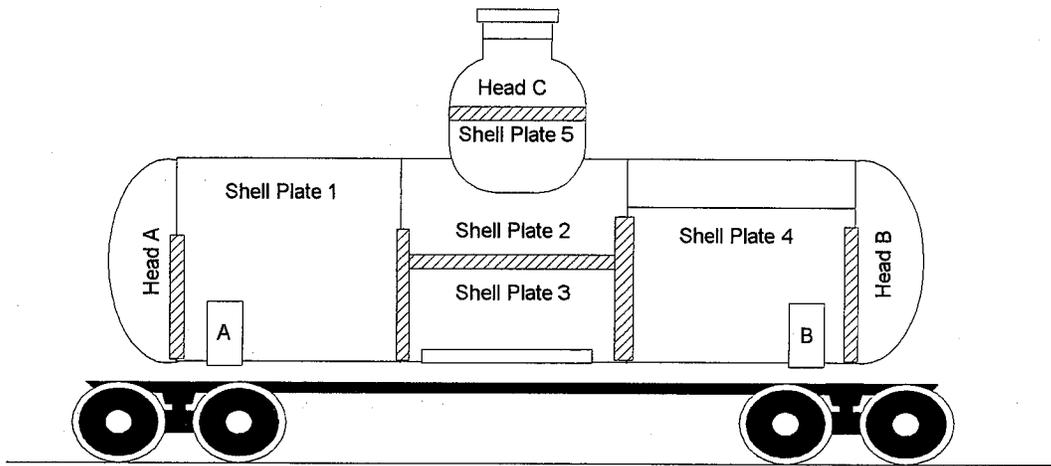
Center Line	TML-45	1.040
Head A Side	TML-46	1.030
Opposite CL	TML-48	1.050
Head B Side	TML-48	1.056

### Top Head C

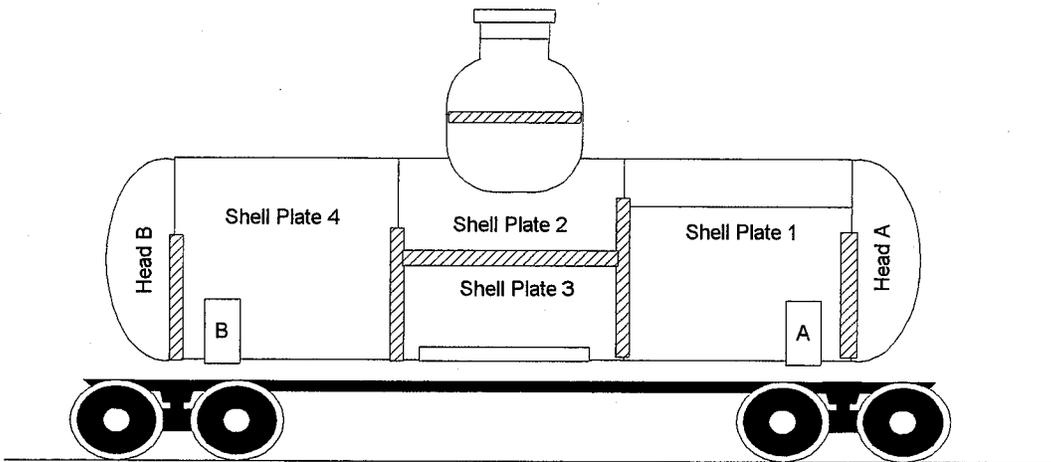
TML-49	.816	TML-53	.812
TML-50	.716	TML-54	.710
TML-51	.812	TML-55	.806
TML-52	.715	TML-56	.692

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature. N/A readings on shell plate number 2, black non-skid coating on top of rail car obstructing TML point.

# Tank Car - 17073



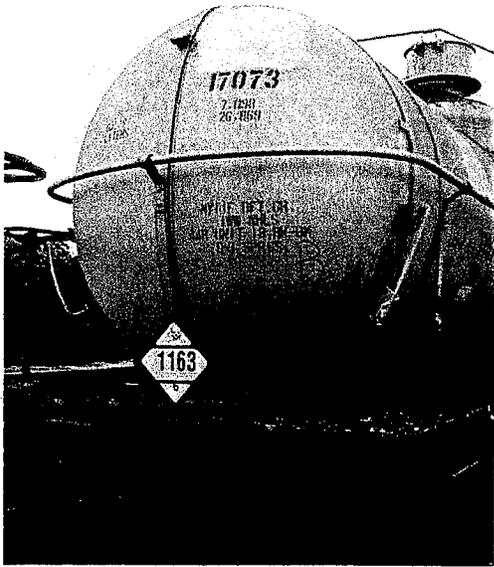
 Indicates Areas Where UT Shear Wave Examination were performed.



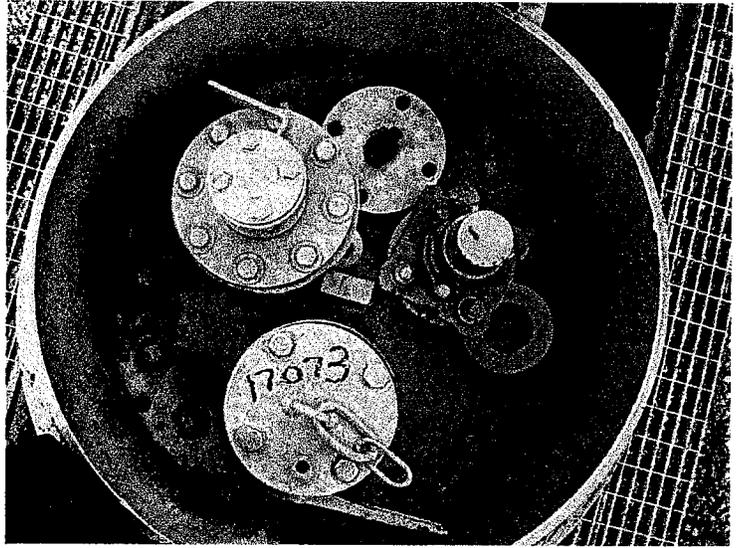
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

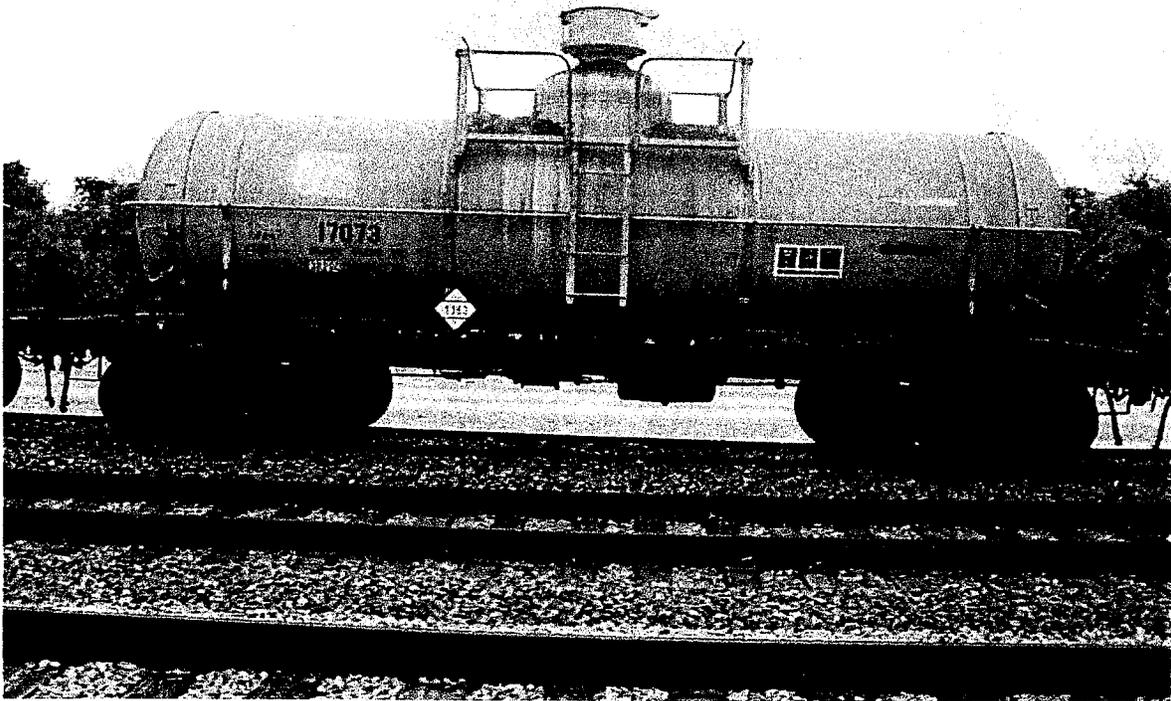
# Tank Car 17073



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

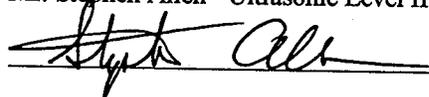
Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

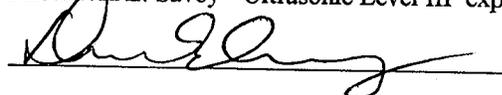
Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17074
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17060
PO #:	296P6
PSI #:	08M6
Set Pressure:	35 lbs on 4/24/95

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint is faded and has chalky residue but appears to be adhered well.

All external attachments for handrails and walkways are in good condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .593" is located on Shell Plate 4 - TML-21.

### Heads

Minimum thickness .611" is located on Head B - TML-40.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

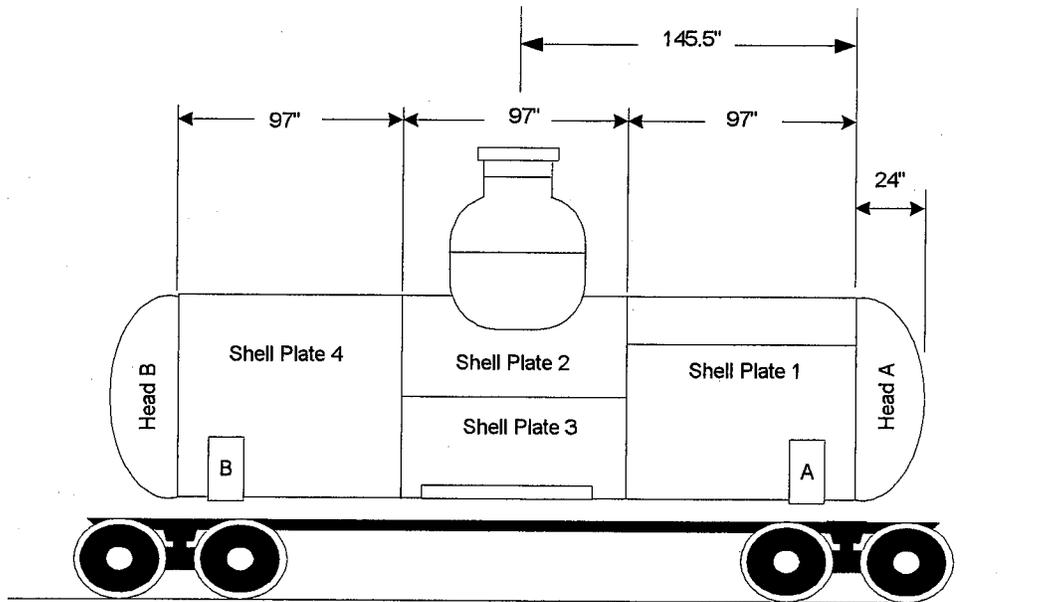
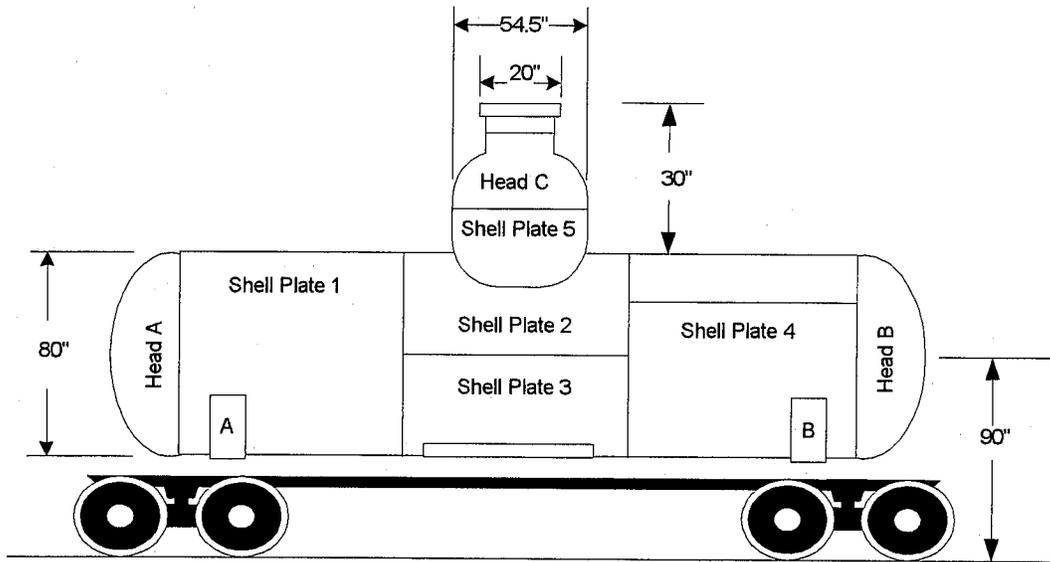
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

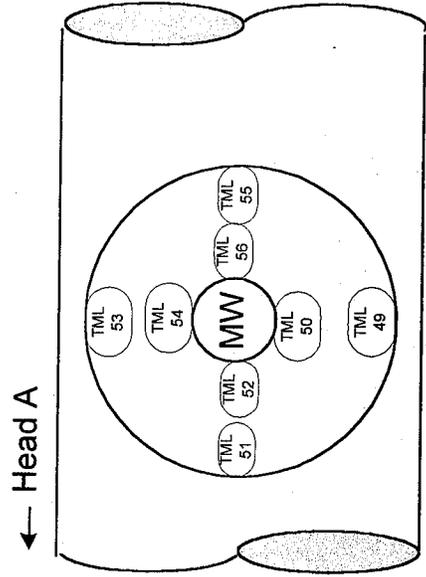
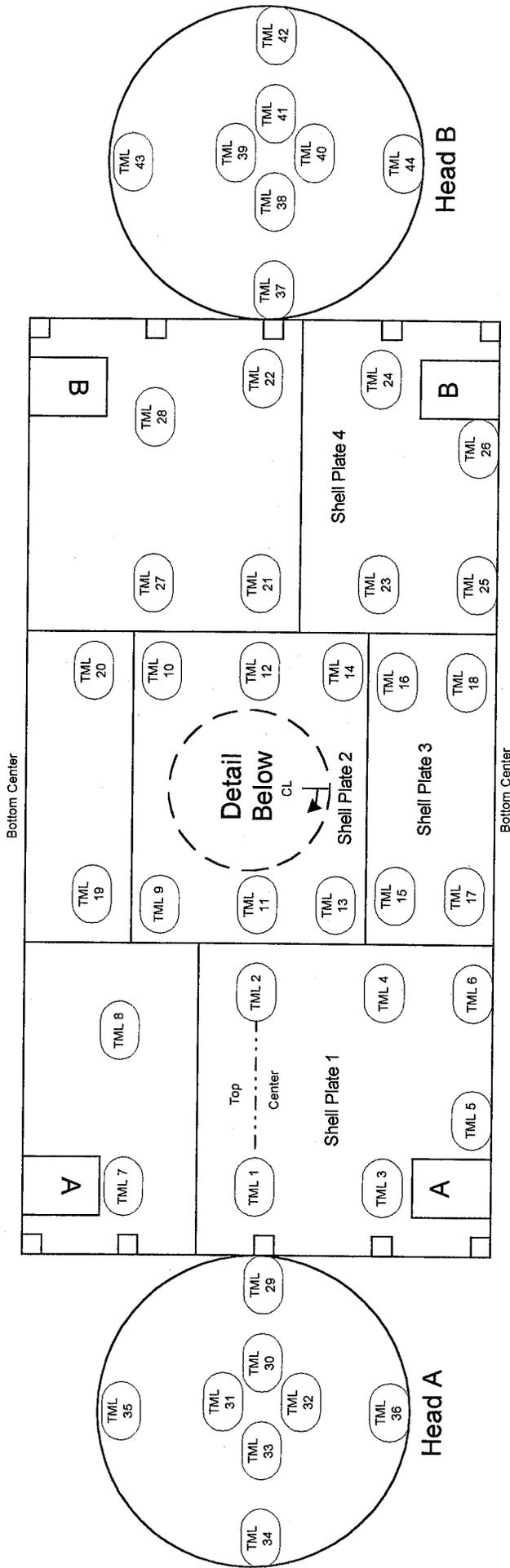
Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

# Tank Car - 17074

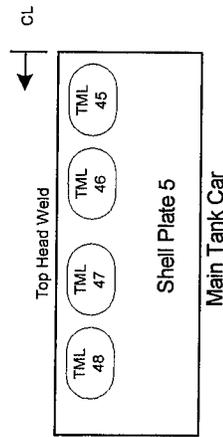


## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.



Top Head C



Location of Thickness Measurement Locations (TML)

Tank Car - 17074

# Thickness Measurement Readings

## Tank Car - 17074

### Shell Plate 1:

Top Center	TML-1	.622	TML-2	.620
Side A-B	TML-3	.626	TML-4	.621
Bottom Center	TML-5	.625	TML-6	.622
Side B-A	TML-7	.624	TML-8	.620

### Shell Plate 2

Side B-A	TML-9	1.265	TML-10	1.244
Top Center	TML-11	1.219	TML-12	1.230
Side A-B	TML-13	1.242	TML-14	1.241

### Shell Plate 3

Side A-B	TML-15	.599	TML-16	.604
Bottom Center	TML-17	.602	TML-18	.603
Side B-A	TML-19	.607	TML-20	.602

### Shell Plate 4

Top Center	TML-21	.593	TML-22	.599
Side A-B	TML-23	.595	TML-24	.605
Bottom Center	TML-25	.596	TML-26	.602
Side B-A	TML-27	.600	TML-28	.602

### Head A

TML-29	.631	TML-33	.640
TML-30	.641	TML-34	.636
TML-31	.636	TML-35	.661
TML-32	.637	TML-36	.636

### Head B

TML-37	.628	TML-41	.612
TML-38	.614	TML-42	.647
TML-39	.627	TML-43	.650
TML-40	.611	TML-44	.657

### Shell Plate 5

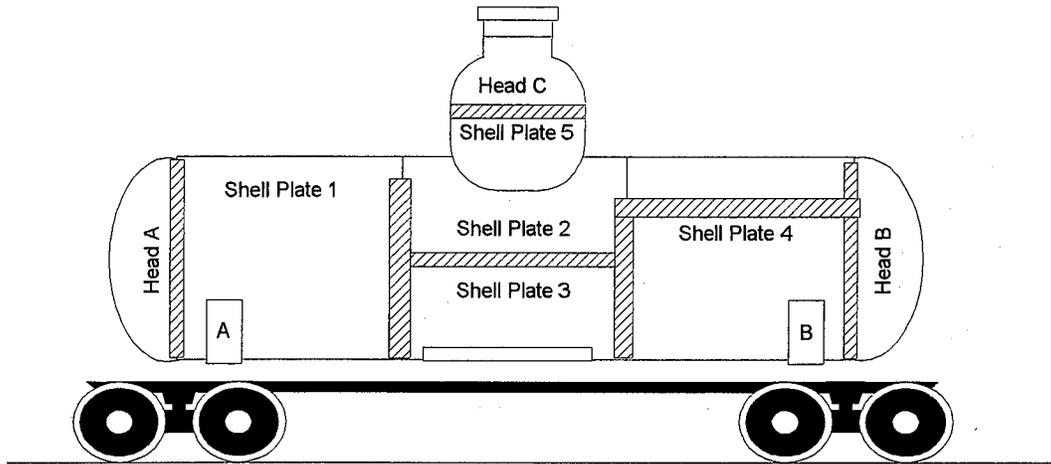
Center Line	TML-45	1.024
Head A Side	TML-46	1.011
Opposite CL	TML-48	1.075
Head B Side	TML-48	1.037

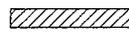
### Top Head C

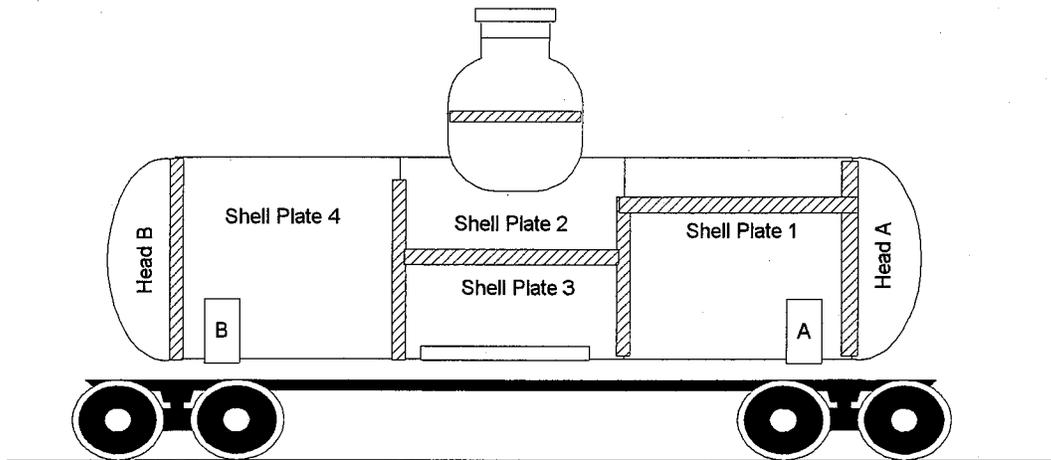
TML-49	.802	TML-53	.767
TML-50	.762	TML-54	.782
TML-51	.783	TML-55	.758
TML-52	.763	TML-56	.783

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

# Tank Car - 17074



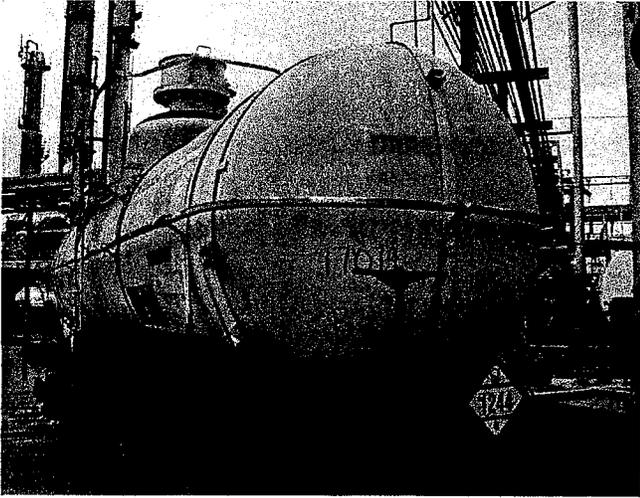
 Indicates Areas Where UT Shear Wave Examination were performed.



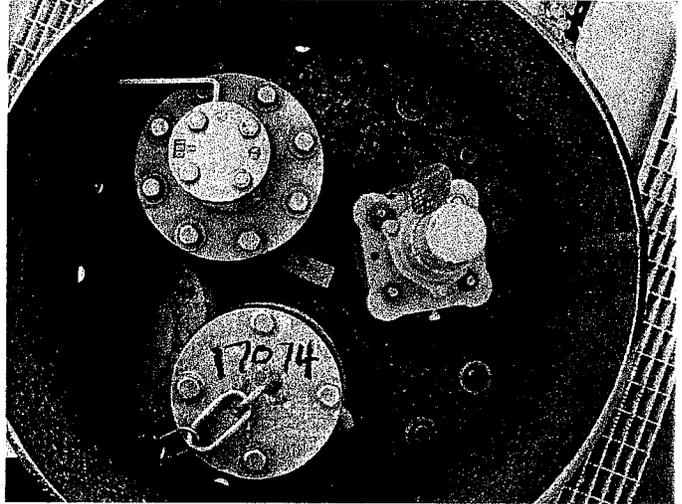
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

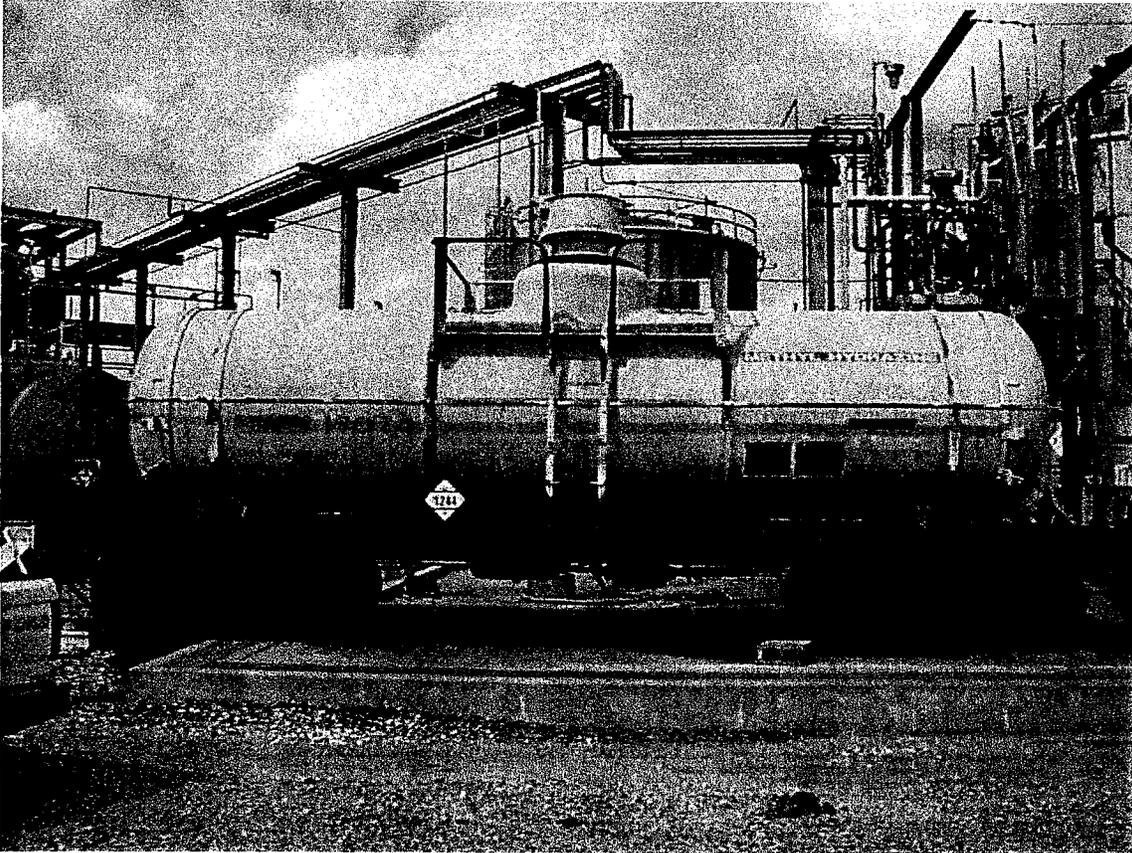
# Tank Car 17074



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

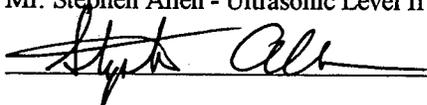
Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

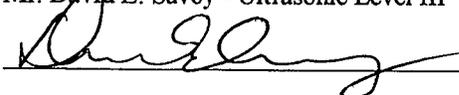
Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17075
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17075
REL #:	8349 G
PSI #:	80826
Set Pressure:	35 lbs on 8/4/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint is faded and has chalky residue but appears to be adhered well.

All external attachments for handrails and walkways are in good condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .590" is located on Shell Plate 4 - TML-25 & 26.

### Heads

Minimum thickness .614" is located on Head B - TML-41.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

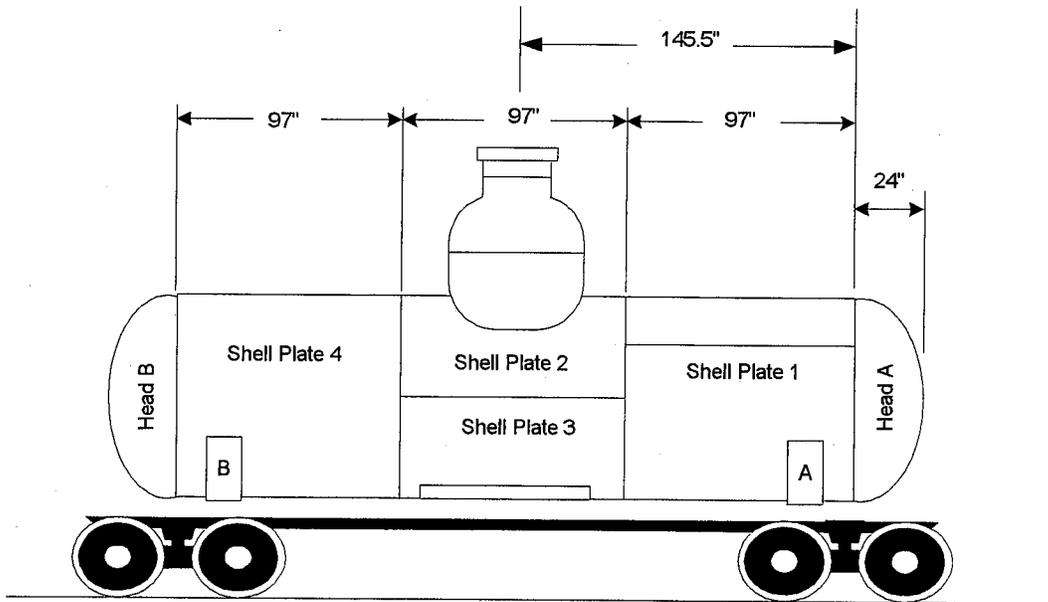
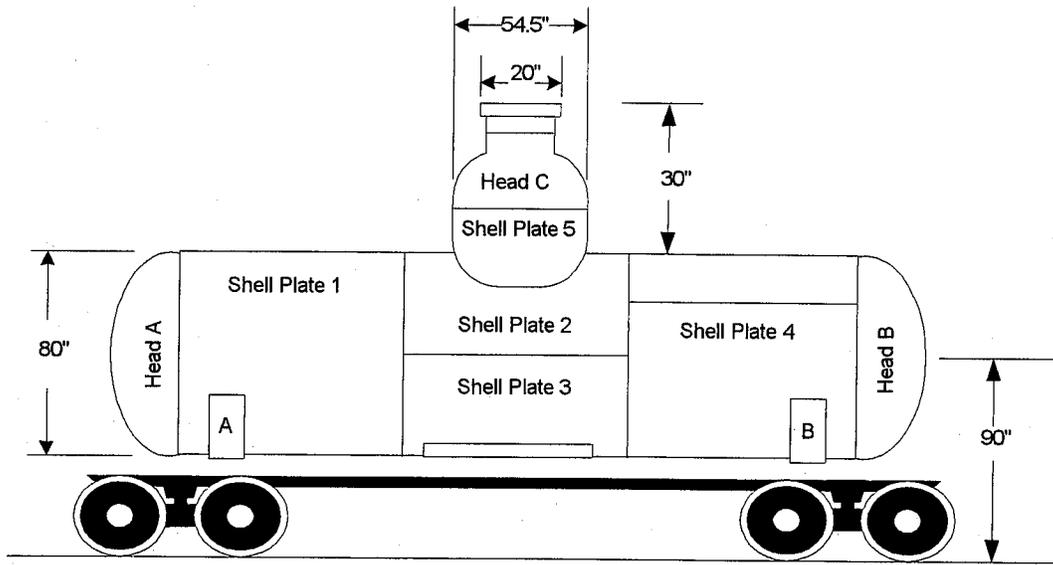
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

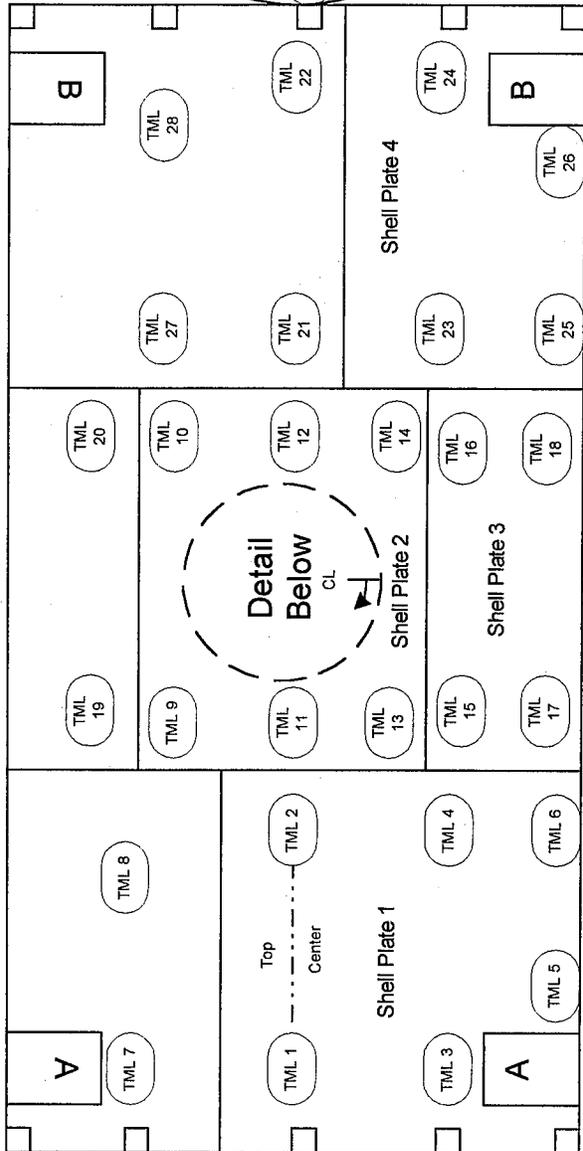
# Tank Car - 17075



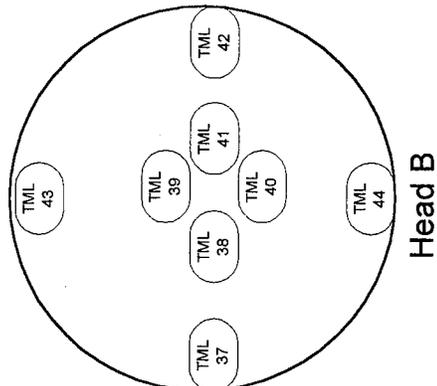
## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.

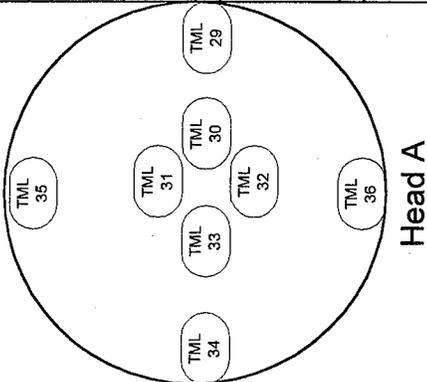
Bottom Center



Bottom Center

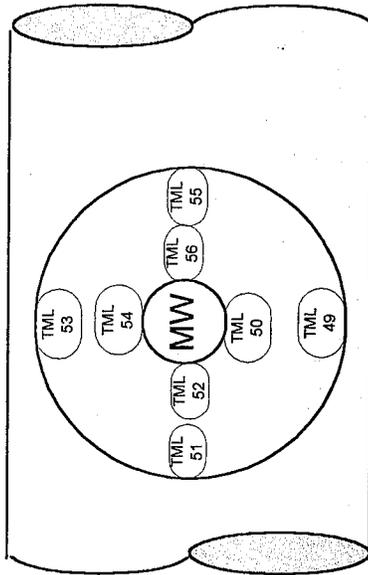


Head B

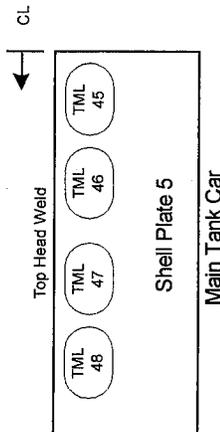


Head A

← Head A



Top Head C



Main Tank Car

Location of Thickness Measurement Locations (TML)

Tank Car - 17075

# Thickness Measurement Readings

## Tank Car - 17075

### Shell Plate 1:

Top Center	TML-1	.622	TML-2	.618
Side A-B	TML-3	.626	TML-4	.624
Bottom Center	TML-5	.626	TML-6	.617
Side B-A	TML-7	.624	TML-8	.614

### Shell Plate 2

Side B-A	TML-9	1.246	TML-10	1.237
Top Center	TML-11	N/A	TML-12	N/A
Side A-B	TML-13	1.246	TML-14	1.241

### Shell Plate 3

Side A-B	TML-15	.636	TML-16	.625
Bottom Center	TML-17	.621	TML-18	.618
Side B-A	TML-19	.612	TML-20	.614

### Shell Plate 4

Top Center	TML-21	.632	TML-22	.630
Side A-B	TML-23	.595	TML-24	.604
Bottom Center	TML-25	.590	TML-26	.590
Side B-A	TML-27	.627	TML-28	.596

### Head A

TML-29	.625	TML-33	.622
TML-30	.620	TML-34	.630
TML-31	.622	TML-35	.629
TML-32	.616	TML-36	.637

### Head B

TML-37	.625	TML-41	.614
TML-38	.627	TML-42	.657
TML-39	.657	TML-43	.658
TML-40	.615	TML-44	.656

### Shell Plate 5

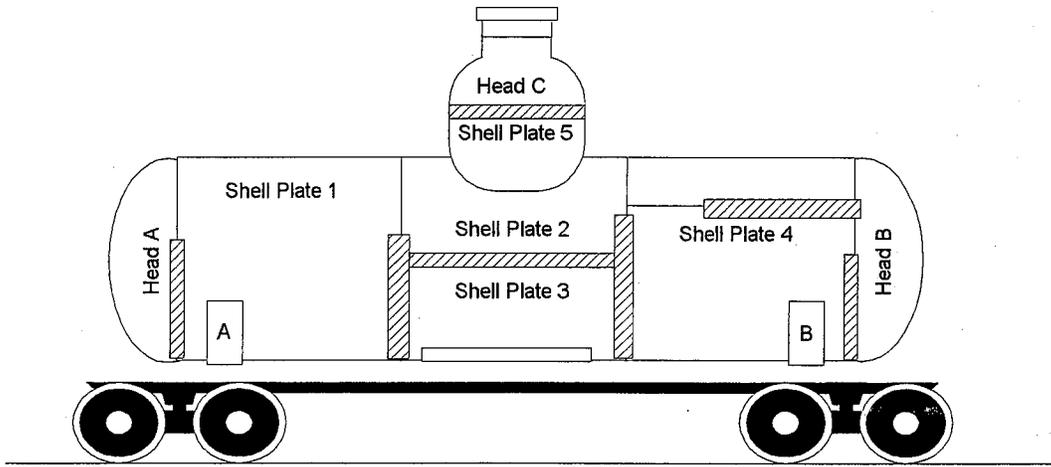
Center Line	TML-45	1.047
Head A Side	TML-46	1.009
Opposite CL	TML-48	1.068
Head B Side	TML-48	.979

### Top Head C

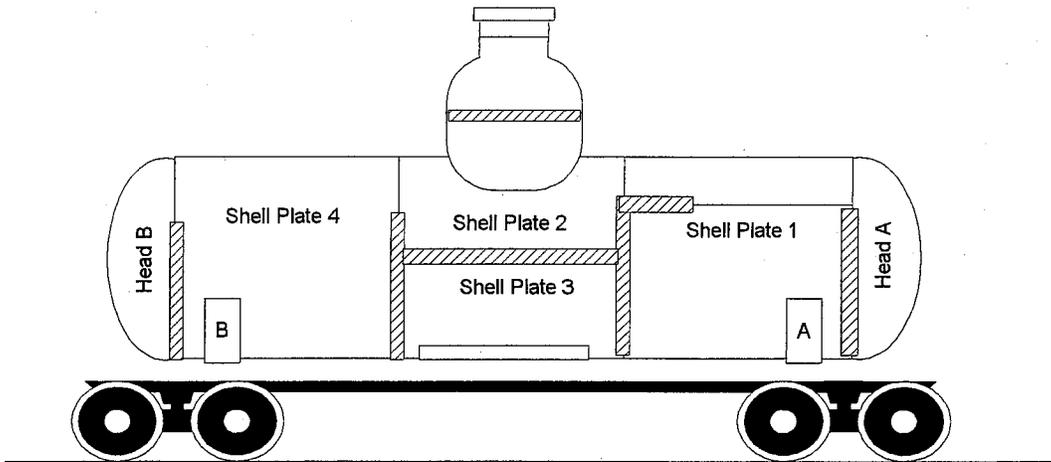
TML-49	.822	TML-53	.803
TML-50	.719	TML-54	.739
TML-51	.835	TML-55	.817
TML-52	.725	TML-56	.719

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature. N/A readings on shell plate number 2, black non-skid coating on top of rail car obstructing TML point.

# Tank Car - 17075



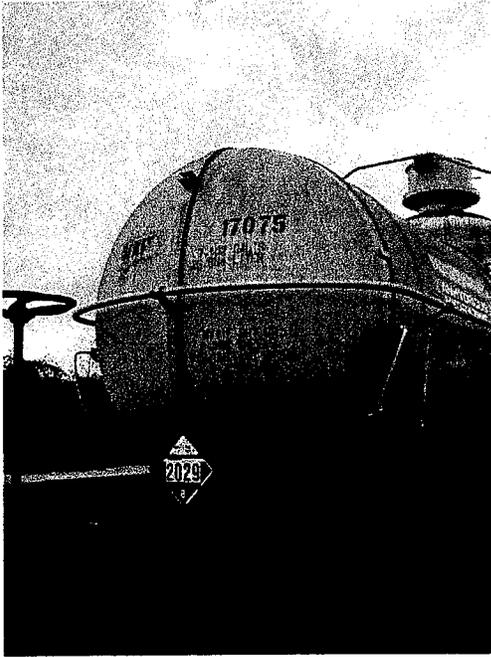
 Indicates Areas Where UT Shear Wave Examination were performed.



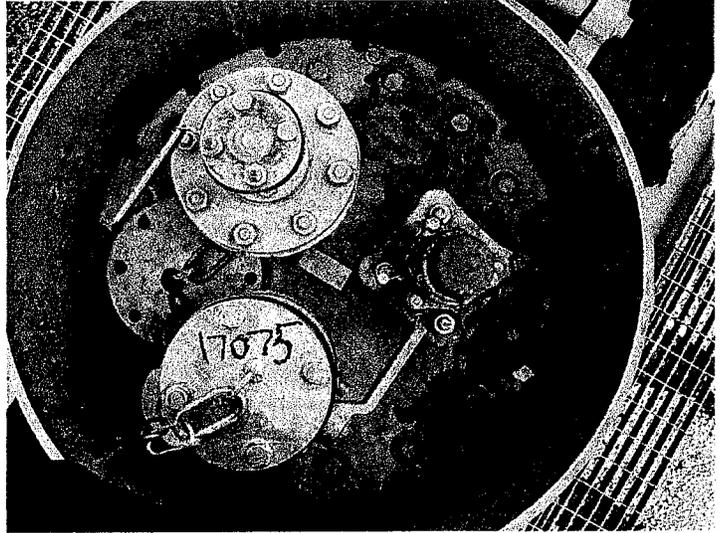
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

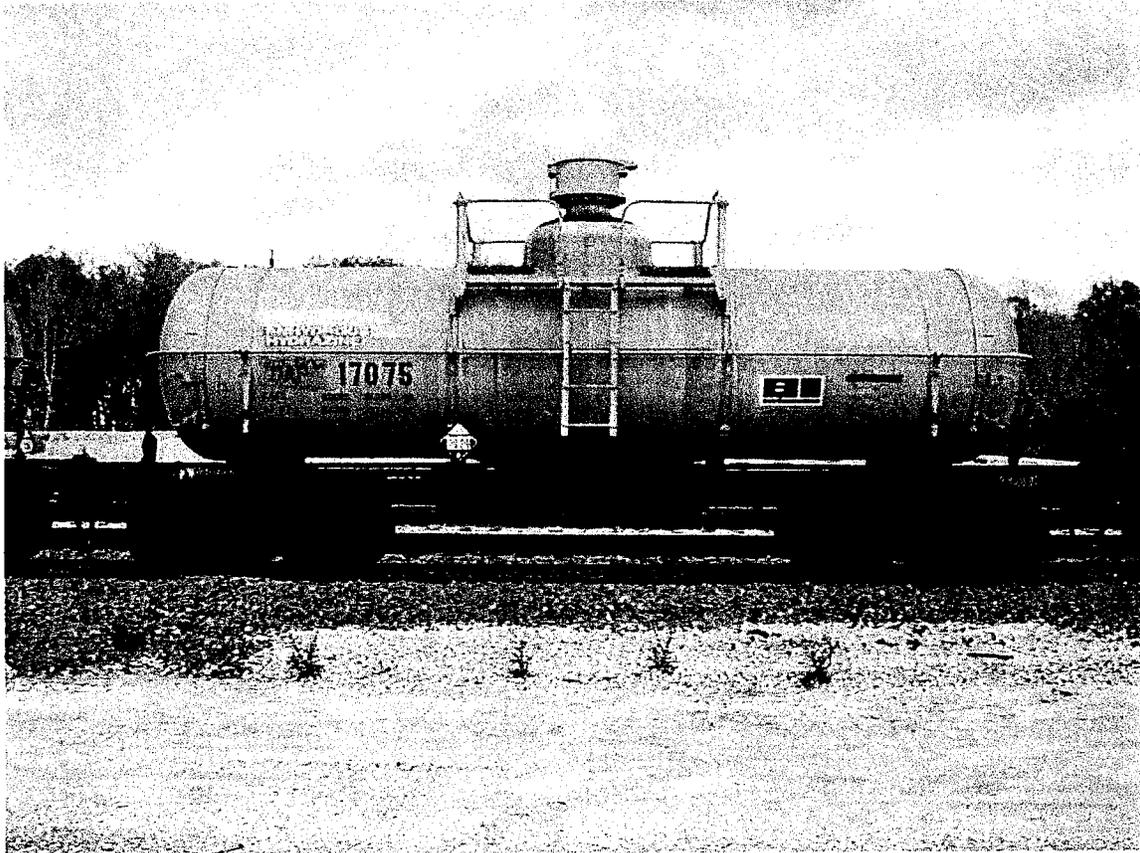
# Tank Car 17075



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

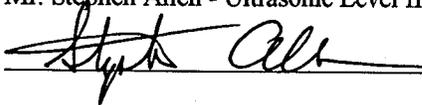
Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

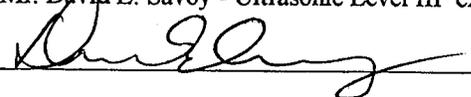
Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17077
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	17077
REL #:	8241 A
PSI #:	80640
Set Pressure:	35 lbs on 6/10/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be in good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint has chalky residue but appears to be adhered well.

All external attachments for handrails and walkways are in good condition.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .609" is located on Shell Plate 3 - TML-17.

### Heads

Minimum thickness .615" is located on Head A - TML-30 & Head B - TML-41.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

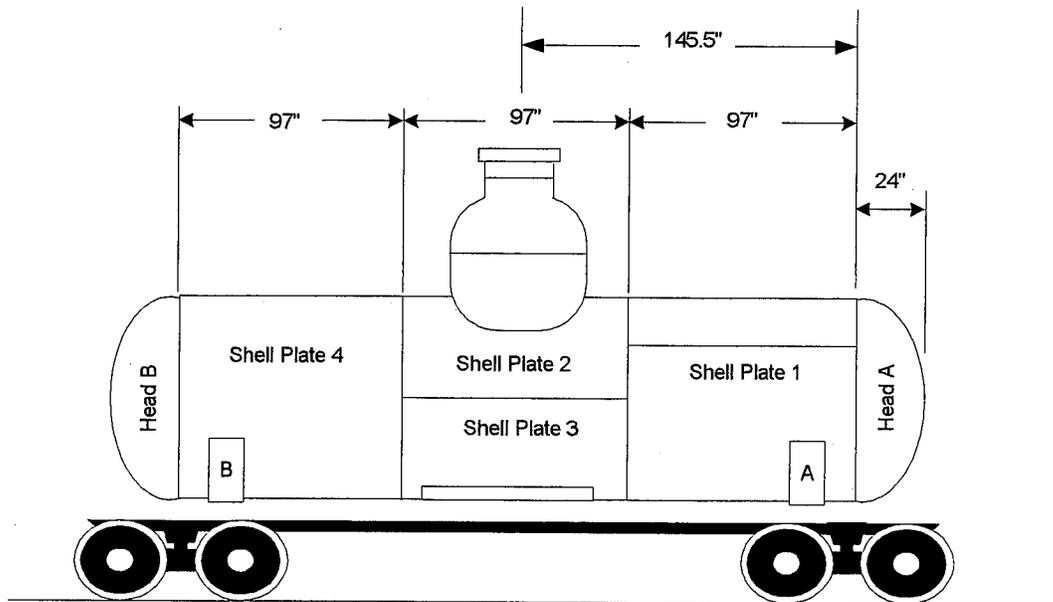
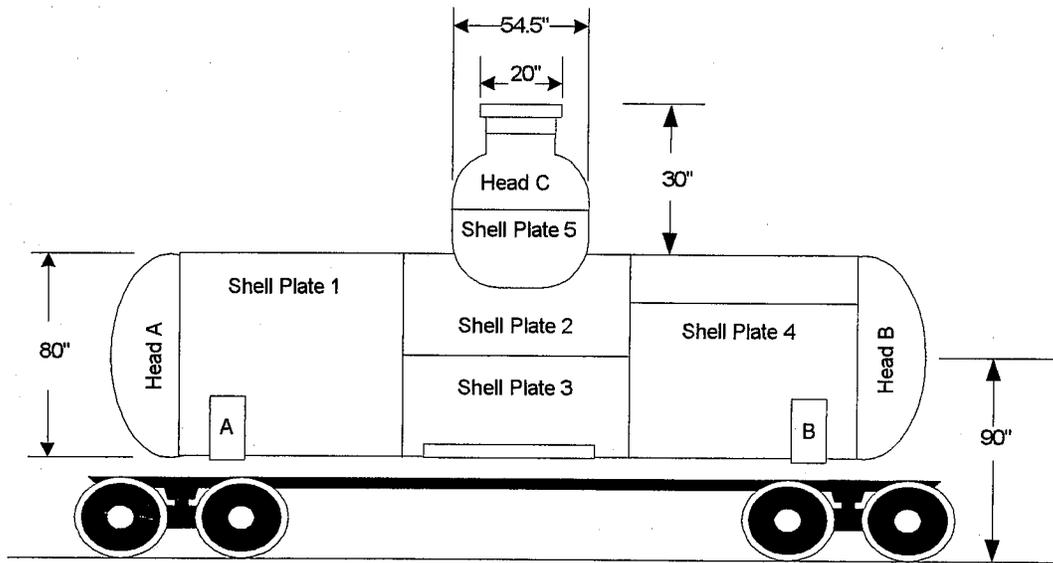
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

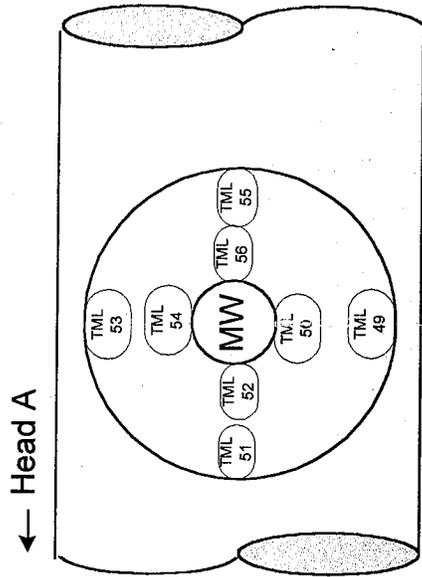
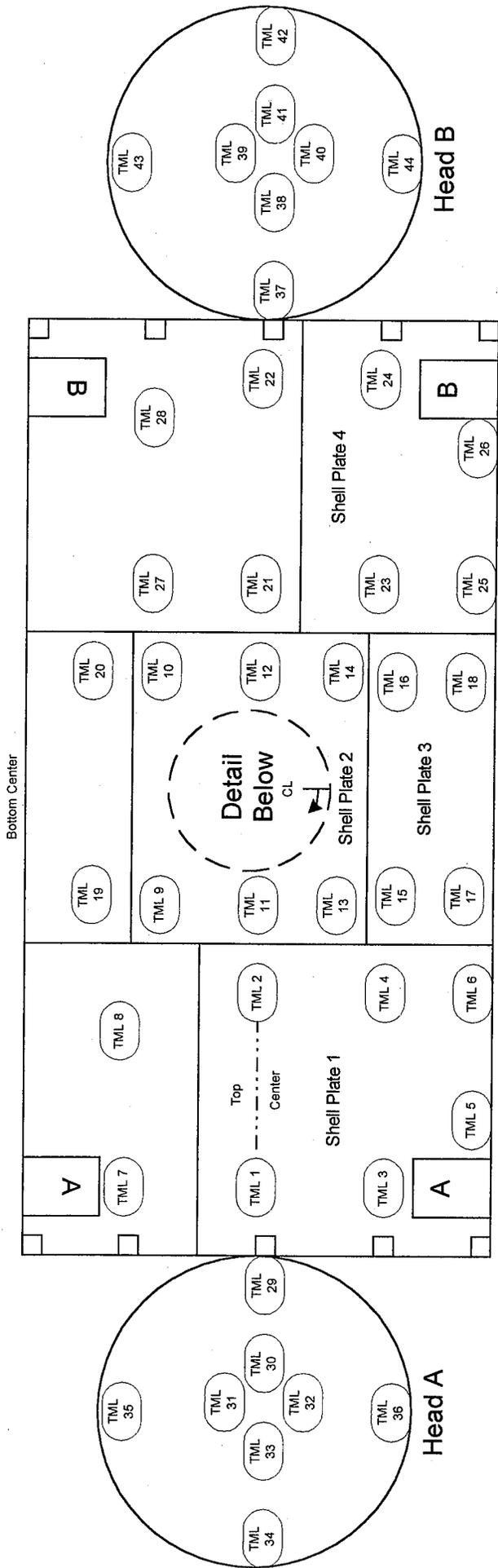
Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

# Tank Car - 17077

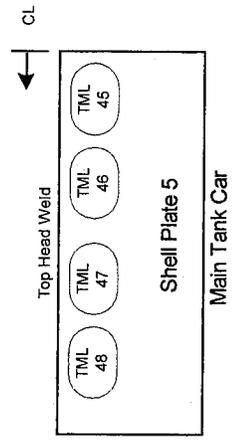


## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.



Top Head C



Location of Thickness Measurement Locations (TML)

# Tank Car - 17077

# Thickness Measurement Readings

## Tank Car - 17077

### Shell Plate 1:

Top Center	TML-1	.623	TML-2	.622
Side A-B	TML-3	.625	TML-4	.621
Bottom Center	TML-5	.615	TML-6	.625
Side B-A	TML-7	.628	TML-8	.622

### Shell Plate 2

Side B-A	TML-9	1.253	TML-10	1.254
Top Center	TML-11	1.250	TML-12	1.258
Side A-B	TML-13	1.255	TML-14	1.260

### Shell Plate 3

Side A-B	TML-15	.616	TML-16	.618
Bottom Center	TML-17	.609	TML-18	.617
Side B-A	TML-19	.612	TML-20	.618

### Shell Plate 4

Top Center	TML-21	.626	TML-22	.622
Side A-B	TML-23	.621	TML-24	.626
Bottom Center	TML-25	.620	TML-26	.619
Side B-A	TML-27	.622	TML-28	.627

### Head A

TML-29	.643	TML-33	.631
TML-30	.615	TML-34	.652
TML-31	.621	TML-35	.660
TML-32	.625	TML-36	.643

### Head B

TML-37	.635	TML-41	.615
TML-38	.619	TML-42	.628
TML-39	.620	TML-43	.655
TML-40	.619	TML-44	.653

### Shell Plate 5

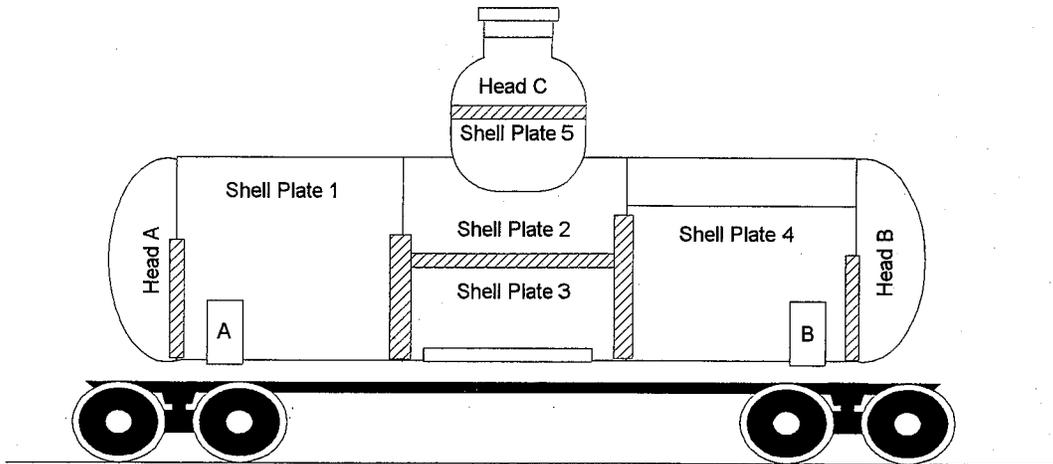
Center Line	TML-45	1.038
Head A Side	TML-46	.990
Opposite CL	TML-48	1.066
Head B Side	TML-48	.995

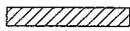
### Top Head C

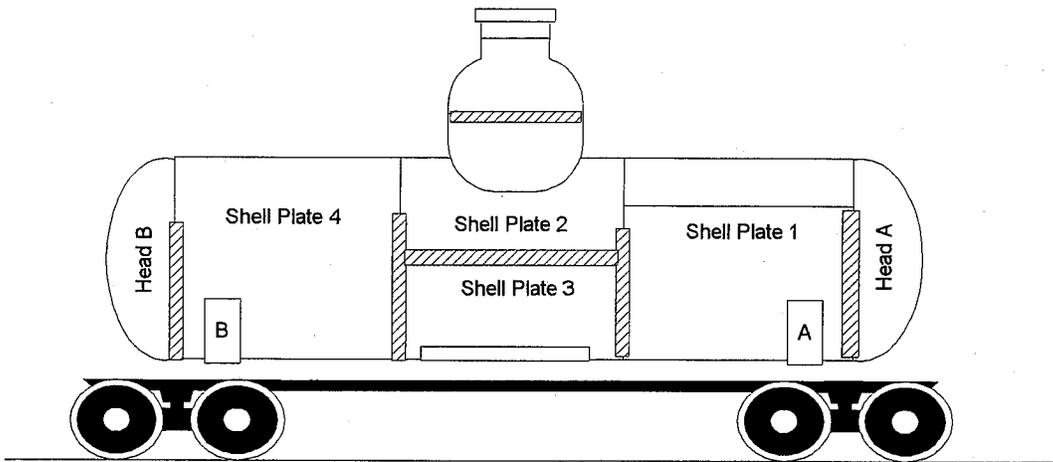
TML-49	.794	TML-53	.848
TML-50	.727	TML-54	.750
TML-51	.845	TML-55	.811
TML-52	.760	TML-56	.741

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

# Tank Car - 17077



 Indicates Areas Where UT Shear Wave Examination were performed.



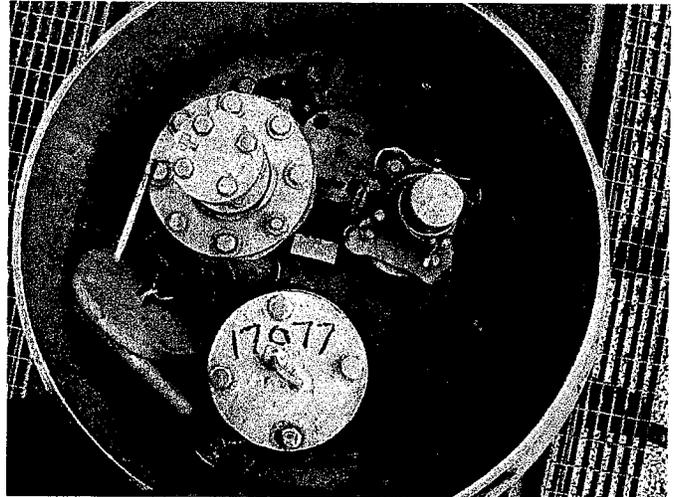
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

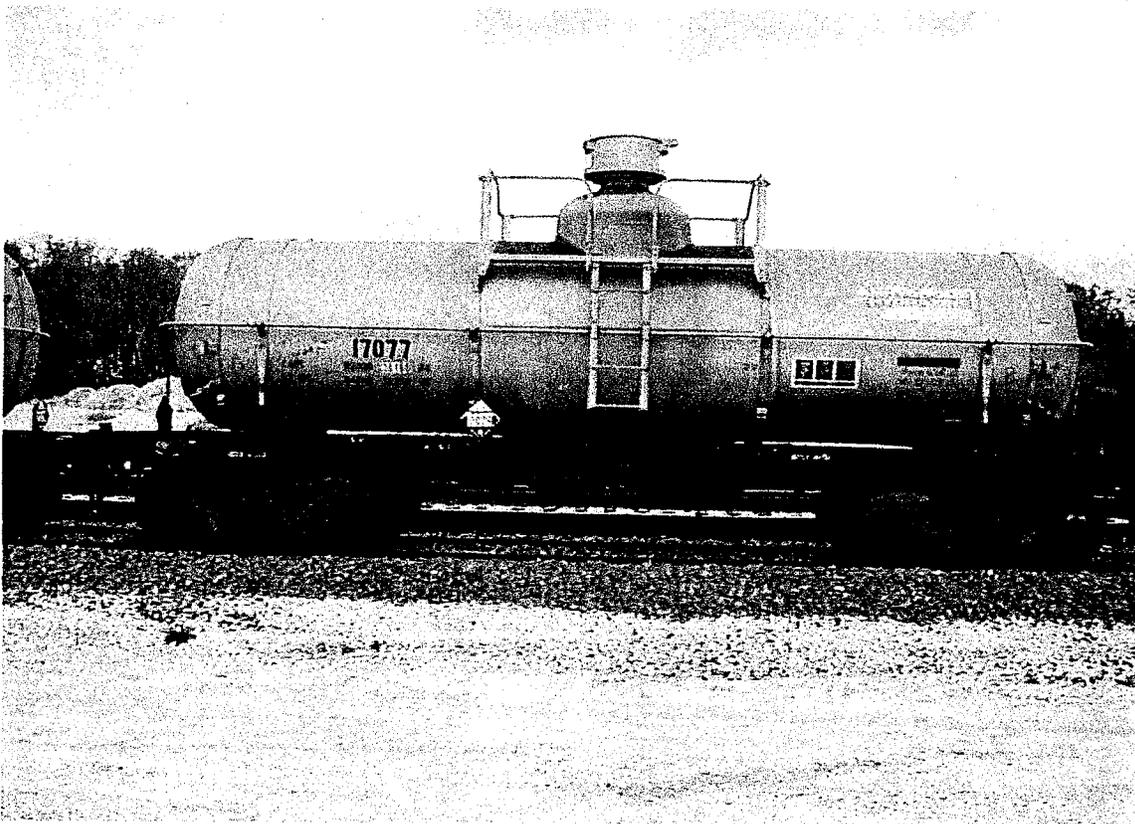
# Tank Car 17077



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

Stephen Allen Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

David E. Savoy Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17081
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	SNRC02
REL #:	N/A
PSI #:	805318
Set Pressure:	35 lbs on 5/25/88

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint has chalky residue but appears to be adhered well.

External attachments for handrails and walkways are in usable condition. Top handrail on the A-B side toward Head A is broken and in need of repair

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .602" is located on Shell Plate 3 - TML-19.

### Heads

Minimum thickness .607" is located on Head B - TML-39.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

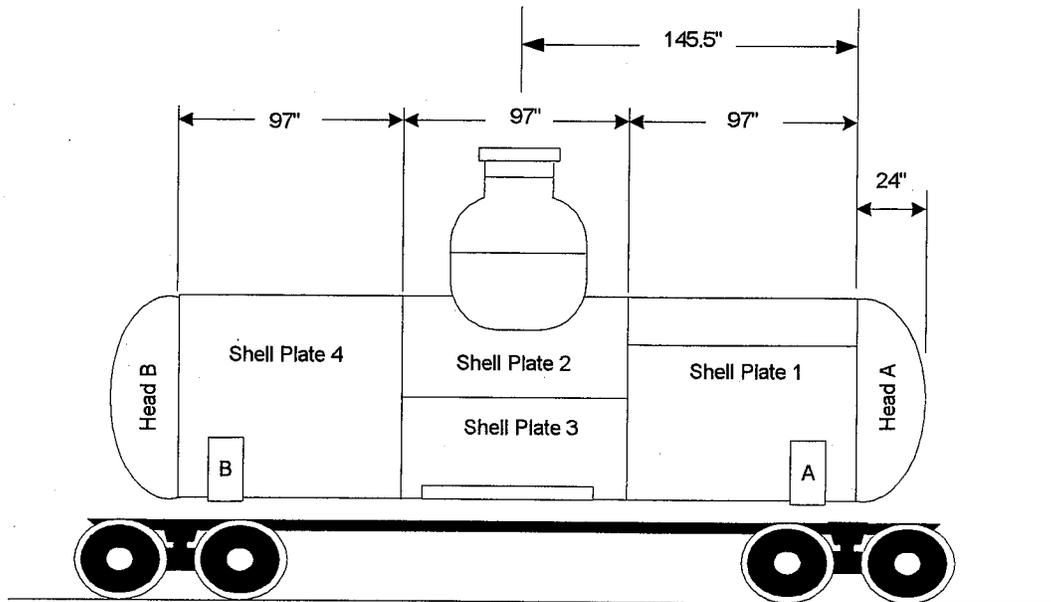
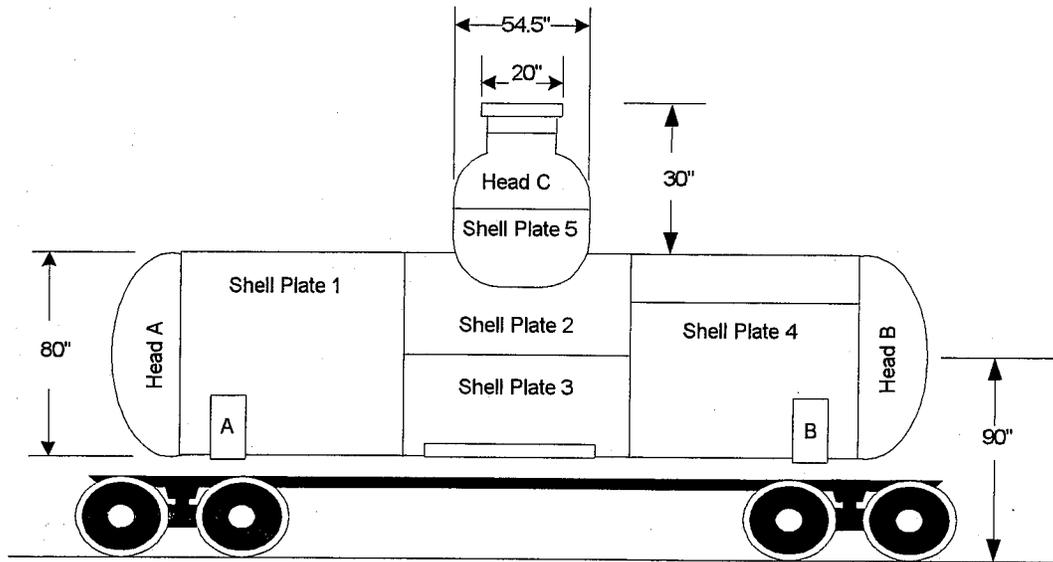
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

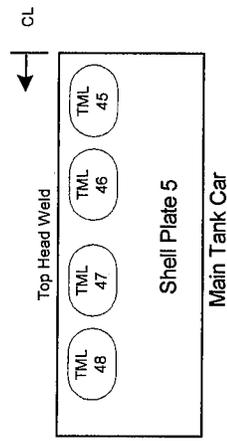
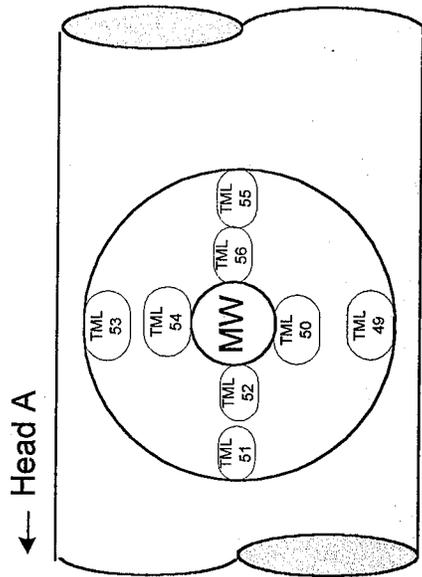
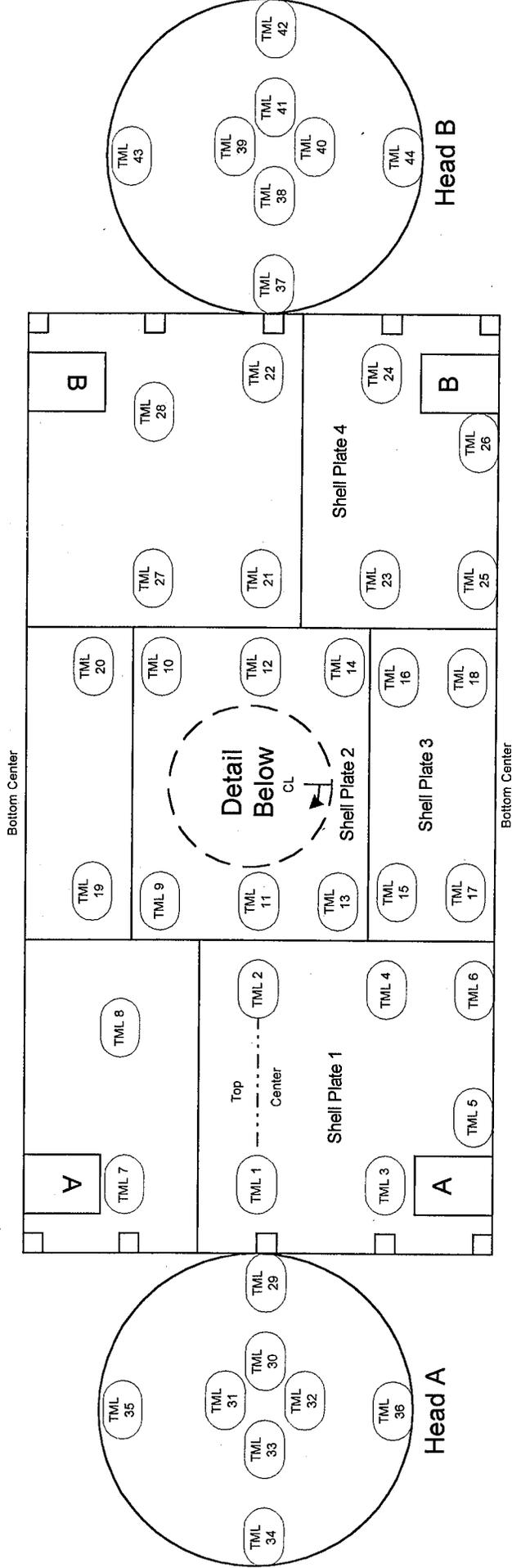
Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

# Tank Car - 17081



## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.



Location of Thickness Measurement Locations (TML)

Tank Car - 17081

# Thickness Measurement Readings

## Tank Car - 17081

### Shell Plate 1:

Top Center	TML-1	.626	TML-2	.629
Side A-B	TML-3	.633	TML-4	.625
Bottom Center	TML-5	.628	TML-6	.625
Side B-A	TML-7	.631	TML-8	.628

### Shell Plate 2

Side B-A	TML-9	1.237	TML-10	1.233
Top Center	TML-11	1.262	TML-12	1.237
Side A-B	TML-13	1.239	TML-14	1.234

### Shell Plate 3

Side A-B	TML-15	.630	TML-16	.605
Bottom Center	TML-17	.625	TML-18	.625
Side B-A	TML-19	.602	TML-20	.605

### Shell Plate 4

Top Center	TML-21	.625	TML-22	.625
Side A-B	TML-23	.624	TML-24	.620
Bottom Center	TML-25	.623	TML-26	.622
Side B-A	TML-27	.620	TML-28	.627

### Head A

TML-29	.658	TML-33	.618
TML-30	.657	TML-34	.658
TML-31	.615	TML-35	.633
TML-32	.652	TML-36	.654

### Head B

TML-37	.657	TML-41	.622
TML-38	.610	TML-42	.641
TML-39	.607	TML-43	.628
TML-40	.645	TML-44	.643

### Shell Plate 5

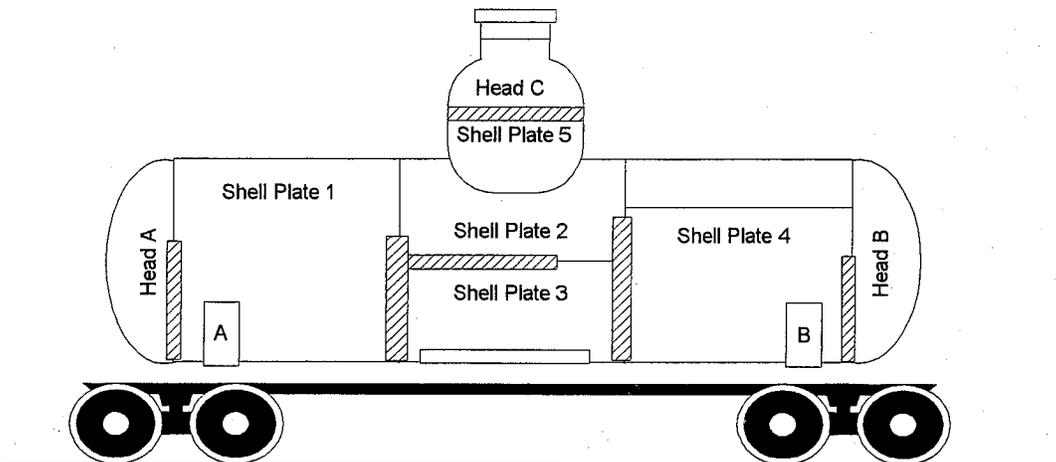
Center Line	TML-45	1.002
Head A Side	TML-46	1.022
Opposite CL	TML-48	1.028
Head B Side	TML-48	1.080

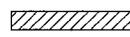
### Top Head C

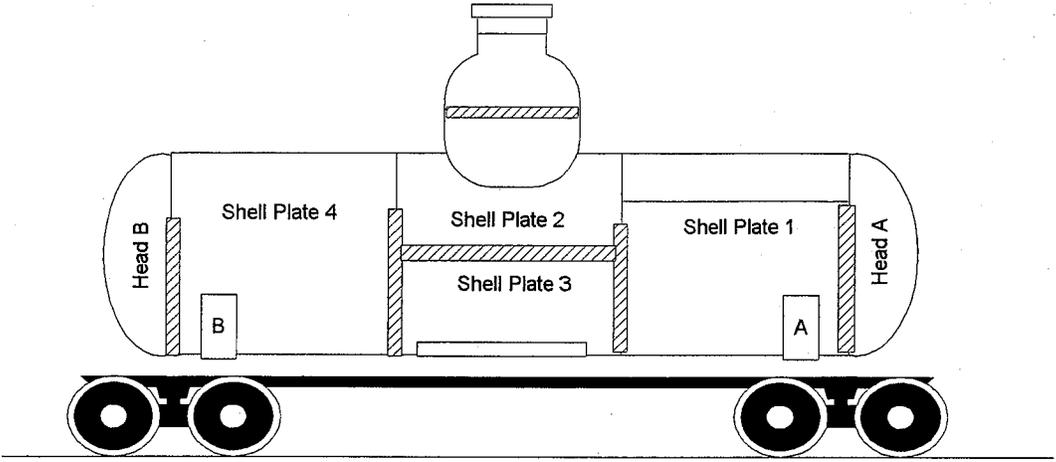
TML-49	.783	TML-53	.801
TML-50	.778	TML-54	.783
TML-51	.737	TML-55	.768
TML-52	.786	TML-56	.784

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

# Tank Car - 17081



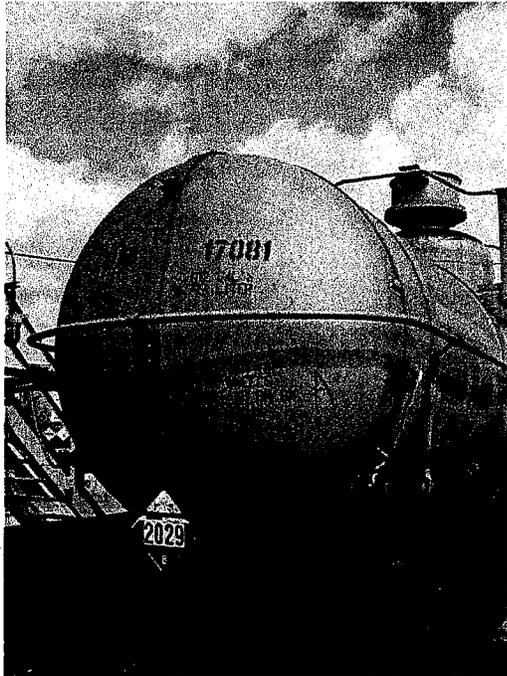
 Indicates Areas Where UT Shear Wave Examination were performed.



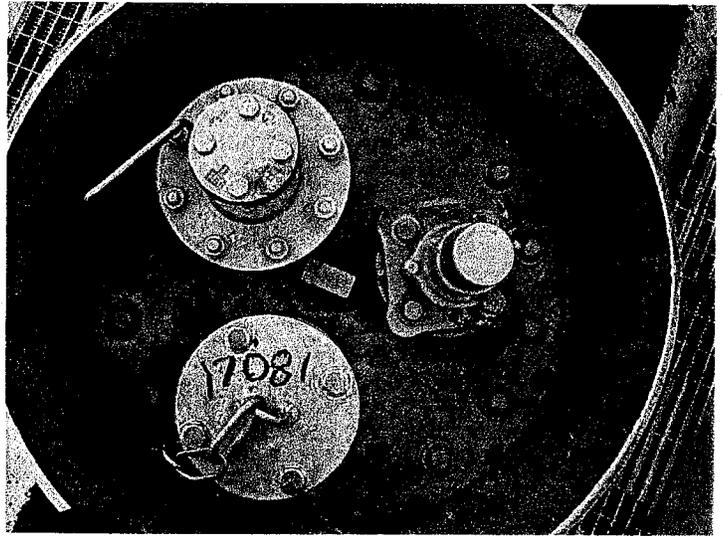
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

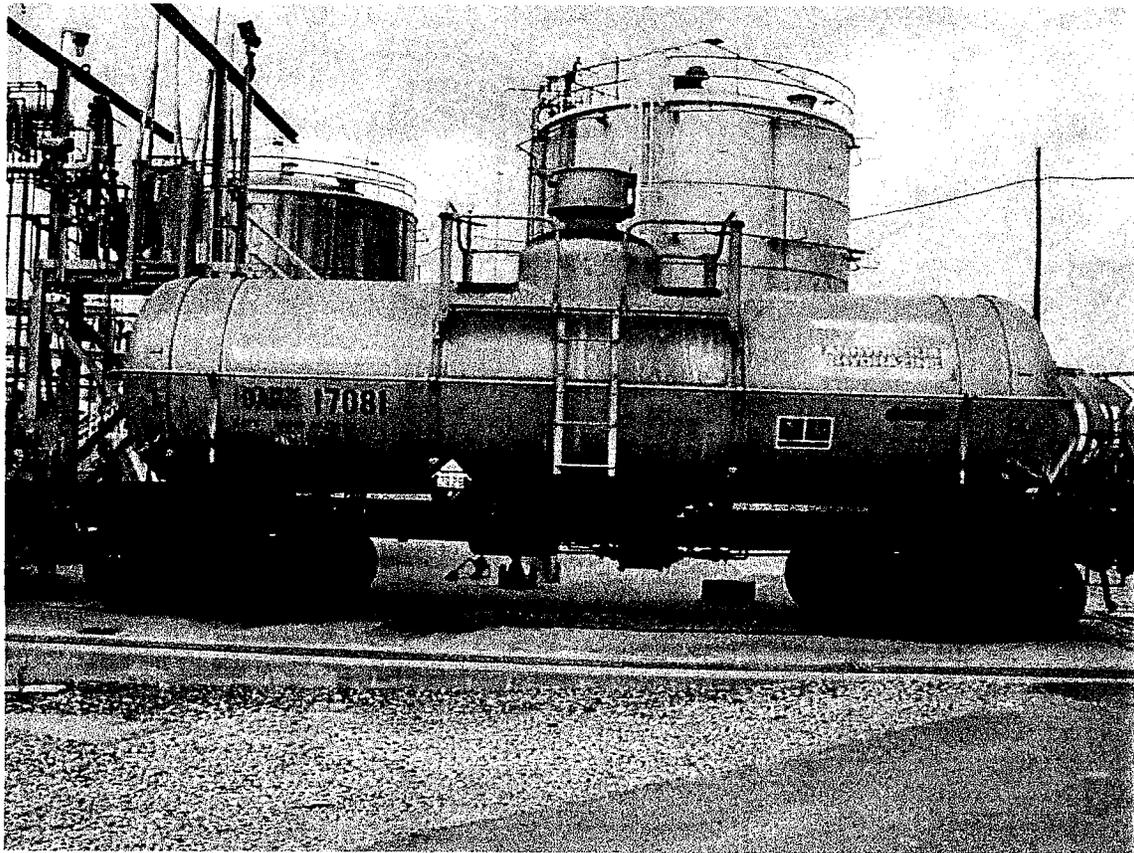
# Tank Car 17081



End View



Top View



Side View

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

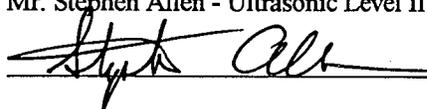
Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

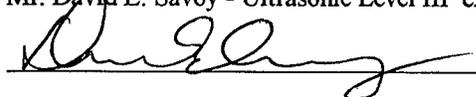
Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00

# Report of Findings

## Vessel Information as Provided by Arch Chemicals, Inc.

Tank Car Number:	17091
Vessel Material:	Aluminum
Tank Pressure Rating:	60 psi
Safety Valve:	35 psi
Capacity:	50,000 lbs

## Relief Valve Information:

Tag applied by:	Plant Specialist
PSV #:	N/A
REL #:	N/A
PSI #:	N/A
Set Pressure:	N/A

## Field Sketch and Dimensions

See Drawing "Tank Car Orientation and Dimensional Drawing" which indicates field sketch dimensions and orientation for NDT work.

## Visual Examination

The tank car appears to be good working condition. No external plate buckles or deformities were noted.

Tank car external coating is in good condition. Paint has chalky residue but appears to be adhered well.

All External attachments for handrails and walkways are in usable condition. PSV has no tag or information attached, the cap is broken off the PSV. See attached picture of PSV.

## Ultrasonic Thickness Survey

### Shell Plates

Minimum thickness .543" is located on Shell Plate 3 - TML-14.

### Heads

Minimum thickness .572" is located on Head C - TML-53.

### Thickness Data

Review Thickness Measurement Readings for complete thickness data  
Drawing Thickness Measurement Location shows location of TML's

Technician, equipment and calibration information can be found on equipment/calibration document.

## Ultrasonic Shear Wave Examination

Shear wave ultrasonic examinations were performed on all accessible full penetration welds. The location of the examination is as shown on drawing "Location of Ultrasonic Shear Wave Examinations". A hundred percent examination was not possible due to tie-down strap location and coating thickness limitations.

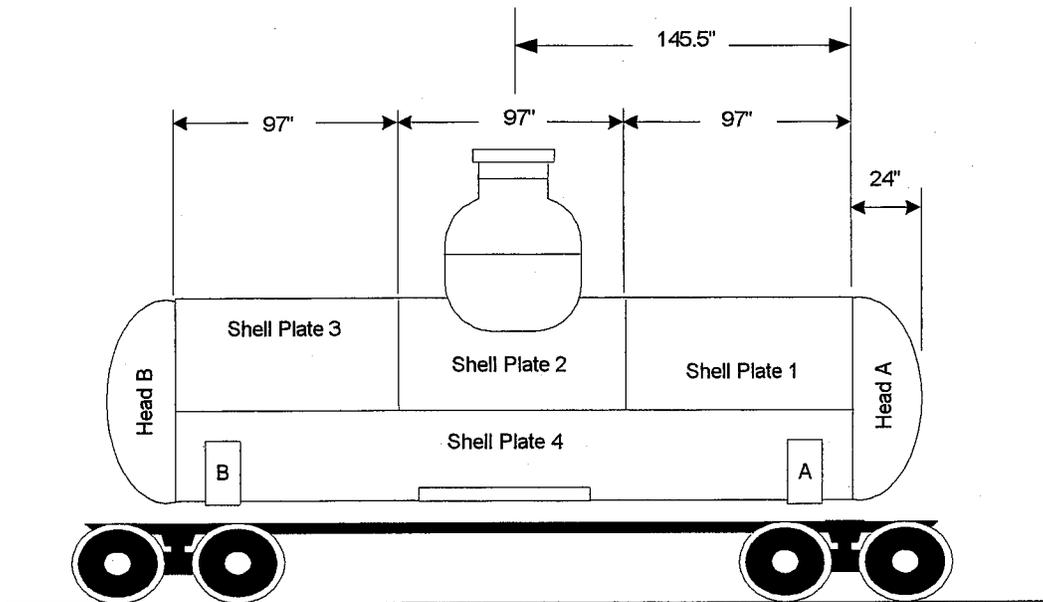
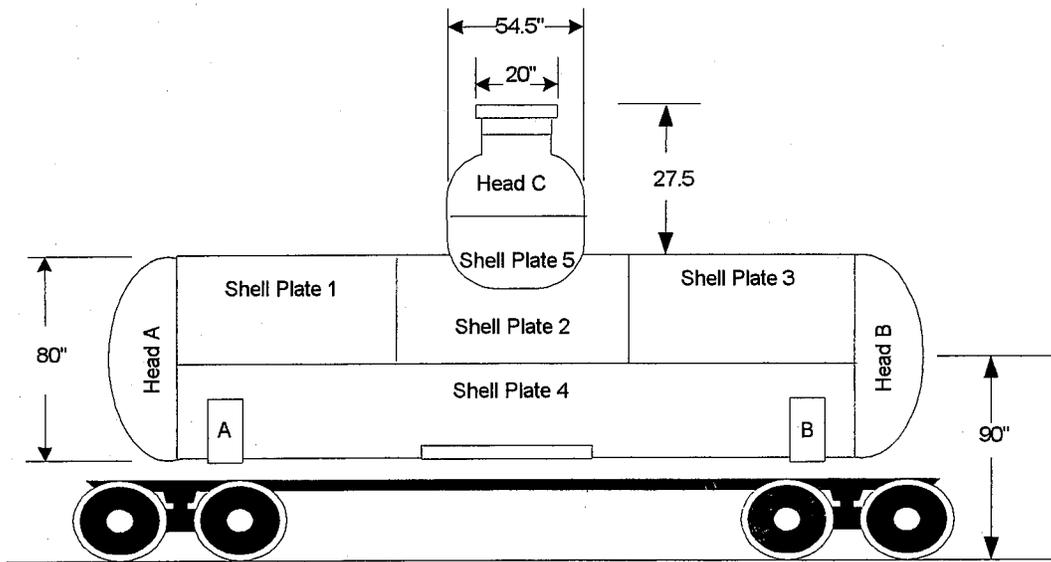
The results of the examination did not show any evidence of internal cracking or wall loss at the weld seams examined. The vessel had stencil numbers stamped next to the weld seams indicating possible radiographic examination was performed during fabrication. No rejectable indications were noted in any weld seams examined.

Technician, equipment and calibration information can be found on equipment/calibration document.

## Drawings and Attachments

Tank Car Orientation and Dimensional Drawing  
Location of Thickness Measurement Locations  
Thickness Measurement Readings  
Location of Ultrasonic Shear Wave Examinations  
Photographs of Tank Cars (Top, End and Side View)  
Equipment and Calibration Sheet

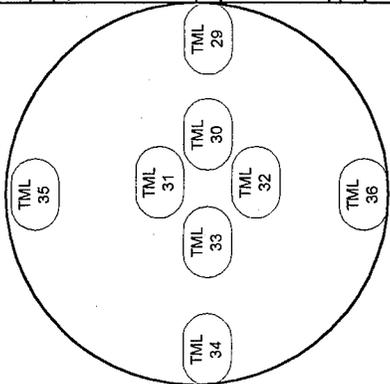
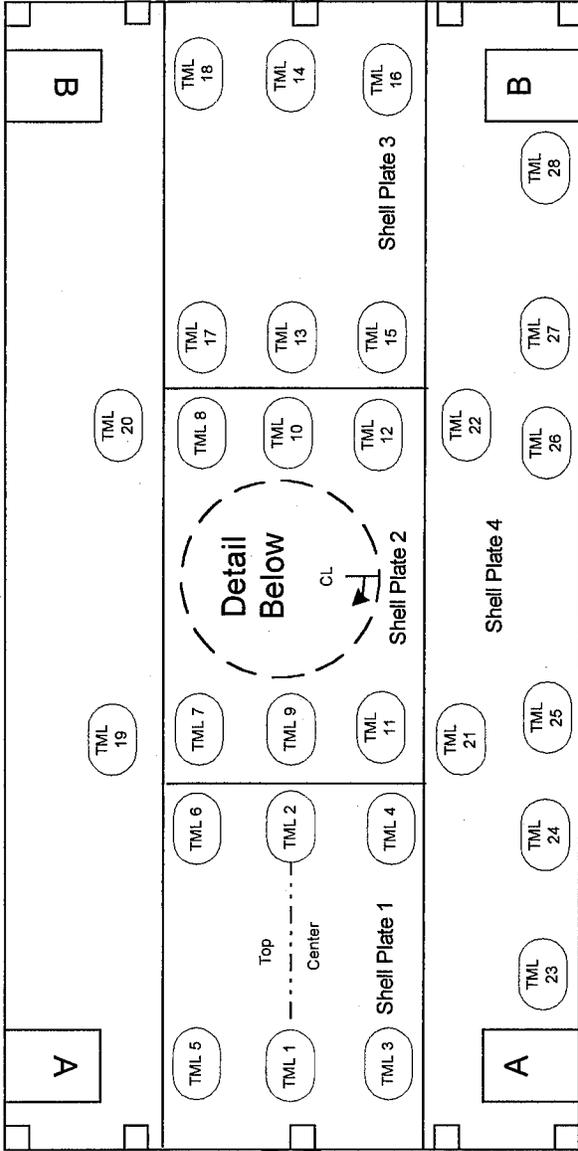
# Tank Car - 17091



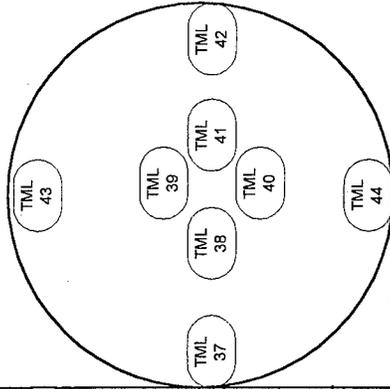
## Tank Car Orientation and Dimensional Drawing

Please note this drawing is not intended to be an engineering drawing. This is a field sketch with dimensions taken from the tank car.

Bottom Center



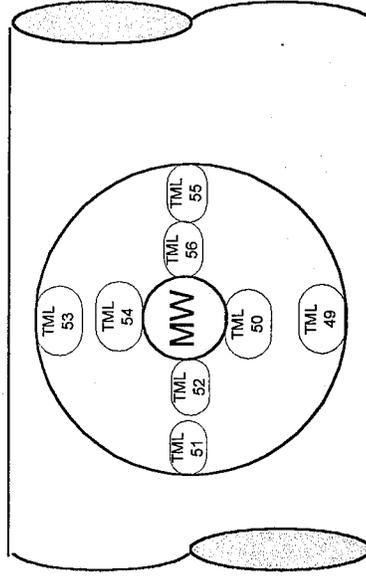
Head A



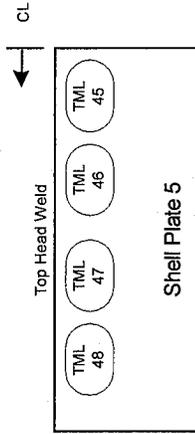
Head B

Bottom Center

← Head A



Top Head C



Main Tank Car

Location of Thickness Measurement Locations (TML)

# Tank Car - 17091

# Thickness Measurement Readings

## Tank Car - 17091

### Shell Plate 1:

Top Center	TML-1	.553	TML-2	.555
Side A-B	TML-3	.562	TML-4	.561
Side B-A	TML-5	.555	TML-6	.553

### Shell Plate 2

Side B-A	TML-7	1.021	TML-8	1.018
Top Center	TML-9	N/A	TML-10	N/A
Side A-B	TML-11	1.026	TML-12	1.052

### Shell Plate 3

Top Center	TML-13	.555	TML-14	.543
Side A-B	TML-15	.559	TML-16	.558
Side B-A	TML-17	.555	TML-18	.552

### Shell Plate 4

Bottom Center Under Plate 1	TML-23	.609	TML-24	.610
Bottom Center Under Plate 2	TML-25	.608	TML-26	.605
Bottom Center Under Plate 3	TML-27	.605	TML-28	.610

### Head A

TML-29	.666	TML-33	.620
TML-30	.606	TML-34	.624
TML-31	.610	TML-35	.642
TML-32	.615	TML-36	.648

### Head B

TML-37	.611	TML-41	.603
TML-38	.629	TML-42	.601
TML-39	.610	TML-43	.656
TML-40	.615	TML-44	.632

### Shell Plate 5

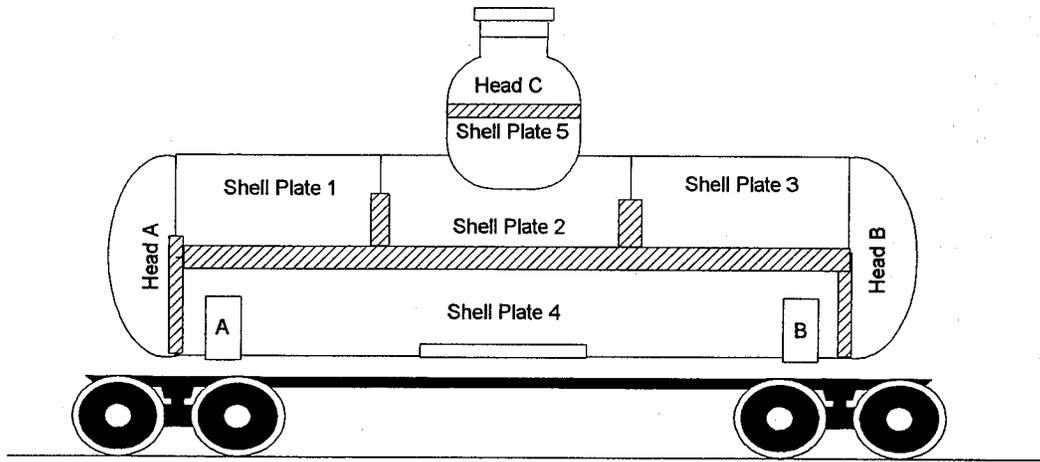
Center Line	TML-45	N/A
Head A Side	TML-46	N/A
Opposite CL	TML-48	N/A
Head B Side	TML-48	N/A

### Top Head C

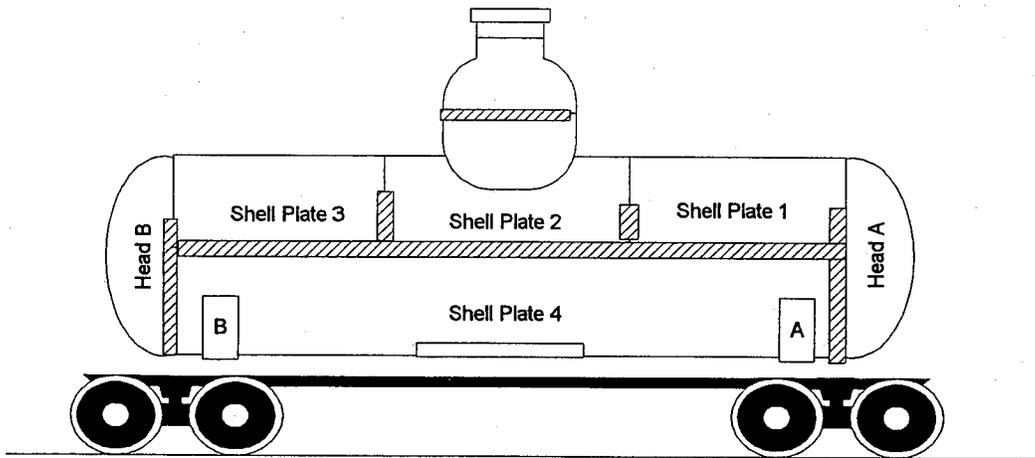
TML-49	.584	TML-53	.572
TML-50	N/A	TML-54	N/A
TML-51	.574	TML-55	.574
TML-52	N/A	TML-56	N/A

Note: All reading given in inches. See attached equipment/calibration sheet for description of equipment used and technician certification and signature. N/A readings on shell plate number 5, grading for deck on top of rail car obstructing shell plate. N/A reading on top head C, black non-skid coating on top of rail car obstructing TML point.

# Tank Car - 17091



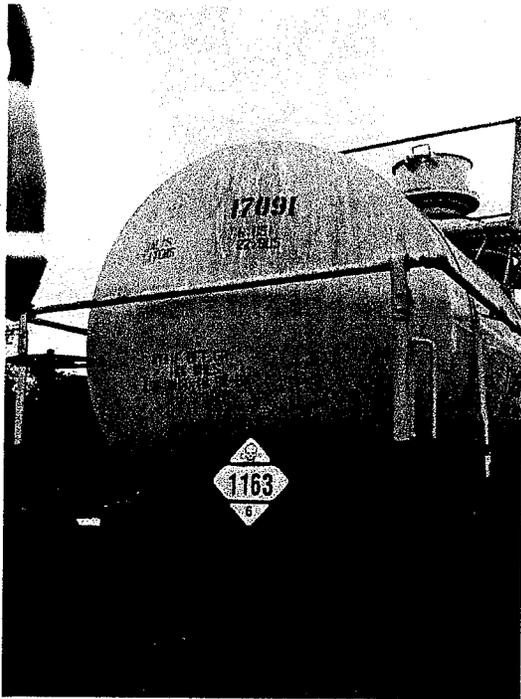
 Indicates Areas Where UT Shear Wave Examination were performed.



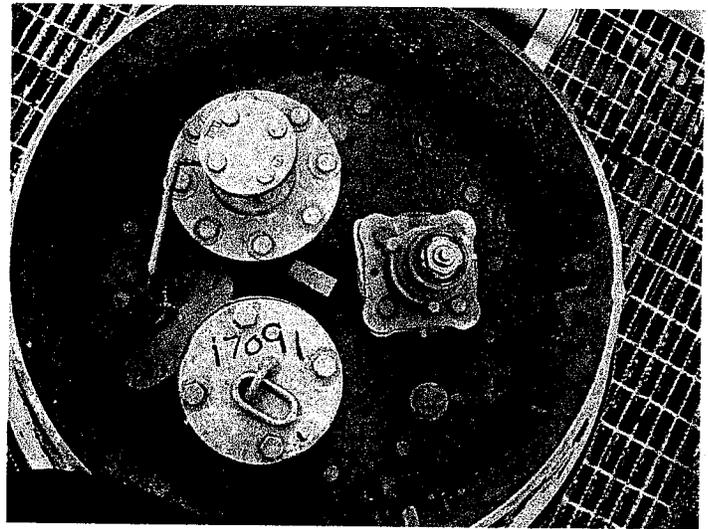
## Location of Ultrasonic Shear Wave Examinations

Note: See attached equipment/calibration sheet for description of equipment used and technician certification and signature.

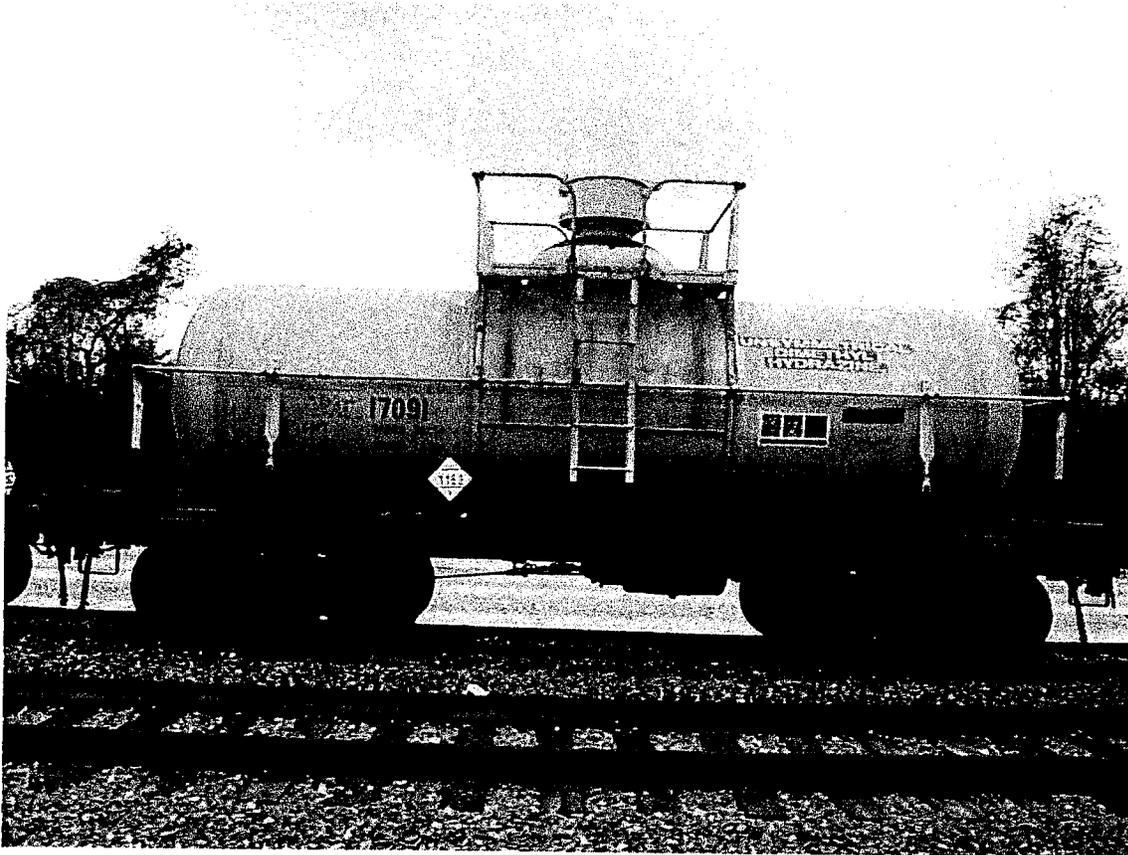
# Tank Car 17091



End View

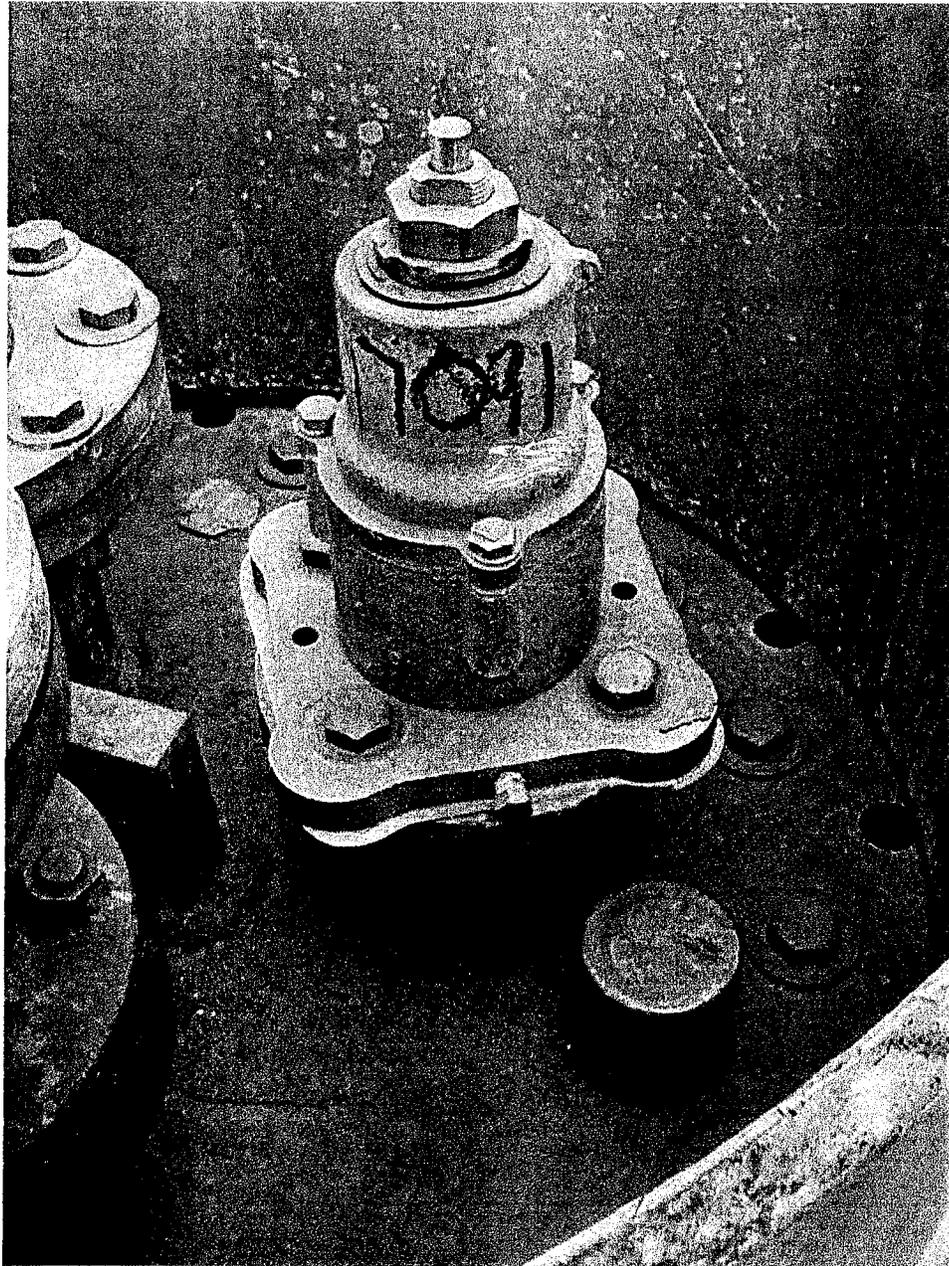


Top View



Side View

Tank Car 17091



Broken Safety Relief Valve

# Equipment and Calibration Sheet

## Ultrasonic Thickness Measurement Examinations

### Instrument Information

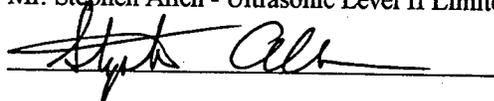
Unit: Panametrics  
Model: 36 DL Plus  
S/N: 97039012  
Calibration Due Date: 1/19/2001  
Couplant: Ultragel  
Probe: D790SM Duel Element 5Mhz by 3/8" diameter. SN: 798307

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. Stephen Allen - Ultrasonic Level II Limited 1

 Date: 3/2/00

## Ultrasonic Shear Wave Examinations

### Instrument Information

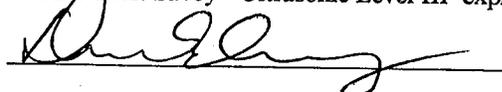
Unit: Panametrics  
Model: Epoch III  
S/N: 98280703  
Calibration Due Date: 5/20/00  
Couplant: Ultragel  
Probe: 45° and 70° wedge with a 2.25MHz by 1/2" diameter transducer SN 26401.  
Scanning Sensitivity: 58db ± 24db

### Calibration Block:

Aluminum IIW Block SN 00-5833

### Technician:

Mr. David E. Savoy - Ultrasonic Level III expires 3/2005

 Date: 3/2/00