



TANK INSPECTION DIVISION  
***API 653 INSPECTION***  
***REPORT***

***JOB NO.:*** \_\_\_\_\_

**Tank Description**

Customer:	<input type="text"/>	Tank No.:	<input type="text"/>
Location:	<input type="text"/>	Tank Dia.:	<input type="text"/>
Product:	<input type="text"/>	Tank Ht.:	<input type="text"/>
Specific Gravity:	<input type="text"/>	Yr. Built:	<input type="text"/>

**OilPro Inspectors:**







<input type="text"/>
<input type="text"/>

Prepared By:	<input type="text"/>	Checked By:	<input type="text"/>	<input type="text"/>
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**Tank History Questionnaire**

**SCOPE:** This questionnaire should be completed with the aid of the customer as well as the customers records concerning the tank. Each item shall be addressed even if no answer is available or the tank isn't applicable. Questions marked with \* shall be considered as non-standard inspection items and shall be self explanatory with each answer. Fill out this questionnaire prior to inspection. If additional space is required to completely answer the question, use a supplementary page and provide reference to the question.

**Section A****GENERAL INFORMATION**

	Month	Day	Year
Date of Inspection:			
 Owner:	0		
 Location:	0		
 Contact:			
 Tank No:	0		
 OilPro Inspector:			
 Region:			

- |       |  |   |                             |
|-------|--|---|-----------------------------|
| 1.1   | What type of inspection is to be performed?                        | <input type="checkbox"/> In-Service External Inspection     |                             |
|       |  | <input type="checkbox"/> Out of Service Internal Inspection |                             |
| 2.2   | Did you get MSDS on most recent product?                           | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 3.3   | Can Engineer Contact Customer Direct?                              | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 4.4   | Does Customer Require a field report at completion of Field work?  | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 5.5   | Is an Entry permit Required?                                       | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 6.6   | Is a Hot Work permit required?                                     | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 7.7   | Are photographs allowed to be taken?                               | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 8.8   | Is the tank painted with lead paint?                               | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 9.9   | If coating does not have lead, can customer provide Documentation? | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |
| 10.10 | Has the tank been cleaned, gas free and safe for entry?            | <input type="checkbox"/> Yes                                | <input type="checkbox"/> No |

1. Name plate information:


**Section B**

**◀ TANK HISTORY ▶**

2. Who was the original Manufacturer (Contract # if possible)


3. What was the year of construction?

0
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4. Product(s) currently stored?

0
---

5. Previously stored product(s)?

0
---

6. Has tank had previous inspections?

☐ Yes

☐ No

☐ Unknown

If so, enter year of most recent bottom and shell readings:

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7. Are the previous inspection reports available?

☐ Yes

☐ No

☐ N/A

8. Has the tank ever been subjected to unusual events such as fire, including adjacent tank, over pressure, vacuum or foundation settlement?

☐ Yes

☐ No

☐ Unknown

If yes, please describe:


9. Have repairs or alterations been performed on this tank?

☐ Yes

☐ No

☐ Unknown

If yes, please describe, including year:


10. Are tank drawings available?

☐ Yes

☐ No

11. Has tank ever been cut down/re-erected or moved from another location where it was originally constructed?

☐ Yes

☐ No

☐ Unknown

If Yes, Please explain:

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12. Has tank ever undergone major modifications such as adding or removal of a floating or fixed roof?

☐ Yes

☐ No

☐ Unknown

13. Are current elevation readings available?

☐ Yes

☐ No

14. Has tank ever been hot-tapped?

☐ Yes

☐ No



## ◀ DESIGN ▶

## Section C

1. Tank Diameter:  Tank Height:  Max. Liquid Level:  FT.
2. Specific Gravity of Current Product:
3. Internal Pressure (Include Units:):
4. Temperatures: Operating:  deg F Design Metal:  deg F
5. Shell Material Specification:
6. Is the tank anchored? ☐ Yes ☐ No
7. Does the tank have a stiffening ring? ☐ Yes ☐ No
8. To what construction standard was the tank built? (API 650, API 12F, etc)
9. Is a re-rate or change in service required? ☐ Yes ☐ No  
If so, please explain:


10. ◀ SHELL INFORMATION ▶ Butt Welded ☐ Lap welded ☐ Riveted ☐  
(For Riveted Tanks)

Shell Ring	Measured t (in)	Material	Ring Ht (in)	JE*	Rivet Rows	Butt	Lap
1						<input type="checkbox"/>	<input type="checkbox"/>
2						<input type="checkbox"/>	<input type="checkbox"/>
3						<input type="checkbox"/>	<input type="checkbox"/>
4						<input type="checkbox"/>	<input type="checkbox"/>
5						<input type="checkbox"/>	<input type="checkbox"/>
6						<input type="checkbox"/>	<input type="checkbox"/>
7						<input type="checkbox"/>	<input type="checkbox"/>
8						<input type="checkbox"/>	<input type="checkbox"/>
9						<input type="checkbox"/>	<input type="checkbox"/>
10						<input type="checkbox"/>	<input type="checkbox"/>

\* - JE = Joint Efficiency. See API 653, Table 4-2 for welded shells and Table 4-3 for riveted.

11. Are the rivets sealed? ☐ Yes ☐ No ☐ N/A
12. If so, by what method are they sealed? ☐ Seal welded  
☐ Epoxy sealed

**◀ FOUNDATION ▶**

**Section D**

1. Is the base of the tank kept dry? ☒ Yes ☐ No

2. Type of foundation: ☐ Gravel Berm ☐ Ringwall  
☐ Sand Berm ☐ Oiled Sand Pad  
☐ Other, Describe:

3. Has any unusual settlement been noted? ☐ Yes ☐ No

4. Have there been foundation problems on other tanks at this site? ☐ Yes ☐ No

5. Is there excessive vegetation around the tank? ☐ Yes ☐ No

**◀ DETAILS ▶**

**Section E**

1. Is the tank bottom cathodically protected? ☐ Yes ☐ No

2. Does the tank have a leak detection system? ☐ Yes ☐ No

3. Is the tank internally lined? ☐ Yes ☐ No

4. Is the tank externally insulated? ☐ Yes ☐ No

**BOTTOM INFORMATION**

☐ Welded ☐ Riveted ☐ Other

1. Original Bottom Thickness: (new) (IN.)

2. Does Tank Have An Annular Ring? ☐ Yes ☐ No

3. What is the size?  What is the thickness?

4. What size plates are used in the bottom?

5. What type of coating does the bottom have?

☐ Thin Film Epoxy ☐ Thick Film ☐ None ☐ Other

6. What type of bottom is it? Design Type?

☐ Cone Up ☐ Cone Down ☐ Shovel Type ☐ Lap-Welded  
☐ Flat ☐ Drain Dry ☐ Concrete ☐ Butt-Welded  
☐ Riveted

## ◀ ROOF DATA ▶

## Section E

1. Type of Tank: ☐ Fixed Roof ☐ Open Top ☐ Floating Roof

**If Fixed Roof is marked, please identify below:**

Type of Fixed Roof:

- ☒ Rafter Supported Cone ☐ Self-Supported Cone  
☐ Geodesic Dome ☐ Dome type ☒ Umbrella type

**If Floating Roof is marked, please identify below:**

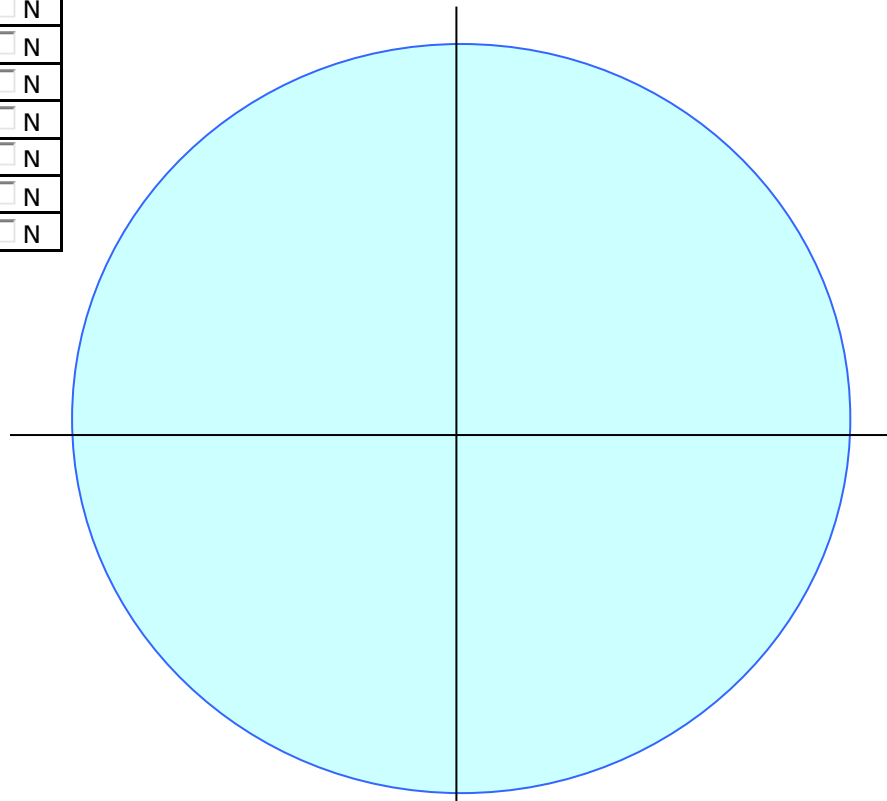
Type of Floating Roof:

- ☐ Reverse Slope Pontoon ☐ Back Slope Pontoon  
☐ Pan Type ☐ Truss Pan Type  
☐ Aluminum Pontoon ☐ Double Deck

Type of Floating Roof material: ☐ Steel ☐ Aluminum ☐ Other

**Using the layout below, locate all roof appurtenances.**

List appurtenances below		
Mark	Size	Repad
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N
		<input type="checkbox"/> Y <input type="checkbox"/> N



**ROOF DATA (Continued)**
**CONE ROOF ULTRASONIC READINGS**


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Measure roof plate thickness readings on the four quadrants, at the tank center and on even spaces to the edge of the tank.

Quadrant	Center	11'-0"	22'-0"	33'-0"	44'-0"
North					
South					
East					
West					

## INTERNAL

### 2.1 GENERAL OVERVIEW

- a. Check that tank has been cleaned, is gas free and safe for entry per Matrix Service guidelines.
- b. Check that the tank is completely isolated from product lines, all electrical power and steam lines.
- c. Check that roof is adequately supported, including fixed roofs and floating roof legs.
- d. Check for the presence of falling object hazards, such as corroded or loose roof rafters, asphalt hanging or trapped hydrocarbons in unopened or plugged equipment, appurtenances, etc.
- e. Inspect for slipping hazards on the bottom and roof plates.
- f. Inspect structural welds on access ways and clips.
- g. Check surfaces needing inspection because of a heavy-scale buildup, check weld seams and oily surfaces where welding has been done. Note areas in need of further cleaning or blasting.

### 2.2 BOTTOM INTERIOR SURFACE

- a. Make a bottom plate layout showing locations of all plates, sump, fixed column locations, bottom outlet, swing lines, heater piping, etc. The shell manway must be shown as a reference.
- b. Using adequate lighting, visually inspect the entire bottom.
- c. Measure the depth of pitting and describe the pitting appearance.
- d. Mark areas requiring further inspection.
- e. Inspect all welds for corrosion and leaks, particularly the corner weld area.
- f. Perform an edge and interior settlement survey.
- g. Locate and mark any areas with evidence of underside voids beneath the tank bottom.
- h. Record bottom data on a layout sketch using the existing bottom plates as a grid.
- i. Ultrasonically or vacuum test any slightly discolored spots or damp areas.
- j. Report all bottom attached clips, brackets and supports which do not have reinforcing pads.
- k. Inspect floating roof leg pads for pitting, cutting or dimpling (Indicating excessive loading)
- l. Check column bases of fixed roof supports for corrosion and distortion.
- m. If there is a liner present, check for holes, disbonding, deterioration or discoloring.



**2.3 SHELL SEAMS AND PLATE**

	a.	On cone up bottoms, closely inspect and gauge the depth of metal loss on the lower 2" to 4" of the shell. (area of standing water).	
	b.	Measure the depth of pitting on each accessible course.	
	c.	Inspect and estimate the amount of metal loss on the heads of rivets and bolts.	
	d.	Inspect shell to bottom rivet lap joints.	
	e.	Inspect for vertical grooving damage from floating roof seal assembly protrusions.	
	f.	If there is a lining, inspect for damage, deterioration and disbonding.	
	g.	Check for areas of rubbing caused by too much pressure by the floating roof seal assembly shoes or inadequate rim space.	
	h.	Inspect all shell plates and seams for indications of leakage and record locations.	

**2.4 CONE ROOF INTERIOR SURFACE**

	a.	Inspect from the bottom of the tank, the underside surface of the roof plates for holes, scale-buildup and pitting.	
	b.	Check all clips, brackets, braces, etc. welded to the roof deck plate to see that they have not broken free.	
<b>2.4.1</b>	<b>Fixed Roof Support Structure</b>		
	a.	Inspect the support columns for corrosion and distortion.	
	b.	On API columns, (two or three channels welded together) check for corrosion and condition of welds between channels.	
	c.	Check that any reinforcing pads on the bottom are seal welded to the tank bottom.	
	d.	Check that the roof supports are not welded down to the bottom, but are only restrained from horizontal movement.	

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e.	Determine if pipe columns are plugged or open pipe. If open pipe, check for a drain opening in the bottom of the pipe.	
f.	Inspect from the tank bottom, the rafters, particularly near the center portion of the roof.	
g.	Inspect from the tank bottom for loose or twisted rafters.	
h.	Inspect girders from the tank bottom for corrosion and check that they are attached securely to the top of the tank.	
i.	Report if the columns have cross bracing in the area between the low pump out and the top of the shell (for future floating roof installation).	
j.	Photograph the roof structure if no rafter layout drawing exists.	

### 2.5 COMMON TANK APPURTENANCES

#### 2.5.1 Gauge Well

a.	Inspect gauge well pipe for corrosion.	
b.	Check that supports for gauge pole are welded to pad or to shell and not directly to tank bottom.	
c.	Identify and report pipe diameter and whether pipe is solid, has holes or slotted. Report slot size.	

#### 2.5.2 Shell Nozzles

a.	Inspect shell nozzles for thinning and pitting.	
b.	Identify location and size of all hot-taps.	
c.	Inspect hot-tap nozzles for trimming of holes.	

#### 2.5.3 Shell Nozzles with internal projections

a.	Identify and describe internal piping including elbow up or down types.	
b.	Inspect pipe support pads welded to tank bottom.	
c.	Inspect to see that pipe is moving freely along support without strain or tearing action on bottom.	
d.	With internal elbow down fill nozzles, inspect the wear plate on the tank bottom.	
e.	On elbow-up fill lines in floating roof tanks, check that opening is directed against underside of floating roof deck and not pointed into the rim space. Inspect impact area for erosion. Record the fill line projection from the tank shell if less than five feet.	

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<b>2.5.4</b>	<b>Diffusers</b>	
	a.	Inspect diffuser pipe for erosion and leaks.
	b.	Check holes in diffuser for excessive wear or enlargement.
	c.	Inspect diffuser supports for damage and corrosion.
	d.	Check that diffuser supports restrain, not anchor longitudinal movement.
<b>2.5.5</b>	<b>Swing lines</b>	
	a.	Inspect flexible joints for cracks and leaks.
	b.	Visually check joint's freedom of movement, indicate whether or not joint is painted.
	c.	Check that the flexible joints over six inches are supported.
	d.	Inspect the swing pipe for deep pitting and weld corrosion.
	e.	Inspect the pontoons for pitting, cracks, damp spots or leaks in general.
	f.	Inspect the safety hold down chain for corrosion and weak links.
	g.	Check that there is a welded reinforcing pad where the chain connects to the tank bottom.
	h.	Inspect pull-down cable for fraying.
	i.	Inspect the winch operation and check the height indicator for legibility.
	j.	Inspect the entire assembly for corrosion and freedom of operation.
<b>2.5.6</b>	<b>Heater Racks</b>	
	a.	Inspect the manway heater racks for broken welds and bending of the sliding rails.
<b>2.5.7</b>	<b>Mixer Wear Plates and Deflector Stands</b>	
	a.	Inspect bottom and shell plates as well as deflector stands.
	b.	Inspect for erosion and corrosion on the wear plates. Inspect the rigidity, structural soundness, corrosion and erosion of the wear plates and for reinforcing pads that are seal welded to the tank bottom beneath the deflector stand legs.
<b>2.5.8</b>	<b>Autogage System</b>	
	a.	Inspect tape and cable for twisting or fraying.
	b.	Check float for leaks.
	c.	Test float guide wire anchors for spring action by pulling on wire and releasing.

**INTERNAL (continued)**

**I.1.1 FLOATING ROOF**

a. Visually check the exterior of the roof rim for corrosion. Especially the rim to deck area.

b. Inspect all deck plate weld seams for cracks.

c. Check that either the roof drain is open or the drain plug in the roof is open incase of an unexpected rain.

If a vapor dam exists, check for cracks or openings impairing a continuous barrier to contain vapors.

d. Visually inspect each pontoon for leakage and note findings.

e. Inspect all rim vents and bleeder vents to ensure they are working properly.

f. Inspect lock-down latches on each pontoon manway as well as any other lock down hatches.

g. Check and report that each pontoon is vapor tight. (seal welded bulkhead to deck, bottom and sides)

h. Inspect underside of all cutouts for mechanical damage.

i. Inspect deck plates for thinning, pitting or erosion.

j. Inspect legs for thinning, pitting or erosion.

k. Inspect for notching on the bottom of each leg for drainage.

l. Inspect for leg buckling or failing at bottom.

m. Check plumb ness of all floating roof legs.

n. Inspect for inadequate reinforcing gussets on all floating roof legs throughout the single deck area.

o. Inspect area around the floating roof legs for cracking and be sure that lapwelds are stitch-welded 2"-12" on bottom side of roof.

p. Inspect all column wells for corrosion, pitting or general thinning.

**Additional Notes:**

## **I.1.2 FLOATING ROOF SEALS**

### **I.1.2.A Primary Seal Assembly**

- a. Inspect foam log seal for saturation in four areas on 90 deg. locations.
- b. Inspect rim hanger attachment for damage, corrosion or wear of pin holes.
- c. Inspect all attachment clips associated with mechanical shoe seal for wear or thinning.
- d. Inspect all shoes for thinning, mechanical damage or holes.
- e. Inspect for bent bolts, clips or attachments.
- f. Inspect seal fabric for deterioration, stiffening, holes or tears in fabric.
- g. Measure length of fabric from top of shoe to roof rim and check against maximum anticipated rim space as roof operates.
- h. Inspect any shoe modifications over shell nozzles, mixers, etc. for clearance.
- i. Inspect hold-down assembly for buckling, bending or other distortion.

### **I.1.2.A Secondary Seal Assembly**

- a. Measure and record all seal -to-shell gaps
- b. Visually inspect seams from below, looking for holes or tears evidenced by light.
- c. Inspect fabric for deterioration and stiffness.
- d. Inspect for mechanical damage, corrosion or wear on tip in contact with tank shell.
- e. Inspect for contact with obstructions above top of tank shell.

### **I.1.2.B Floating Roof Appurtenances**

- a. Inspect walls of deck manways for pitting or thinning.
- b. Inspect gauge well/ float well for pitting or thinning.
- c. Check rim vent for pitting or holes.
- d. Inspect the screen condition.
- e. Check that the vacuum breaker nozzle doesn't project more than 1/2" below the deck.
- f. Inspect the stem on the vacuum breaker for thinning. Measure the distance the vacuum breaker cover is raised above the pipe when roof is in the high/low position.
- g. Inspect the emergency drain and confirm that it is functioning properly.



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h. Inspect the center sump for thinning or corrosion.	
i. Inspect coating on floating roof for peeling, failure or corrosion.	
j. Inspect sump cover or screen (if applicable) for corrosion.	
k. Check the operation of the check valve on the center sump.	
l. Inspect the center sump to deck welds for cracks.	
m. Inspect the center sump outlet nozzle for adequate reinforcement to the roof deck.	
n. Inspect the roof drain piping supports and reinforcing pads for weld failures and corrosion.	
o. Check that the gauge pole is guided, not rigidly locked to the support, to avoid tearing of the tank bottom.	
p. Inspect the exterior of the roof drain piping for damage.	
q. Inspect for possible obstructions that roof drain piping could catch on.	
r. Inspect roof drain system for signs of stress or bending.	
<b>I.1.2.C Automatic Tank Gauging System</b>	
a. Check the movement of the tape through the tape guide.	
b. Test the operation of the gauge head.	
c. Inspect tape and cables for twisting or fraying.	
d. Inspect float for leakage or damage.	
e. Test float guide wire anchors for spring action by pulling on wires and releasing.	
f. Check that the autogauge tape is firmly attached to the float.	
g. Check seal fabric inside of float well cover if applicable.	
h. Inspect the bottom guide wire attachment clip, inspect for a temporary weighted bar instead of a permanent attachment.	
i. Inspect board type gauges for freedom of movement and accuracy.	

### Additional Notes:


**EXTERNAL**

**1.0 GENERAL SITE OBSERVATIONS**

- a. Write a short description, make sketches or take photographs of the site conditions including nearby tanks, electric lines, piping dikes, etc.

**1.1 FOUNDATION**

- a. Make a level survey of tank shell and foundation.

**1.1.1 CONCRETE RING WALL**

- a. Inspect for broken concrete, spalling and cracks, particularly under backup bars used in welding butt-welded annular rings under the shell.
- b. Inspect drain openings in ring, water draw basins and top surface of ring for indications of bottom leakage or for indications of stoppage.
- c. Inspect for cavities under foundation and against bottom of tank.
- d. Inspect anchor bolts and nuts for corrosion, straightness and tightness.

**1.1.2 Asphalt**

- a. Check for settling of tank into asphalt base which would direct runoff rainwater under the tank instead of away from it.
- b. Look for areas where leaching of oil has left rock filler exposed, which indicates hydrocarbon leakage.

**1.1.3 OILED DIRT OR SAND**

- a. Check for settlement in the base, which would direct runoff rainwater under the tank rather than away from it.

**1.1.4 GRAVEL & SAND**

- a. Presence of crushed rock directly beneath the steel bottom without a sand pad usually results in severe underside corrosion.

### **1.1.5 SITE DRAINAGE**

- a. Check site for drainage from the tank, associated piping and manifolds.

### **1.1.6 HOUSEKEEPING**

- a. Inspect the area for build-up of trash, vegetation and other flammable objects.

## **1.2 SHELL**

- a. Sketch a pictorial nozzle orientation showing approximate location of all nozzles, stairways, and ladders. Items should be identified from left to right looking at the shell from the outside of the tank.

### **1.2.1 GENERAL SHELL INSPECTION**

- a. Inspect for paint failures, pitting and corrosion.

- b. Clean off the shell-to-bottom corner weld and inspect for corrosion and thinning on plate and weld.

- c. Inspect bottom -to- foundation seal, if any.

- d. Record the location and describe of any flat spots, buckles or distortions.

- e. Record the location and size of any patches and types of welds.

### **1.2.2 RIVETED SHELL INSPECTION**

- a. Inspect and locate external surface rivet and seam leaks by sketch or photo (locations will be lost if shell is abrasive cleaned for painting).

- b. Inspect rivets for corrosion loss, wear or hydrocarbon leakage .

- c. Inspect vertical seams to see if they have been full fillet lap welded to increase joint efficiency.



### **1.2.3 WIND GIRDER**

- a. Inspect top wind girder for corrosion and paint failure.
- b. Check weld supports to shell for pitting, especially on shell plates.
- c. Note whether supports have reinforcing pads welded to shell.
- d. Inspect intermediate stiffening ring for corrosion.

### **1.2.4 SHELL INSULATION**

- a. Inspect for cracks or leaks in the insulation jacket where moisture could penetrate the insulation.

## **1.3 SHELL APPURTENANCES**

### **1.3.1 Manways and Nozzles**

- a. Inspect for cracks or signs of leakage on weld joints at nozzles, manways and reinforcing pads.
- b. Inspect for shell plate dimpling around nozzles, caused by excessive pipe deflection.
- c. Inspect for flange leaks around bolting.
- d. Inspect sealing of insulation around nozzles and manways.
- e. Check spacing of attachment welds of penetrations, reinforcing pads, insert plates and structural attachments. Then report any deviations on the pictorial nozzle orientation sketch.
- f. Inspect all repads for telltale holes.

### **1.3.2 Mixer**

- a. Inspect for proper mounting flange and support.
- b. Inspect for leakage.
- c. Check for mounting flange and shell distortion.
- d. Check for excessive vibration if mixer is operating.

### **1.3.3 Condensate Drain**

- a. Inspect condensate drain on heaters and other piping (to first flange) for presence of product indicating leakage.



**1.3.4 Shell Mounted Overflows**

- a. Inspect overflow for corrosion and adequate screening.
- b. Record the location of overflow if it is above any tank valves or equipment. (Overflow could leak product on valves and equipment.

**1.3.5 Swing Lines**

- a. **Non-floating:** Raise, then lower the swing line with the winch and check for cable tightness to confirm that the swing line lowered properly.
- b. **Indicator:** Check that the indicator moves in the proper direction. Floating swing line indicators show a lower level as the cable is wound up on the winch. Non-floating swing line indicators show the opposite.

**1.3.6 Auto Gauge System**

- a. Inspect auto gauge tape guide and lower sheave housing for leaks.
- b. Inspect auto gauge for damage.
- c. Bump the checker on the auto gauge head for proper movement of tape.
- d. On target type gauges, check the condition and legibility of the board and test freedom of movement of the marker and float.

**1.3.7 Stairway and/or Ladder**

- a. Inspect spiral stairway for paint failure and corrosion.
- b. Inspect all ladders for paint failure and corrosion.
- c. Inspect all handrails and cages for paint failure and corrosion.
- d. Inspect all attachment welds.
- e. Verify that all handrails, toe boards and structure types, conform with OSHA Regulations.

**1.4 FIXED ROOFS**

- a. Describe roof type.
- b. Make a roof plate layout showing all plates, all nozzles and platforms.  
**(SEE SECTION E)**

**1.4.1 Roof Plate Corrosion**

- a. For Safety, before accessing the roof, check roof plate with UT near edge of the roof for thinning.
- b. Inspect for paint failure, holes, pitting and corrosion.

**1.4.2 Roof Drainage**

- a. Look for indications of standing water. (Significant sagging of a fixed roof indicates potential rafter failure.)

**1.4.3 Gas Test Internal Floating Roof**

- a. If accessible and without removing the blind flange bolts, test for explosive gas on top of the internal floating roof. Readings could indicate a leaking roof, leaking seal system or inadequate ventilation of the internal floating roof.

**1.4.4 Roof Insulation**

- a. Inspect for cracks or leaks in the insulation jacket where run-off rainwater could penetrate the insulation.
- b. Inspect for wet insulation beneath the insulation jacket.

**1.5 FIXED ROOF APPURTENANCES**

**1.5.1 Sample Hatch**

- a. Inspect condition and functionality of sample hatch.
- b. Check the condition of seal inside hatch cover.
- c. Check for corrosion and plugging on thief hatch and gauge hatch cover.

**1.5.2 Gauge well**

- a. Inspect visible portion of the gauge well for corrosion, size of slots and cover condition.

**1.5.3 Fixed Roof Scaffold Support**

- a. Inspect scaffold support for corrosion, wear and structural soundness.

**1.5.4 Drip Ring**

- a. On fixed roof tanks with drip rings beneath the platform or sample area, inspect for plugged drain return to the tank.

**1.5.5 Inspection Hatches**

- a. Inspect the hatches for corrosion, paint and coating failures, holes and cover sealing.
- b. On loose covers, check for a safety chain and that it is in good condition.
- c. Inspect the condition of the gaskets on bolted or latched down hatch covers.



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<b>1.5.6</b>	<b>Breather Valves and Atmospheric Free Vents</b>
a.	Inspect the breather.
b.	Inspect screens on vents and breathers for obstructions or tears.
c.	Inspect screens on shell or roof mounted vents on internal floating roof tanks.
<b>1.5.7</b>	<b>Pressure Relief Valve, Vacuum Relief Valve, Flame Arrestor</b>
a.	Inspect all valves and screens.
b.	Record Manufacturer and Model No. Information.
<b>1.5.8</b>	<b>Handrails</b>
a.	Inspect for pits, holes or paint failure.
b.	Inspect attachment welds.
c.	Verify that all handrails, toe boards and structural types conform with OSHA regulations.
<b>1.5.9</b>	<b>Platform Frame</b>
a.	Inspect frame for corrosion and paint failure.
b.	Inspect the attachment of frame to supports and supports to tank; for corrosion and weld failure.
c.	Check reinforcing pads where supports are attached to shell or roof.
d.	Inspect the surfaces that deck plate or grating rests on, for thinning and holes.
e.	Check that flat surface to flat surface junctures are seal welded.
<b>1.5.10</b>	<b>Platform Grating</b>
a.	Inspect platform grating or plate for corrosion and paint failure.
b.	Inspect grating or plate-to-support frame for corrosion.



Company: 0 Tank No: 0  
Location: 0

### STAIRWAYS, LADDERS & PLATFORMS

1. Inspect the stairway and platform: **Catwalk** ☐ OK ☒ NOT OK

- ☒ Broken Welds ☐ Coating Failure  
☐ Bent Members ☐ Corrosion

Stairway Type:

☐ Radial Type ☐ Spiral Type ☐ Catwalk ☐ Other

Structural Type:

☐ Platform ☐ Wing Rails ☐ Walkway ☐ Other

2. Record existing dimensions:

ITEM	OSHA	EXISTING			
Platform / Wing Rails	Required	PLATFORM		WING RAIL	CATWALK
Width	Min. 24"				
Length	Min. 24"				
Toe Board Size	Min. 4"				
Handrail Height	Min. 42"				
Spacing of Uprights	Max. 96"				
Size of Upright Member	2"x2"x3/8" or 1.5" Pipe				
Has Mid rail Present	Required				
Slip Resistant Surface Present	Required				

STAIRWAY				CAGED LADDER		
Item	OSHA Req.	Existing		Item	OSHA Req.	Existing
Width	Min. 22"			Width	16" min.	
Rise/Run Angle	30°-50°			Height	30' max.	
Handrail Height	30" to 34"			Rung to Rung	12" max.	
Size of Upright	2"x2"x3/8" or 1.5" Pipe			Rung to Shell	7" min.	
Upright Spacing	Max 96"			Rung Size	3/4" min.	
Mid rail	Required			Rung to Cage	27" to 28"	
Slip Resistant	Required			Cage Verticals	9.5" max.	
				Cage Hoops	8' max.	
				Rung to Roof	1.5" to 12"	

\* Note: The spacing of the uprights may meet the requirements of the OSHA midrail spacing requirement.

Comments:

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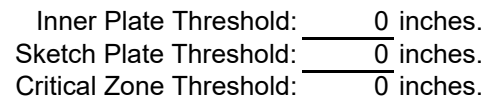


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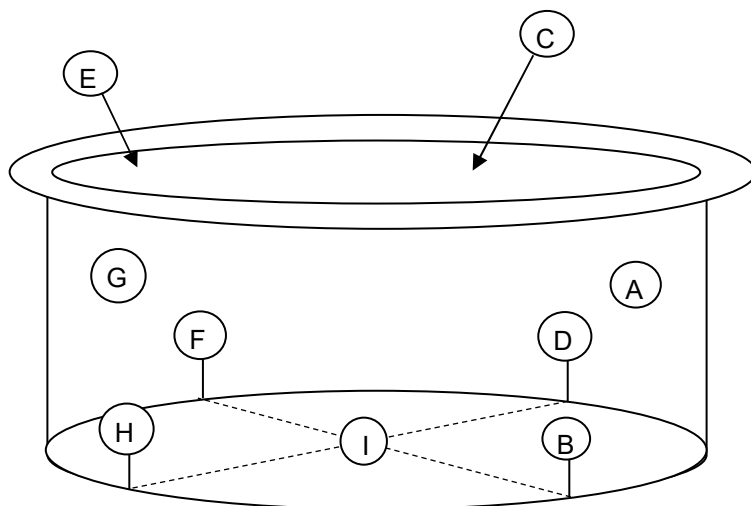


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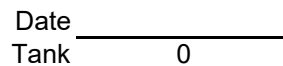
## Bottom Sumps



Reading Number	Reading (Inches)
A	
B	
C	
E	
F	
G	
H	
I	

Sump Size:






## ◀ Record Internal Bottom Survey ▶

Identify the location of the first radial line:

\_\_\_\_\_ feet \_\_\_\_\_ inches.

 Counter-Clockwise

*The "-5' through -1' " are measurements subtracted radially from the shell towards the center.*

[illegible]

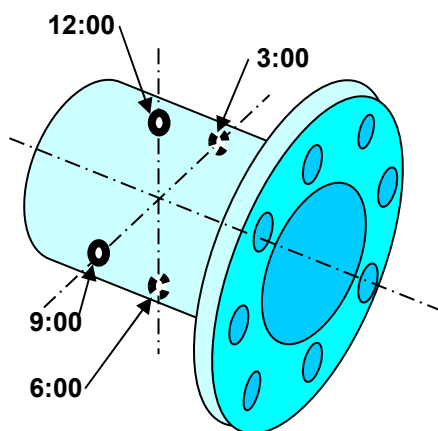
Customer: 0

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Location: 0

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Tank No.: 0

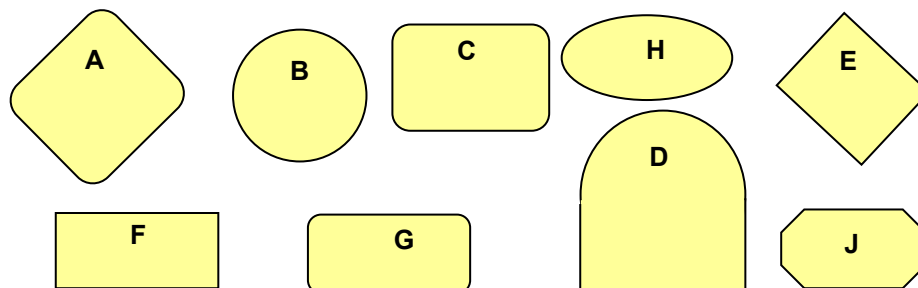
[illegible]



**Tank No:** 0

[illegible]

## Shape







## Floating Roof Readings

Outside Rim plate thickness readings

Position	Top	Middle	Bottom	Average
North				#DIV/0!
West				#DIV/0!
South				#DIV/0!
East				#DIV/0!

Measure the thickness of the floating roof deck in four quadrants

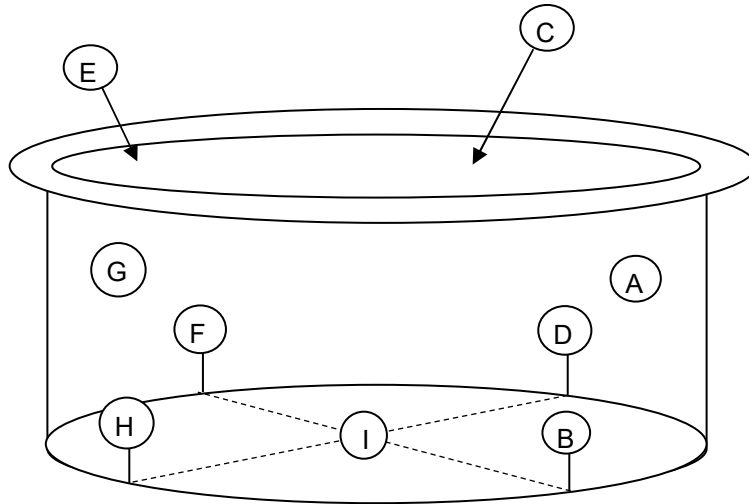
		► Distance From Center ◀						
Quadrant	Center							
N								
S								
E								
W								

### Other Floating Roof Thickness Readings

UT Measurements in Other Structures				
Description	Top	Middle	Bottom	Average
Support 1				#DIV/0!
Support 2				#DIV/0!
Support 3				#DIV/0!
Support 4				#DIV/0!
Support 5				#DIV/0!
Support 6				#DIV/0!
Support 7				#DIV/0!
Support 8				#DIV/0!
Support 9				#DIV/0!
Support 10				#DIV/0!
Support 11				#DIV/0!
Support 12				#DIV/0!
Support 13				#DIV/0!
Support 14				#DIV/0!
Support 15				#DIV/0!
Support 16				#DIV/0!
Support 17				#DIV/0!
Support 18				#DIV/0!
Support 19				#DIV/0!
Support 20				#DIV/0!
Support 21				#DIV/0!
Support 22				#DIV/0!
Support 23				#DIV/0!
Support 24				#DIV/0!

UT Readings on roof supports are taken randomly.

## Floating Deck Sumps



Sump Size:

Reading Number	Reading (Inches)
A	
B	
C	
E	
F	
G	
H	
I	



## Primary Seal Inspection Report

TANK INSPECTION DIVISION

Tank No.: 0

Inspection Date:

Is this a follow-up inspection? If yes, date of previous inspection:

### CLIENT INFORMATION

Company Name:	0		
Location Address:	0	City:	State:
Contact Person:	0	Title:	
Phone Number:	0	Email Address:	
Inspection By:	0	Title:	API 653 Inspector

### TANK INFORMATION:

Capacity (bbls) Installation Date: 0 Tank Diameter (ft) 0

Tank Height: 0 Product Type: 0

Tank Type: ☐ Welded ☐ Riveted ☐ Other (Describe)

Roof Type: ☐ Pontoon ☐ Pan Type ☐ Dbl. Deck ☐ Other

External Floating Roof: ☐ Internal Floating Roof: ☐

### A. PRIMARY SEAL CHECKLIST:

- 1.) Check the vapor between floating roof and the fixed roof with an explosion meter: % LEL
- 2.) Are all roof openings covered? (If NO, Explain)
- 3.) Was the seal gap measured while the floating roof was floating off of it's support legs?
- 4.) How many roof elevations was the seal gap measured in?

### Primary Seal Material

1.) What type of material does the vapor fabric consist of: Explain:

Condition: ☐ Good ☐ Fair ☐ Poor

Describe:

2.) What type of material do the shoe plates consist of:

Condition: ☐ Good ☐ Fair ☐ Poor

Describe:



## Primary Seal Inspection Report

(Continued)

3.) What type of material are the hold downs &amp; hardware made from?:

Condition:

☐

Good

☐

Fair

☐

Poor

Describe:

4.) What type of material are the hanger brackets and springs made from?:

Condition:

☐

Good

☐

Fair

☐

Poor

Describe:

### Estimated Remaining Life Expectancy

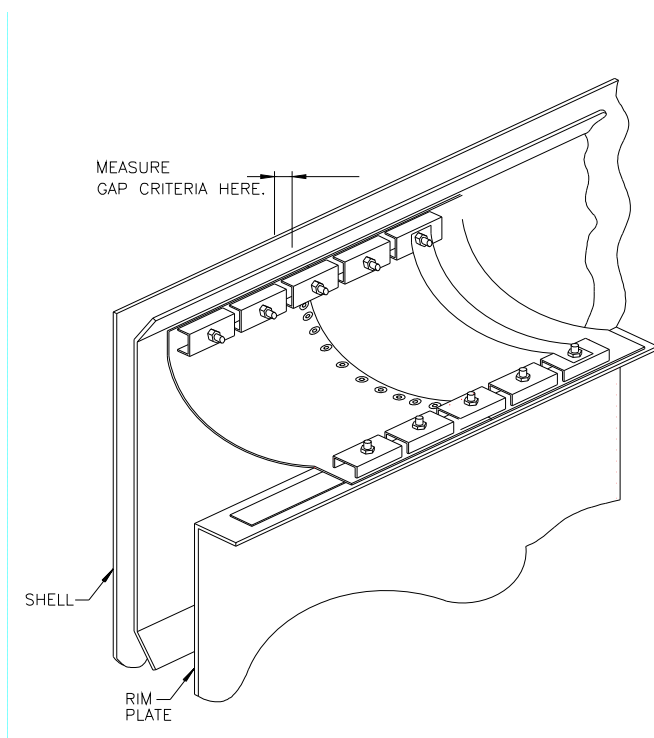
Primary Fabric:

Primary Shoe Plates:

Hold Downs &amp; Hardware:

Hanger Brackets &amp; Springs:

### NOTES:

Record seal gap measurements below: (starting on north side of tank)

	Width (in)	Length (in)	Gap		Width (in)	Length (in)	Gap
Point A			0	Point I			0
Point B			0	Point J			0
Point C			0	Point K			0
Point D			0	Point L			0
Point E			0	Point M			0
Point F			0	Point N			0
Point G			0	Point O			0
Point H			0	Point P			0

Average Seal Gap:

0

Seal Gap Criteria:

Acceptable





## Secondary Seal Inspection Report

### TANK INSPECTION DIVISION

Tank No.: 0

Inspection Date:

Is this a follow-up inspection? ☐ If yes, date of previous inspection: 0

#### CLIENT INFORMATION

Company Name:	0				
Location Address:	0	City:		State:	
Contact Person:	0	Title:			
Phone Number:		Email Address:			

#### TANK INFORMATION:

Capacity (bbls) 0 Installation Date: 0 Tank Diameter (ft) 0

Tank Height: 0 Product Type: 0

Tank Type: ☐ Riveted ☐ Welded ☐ Other (Describe)

Roof Type: ☐ Pontoon ☐ Pan Type ☐ Dbl. Deck ☐ Other

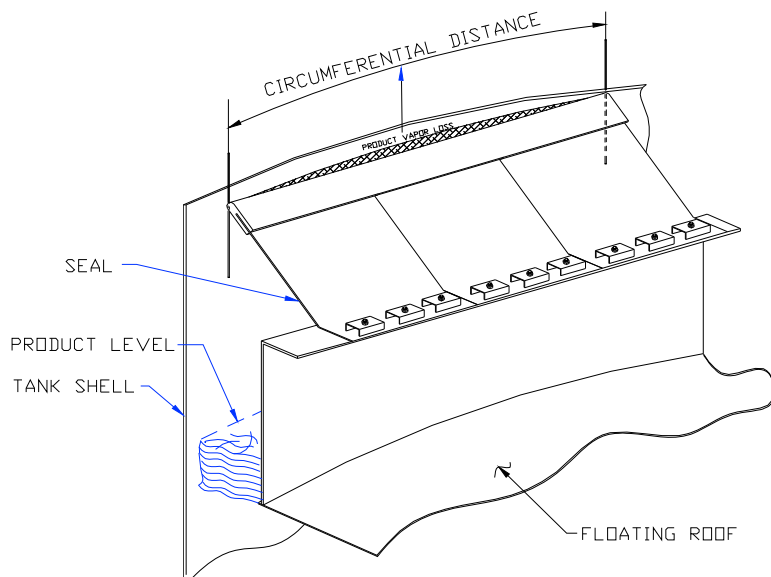
External Floating Roof: ☐ Internal Floating Roof: ☐

#### A. Secondary Seal Checklist:

- 1.) Check the vapor between floating roof and the fixed roof with an explosion meter: % LEL
- 2.) Are all roof openings covered? (If NO, Explain)
- 3.) Was the seal gap measured while the floating roof was floating off of it's support legs?
- 4.) How many roof elevations was the seal gap measured in?
- 5.) What material are the secondary weather shields made from?



## Secondary Seal Inspection Report



Record seal gap measurements below: (starting on north side of tank)

	Width (in)	Length (in)	Gap		Width (in)	Length (in)	Gap
Point A			0	Point I			0
Point B			0	Point J			0
Point C			0	Point K			0
Point D			0	Point L			0
Point E			0	Point M			0
Point F			0	Point N			0
Point G			0	Point O			0
Point H			0	Point P			0

Average Seal Gap: **0**

Seal Gap Criteria: **Acceptable**

## MAGNETIC FLUX LEAKAGE TECHNIQUE

The Magnetic Flux Leakage Examination technique is a method used to provide a reliable indication of the overall tank bottom condition.

This method of examination uses a magnetic bridge composed of extremely strong rare earth magnets that introduce as near a saturation of magnetic flux as possible in the inspection area between the poles of the bridge. Any significant reduction of the plate thickness will result in some magnetic flux being forced into the air. Sensors which are designed to detect these flux "leaks" are located between the poles of the bridge.

Accurate assessment of the remaining wall thickness is virtually impossible. Truly quantitative results can only be obtained using a combination of Ultrasonic and Flux Leakage. Therefore, MFE indications of thinning must be further evaluated using Ultrasonics to obtain a reliable assessment of the underside condition.





## MAGNETIC FLUX LEAKAGE INSPECTION

Client: 0 Date: Job No.: 0

Location Address: 0

P.O. No.: Contact Person: 0

Tank No.: 0 Capacity: Product: 0

## MAGNETIC FLUX LEAKAGE EQUIPMENT

Built By: Model: S/N:

Calibration Sensitivity

Scanning Sensitivity:

## SCANNING INSPECTION AREA:


## RESULTS:

Number of Indications: 

--

  
Number of Indications Confirmed by Visual Inspection: 

--

  
Number of Indications Confirmed by Ultrasonic Inspection: 

--

## NOTES:


## INSPECTOR COMMENTS:


Inspector: 0

Date: 0

**TANK INSPECTION DIVISION****NDE TECHNIQUE RECORD / ULTRASONIC - THICKNESS**

DATE: 0

CLIENT: 0

JOB NUMBER: 0

TERMINAL: 0

TANK NO.: 0

SPECIFICATION: PROCEDURE:

OTHER:

COMPONENT: MODEL: S/N:

Additional Information:

**EQUIPMENT:**

Unit Mfg.: Model: 0 S/N: 0

Transducer Mfg: 0 Model: S/N: 703018

Frequency: Angle: Size: Type: Dual

CABLE: LENGTH: TYPE:

Calibration Block: S/N: 2218E

Couplant:

Record results on appropriate inspection form Attach sketches or additional information as applicable

**Remarks:**

TECHNICIAN/Level

DATE:

0

**TANK INSPECTION DIVISION****NDE TECHNIQUE RECORD / WET MAG PARTICLE**

DATE: 0

CLIENT: 0

JOB NUMBER: 0

TERMINAL: 0

TANK NO.: 0

**MAGNETIC PARTICLE TESTING EQUIPMENT**

Built by:

Style:

Yoke:

Model.:

Serial No.:

Procedure:

Rev. No.

**Description of areas where Magnetic Particle testing is required:****Examination Mediums:**

Manufacturer	Type	Color	P/N
--------------	------	-------	-----

**RESULTS:**

Number of areas tested:

Number of Indications found:

**INSPECTOR REMARKS:**

TECHNICIAN/Level II

DATE:



## TANK INSPECTION DIVISION

## NDE TECHNIQUE RECORD / DRY MAG PARTICLE

DATE: 0

CLIENT: 0

JOB NUMBER: 0

TERMINAL: 0

TANK NO.: 0

## MAGNETIC PARTICLE TESTING EQUIPMENT

Built by:

Style:

Yoke:

Model.: Serial No.:

Procedure:

Rev. No.

## Description of areas where Magnetic Particle testing is required:

## Examination Mediums:

## Color

## P/N

## BATCH No.

## Mfg Date




## RESULTS:

Number of areas tested:

Number of Indications found:

## INSPECTOR REMARKS:

TECHNICIAN/Level II

DATE:

0



TANK INSPECTION DIVISION  
**VACUUM BOX INSPECTION - TANK BOTTOM**

DATE: \_\_\_\_\_

CLIENT: 0 \_\_\_\_\_

JOB NUMBER: 0 \_\_\_\_\_

TERMINAL: 0 \_\_\_\_\_

TANK NO.: 0 \_\_\_\_\_

**BOTTOM DESIGN:**

☐ Flat

☐ Cone Up

☐ Cone Down

☐ Lined

Diameter: \_\_\_\_\_ ☐ Welded

☐ Riveted

Date of Construction: \_\_\_\_\_

Material Thickness: \_\_\_\_\_ Fabricated By: \_\_\_\_\_

**RESULTS:**

**ALL TANK INSIDE BOTTOM CORNER WELDS AND ALL BOTTOM PLATE WELDS HAVE BEEN VACUUM BOX TESTED.**

**INSPECTOR COMMENTS:**

OilPro Inspector: \_\_\_\_\_

Date: \_\_\_\_\_





## TANK INSPECTION DIVISION

Customer: 0

Date:

Location: 0

Job No. 0

Tank No. 0

### PHOTOGRAPH LOG

Insert pictures here at 2.45" height



## TANK INSPECTION DIVISION

Customer: 0

Date: 0

Location: 0

Job No. 0

Tank No. 0

## PHOTOGRAPH LOG



## TANK INSPECTION DIVISION

Customer: 0

Date: 0

Location: 0

Job No. 0

Tank No. 0

## PHOTOGRAPH LOG



Location: 0  
Inspection Date: 0

TANK INSPECTION DIVISION

Customer: 0

**RECOMMENDED INSPECTION REPAIRS**

ITEM NO.	RECOMMENDED REPAIR	INTEGRITY OR NON-INTEGRITY	NOTES CONCERNING RECOMMENDATION



Location: 0  
Inspection Date: 0

Customer: 0

**RECOMMENDED INSPECTION REPAIRS**

ITEM NO.	RECOMMENDED REPAIR	INTEGRITY OR NON-INTEGRITY	NOTES CONCERNING RECOMMENDATION

**RECOMMENDED INSPECTION REPAIRS**

ITEM NO.	RECOMMENDED REPAIR	INTEGRITY OR NON-INTEGRITY	NOTES CONCERNING RECOMMENDATION



Location: 0  
Inspection Date: 0

Customer: U

**RECOMMENDED INSPECTION REPAIRS**

ITEM NO.	RECOMMENDED REPAIR	INTEGRITY OR NON-INTEGRITY	NOTES CONCERNING RECOMMENDATION



Location: 0  
Inspection Date: 0

Page 49

TANK INSPECTION DIVISION

Customer: U

**RECOMMENDED INSPECTION REPAIRS**

ITEM NO.	RECOMMENDED REPAIR	INTEGRITY OR NON-INTEGRITY	NOTES CONCERNING RECOMMENDATION





Location: 0  
Inspection Date: 0

Customer: U

**RECOMMENDED INSPECTION REPAIRS**

ITEM NO.	RECOMMENDED REPAIR	INTEGRITY OR NON-INTEGRITY	NOTES CONCERNING RECOMMENDATION

