



July 1960 - Tank #2 - Red Hill

Section of 12-foot length of 1 1/2" collector ring. Two holes were found in this section, one of which is shown in picture. Diameter of collector ring is 19'-6".



July 1960 - Tank #2 - Red Hill

Internal view of telltale piping removed  
from bottom portion of tank, indicating  
typically good condition of piping  
internally.



July 1960 - Tank #2 - Red Hill

Overall view of  $1\frac{1}{2}$ " collector ring. 19'-6" diameter ring was cut and removed from tank in 5 lengths.

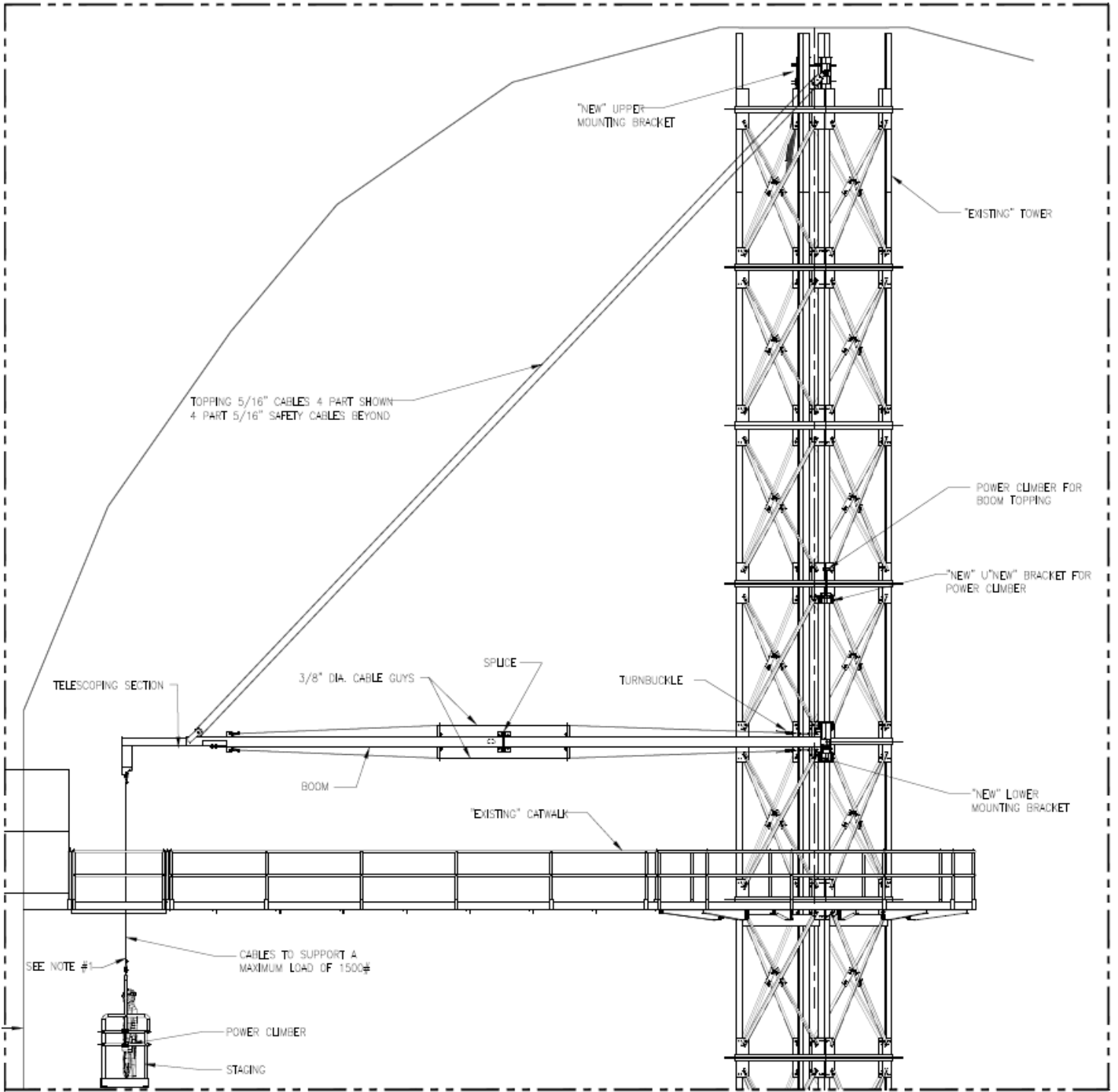


July 1960 - Tank #2 - Red Hill

Closeup of section of  $1\frac{1}{4}$ " collector ring,  
showing generally corroded condition.

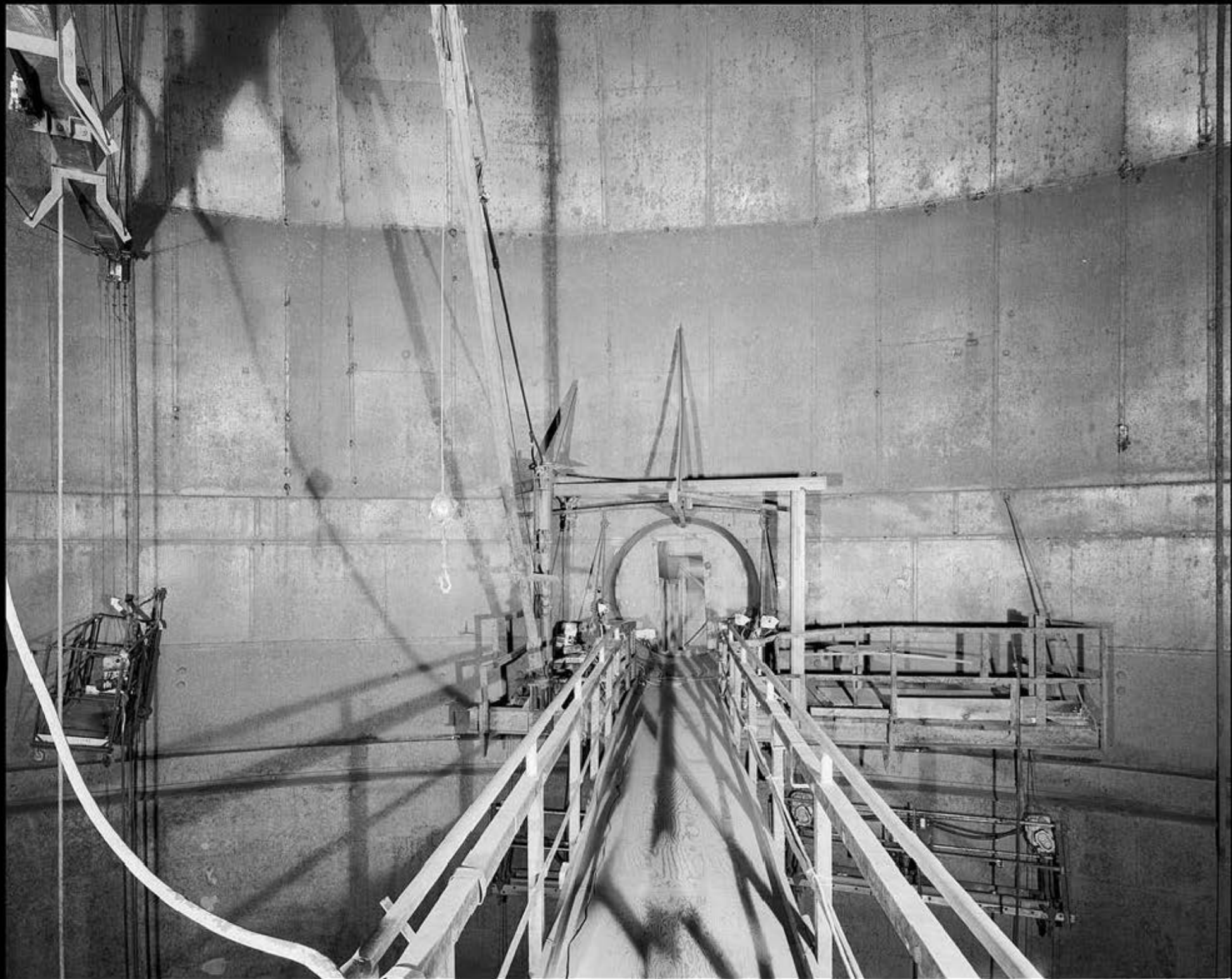














**DESCRIPTION:** Red Hill Storage Facility Tank #13

**INSPECTION DATES:** June 26, 1995 to July 3, 1995

**INSPECTION TIME:** 7:00 am to 3:30 pm

**AMAN ENVIRONMENTAL  
REPRESENTATIVE:** Doug Fenstermacher

**CONAM MMP  
REPRESENTATIVE:** Leif Woodman

**EXTENT OF INSPECTION:**

1. Perform inspection on the interior of the tank.
2. Perform leak testing on the floor and the first course.
3. Perform ultrasonic thickness testing on the floor and the first course.
4. Inspections performed to applicable API 653 criteria.

**RESULTS OF SURVEY:**

Floor:

1. A mild general corrosion was noted on the floor.
2. Minor scattered pitting was noted with a maximum of 0.15" noted on the ring on the bottom of the first course.
3. The coating had been mostly removed with some primer still remaining.
4. No leaks were detected on the plates.

First Course:

1. A mild general corrosion was noted on the plates.
2. Mild scattered pitting was noted. The maximum pit depth noted was .11".
3. The coating had been removed from the bottom six feet of the course.
4. The remaining coated area had some scratches was moderately blistered with some of the blisters having been popped.
5. No leaks were detected on the plates.



**Second Course:**

1. There was moderate blistering at the bottom of the course which decreased toward the top of the course.
2. There were no leaks detected on the plates.
3. The course was inspected from the top of the first course.

**Shell:**

1. No leaks were Noted on the shell.
2. The shell was inspected from the catwalk.

**RECOMMENDATIONS:**

1. Recoat areas where the coating was scratched or was a hole that has exposed the bare metal.

**CONAM MMP INSPECTIONS:**

A handwritten signature in black ink, appearing to read "Leif Woodman".

Leif Woodman  
API 653 #1059

A handwritten signature in black ink, consisting of several overlapping loops.

AMAN REPRESENTATIVE:



Inspections, Inc.

VACUUM LEAK TEST REPORT

PAGE 1 OF 2

INSPECTION DATE 6-30-95 TIME 1530

ITEM DESCRIPTION Tank #13

CUSTOMER Amen Environmental

JOB LOCATION/ADDRESS Red Hill tanks Farm

BILLING ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE HAWAII

P.O. NO. \_\_\_\_\_ JOB NO. \_\_\_\_\_

CONTACT Doug Fenstermaker PHONE NO. \_\_\_\_\_

TEST SPECIFICATIONS ASME Sect II Act 10

ACCEPTANCE STANDARDS No Emissions permitted

100% INSP.  SPOT INSP. \_\_\_\_\_

CUSTOMER INFO \_\_\_\_\_

PROC. NO. map-tp-kt-001 REV. NO. 1

METHOD USED:

2. BUBBLE  i. DIRECT

ii. VACUUM

SURFACE CONDITION Bare steel / coated after 6' up on 1<sup>st</sup> course  
(MUST BE THOROUGHLY CLEAN)

TEST USED: Vacuum box bubble emission SURFACE TEMP.: 80° F

BUBBLE SOLUTION: snoop solution VACUUM SOURCE: Air Ejector

SOAK TIME: 15 seconds VACUUM PSI ( 3 PSI) 5-25 in vacuum

APPLICATION: FLOWING  SPRAYING  BRUSHING

VACUUM BOX SIZE: 8"x36" - 9"x13" - 4"x6" - 4"x9" - 4"x13" - 6"x6"x7"

PRESSURE RETENTION TIME, ( 15 SEC.): 15 seconds minimum

IDENT. NO.	ACCEPT	REJECT	GRADE	INTERPRETATION	REMARKS
<u>1<sup>st</sup> Course welds</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<u>No relevant indications</u>	
<u>ring at top of 1<sup>st</sup> course</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>1<sup>st</sup> Course patch plates</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>ring at Btm of 1<sup>st</sup> course</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>floor Btm welds</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>Nozzle reaps to floor</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>Nozzles to reaps</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>Angle iron legs</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>tug points (pad eyes)</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	
<u>floor patch plates</u>	<input type="checkbox"/>	<input type="checkbox"/>		<u>" " "</u>	

SKETCH HERE OR SEE ATTACHED

ATTACHMENT  YES

NO

EXAMINED BY: [Signature]

DATE: 6-30-95



Inspections, Inc.

VACUUM LEAK TEST REPORT

INSPECTION DATE 6-30-95 TIME 1530  
 CUSTOMER Amea Environmental  
 BILLING ADDRESS \_\_\_\_\_  
 P.O. NO. \_\_\_\_\_ JOB NO. \_\_\_\_\_  
 CONTACT Doug Fenstermaker PHONE NO. \_\_\_\_\_

ITEM DESCRIPTION Tank #13  
 JOB LOCATION/ADDRESS Red Hill tank farm  
 CITY \_\_\_\_\_ STATE Hawaii

METHOD USED:

2. BUBBLE  i. DIRECT   
 ii. VACUUM

TEST SPECIFICATIONS Asme Sect V Art 10  
 ACCEPTANCE STANDARDS No emission permitted  
 100% INSP. X SPOT INSP. \_\_\_\_\_  
 CUSTOMER INFO \_\_\_\_\_  
 PROC. NO. mmp-fault-001 REV. NO. 1

SURFACE CONDITION Bare steel / coated after 6' on 1<sup>st</sup> course  
 (MUST BE THOROUGHLY CLEAN)

TEST USED: Vacuum box bubble emission  
 BUBBLE SOLUTION: Soap Solution  
 SOAK TIME: 15 seconds

SURFACE TEMP.: 80°F  
 VACUUM SOURCE: Air Ejector  
 VACUUM PSI ( 3 PSI) 5-25 in Vacuum

APPLICATION: FLOWING  SPRAYING  BRUSHING

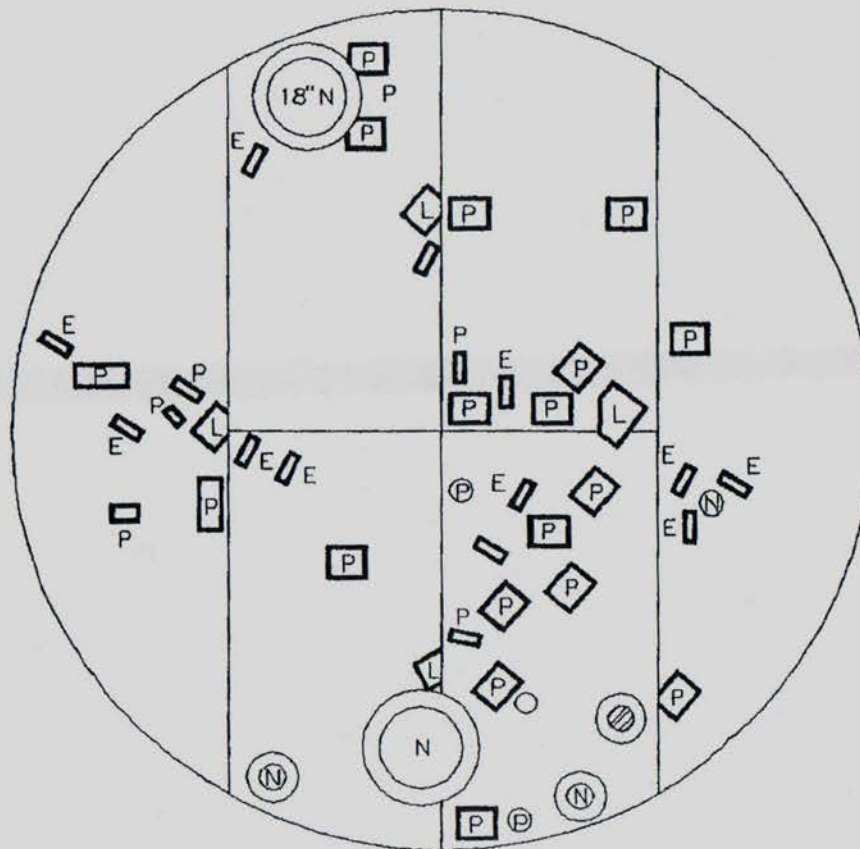
VACUUM BOX SIZE: 8"x36" - 9"x13" - 4x6" - 4"x9" - 4"x13" - 6"x6"x7"  
 PRESSURE RETENTION TIME, ( 15 SEC.): 15 seconds minimum

IDENT. NO.	ACCEPT	REJECT	GRADE	INTERPRETATION	REMARKS
<u>tower rebar welds</u>				<u>NO relevant indications</u>	
<u>Angle iron brackets</u>				<u>" " "</u>	
<u>18" Nozzle supports</u>				<u>" " "</u>	

SKETCH HERE OR SEE ATTACHED


ATTACHMENT  YES  
 NO

EXAMINED BY: [Signature]  
 DATE: 6-30-95



**LEGEND**

ITEM	DESCRIPTION
N	NOZZLE
P	PATCH
L	TOWER LEG
E	PAD EYE

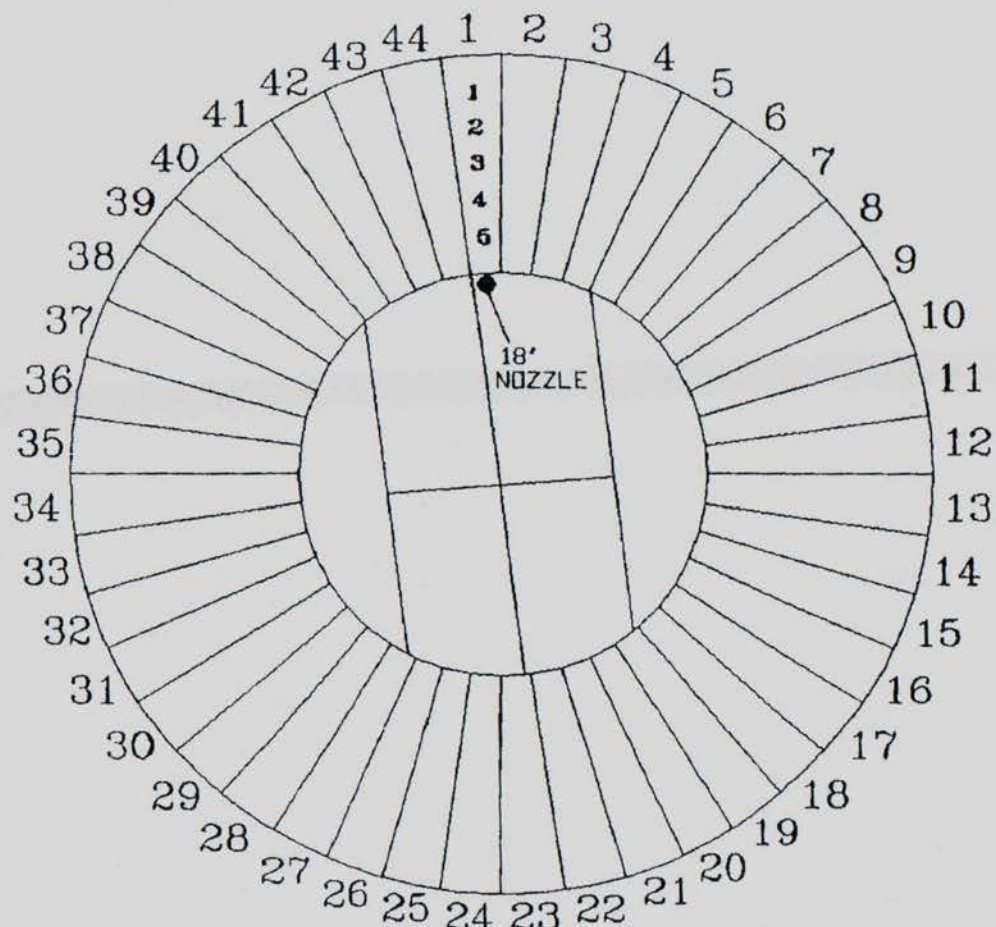
ITEM: TK-#13	CLIENT: <b>AMAN ENVIRONMENTAL</b>	TITLE: FLOOR LAYOUT
LOCATION: RED HILL TANK FARM	INSPECTOR: L. WOODMAN	INSPECTED BY: L. WOODMAN
INSPECTION: ULTRASONIC	INSP. DATE: 7/3/95	DRAWN BY: SLB
 <b>COMAM M.N.P. INSPECTIONS INC.</b>	COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA	DATE: 7/24/95
		REQUEST NO.:

NOTE: EACH WEDGE WAS ULTRASONIC THICKNESS TESTED ON A 36" CENTER DISTANCE AT LOCATION NUMBERED 1 THROUGH 5

**LEGEND**

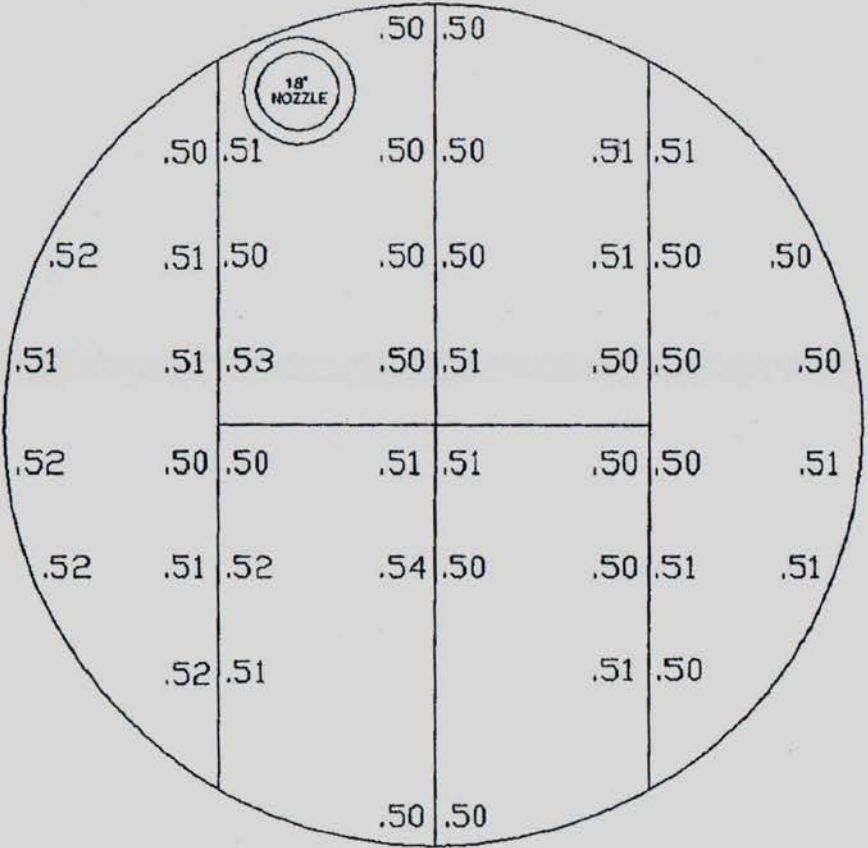
BY READINGS ARE LISTED FROM THE OUTSIDE EDGE TO THE CENTER  
ALL ULTRASONIC READINGS LISTED IN INCHES  
LARGEST READINGS FOR COMPASS POINTS ARE LISTED IN RED


POINTS	1	2	3	4	5	POINTS	1	2	3	4	5
1	.25	.25	.25	.25	.25	23	.25	.25	.25	.26	.22
2	.23	.24	.24	.24	.25	24	.25	.26	.26	.26	.25
3	.24	.23	.24	.24	.24	25	.25	.26	.25	.26	.25
4	.25	.25	.25	.25	.25	26	.25	.28	.26	.25	.25
5	.25	.25	.24	.25	.25	27	.24	.25	.25	.25	.24
6	.24	.25	.25	.25	.25	28	.25	.25	.25	.25	.25
7	.25	.25	.25	.25	.24	29	.24	.26	.27	.25	.24
8	.25	.25	.24	.25	.25	30	.24	.25	.25	.25	.24
9	.24	.25	.25	.25	.25	31	.24	.25	.25	.25	.26
10	.24	.24	.24	.24	.24	32	.25	.25	.24	.25	.25
11	.24	.25	.25	.25	.24	33	.25	.26	.25	.23	.25
12	.24	.24	.24	.24	.23	34	.25	.25	.25	.25	.24
13	.25	.25	.25	.24	.25	35	.25	.26	.25	.25	.25
14	.25	.25	.25	.25	.23	36	.25	.26	.25	.25	.25
15	.25	.25	.25	.25	.22	37	.24	.25	.24	.24	.24
16	.25	.25	.25	.25	.25	38	.25	.25	.25	.25	.26
17	.25	.25	.25	.24	.24	39	.24	.25	.26	.25	.25
18	.24	.24	.24	.24	.24	40	.25	.26	.25	.25	.25
19	.25	.25	.25	.25	.25	41	.25	.25	.25	.25	.25
20	.25	.25	.25	.24	.24	42	.24	.25	.25	.24	.25
21	.25	.25	.26	.25	.25	43	.24	.25	.25	.24	.25
22	.25	.24	.24	.24	.25	44	.25	.25	.25	.25	.25



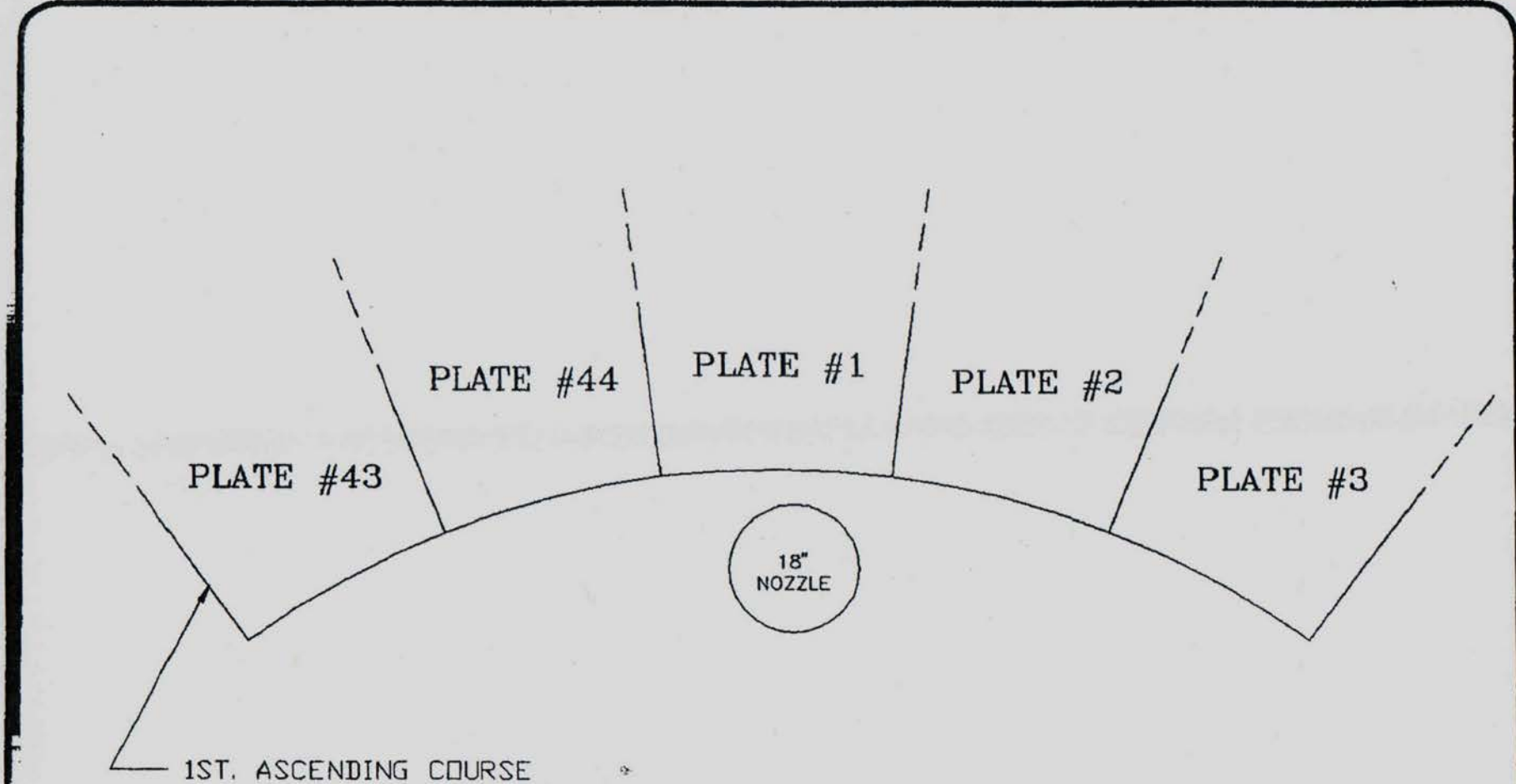
ITEM: TK-#13	CLIENT: <b>AMAN ENVIRONMENTAL</b>	TITLE: 1ST. ASCENDING COURSE ULTRASONIC READINGS
LOCATION: RED HILL TANK FARM	DRAWN BY: L.W.	INSPECTED BY: L. WOODMAN
INSPECTION: ULTRASONIC	DATE: 7/3/95	DATE: 7/24/95
COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA.		REQUEST NO.:





ITEM: TK-#13		CLIENT: AMAN ENVIRONMENTAL		TITLE: FLOOR ULTRASONIC READINGS	
LOCATION: RED HILL TANK FARM		INSPECTOR: L. WOODMAN		DATE: 7/24/95	
INSPECTION: ULTRASONIC		RISP. DATE: 7/3/95		REQUEST NO.:	
 CONAN M.N.P. INSPECTIONS INC.		COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA.		DRAWN BY: BLS	





ITEM: TK-#13		CLIENT:		TITLE:	
LOCATION: RED HILL TANK FARM	DIAMETER:	AMAN ENVIRONMENTAL		FLOOR PLATE NUMBERING DETAIL	
INSPECTION: PLATE DETAIL	INSP. DATE: 7/3/95				
 CONLAN M.E.P. INSPECTIONS INC.		COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA.		INSPECTED BY: L. WOODMAN	REQUEST NO.:
		DRAWN BY: BLL	DATE: 7/24/95		

top



P - Pit  
 H - Hole in Coating  
 i - Surface patch  
 C - Coated pitting

edge of  
 Coatings

Weld

Bottom



M.M.P. Quality Inspections, Inc.

PROJECT: Red Hill tank 13 310.597.3932

ITEM: Plate #1

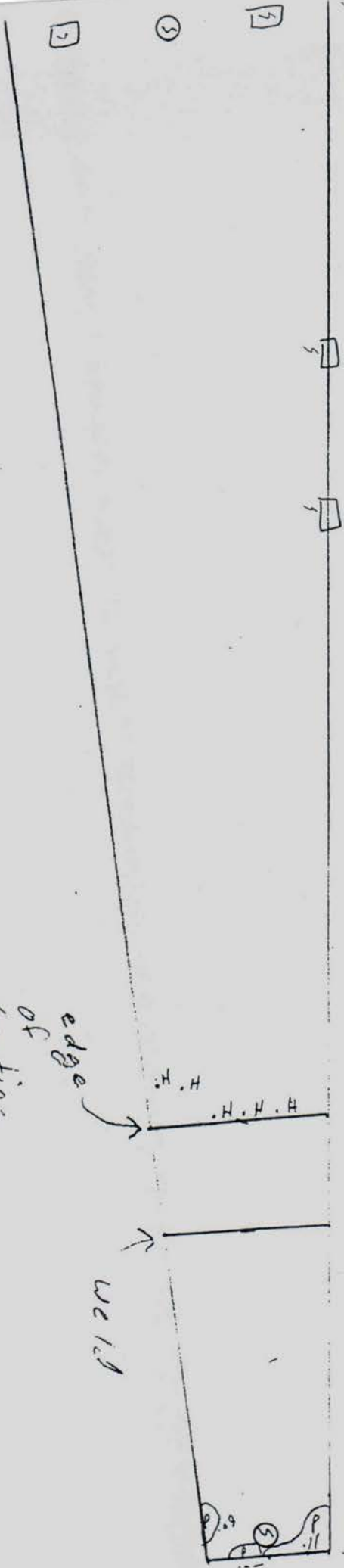
BY: L. Woodman DATE: 7-3-95

CLIENT: Amer. Environmental

REMARKS


NO 5061

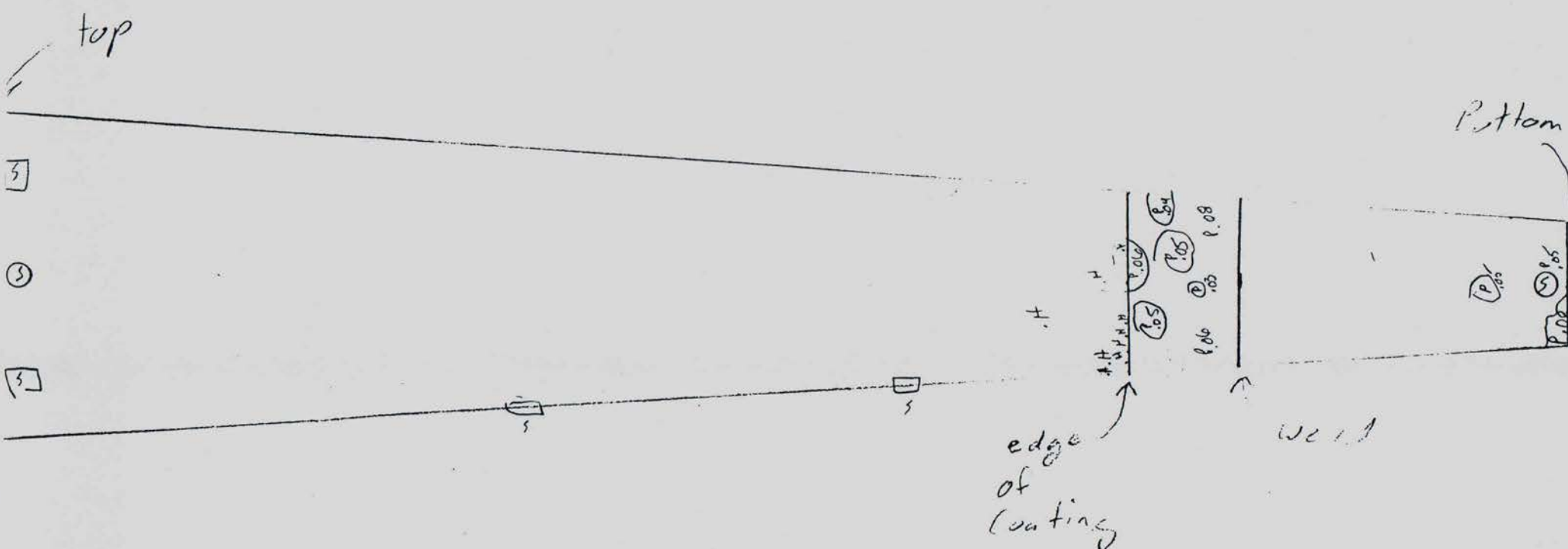
top



P - Pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting

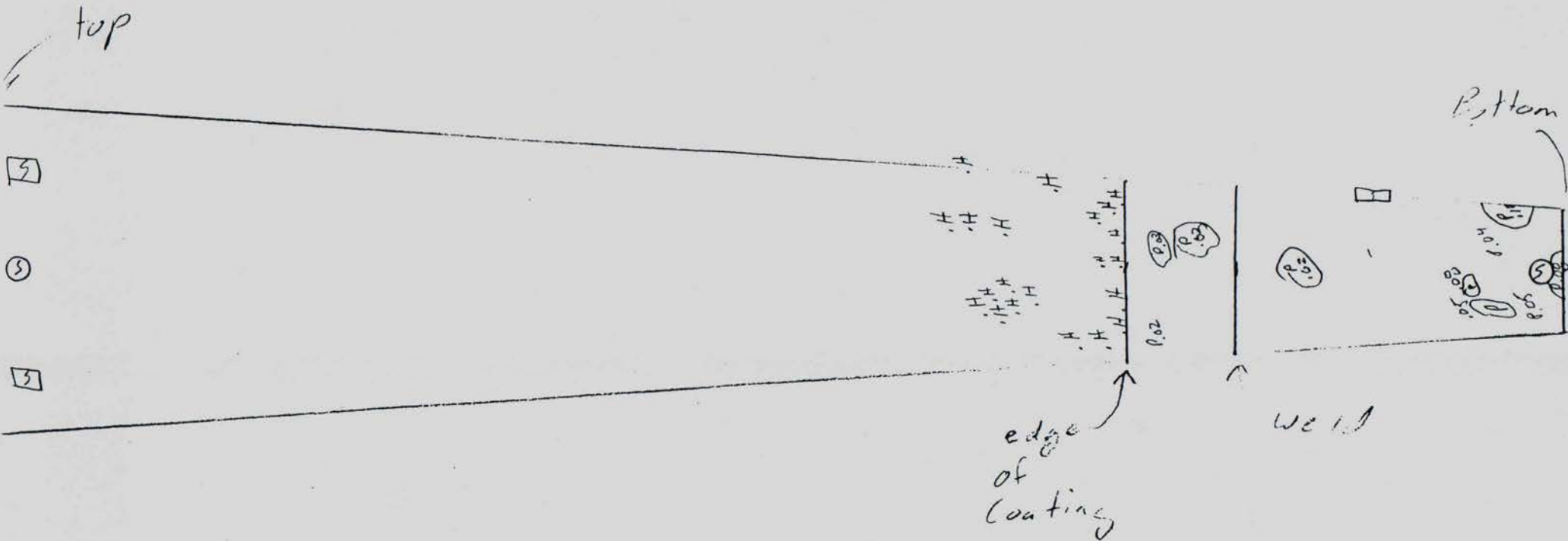
NO 5061

 <b>M.M.P. Quality Inspections, Inc.</b> 310-597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 2
BY:	L Woodman
REPORT NO.:	
CLIENT:	Ames Environmental
DATE:	7-3-95
REMARKS:	
SHEET	OF




P - Pit  
 H - Hole in Coating  
 S - Surface patch  
 C - Coated pitting

 <b>M.M.P. Quality Inspections, Inc.</b>		310-597-3932
PROJECT:	Red Hill tank 13	
ITEM:	Plate #3	
BY:	L Woodman	DATE: 7-3-95
REPORT NO.:		
CLIENT:	Amen Environmental	
REMARKS:		
	SHEE	OF



P - Pit  
 H - Hole in Coating  
 S - Surface patch  
 C - Coated pitting

 <b>M.M.P. Quality Inspections, Inc.</b>		310-597-3932
PROJECT:	Red Hill tank 13	
ITEM:	Plate #4	
BY:	L. Woodman	DATE: 7-3-95
REPORT NO.:		
CLIENT:	Amen Environmental	
REMARKS:		
		SHEET OF

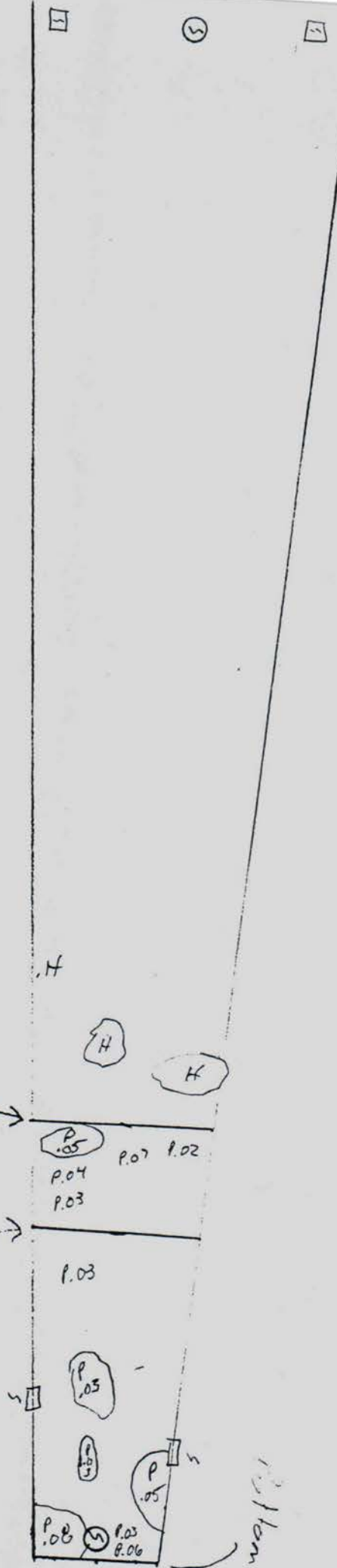
top

P - Pit  
H - Hole in coating  
S - Scar face patch  
C - Coated pitting

edge of coating

weld

bottom



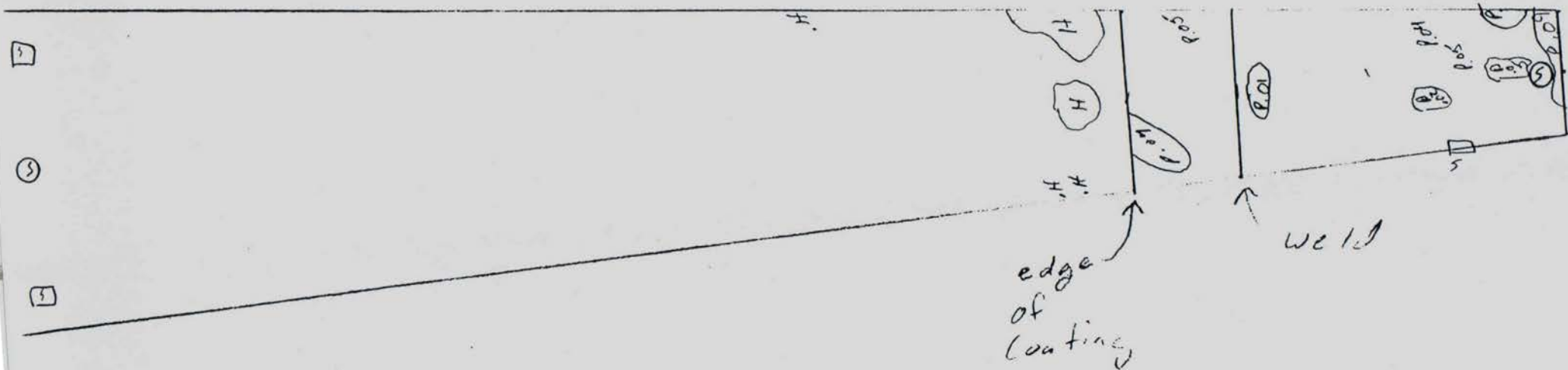
M.M.P. Quality Inspections, Inc.

310.597.3932


PROJECT:	Red Hill tank 1's
ITEM:	Plate #5
BY:	L Woodman
REPORT NO.:	
CLIENT:	Arco Environmental
DATE:	7-3-95
REMARKS:	

top

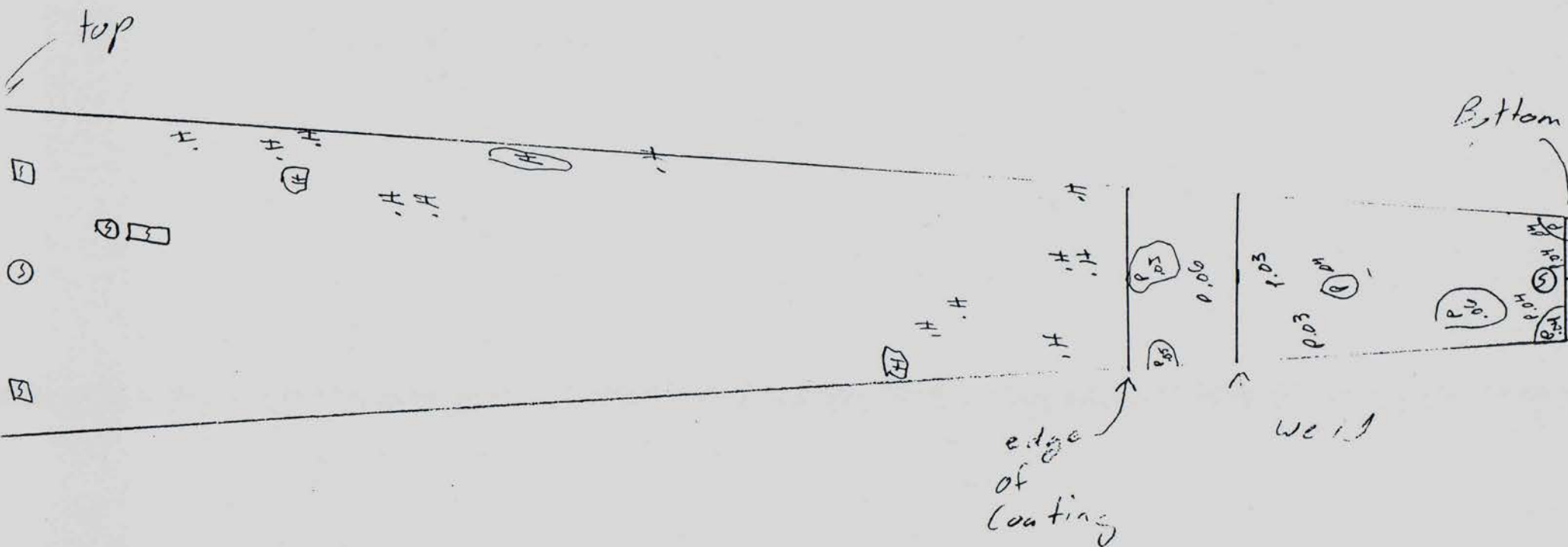
Bottom




P - Pit  
 H - Hole in Coating  
 S - Surface patch  
 C - Coated pitting

 <b>M.M.P. Quality Inspections, Inc.</b>		310-597-3932
PROJECT	Red Hill tank 13	
ITEM:	Plate # 6	
BY:	L. Woodman	DATE: 7-3-95
REPORT NO.:		
CLIENT:	Amen Environmental	
REMARKS:		
	SHEET	OF

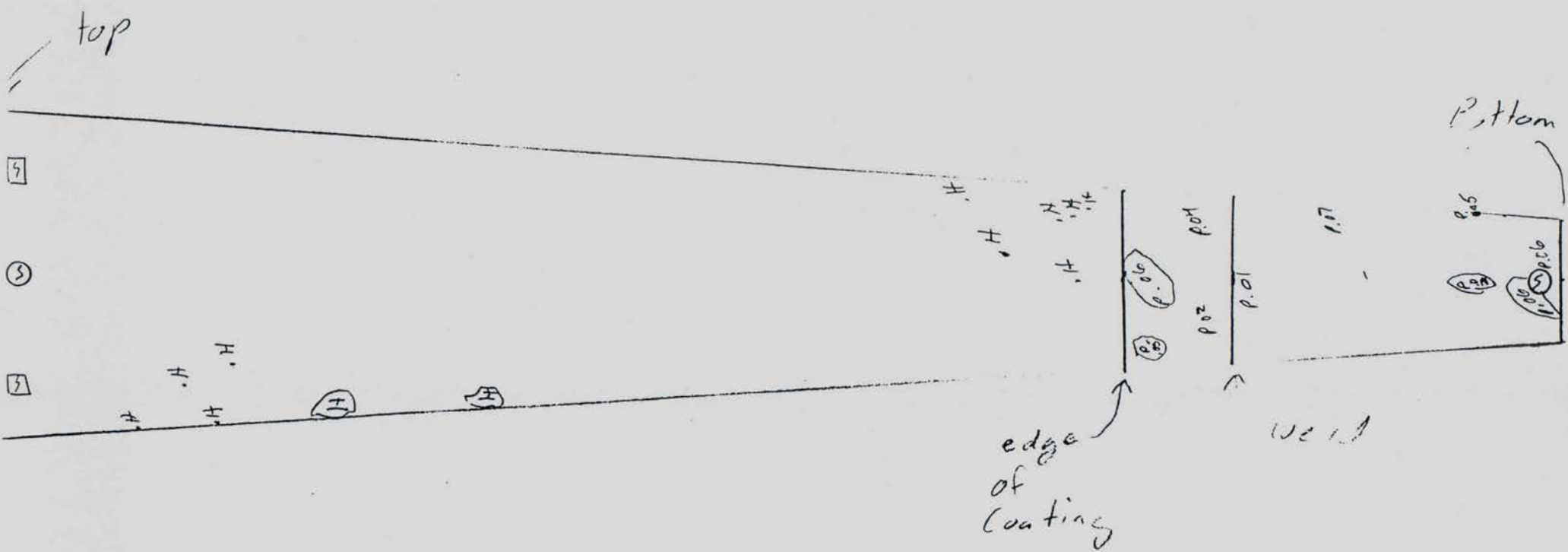
No 5061




P - Pit  
 H - Hole in Coating  
 S - Surface patch  
 C - Coated pitting

 <b>M.M.P. Quality Inspections, Inc.</b>		310-597-3932
PROJECT:	Red Hill tank 13	
ITEM:	Plate #7	
BY:	L Woodman	DATE: 7-3-95
REPORT NO.:		
CLIENT:	Aman Environmental	
REMARKS:		
		SHEET OF





P - Pit  
 H - Hole in Coating  
 S - Surface patch  
 C - Coated pitting

 <b>M.M.P. Quality Inspections, Inc.</b>		310/597-3932
PROJECT:	Red Hill tank 13	
ITEM:	Plate # 8	
BY:	L Woodman	DATE: 7-3-95
REPORT NO.:		
CLIENT:	Amen Environmental	
REMARKS:		
		SHEET OF

top

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③

③

H.

H.

H.

3

H.

H.

H.

P.05

P.05

P.05

P.05

P.05

P.05

P.05

P.05

P.05

edge of coating

weld

Bottom

P - Pit  
H - Hole in coating  
S - Scar face patch  
C - Coated pitting



M.M.P. Quality Inspections, Inc.

PROJECT: Red Hill tank 13 310.597.3932

ITEM: Plate # 9

BY: L Weedman

REPORT NO: DATE: 7-3-95

CLIENT: Amer Environmental

REMARKS:

top

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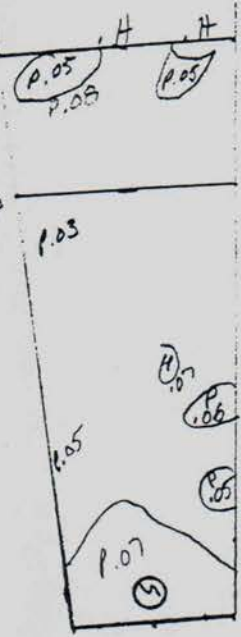
H.

P - pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting

edge  
 of  
 coating

Weld

Bottom

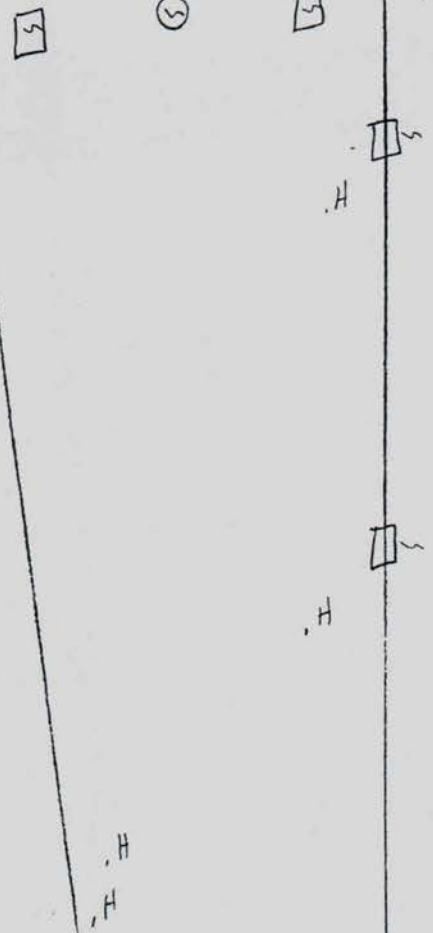


M.M.P. Squally Inspections, Inc.

310.597.3932

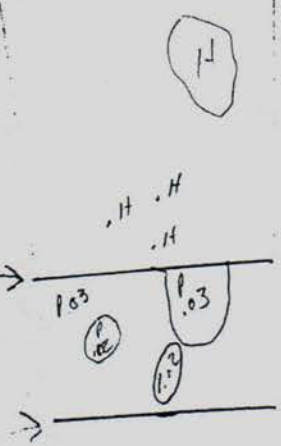
PROJECT:	Red Hill tank 13
ITEM:	Plate # 10
DATE:	7-3-95
BY:	L. Woodman
REPORT NO.:	
CLIENT:	Area Environmental
REMARKS:	

top



P - Pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting

edge of coating




weld



Bottom

NO 5061

 <b>M.M.P. Quality Inspections, Inc.</b> 310.597.3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 11
BY:	L. Woodman
REPORT NO.:	
CLIENT:	Arco Environmental
REMARKS:	
SHEET:	OF

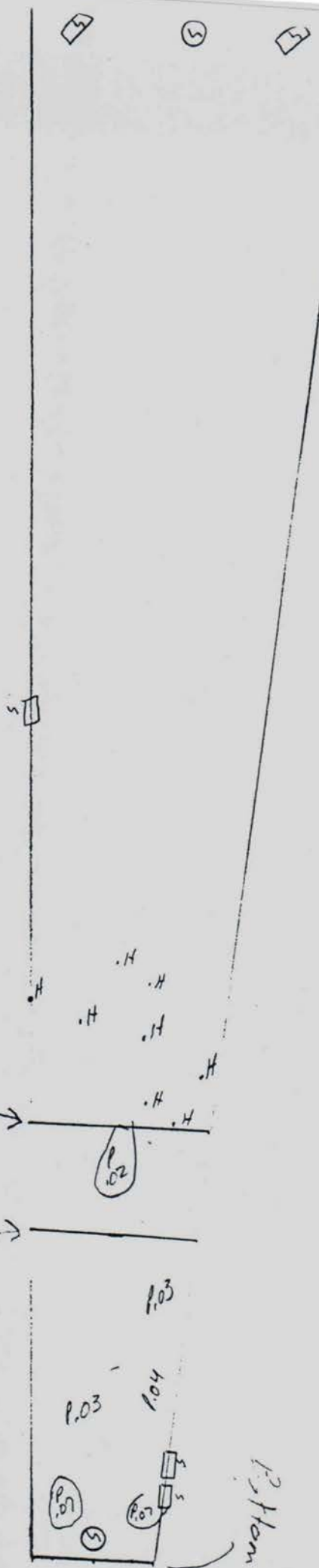
top

P - Pit  
H - Hole in Coating  
S - Scar face patch  
C - Coated pitting

edge of coating

weld

Bottom



M.M.P. Quality Inspections, Inc.

310.597.3932

PROJECT:	Red Hill tank 13
ITEM:	Plate #12
BY:	L. Wadman
REPORT NO.:	
DATE:	7-3-95
CLIENT:	Amen Environmental
REMARKS:	

NO 5061

top

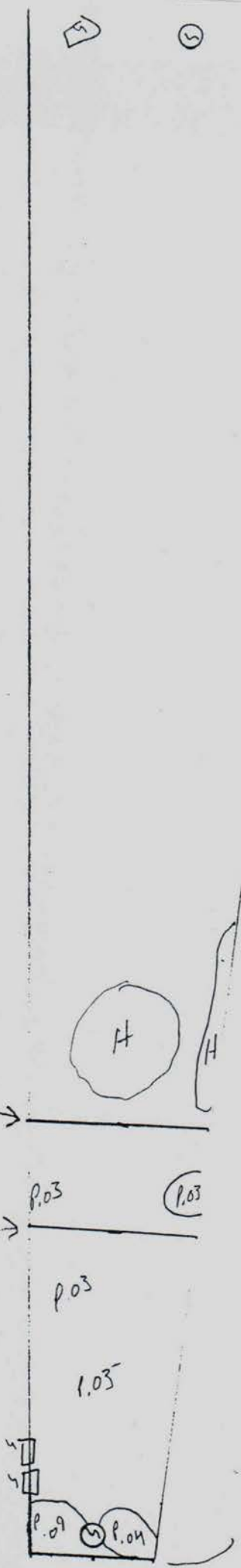
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⑤  
⑤

P - pit  
H - Hole in coating  
S - surface patch  
C - coated pitting

edge of coating

weld

Bottom



M.M.P. Quality Inspections, Inc.

PROJECT: Red Hill tank 13 310.597.3932

ITEM: Plate # 13

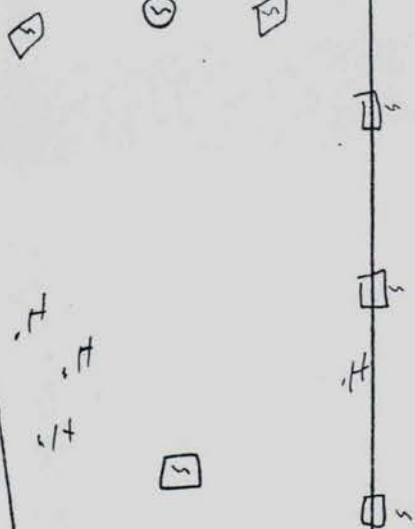
BY: L. Woodman DATE: 7-3-95

CLIENT: Area Environmental

REMARKS:

No 5061

top

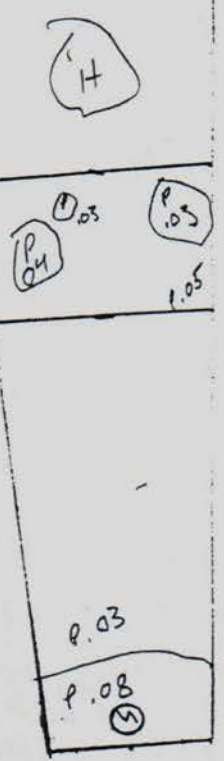


P - Pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting

edge of coating

weld

Bottom



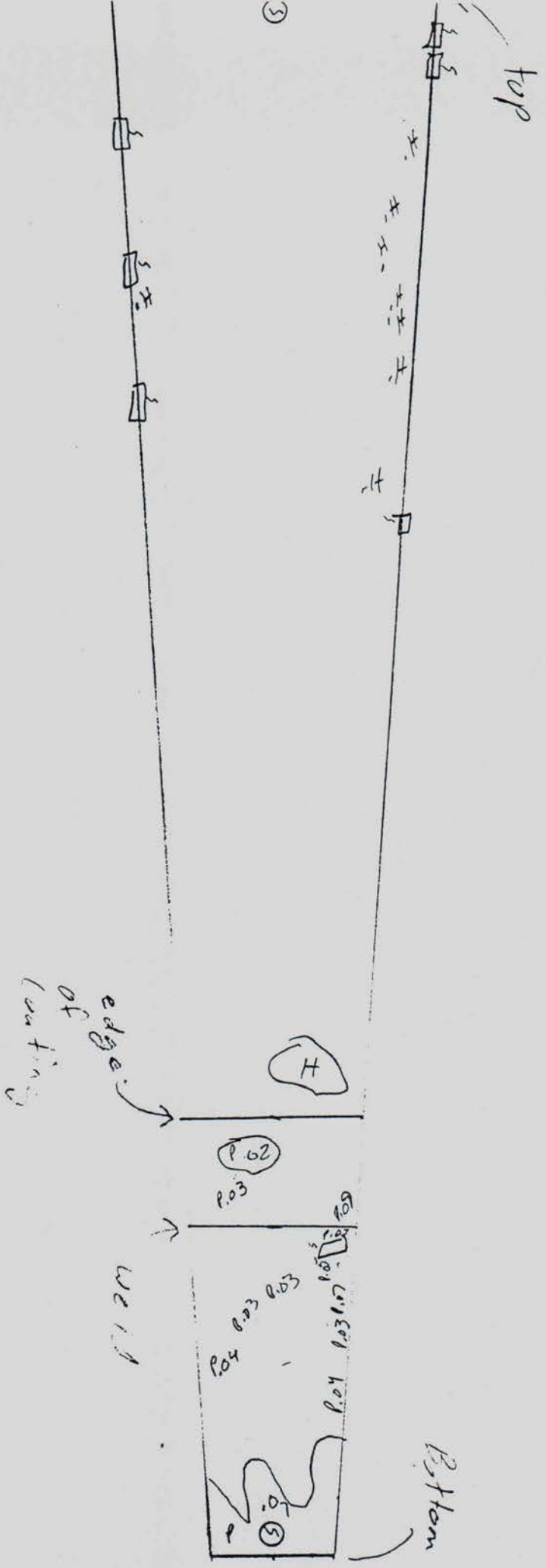
M.M.P. Quality Inspections, Inc.

310.597.3932

PROJECT:	Red Hill tank 13
ITEM:	Plate #14
BY:	L Woodman
REPORT NO.:	
CLIENT:	Ames Environmental
REMARKS:	
SHEET	OF

No 5061

P - pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting



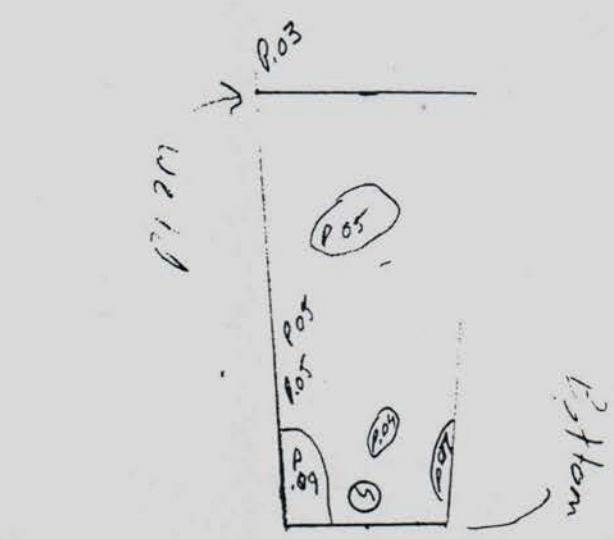
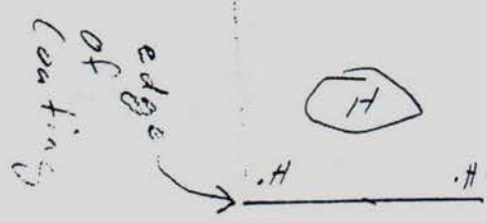
M. M. P. Quality Inspections, Inc.	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 15
BY:	L. Woodman
REPORTING NO.:	
CLIENT:	Amen Environmental
REMARKS:	
DATE:	7-3-95
310.597.3932	




top



P - pit  
 H - Hole in coating  
 S - Scar face patch  
 C - coated pitting



NO 5061

 <b>M.M.P. Quality Inspections, Inc.</b> 310.597.3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate #16
BY:	L. Woodman
REPORT NO.:	
CLIENT:	Amen Environmental
REMARKS:	
DATE:	7-3-95
SHEET	OF

top

H.  
H.

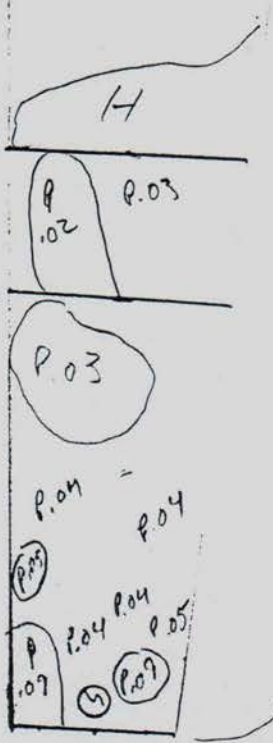
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P - Pit  
H - Hole in Coating  
S - Scar face patch  
C - Coated pitting

edge  
of  
Coating

Weld

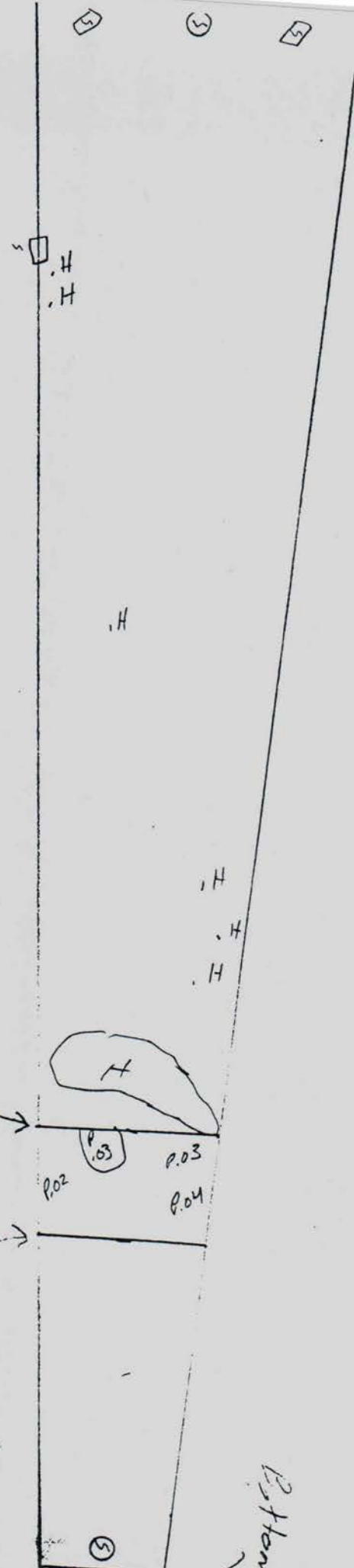
Bottom



M.M.P. Quality Inspections, Inc.

PROJECT:	Red Hill tank 13	310/597-3932
ITEM:	Plate # 17	
BY:	L. Woodman	
REPORT NO.:		
DATE:	7-3-95	
CLIENT:	Amen Environmental	
REMARKS:		

top



P - Pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting

edge of coating  
 weld



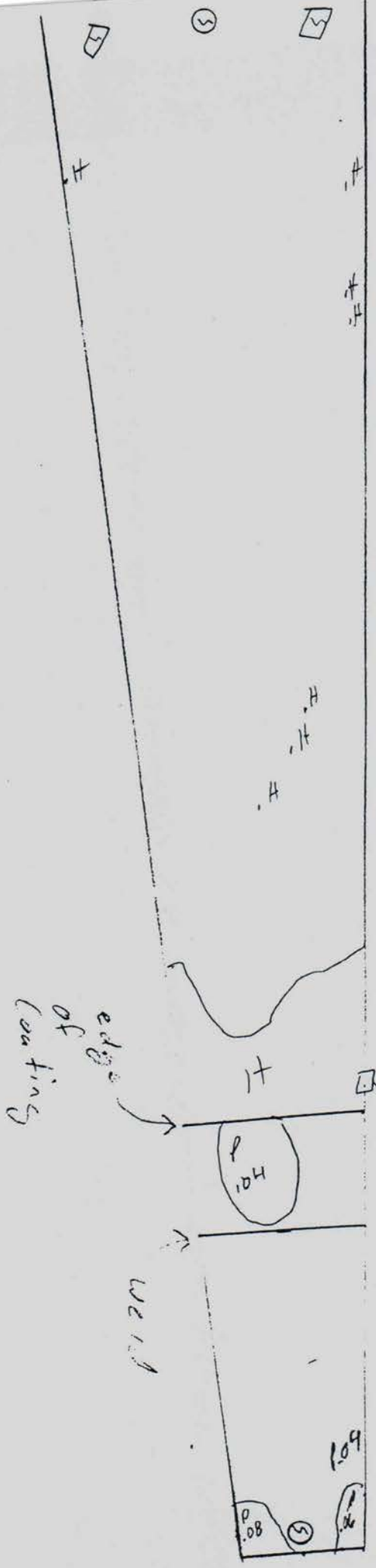
M.M.P. Quality Inspections, Inc.

310-597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate # 18
BY:	L. Woodman
REPORT NO.:	
DATE:	7-3-95
CLIENT:	Area Inspection
REMARKS:	


NO 5061

top



P - Pit  
 H - Hole in coating  
 S - Scar face patch  
 C - Coated pitting

NO 5061

 <b>M.M.P. Quality Inspections, Inc.</b> 310:597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 19
DATE:	7-3-95
BY:	L. Woodman
REPORT NO.:	
CLIENT:	Armen Environmental
REMARKS:	
SHEET	OF

**Engineering Report**

**Red Hill Tank #10**

prepared for

**Naval Supply Center  
Pearl Harbor, Hawaii**

**PRL 96-21  
Emergency Repairs for Red Hill Tanks**

**Contract No N00604-97-R-0013**

Prepared by:

**Mid Atlantic Environmental, Inc.  
5252 Challedon Drive  
Virginia Beach, VA 23462**

# Table of Contents

1	CERTIFICATION
2	INTRODUCTION
3	REFERENCES
4	TANK DESCRIPTION
5	REPAIR HISTORY
6	TESTING CONDUCTED
7	TESTING RESULTS
8	REPAIR SPECIFICATIONS
9	RECOMMENDED REPAIRS
10	AS-BUILT DRAWINGS
11	PHOTOGRAPHS
12	CONTRACT DRAWINGS

**Section 1.0**  
**CERTIFICATION**

## 1.0 Certification

1.1 **Certification:** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

*Thomas G. Kitchen*  
No. 17246  
REGISTERED PROFESSIONAL ENGINEER  
API - 658 Certification # 1891  
THOMAS G. KITCHEN



**Section 2**

**INTRODUCTION**

## 2.0 Introduction

2.1 Mid Atlantic Environmental, Inc. conducted an inspection on Tank #16 at the Red Hill Underground Storage Facility, Pearl Harbor, Hawaii. This inspection was conducted in accordance with the scope of work identified by Contract Number N00604-97-R-0013, PRL 96-21, titled "Emergency Repair for Red Hill Tanks."

### 2.2 Inspection Support

2.2.1 Access to the inside surface of the tank was provided through the use of the booms and power climber basket shown on NAVFAC Drawing Number 7927650.

2.2.2 Personnel support was provided by Dames and Moore. This support included:

2.2.2.1 Hole watch,

2.2.2.2 Boom operator,

2.2.2.3 An assistant, either in the basket or on the tank bottom.

### 2.3 Phase 1

2.3.1 The initial phase of the inspection was to inspect the interior of the tank to identify and make repair recommendations for any of the following defects:

2.3.1.1 Deterioration and damage to the coating on the interior of the tank shell plates and welds.

2.3.1.2 Pits on the interior of the tank shell plates and welds.

2.3.1.3 Holes through the tank shell plates and welds.

2.3.1.4 Non-visible holes and cracks in the tank shell plates and welds that are identifiable by the nondestructive test or the visible seepage of fuel and/or water back into the tank.

2.3.1.5 Suspect areas, such as blisters in the tank shell plates.

### 2.4 Phase 2

2.4.1 The second phase of the inspection was a test of the tank bottom after removal of the coating. The following tests were conducted:

2.4.1.1 Sample ultrasonic thickness (UT) measurements were taken on the bottom plates and the first ascending plates,

2.4.1.2 Vacuum box testing of all welds was conducted on the bottom plates and the first ascending plates,

2.4.1.3 Testing for the presence of chlorides, soluble ferrous and ferric salts, alkaline/acidic contaminants and flame sprayed aluminum was conducted on the tank bottom.

**Section 3**

**REFERENCES**

### 3.0 References

#### 3.1 American Petroleum Institute:

- 3.1.1 API Standard 650, Welded Steel Tanks for Oil Storage.
- 3.1.2 API Recommended Practice 651, Cathodic Protection of Aboveground Petroleum Storage Tanks.
- 3.1.3 API Recommended Practice 652, Lining of Aboveground Petroleum Storage Tank Bottoms.
- 3.1.4 API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction.

#### 3.2 American Society of Mechanical Engineers Codes:

- 3.2.1 ASME Boiler and Pressure Vessel Code; Section V, Non Destructive Examination.
- 3.2.2 ASME Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications.

#### 3.3 Code of Federal Regulations:

- 3.3.1 29 CFR 1910, Permit-Required Confined Spaces for General Industry.

#### 3.4 National Association of Corrosion Engineers:

- 3.4.1 NACE Recommended Practice, RP0184-91, Repair of Lining Systems.
- 3.4.2 NACE Recommended Practice, RP0193-93, External Cathodic Protection of On-Grade Metallic Storage Tank Bottoms.
- 3.4.3 NACE Recommended Practice, RP0288-94, Inspection of Linings on Steel and Concrete.

#### 3.5 National Fire Protection Association:

- 3.5.1 NFPA-30, Flammable and Combustible Liquids Code.

**Section 4**

**TANK DESCRIPTION**

#### 4.0 TANK DESCRIPTION

The tank is a vertical cylinder, 257 feet high and 100 feet in diameter with both upper and lower domes. Each dome is a 50 foot radius hemisphere. The tank is underground and encased in concrete. Tank shell, upper and lower domes are 1/4 inch carbon steel plate, except the 20 foot flat bottom which is 1/2 inch thick.

Owner/Operator:	Fleet and Industrial Supply Center	
Location:	Pearl Harbor, HI	
Tank Number:	16	
Service:	Fuel Storage	
Capacity:	300,000 Bbl	
Diameter:	100 feet	
Shell Height:	155 feet	
Configuration:	Vertical	
Fill Height:	235 feet above flat bottom	
Foundation:	Concrete	
Construction:	Bottom:	Butt Welded
	Lower Dome:	Butt Welded
	Shell:	Butt Welded
	Upper Dome:	Butt Welded
Age:	56 years	
Specific Gravity:	1.00	
Seismic Zone:	Zone 1	
Construction Code:	Unknown	

**Section 5**

**REPAIR HISTORY**

RED HILL TANK NO. 10  
PRODUCT: DFM

<u>DATE</u>	<u>REMARKS</u>
10/2/63	Put in floats and welding brackets to secure 3/4" pipe from telltale #4 to catwalk entrance. Telltales plugged following inspection after cleaning.
10/3/63	Completed piping on telltale #4 in tank. Ready for testing.
10/7/63	Made air test of 2-1/2 psi on telltale #4.
10/11/63	Calibrated gauge.
4/21/64	Repaired broken tape.
3/3/67	Replaced 6" standard 150 lbs. steel valve (new). Old valve frozen and valve stem bent. Labor Cost: \$22. Material: \$185
3/3-21/67	Fished float from tank bottom and installed new float. Labor Cost: \$174. Material: \$65
3/67	Installed turn buckles at top of guide wires for float.
3/3/67	Removed all gear from tank and took to maintenance shop for cleaning.
3/6/67	Machined new manhole cover for tank.
3/9/67	Checked and found counterweight required an additional 1-1/2 lbs. Machined additional weight to be installed.
3/10/67	While attempting to install additional weight to counterweight, upon removing cover, chain cable jumped, causing counterweight to drop to bottom of tank and breaking cable. Tank gear was set up immediately to start washing down catwalk and elevator shaft.
3/15/67	Tested elevator with 920 lbs. Washed side wall of tank using elevator.
3/17/67	Washed, checked and inspected tank bottom. No signs of any new dents or splits. Machined cracked 52 lbs. counterweight.
3/20/67	Cleared and tested plugged collector ring.
3/21/67	Wire brushed bad pits on tank bottom and painted same with tarset. Hung back counterweight and checked operation of float.
3/10/72	Emptied and cleaned for conversion.



RED HILL TANK NO. 10  
PRODUCT: DFM

<u>DATE</u>	<u>REMARKS</u>
3/22-4/10/72	Cleaned tank (252 hours). Labor Cost: \$1,174.32. Converted from NSFO to Navy Distillate.
6/29/72	Topped off with Navy Distillate.
1/73	Started to empty tank. Suspected leak. No sign of oil from telltale.
8/22/73	Emptied tank into mainline. Started cleaning.
9/1/73	Emptied and cleaned for conversion. Telemeter system installed. Converted to DFM.
9/4/73	Installed 6" valve on drain line.
11/14/73	Started receiving Navy Distillate from Tank 7 due to leak.
4/20/76	Telltale #1 started to leak--60 drops per minute.
4/23/76	Started to drain pits into Tank 13.
5/5/76	Emptied and cleaned tank for repairs.
5/28/76	Leak found on collector ring.
5/4/76	Tank removed from service due to leakage.
9/21/76	PWC working in tank. Tank emptied and washed down for contractors.
12/15/77	PWC Pearl commenced repairs to tank.
10/25/78	Contractor began work. Removed motorized valves and installed blanks.
4/9/80	Contractor notified ROICC that tank ready to be returned to service.
4/11/80	Began refilling tank for leak test.

DATE                      REMARKS

LEAK TEST DATA

(Note that leak rate is based on data from telemetering.)

<u>DATE</u>	<u>FILL LEVEL</u>	<u>LEAK RATE (GAL/DAY)</u>
4/11-7/22/80	Various 188-235	Bad data due to leaking skin valves
7/22-8/21/80	235.0	13.3
9/10-10/4/80	235.0	12.8
10/4-11/12/80	235.0	2.4
11/12/80-1/9/81	235.0	4.7
1/9-10/81	242.1	1206
1/10-12/81	195.4	NIL
1/12-15/81	235.1	NIL
1/15-19/81	236.1	NIL
1/19-22/81	237.1	NIL
1/22-26/81	238.0	NIL
1/26-29/81	238.0	NIL
1/29-30/81	240.0	693
1/30-2/10/81	239.0	15.0

1/9/81                      Fill level raised from 235.0 ft. to 242.1 ft. to test upper dome. Severe leak somewhere between 235.0 ft. and 242.1 ft. Fuel ran out of concrete near first platform on stairway to top of dome.

1/29/81                      Leak located between 239 ft. and 240 ft. level.

10/9/81                      Completed draining DFM from tank.

10/14/81                      Flushed with JP-5 and drained.

10/19/81                      Started refilling tank with JP-5.

4/1/83                      Tank is still being tested for leaks. If necessary, the contractor will return in August or September 1983 for a final rework.

**Section 6**  
**TESTING CONDUCTED**

## 6.0 Testing Conducted

6.1 General: The internal inspection was conducted to gather the data necessary for the assessment of the interior of the tank. This data takes into account previous inspection information. An evaluation was conducted on the tank by means of visual inspection, NDE, including Ultrasonic, Dye Penetrant, and Vacuum Box testing. These results have been evaluated and are contained in the body of this report. Corrosion rates were established. A complete description of unusual conditions, as well as corrective action procedures is also included in the body of this report. All repair data is included in the body of this report.

6.2 Visual: To verify that the angle of vision and level of lighting were adequate for the visual inspection, a 1/32 inch wide black line on an 18% neutral grey background was used as a test guide.

6.3 Surface contamination of the tank bottom: After the tank bottom was brush blasted testing was performed for the presence of chlorides, soluble ferrous and ferrous salts, alkaline/acid contaminants per NACE Bulletin No.24118 using a KATA SCAT Kit (Surface Contamination Analysis Test Kit). The bottom was tested for the presence of flame sprayed aluminum using a caustic soda method.

**Section 7**  
**TESTING RESULTS**

## 7.0 TESTING RESULTS

### 7.1 Results of Internal Visual Inspection:

7.1.1 A total of seventy one (71) defects were identified on the interior of the tank. These repairs are identified and described in section 9 of this report.

### 7.2 Results of Bottom Inspection:

7.2.1 The original bottom thickness was determined to be 0.500 inches and the first ascending plate to be 0.250 inches. The ultrasonic thickness measurements taken determined that backside corrosion in this area is not a problem. Pitting is not a problem since the remaining metal thickness is well within the 0.10 inches of metal required by API Standard 653 by the next inspection. Also the coating to be applied to the tank bottom should prevent any increase in pit depth. The surface contamination test results yielded 0% ferrous salts, 32 ppm NaCl and a pH level of 7. These results are within the limits set forth in the KTA SCAN Kit technical data and the NACE technical committee report on Surface Preparation of Contaminated Steel Surfaces. The Caustic Soda test of the tank bottom indicated that all Flame Sprayed Aluminum had been removed. By visual inspection, scattered pitting was observed on the tank bottom and first ascending plates. The deeper pits were measured and recorded on the Bottom Layout With Pit Indications drawing. Pictures of typical pitting on the first ascending plate are included in Section 11 of this report.

## 7.3 Engineering Calculations:

## 7.4 KTA SCAT Kit Calculation Sheet:

Calculation	Determination 1
Reading from Titratch Strip	0.005 ppm
(A) x milliliters of water	0.05 micrograms Cl
Calculate the area swabbed ( $\text{cm}^2 = \text{in}^2 \times 2.54^2$ )	103 $\text{cm}^2$
(microgram Cl) / (area swabbed)	0.0005 micrograms/ $\text{cm}^2$ Cl
((micrograms) / ( $\text{cm}^2$ )) x 10	0.005 milligrams/ $\text{cm}^2$ Cl

4 inch x 4 inch area tested

10 ml solution used

Results:	Fe test = 0	Satisfactory
	ph = 7	Satisfactory
	Quantum unit test = 1.2	Satisfactory
	% NaCl less than 0.005%	Satisfactory
	ppm less than 32	Satisfactory

### 7.3 Engineering Calculations (cont'd):

#### 7.4.2 Minimum Thickness for Tank Bottom and Remaining Life:

$$MRT_1 = T_o - GC_a - StP_a - UP_m - (StP_r + UP_r + GC_r)O_{r1}$$

$$MRT_2 = T_o - GC_a - StP_m - UP_a - (StP_r + UP_r + GC_r)O_{r2}$$

$$O_{r1} = \frac{T_o - GC_a - StP_a - UP_m - MRT_1}{(StP_r + UP_r + GC_r)}$$

$$O_{r2} = \frac{T_o - GC_a - StP_m - UP_a - MRT_2}{(StP_r + UP_r + GC_r)}$$

Where:

$MRT_1$  or  $MRT_2$  = Minimum remaining thickness at the end of the in-service period of operation, in inches.  $MRT_1$  represents minimum remaining thickness due to average internal pitting and maximum external pitting.  $MRT_2$  represents minimum remaining thickness due to maximum internal pitting and average external pitting.

$T_o$  = Original plate thickness, in inches.

$StP_a$  = Average depth of internal pitting, in inches, measured from the original thickness.

$StP_m$  = Maximum depth of internal pitting remaining in bottom plates after repairs are completed, in inches, measured from the original thickness.

$UP_a$  = Average depth of underside pitting, in inches.

$UP_m$  = Maximum depth of underside pitting, in inches.

$StP_r$  = Maximum internal pitting rate in inches per year;  $StP_r = 0$  if tank bottom is internally lined.

$UP_r$  = Maximum underside pitting rate, in inches per year;  $UP_r = 0$  if tank bottom is cathodically protected.

$O_{r1}$  or  $O_{r2}$  = Anticipated in-service period of operation (normally 10 years).

$GC_a$  = Average depth of generally corroded area, in inches.

$GC_r$  = Maximum rate of corrosion, in inches per year.



## 7.4 Engineering Calculations (cont'd):

### 7.4.2 Minimum Thickness for Tank Bottom and Remaining Life (cont'd):

#### PRESENT CONDITION:

$$\begin{aligned}
 MRT_1 \text{ or } MRT_2 &= 0.1 \text{ inches} \\
 T_o &= 0.5 \text{ inches} \\
 StP_a &= 0.05 \text{ inches} \\
 StP_m &= 0.125 \text{ inches} \\
 UP_a &= 0.01 \text{ inches} \\
 UP_m &= 0.01 \text{ inches} \\
 StP_r &= 0.0022 \text{ inches/year} \\
 UP_r &= 0.0002 \text{ inches/year} \\
 GC_a &= 0.02 \text{ inches} \\
 GC_r &= 0.0004 \text{ inches/year}
 \end{aligned}$$

$$O_{r1} = \frac{T_o - GC_a - StP_a - UP_m - MRT_1}{(StP_r + UP_r + GC_r)}$$

$$O_{r1} = \frac{0.5 - 0.02 - 0.05 - 0.01 - 0.1}{(0.0022 + 0.0002 + 0.0004)} > 20 \text{ years}$$

$$O_{r2} = \frac{T_o - GC_a - StP_m - UP_a - MRT_2}{(StP_r + UP_r + GC_r)}$$

$$O_{r2} = \frac{0.5 - 0.02 - 0.125 - 0.01 - 0.1}{(0.0022 + 0.0002 + 0.0004)} > 20 \text{ years}$$

Therefore, the remaining bottom life is:

$$O_r > 20 \text{ years}$$

NOTE: The engineering data used to calculate in-service period of operation ( $O_r$ ) assumes the tank remains in the same service and all corrosion rates remain constant.

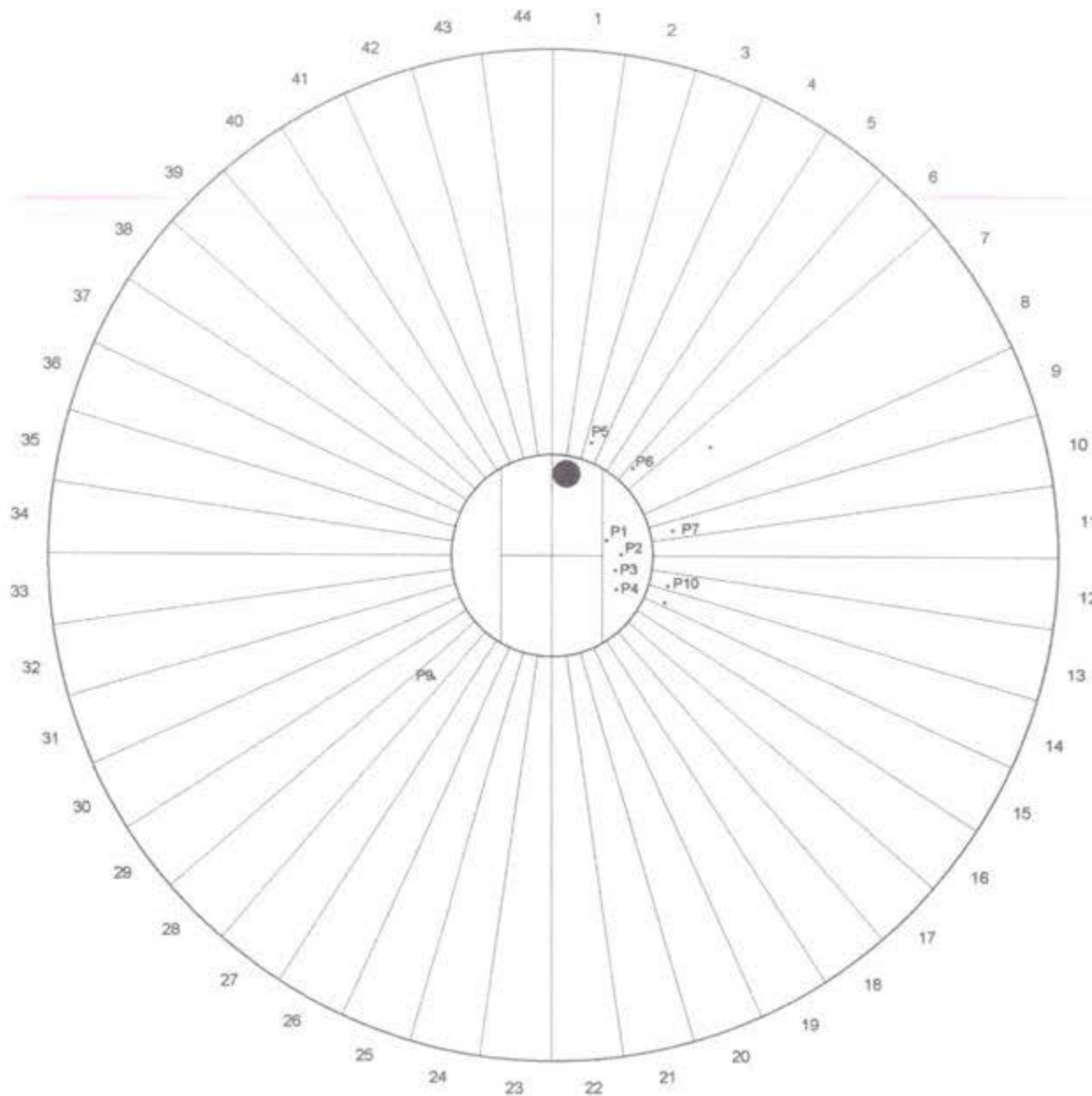
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## 7.5 Engineering Drawings

7.5.1 Bottom Layout With Pit Indications

7.5.2 Bottom Layout & Thickness Measurements

Remarks/Legend:



Pit Depth in inches:

- P1 = 0.08
- P2 = 0.09
- P3 = 0.10
- P4 = 0.07
- P5 = 0.07
- P6 = 0.06
- P7 = 0.09
- P8 = 0.11
- P9 = 0.12
- P10 = 0.11

Company:

Naval Supply Center, Pearl Harbor, HI

Drawn By:

Mid Atlantic Environmental, Inc.

Date:

06/16/98

Rev. No.:

N/A

Scale:

1/200 feet

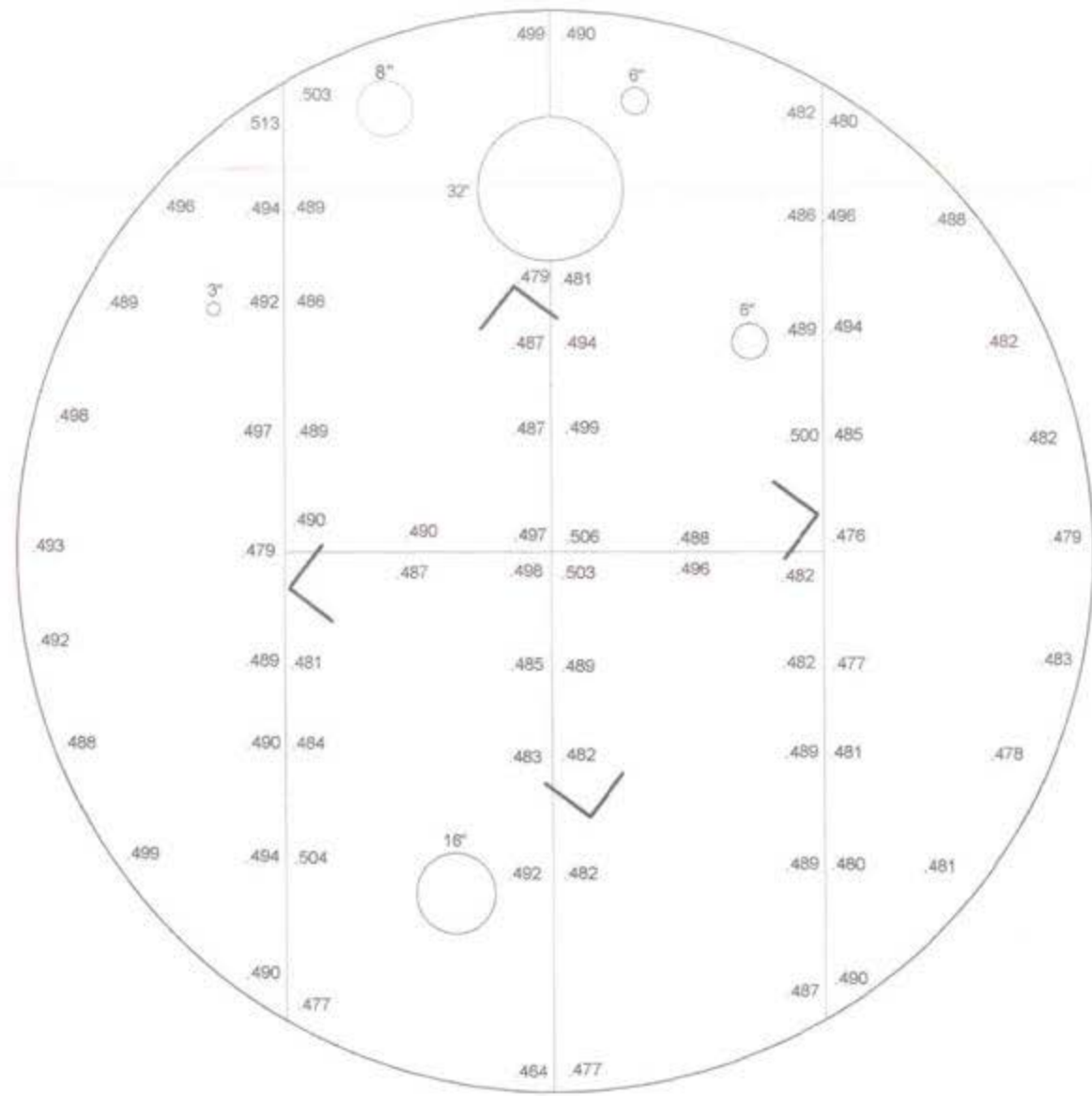
Drawing Title:

Bottom Layout with Pit Indications

Tank Description:

Tank #10

Remarks/Legend:



Company:  
 Naval Supply Center, Pearl Harbor, HI  
 Drawn By:  
 Mid Atlantic Environmental, Inc.  
 Date: 06/13/98    Rev. No.: N/A    Scale: 1/40 feet

Drawing Title:  
**Bottom Layout & Thickness Measurements**

Tank Description:  
**Tank #10**

## 7.6 Engineering Data:

## 7.6.1 Thickness Measurements for the First Ascending Plates

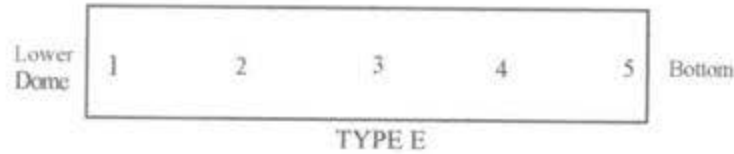


Plate Number	Thickness Measurements (in inches)					Plate Type
	Point Numbers					
	1	2	3	4	5	
1	0.278	0.269	0.24	0.25	0.25	E
2	0.272	0.256	0.264	0.263	0.245	E
3	0.279	0.273	0.246	0.244	0.271	E
4	0.266	0.269	0.272	0.246	0.247	E
5	0.275	0.267	0.265	0.246	0.238	E
6	0.267	0.27	0.275	0.247	0.24	E
7	0.281	0.277	0.271	0.247	0.264	E
8	0.271	0.274	0.274	0.251	0.242	E
9	0.26	0.268	0.258	0.251	0.247	E
10	0.26	0.262	0.259	0.24	0.251	E
11	0.256	0.255	0.261	0.247	0.243	E
12	0.263	0.261	0.266	0.238	0.243	E
13	0.259	0.263	0.264	0.241	0.245	E
14	0.273	0.274	0.272	0.267	0.253	E
15	0.262	0.271	0.251	0.251	0.247	E
16	0.286	0.271	0.275	0.256	0.246	E
17	0.27	0.256	0.261	0.24	0.251	E
18	0.272	0.28	0.271	0.247	0.246	E
19	0.263	0.268	0.266	0.256	0.253	E
20	0.265	0.264	0.252	0.253	0.265	E
21	0.284	0.288	0.274	0.262	0.273	E
22	0.271	0.256	0.262	0.261	0.256	E

Plate Number	Thickness Measurements (in inches)					Plate Type
	Point Numbers					
	1	2	3	4	5	
23	0.283	0.269	0.256	0.255	0.252	E
24	0.256	0.266	0.262	0.236	0.251	E
25	0.284	0.267	0.246	0.261	0.259	E
26	0.283	0.281	0.265	0.248	0.243	E
27	0.266	0.273	0.274	0.251	0.249	E
28	0.285	0.283	0.274	0.243	0.241	E
29	0.26	0.267	0.269	0.246	0.241	E
30	0.271	0.273	0.258	0.251	0.254	E
31	0.262	0.266	0.251	0.254	0.256	E
32	0.266	0.269	0.264	0.249	0.241	E
33	0.271	0.269	0.265	0.247	0.251	E
34	0.261	0.256	0.259	0.239	0.237	E
35	0.267	0.261	0.254	0.247	0.246	E
36	0.261	0.265	0.271	0.242	0.248	E
37	0.275	0.269	0.267	0.258	0.252	E
38	0.269	0.263	0.255	0.235	0.258	E
39	0.268	0.274	0.271	0.253	0.256	E
40	0.287	0.284	0.281	0.256	0.252	E
41	0.277	0.284	0.291	0.256	0.248	E
42	0.274	0.267	0.256	0.251	0.245	E
43	0.269	0.271	0.269	0.255	0.248	E
44	0.281	0.271	0.286	0.245	0.246	E

## 7.6 Engineering Data (cont'd)

## 7.6.2 Field Test Report:

Quality Control  
Field Test Report

Vacuum Leak Tests

Project Name: Red Hill Emergency Repairs

Project Number: Tank #10

Test Report Number: 1

Service: Fuel Storage

Material: Carbon Steel Thickness: 0.50 inch (flat bottom plates) Diameter: 100 ft  
0.25 inch (first ascending plates)

Location: Honolulu, HI

New Construction:  Repair:  ASME Code:

Service Boundary Description: Tank Bottom & First Ascending Plates

Test Type: Hydrostatic  Pneumatic  Vacuum

Test Date: 5/28 to 6/2/98

Ambient Temp: 77 degrees Fahrenheit Test Pressure: 5 psi minimum Design Pressure:

Test Media: Soapy Water Temperature: 77 degrees Fahrenheit Holding Time: 30 seconds

Test Acceptable:  Unacceptable:

Authorized Code Inspectors: Tom Kitchen Date: 3/16/98

Boundaries of Test:

ID Number	Results	Notes
Bottom Butt Welds	No Leaks Detected	
36", 10" & 6" nozzle to repad	No Leaks Detected	
Repads & patches on floor	No Leaks Detected	
Ring at bottom of first course	No Leaks Detected	
Ring at top of first course	No Leaks Detected	
Angle legs to bottom	No Leaks Detected	
Radial welds, first course	No Leaks Detected	

ENGINEERING REPORT

PITTING AT BOTTOM OF TANK

RED HILL TANK #10

PRL 96-21

EMERGENCY REPAIRS FOR RED HILL TANKS

Prepared for:

DEPARTMENT OF THE NAVY  
FLEET AND INDUSTRIAL SUPPLY CENTER  
PEARL HARBOR, HAWAII

Prepared by: Tom Kitchen

MID ATLANTIC ENVIRONMENTAL, Inc.  
5252 Challedon Dr. Suite A  
Virginia Beach, VA 23462

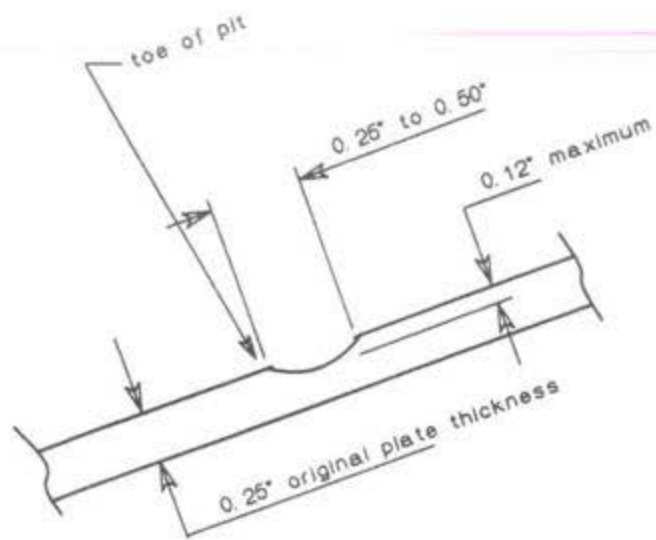
June 3, 1998

## Tank 10 Bottom Pitting

- 1.0 Mid Atlantic Environmental conducted an inspection of the bottom of Red Hill Tank #10. Part of this inspection was to determine the amount of pitting and make repair recommendations.
- 2.0 Ultrasonic thickness measurements of the bottom and first ascending plates confirmed that the original plate metal thickness was  $\frac{1}{2}$  inch on the tank bottom and  $\frac{1}{4}$  inch on the ascending plates. The most severe pitting was found on the ascending plates. Pits found in the ascending plate area over 0.15 inches would result in a remaining plate thickness of less than 0.10 inches; (API's requirement of minimum metal thickness for tank bottoms is 0.10 inches.)
- 3.0 Only pits over 0.06 inches deep were identified. Twenty pitted areas were identified and measured in the first ascending plates of the lower dome. The deepest pit recorded on the ascending plates was 0.12 inches. The metal thickness at the identified pits is greater than 0.10 and the scheduled repair by providing a welded patch plate over the pit is not applicable and no repair is necessary to maintain the integrity of the tank. (The method of repair specified by contract is provided on sheet M-9 of NAVFAC DWG. NO. 7927658, REPAIR TYPE 1.)
- 4.0 Pitting at the bottom of tank #16 was similar to #10 and did not require the scheduled repairs. However the sharp edges at the toe of pit caused problems with the coating application. To correct this problem on tank #10 Mid Atlantic Environmental advises smoothing the sharp edge mechanically or by applying primer coat with a stiff brush as proscribed by NAVFAC SPECIFICATION N62472-96-C-1356, Section 09970, 3.9.5, Application of Polyurethane Coating System, which states, "For blasted areas which are pitted, work the wash primer into the crevices, and pits with a stiff brush (100 mm brush cut 25mm long, for example)"
- 5.0 A drawing showing the contour of the pits and pictures taken at the bottom are attached to this report.
- 6.0 Mid Atlantic identified 20 pits in the first ascending plates, which measured over 0.06 inches deep. There were an estimated 100 that measured less than 0.06 inches deep. Mid Atlantic does not consider this to be excessive or abnormal for steel, which has been in service for nearly 60 years.



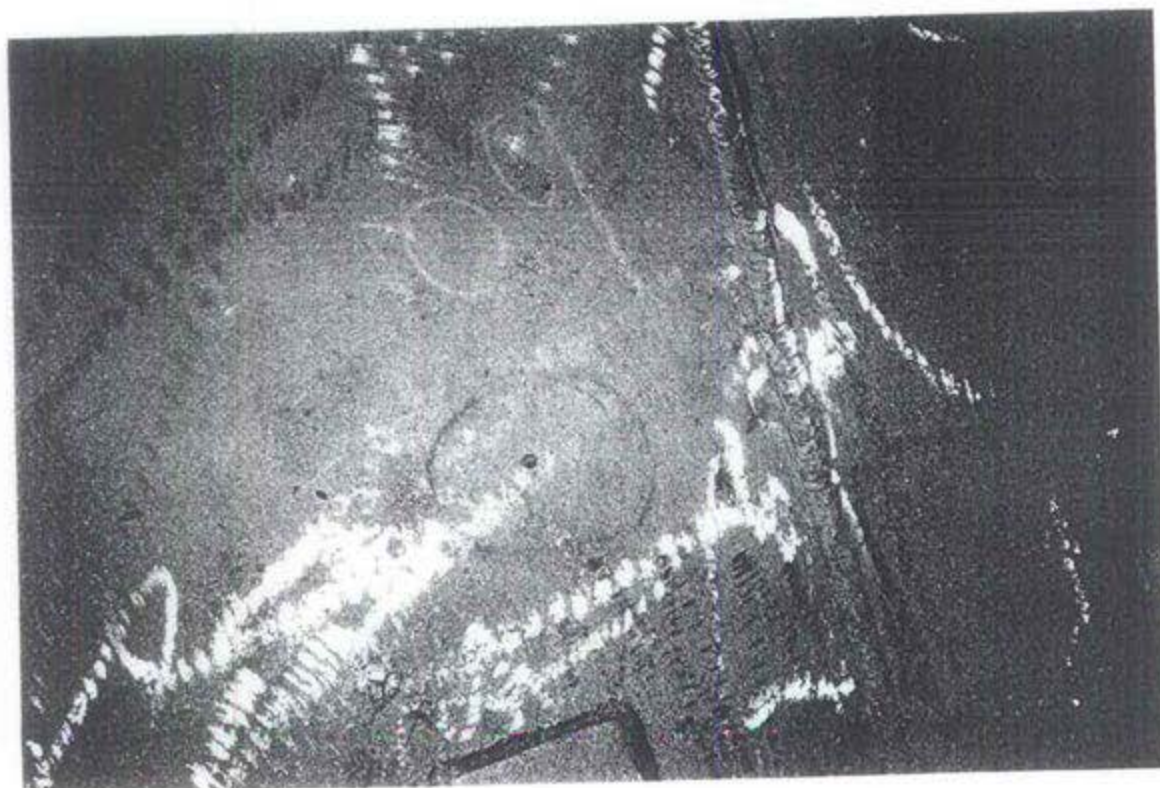
Twenty pits were identified and measured on the first ascending plates in the area to be coated at the bottom of tank #10. The deepest pit measured 0.12 inches. A sketch showing the dimensions of a typical pit is shown below.



SECTION VIEW AT TYPICAL PIT

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #10	
Pitting Detail	File:10pit
Tank bottom	
NOT TO SCALE	
Drawn By: T. Kitchen	Date: 6/3/98

PICTURES SHOWING PITTING ON FIRST ASCENDING PLATES



**Section 8**

**REPAIR SPECIFICATIONS**

## 8.0 REPAIR SPECIFICATIONS

### 8.1 Typical Repair Procedures:

REPAIR TYPE #	TYPE OF DAMAGE	REPAIR PROCEDURE (SEE NOTE 4)	APPROX. SIZE
1	RUSTED AREA, PITTING	REMOVE RUST AND ADJACENT COATING. MEASURE & RECORD DEPTH OF PITS. CLEAN TO BARE METAL, RECOAT.	0.25 SQ. M.
2	DEEP GOUGE IN LINER PLATE	MEASURE & RECORD DEPTH OF GOUGE. CHECK WITH UT FLAW DETECTOR FOR CRACKS. RESURFACE WITH WELD, GRIND SMOOTH, RECOAT.	0.1 SQ. M.
3	LEAK - POROUS/DEFECTIVE WELD	CLEAN SURFACE, VACUUM TEST FOR LEAK, WELD PATCH PLATE OVER LEAK, CLEAN TO BARE METAL, RETEST WITH VACUUM BOX, RECOAT	0.1 SQ. M.
4	LEAK - DOUBLER PLATE	CLEAN SURFACE, VACUUM TEST FOR LEAK REMOVE DOUBLER PLATE, CLEAN SURFACE AND GRIND, WELD PATCH PLATE OVER LEAK, CLEAN TO BARE METAL, RETEST WITH VACUUM BOX, RECOAT.	0.25 SQ. M.
5	LEAK - BLISTER/RUST THROUGH FROM BACK SIDE	REMOVE RUST AND ADJACENT COATING, MEASURE & RECORD THICKNESS. WELD PATCH PLATE OVER LEAK. CLEAN TO BARE METAL. RETEST WITH VACUUM BOX, RECOAT	0.2 SQ. M.
6	LEAK - HOLE	CLEAN SURFACE, VACUUM TEST FOR LEAK. WELD PATCH PLATE OVER LEAK. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT	0.1 SQ. M.
7	BLISTER/DENT	REMOVE COATING TO BARE METAL. MEASURE & RECORD THICKNESS, RECOAT.	0.1 SQ. M.
8	COATING FAILURE	REMOVE COATING TO BARE METAL, RECOAT.	1.0 SQ. M.
9	BUTT WELD FAILURE BETWEEN LINER PLATES	DRILL HOLES IN LINER PLATE AT BOTH SIDES OF THE DAMAGE. PURGE WITH NITROGEN DURING HOTWORK. REMOVE WELD, REWELD, INSTALL THREADED PLUGS IN HOLES AND SEALWELD. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT.	300mm
10	FILLET-WELD FAILURE BETWEEN BACKER STRIPS IN UPPER DOME AND LINER PLATES	REMOVE DEFECTIVE WELD AND REWELD. CLEAN TO BARE META, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT.	300 mm
11	FILLET-WELD FAILURE BETWEEN 3.5 MM STEEL COVER PLATE AND LINER PLATES IN UPPER DOME	DRILL HOLES IN STEEL COVERS AND PURGE WITH NITROGEN DURING HOT WORK. REMOVE DEFECTIVE WELD AND REWELD. INSTALL THREADED PLUGS IN HOLES AND SEALWELD. CLEAN TO BARE METAL, INCLUDING WELD, RETEST WITH VACUUM BOX, RECOAT	300 mm

#### GENERAL NOTES:

1. PATCH PLATES FOR UPPER DOME, DOME EXTENSION, BARREL OF TANK AND LOWER DOME TO BE 6mm THICK. PATCH PLATES FOR BOTTOM PLATE TO BE 11mm THICK.
2. ALL WELDS TO BE CONTINUOUS.
3. SANDBLAST PATCH PLATES BEFORE WELDING IN PLACE AND BREAK EXPOSED EDGE BY GRINDING CHAMFER OF 1.5 mm MINIMUM.
4. THE REPAIR PROCEDURE IS THE SAME, REGARDLESS OF THE LOCATION OF THE DAMAGE IN THE UPPER DOME, TANK BARREL, OR LOWER DOME.

# Table of Contents

CERTIFICATION

INTRODUCTION

**3**

REFERENCES

**4**

TANK DESCRIPTION

**5**

REPAIR HISTORY

**6**

TESTING CONDUCTED

**7**

TESTING RESULTS

**8**

REPAIR SPECIFICATIONS

**9**

RECOMMENDED REPAIRS

**10**

AS-BUILT DRAWINGS

**11**

PHOTOGRAPHS

**12**

CONTRACT DRAWINGS

**Section 1.0**  
**CERTIFICATION**

## **1.0 Certification**

**1.1 Certification:** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

---

**Thomas Kitchen, P.E.**  
**API - 653 Certification #1891**

**Section 2**

**INTRODUCTION**



## 2.0 Introduction

2.1 Mid Atlantic Environmental, Inc. conducted an inspection on Tank #8 at the Red Hill Underground Storage Facility, Pearl Harbor, Hawaii. This inspection was conducted in accordance with the scope of work identified by Contract Number N00604-97-R-0013, PRL 96-21, titled "Emergency Repair for Red Hill Tanks."

### 2.2 Inspection Support

2.2.1 Access to the inside surface of the tank was provided through the use of the booms and power climber basket shown on NAVFAC Drawing Number 7927650.

2.2.2 Personnel support was provided by Dames and Moore. This support included:

2.2.2.1 Hole watch,

2.2.2.2 Boom operator,

2.2.2.3 An assistant, either in the basket or on the tank bottom.

### 2.3 Phase 1

2.3.1 The initial phase of the inspection was to inspect the interior of the tank to identify and make repair recommendations for any of the following defects:

2.3.1.1 Deterioration and damage to the coating on the interior of the tank shell plates and welds.

2.3.1.2 Pits on the interior of the tank shell plates and welds.

2.3.1.3 Holes through the tank shell plates and welds.

2.3.1.4 Non-visible holes and cracks in the tank shell plates and welds that are identifiable by the nondestructive test or the visible seepage of fuel and/or water back into the tank.

2.3.1.5 Suspect areas, such as blisters in the tank shell plates.

### 2.4 Phase 2

2.4.1 The second phase of the inspection was a test of the tank bottom after removal of the coating. The following tests were conducted:

2.4.1.1 Sample ultrasonic thickness (UT) measurements were taken on the bottom plates and the first ascending plates,

2.4.1.2 Vacuum box testing of all welds was conducted on the bottom plates and the first ascending plates,

2.4.1.3 Testing for the presence of chlorides, soluble ferrous and ferric salts, alkaline/acidic contaminants and flame sprayed aluminum was conducted on the tank bottom.

**Section 3**

**REFERENCES**

## **3.0 References**

### **3.1 American Petroleum Institute:**

- 3.1.1 API Standard 650, Welded Steel Tanks for Oil Storage.
- 3.1.2 API Recommended Practice 651, Cathodic Protection of Aboveground Petroleum Storage Tanks.
- 3.1.3 API Recommended Practice 652, Lining of Aboveground Petroleum Storage Tank Bottoms.
- 3.1.4 API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction.

### **3.2 American Society of Mechanical Engineers Codes:**

- 3.2.1 ASME Boiler and Pressure Vessel Code; Section V, Non Destructive Examination.
- 3.2.2 ASME Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications.

### **3.3 Code of Federal Regulations:**

- 3.3.1 29 CFR 1910, Permit-Required Confined Spaces for General Industry.

### **3.4 National Association of Corrosion Engineers:**

- 3.4.1 NACE Recommended Practice, RP0184-91, Repair of Lining Systems.
- 3.4.2 NACE Recommended Practice, RP0193-93, External Cathodic Protection of On-Grade Metallic Storage Tank Bottoms.
- 3.4.3 NACE Recommended Practice, RP0288-94, Inspection of Linings on Steel and Concrete.

### **3.5 National Fire Protection Association:**

- 3.5.1 NFPA-30, Flammable and Combustible Liquids Code.

**Section 4**

**TANK DESCRIPTION**

## 4.0 TANK DESCRIPTION

**The tank is a vertical cylinder, 257 feet high and 100 feet in diameter with both upper and lower domes. Each dome is a 50 foot radius hemisphere. The tank is underground and encased in concrete. Tank shell, upper and lower domes are 1/4 inch carbon steel plate, except the 20 foot flat bottom which is 1/2 inch thick.**

Owner/Operator:	Fleet and Industrial Supply Center	
Location:	Pearl Harbor, HI	
Tank Number:	7	
Service:	Fuel Storage	
Capacity:	300,000 Bbl	
Diameter:	100 feet	
Shell Height:	155 feet	
Configuration:	Vertical	
Fill Height:	235 feet above flat bottom	
Foundation:	Concrete	
Construction:	Bottom:	Butt Welded
	Lower Dome:	Butt Welded
	Shell:	Butt Welded
	Upper Dome:	Butt Welded
Age:	56 years	
Specific Gravity:	1.00	
Seismic Zone:	Zone 1	
Construction Code:	Unknown	

**Section 5**

**REPAIR HISTORY**

**Section 5**

**REPAIR HISTORY**

RED HILL TANK NO. 7  
PRODUCT: DFM

<u>DATE</u>	<u>REMARKS</u>
5/22/52	Cleaned tank. Labor Cost: \$1898.30. Material: \$398.60
10/11/63	Calibrated gauge.
4/64	Completed cleaning tank. Tank inspected. No corrosion. Good shape.
3/18/71	Emptied and cleaned for conversion.
4/20-5/3/71	Cleaned tank for Navy Distillate conversion. Installed flat steel bars around elevator shaft and catwalk inside of tank (256 hours). Labor cost: \$1,024.
5/4/71	Topped off with Navy Distillate.
6/22/73	Emptied and cleaned for conversion.
6/23/73	Emptied and cleaned by Asteroid group for installation of gauging equipment.
7/13/73	Removed and installed new 6" valve on drain line.
9/11/73	Telemeter system installed. Converted to DFM.
11/14/73	Telltale #1 collector ring started to leak. Alarm sounded in sump pit. Transferred Navy Distillate to Tank 10.
11/26/73	Started to clean tank. Drain line plugged. Welded collector ring.
12/73	Tank cleaned to repair leak #1 telltale (collector ring). Found corroded jumper pipe in collector ring. Bad section of jumper pipe removed and new section welded in. Tank buttoned up on 5 December 1973.
7/74	Telemeter out.
5/22/78	Tank experienced significant telltale leakage during weekend of 20-21 May 1978 requiring immediate transfer of DFM inventory to other tankage.
6/9/78	Tank emptied and washed for contractors.
6/9/78	Completed fuel removal for turnover to contractor for MILCON P-060.
10/24/78	Contractor began work. Removed motorized valves and installed blanks.



RED HILL TANK NO. 7  
 PRODUCT: DFM

<u>DATE</u>	<u>REMARKS</u>
2/15/80	Contractor notified ROICC that tank is ready to be returned to service.
2/11/80	Final inspection of tank was held on this date. As there were some discrepancies that needed to be corrected by the contractor, the tank was not accepted. The tank was accepted on 29 February 1980 and filled. This is the first tank to be completed under MILCON P-060.
2/20/80	Began refilling tank for leak test.

LEAK TEST DATA

(Note: Leak rate is based on data from telemetering)

<u>DATE</u>	<u>FILL LEVEL</u>	<u>LEAK RATE (GAL/DAY)</u>
2/20-7/20/80	Various 171-235	Bad data due to leaking skin valve.
7/21-25/80	235.0	609
7/26-31/80	214.8	334
8/1-7/80	209.9	208
8/9-9/10/80	207.0	12.7
9/10-10/4/80	207.0	12.0
10/22-11/12/80	206.9	2.6
11/13/80-1/8/81	206.9	3.1
8/7/80	Tank fill level dropped to 207.0 feet. Leak subsided. Tank maximum fill capacity temporarily reduced by 31.3 Mbbls. to 265.4 Mbbls.	
1/8/81	Stopped leak test. Began use as receiving tank.	
4/9/81	Tank was removed from service for leak repairs under MCON P-060.	
5/3/81	Tank was returned to service for leak testing following completion of leak repairs.	

**Section 6**

**TESTING CONDUCTED**

## 6.0 Testing Conducted

6.1 General: The internal inspection was conducted to gather the data necessary for the assessment of the interior of the tank. This data takes into account previous inspection information. An evaluation was conducted on the tank by means of visual inspection, NDE, including Ultrasonic, Dye Penetrant, and Vacuum Box testing. These results have been evaluated and are contained in the body of this report. Corrosion rates were established. A complete description of unusual conditions, as well as corrective action procedures is also included in the body of this report. All repair data is included in the body of this report.

6.2 Visual: To verify that the angle of vision and level of lighting were adequate for the visual inspection, a 1/32 inch wide black line on an 18% neutral grey background was used as a test guide.

6.3 Surface contamination of the tank bottom: After the tank bottom was brush blasted testing was performed for the presence of chlorides, soluble ferrous and ferrous salts, alkaline/acid contaminants per NACE Bulletin No.24118 using a KATA SCAT Kit (Surface Contamination Analysis Test Kit). The bottom was tested for the presence of flame sprayed aluminum using a caustic soda method.

**Section 7**  
**TESTING RESULTS**

## **7.0 TESTING RESULTS**

### **7.1 Results of Internal Visual Inspection:**

7.1.1 A total of twenty two (22) defects were identified on the interior of the tank. These repairs are identified and described in section 9 of this report.

### **7.2 Results of Bottom Inspection:**

7.2.1 The original bottom thickness was determined to be 0.500 inches and the first ascending plate to be 0.250 inches. The ultrasonic thickness measurements taken determined that backside corrosion in this area is not a problem. Pitting is not a problem since the remaining metal thickness is well within the 0.10 inches of metal required by API Standard 653 by the next inspection. Also the coating to be applied to the tank bottom should prevent any increase in pit depth. Although pitting is not a problem with regard to structural integrity, it did present a problem regarding the coating to be applied. Pictures of this pitting are included with this report. The surface contamination test results yielded 0% ferrous salts, 32 ppm NaCl and a pH level of 7. These results are within the limits set forth in the KTA SCAN Kit technical data and the NACE technical committee report on Surface Preparation of Contaminated Steel Surfaces. The Caustic Soda test of the tank bottom indicated that all Flame Sprayed Aluminum had been removed. By visual inspection, scattered pitting was observed on the tank bottom and first ascending plates. The deeper pits were measured and recorded on the Bottom Layout With Pit Indications drawing.

## 7.3 Engineering Calculations:

## 7.4 KTA SCAT Kit Calculation Sheet:

Calculation	Determination 1
Reading from Titratch Strip	0.005 ppm
(A) x milliliters of water	0.05 micrograms Cl
Calculate the area swabbed ( $\text{cm}^2 = \text{in}^2 \times 2.54^2$ )	103 $\text{cm}^2$
(microgram Cl) / (area swabbed)	0.0005 micrograms/ $\text{cm}^2$ Cl
((micrograms) / ( $\text{cm}^2$ )) x 10	0.005 milligrams/ $\text{cm}^2$ Cl

4 inch x 4 inch area tested

10 ml solution used

<b>Results:</b>	<b>Fe test = 0</b>	<b>Satisfactory</b>
	<b>ph = 6</b>	<b>Satisfactory</b>
	<b>Quantum unit test = 1.2</b>	<b>Satisfactory</b>
	<b>% NaCl less than 0.005%</b>	<b>Satisfactory</b>
	<b>ppm less than 32</b>	<b>Satisfactory</b>

### 7.3 Engineering Calculations (cont'd):

#### 7.4.2 Minimum Thickness for Tank Bottom and Remaining Life:

$$MRT_1 = T_o - GC_a - StP_a - UP_m - (StP_r + UP_r + GC_r)O_{r1}$$

$$MRT_2 = T_o - GC_a - StP_m - UP_a - (StP_r + UP_r + GC_r)O_{r2}$$

$$O_{r1} = \frac{T_o - GC_a - StP_a - UP_m - MRT_1}{(StP_r + UP_r + GC_r)}$$

$$O_{r2} = \frac{T_o - GC_a - StP_m - UP_a - MRT_2}{(StP_r + UP_r + GC_r)}$$

Where:

$MRT_1$  or  $MRT_2$  = Minimum remaining thickness at the end of the in-service period of operation, in inches.  $MRT_1$  represents minimum remaining thickness due to average internal pitting and maximum external pitting.  $MRT_2$  represents minimum remaining thickness due to maximum internal pitting and average external pitting.

$T_o$  = Original plate thickness, in inches.

$StP_a$  = Average depth of internal pitting, in inches, measured from the original thickness.

$StP_m$  = Maximum depth of internal pitting remaining in bottom plates after repairs are completed, in inches, measured from the original thickness.

$UP_a$  = Average depth of underside pitting, in inches.

$UP_m$  = Maximum depth of underside pitting, in inches.

$StP_r$  = Maximum internal pitting rate in inches per year;  $StP_r = 0$  if tank bottom is internally lined.

$UP_r$  = Maximum underside pitting rate, in inches per year;  $UP_r = 0$  if tank bottom is cathodically protected.

$O_{r1}$  or  $O_{r2}$  = Anticipated in-service period of operation (normally 10 years).

$GC_a$  = Average depth of generally corroded area, in inches.

$GC_r$  = Maximum rate of corrosion, in inches per year.

**7.4 Engineering Calculations (cont'd):****7.4.2 Minimum Thickness for Tank Bottom and Remaining Life (cont'd):****PRESENT CONDITION:**

$$MRT_1 \text{ or } MRT_2 = 0.1 \text{ inches}$$

$$T_o = 0.5 \text{ inches}$$

$$StP_a = 0.05 \text{ inches}$$

$$StP_m = 0.125 \text{ inches}$$

$$UP_a = 0.01 \text{ inches}$$

$$UP_m = 0.01 \text{ inches}$$

$$StP_r = 0.0022 \text{ inches/year}$$

$$UP_r = 0.0002 \text{ inches/year}$$

$$GC_a = 0.02 \text{ inches}$$

$$GC_r = 0.0004 \text{ inches/year}$$

$$O_{r1} = \frac{T_o - GC_a - StP_a - UP_m - MRT_1}{(StP_r + UP_r + GC_r)}$$

$$O_{r1} = \frac{0.5 - 0.02 - 0.05 - 0.01 - 0.1}{(0.0022 + 0.0002 + 0.0004)} > 20 \text{ years}$$

$$O_{r2} = \frac{T_o - GC_a - StP_m - UP_a - MRT_2}{(StP_r + UP_r + GC_r)}$$

$$O_{r2} = \frac{0.5 - 0.02 - 0.125 - 0.01 - 0.1}{(0.0022 + 0.0002 + 0.0004)} > 20 \text{ years}$$

Therefore, the remaining bottom life is:

$$O_r > 20 \text{ years}$$

**NOTE:** The engineering data used to calculate in-service period of operation ( $O_r$ ) assumes the tank remains in the same service and all corrosion rates remain constant.

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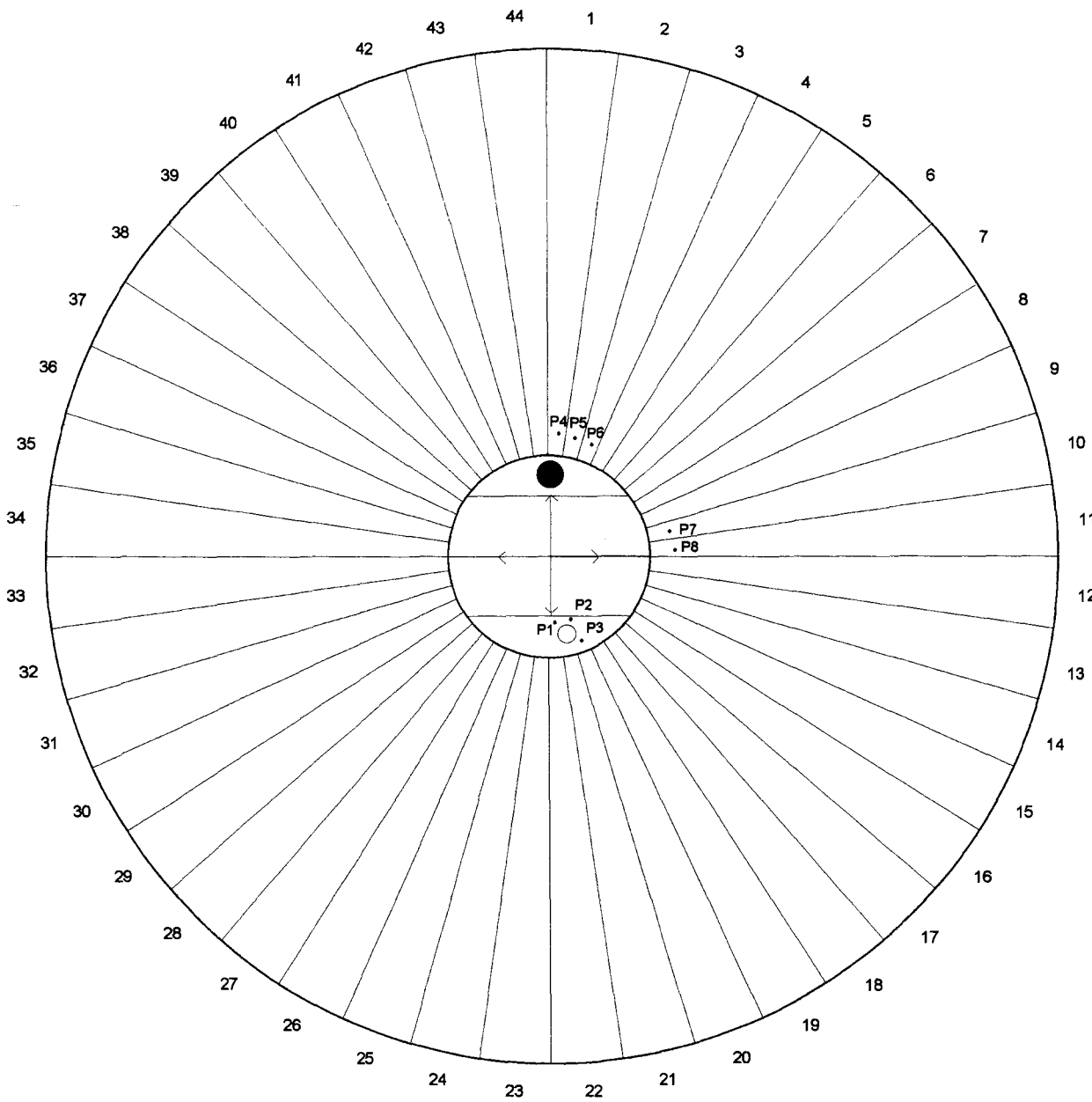


**7.5 Engineering Drawings**

**7.5.1 Bottom Layout With Pit Indications**

**7.5.2 Bottom Layout & Thickness Measurements**

Remarks/Legend:



Pit Depth in inches:

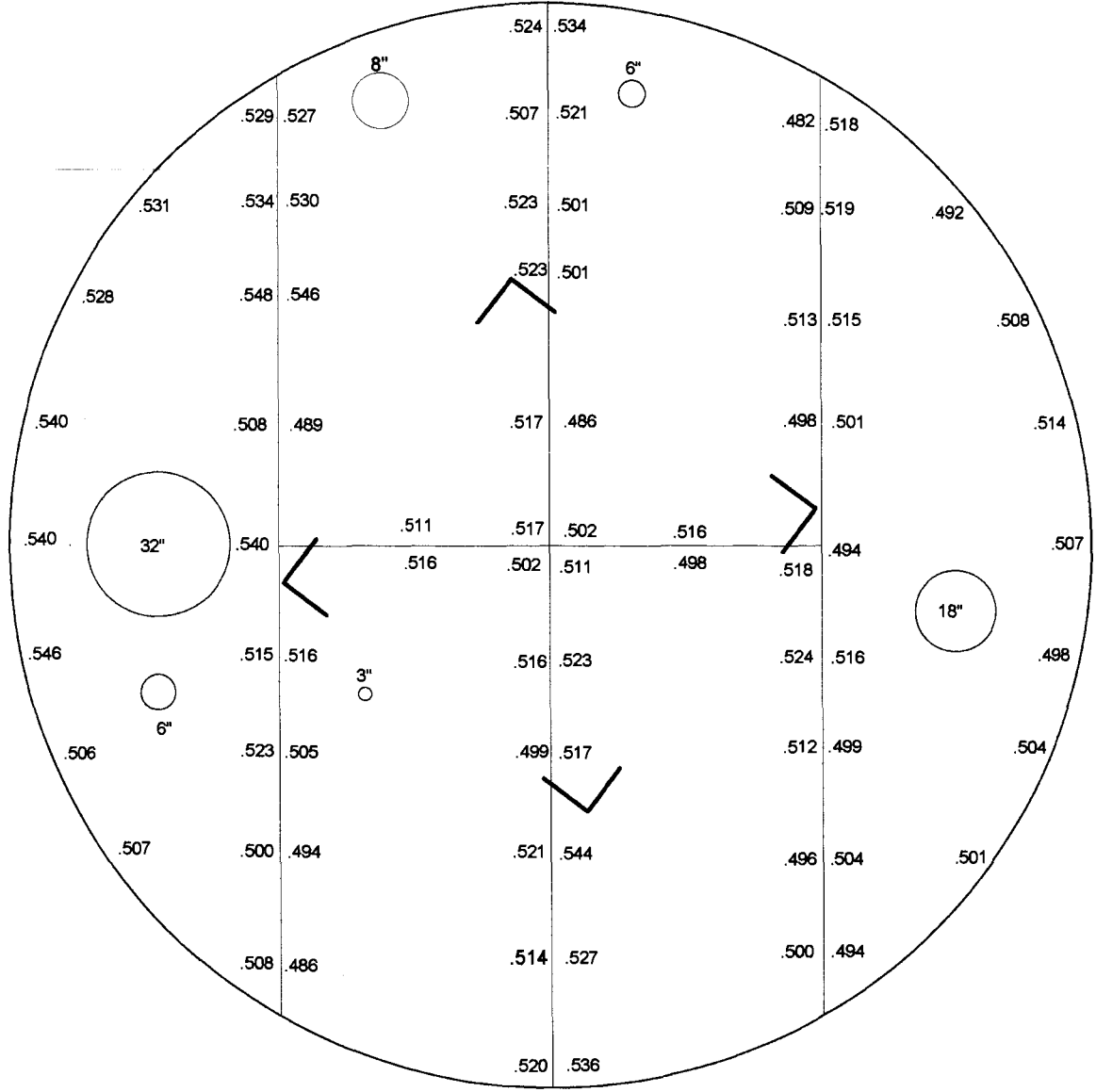
- P1 = 0.120
- P2 = 0.160
- P3 = 0.120
- P4 = 0.119
- P5 = 0.075
- P6 = 0.071
- P7 = 0.090
- P8 = 0.125

Company:		
Naval Supply Center, Pearl Harbor, HI		
Drawn By:		
Mid Atlantic Environmental, Inc.		
Date:	Rev. No.:	Scale:
08/02/98	N/A	1/200 feet

Drawing Title:  
**Bottom Layout with Pit Indications**

Tank Description:  
**Tank #7**

Remarks/Legend:



Company:  
Naval Supply Center, Pearl Harbor, HI

Drawn By:  
Mid Atlantic Environmental, Inc.

Date: 07/31/98	Rev. No.: N/A	Scale: 1/40 feet
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Drawing Title:  
**Bottom Layout & Thickness Measurements**

Tank Description:  
**Tank #7**

## 7.6 Engineering Data (cont'd)

## 7.6.2 Field Test Report:

Quality Control  
Field Test Report

## Vacuum Leak Tests

Project Name: Red Hill Emergency RepairsProject Number: Tank #8Test Report Number: 1Service: Fuel StorageMaterial: Carbon Steel Thickness: 0.50 inch (flat bottom plates) Diameter: 100 ft  
0.25 inch (first ascending plates)Location: Honolulu, HINew Construction:      Repair:   x   ASME Code:     Service Boundary Description: Tank Bottom & First Ascending PlatesTest Type: Hydrostatic      Pneumatic      Vacuum   x  Test Date: 7/26 to 7/31/98Ambient Temp: 77 degrees Fahrenheit Test Pressure: 5 psi minimum Design Pressure:     Test Media: Soapy Water Temperature: 77 degrees Fahrenheit Holding Time: 30 secondsTest Acceptable:   x   Unacceptable:     Authorized Code Inspectors: Tom Kitchen Date: 7/31/98

## Boundaries of Test:

ID Number	Results	Notes
Bottom Butt Welds	No Leaks Detected	
36", 10" & 6" nozzle to repad	No Leaks Detected	
Repads & patches on floor	No Leaks Detected	
Ring at bottom of first course	No Leaks Detected	
Ring at top of first course	No Leaks Detected	
Angle legs to bottom	No Leaks Detected	
Radial welds, first course	No Leaks Detected	

**Section 8**

**REPAIR SPECIFICATIONS**

## 8.0 REPAIR SPECIFICATIONS

### 8.1 Typical Repair Procedures:

REPAIR TYPE #	TYPE OF DAMAGE	REPAIR PROCEDURE (SEE NOTE 4)	APPROX. SIZE
1	RUSTED AREA, PITTING	REMOVE RUST AND ADJACENT COATING. MEASURE & RECORD DEPTH OF PITS. CLEAN TO BARE METAL, RECOAT.	0.25 SQ. M.
2	DEEP GOUGE IN LINER PLATE	MEASURE & RECORD DEPTH OF GOUGE. CHECK WITH UT FLAW DETECTOR FOR CRACKS. RESURFACE WITH WELD, GRIND SMOOTH, RECOAT.	0.1 SQ. M.
3	LEAK - POROUS/DEFECTIVE WELD	CLEAN SURFACE, VACUUM TEST FOR LEAK, WELD PATCH PLATE OVER LEAK, CLEAN TO BARE METAL, RETEST WITH VACUUM BOX, RECOAT	0.1 SQ. M.
4	LEAK - DOUBLER PLATE	CLEAN SURFACE, VACUUM TEST FOR LEAK REMOVE DOUBLER PLATE, CLEAN SURFACE AND GRIND, WELD PATCH PLATE OVER LEAK, CLEAN TO BARE METAL, RETEST WITH VACUUM BOX, RECOAT.	0.25 SQ. M.
5	LEAK - BLISTER/RUST THROUGH FROM BACK SIDE	REMOVE RUST AND ADJACENT COATING, MEASURE & RECORD THICKNESS. WELD PATCH PLATE OVER LEAK. CLEAN TO BARE METAL. RETEST WITH VACUUM BOX, RECOAT	0.2 SQ. M.
6	LEAK - HOLE	CLEAN SURFACE, VACUUM TEST FOR LEAK. WELD PATCH PLATE OVER LEAK. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT	0.1 SQ. M.
7	BLISTER/DENT	REMOVE COATING TO BARE METAL. MEASURE & RECORD THICKNESS, RECOAT.	0.1 SQ. M.
8	COATING FAILURE	REMOVE COATING TO BARE METAL, RECOAT.	1.0 SQ. M.
9	BUTT WELD FAILURE BETWEEN LINER PLATES	DRILL HOLES IN LINER PLATE AT BOTH SIDES OF THE DAMAGE. PURGE WITH NITROGEN DURING HOTWORK. REMOVE WELD, REWELD, INSTALL THREADED PLUGS IN HOLES AND SEALWELD. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT.	300mm
10	FILLET-WELD FAILURE BETWEEN BACKER STRIPS IN UPPER DOME AND LINER PLATES	REMOVE DEFECTIVE WELD AND REWELD. CLEAN TO BARE META, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT.	300 mm
11	FILLET-WELD FAILURE BETWEEN 3.5 MM STEEL COVER PLATE AND LINER PLATES IN UPPER DOME	DRILL HOLES IN STEEL COVERS AND PURGE WITH NITROGEN DURING HOT WORK. REMOVE DEFECTIVE WELD AND REWELD. INSTALL THREADED PLUGS IN HOLES AND SEALWELD. CLEAN TO BARE METAL, INCLUDING WELD, RETEST WITH VACUUM BOX, RECOAT	300 mm

#### GENERAL NOTES:

1. PATCH PLATES FOR UPPER DOME, DOME EXTENSION, BARREL OF TANK AND LOWER DOME TO BE 6mm THICK. PATCH PLATES FOR BOTTOM PLATE TO BE 11mm THICK.
2. ALL WELDS TO BE CONTINUOUS.
3. SANDBLAST PATCH PLATES BEFORE WELDING IN PLACE AND BREAK EXPOSED EDGE BY GRINDING CHAMFER OF 1.5 mm MINIMUM.
4. THE REPAIR PROCEDURE IS THE SAME, REGARDLESS OF THE LOCATION OF THE DAMAGE IN THE UPPER DOME, TANK BARREL, OR LOWER DOME.

**Section 9**

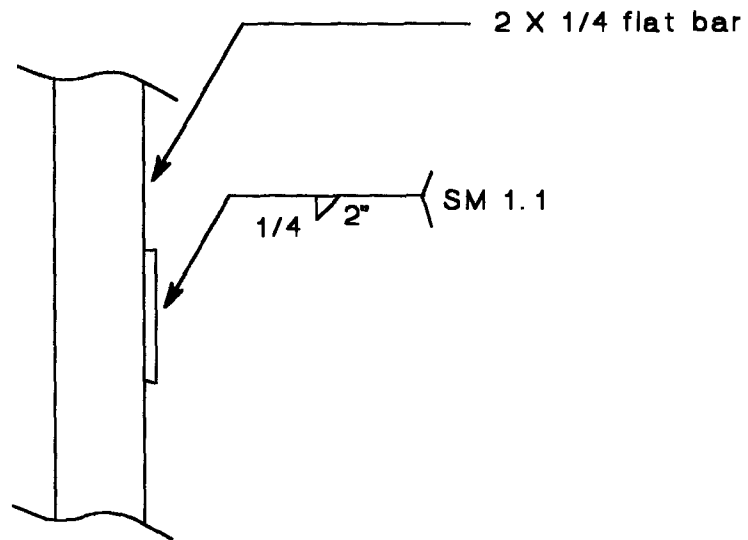
**RECOMMENDED REPAIRS**

TAN	Repair #	TYPE	Actual Repair	Coated Areas Square Inches	Plate size Inches	Weld Lgth Inches	Location	Quadrant	Course	Plate	Comments
	1		10	20		2	Upper Dome	D	B	19	
	2		10	20		2	Upper Dome	D	B	22	
	3		10	20		3	Upper Dome	D	A	22	
	4		10	20		3	Upper Dome	D	A	22	
	5		10	20		2	Upper Dome	D	A	22	
	6		10	20		2	Upper Dome	D	A	22	
	7		10	20		4	Upper Dome	D	EXT	22	
	8		10	30		4	Upper Dome	D	EXT	22	
	9		5	20	5 X 5	20	Upper Dome	D	7	22	
	10		10	20		2	Cylinder	D	28	22	
	11		10	30		4	Cylinder	C	A	17	
	12		10	20		2	Upper Dome	D	A	22	
	13		10	20		2	Upper Dome	D	A	22	
	14		10	20		2	Upper Dome	D	A	21	
	15		2	40			Upper Dome	D	A	21	
	16		10	20		2	Upper Dome	D	A	21	
	17		10	30		6	Upper Dome	D	A	19	
	18		10	20		2	Upper Dome	D	A	19	
	19		10	20		2	Upper Dome	C	EXT	18	
	20		10	20		2	Upper Dome	C	A	18	
	21		9	20		2	Upper Dome	C	A	16	
	22		10	20		2	Upper Dome	C	EXT	18	
	23		10	20		2	Cylinder	D	6	21	
	24		9	20		2	Cylinder	D	10	12	
	25		9	20		2	Cylinder	D	13	21	
	26		9	20		2	Cylinder	D	13	21	
	27		9	20		2	Cylinder	D	13	21	
	28		10	20		1	Cylinder	D	16	21	
	29		10	30		3	Cylinder	C	14	22	
	30		9	20		1	Cylinder	C	25	15	
	31		10	130			Cylinder	C	24	15	
	32		10	100		3	Cylinder	C	28	18	
	33		10	40		36	Lower Dome	D	3	21	
	34		8	50			Lower Dome	C	3	17	
	35		8	100			Lower Dome	C	3	16	
	36		8	140			Lower Dome	C	2	18	
	37		8	130			Lower Dome	C	2	15	
	38		8	200			Lower Dome	D	2	21	
	39		8	20		2	Upper Dome	A	B	3	
	40		10	20		2	Upper Dome	A	B	9	



TAN	7									page 2
Repair #	TYPE	Actual Repair	Coated Areas Square Inches	Plate size Inches	Weld Lgth Inches	Location	Quadrant	Course	Plate	Comments
41		10	40		10	Upper Dome	A	A	2	
42		10	20		2	Upper Dome	A	A	3	
43		10	20		2	Upper Dome	A	A	3	
44		10	40		20	Upper Dome	A	A	3	
45		10	20		3	Upper Dome	A	A	4	
46		10	20		2	Upper Dome	B	A	10	
47		10	40		16	Upper Dome	B	A	11	
48		10	20		2	Cylinder	B	8	11	
49		9	20		2	Cylinder	B	15	9	
50		10	80		20	Cylinder	B	28	11	
51		10	30		30	Cylinder	B	28	8	
52		10	30		16	Cylinder	B	28	7	
53		10	30		25	Cylinder	B	28	6	
54		10	20		6	Cylinder	B	28	5	
55		10	30		24	Cylinder	B	28	4	
56		2	30		30	Cylinder	B	28	2	
57		10	70			Lower Dome	B	3	11	
58		8	50			Lower Dome	B	3	11	
59		8	180			Lower Dome	A	3	3	
60		8	20		4	Cylinder	A	17	1	
62		10	900			Lower Dome	A	3	1	
63		8	50			Lower Dome	B	2	7	
64		8	70			Lower Dome	A	2	1	
65		8	100			Lower Dome	A	1	1	
66		8	50			Lower Dome	B	1	9	

INSPECTED 3/27/98 BY JF & TK



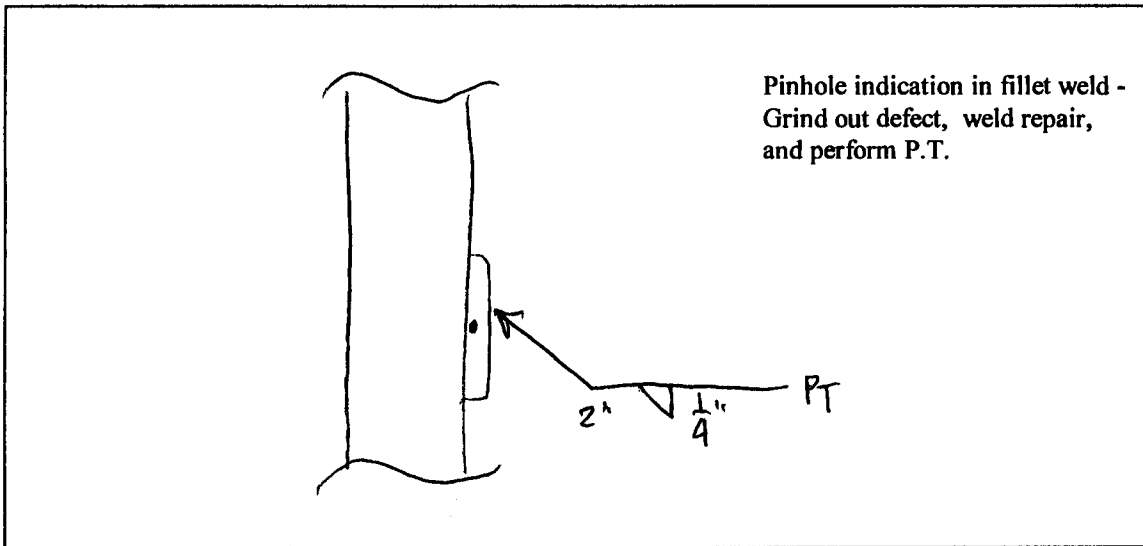
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 001	File: 7r001
Upper Dome	Quadrant: D
Course: B	Plate: 19
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 002    Type: 10    Location: D 22 - B



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

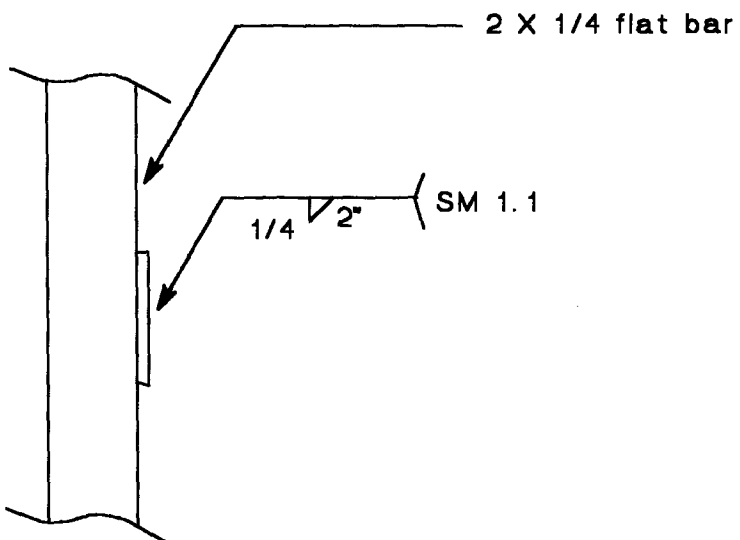
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

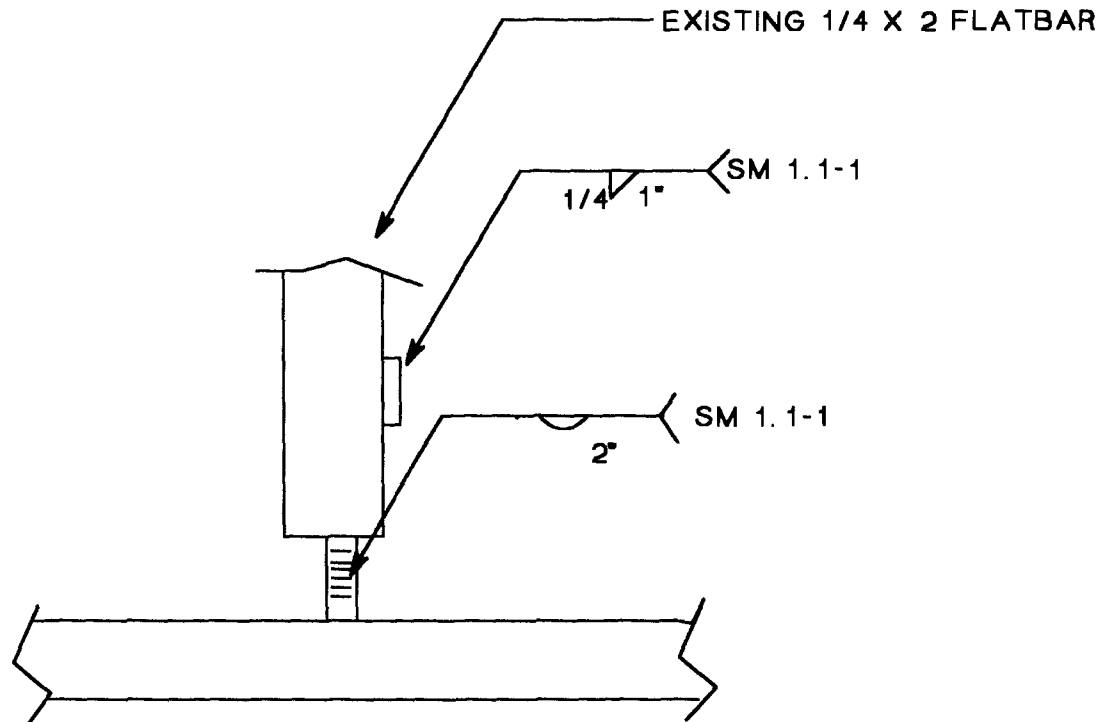
INSPECTED 3/27/98 BY JF & TK



TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 AS BUILT DRAWINGS	
Repair No.: 002	File: 7r002
Upper Dome	Quadrant: D
Course: B	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

DEFECT INSPECTED 3/27/98 BY JF & TK



EXISTING 1/4 X 2 FLATBAR

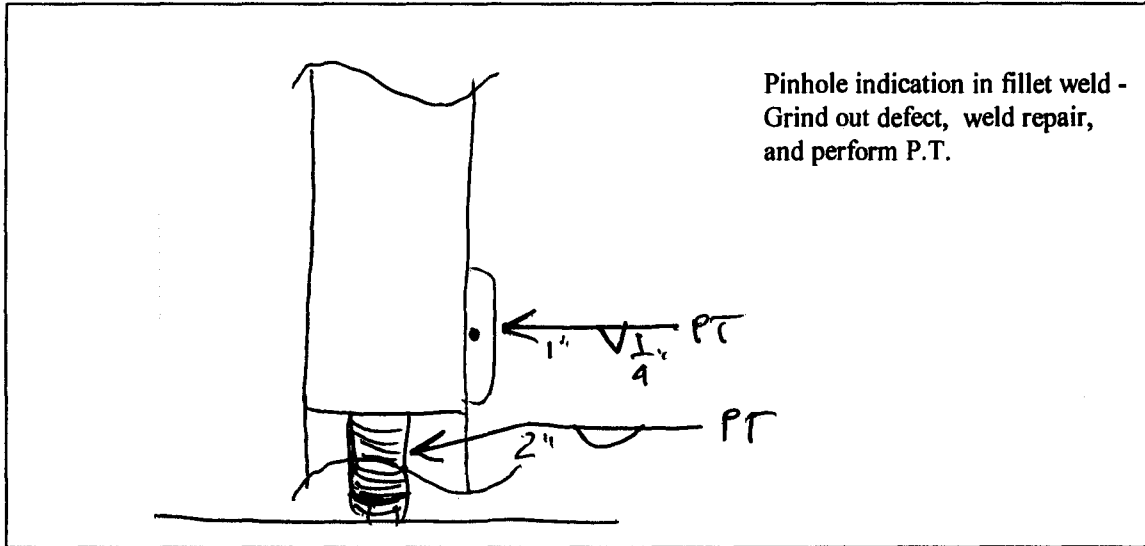
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 AS BUILT DRAWINGS	
Repair No.: 003	File: 7R003
Upper Dome	Quadrant: D
Course: A	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 003 Type: 10 Location: D22-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zachell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

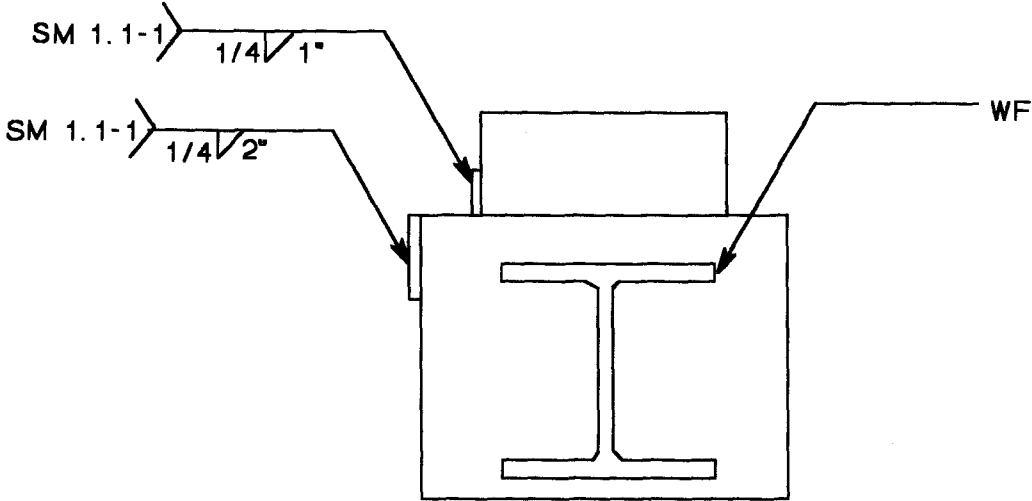
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zachell Date Accepted: 4-3-98

Defect Inspected 3/27/98 by JF 7 TK



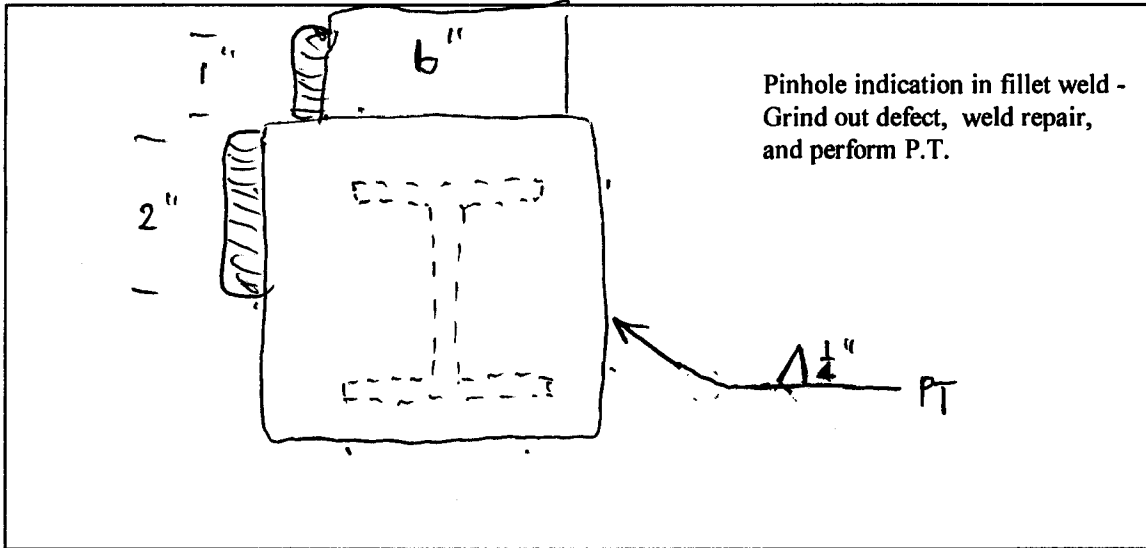
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 AS BUILT DRAWINGS	
Repair No.: 004	File: 7R004
Upper Dome	Quadrant: A
Course: A	Plate 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 004    Type: 10    Location: D22-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zehrell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

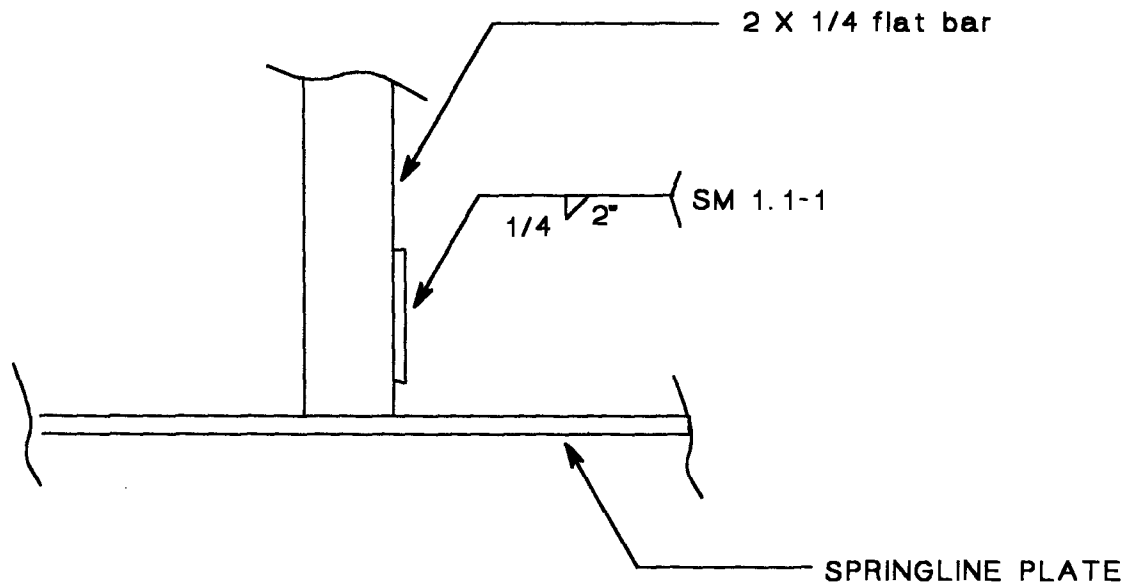
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zehrell                      Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



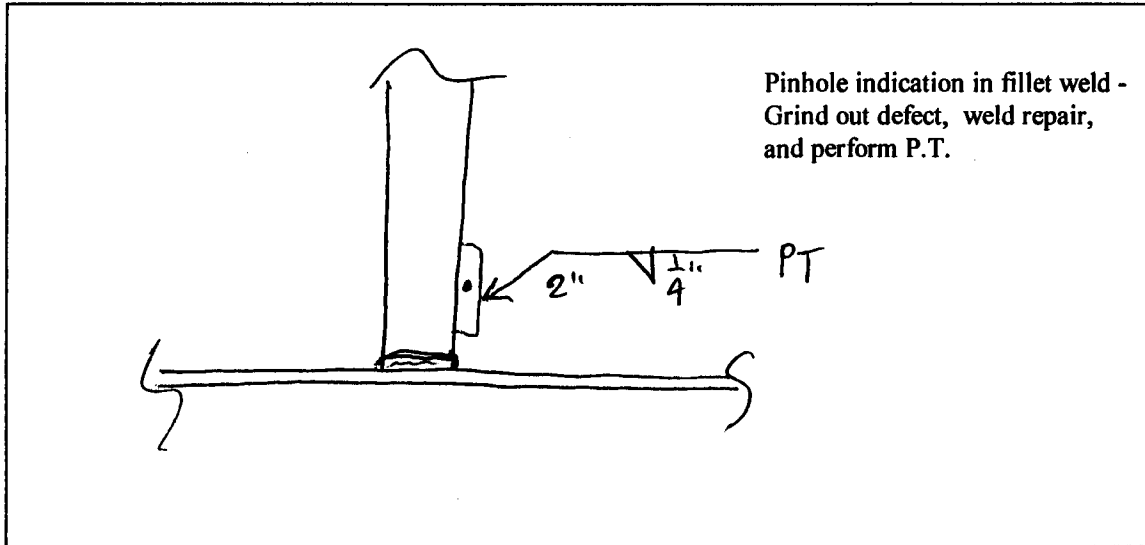
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No.: 005	File: 7R005
Upper Dome	Quadrant: A
Course: A	Plate: 22
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 005 Type: 10 Location: D 22 - A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zedell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

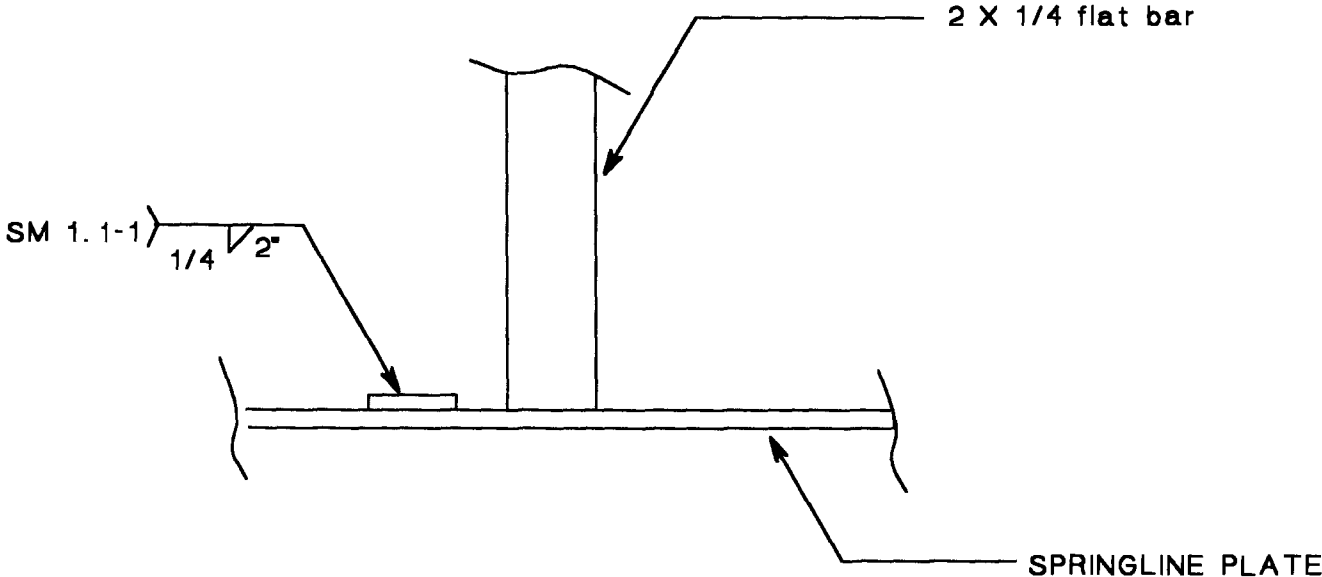
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zedell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



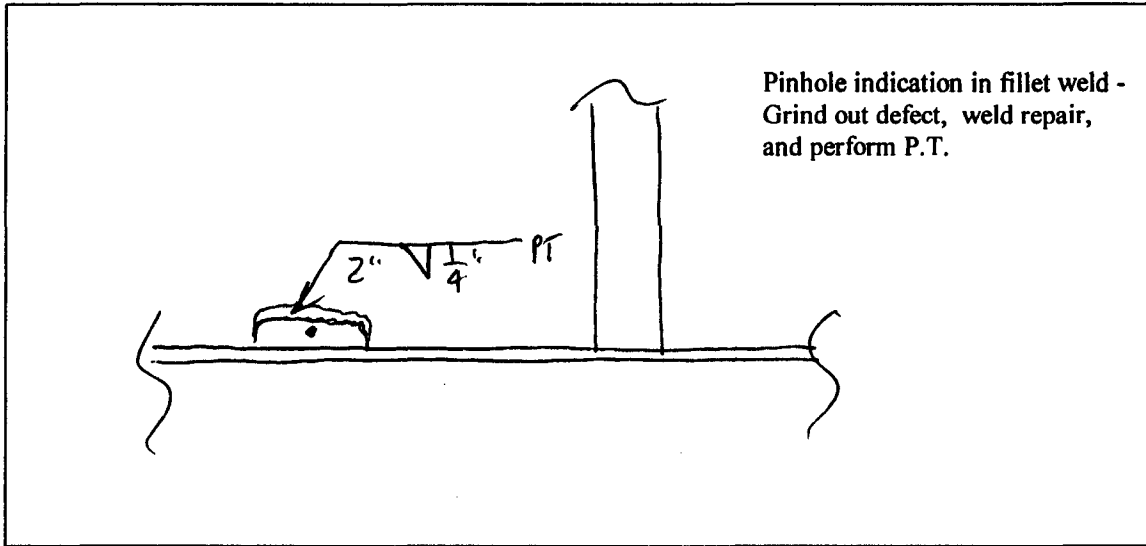
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 006	File: 7R006
Upper Dome	Quadrant: A
Course: A	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 006    Type: 10    Location: 022-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zahrell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

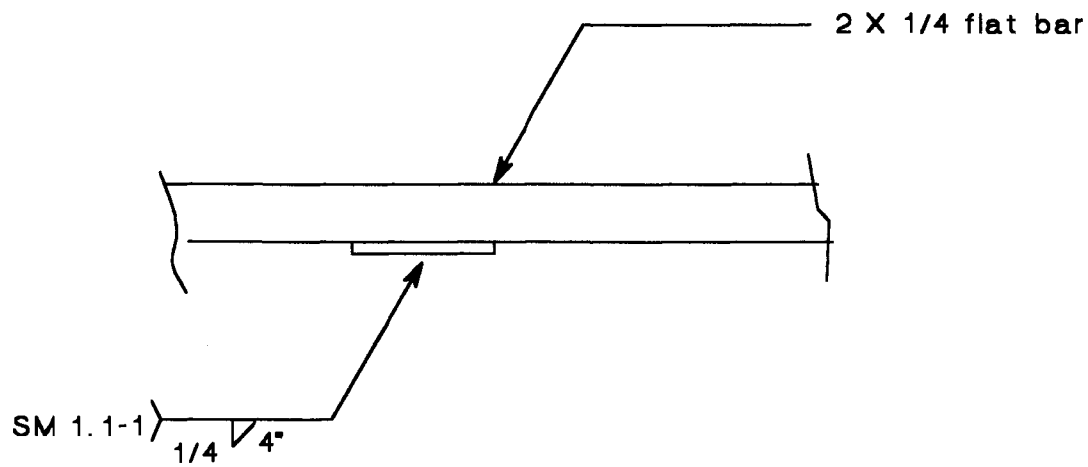
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zahrell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



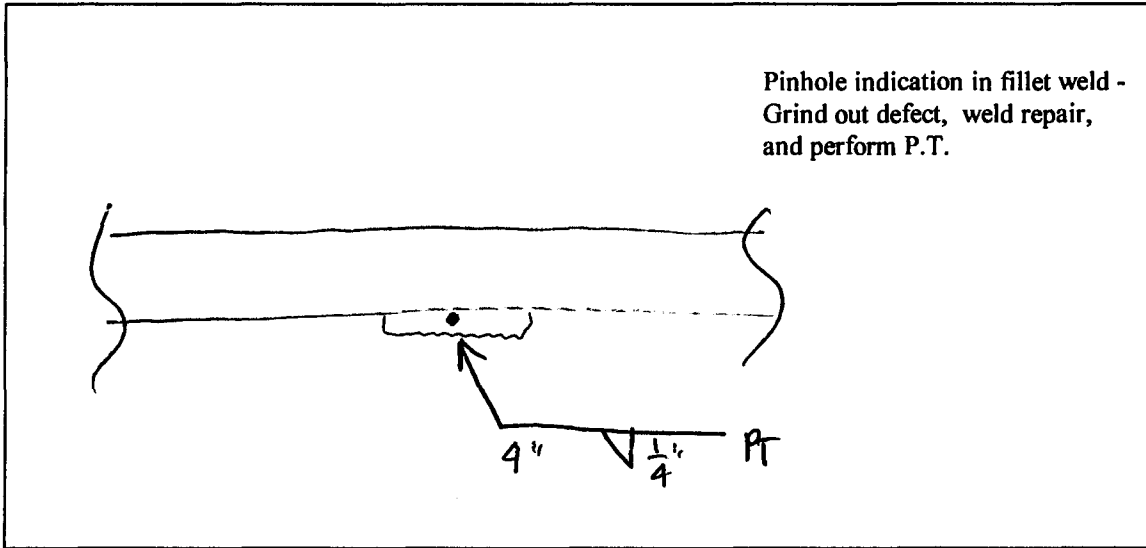
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No. : 007	File: 7R007
Upper Dome	Quadrant: D
Course: EXTENSION	Plate: 22
Drawn by: Tom Kitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 007    Type: 10    Location: D22-EXT



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zehrell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

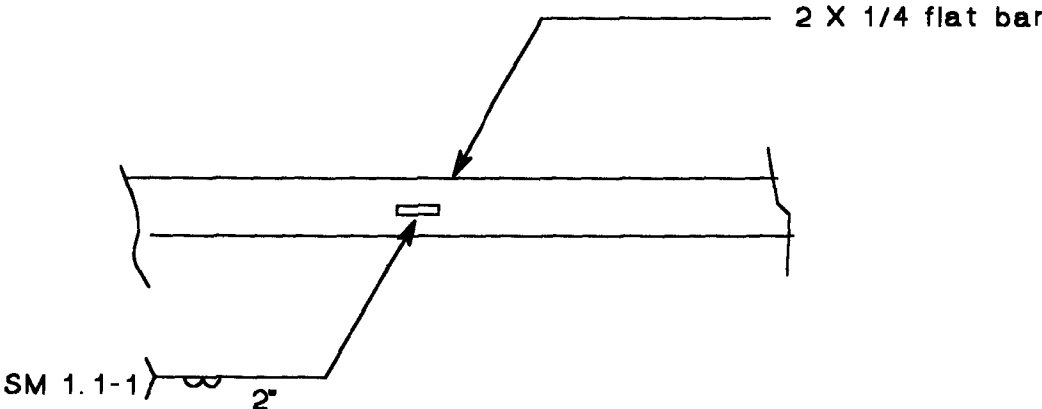
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zehrell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



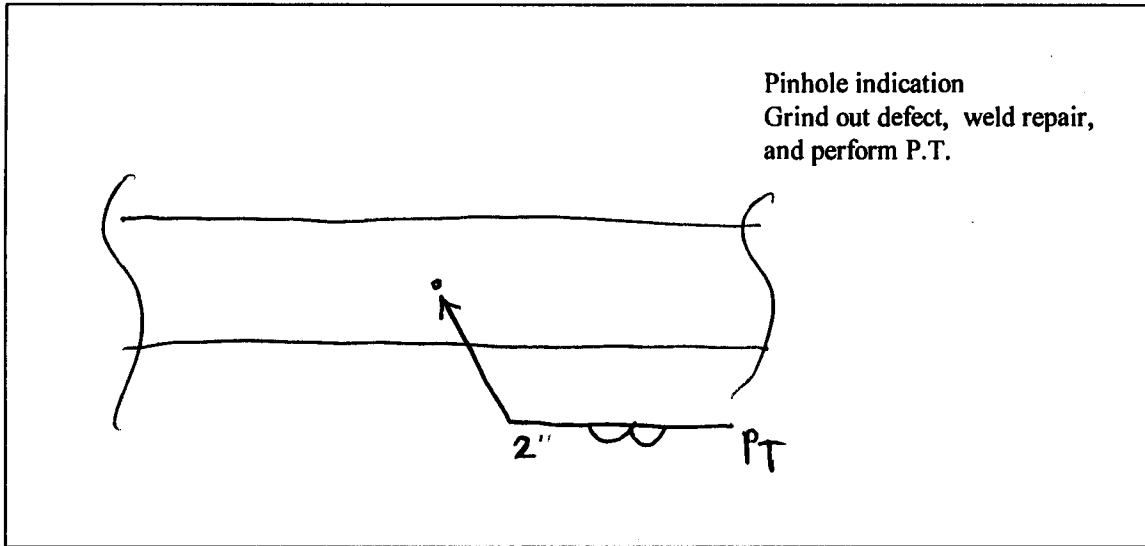
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No. : 008	File: 7R008
Upper Dome	Quadrant: D
Course: EXTENSION	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 008 Type: 10 Location: D22-EXT



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

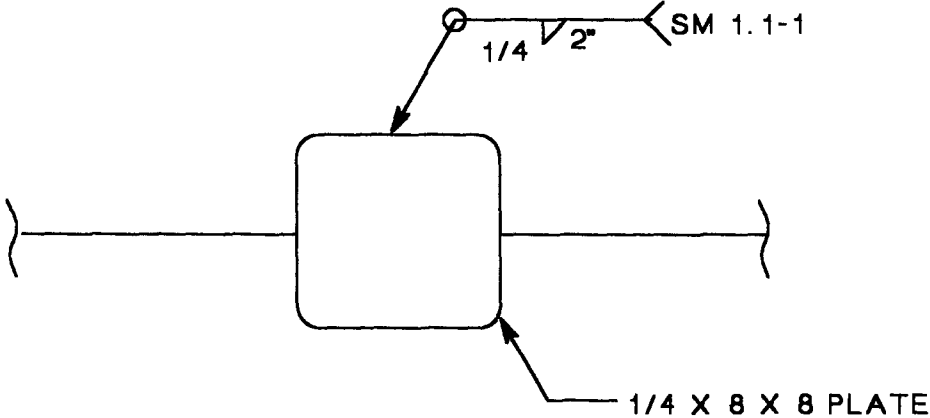
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



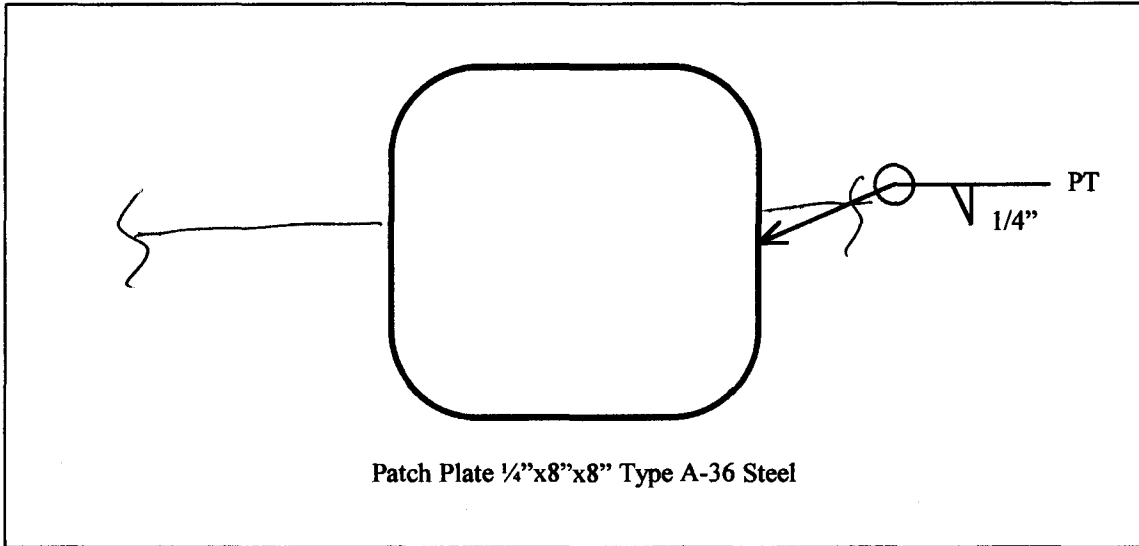
TYPE 5 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No.: 009	File: 7R009
CYLINDER	Quadrant: D
Course: 7	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 009 Type: 5 Location: D22-07



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zarell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

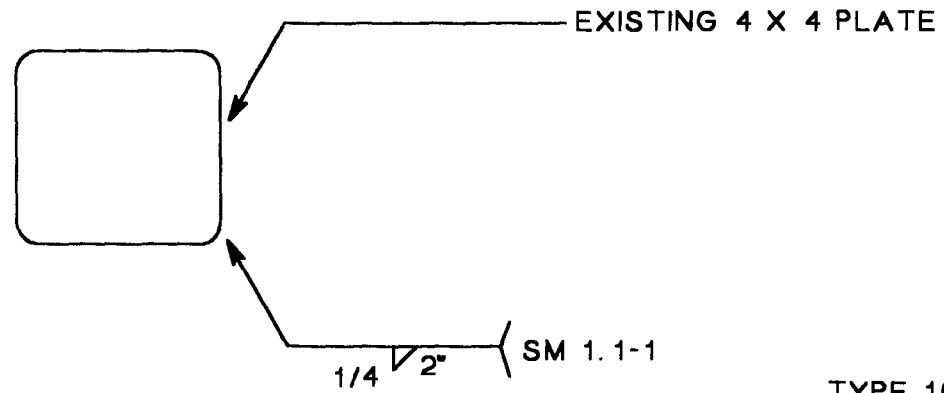
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zarell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



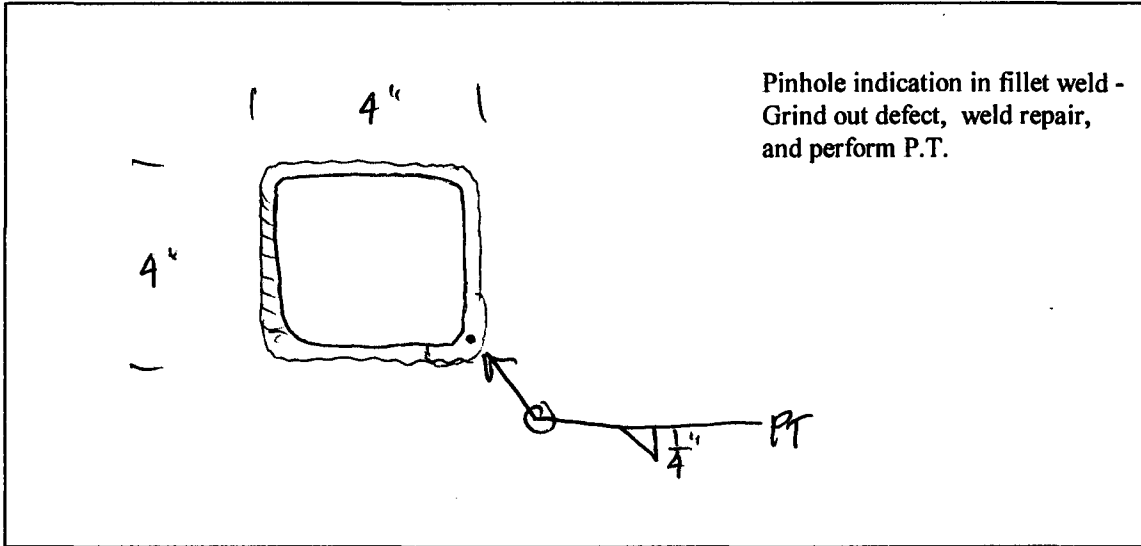
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No.: 010	File: 7R010
CYLINDER	Quadrant: D
Course: 28	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 010 Type: 10 Location: D22-28



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

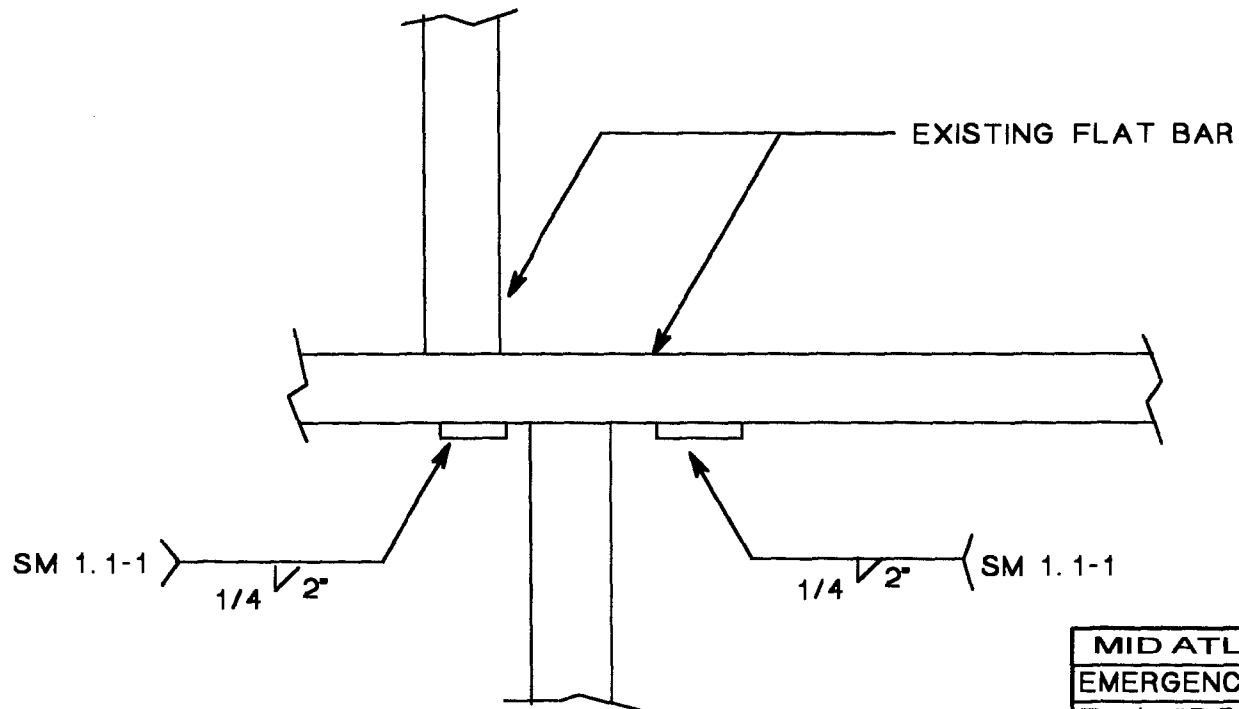
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



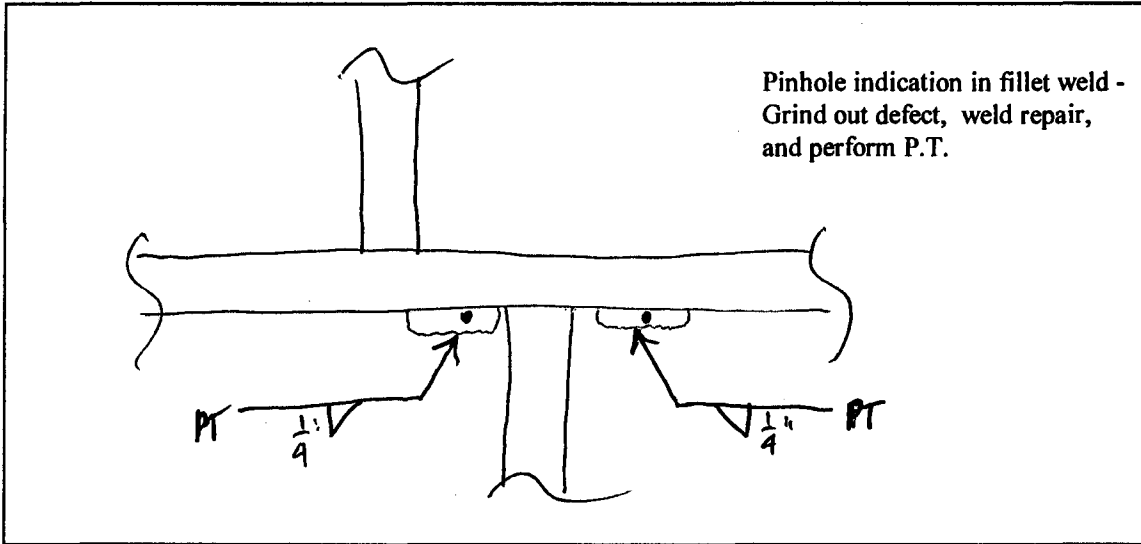
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No.: 011	File: 7R011
UPPER DOME	Quadrant: C
Course: A	Plate: 17
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 011    Type: 10    Location: C17-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

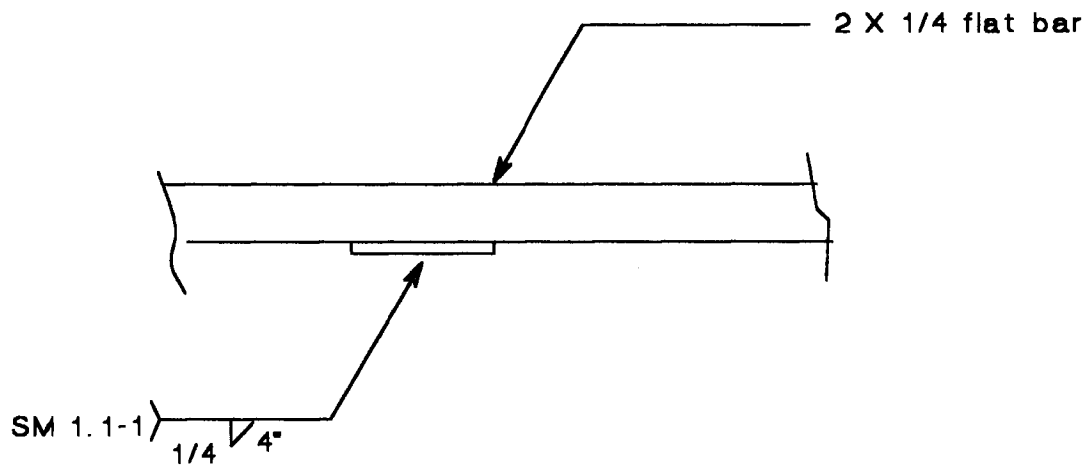
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



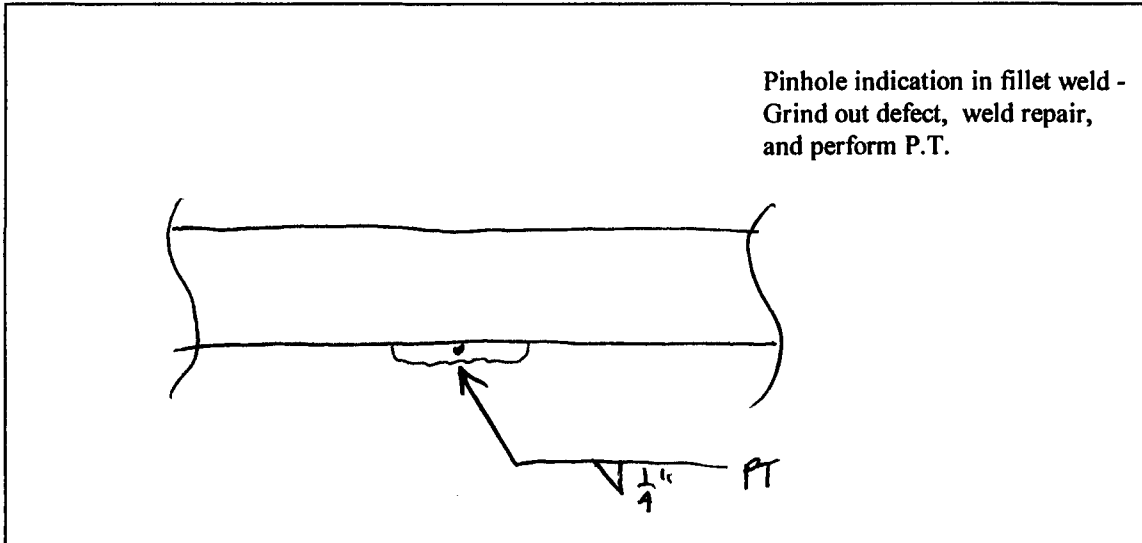
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 012	File: 7R012
Upper Dome	Quadrant: D
Course: A	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 012    Type: 10    Location: D22-A/B



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

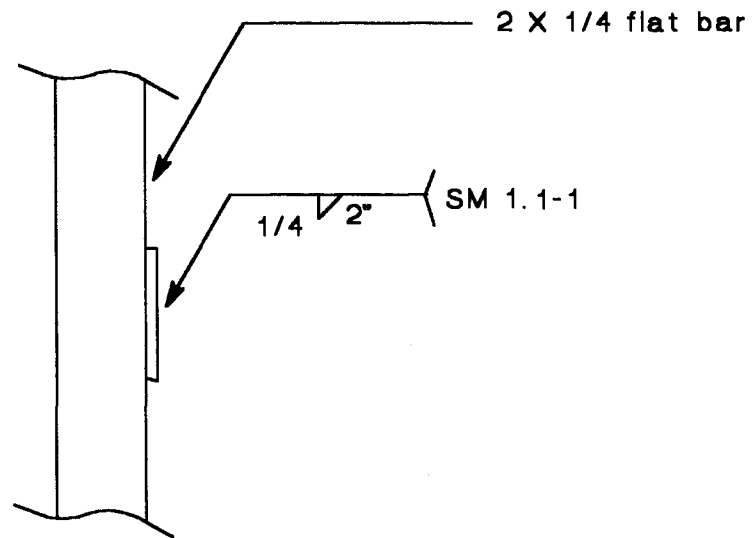
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



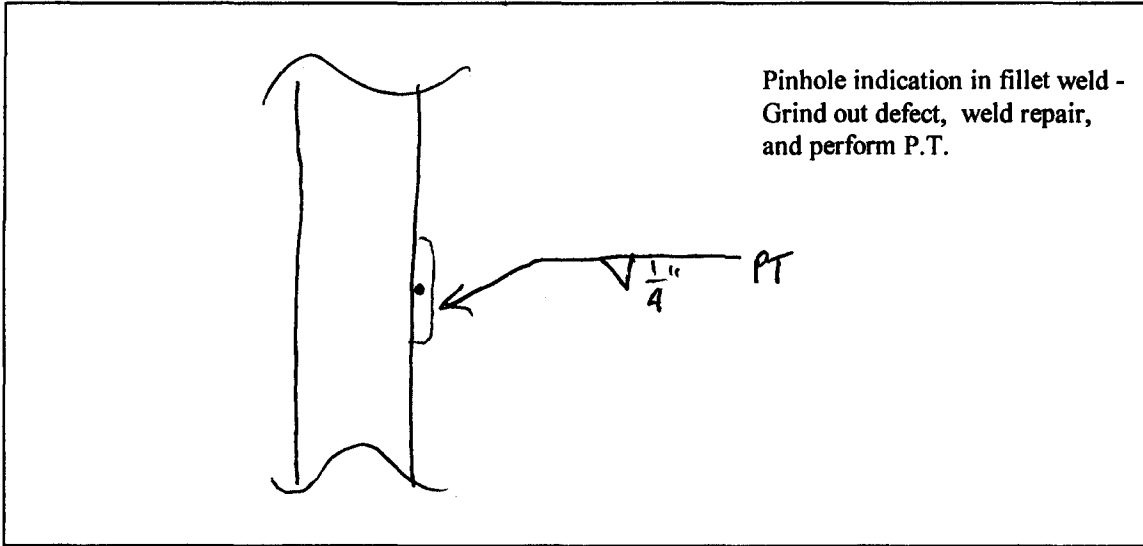
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 013	File: 7R013
Upper Dome	Quadrant: D
Course: A	Plate: 22
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 013    Type: 10    Location: D22-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

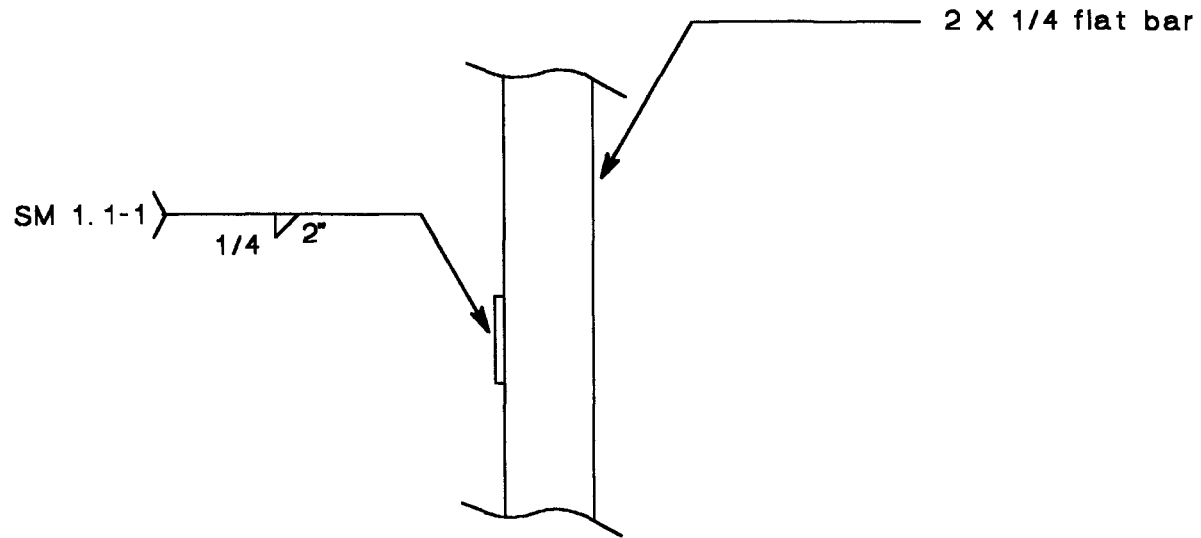
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



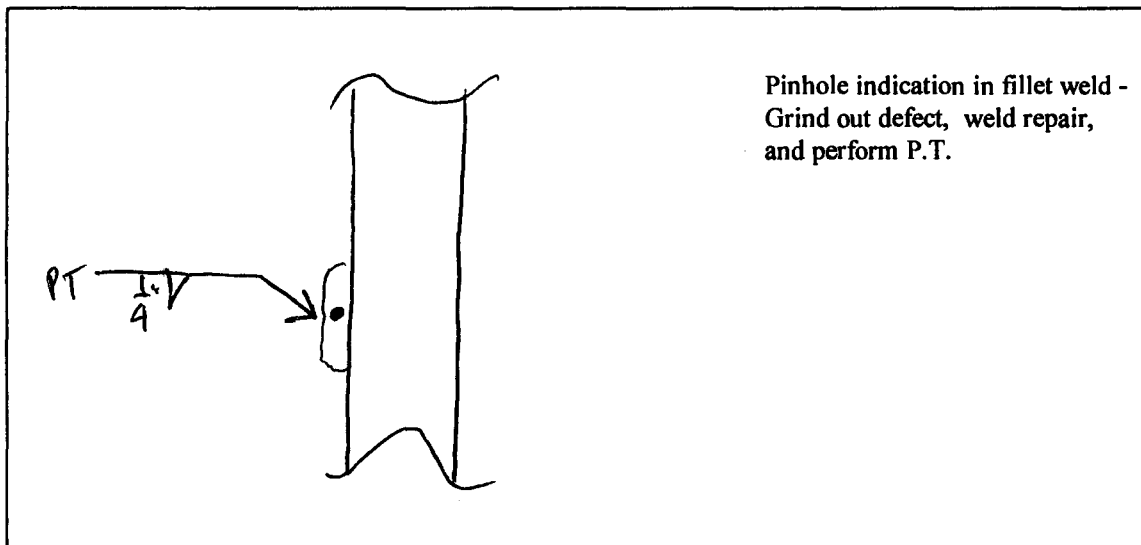
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 014	File: 7R014
Upper Dome	Quadrant: D
Course: A	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 014 Type: 10 Location: D21 - A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

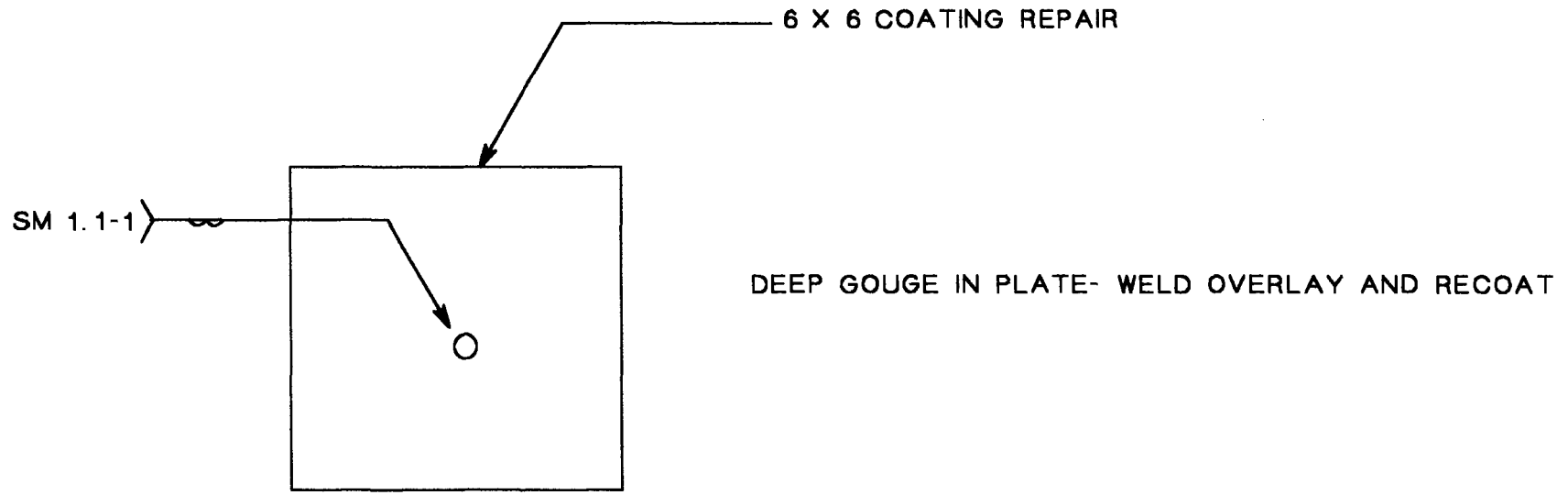
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



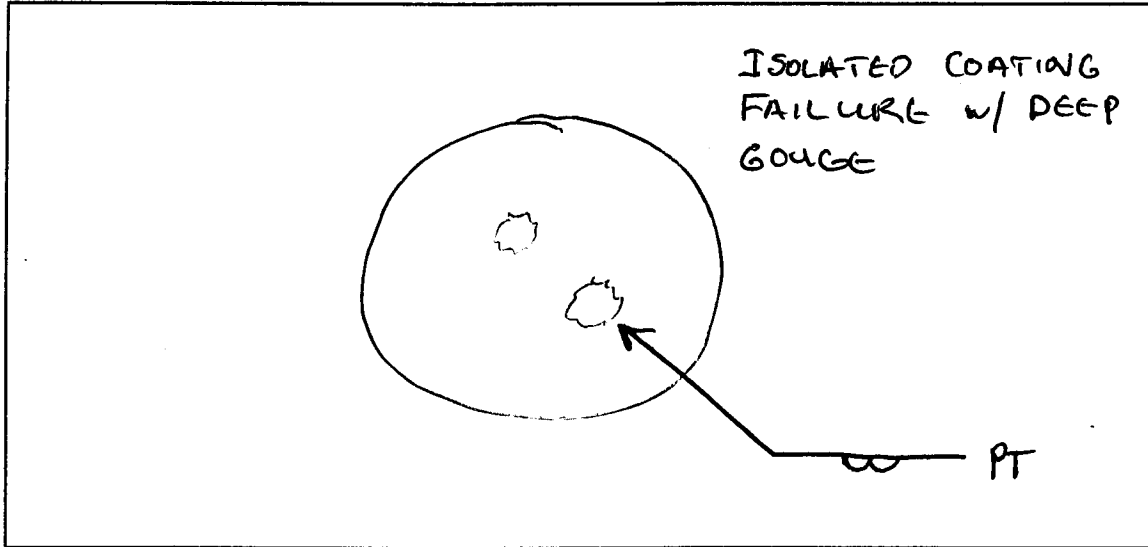
TYPE 2 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 015	File: 7R015
Upper Dome	Quadrant: D
Course: A	Plate: 21
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 015 Type: 82 Location: D21-A



Sketch of Repair Area

Weld Repair ~~N/A~~

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zickell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

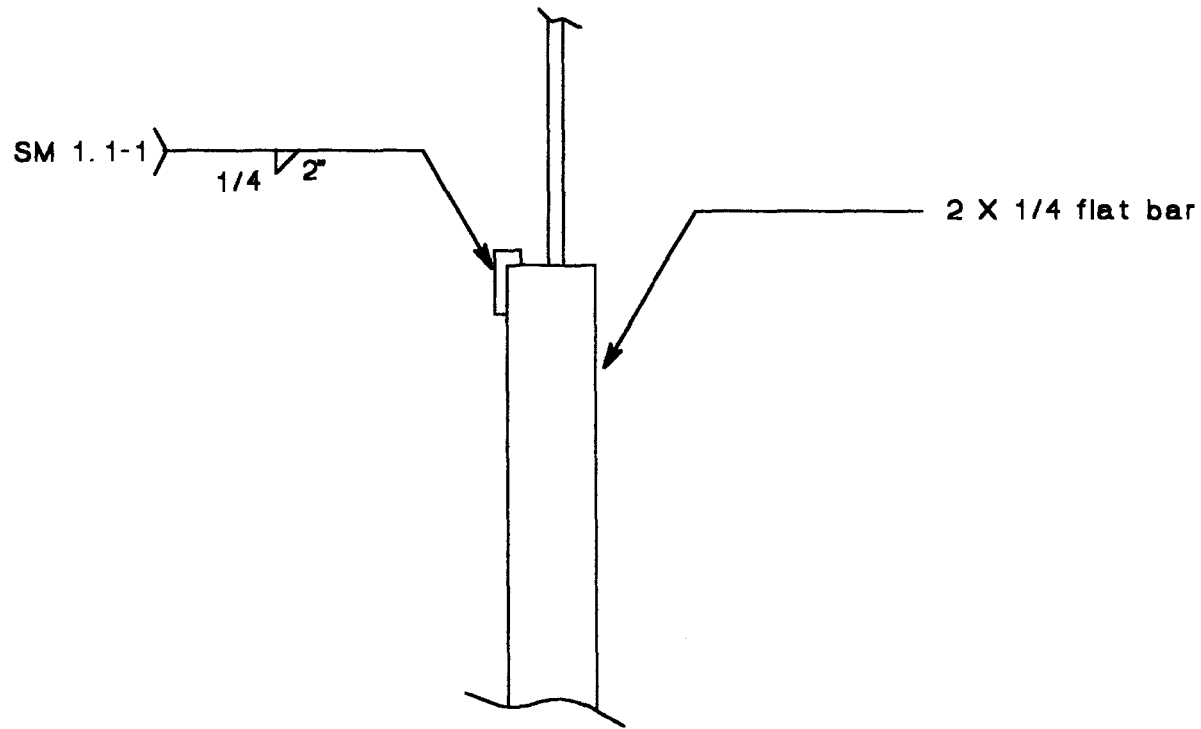
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zickell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



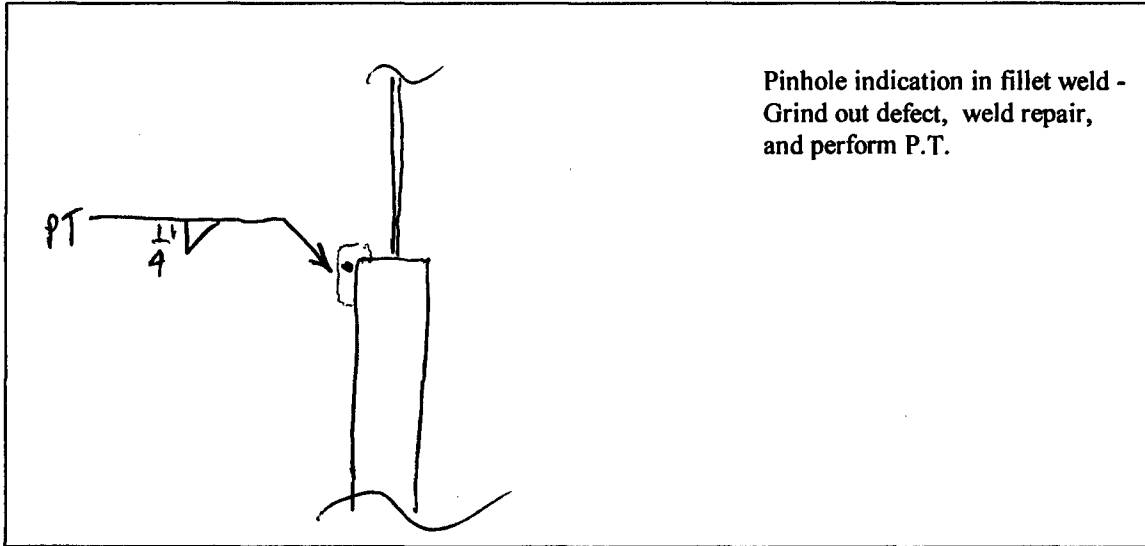
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 016	File: 7R016
Upper Dome	Quadrant: D
Course: A	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 016    Type: 10    Location: D21-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zubell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

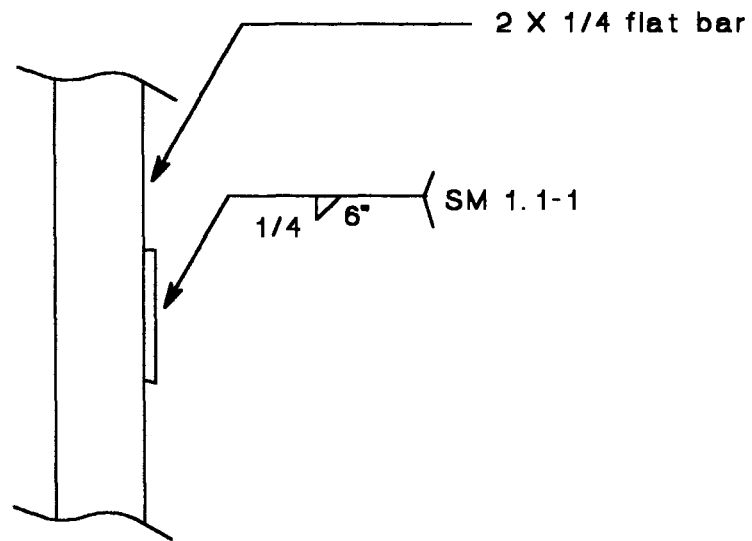
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zubell                      Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



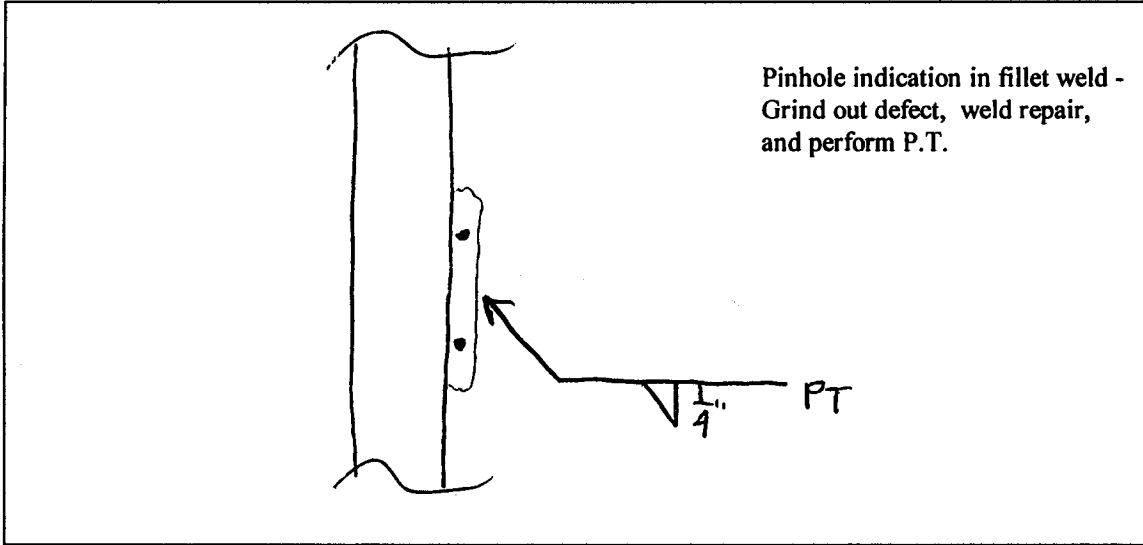
**TYPE 10 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWINGS</b>	
Repair No.: 017	File: 7R017
Upper Dome	Quadrant: D
Course: A	Plate: 19
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 017 Type: 10 Location: D19-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zickell

Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

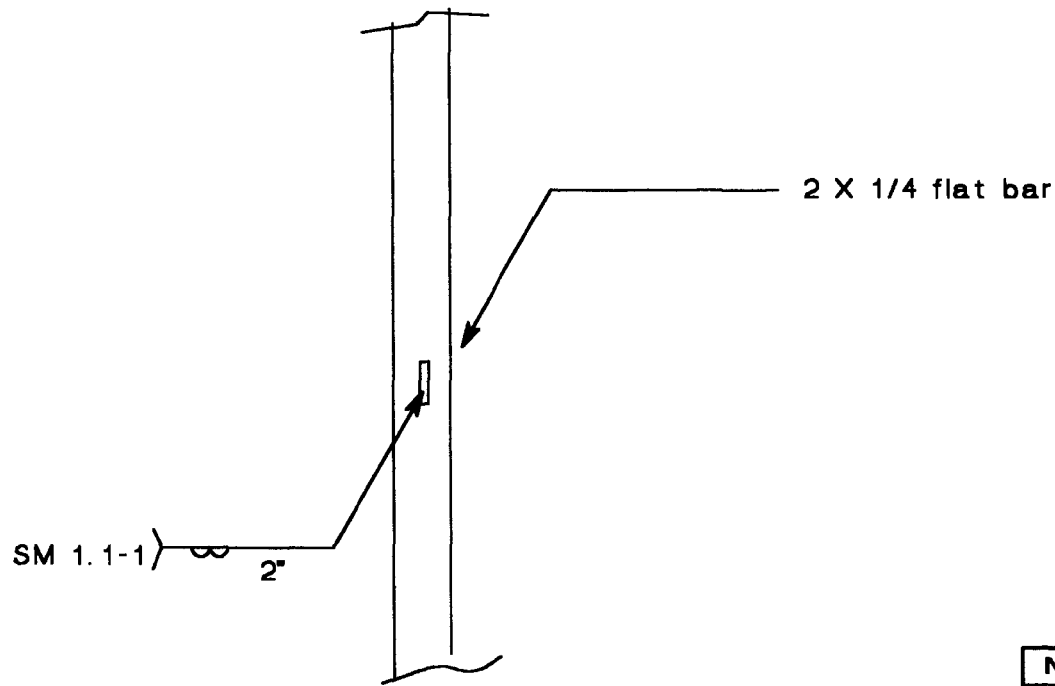
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zickell

Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



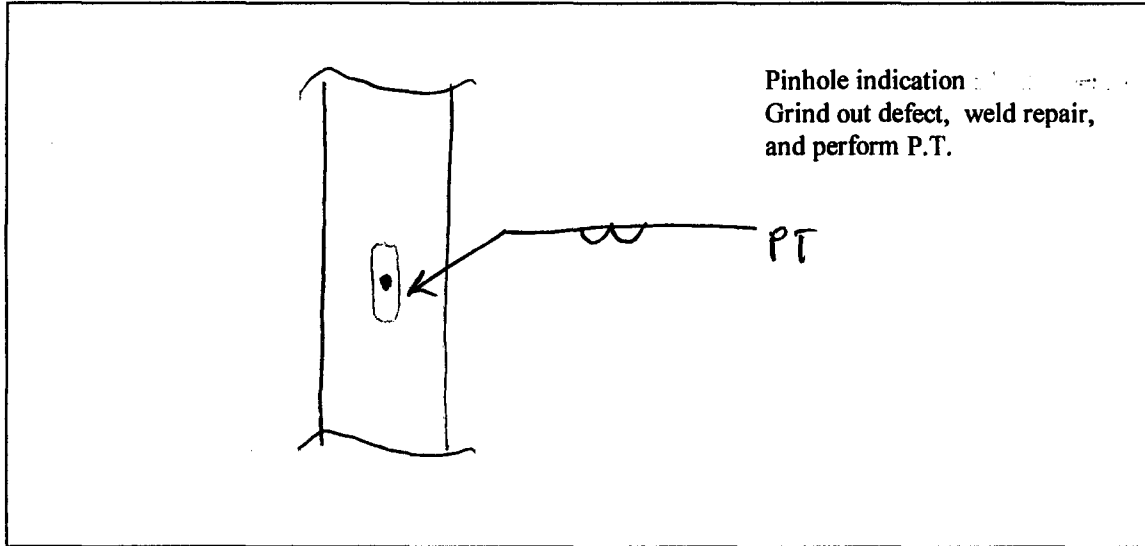
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 018	File: 7R018
Upper Dome	Quadrant: D
Course: A	Plate: 19
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 018    Type: 10    Location: D19-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

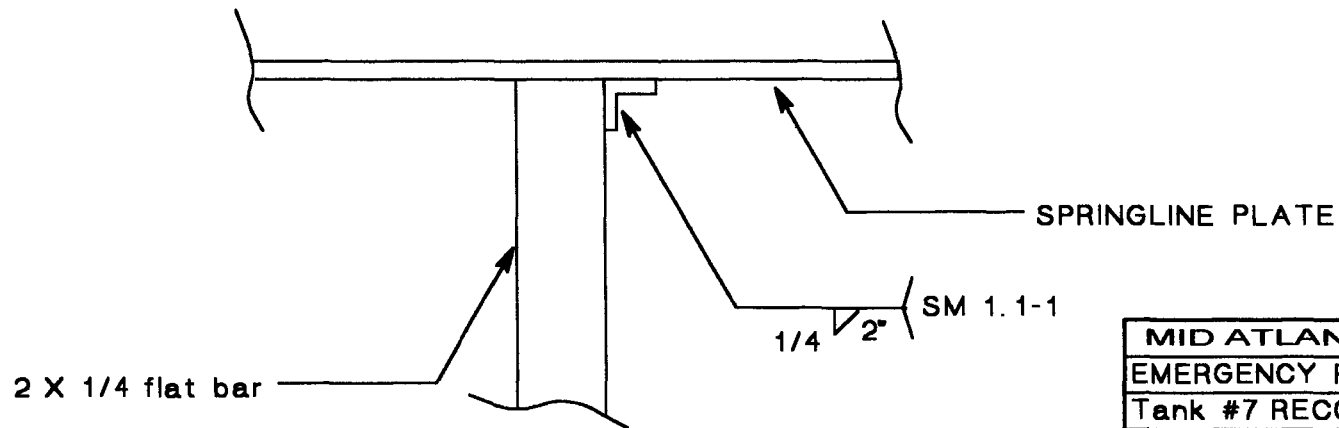
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



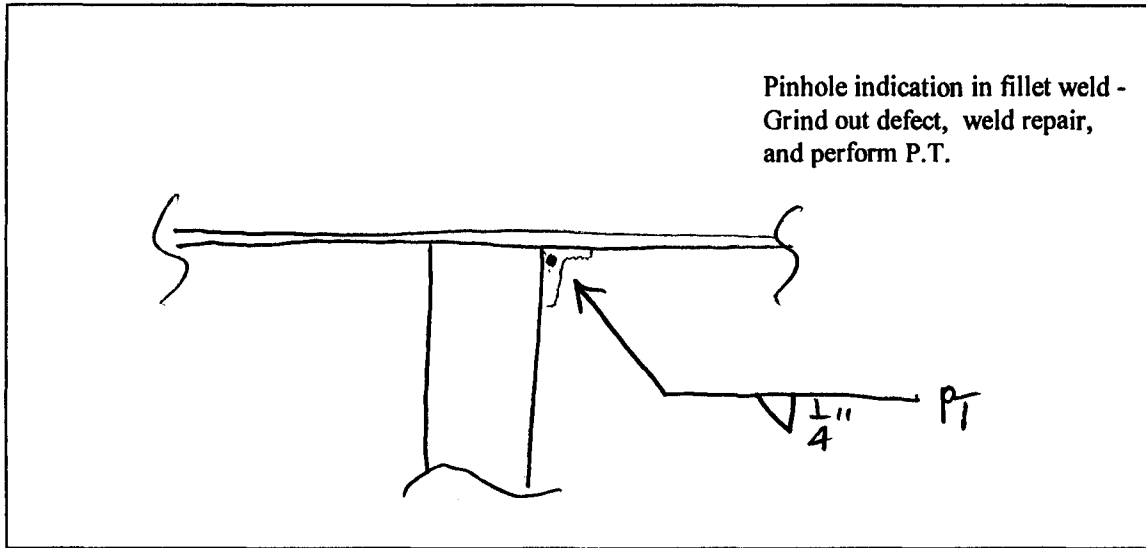
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No. : 019	File: 7R019
Upper Dome	Quadrant: C
Course: EXTENSION	Plate: 18
Drawn by: Tom Kitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 019 Type: 10 Location: C18-EXT



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

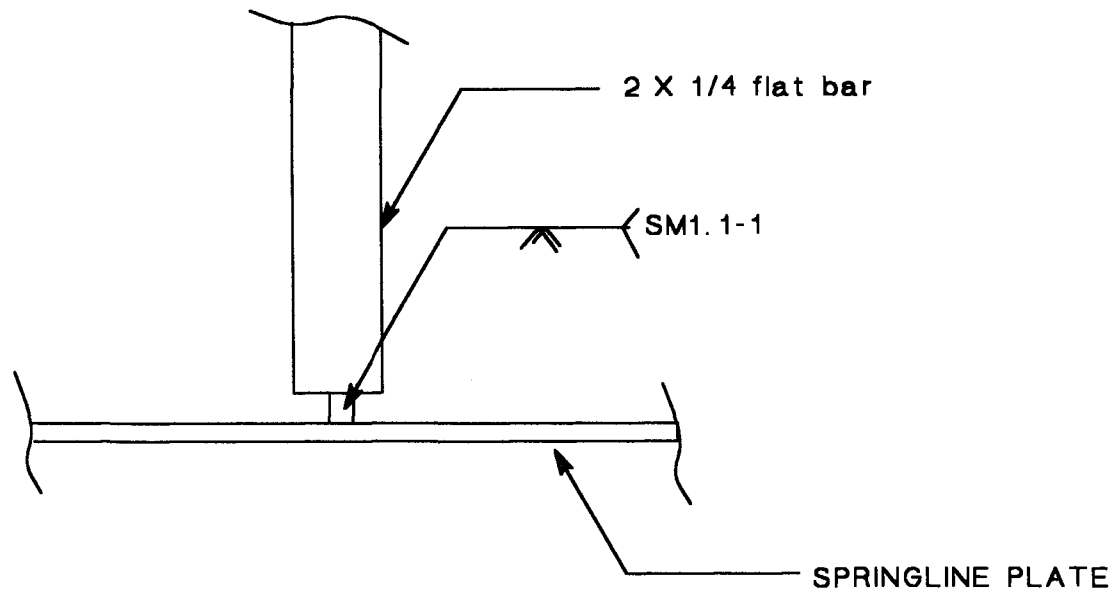
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



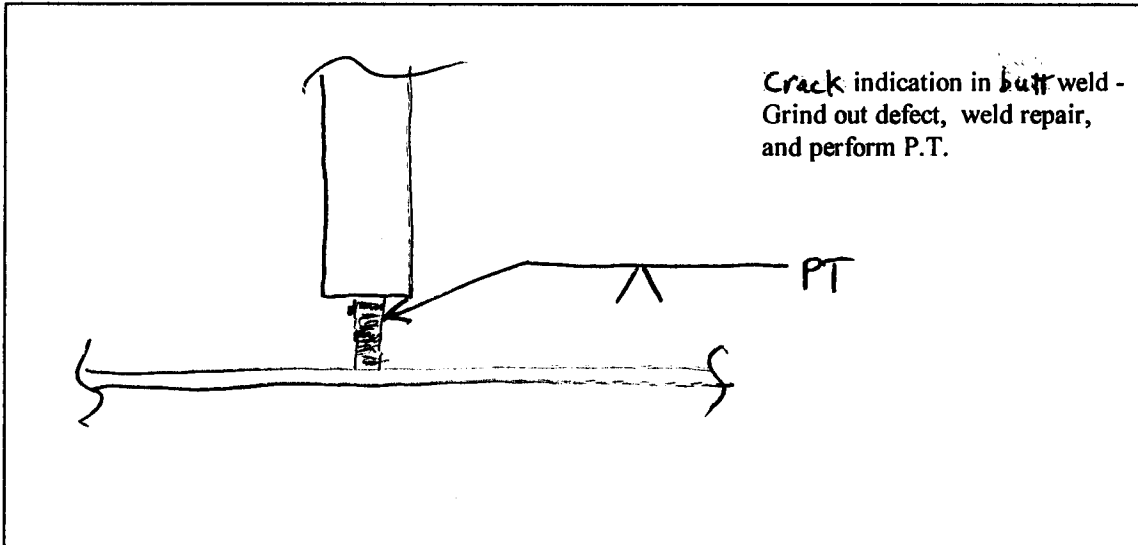
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No. 020	File 7R020
Upper Dome	Quadrant C
Course A	Plate 18
Drawn by Tom Klitcher	Date 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 020 Type: 9 Location: C10-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Becknell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

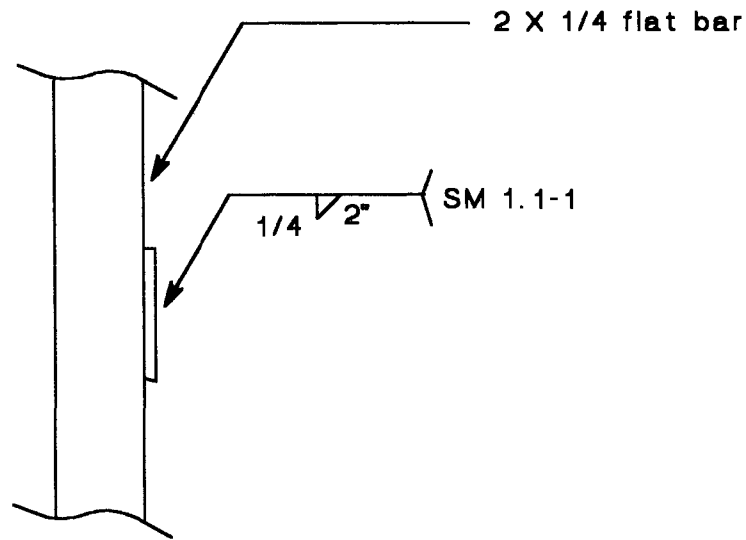
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Becknell Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



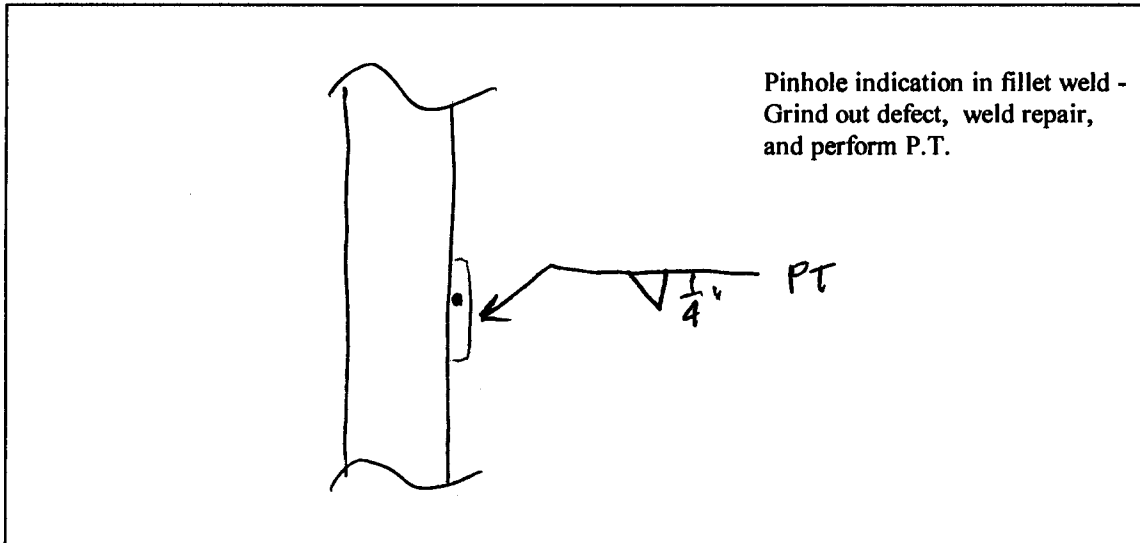
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No. 021	File 7R021
Upper Dome	Quadrant C
Course A	Plate 1C
Drawn by Tom Kitchen	Date 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 021 Type: 10 Location: C16-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

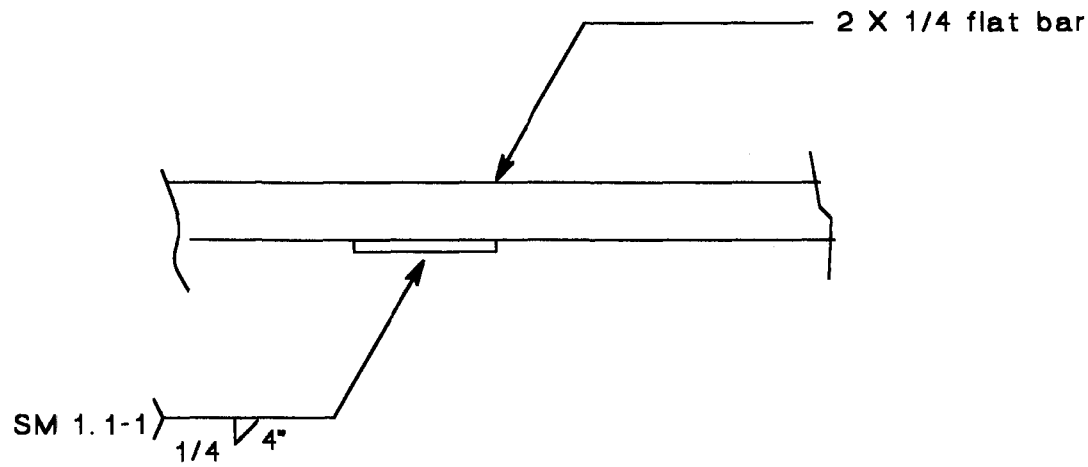
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



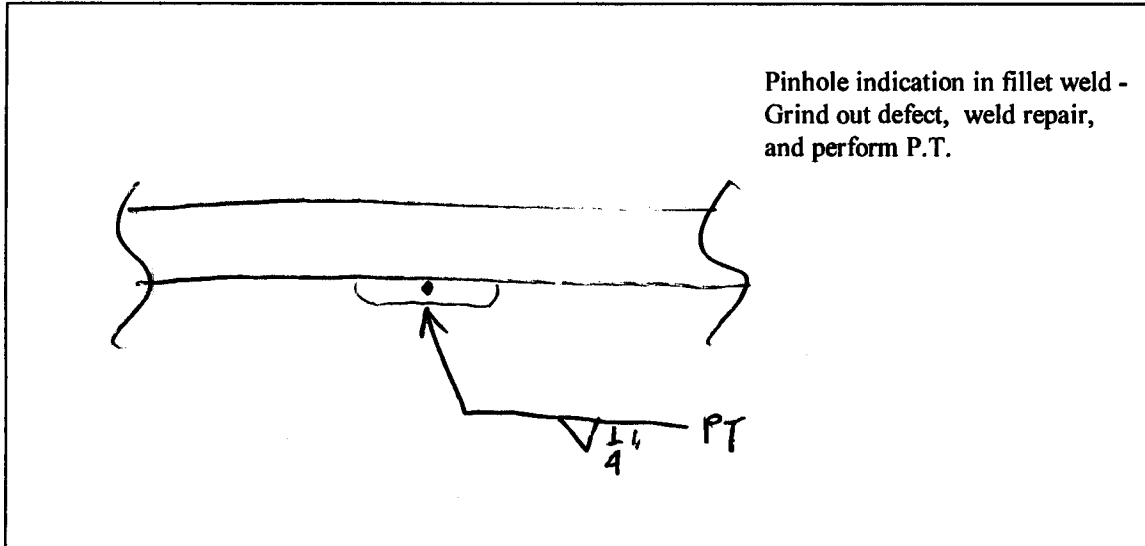
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 022	File: 7R022
Upper Dome	Quadrant: C
Course: EXTENSION	Plate: 18
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 022    Type: 10    Location: C18 - EXT



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

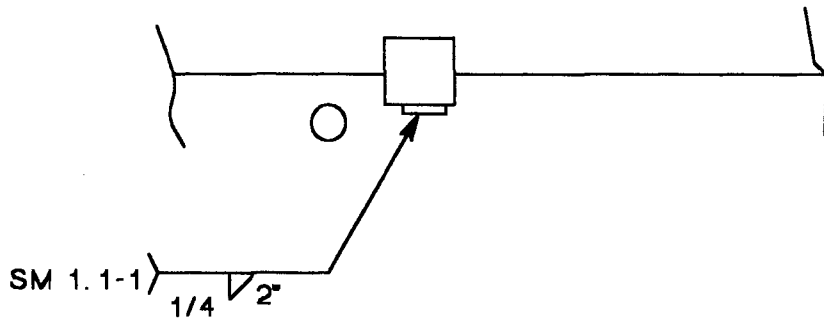
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



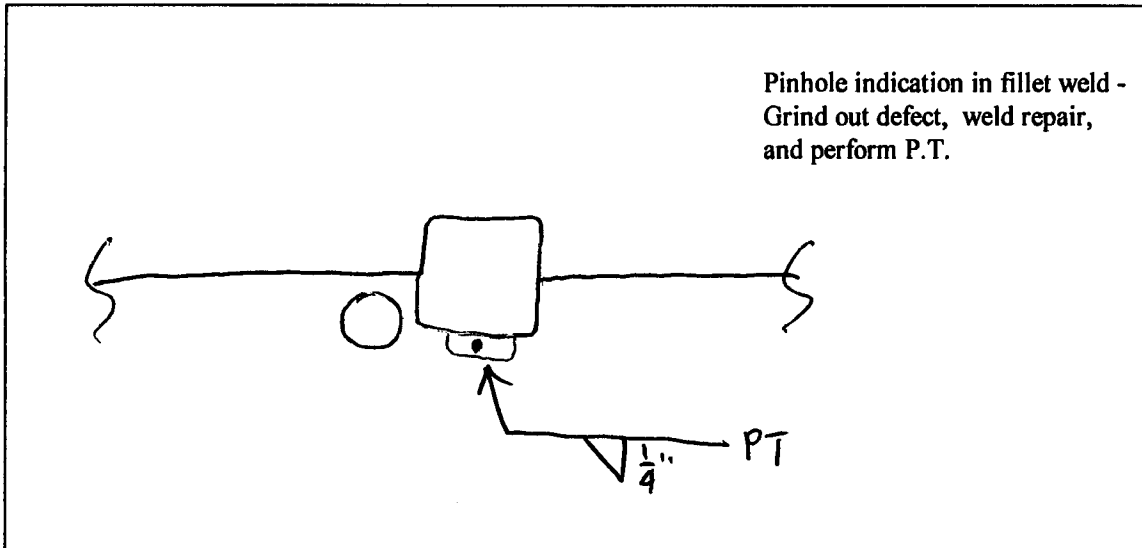
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 023	File: 7R023
CYLINDER	Quadrant: D
Course: 6	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 023    Type: 10    Location: D21-06



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

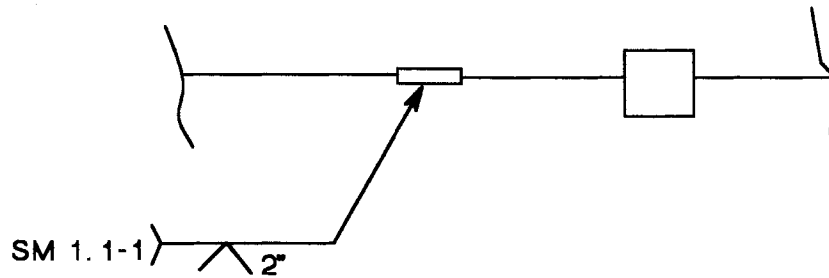
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



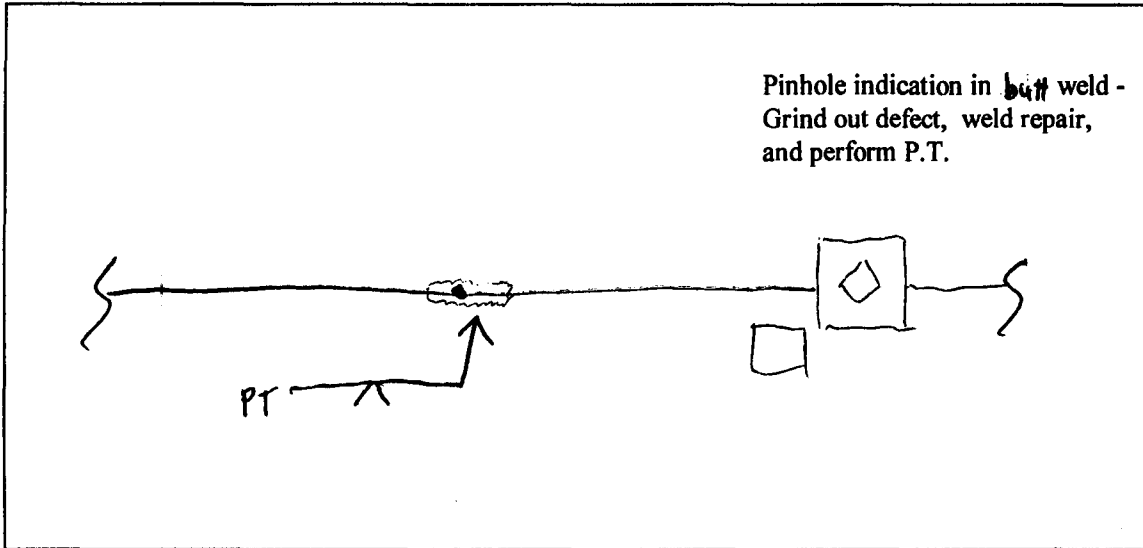
TYPE 9 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 024	File: 7R024
CYLINDER	Quadrant: C
Course: 10	Plate: 12
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 024    Type: 90    Location: D12-10



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zarell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

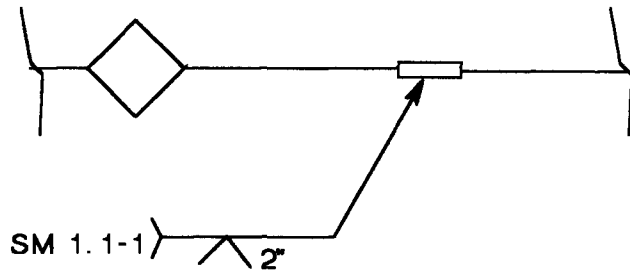
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zarell                      Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



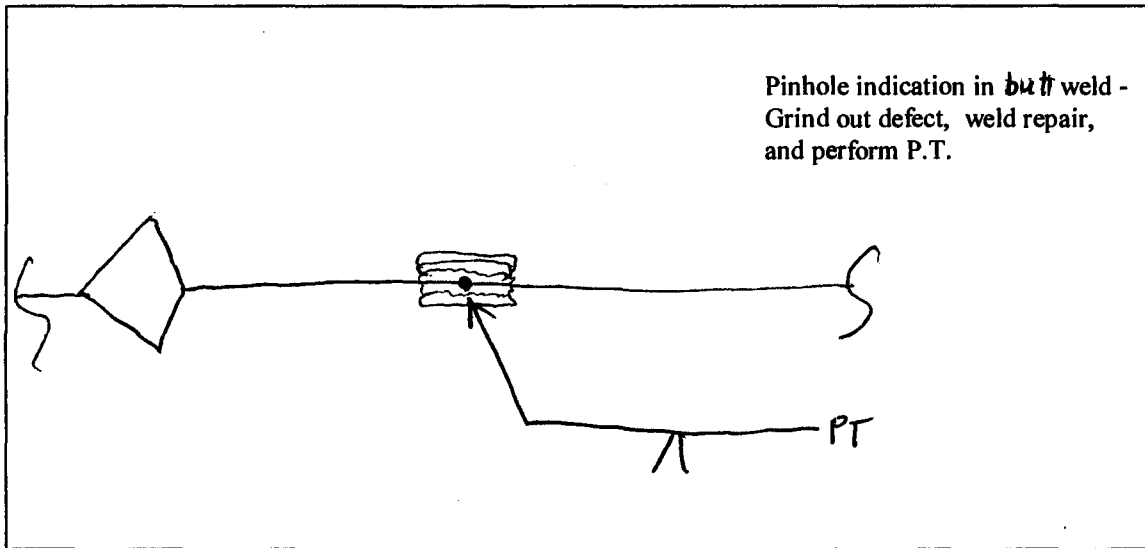
TYPE 9 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 025	File: 7R025
CYLINDER	Quadrant: D
Course: 13	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 025    Type: 9    Location: D21-13



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

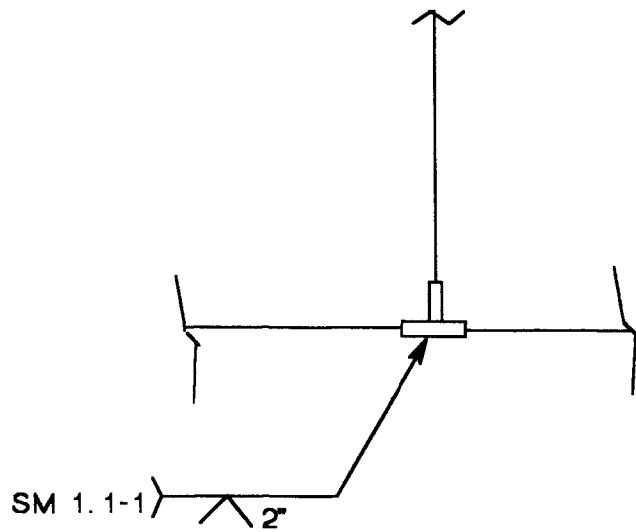
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



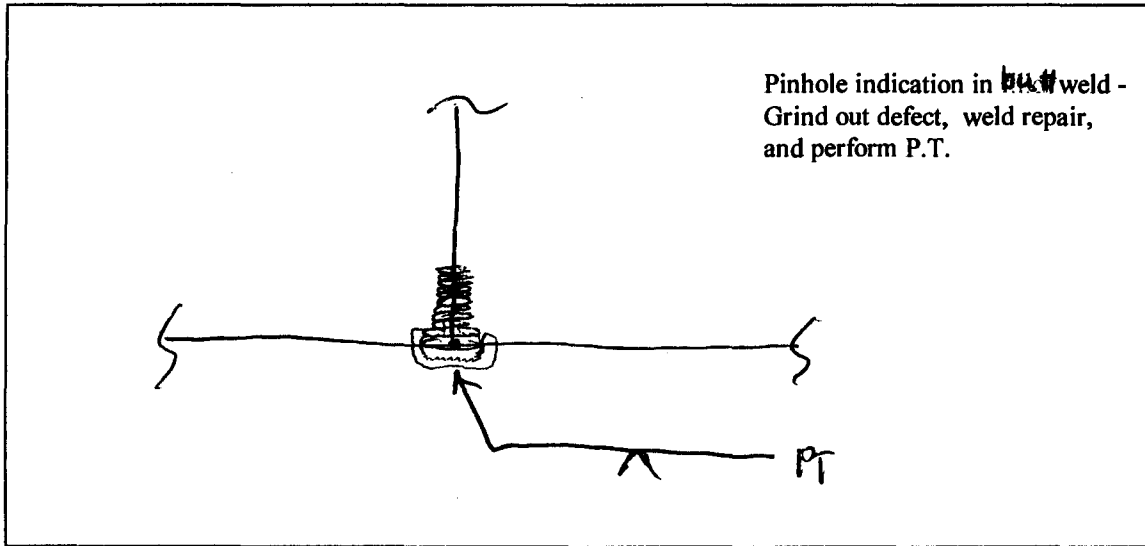
TYPE 9 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 026	File: 7R026
CYLINDER	Quadrant: D
Course: 13	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 026    Type: 9    Location: D21-13



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zedell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

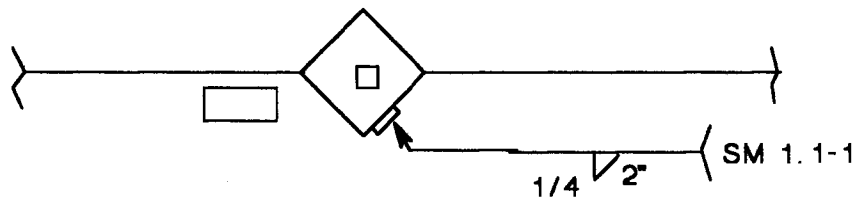
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zedell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



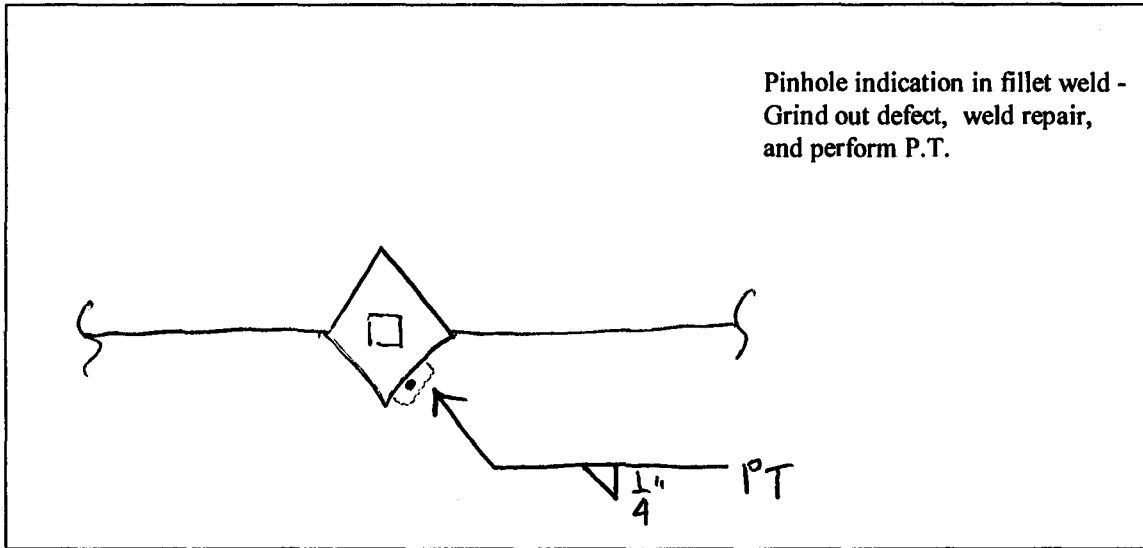
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 027	File: 7R027
CYLINDER	Quadrant: D
Course: 13	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 027 Type: 10 Location: D21-13



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zadrill

Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

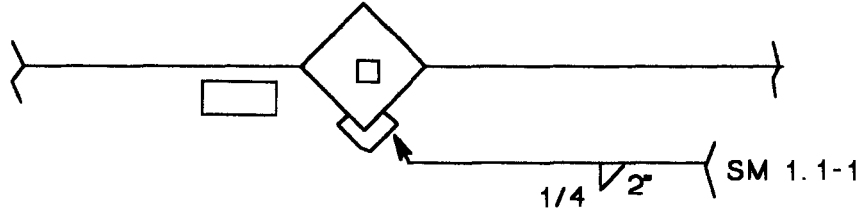
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zadrill

Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



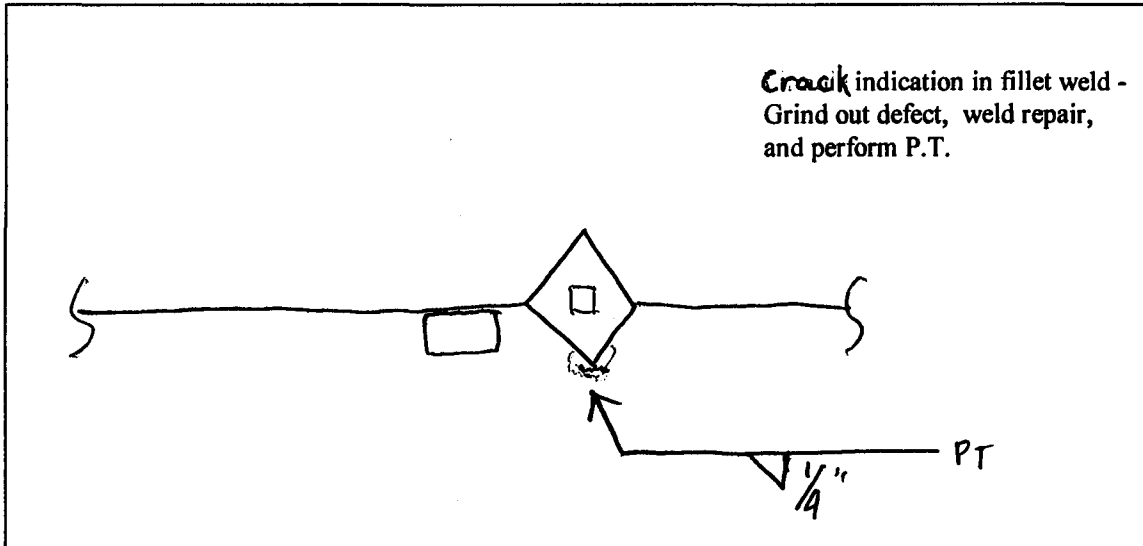
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 028	File: 7R028
CYLINDER	Quadrant: D
Course: 16	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 028    Type: 10    Location: D21-16



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zerkell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

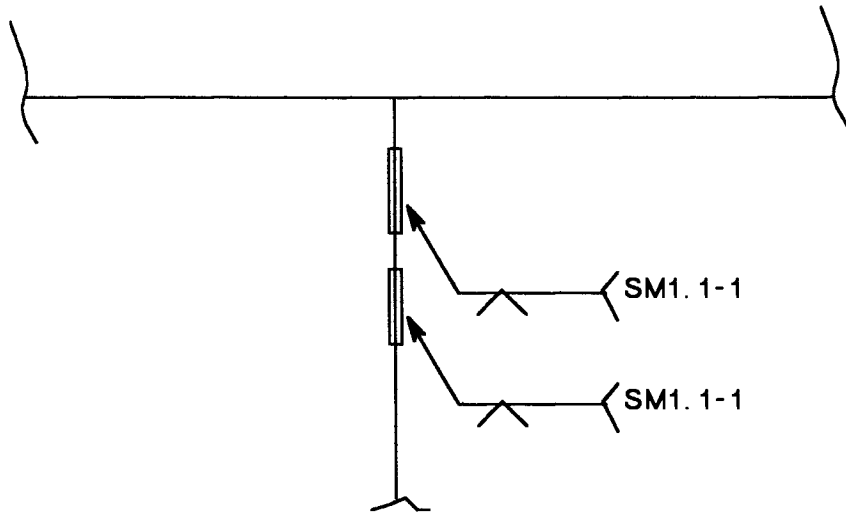
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zerkell                      Date Accepted: 4-3-98



Inspected 3/27/98 by JF & TK



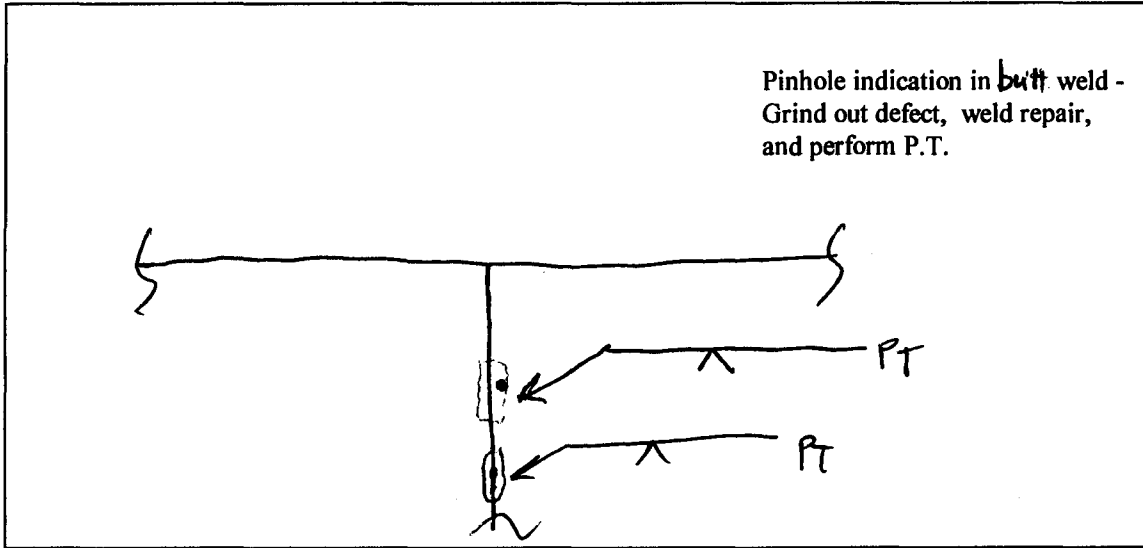
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 029	File: 7R029
CYLINDER	Quadrant: D
Course: 14	Plate: 22
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 029    Type: 90    Location: C 14-22



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

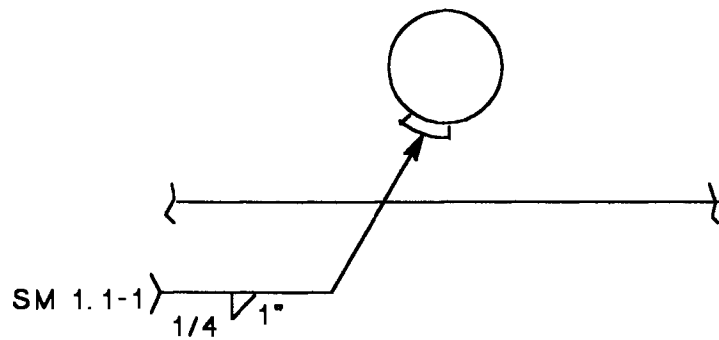
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 m.l.s

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



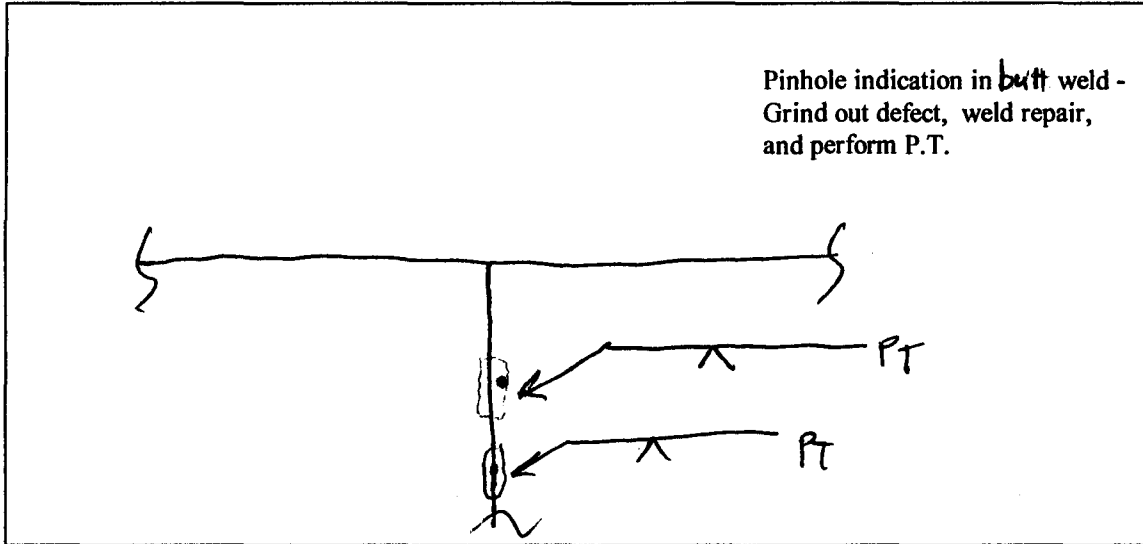
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 030	File: 7R030
cylinder	Quadrant: C
Course: 25	Plate: 15
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 029    Type: 90    Location: C 19-22



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 m/s

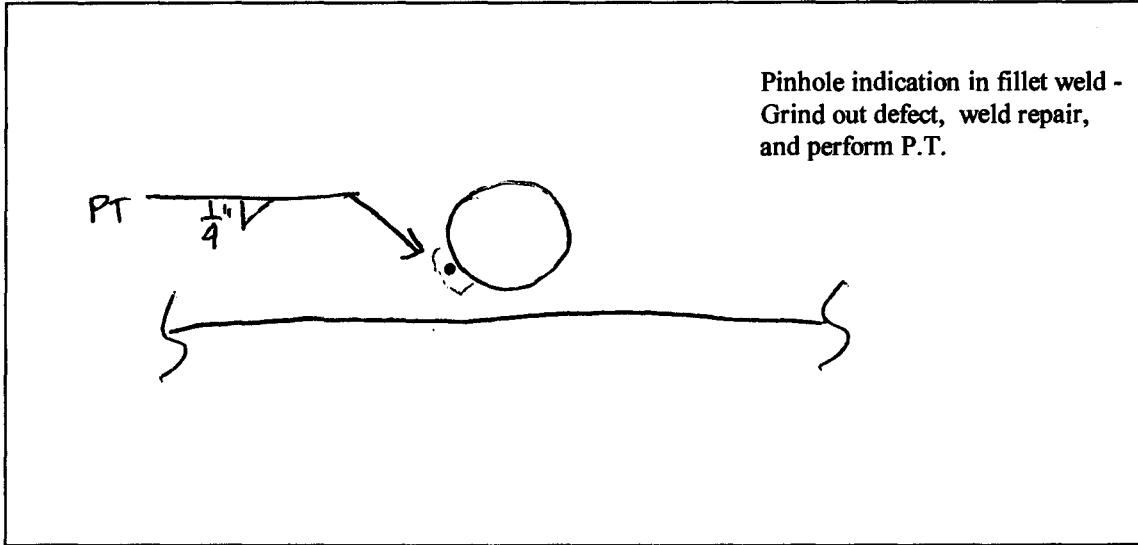
Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-3-98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 030    Type: 10    Location: C:15 - 25



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zurell                      Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

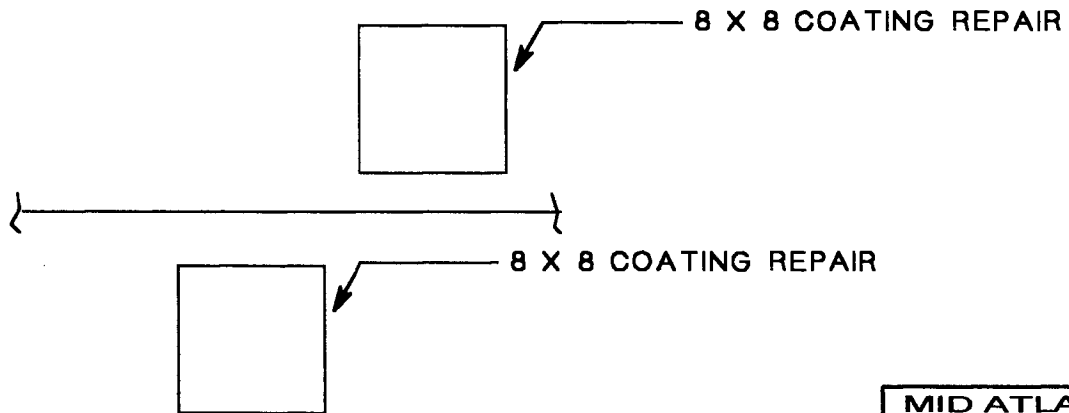
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 m.l.s

Rework Required: N/A

Repair Acceptable: John Zurell                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



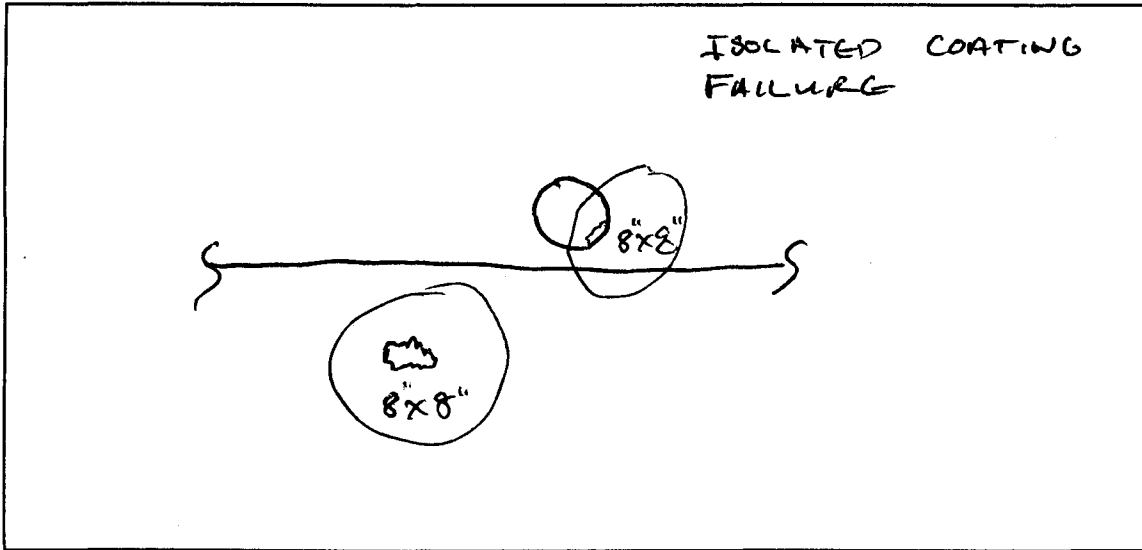
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No. 031	File 7R031
cylinder	Quadrant C
Course 24	Plate 15
Drawn by Tom Klitcher	Date 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 031 Type: 8 Location: C15-24



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: Epoxy

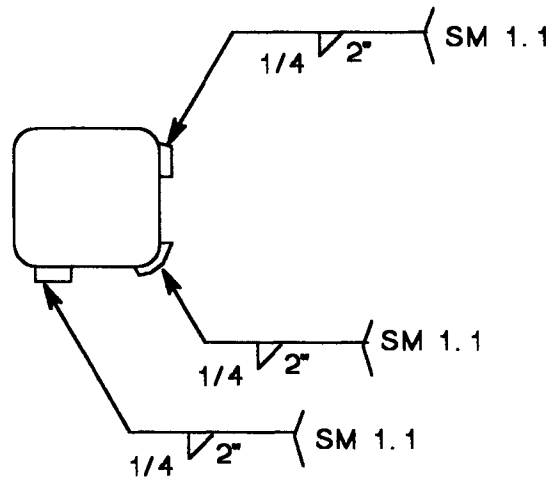
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zehnd Date Accepted: 4-3-98

INSPECTED 3/27/98 BY JF & TK



TYPE 10 REPAIR

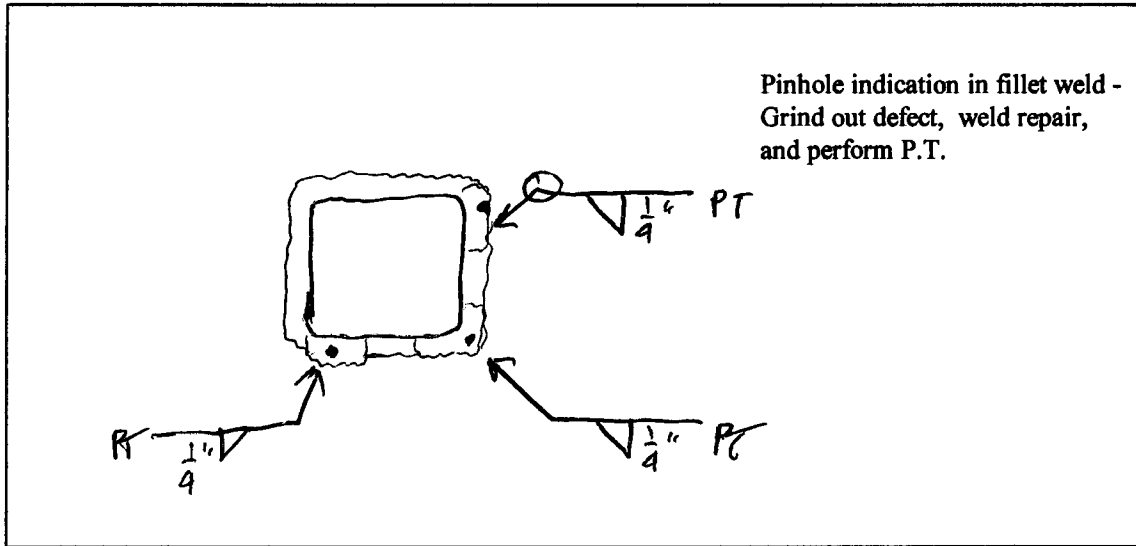
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No. 032	File 7r032
CYLINDER	Quadrant C
Course 28	Plate 18
Drawn by Tom Klitcher	Date 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 032 Type: 10 Location: C18-28



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

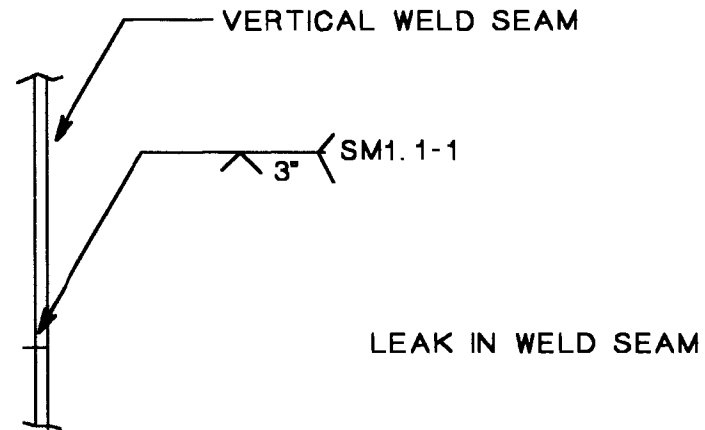
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



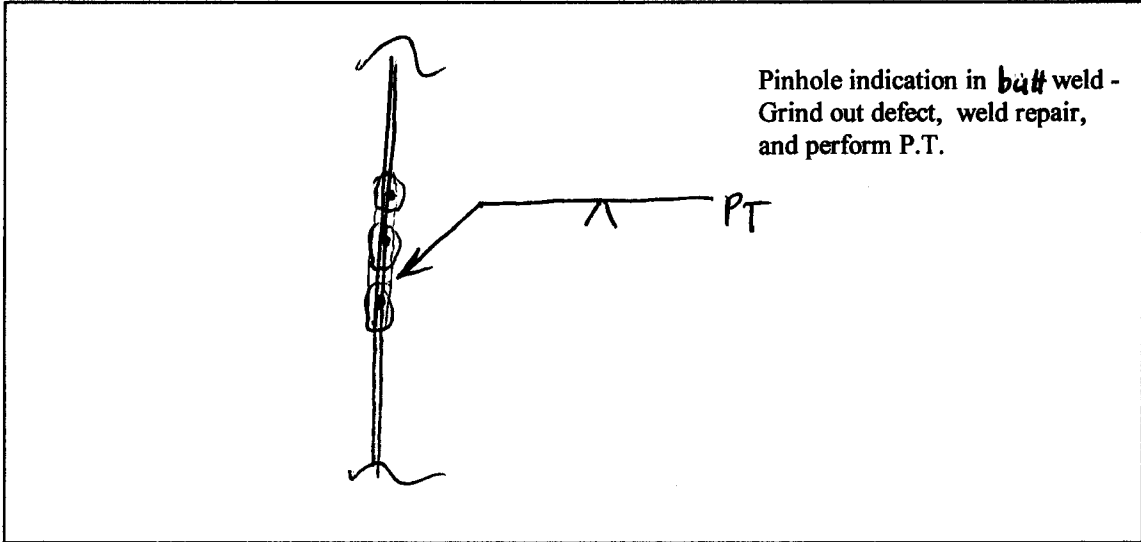
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 033	File: 7R033
Lower Dome	Quadrant: D
Course: 3	Plate: 21
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 033    Type: 9    Location: D21-3



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Walsh

Date Accepted: 4-2-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

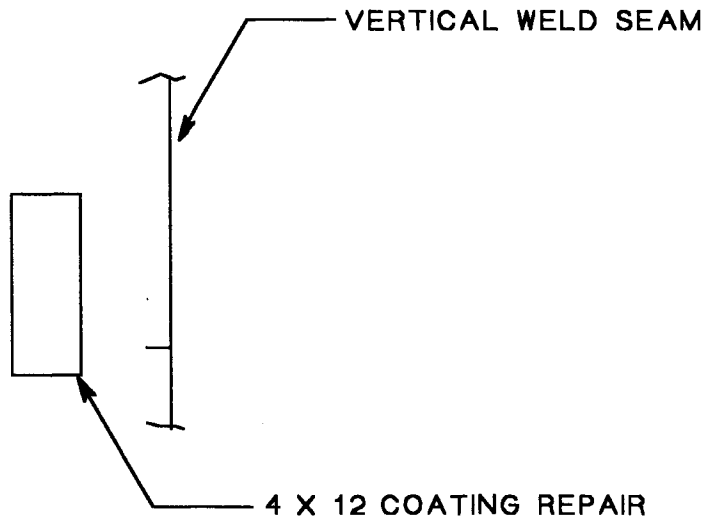
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Walsh

Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



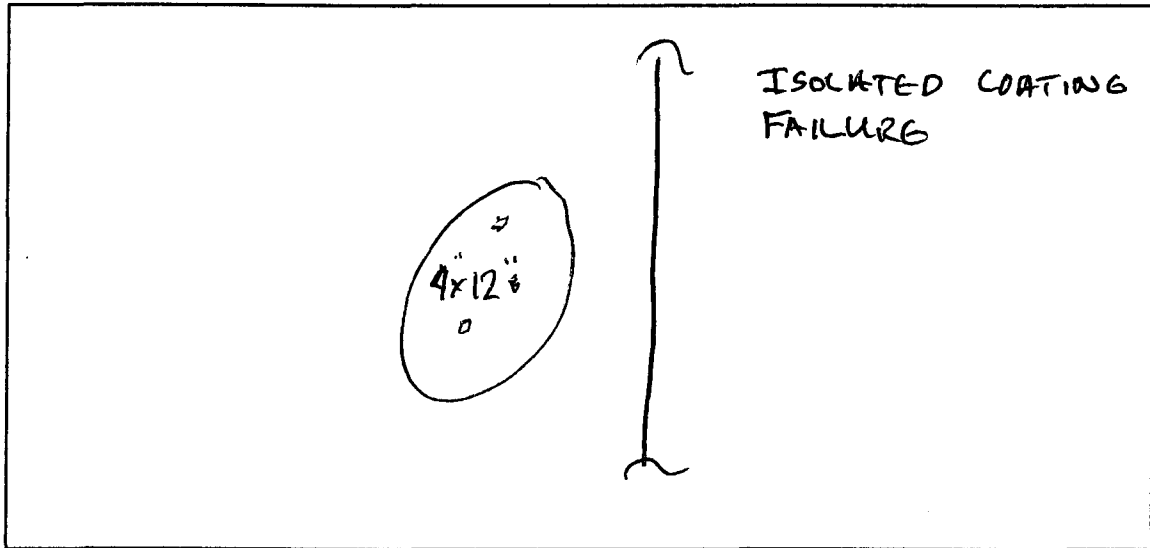
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 034	File: 7R034
Lower Dome	Quadrant: C
Course: 3	Plate: 17
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 034 Type: 8 Location: C17-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPoxy

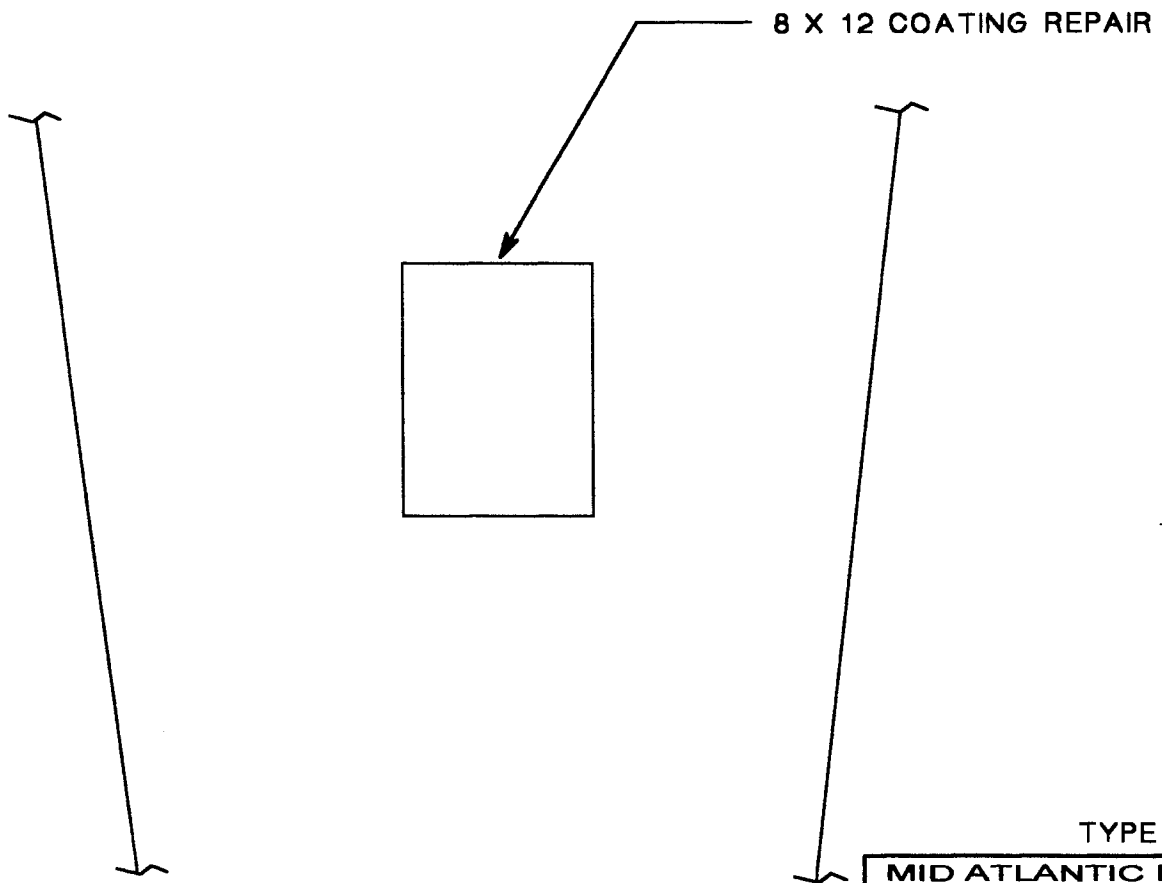
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zachell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



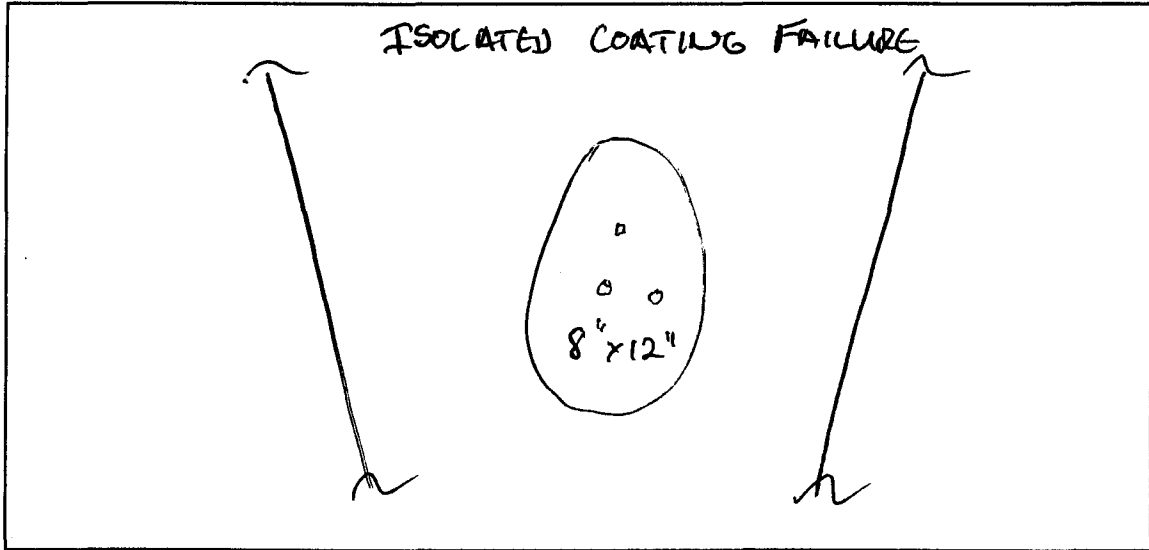
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No. 035	File 7R035
Lower Dome	Quadrant C
Course 3	Plate 16
Drawn by Tom Kitchen	Date 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 035    Type: 8    Location: C16-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_    Vacuum Box \_\_\_\_\_    Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_                      Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

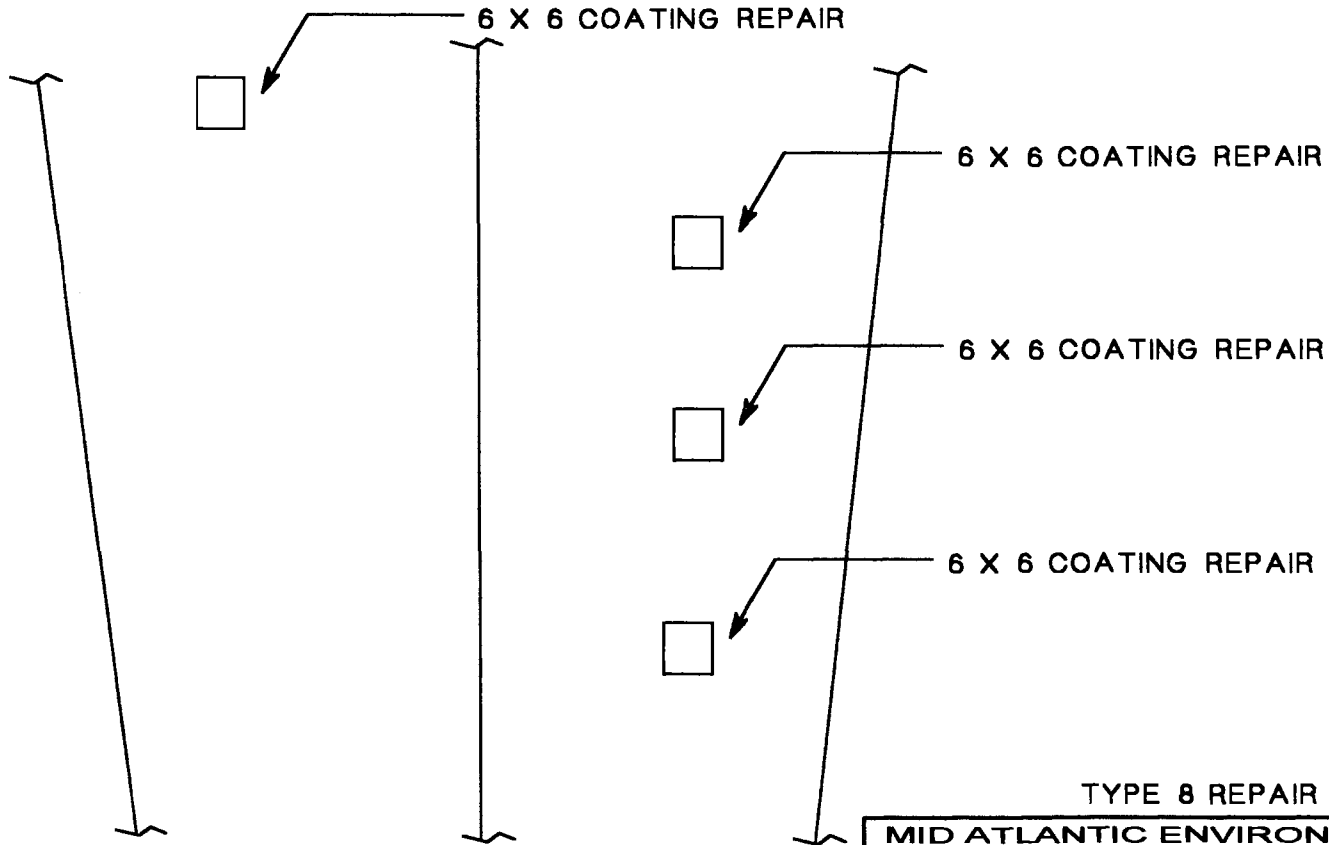
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zehel                      Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



**TYPE 8 REPAIR**

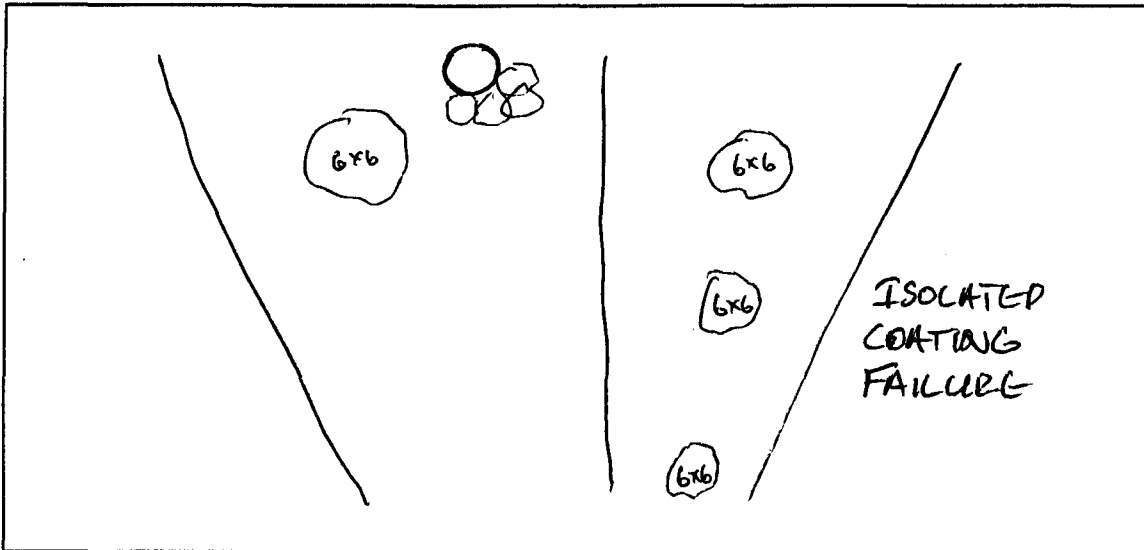
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWING</b>	
Repair No.: 036	File: 7R036
Lower Dome	Quadrant: C
Course: 2	Plate: 18
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 036 Type: 8 Location: C18-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

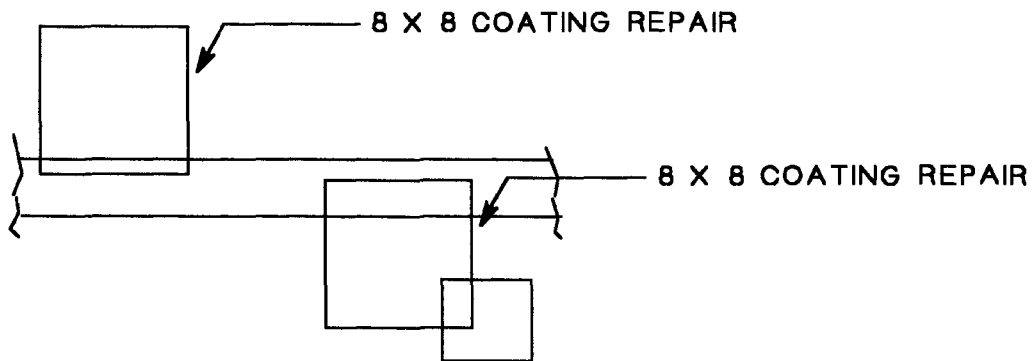
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zdrull Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



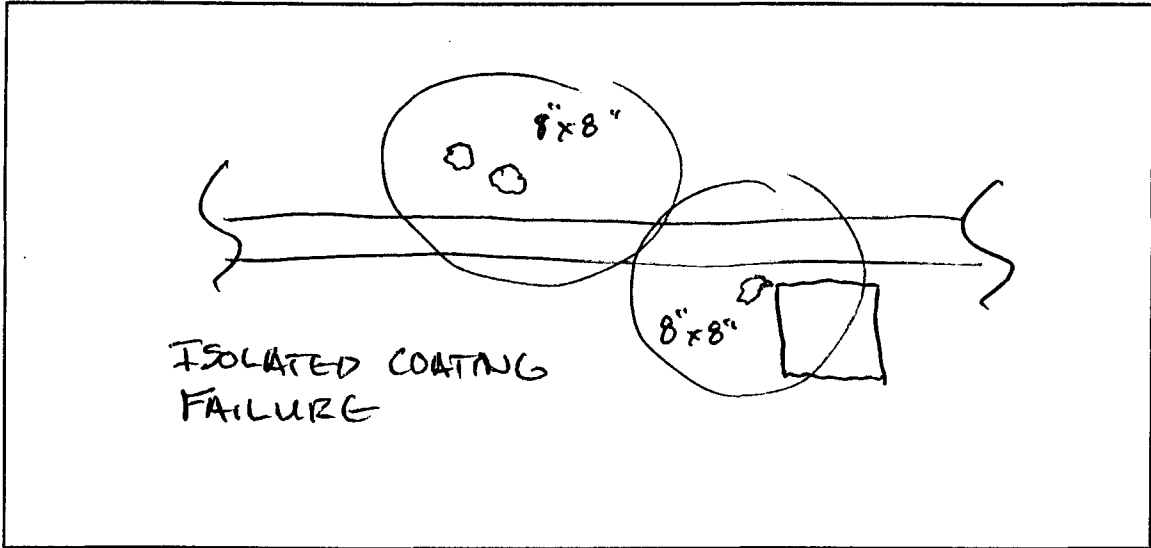
**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWING</b>	
Repair No.: 037	File: 7R037
LOWER DOME	Quadrant: C
Course: 2 & 3	Plate: 15
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 037 Type: 8 Location: C15-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

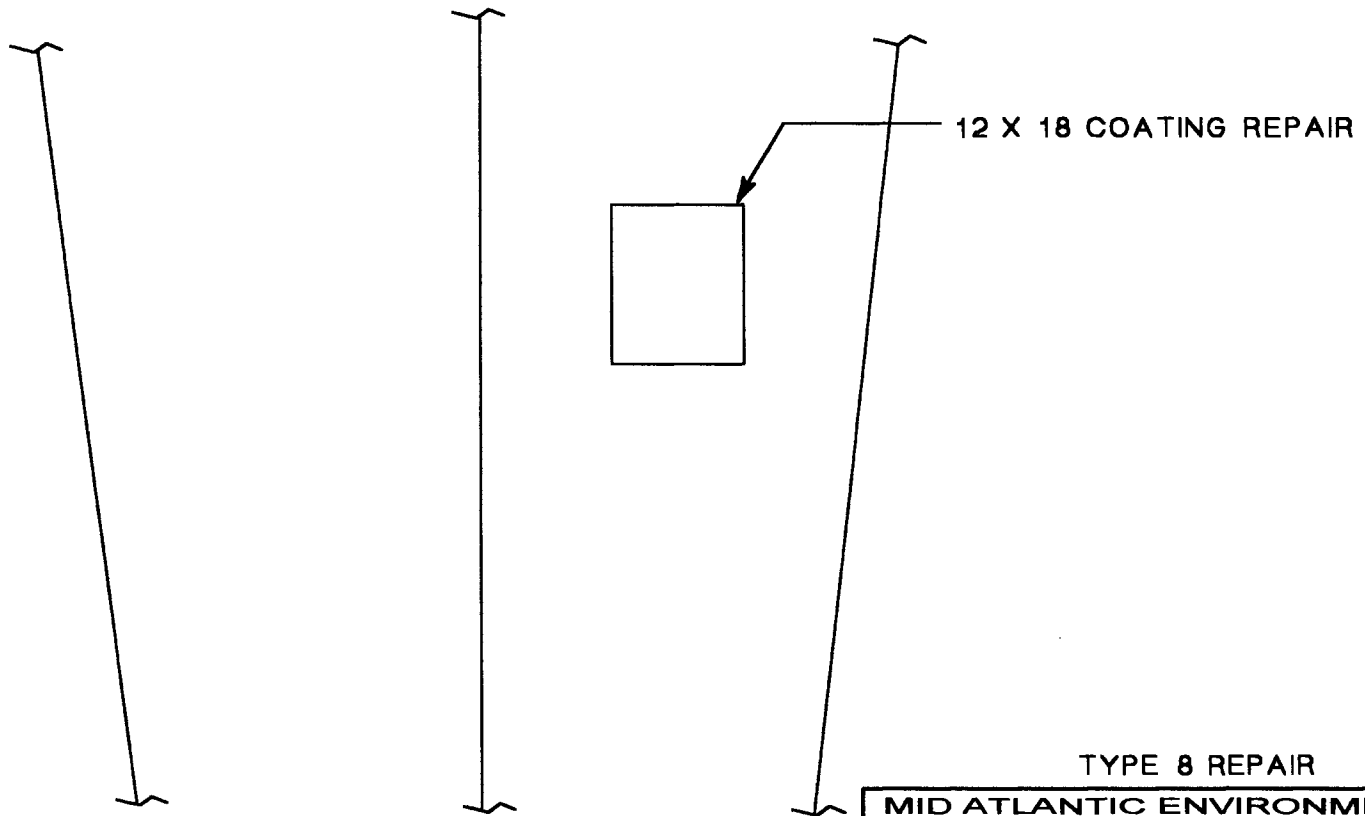
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed:                      Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zedell Date Accepted: 4-3-98

Inspected 3/27/98 by JF & TK



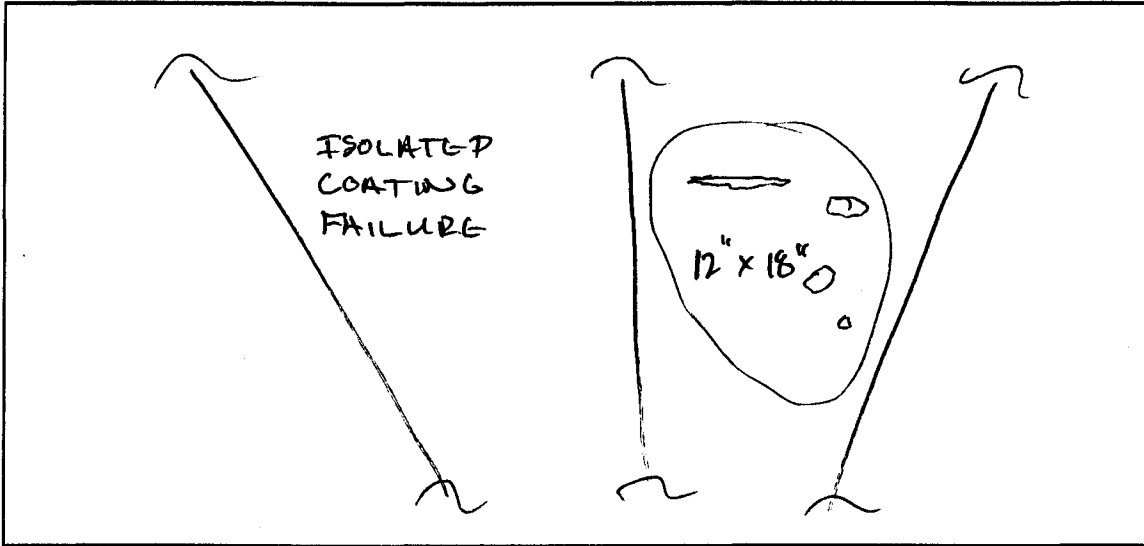
**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWING</b>	
Repair No. 038	File 7R038
Lower Dome	Quadrant D
Course 2	Plate 21
Drawn by Tom Klitcher	Date 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 038 Type: 8 Location: D21-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

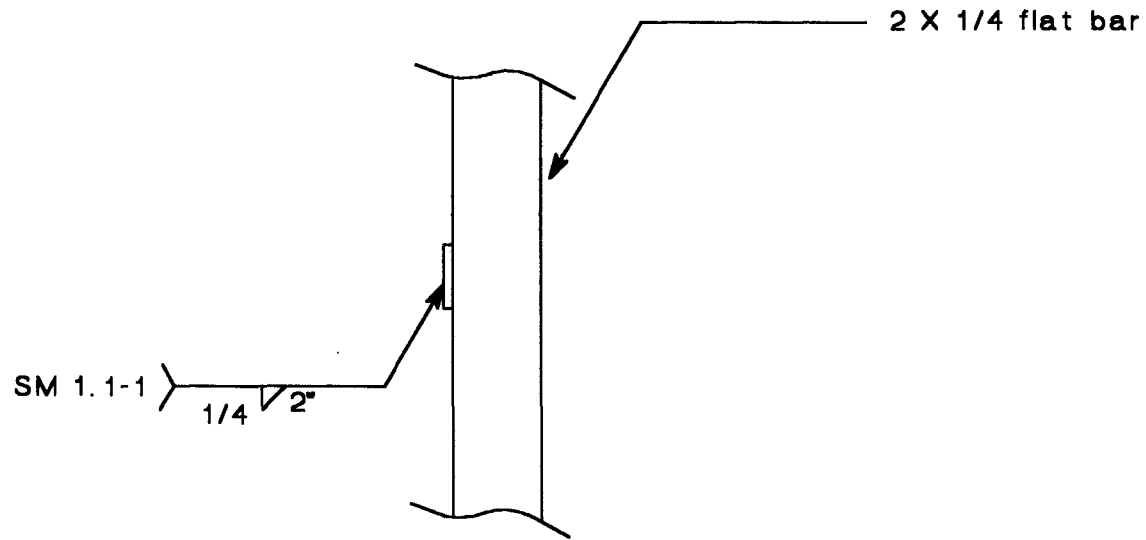
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed:                      Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zehrell Date Accepted: 4-3-98

Inspected 3/28/98 by JF & TK



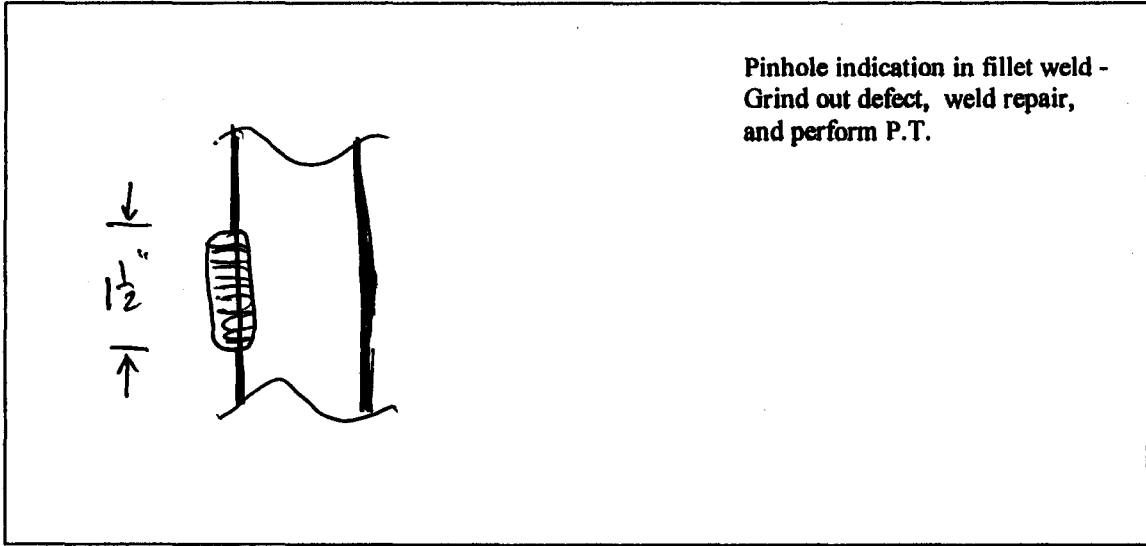
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No. 039	File 7R039
Upper Dome	Quadrant A
Course B	Plate 3
Drawn by Tom Klitcher	Date 5/4/98

**Dames & Moore**  
 Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
 Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 039 Type: 10 Location: A3-B



Pinhole indication in fillet weld -  
 Grind out defect, weld repair,  
 and perform P.T.

Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zubell

Date Accepted: 4-15-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

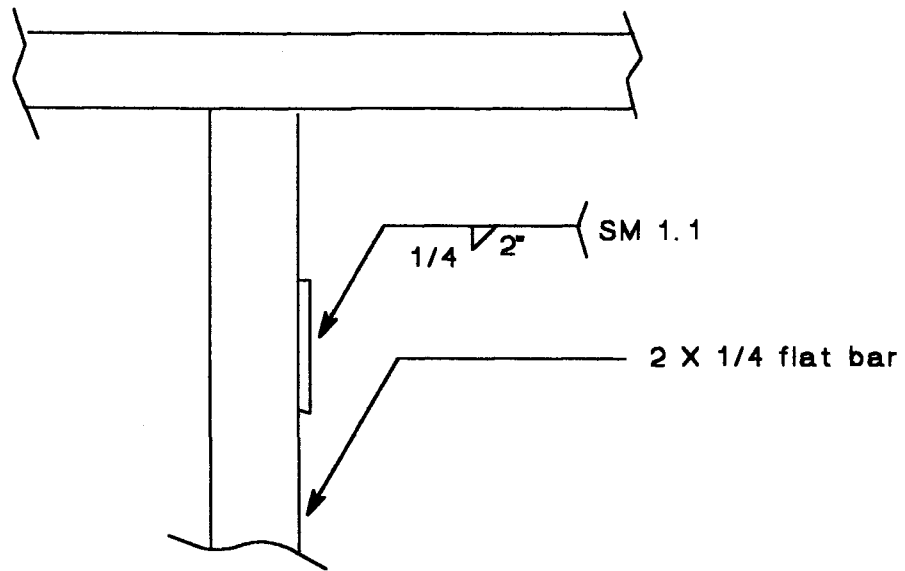
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zubell

Date Accepted: 4-17-98

INSPECTED 3/29/98 BY JF & TK



TYPE 10 REPAIR

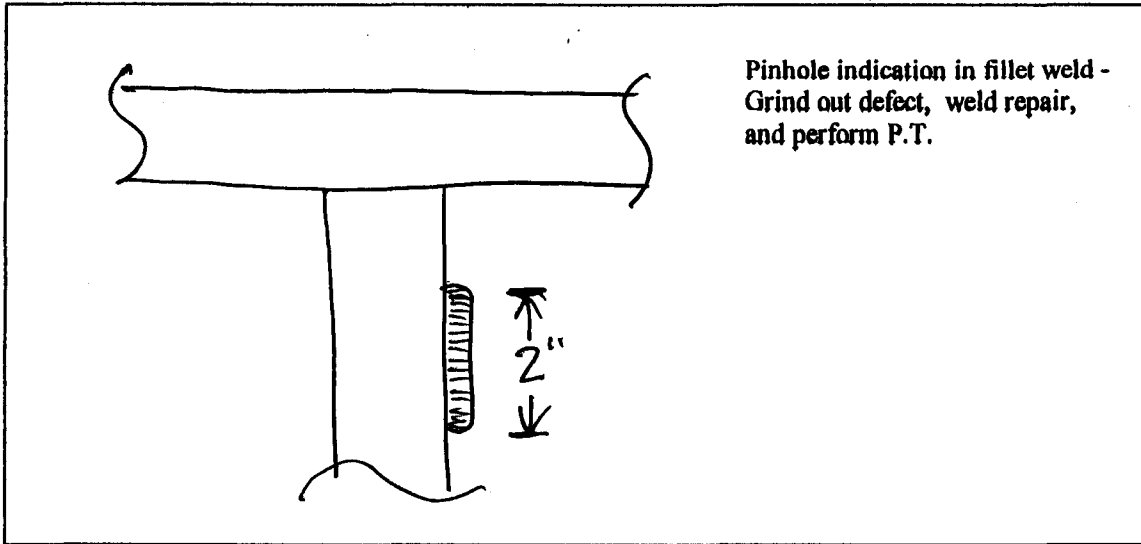
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No. : 040	File: 7r040
Upper Dome	Quadrant: A
Course: B	Plate: 9
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 040 Type: 10 Location: B9-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zehell

Date Accepted: 4.15.98

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

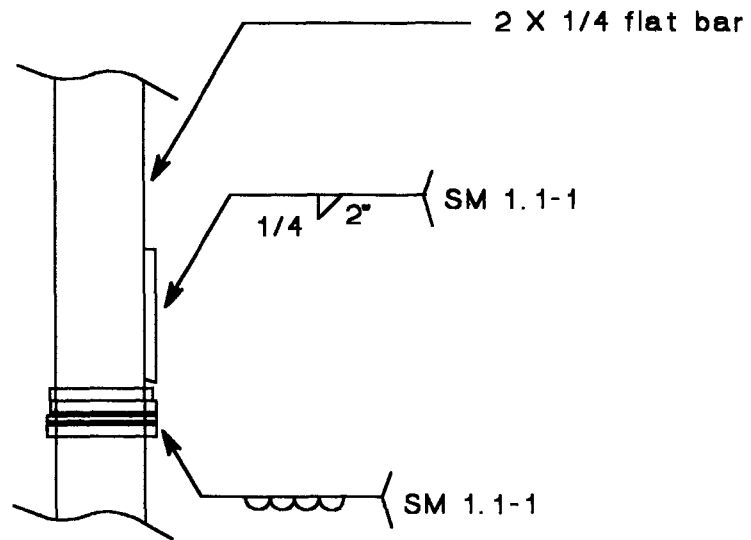
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zehell

Date Accepted: 4-17-98

INSPECTED 3/27/98 BY JF & TK



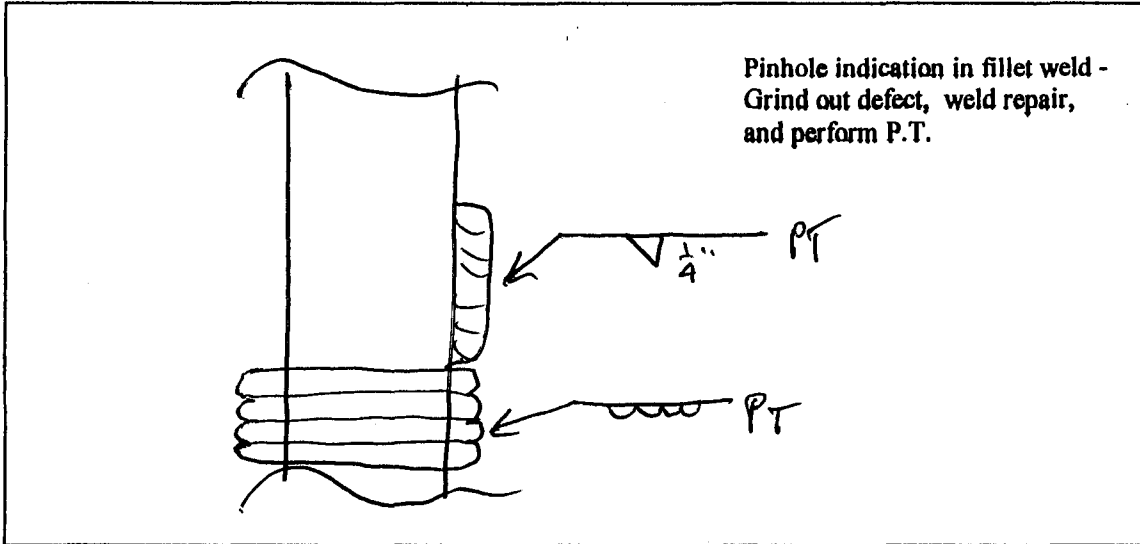
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No. : 041	File: 7r041
Upper Dome	Quadrant: a
Course: 7	Plate: 2
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 041 Type: 10 Location: A2 - A



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zurell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

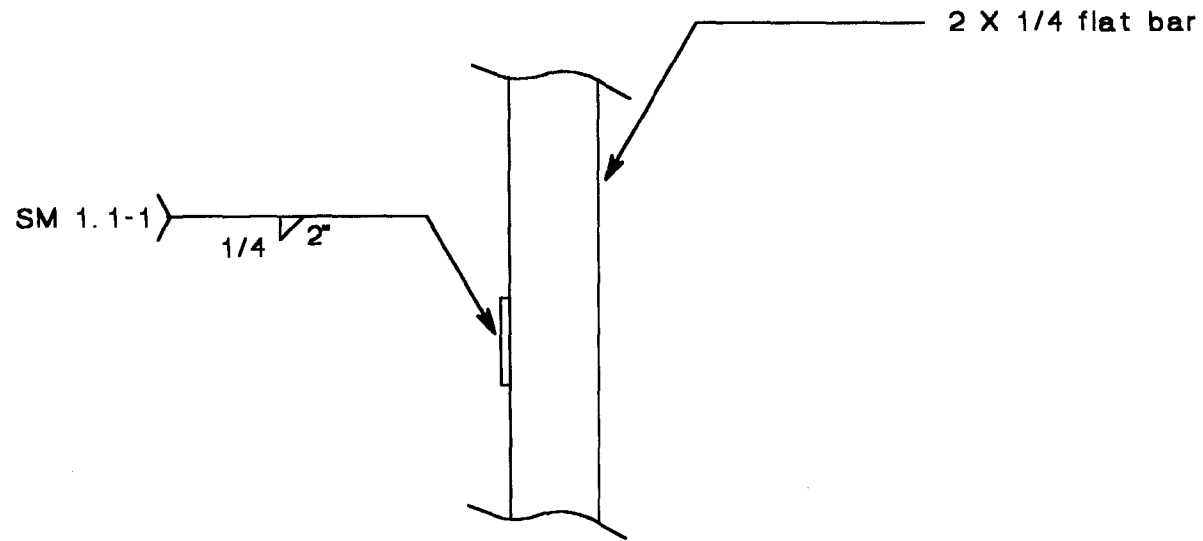
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zurell Date Accepted: 4-17-98

Inspected 3/27/98 by JF & TK



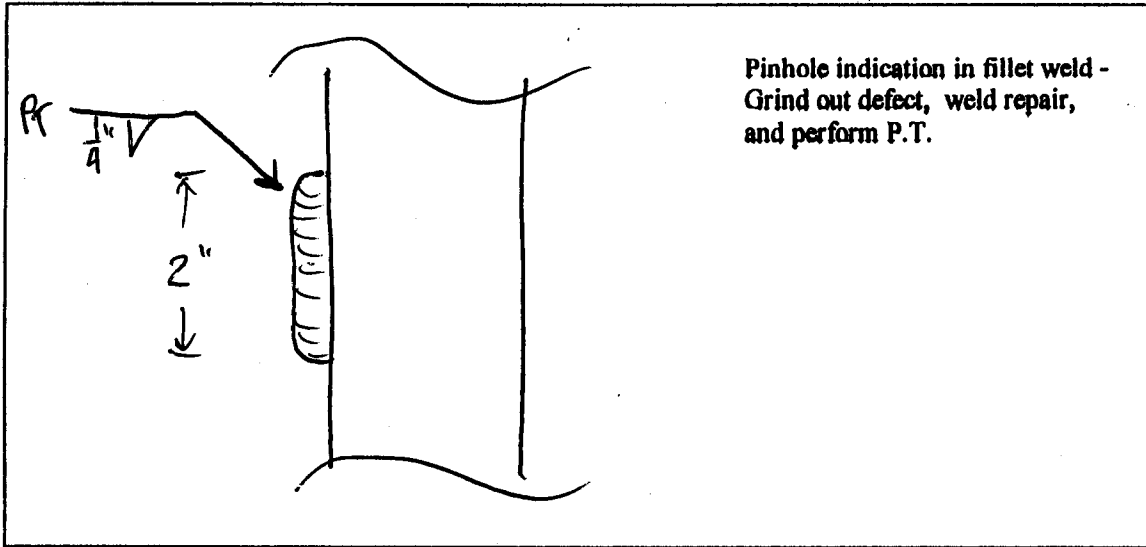
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 042	File: 7R042
Upper Dome	Quadrant: A
Course: A	Plate: 3
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 042 Type: 10 Location: A3-A



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

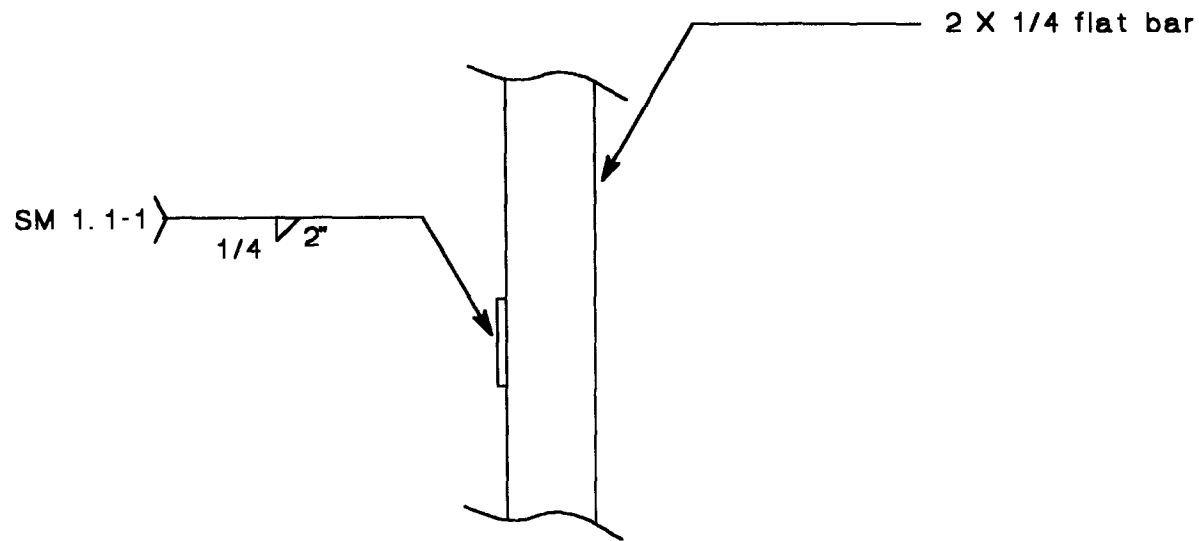
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-17-98

Inspected 3/27/98 by JF & TK



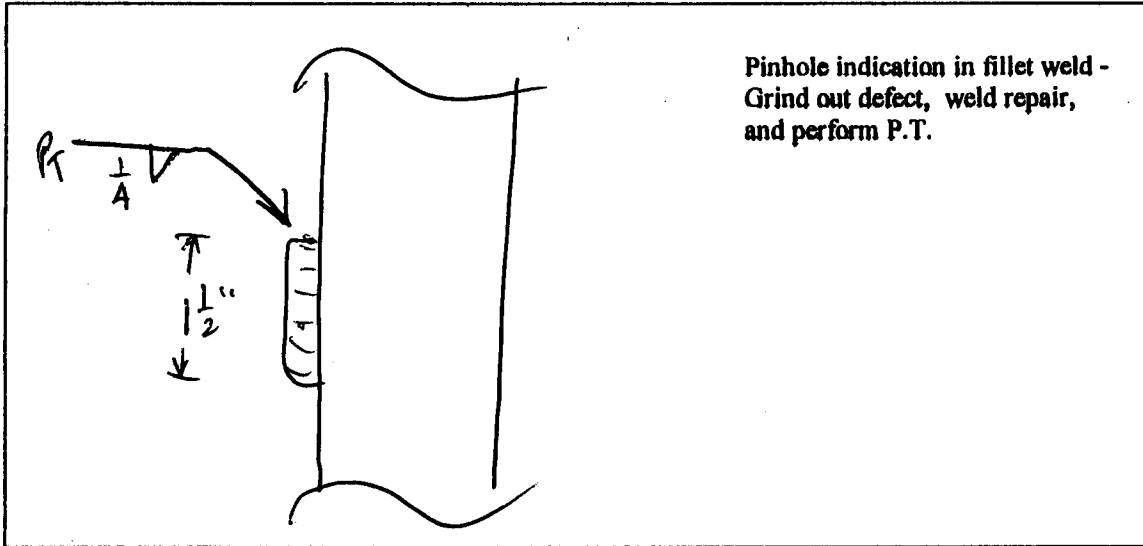
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 043	File: 7R043
Upper Dome	Quadrant: A
Course: A	Plate: 3
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 043 Type: 10 Location: A3-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

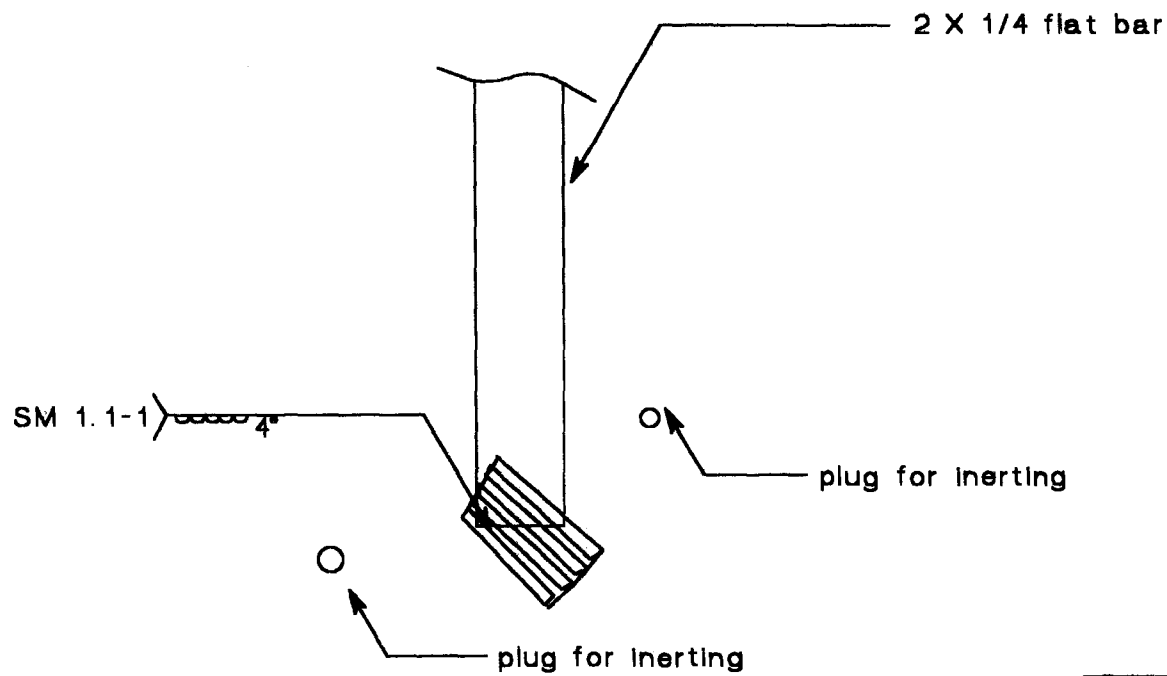
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-17-98

Inspected 3/27/98 by JF & TK



TYPE 10 REPAIR

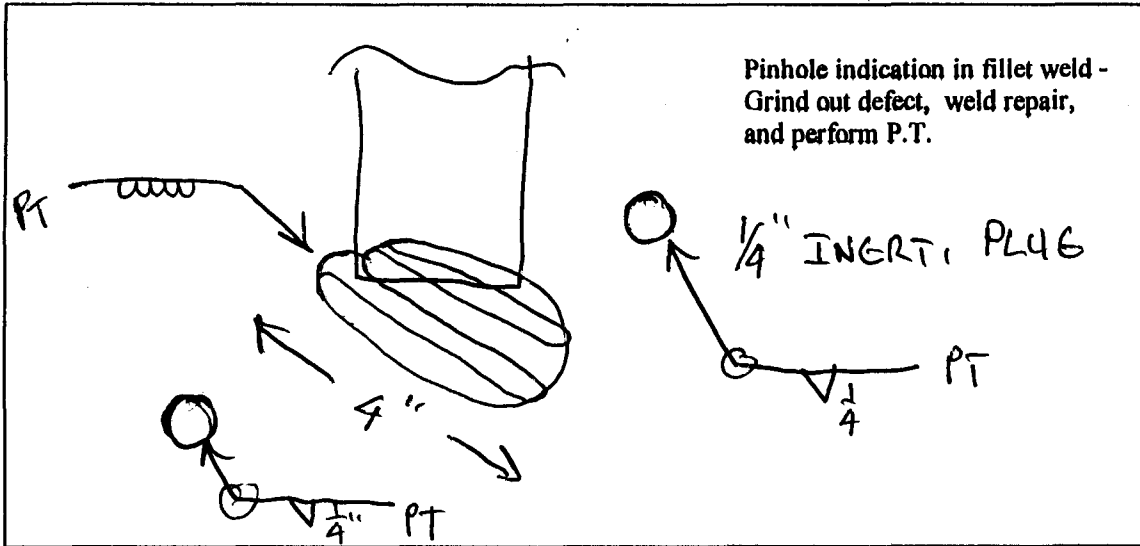
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 044	File: 7R044
Upper Dome	Quadrant: A
Course: A	Plate: 3
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 044    Type: 10    Location: A3-A



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual                       Vacuum Box                       Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

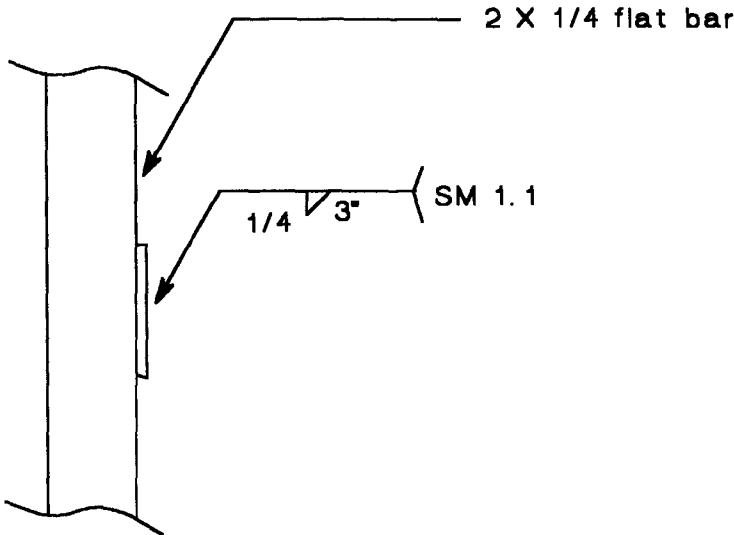
NDT Performed:                      Visual:                       DFT:                       Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-17-98

INSPECTED 3/27/98 BY JF & TK



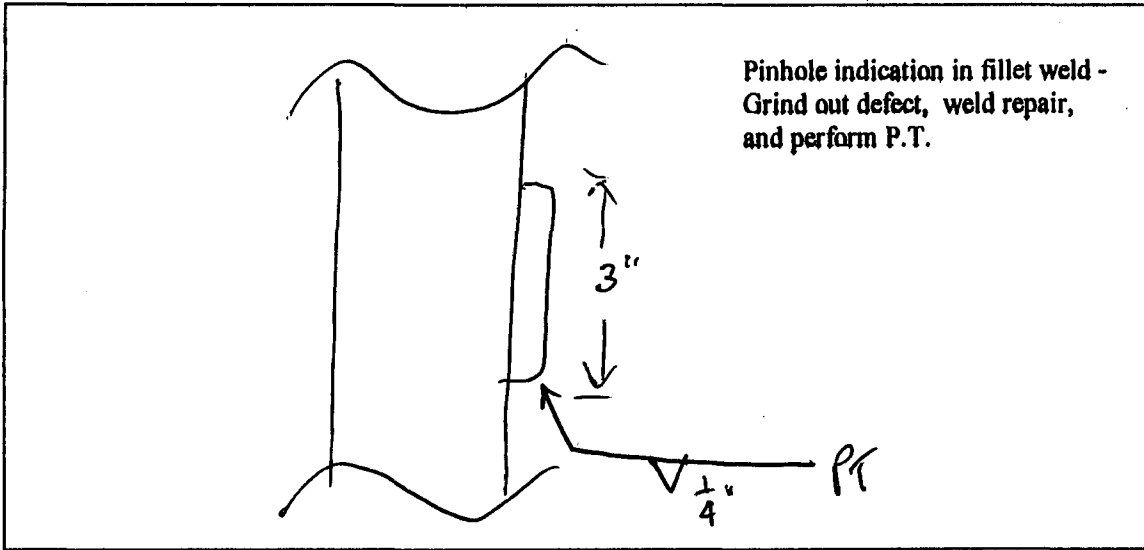
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 045	File: 7r045
Upper Dome	Quadrant: A
Course: A	Plate: 4
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 045    Type: 10    Location: A4-A



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

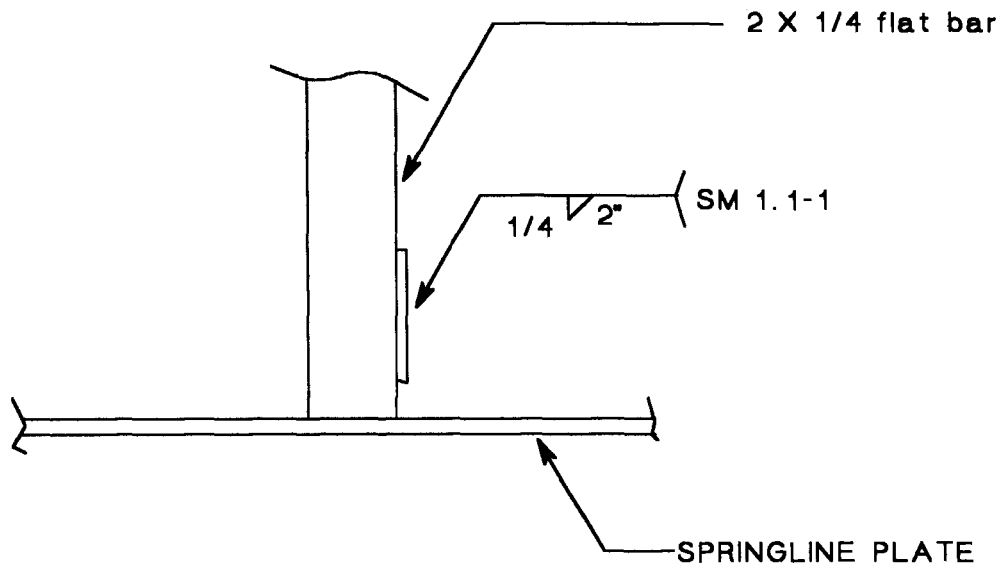
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 m.l.s

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-17-98

INSPECTED 3/29/98 BY JF & TK



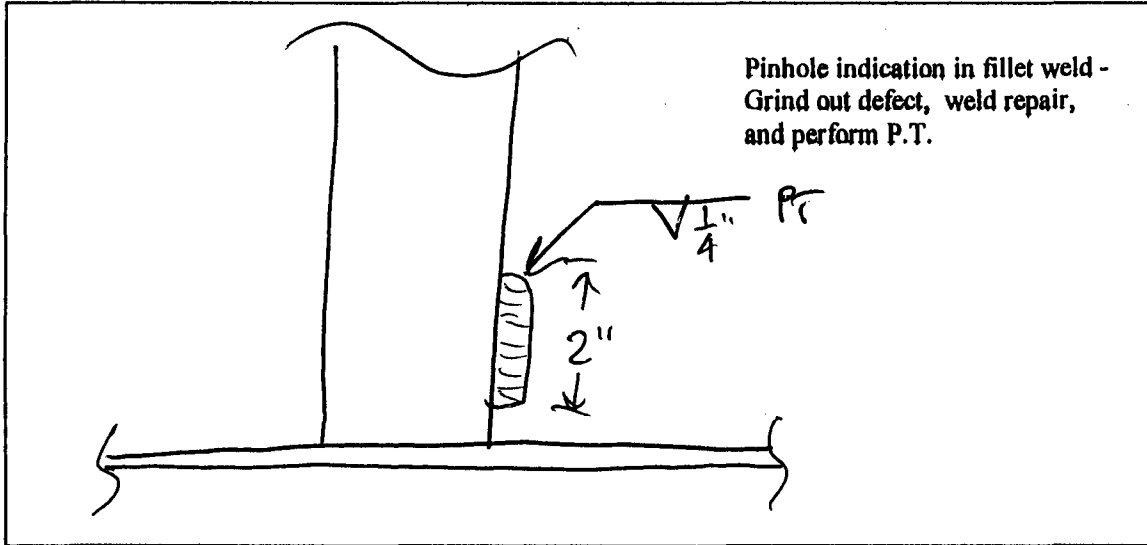
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No. 046	File: 7r046
Upper Dome	Quadrant: B
Course: A	Plate: 10
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 046 Type: 10 Location: B10-A



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

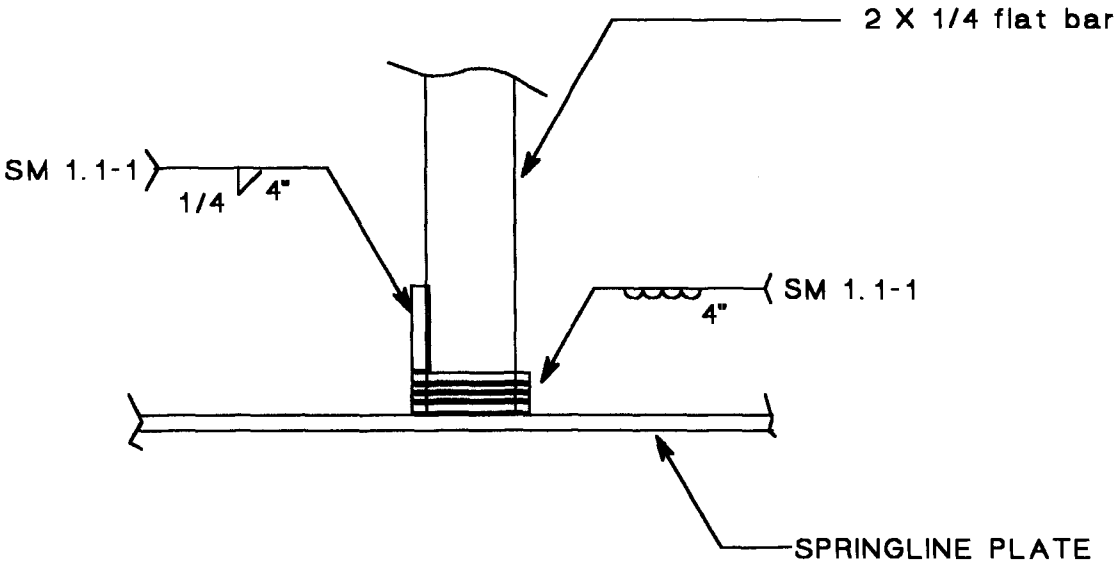
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-17-98

INSPECTED 3/29/98 BY JF & TK



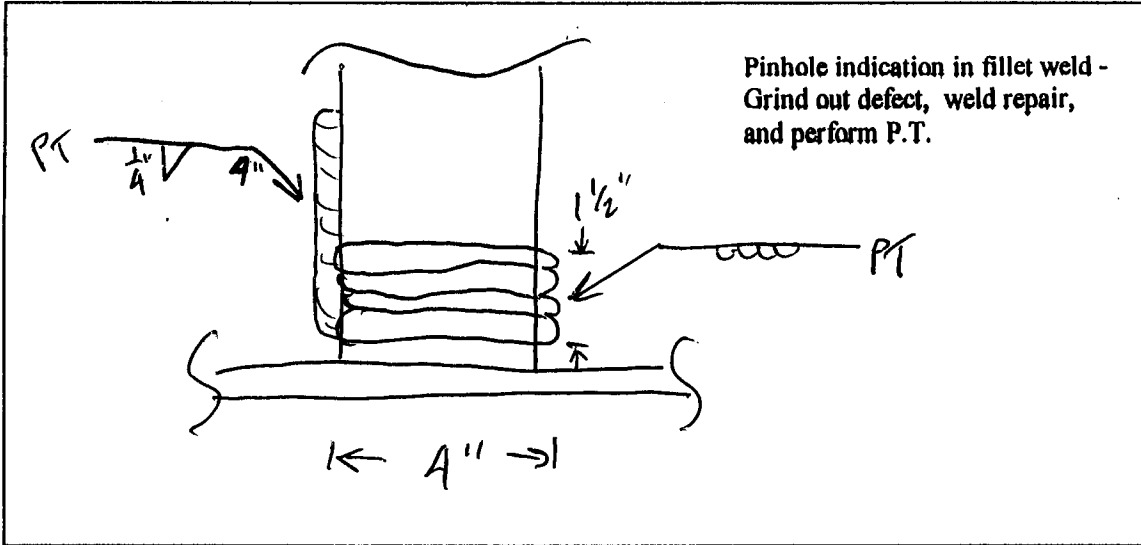
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWINGS	
Repair No.: 047	File: 7r047
Upper Dome	Quadrant: B
Course: A	Plate: 11
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 047 Type: 10 Location: B11-A



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zurell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

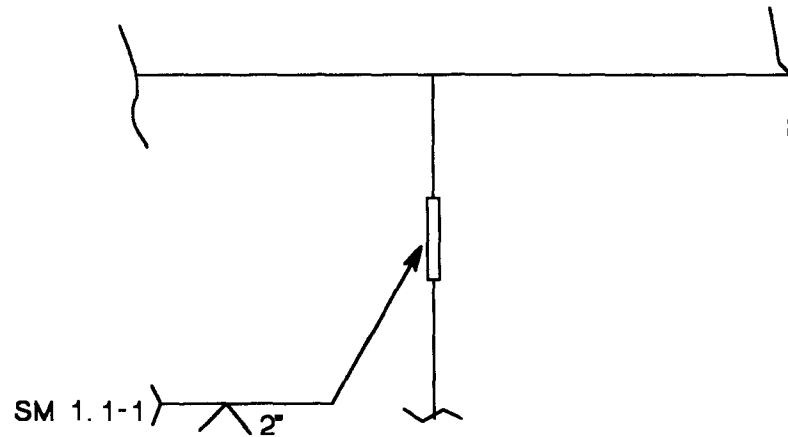
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zurell Date Accepted: 4-17-98

Inspected 3/27/98 by JF & TK



TYPE 9 REPAIR

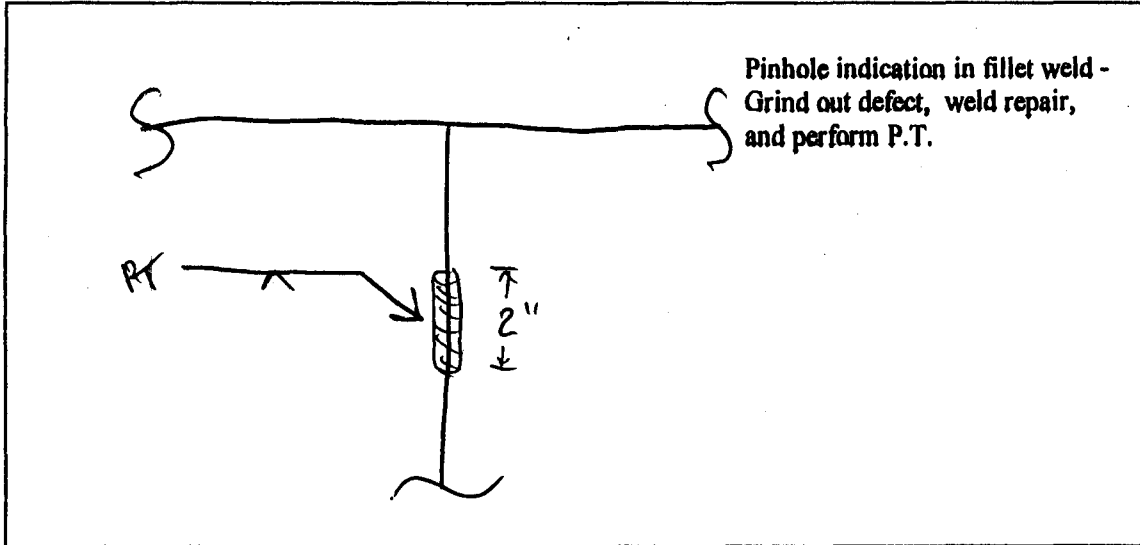
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 048	File: 7R048
CYLINDER	Quadrant: B
Course: 18	Plate: 11
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 048 Type: 9 Location: B11-8



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zehell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

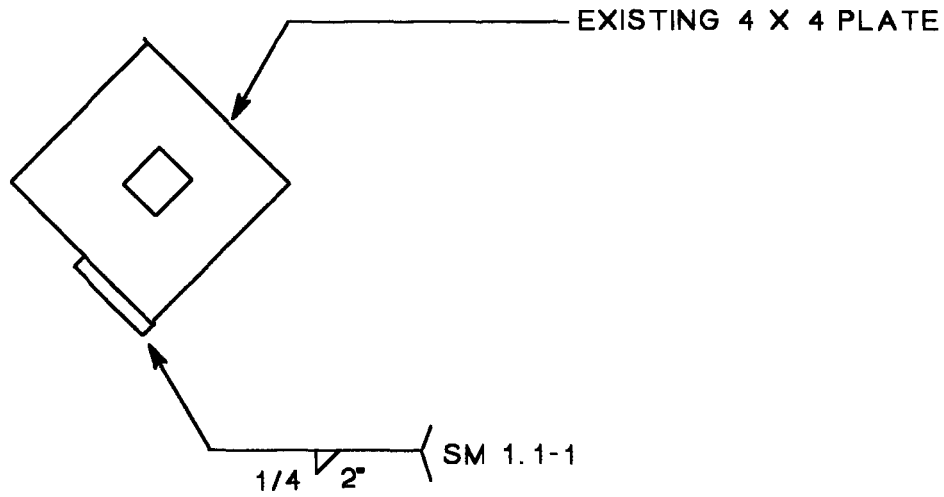
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zehell Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



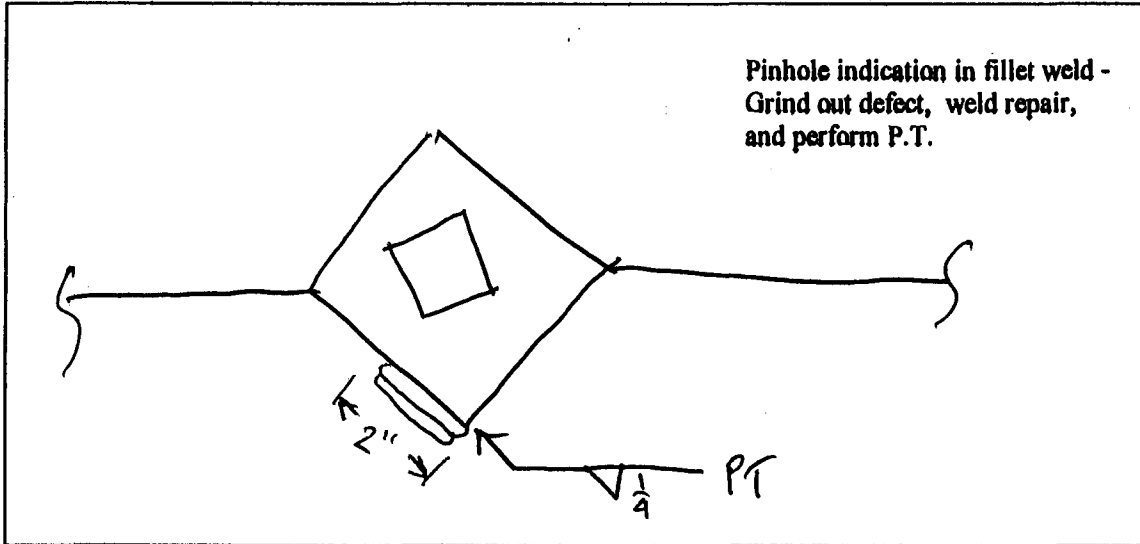
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No. : 049	File: 7R049
CYLINDER	Quadrant: B
Course: 15	Plate: 9
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 049    Type: 10    Location: B9-15



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

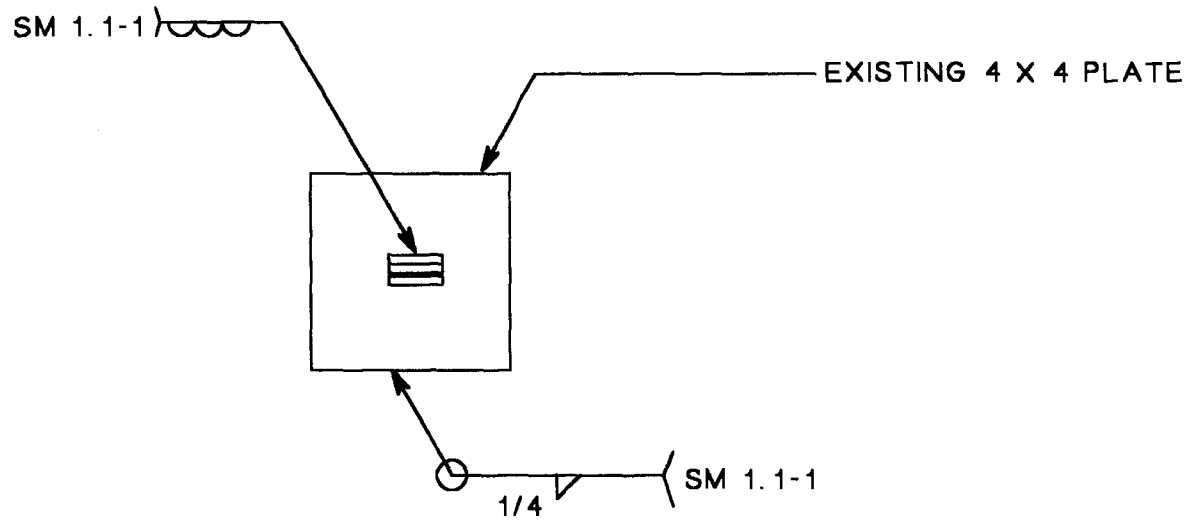
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell                      Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



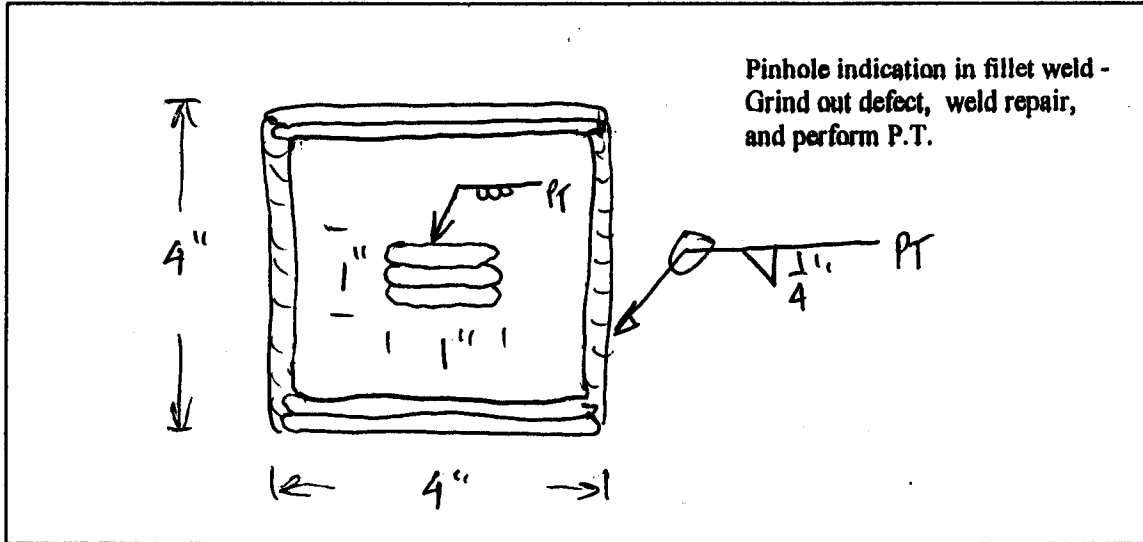
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No. : 050	File: 7R050
CYLINDER	Quadrant: B
Course: 28	Plate: 11
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 050    Type: 10    Location: B11-28



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zirkell                      Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

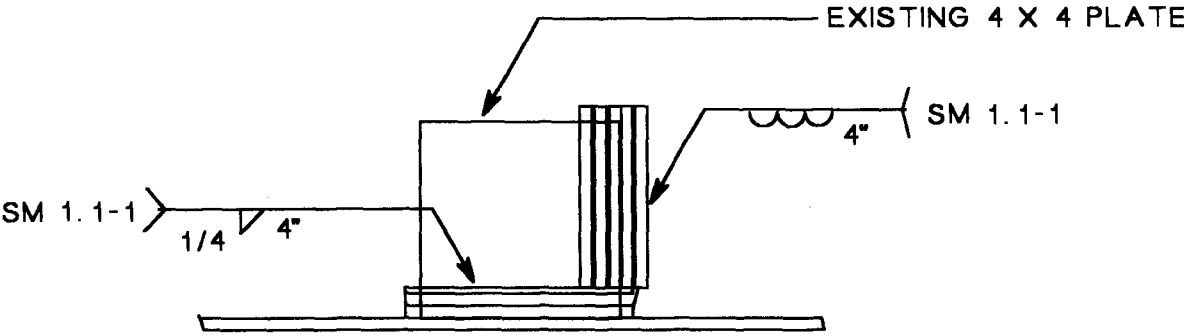
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mls

Rework Required: N/A

Repair Acceptable: John Zirkell                      Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



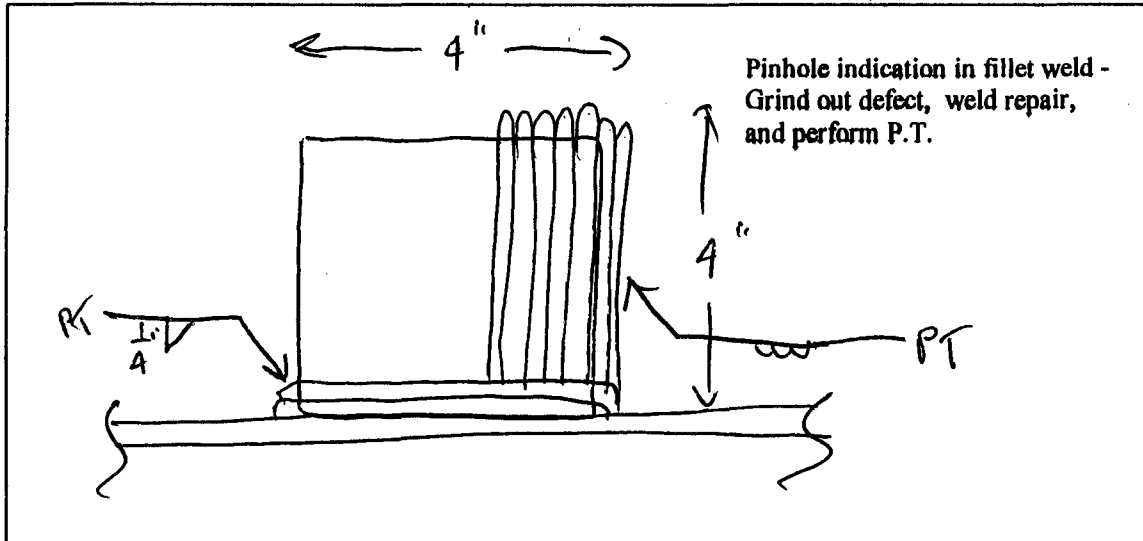
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No. 051	File 7R051
CYLINDER	Quadrant B
Course 28	Plate 8
Drawn by Tom Kitchen	Date 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 051 Type: 10 Location: B8-28



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

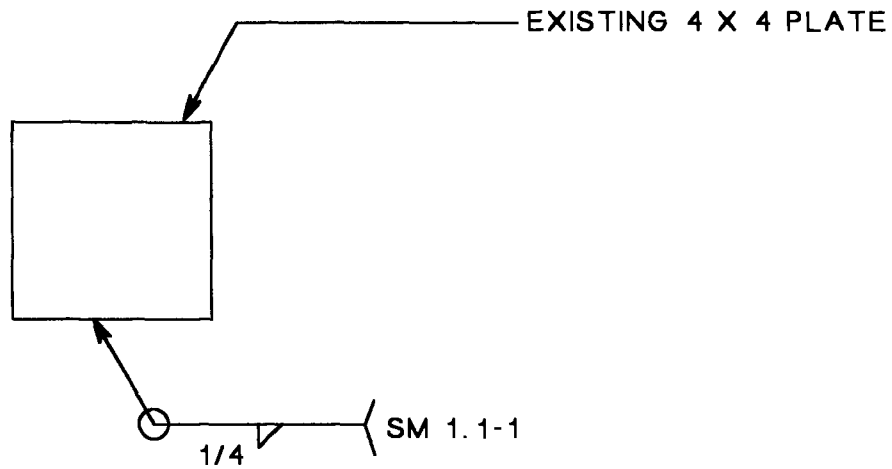
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



TYPE 10 REPAIR

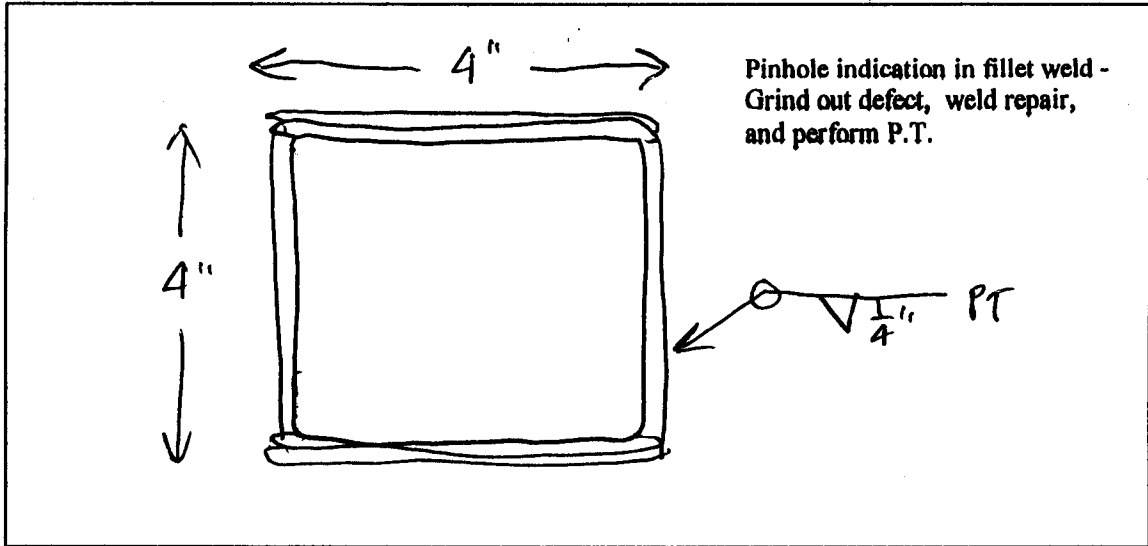
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 REPAIR DRAWING	
Repair No. 052	File: 7R052
CYLINDER	Quadrant: B
Course: 28	Plate: 7
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 052    Type: 10    Location: B7-28



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

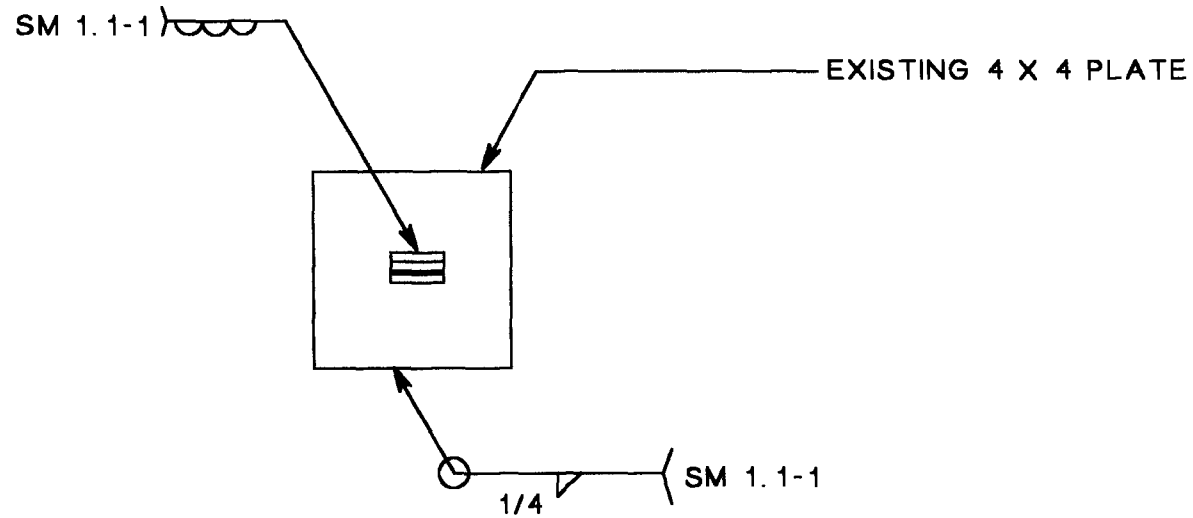
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



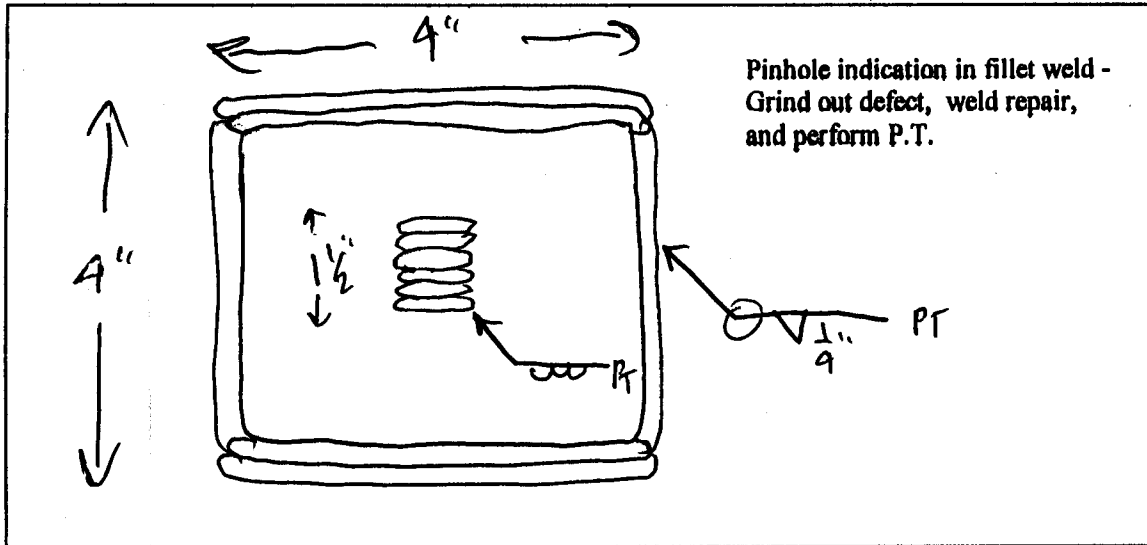
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 053	File: 7R053
CYLINDER	Quadrant: B
Course: 28	Plate: 6
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 053 Type: 10 Location: B6-28



Sketch of Repair Area

Weld Repair

WPS No.: SMI.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4.15.98

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

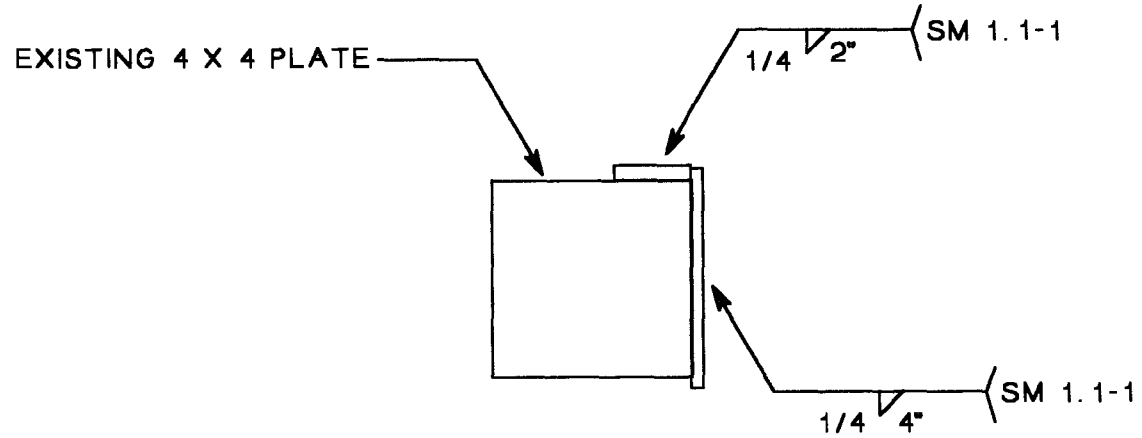
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4.17.98

Inspected 3/29/98 by JF & TK



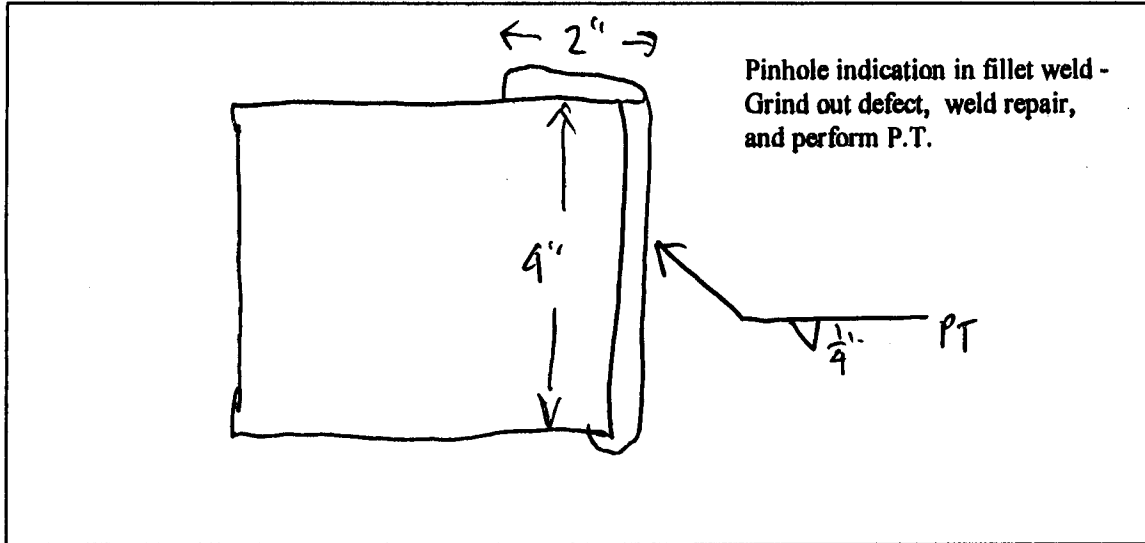
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 054	File: 7R054
CYLINDER	Quadrant: B
Course: 28	Plate: 5
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7 Repair No.: 054 Type: 10 Location: B5-28



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zibrell

Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

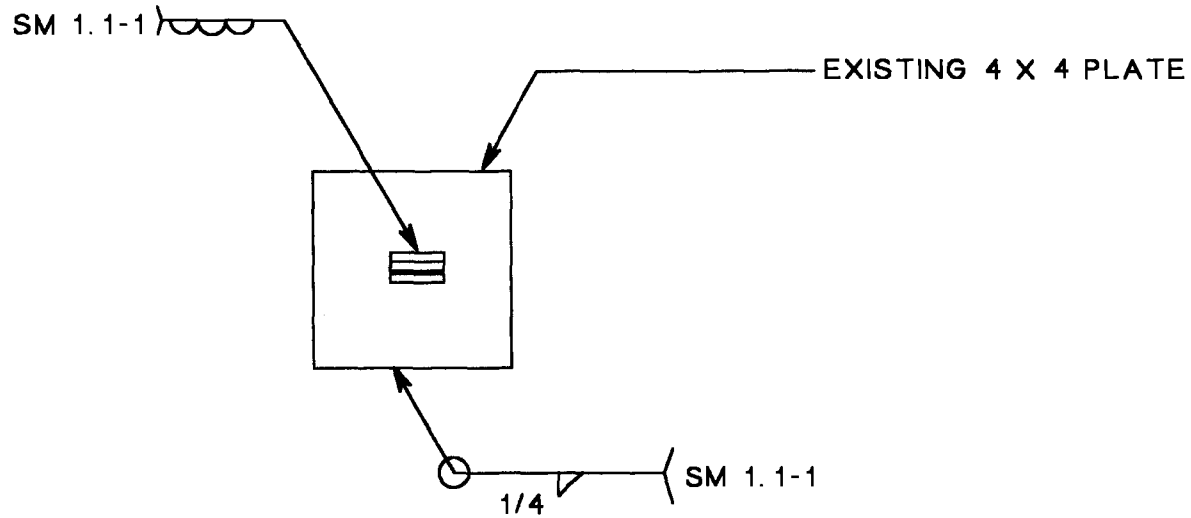
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zibrell

Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



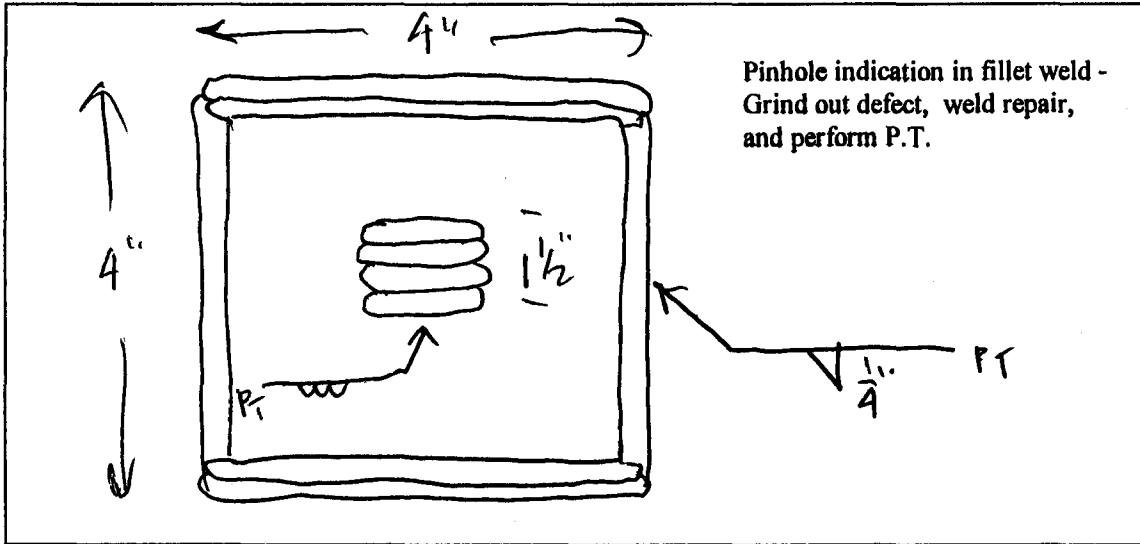
TYPE 10 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No. 055	File 7R055
CYLINDER	Quadrant A
Course 28	Plate 4
Drawn by Tom Kitchen	Date 5/4/98

**Dames & Moore**  
 Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
 Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 055    Type: 10    Location: B4-28



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

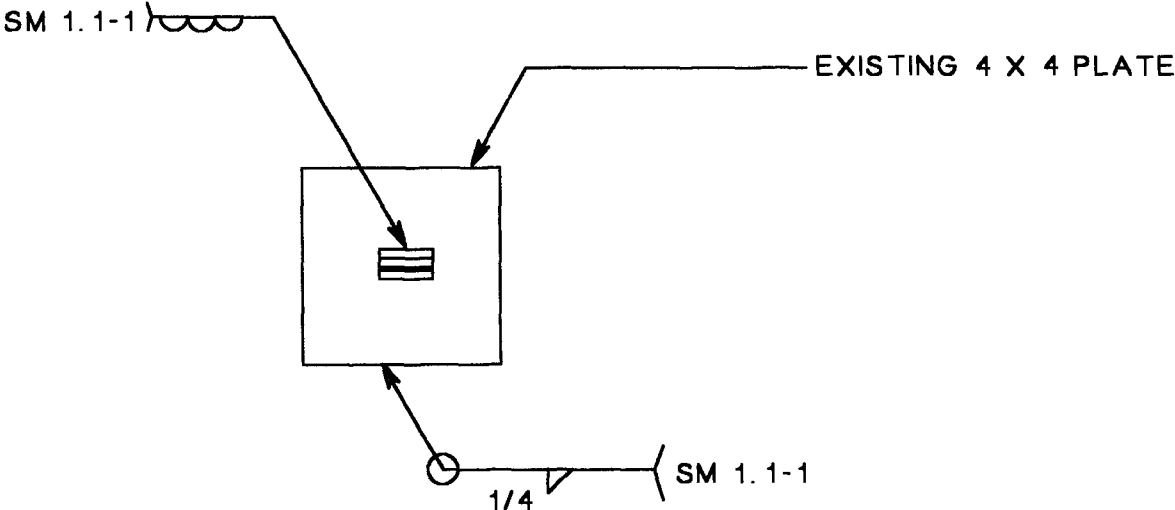
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15

Rework Required: N/A

Repair Acceptable: John Zschell

Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



TYPE 10 REPAIR

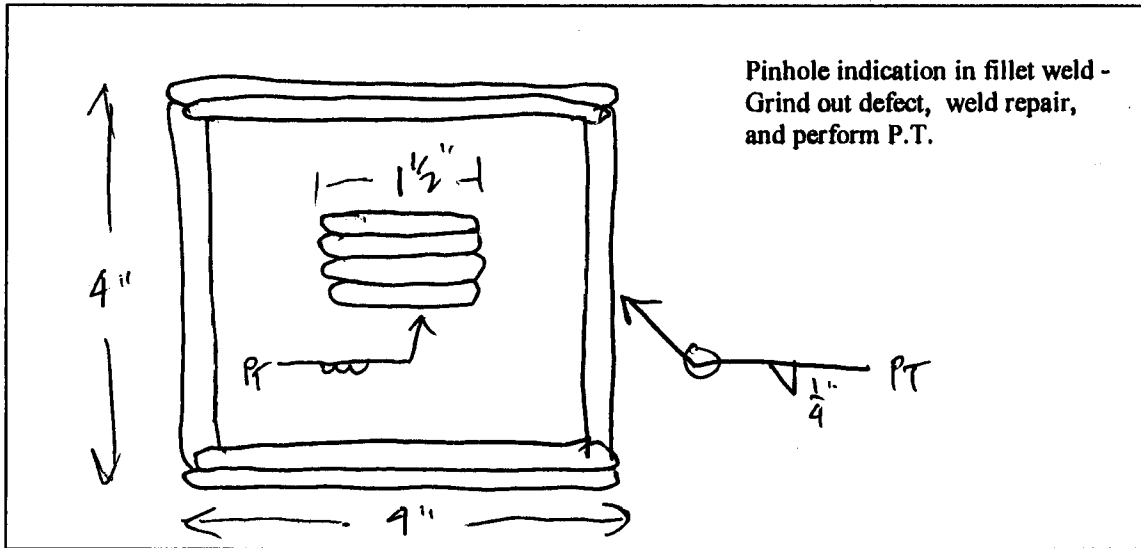
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 056	File: 7R056
CYLINDER	Quadrant: A
Course: 28	Plate: 2
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 056    Type: 10    Location: B2-28



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zedell

Date Accepted: 4-15-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

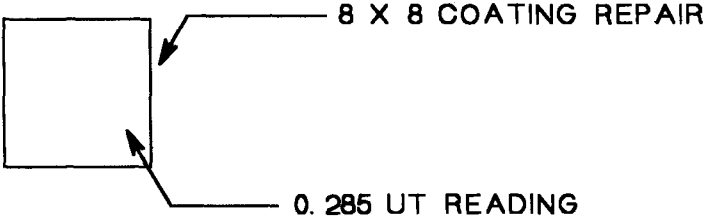
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zedell

Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



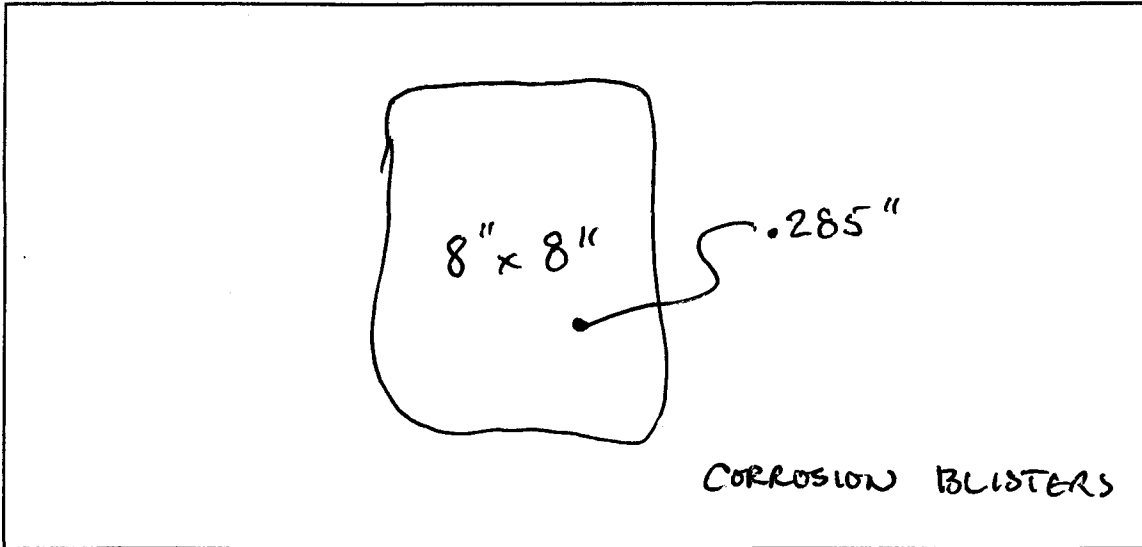
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No. : 057	File: 7R057
LOWER DOME	Quadrant: B
Course: 3	Plate: 11
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 057    Type: 0    Location: B11-3



Weld Repair    N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_                      Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

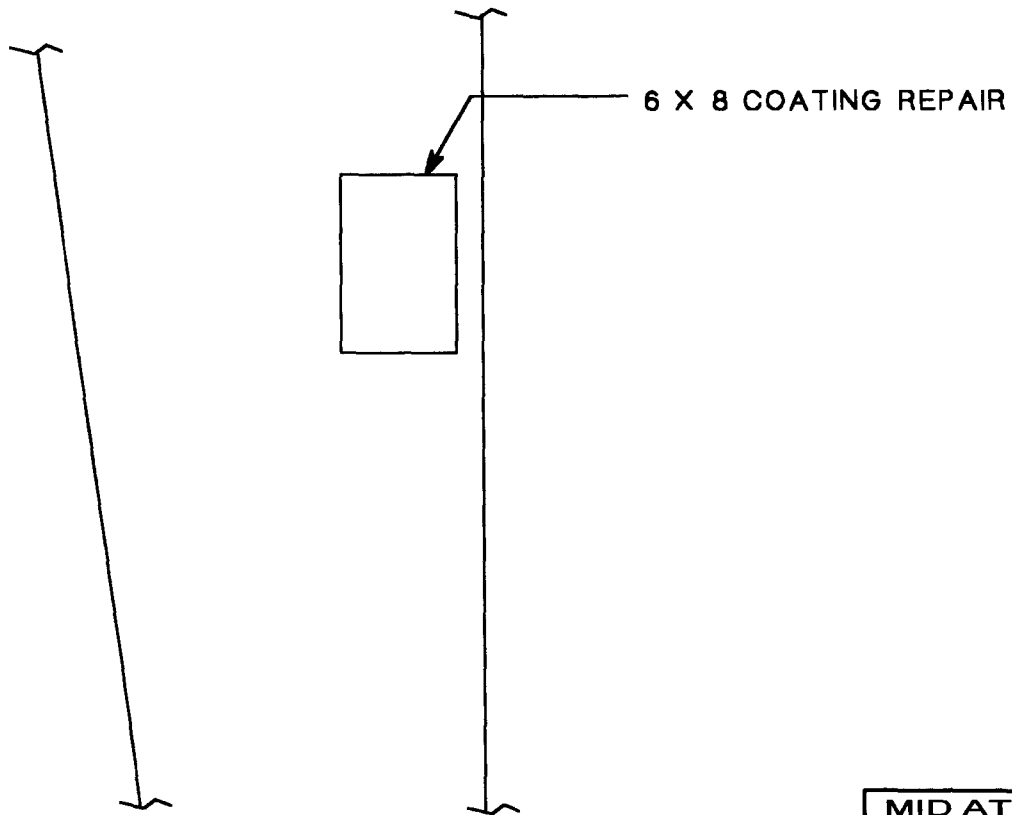
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zachell                      Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



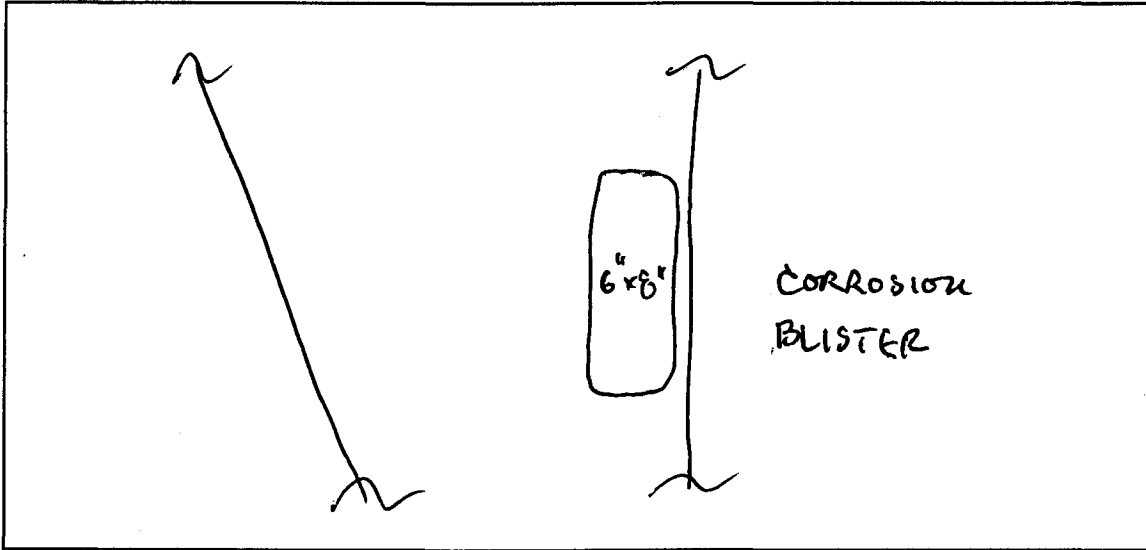
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 058	File: 7R058
Lower Dome	Quadrant: B
Course: 3	Plate: 11
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 7    Repair No.: 058    Type: 8    Location: B11-3



Sketch of Repair Area

Weld Repair    N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_    Vacuum Box \_\_\_\_\_    Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_                      Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

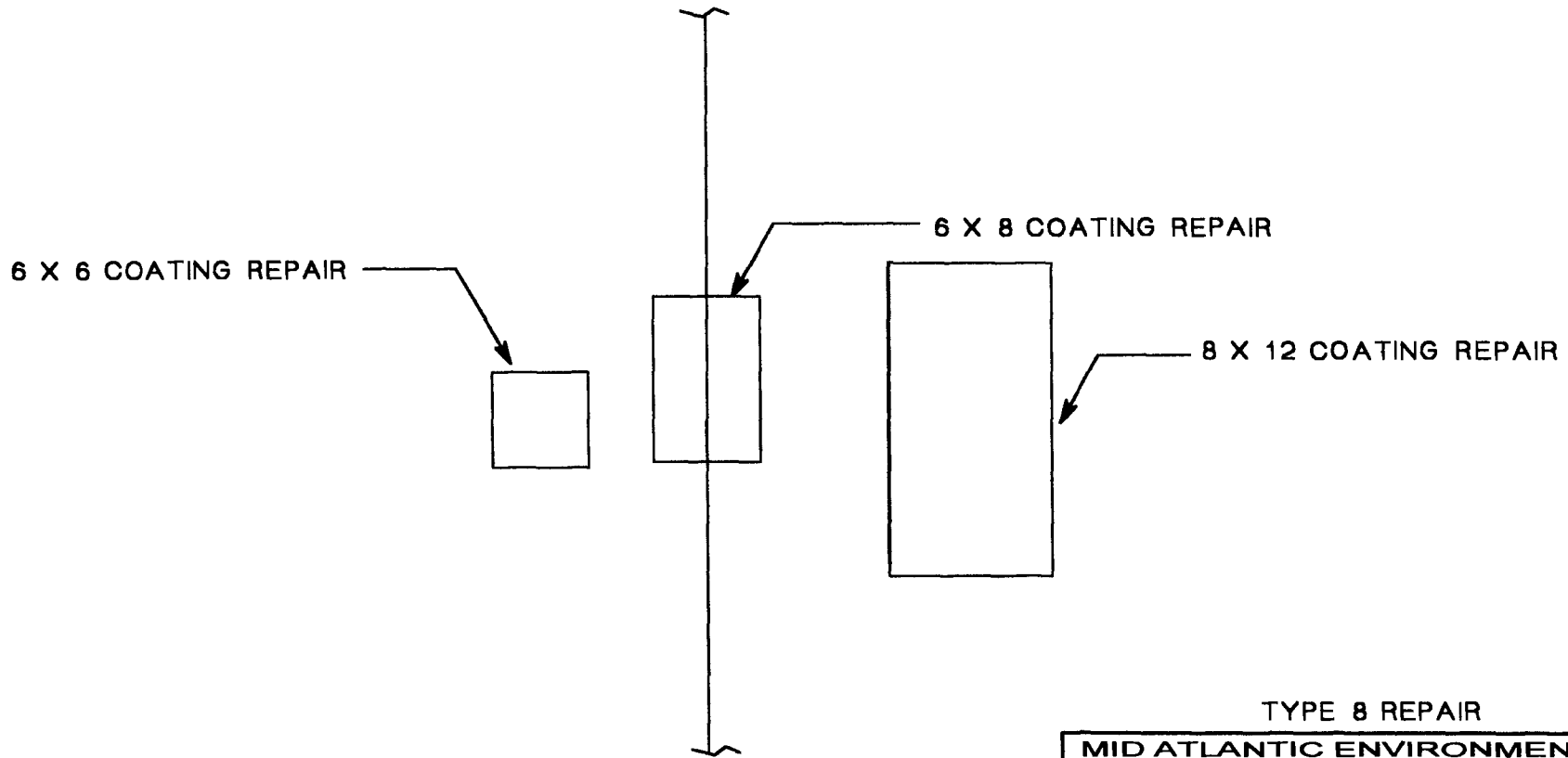
Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

NDT Performed:                      Visual:                       DFT:                       Average DFT: 8-15 m.l.s

Rework Required: N/A

Repair Acceptable: John Zachell                      Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK

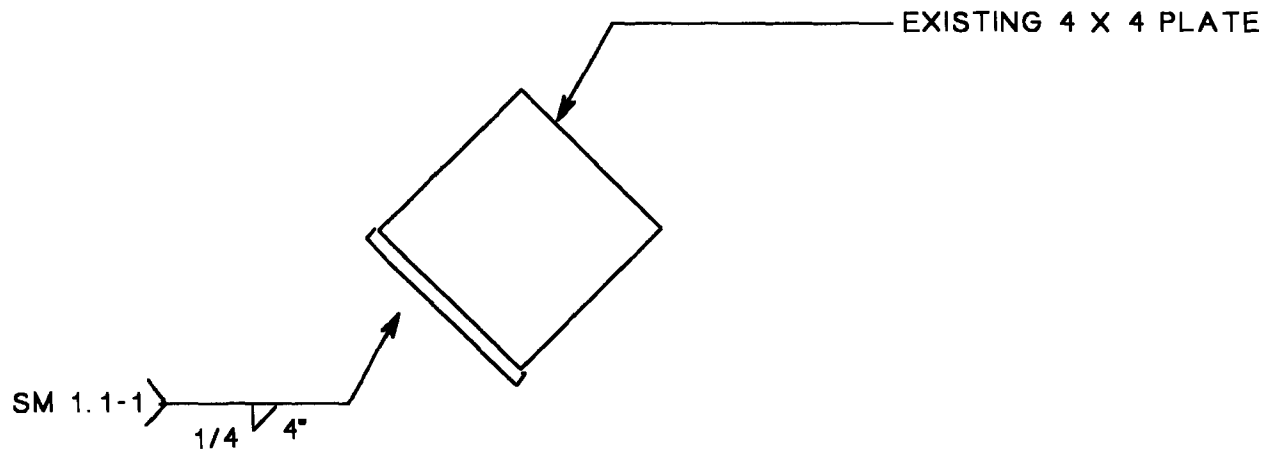


TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 059	File: 7R059
Lower Dome	Quadrant: A
Course: 3	Plate: 3
Drawn by: Tom Kitchen	Date: 5/4/98



Inspected 3/29/98 by JF & TK



TYPE 10 REPAIR

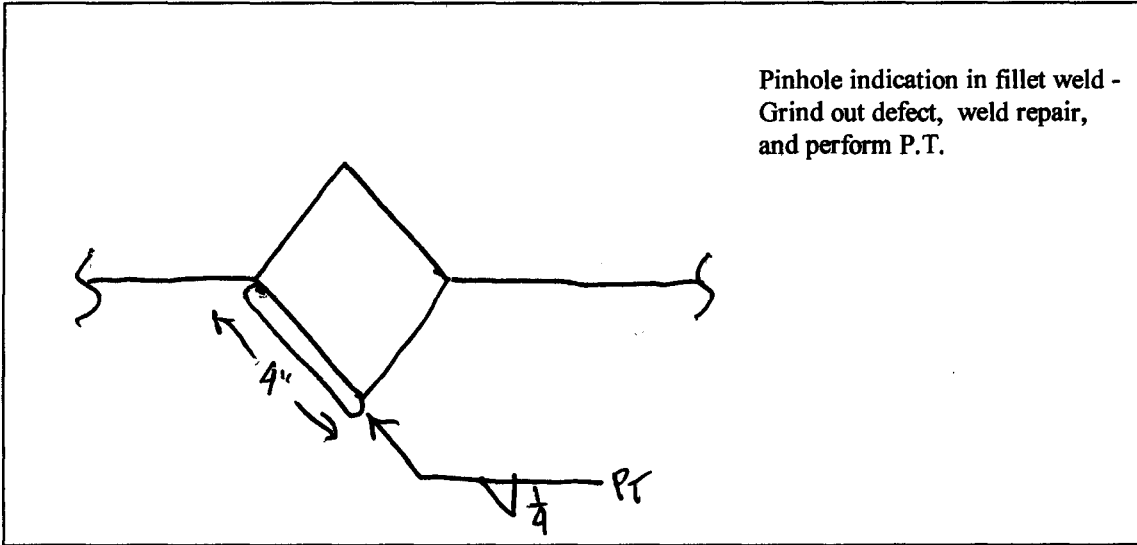
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 060	File: 7R060
CYLINDER	Quadrant: A
Course: 17	Plate: 1
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7    Repair No.: 060    Type: 10    Location: A1-17



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed:                      Visual     Vacuum Box     Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zuhell

Date Accepted: 4-15-98

Coating Repair

Coating Type: Epoxy

Surface Preparation:     Primer Coat:     Intermediate Coat:     Final Coat:

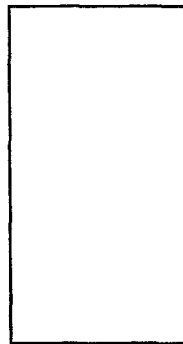
NDT Performed:                      Visual:     DFT:     Average DFT: 8-15 mils

Rework Required: N/A

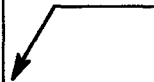
Repair Acceptable: John Zuhell

Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



24 X 36 COATING REPAIR



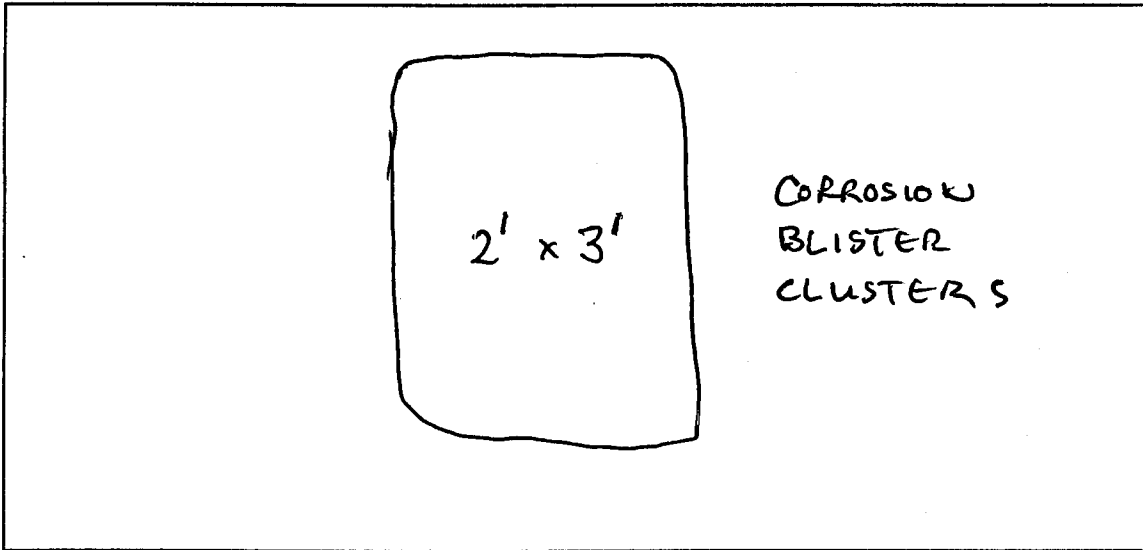
**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWING</b>	
Repair No.: 062	File: 7R062
Lower Dome	Quadrant: A
Course: 3	Plate: 1
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 062 Type: 8 Location: A1-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

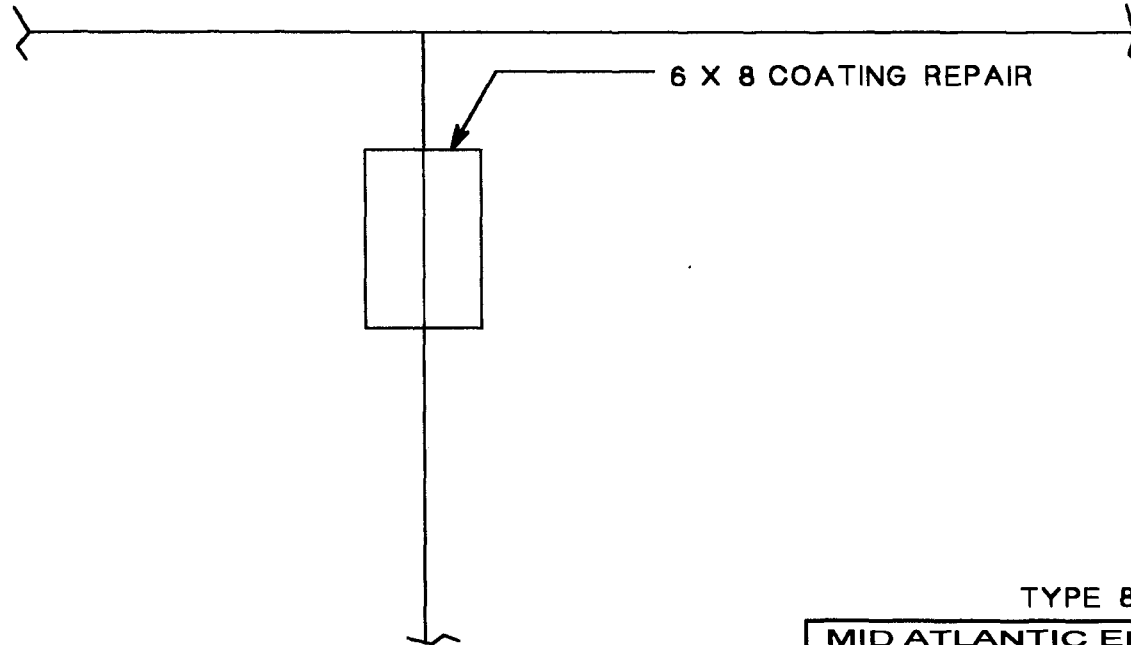
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK

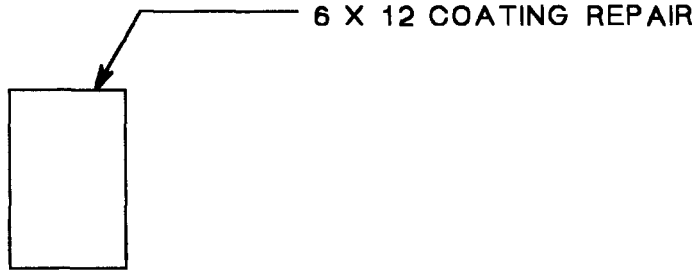


**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWING</b>	
Repair No.: 063	File: 7R063
Lower Dome	Quadrant: A
Course: 2	Plate: 7
Drawn by: Tom Kitchen	Date: 5/4/98



Inspected 3/29/98 by JF & TK



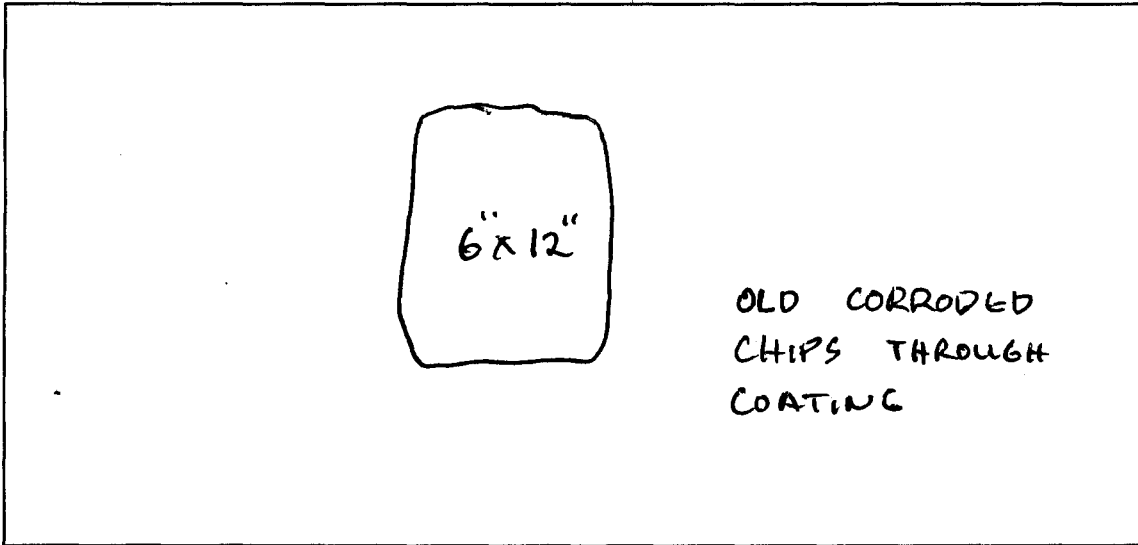
**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #7 RECOMMENDED REPAIR DRAWING</b>	
Repair No.: 064	File: 7R064
Lower Dome	Quadrant: A
Course: 2	Plate: 1
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 064 Type: 8 Location: A1-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

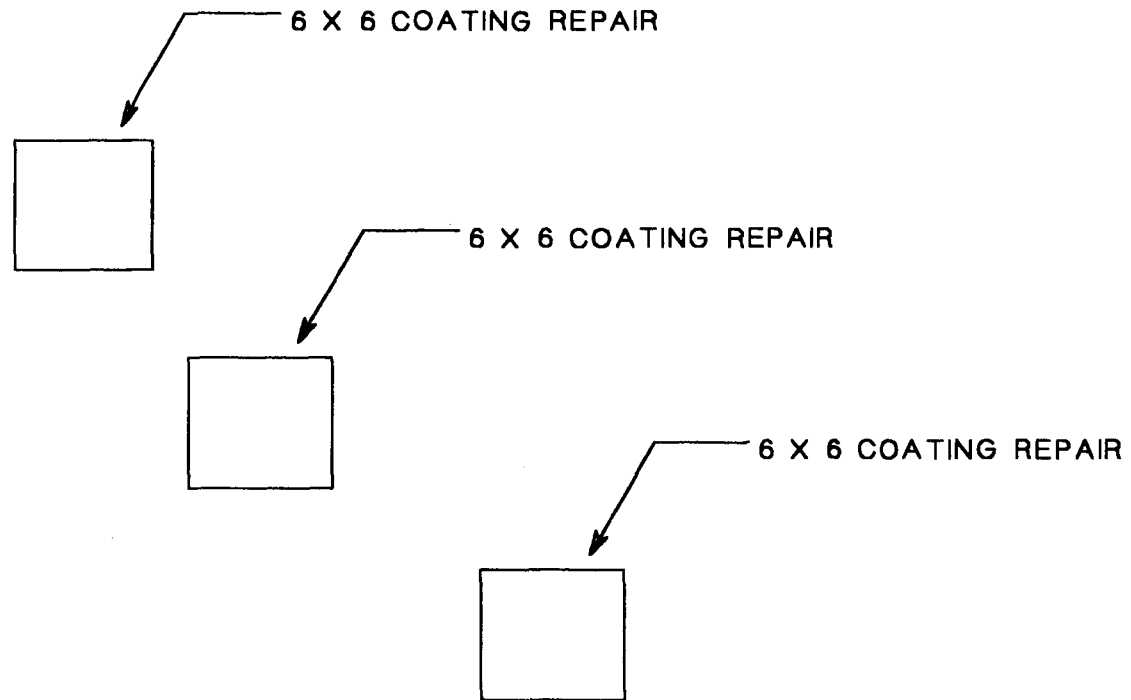
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed:                      Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zahrad Date Accepted: 4-17-98

Inspected 3/29/98 by JF & TK



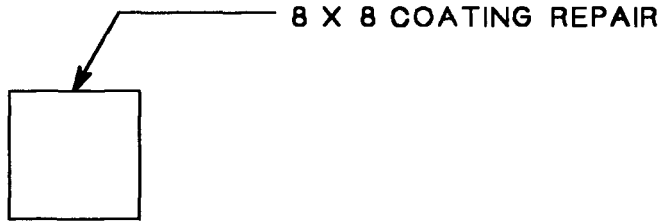
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 065	File: 7R065
Lower Dome	Quadrant: A
Course: 1	Plate: 1
Drawn by: Tom Kitchen	Date: 5/4/98





Inspected 3/29/98 by JF & TK



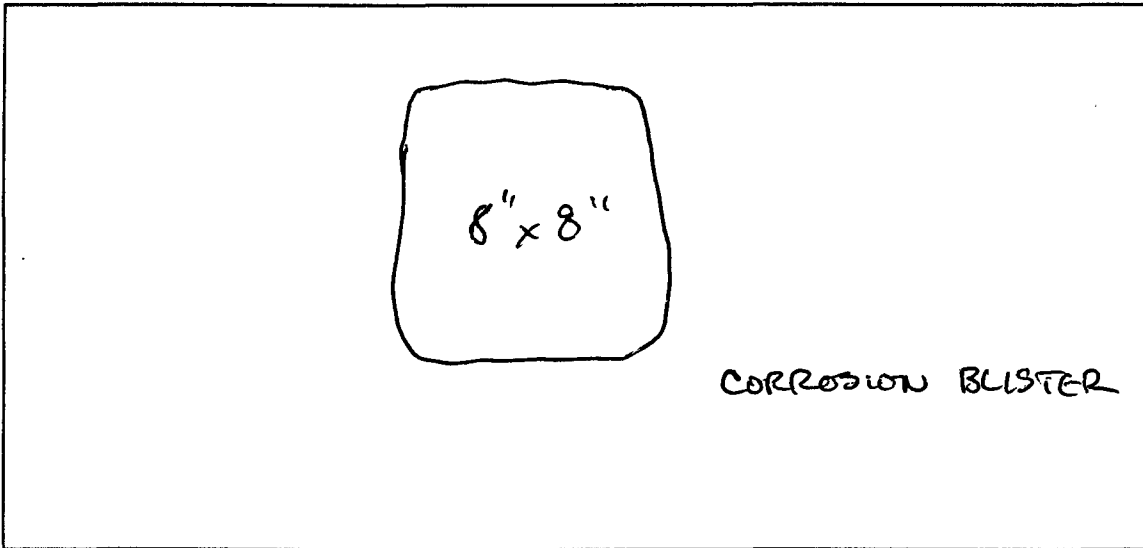
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #7 RECOMMENDED REPAIR DRAWING	
Repair No.: 066	File: 7R066
Lower Dome	Quadrant: B
Course: 1	Plate: 9
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 7 Repair No.: 066 Type: 8 Location: B9-1



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

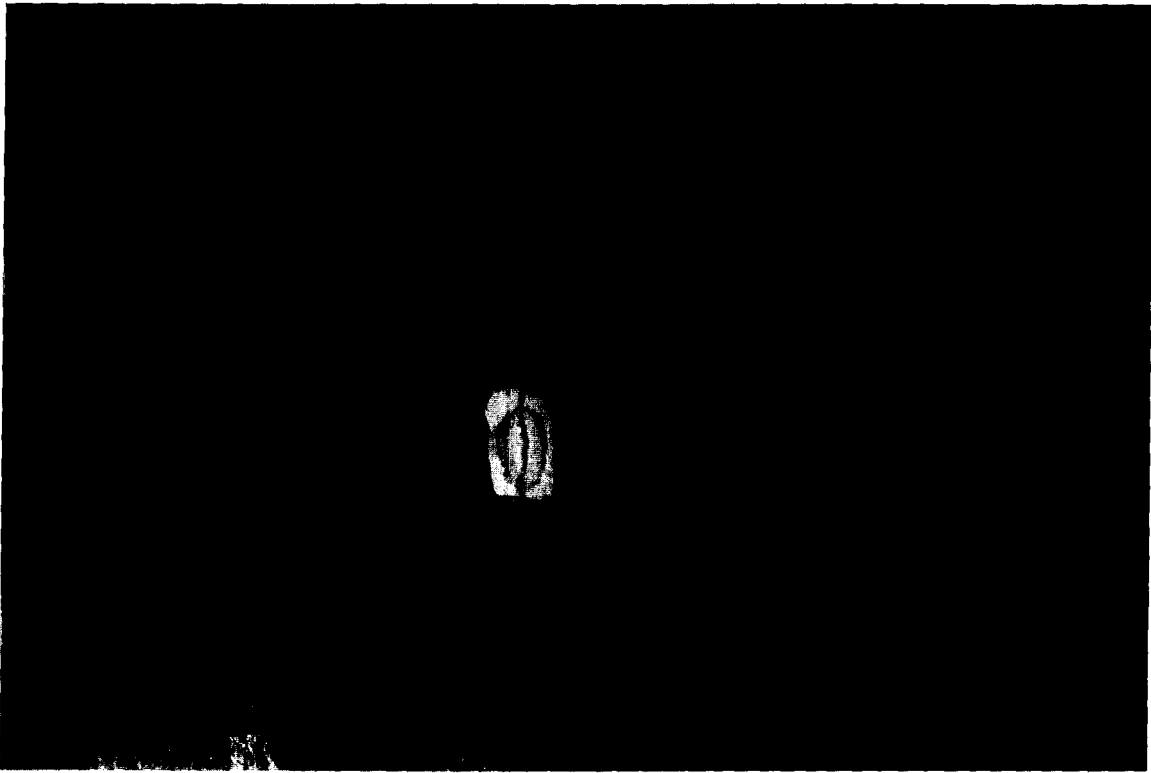
NDT Performed:                      Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

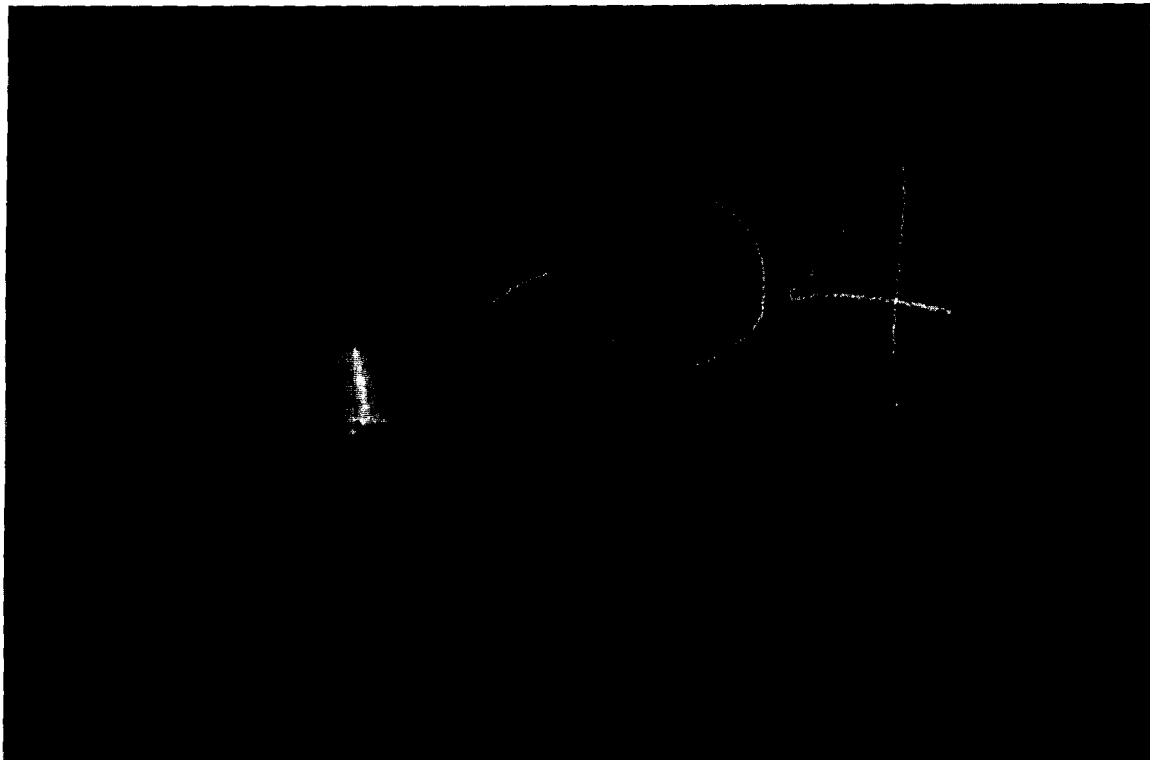
Repair Acceptable: John Zuchell Date Accepted: 4-17-98

**Section 10**

**AS-BUILT DRAWINGS**



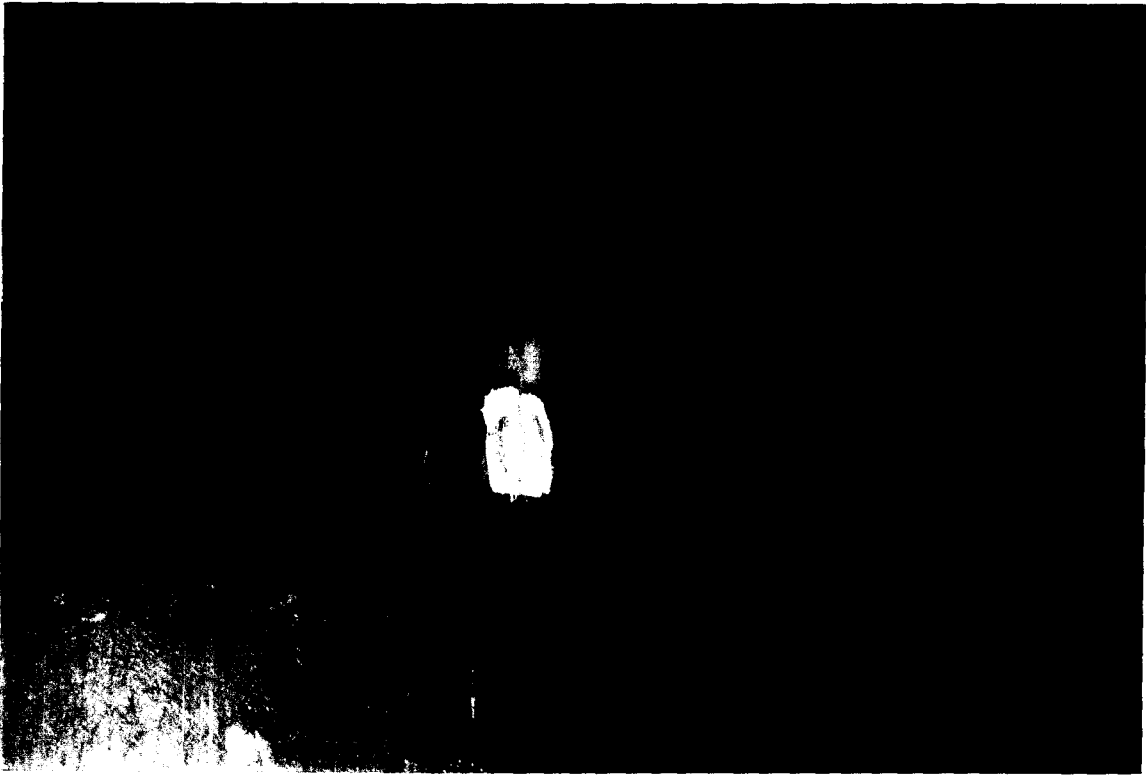
**Weld repair # 045**



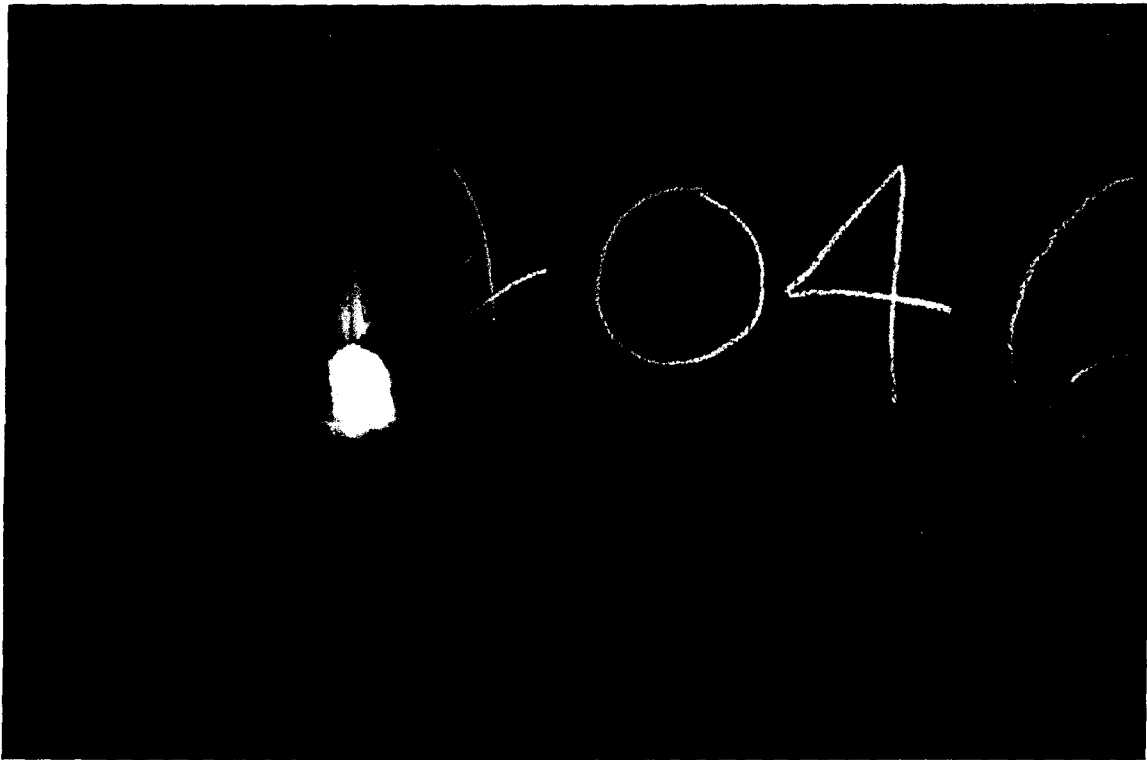
**Weld repair #046**

**Section 11**

**Pictures**



**Weld repair # 045**



**Weld repair #046**

# Table of Contents

CERTIFICATION

INTRODUCTION

**3**

REFERENCES

**4**

TANK DESCRIPTION

**5**

REPAIR HISTORY

**6**

TESTING CONDUCTED

**7**

TESTING RESULTS

**8**

REPAIR SPECIFICATIONS

**9**

RECOMMENDED REPAIRS

**10**

AS-BUILT DRAWINGS

**11**

PHOTOGRAPHS

**12**

CONTRACT DRAWINGS



**Section 1.0**

**CERTIFICATION**

## 1.0 Certification

1.1 **Certification:** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

  
Thomas Kitchen, P.E.  
API - 653 Certification #1891

**Section 2**

**INTRODUCTION**

## 2.0 Introduction

2.1 Mid Atlantic Environmental, Inc. conducted an inspection on Tank #8 at the Red Hill Underground Storage Facility, Pearl Harbor, Hawaii. This inspection was conducted in accordance with the scope of work identified by Contract Number N00604-97-R-0013, PRL 96-21, titled "Emergency Repair for Red Hill Tanks."

### 2.2 Inspection Support

2.2.1 Access to the inside surface of the tank was provided through the use of the booms and power climber basket shown on NAVFAC Drawing Number 7927650.

2.2.2 Personnel support was provided by Dames and Moore. This support included:

2.2.2.1 Hole watch,

2.2.2.2 Boom operator,

2.2.2.3 An assistant, either in the basket or on the tank bottom.

### 2.3 Phase 1

2.3.1 The initial phase of the inspection was to inspect the interior of the tank to identify and make repair recommendations for any of the following defects:

2.3.1.1 Deterioration and damage to the coating on the interior of the tank shell plates and welds.

2.3.1.2 Pits on the interior of the tank shell plates and welds.

2.3.1.3 Holes through the tank shell plates and welds.

2.3.1.4 Non-visible holes and cracks in the tank shell plates and welds that are identifiable by the nondestructive test or the visible seepage of fuel and/or water back into the tank.

2.3.1.5 Suspect areas, such as blisters in the tank shell plates.

### 2.4 Phase 2

2.4.1 The second phase of the inspection was a test of the tank bottom after removal of the coating. The following tests were conducted:

2.4.1.1 Sample ultrasonic thickness (UT) measurements were taken on the bottom plates and the first ascending plates,

2.4.1.2 Vacuum box testing of all welds was conducted on the bottom plates and the first ascending plates,

2.4.1.3 Testing for the presence of chlorides, soluble ferrous and ferric salts, alkaline/acidic contaminants and flame sprayed aluminum was conducted on the tank bottom.

**Section 3**

**REFERENCES**

## **3.0 References**

### **3.1 American Petroleum Institute:**

- 3.1.1 API Standard 650, Welded Steel Tanks for Oil Storage.
- 3.1.2 API Recommended Practice 651, Cathodic Protection of Aboveground Petroleum Storage Tanks.
- 3.1.3 API Recommended Practice 652, Lining of Aboveground Petroleum Storage Tank Bottoms.
- 3.1.4 API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction.

### **3.2 American Society of Mechanical Engineers Codes:**

- 3.2.1 ASME Boiler and Pressure Vessel Code; Section V, Non Destructive Examination.
- 3.2.2 ASME Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications.

### **3.3 Code of Federal Regulations:**

- 3.3.1 29 CFR 1910, Permit-Required Confined Spaces for General Industry.

### **3.4 National Association of Corrosion Engineers:**

- 3.4.1 NACE Recommended Practice, RP0184-91, Repair of Lining Systems.
- 3.4.2 NACE Recommended Practice, RP0193-93, External Cathodic Protection of On-Grade Metallic Storage Tank Bottoms.
- 3.4.3 NACE Recommended Practice, RP0288-94, Inspection of Linings on Steel and Concrete.

### **3.5 National Fire Protection Association:**

- 3.5.1 NFPA-30, Flammable and Combustible Liquids Code.

**Section 4**

**TANK DESCRIPTION**

## 4.0 TANK DESCRIPTION

**The tank is a vertical cylinder, 257 feet high and 100 feet in diameter with both upper and lower domes. Each dome is a 50 foot radius hemisphere. The tank is underground and encased in concrete. Tank shell, upper and lower domes are 1/4 inch carbon steel plate, except the 20 foot flat bottom which is 1/2 inch thick.**

Owner/Operator:	Fleet and Industrial Supply Center	
Location:	Pearl Harbor, HI	
Tank Number:	8	
Service:	Fuel Storage	
Capacity:	300,000 Bbl	
Diameter:	100 feet	
Shell Height:	155 feet	
Configuration:	Vertical	
Fill Height:	235 feet above flat bottom	
Foundation:	Concrete	
Construction:	Bottom:	Butt Welded
	Lower Dome:	Butt Welded
	Shell:	Butt Welded
	Upper Dome:	Butt Welded
Age:	56 years	
Specific Gravity:	1.00	
Seismic Zone:	Zone 1	
Construction Code:	Unknown	



**Section 5**

**REPAIR HISTORY**

RED HILL TANK NO. 8  
PRODUCT: DFM

<u>DATE</u>	<u>REMARKS</u>
3/2/52	Cleaned tank. Labor Cost: \$1986.60. Material: \$313.20
10/11/63	Calibrated gauge.
10/15/63	Repaired selsyn motor on automatic gauge.
5/5/64	Cleaned tank.
4/28/71	Emptied and cleaned for conversion.
5/7-18/71	Cleaned tank (140 hours). Labor Cost: \$560. Converted from NSF0 to Navy Distillate.
5/21/71	Topped off with Navy Distillate.
8/3/73	Emptied and cleaned for conversion.
8/16/73	Installed 6" valve on drain line. Gravitated Navy Distillate from Tank 10 to Tank 8.
9/12/73	Telemeter system installed. Converted to DFM.
4/17/81	Tank was turned over to the contractor for initial repairs and lining under MCON P-060.
12/16/81	Director and Deputy Director inspected tank upon completion of work under MILCON P-060. Tank was accepted pending correction of minor deficiencies.
12/21/81	Tank returned to service for leak testing.
4/1/83	Tank is still being tested for leaks. If necessary, the contractor will return in August or September 1983 for a final rework.

**Section 6**

**TESTING CONDUCTED**

## **6.0 Testing Conducted**

6.1 General: The internal inspection was conducted to gather the data necessary for the assessment of the interior of the tank. This data takes into account previous inspection information. An evaluation was conducted on the tank by means of visual inspection, NDE, including Ultrasonic, Dye Penetrant, and Vacuum Box testing. These results have been evaluated and are contained in the body of this report. Corrosion rates were established. A complete description of unusual conditions, as well as corrective action procedures is also included in the body of this report. All repair data is included in the body of this report.

6.2 Visual: To verify that the angle of vision and level of lighting were adequate for the visual inspection, a 1/32 inch wide black line on an 18% neutral grey background was used as a test guide.

6.3 Surface contamination of the tank bottom: After the tank bottom was brush blasted testing was performed for the presence of chlorides, soluble ferrous and ferrous salts, alkaline/acid contaminants per NACE Bulletin No.24118 using a KATA SCAT Kit (Surface Contamination Analysis Test Kit). The bottom was tested for the presence of flame sprayed aluminum using a caustic soda method.

**Section 7**  
**TESTING RESULTS**

## **7.0 TESTING RESULTS**

### **7.1 Results of Internal Visual Inspection:**

7.1.1 A total of twenty two (22) defects were identified on the interior of the tank. These repairs are identified and described in section 9 of this report.

### **7.2 Results of Bottom Inspection:**

7.2.1 The original bottom thickness was determined to be 0.500 inches and the first ascending plate to be 0.250 inches. The ultrasonic thickness measurements taken determined that backside corrosion in this area is not a problem. Pitting on the bottom plates is widespread and the enclosed drawing shows that many patch plates had been added in the past. Although pitting is widespread it is not a problem since the remaining metal thickness is well within the 0.10 inches of metal required by API Standard 653 by the next inspection. Also the coating to be applied to the tank bottom should prevent any increase in pit depth. Although pitting is not a problem with regard to structural integrity, it did present a problem regarding the coating to be applied. Pictures of this pitting are included with this report. The surface contamination test results yielded 0% ferrous salts, 32 ppm NaCl and a pH level of 7. These results are within the limits set forth in the KTA SCAN Kit technical data and the NACE technical committee report on Surface Preparation of Contaminated Steel Surfaces. The Caustic Soda test of the tank bottom indicated that all Flame Sprayed Aluminum had been removed. By visual inspection, scattered pitting was observed on the tank bottom and first ascending plates. The deeper pits were measured and recorded on the Bottom Layout With Pit Indications drawing.

### 7.3 Engineering Calculations (cont'd):

#### 7.4.2 Minimum Thickness for Tank Bottom and Remaining Life:

$$MRT_1 = T_o - GC_a - StP_a - UP_m - (StP_r + UP_r + GC_r)O_{r1}$$

$$MRT_2 = T_o - GC_a - StP_m - UP_a - (StP_r + UP_r + GC_r)O_{r2}$$

$$O_{r1} = \frac{T_o - GC_a - StP_a - UP_m - MRT_1}{(StP_r + UP_r + GC_r)}$$

$$O_{r2} = \frac{T_o - GC_a - StP_m - UP_a - MRT_2}{(StP_r + UP_r + GC_r)}$$

Where:

$MRT_1$  or  $MRT_2$  = Minimum remaining thickness at the end of the in-service period of operation, in inches.  $MRT_1$  represents minimum remaining thickness due to average internal pitting and maximum external pitting.  $MRT_2$  represents minimum remaining thickness due to maximum internal pitting and average external pitting.

$T_o$  = Original plate thickness, in inches.

$StP_a$  = Average depth of internal pitting, in inches, measured from the original thickness.

$StP_m$  = Maximum depth of internal pitting remaining in bottom plates after repairs are completed, in inches, measured from the original thickness.

$UP_a$  = Average depth of underside pitting, in inches.

$UP_m$  = Maximum depth of underside pitting, in inches.

$StP_r$  = Maximum internal pitting rate in inches per year;  $StP_r = 0$  if tank bottom is internally lined.

$UP_r$  = Maximum underside pitting rate, in inches per year;  $UP_r = 0$  if tank bottom is cathodically protected.

$O_{r1}$  or  $O_{r2}$  = Anticipated in-service period of operation (normally 10 years).

$GC_a$  = Average depth of generally corroded area, in inches.

$GC_r$  = Maximum rate of corrosion, in inches per year.

## 7.4 Engineering Calculations (cont'd):

### 7.4.2 Minimum Thickness for Tank Bottom and Remaining Life (cont'd):

#### PRESENT CONDITION:

$$\begin{aligned}
 MRT_1 \text{ or } MRT_2 &= 0.1 \text{ inches} \\
 T_o &= 0.5 \text{ inches} \\
 StP_a &= 0.05 \text{ inches} \\
 StP_m &= 0.125 \text{ inches} \\
 UP_a &= 0.01 \text{ inches} \\
 UP_m &= 0.01 \text{ inches} \\
 StP_r &= 0.0022 \text{ inches/year} \\
 UP_r &= 0.0002 \text{ inches/year} \\
 GC_a &= 0.02 \text{ inches} \\
 GC_r &= 0.0004 \text{ inches/year}
 \end{aligned}$$

$$O_{r1} = \frac{T_o - GC_a - StP_a - UP_m - MRT_1}{(StP_r + UP_r + GC_r)}$$

$$O_{r1} = \frac{0.5 - 0.02 - 0.05 - 0.01 - 0.1}{(0.0022 + 0.0002 + 0.0004)} > 20 \text{ years}$$

$$O_{r2} = \frac{T_o - GC_a - StP_m - UP_a - MRT_2}{(StP_r + UP_r + GC_r)}$$

$$O_{r2} = \frac{0.5 - 0.02 - 0.125 - 0.01 - 0.1}{(0.0022 + 0.0002 + 0.0004)} > 20 \text{ years}$$

Therefore, the remaining bottom life is:

$$O_r > 20 \text{ years}$$

NOTE: The engineering data used to calculate in-service period of operation ( $O_r$ ) assumes the tank remains in the same service and all corrosion rates remain constant.

---



## 7.3 Engineering Calculations:

## 7.4 KTA SCAT Kit Calculation Sheet:

Calculation	Determination 1
Reading from Titratrch Strip	0.005 ppm
(A) x milliliters of water	0.05 micrograms Cl
Calculate the area swabbed ( $\text{cm}^2 = \text{in}^2 \times 2.54^2$ )	103 $\text{cm}^2$
(microgram Cl) / (area swabbed)	0.0005 micrograms/ $\text{cm}^2$ Cl
((micrograms) / ( $\text{cm}^2$ )) x 10	0.005 milligrams/ $\text{cm}^2$ Cl

4 inch x 4 inch area tested

10 ml solution used

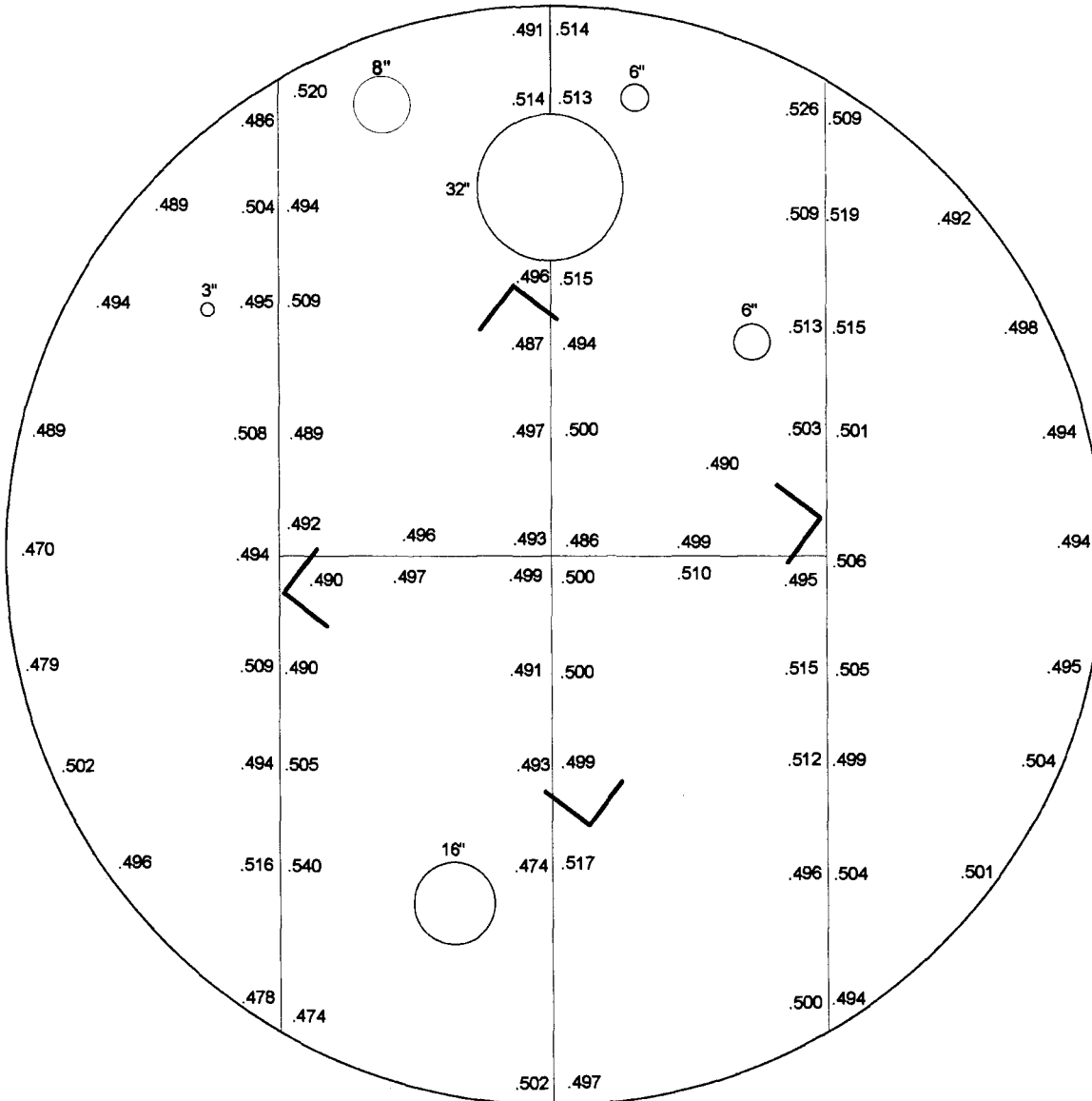
Results:	Fe test = 0	Satisfactory
	ph = 6	Satisfactory
	Quantum unit test = 1.2	Satisfactory
	% NaCl less than 0.005%	Satisfactory
	ppm less than 32	Satisfactory

**7.5 Engineering Drawings**

**7.5.1 Bottom Layout With Pit Indications**

**7.5.2 Bottom Layout & Thickness Measurements**

Remarks/Legend:



Company:  
Naval Supply Center, Pearl Harbor, HI

Drawn By:  
Mid Atlantic Environmental, Inc.

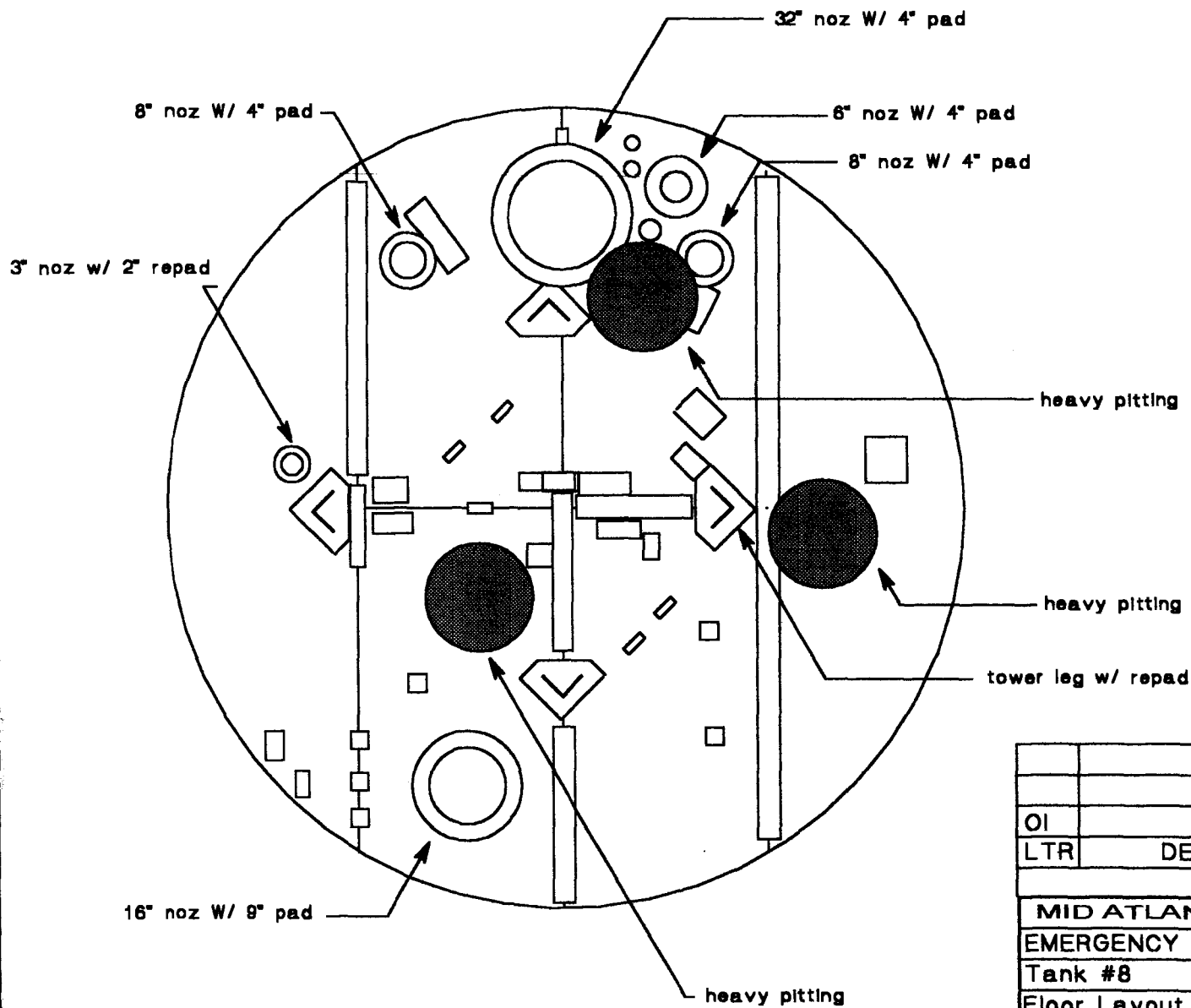
Date: 07/13/98	Rev. No.: N/A	Scale: 1/40 feet
-------------------	------------------	---------------------

Drawing Title:

**Bottom Layout & Thickness Measurements**

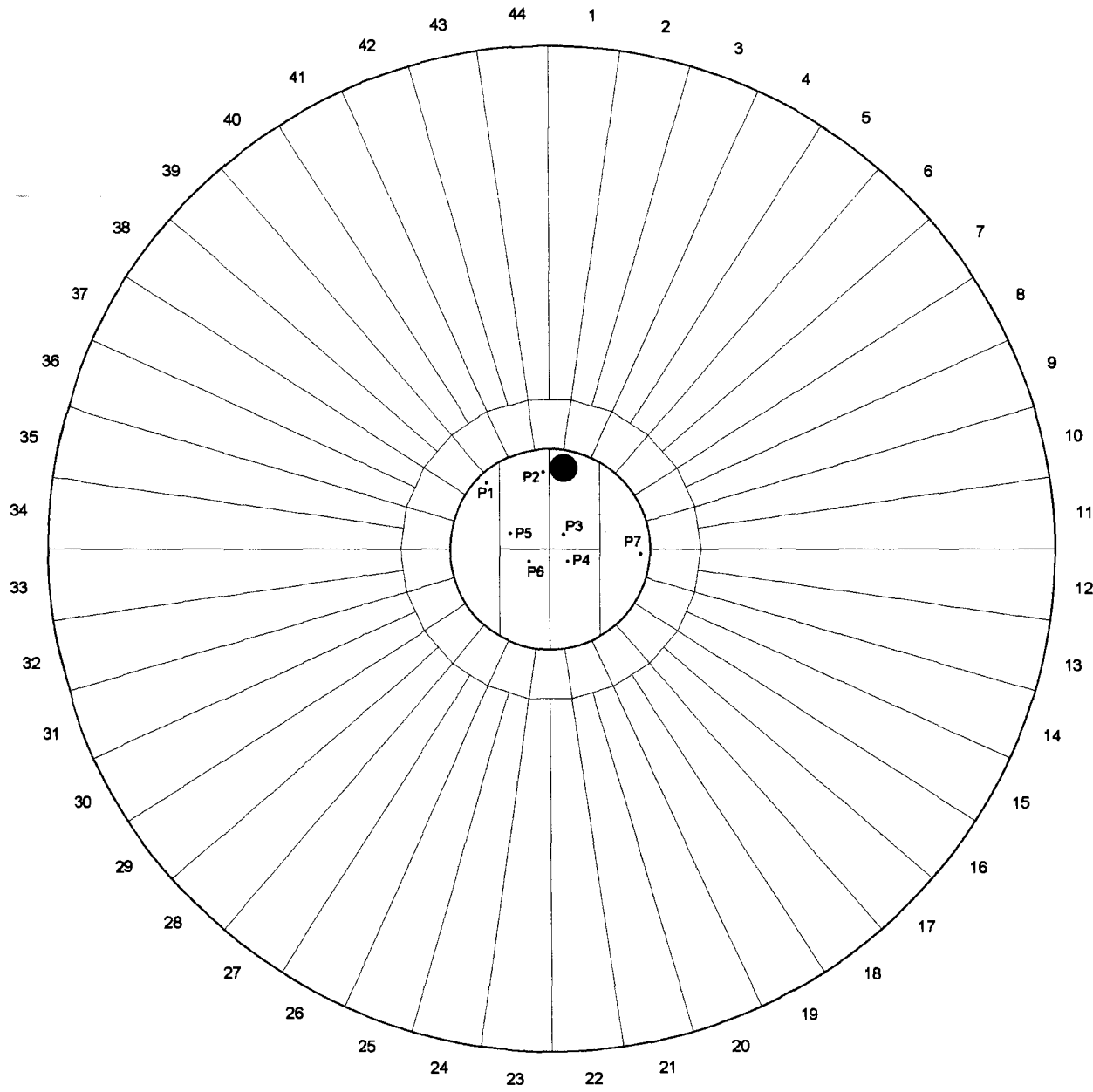
Tank Description:

**Tank #8**



OI		TK	
LTR	DESCRIPTION	BY	DATE
REVISIONS			
MID ATLANTIC ENVIRONMENTAL			
EMERGENCY REPAIRS FOR RED HILL TANKS			
Tank #8			
Floor Layout		File: 8fillo	
Tank bottom			
Drawn By: T. Kitchen		Date: 7/20/98	

Remarks/Legend: Pitting was general over 30% of bottom



Pit Depth in inches:

- P1 = 0.15
- P2 = 0.11
- P3 = 0.09
- P4 = 0.12
- P5 = 0.09
- P6 = 0.09
- P7 = 0.12

Company:		
Naval Supply Center, Pearl Harbor, HI		
Drawn By:		
Mid Atlantic Environmental, Inc.		
Date:	Rev. No.:	Scale:
07/16/98	N/A	1/200 feet

Drawing Title:  
**Bottom Layout with Pit Indications**

Tank Description:  
**Tank # 8**

## 7.6 Engineering Data:

## 7.6.1 Thickness Measurements for the First Ascending Plates

Plate Type E

Lower Dome

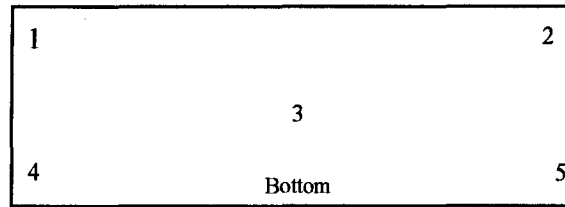


Plate Number	Thickness Measurements (in inches)					Plate Type
	Point Numbers					
	1	2	3	4	5	
1	0.260	0.286	0.250	0.256	0.255	E
2	0.268	0.266	0.255	0.262	0.267	E
3	0.252	0.254	0.259	0.271	0.255	E
4	0.255	0.256	0.248	0.251	0.251	E
5	0.255	0.255	0.256	0.261	0.271	E
6	0.261	0.256	0.261	0.263	0.256	E
7	0.258	0.256	0.260	0.261	0.264	E
8	0.251	0.253	0.253	0.249	0.252	E
9	0.248	0.254	0.244	0.258	0.253	E
10	0.253	0.245	0.246	0.255	0.247	E
11	0.261	0.259	0.256	0.260	0.261	E
12	0.259	0.251	0.251	0.278	0.287	E
13	0.247	0.246	0.255	0.253	0.264	E
14	0.251	0.251	0.250	0.260	0.266	E
15	0.262	0.255	0.247	0.261	0.273	E
16	0.256	0.254	0.251	0.261	0.250	E
17	0.252	0.249	0.251	0.252	0.248	E
18	0.246	0.251	0.246	0.251	0.256	E
19	0.249	0.250	0.274	0.251	0.256	E
20	0.254	0.252	0.251	0.274	0.258	E
21	0.262	0.261	0.254	0.268	0.271	E
22	0.278	0.258	0.260	0.261	0.269	E

## 7.6 Engineering Data:

## 7.6.2 Thickness Measurements for the Second Ascending Plates

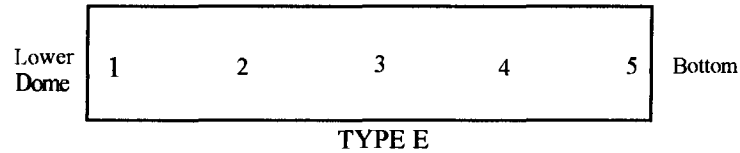


Plate Number	Thickness Measurements (in inches)					Plate Type
	Point Numbers					
	1	2	3	4	5	
1	0.261	0.259	0.263	0.266	0.264	E
2	0.264	0.256	0.261	0.271	0.262	E
3	0.287	0.287	0.285	0.289	0.276	E
4	0.258	0.281	0.276	0.267	0.261	E
5	0.272	0.286	0.277	0.283	0.283	E
6	0.251	0.254	0.253	0.256	0.246	E
7	0.263	0.278	0.272	0.286	0.267	E
8	0.258	0.262	0.250	0.259	0.266	E
9	0.256	0.260	0.256	0.261	0.256	E
10	0.256	0.268	0.254	0.254	0.281	E
11	0.279	0.285	0.287	0.285	0.276	E
12	0.271	0.264	0.259	0.262	0.261	E
13	0.286	0.285	0.285	0.295	0.281	E
14	0.267	0.262	0.266	0.270	0.266	E
15	0.250	0.254	0.266	0.256	0.246	E
16	0.256	0.253	0.261	0.261	0.241	E
17	0.250	0.259	0.253	0.265	0.251	E
18	0.259	0.260	0.256	0.261	0.245	E
19	0.296	0.286	0.299	0.291	0.294	E
20	0.256	0.251	0.250	0.251	0.248	E
21	0.286	0.286	0.292	0.284	0.276	E
22	0.262	0.278	0.274	0.274	0.258	E

Plate Number	Thickness Measurements (in inches)					Plate Type
	Point Numbers					
	1	2	3	4	5	
23	0.265	0.266	0.254	0.256	0.250	E
24	0.253	0.264	0.271	0.260	0.255	E
25	0.264	0.261	0.261	0.269	0.244	E
26	0.266	0.261	0.260	0.262	0.252	E
27	0.251	0.265	0.250	0.251	0.250	E
28	0.254	0.258	0.256	0.261	0.241	E
29	0.253	0.256	0.261	0.248	0.242	E
30	0.256	0.252	0.254	0.256	0.254	E
31	0.255	0.249	0.259	0.246	0.248	E
32	0.264	0.258	0.269	0.254	0.258	E
33	0.270	0.271	0.279	0.274	0.270	E
34	0.252	0.254	0.261	0.256	0.251	E
35	0.256	0.271	0.265	0.271	0.254	E
36	0.256	0.255	0.260	0.252	0.246	E
37	0.255	0.256	0.269	0.256	0.241	E
38	0.256	0.263	0.263	0.265	0.251	E
39	0.281	0.292	0.285	0.281	0.271	E
40	0.263	0.268	0.271	0.272	0.249	E
41	0.269	0.278	0.276	0.271	0.265	E
42	0.266	0.260	0.276	0.266	0.256	E
43	0.247	0.246	0.256	0.268	0.243	E
44	0.267	0.266	0.281	0.277	0.253	E

## 7.6 Engineering Data (cont'd)

## 7.6.2 Field Test Report:

Quality Control  
Field Test Report

Vacuum Leak Tests

Project Name: Red Hill Emergency Repairs

Project Number: Tank #8

Test Report Number: 1

Service: Fuel Storage

Material: Carbon Steel Thickness: 0.50 inch (flat bottom plates) Diameter: 100 ft  
0.25 inch (first ascending plates)

Location: Honolulu, HI

New Construction:  Repair:  ASME Code:

Service Boundary Description: Tank Bottom & First Ascending Plates

Test Type: Hydrostatic  Pneumatic  Vacuum

Test Date: 6/29 to 7/2/98

Ambient Temp: 77 degrees Fahrenheit Test Pressure: 5 psi minimum Design Pressure:

Test Media: Soapy Water Temperature: 77 degrees Fahrenheit Holding Time: 30 seconds

Test Acceptable:  Unacceptable:

Authorized Code Inspectors: Tom Kitchen Date: 7/3/98

Boundaries of Test:

ID Number	Results	Notes
Bottom Butt Welds	No Leaks Detected	
36", 10" & 6" nozzle to repad	No Leaks Detected	
Repads & patches on floor	No Leaks Detected	
Ring at bottom of first course	No Leaks Detected	
Ring at top of first course	No Leaks Detected	
Angle legs to bottom	No Leaks Detected	
Radial welds, first course	No Leaks Detected	



**Section 8**

**REPAIR SPECIFICATIONS**

## 8.0 REPAIR SPECIFICATIONS

### 8.1 Typical Repair Procedures:

REPAIR TYPE #	TYPE OF DAMAGE	REPAIR PROCEDURE (SEE NOTE 4)	APPROX. SIZE
1	RUSTED AREA, PITTING	REMOVE RUST AND ADJACENT COATING. MEASURE & RECORD DEPTH OF PITS. CLEAN TO BARE METAL, RECOAT.	0.25 SQ. M.
2	DEEP GOUGE IN LINER PLATE	MEASURE & RECORD DEPTH OF GOUGE. CHECK WITH UT FLAW DETECTOR FOR CRACKS. RESURFACE WITH WELD, GRIND SMOOTH, RECOAT.	0.1 SQ. M.
3	LEAK - POROUS/DEFECTIVE WELD	CLEAN SURFACE, VACUUM TEST FOR LEAK, WELD PATCH PLATE OVER LEAK, CLEAN TO BARE METAL, RETEST WITH VACUUM BOX, RECOAT	0.1 SQ. M.
4	LEAK - DOUBLER PLATE	CLEAN SURFACE, VACUUM TEST FOR LEAK REMOVE DOUBLER PLATE, CLEAN SURFACE AND GRIND, WELD PATCH PLATE OVER LEAK, CLEAN TO BARE METAL, RETEST WITH VACUUM BOX, RECOAT.	0.25 SQ. M.
5	LEAK - BLISTER/RUST THROUGH FROM BACK SIDE	REMOVE RUST AND ADJACENT COATING, MEASURE & RECORD THICKNESS. WELD PATCH PLATE OVER LEAK. CLEAN TO BARE METAL. RETEST WITH VACUUM BOX, RECOAT	0.2 SQ. M.
6	LEAK - HOLE	CLEAN SURFACE, VACUUM TEST FOR LEAK. WELD PATCH PLATE OVER LEAK. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT	0.1 SQ. M.
7	BLISTER/DENT	REMOVE COATING TO BARE METAL. MEASURE & RECORD THICKNESS, RECOAT.	0.1 SQ. M.
8	COATING FAILURE	REMOVE COATING TO BARE METAL, RECOAT.	1.0 SQ. M.
9	BUTT WELD FAILURE BETWEEN LINER PLATES	DRILL HOLES IN LINER PLATE AT BOTH SIDES OF THE DAMAGE. PURGE WITH NITROGEN DURING HOTWORK. REMOVE WELD, REWELD, INSTALL THREADED PLUGS IN HOLES AND SEALWELD. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT.	300mm
10	FILLET-WELD FAILURE BETWEEN BACKER STRIPS IN UPPER DOME AND LINER PLATES	REMOVE DEFECTIVE WELD AND REWELD. CLEAN TO BARE METAL, INCLUDING WELD. RETEST WITH VACUUM BOX, RECOAT.	300 mm
11	FILLET-WELD FAILURE BETWEEN 3.5 MM STEEL COVER PLATE AND LINER PLATES IN UPPER DOME	DRILL HOLES IN STEEL COVERS AND PURGE WITH NITROGEN DURING HOT WORK. REMOVE DEFECTIVE WELD AND REWELD. INSTALL THREADED PLUGS IN HOLES AND SEALWELD. CLEAN TO BARE METAL, INCLUDING WELD, RETEST WITH VACUUM BOX, RECOAT	300 mm

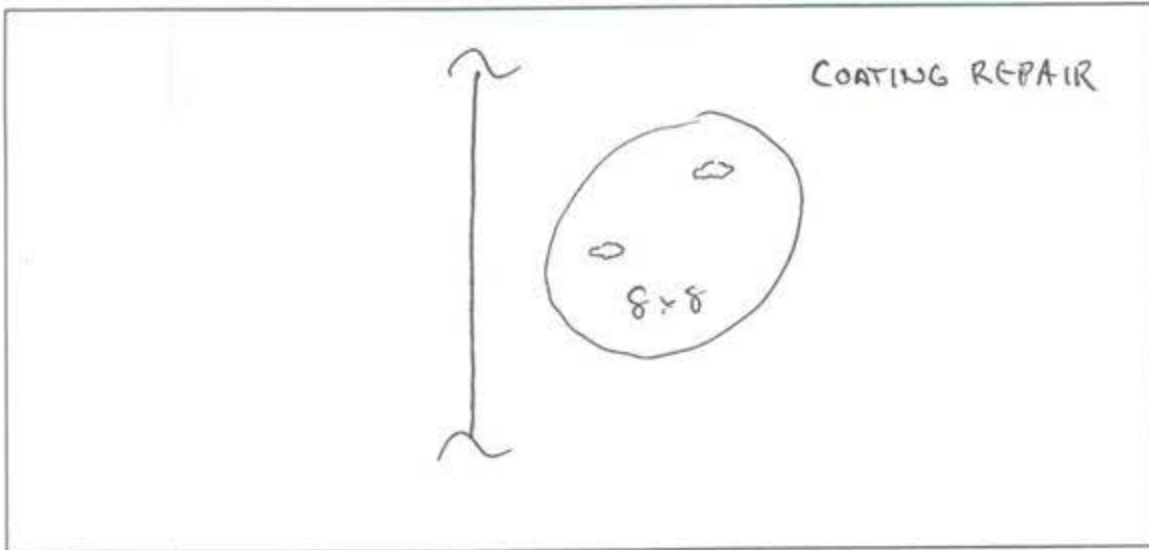
#### GENERAL NOTES:

1. PATCH PLATES FOR UPPER DOME, DOME EXTENSION, BARREL OF TANK AND LOWER DOME TO BE 6mm THICK. PATCH PLATES FOR BOTTOM PLATE TO BE 11mm THICK.
2. ALL WELDS TO BE CONTINUOUS.
3. SANDBLAST PATCH PLATES BEFORE WELDING IN PLACE AND BREAK EXPOSED EDGE BY GRINDING CHAMFER OF 1.5 mm MINIMUM.
4. THE REPAIR PROCEDURE IS THE SAME, REGARDLESS OF THE LOCATION OF THE DAMAGE IN THE UPPER DOME, TANK BARREL, OR LOWER DOME.

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 013 Type: 8 Location: B11-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

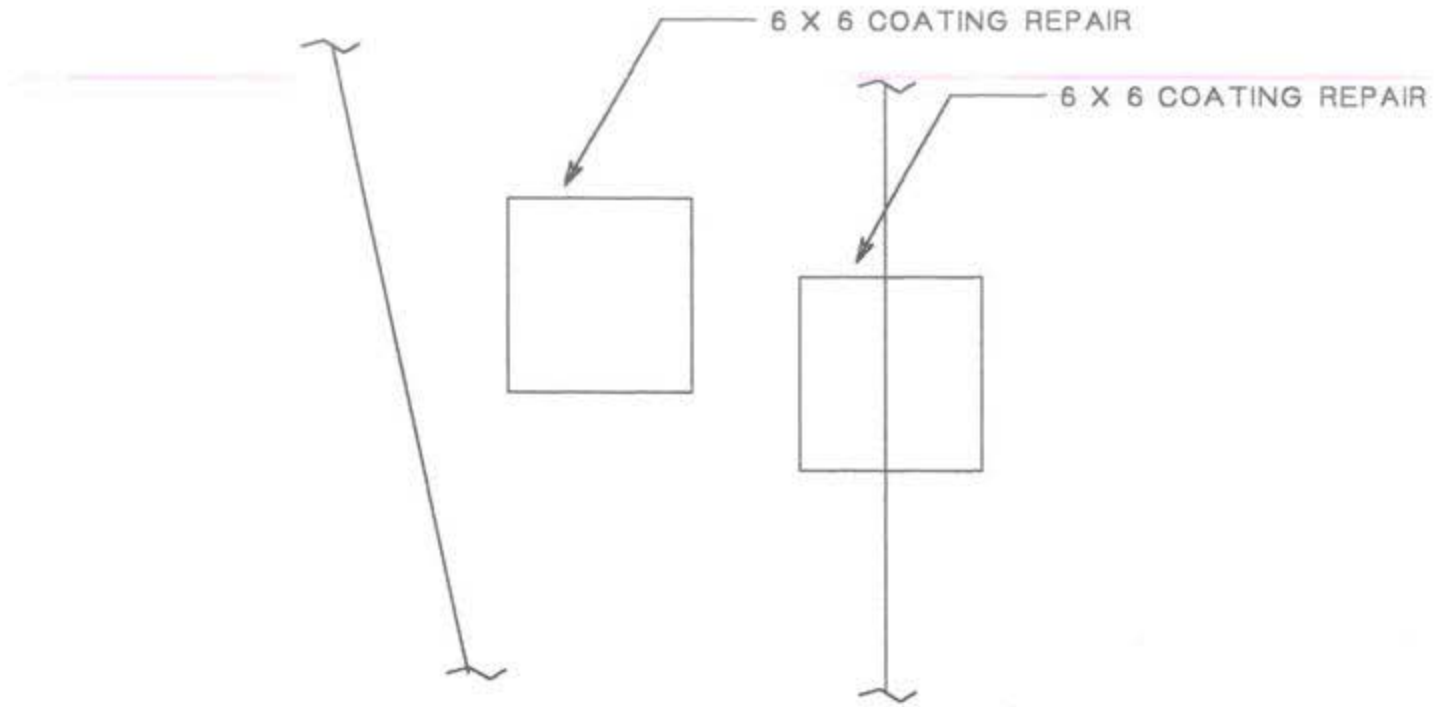
Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mil

Rework Required: N/A

Repair Acceptable: John Zehrell Date Accepted: 4-13-98



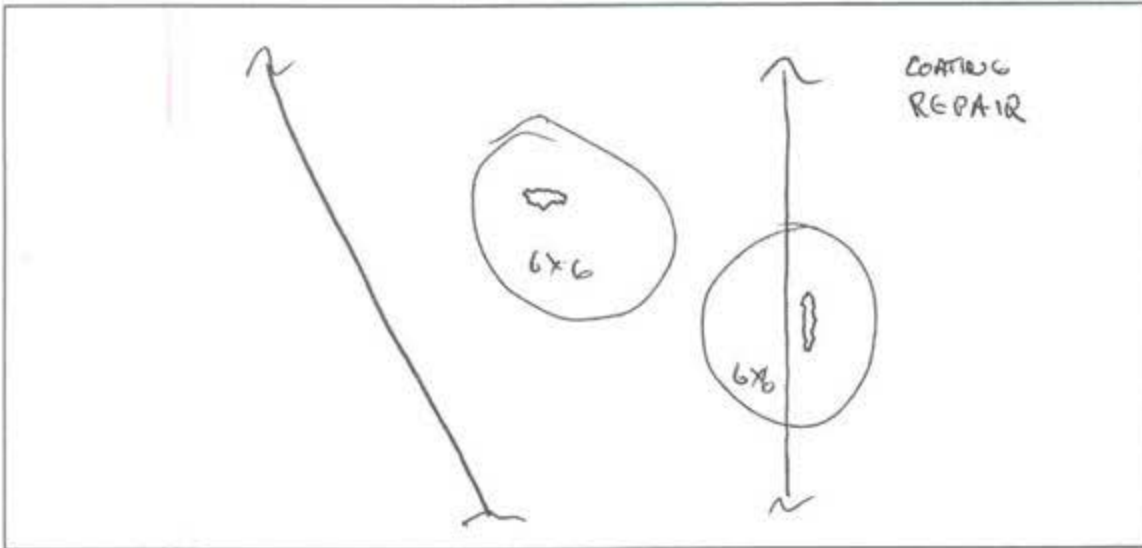
TYPE 9 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No. : 014	File: 8r014
LOWER DOME	Quadrant: B
Course: 3	PLATE: 10
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 014 Type: 8 Location: B10 - 3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

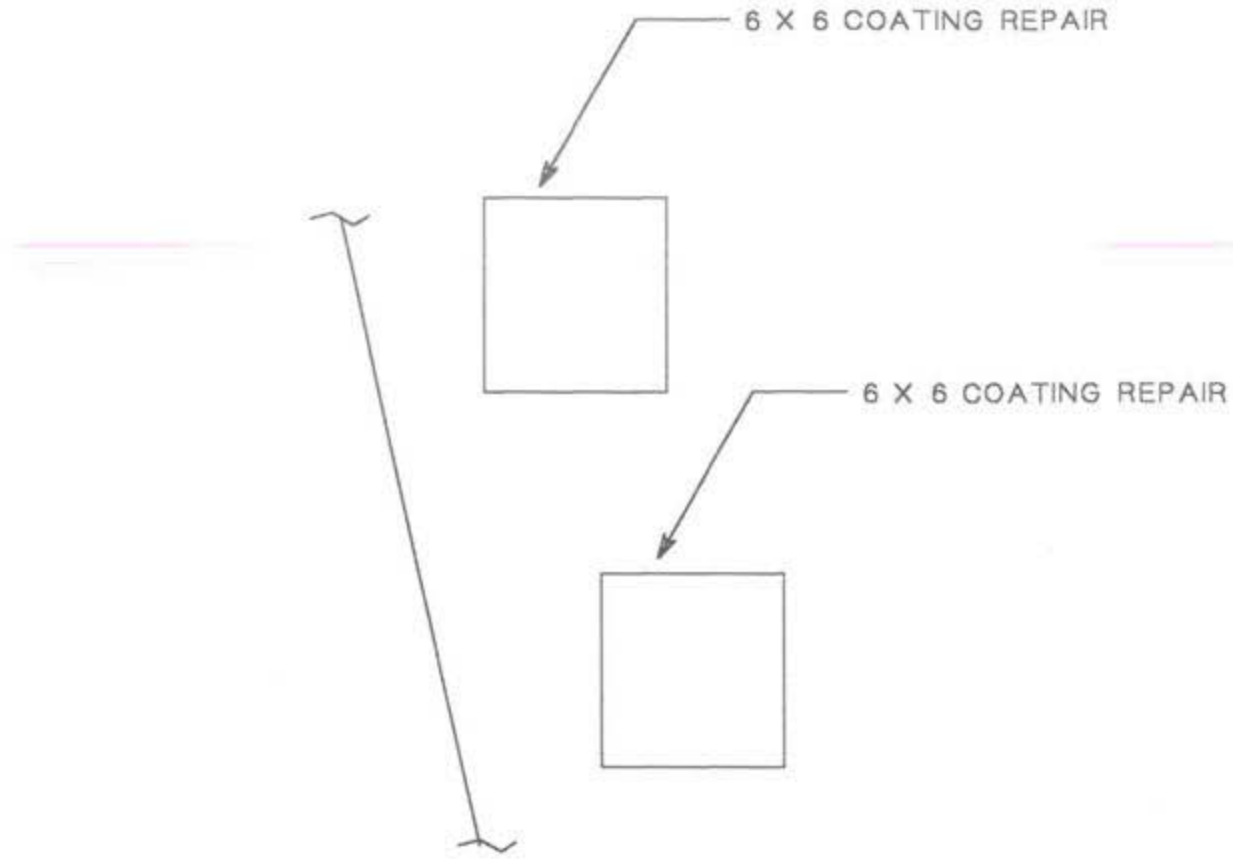
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 3/16/98



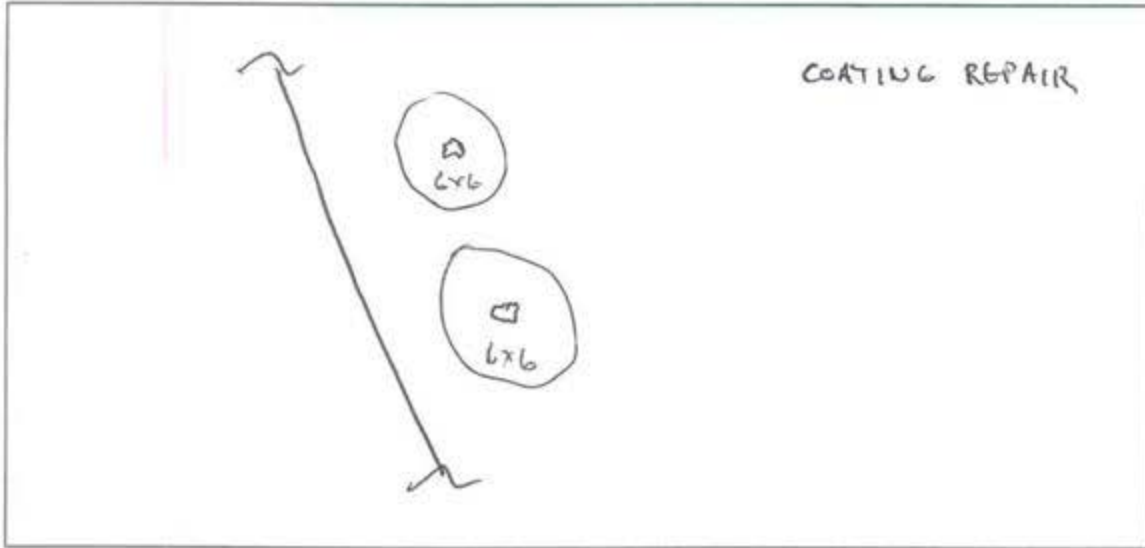
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 015	File: 8r015
LOWER DOME	Quadrant: B
Course: 3	PLATE: 10
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 015 Type: 8 Location: B10-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

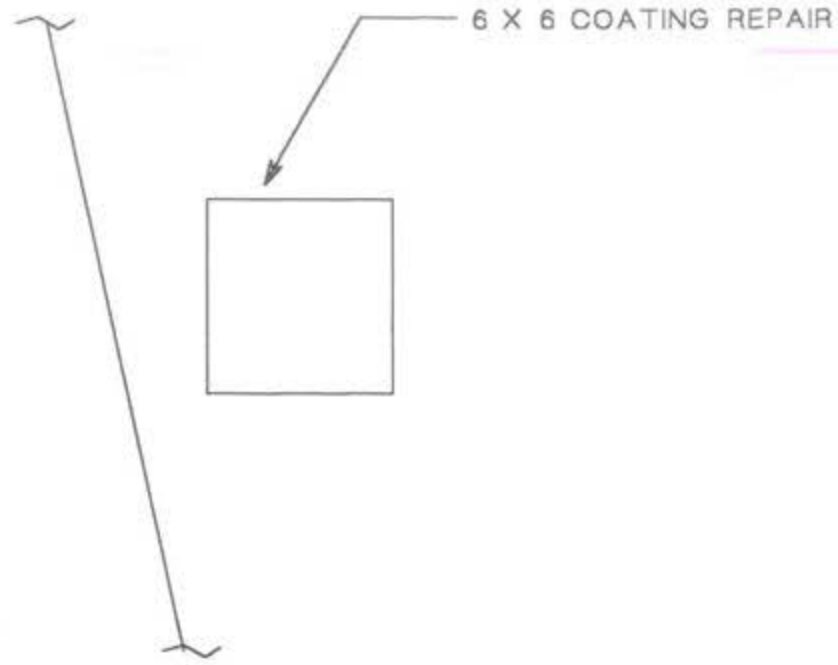
Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-13-98



TYPE 8 REPAIR

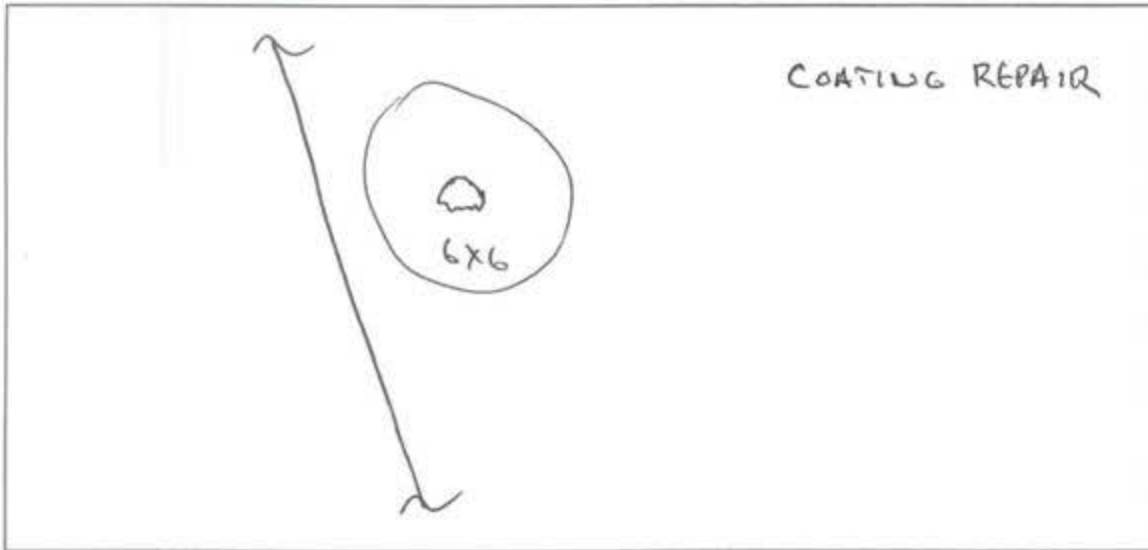
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 016	File: 8r016
LOWER DOME	Quadrant: B
Course: 3	PLATE: 19
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 016 Type: 8 Location: B9-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

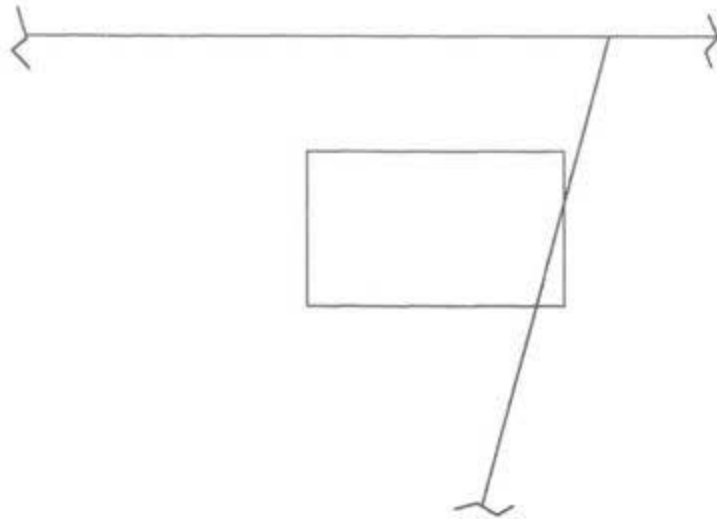
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 3/16/98

6 X 8 COATING REPAIR



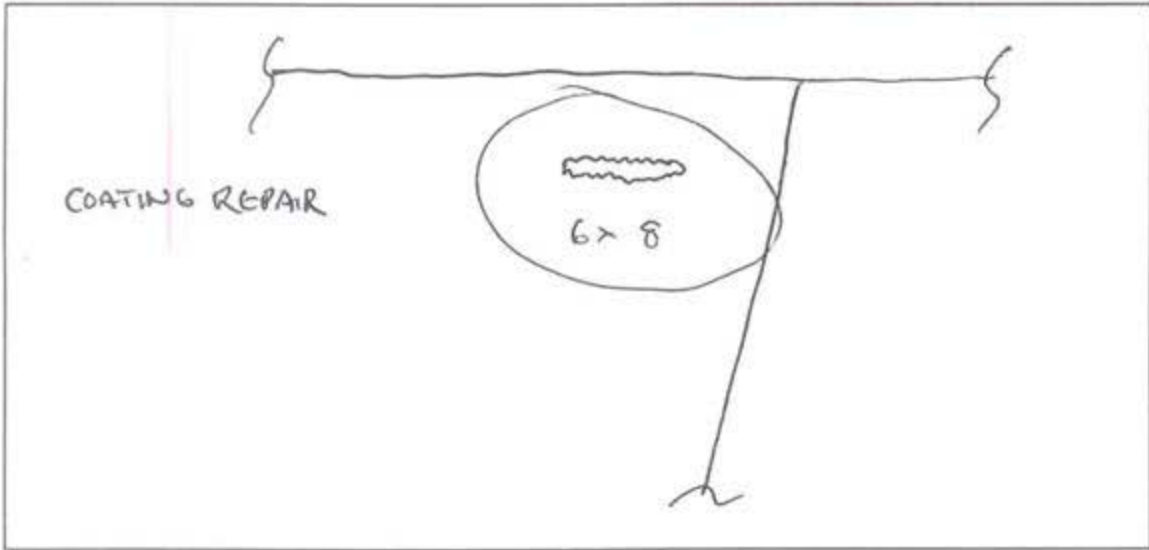
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 017	File: 8r017
LOWER DOME	Quadrant: B
Course: 3	PLATE: 8
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 017 Type: 8 Location: 88-3



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

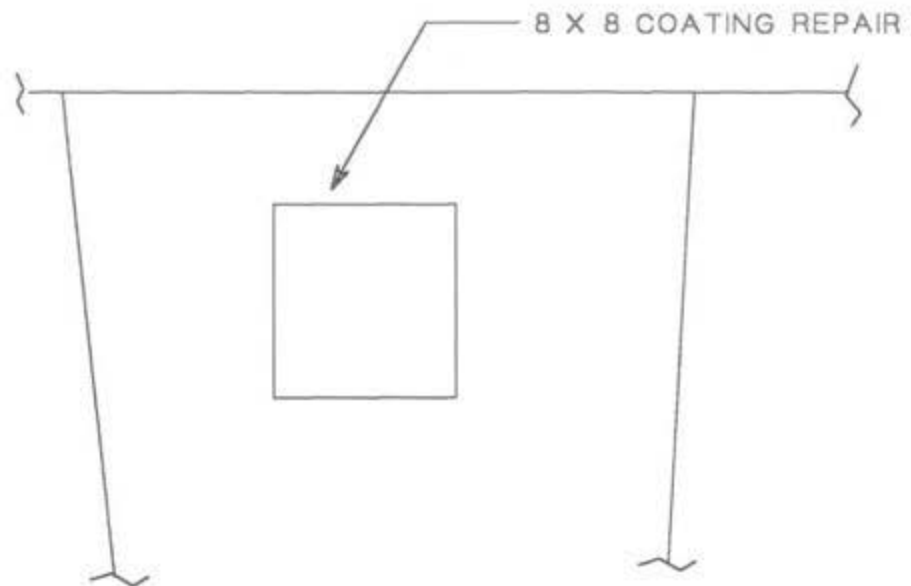
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zoknell Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 3/16/98



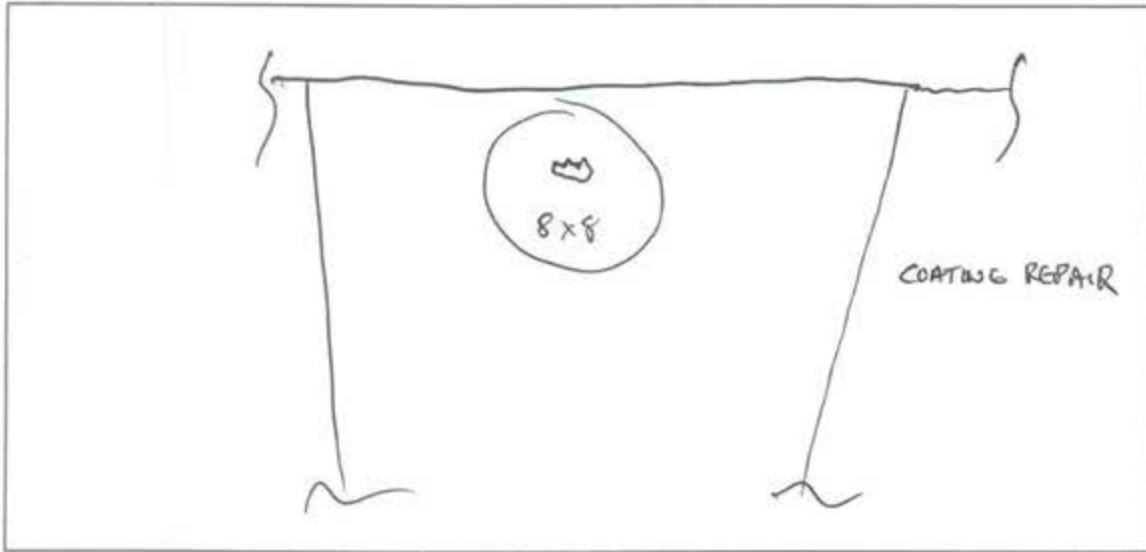
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 018	File: 8r018
LOWER DOME	Quadrant: B
Course: 2	PLATE: 10
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 018 Type: 8 Location: B10-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

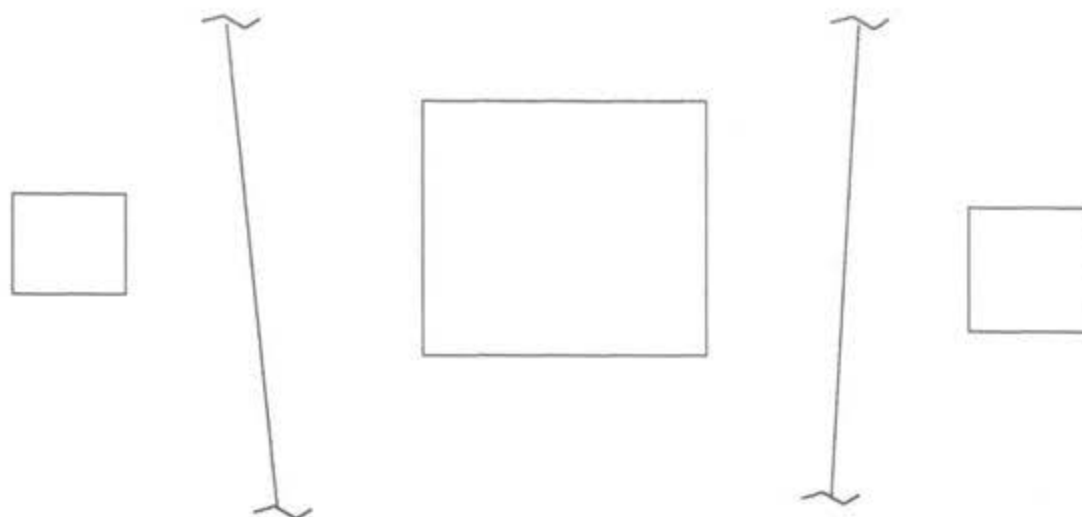
NDT Performed: Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zehnell Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 3/16/98

SCATTERED BLISTERS APPROXIMATE AREA OF COATING  
REPAIR EQUAL 2 SQUARE METERS



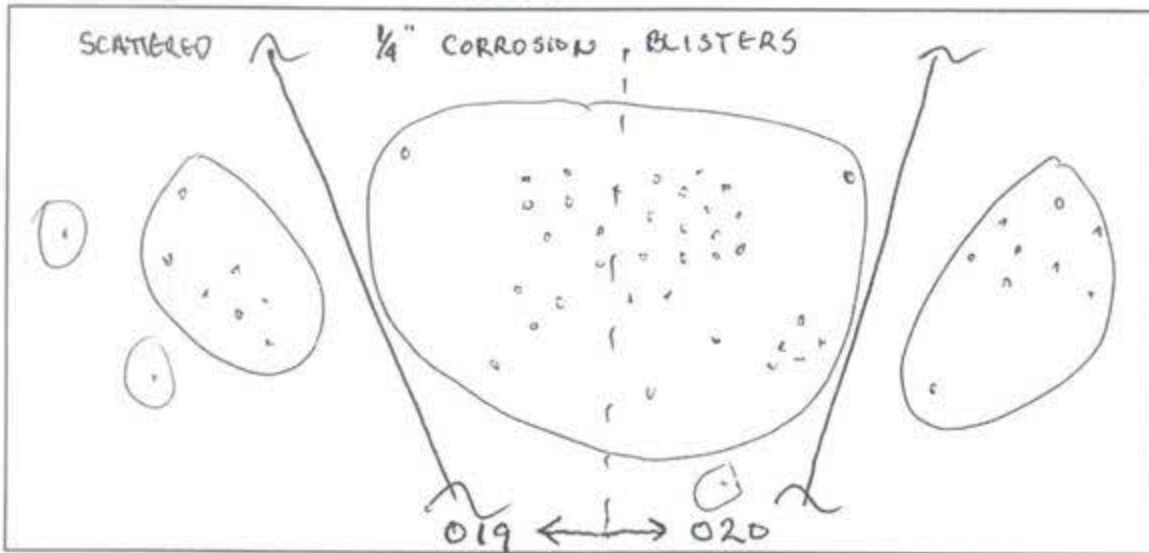
TYPE 8 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 019 & 020	File: 8r019
LOWER DOME	Quadrant: B
Course: 2	PLATE: 11
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 019 Type: 8 Location: B11-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15.22 mils

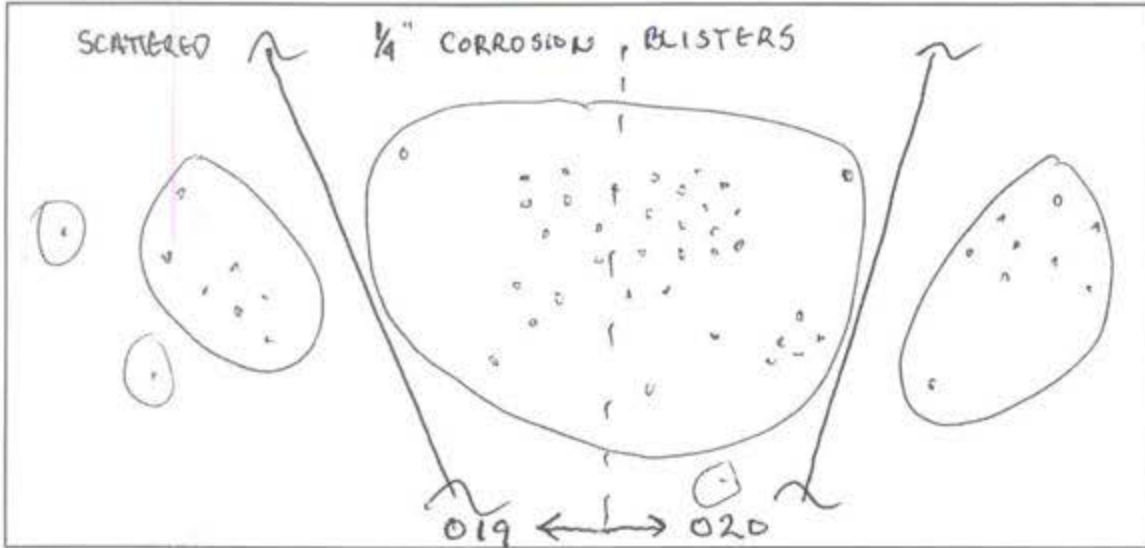
Rework Required: N/A

Repair Acceptable: John Zahrell Date Accepted: 4-13-98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 019 Type: 8 Location: B11-2  
~~019~~



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15.22 mils

Rework Required: N/A

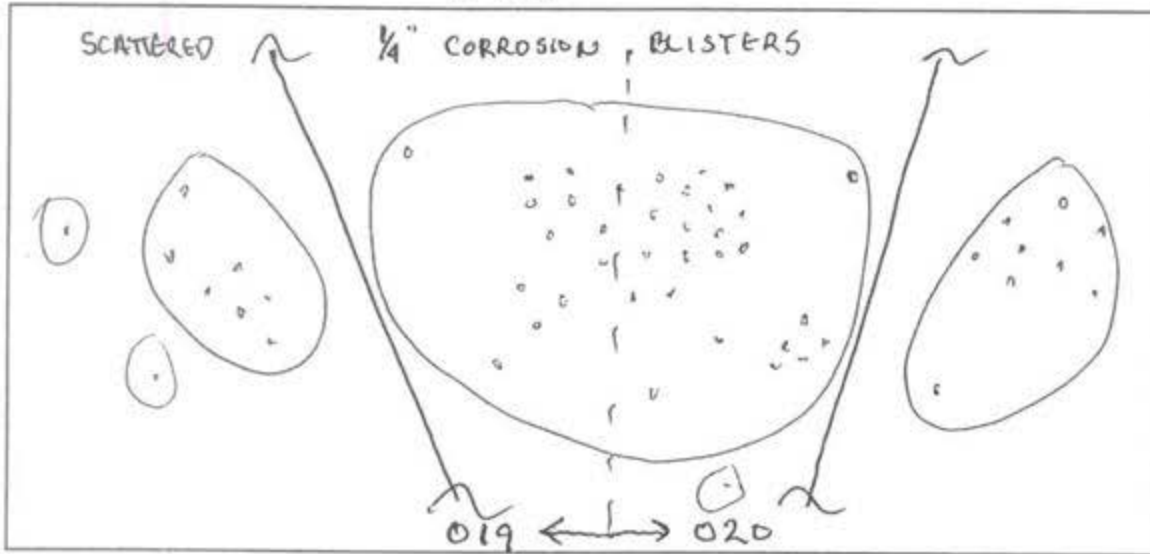
Repair Acceptable: John Zahrell Date Accepted: 4-13-98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD Type: 8 Location: B11-2  
020



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

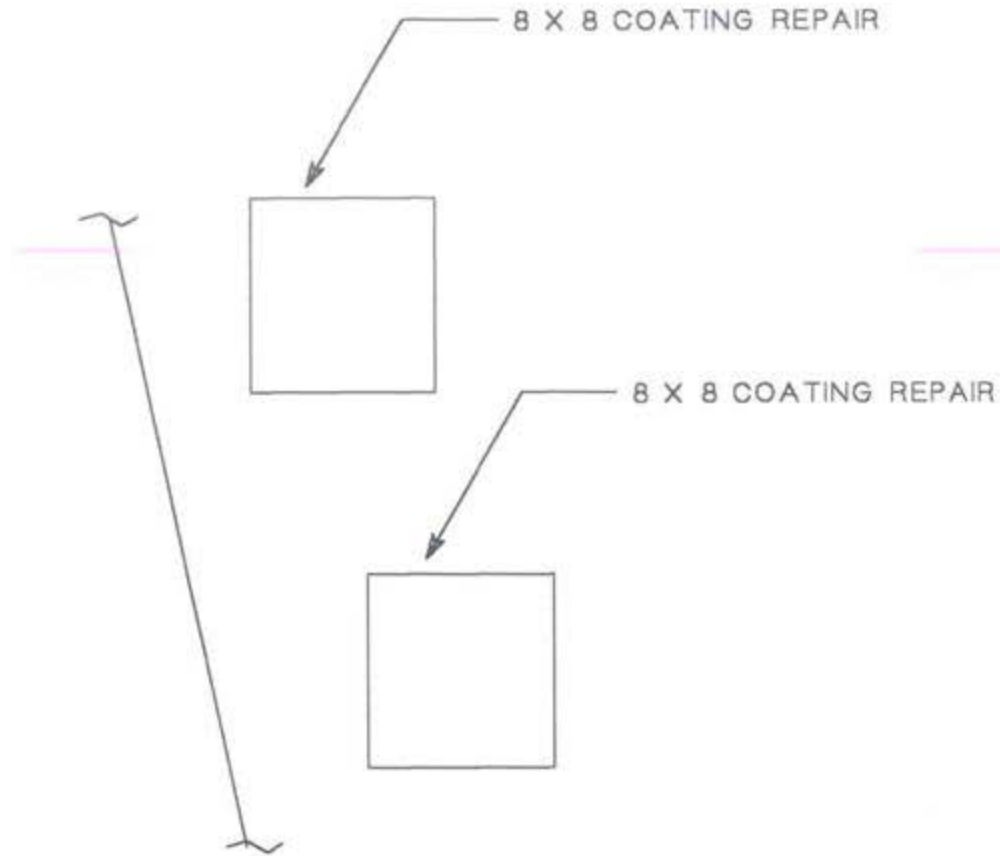
Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 4-13-98



TYPE 8 REPAIR

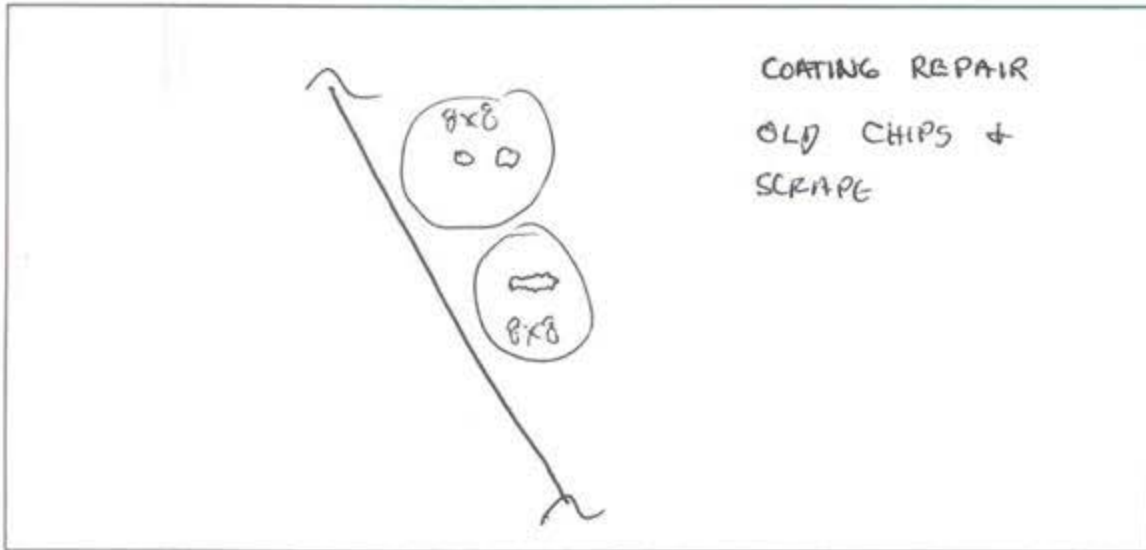
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 021	File: 8r021
LOWER DOME	Quadrant: A
Course: 2	PLATE: 2
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 021 Type: 8 Location: A2-2



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

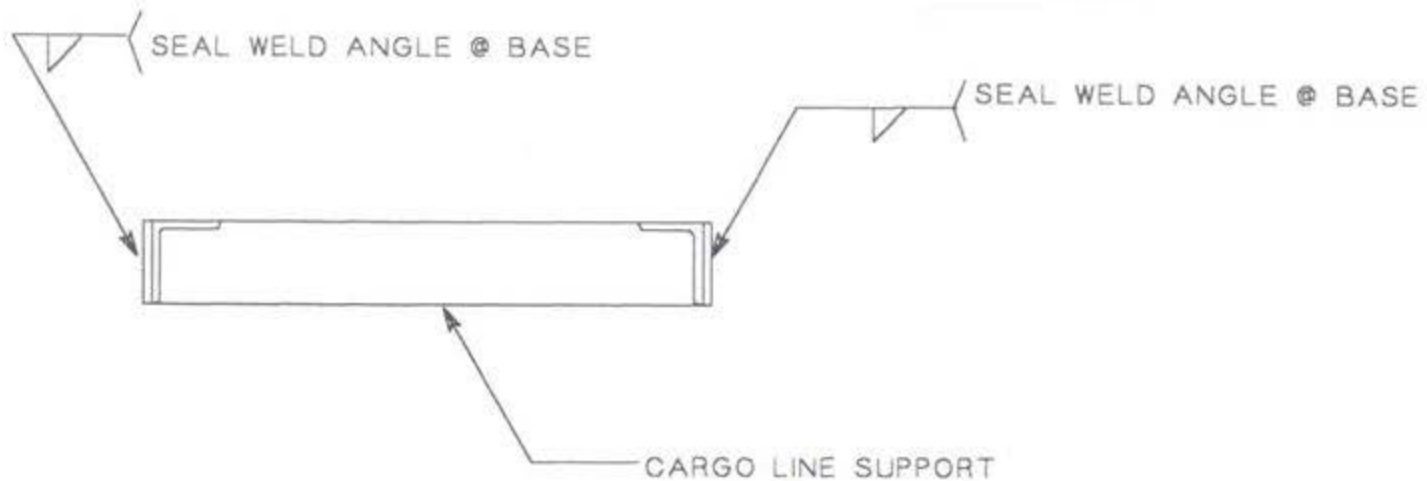
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15-22 mils

Rework Required: N/A

Repair Acceptable: John Zickell Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 7/1/98



TYPE 10 REPAIR

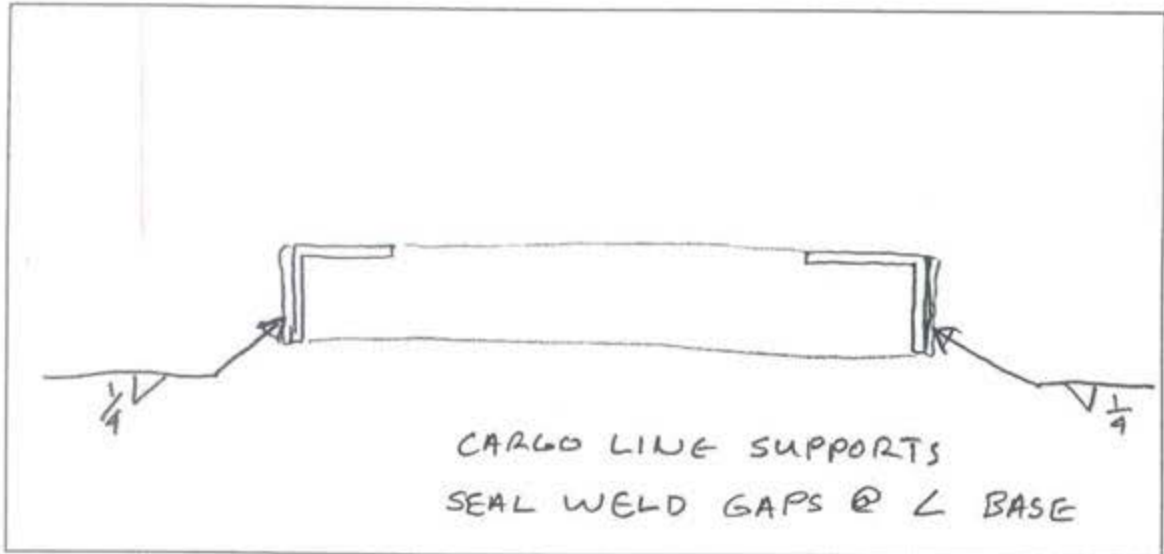
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 022	File: 8r022
LOWER DOME	Quadrant: B
Course: 1	PLATE: 12
Drawn by: Tom Kitchen	Date: 7/1/98

**Dames & Moore**

Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

Tank No.: 8 Repair No.: 022 Type: 10 Location: B-12-1



Sketch of Repair Area

Weld Repair

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: \_\_\_\_\_

Repair Acceptable: John Parkell

Date Accepted: 7-14-98

Coating Repair N/A

Coating Type: \_\_\_\_\_

Surface Preparation: \_\_\_\_\_ Primer Coat: \_\_\_\_\_ Intermediate Coat: \_\_\_\_\_ Final Coat: \_\_\_\_\_

NDT Performed: Visual: \_\_\_\_\_ DFT: \_\_\_\_\_ Average DFT: \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_

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

**Section 10**  
**AS-BUILT DRAWINGS**

**Section 11**

**Pictures**

**PICTURES OF PITTING AT BOTTOM OF TANK**





**Section 12**

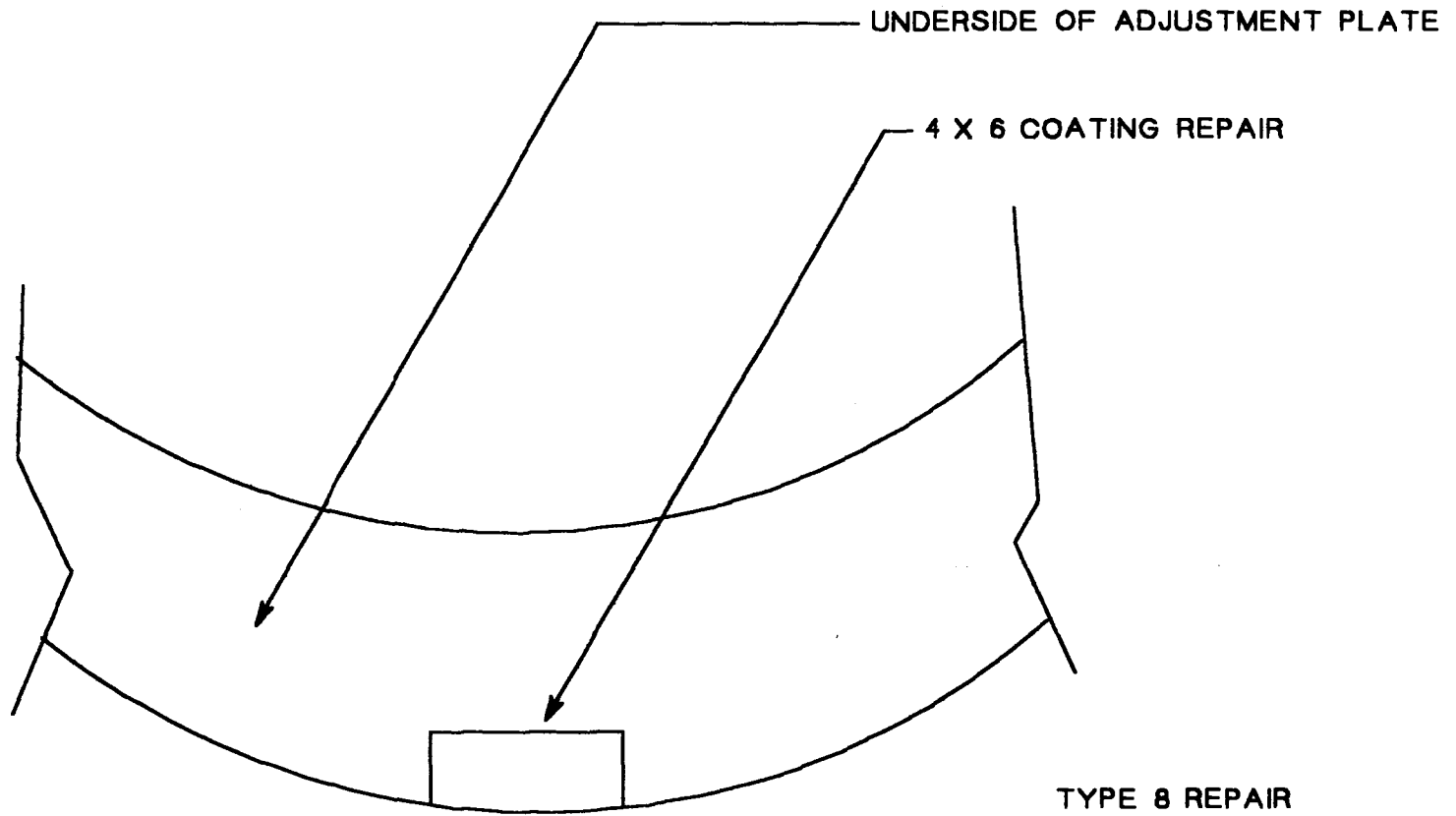
**CONTRACT DRAWINGS**

**Section 9**

**RECOMMENDED REPAIRS**

TANK #8										
Repair #	TYPE	Actual	Coated Areas	Plate size	Weld Lgth	Location	Quadrant	Course	Plate	
		Repair	Square Inches	Inches	Inches					
1		8	25			Upper Dome	D	EXT	22	previously ground
2		8	40			Upper Dome	C	EXT	14	previously ground
3		8	60			Cylinder	D	19	21	
4		8	1550			Lower Dome	D	2	18	
5		8	1550			Lower Dome	D	2	18	
6		8	1550			Lower Dome	D	2	18	
7		8	1550			Lower Dome	C	2	14	
8		8	1550			Lower Dome	C	2	13	
9		8	100			Upper Dome	B	EXT	11	
10	previous repair					Cylinder	C	11	14	UT only
11		8	100			Cylinder	A	8	2	
12		9	40		1	Cylinder	B	17	9	
13		8	40			Lower Dome	B	3	11	
14		8	70			Lower Dome	B	3	10	
15		8	70			Lower Dome	B	3	10	
16		8	40			Lower Dome	B	3	9	
17		8	50			Lower Dome	B	3	8	
18		8	60			Lower Dome	B	2	10	
19		8	1550			Lower Dome	B	2	11	
20		8	1550			Lower Dome	B	2	11	
21		8	120			Lower Dome	A	2	2	
22		10			6	Lower Dome	B	1	12	

NOTE: AREA ~~EAS~~ FOUND TO BE GROUND TO BARE METAL



TYPE 8 REPAIR

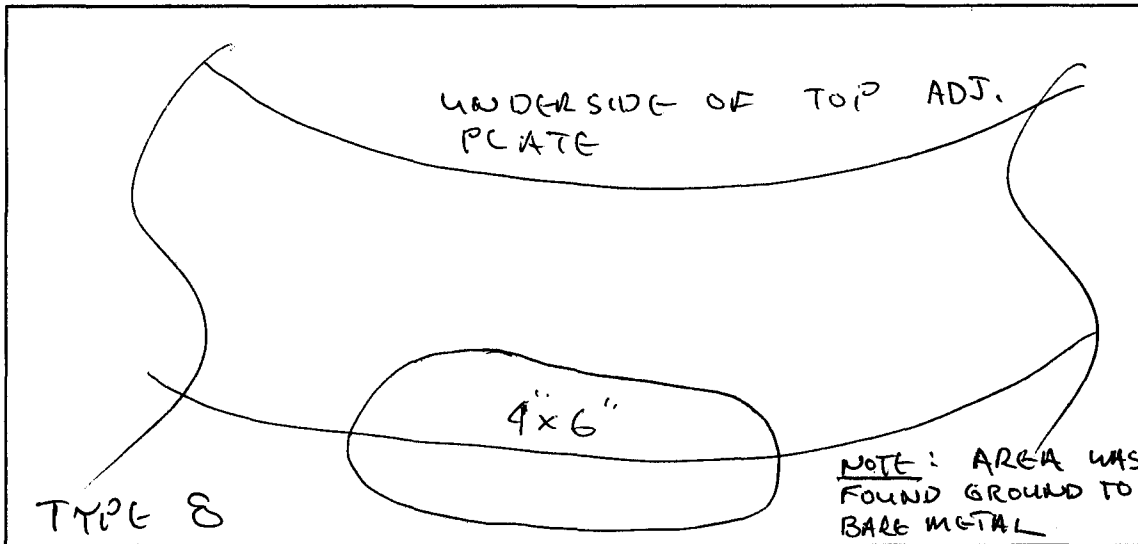
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 AS BUILT DRAWINGS	
Repair No.: 001	File: 8R001
UPPER DOME	Quadrant: D
Course: EXTENSION	PLATE: 22
Drawn by: Tom Klitcher	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 001 Type: 8 Location: D



Sketch of Repair Area

Weld Repair N/A

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: Epoxy

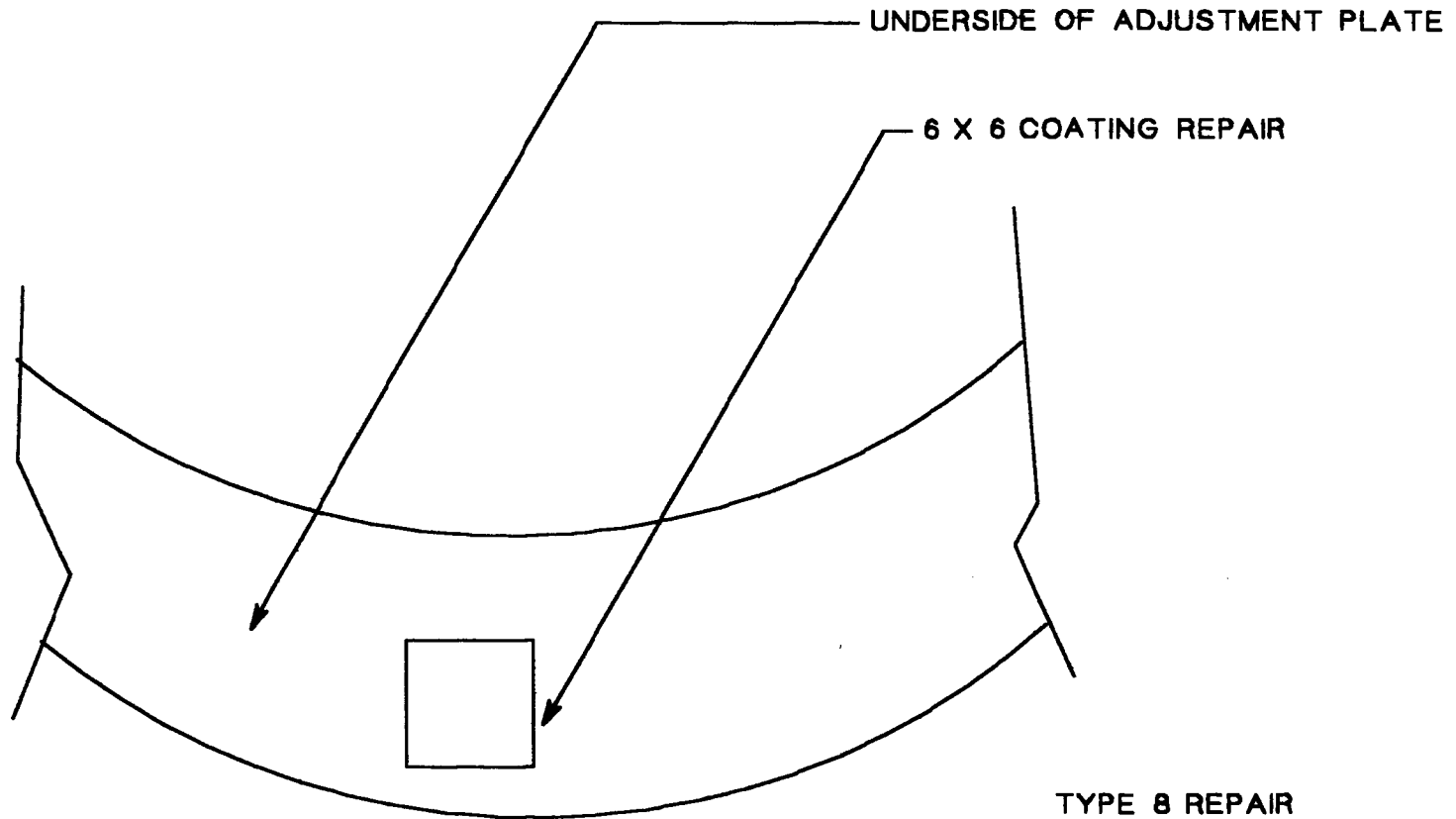
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: > 8 mils  
< 15 mils

Rework Required: N/A

Repair Acceptable: John Walsh Date Accepted: 3-24-98

NOTE: AREA EAS FOUND TO BE GROUND TO BARE METAL



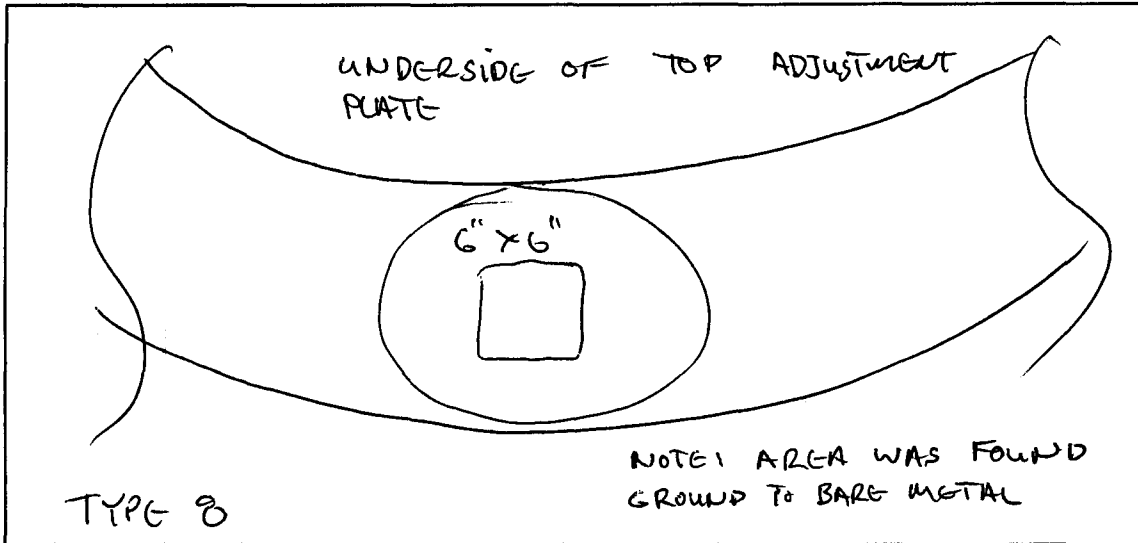
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
Tank #8 AS BUILT DRAWINGS	
Repair No.: 002	File: 8R001
UPPER DOME	Quadrant: C
Course: EXTENSION	PLATE: 14
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

**Repair Record**

ADD

Tank No.: 8 Repair No.: 002 Type: 8 Location: C



Sketch of Repair Area

Weld Repair N/A

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

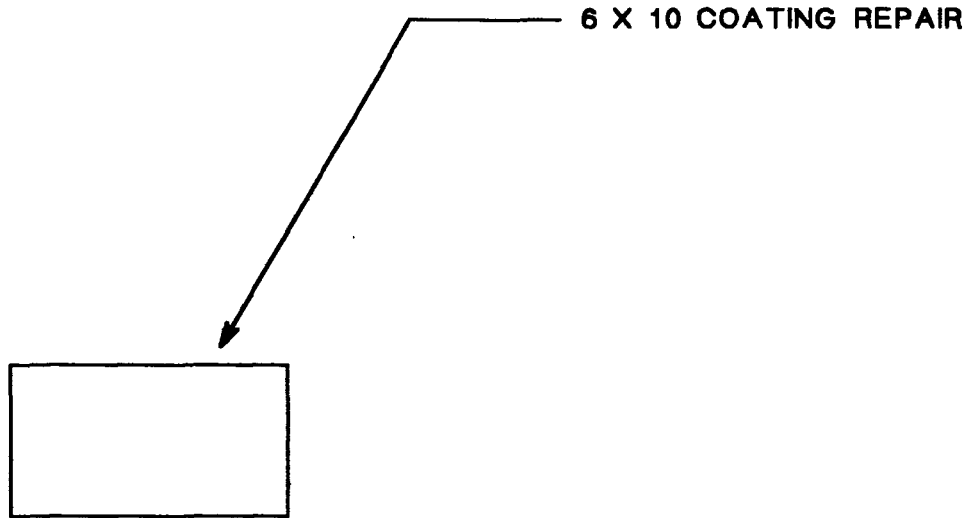
Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: > 8 mils  
< 15 mils

Rework Required: N/A

Repair Acceptable: John Zuberell Date Accepted: 3-24-98



**TYPE 8 REPAIR**

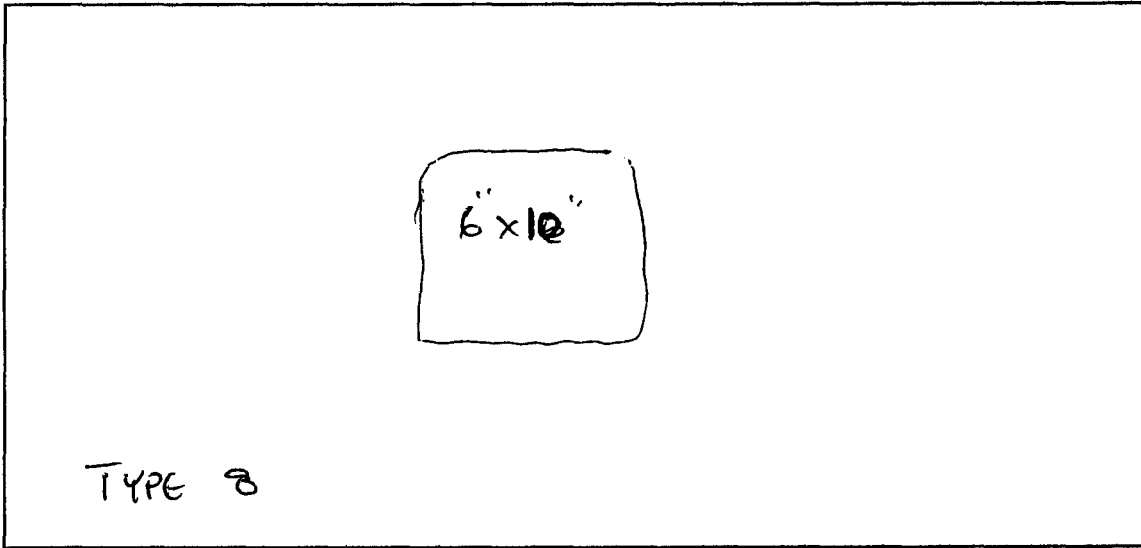
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 AS BUILT DRAWING</b>	
Repair No.: 003	File # 8003
CYLINDER	Quadrant: D
Course: 19	PLATE: 21
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 003 Type: 8 Location: D



Sketch of Repair Area

Weld Repair N/A

WPS No.: SM1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: Epoxy

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

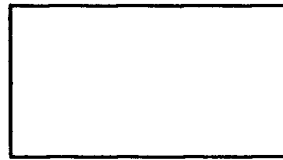
NDT Performed: Visual:  DFT:  Average DFT: > 8 mils  
< 15 mils

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 3-24-98

DEFECT INSPECTED BY TK & JF 3/20/98

30 X 50 COATING REPAIR



TYPE 8 REPAIR

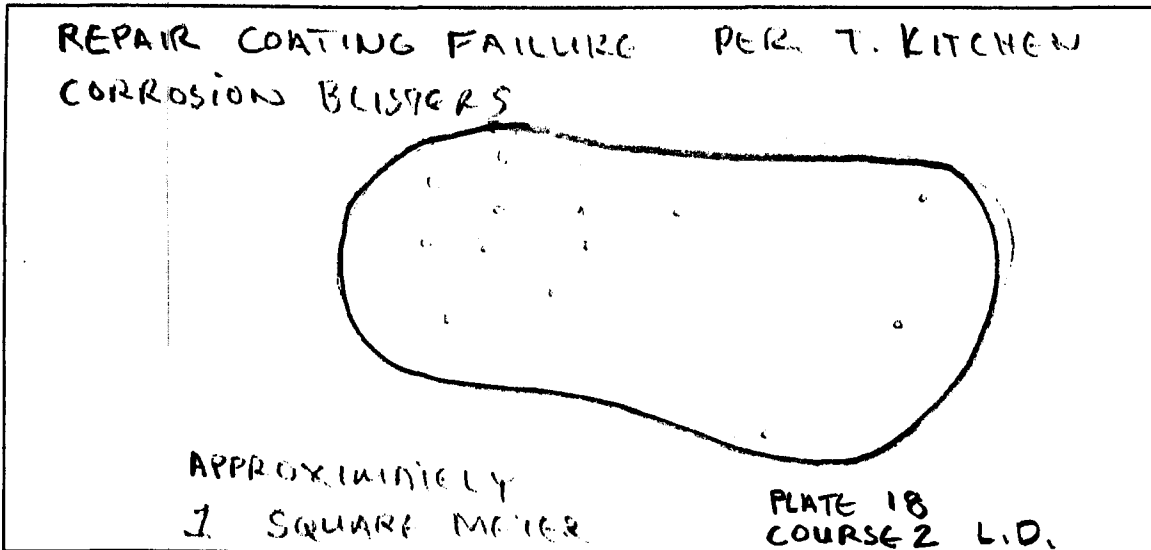
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 AS BUILT DRAWING	
Repair No.: 004	File: 8r004
LOWER DOME	Quadrant: B
Course: 2	PLATE: 18
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 004 Type: 8 Location: D



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15 mil → 22 mil

Rework Required: N/A

Repair Acceptable: John Zerkell Date Accepted: 3-27-98

DEFECT INSPECTED BY TK & JF 3/20/98

30 X 50 COATING REPAIR



**TYPE 8 REPAIR**

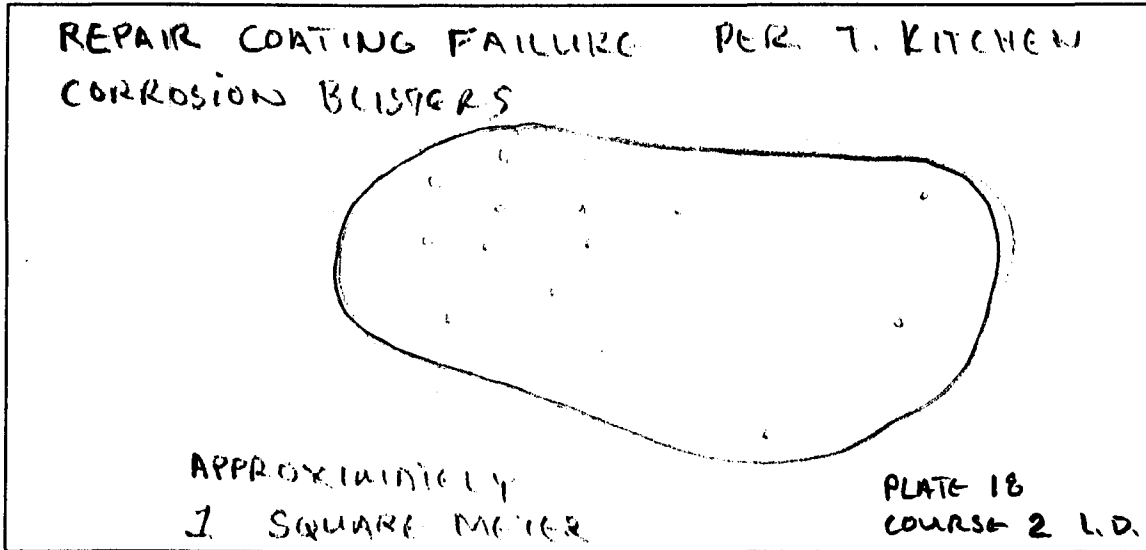
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 AS BUILT DRAWING</b>	
<b>Repair No. : 005</b>	<b>File: 8r005</b>
<b>LOWER DOME</b>	<b>Quadrant: D</b>
<b>Course: 2</b>	<b>PLATE: 18</b>
<b>Drawn by: Tom Kitchen</b>	<b>Date: 5/4/98</b>

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 005 Type: 8 Location: D



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

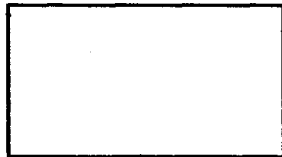
NDT Performed: Visual:  DFT:  Average DFT: 15 mil → 22 mil.

Rework Required: N/A

Repair Acceptable: John Zahrell Date Accepted: 3-27-98

DEFECT INSPECTED BY TK & JF 3/25/98

30 X 50 COATING REPAIR



**TYPE 8 REPAIR**

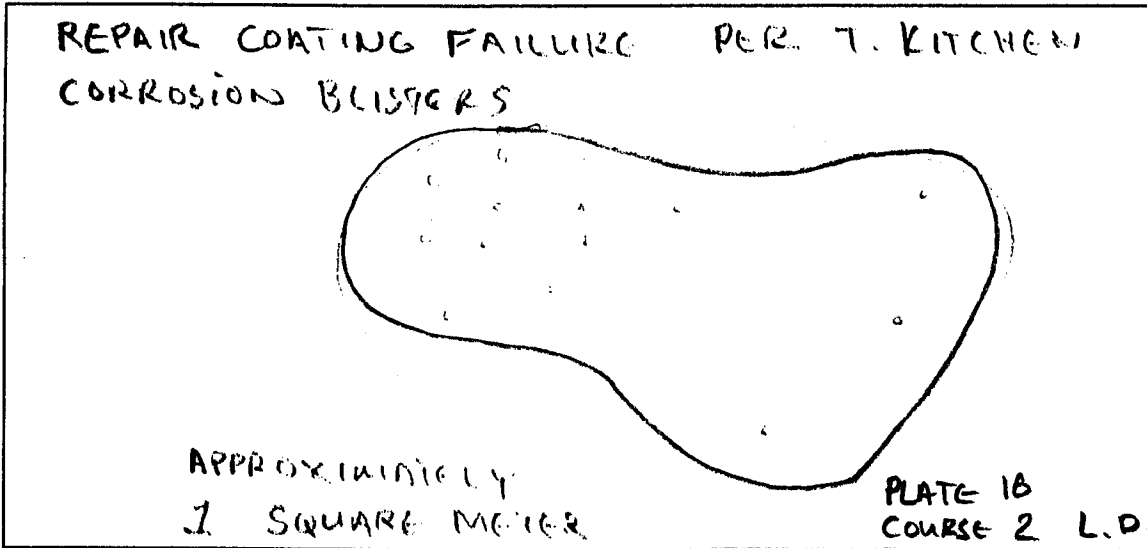
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 AS BUILT DRAWING</b>	
<b>Repair No. : 006</b>	<b>File: 8r006</b>
<b>LOWER DOME</b>	<b>Quadrant: C</b>
<b>Course: 2</b>	<b>PLATE: 14</b>
<b>Drawn by: Tom Kitchen</b>	<b>Date: 5/4/98</b>

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 006 Type: 8 Location: D



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 15 mil. → 22 mil.

Rework Required: N/A

Repair Acceptable: [Signature] Date Accepted: 3-27-98

DEFECT INSPECTED BY TK & JF 3/25/98

30 X 50 COATING REPAIR



**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 AS BUILT DRAWING</b>	
<b>Repair No.: 007</b>	<b>File: 8r007</b>
<b>LOWER DOME</b>	<b>Quadrant: C</b>
<b>Course: 2</b>	<b>PLATE: 14</b>
<b>Drawn by: Tom Kitchen</b>	<b>Date: 5/4/98</b>

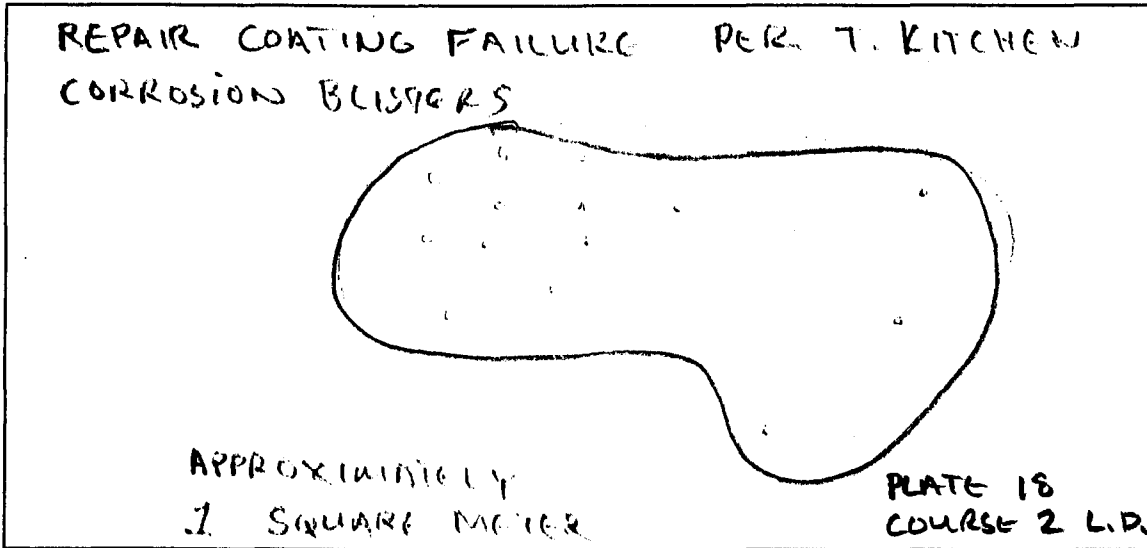


**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 007 Type: 8 Location: D



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

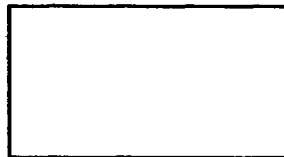
NDT Performed: Visual:  DFT:  Average DFT: 15 mil - 22 mil

Rework Required: N/A

Repair Acceptable: John Zahell Date Accepted: 3-27-98

DEFECT INSPECTED BY TK & JF 3/25/98

30 X 50 COATING REPAIR



**TYPE 8 REPAIR**

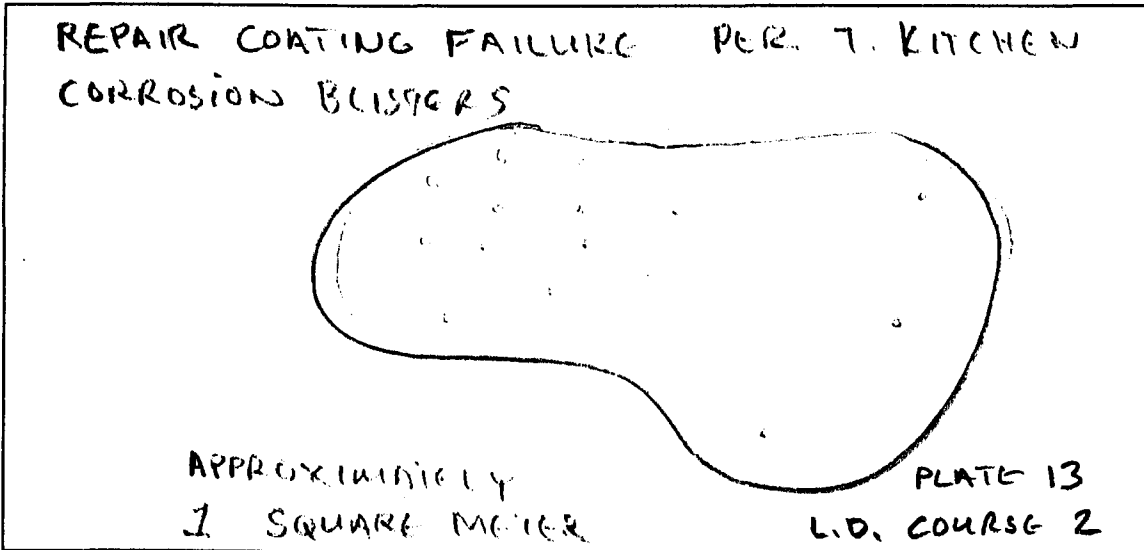
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 AS BUILT DRAWING</b>	
<b>Repair No.: 008</b>	<b>File: 8-008</b>
<b>LOWER DOME</b>	<b>Quadrant: C</b>
<b>Course: 2</b>	<b>PLATE: 13</b>
<b>Drawn by: Tom Kitchen</b>	<b>Date: 5/4/98</b>

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 008 Type: 8 Location: B C



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed:                      Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EROXY

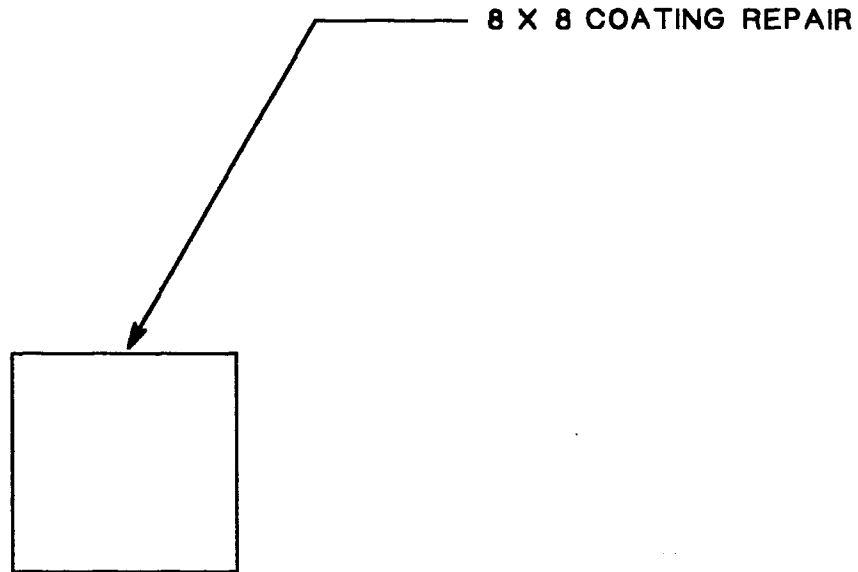
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed:                      Visual:  DFT:  Average DFT: 15 mil → 22 mil.

Rework Required: N/A

Repair Acceptable: John Zschell Date Accepted: 3-28-98

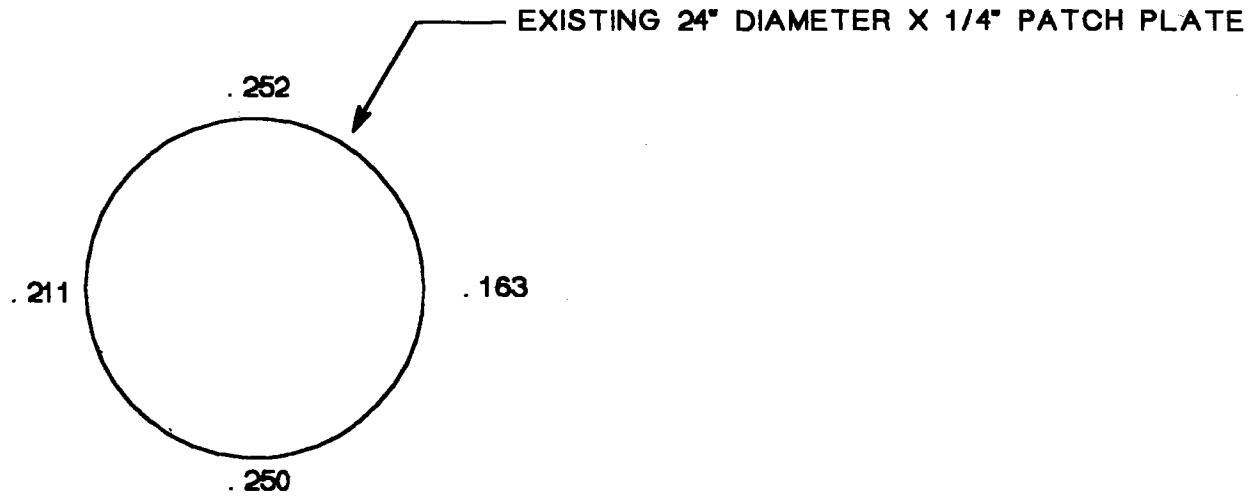
DEFECT INSPECTED BY TK & JF 3/16/98



**TYPE 8 REPAIR**

<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 AS BUILT DRAWING</b>	
<b>Repair No. : 009</b>	<b>File: 8-009</b>
<b>UPPER DOME</b>	<b>Quadrant: B</b>
<b>Course: EXTENSION</b>	<b>PLATE: 11</b>
<b>Drawn by: Tom Kitchen</b>	<b>Date: 5/4/98</b>





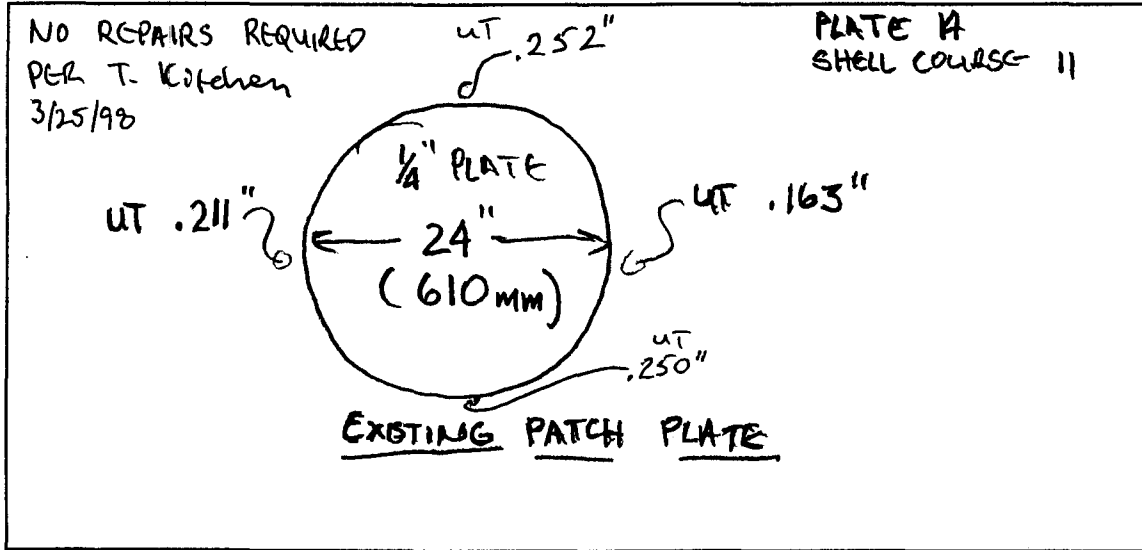
UT READINGS AT EDGE OF PLATE INDICATE GOOD METAL  
NO REPAIR NECESSARY

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 AS BUILT DRAWING	
Repair No.: 010	File: 8r010
CYLINDER	Quadrant: C
Course: 11	PLATE: 14
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: 010 Type: N/A Location: C



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair N/A

Coating Type: \_\_\_\_\_

Surface Preparation: \_\_\_\_\_ Primer Coat: \_\_\_\_\_ Intermediate Coat: \_\_\_\_\_ Final Coat: \_\_\_\_\_

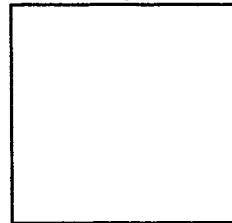
NDT Performed: Visual: \_\_\_\_\_ DFT: \_\_\_\_\_ Average DFT: \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

DEFECT INSPECTED BY TK & JF 3/16/98

8 X 8 COATING REPAIR



TYPE 8 REPAIR

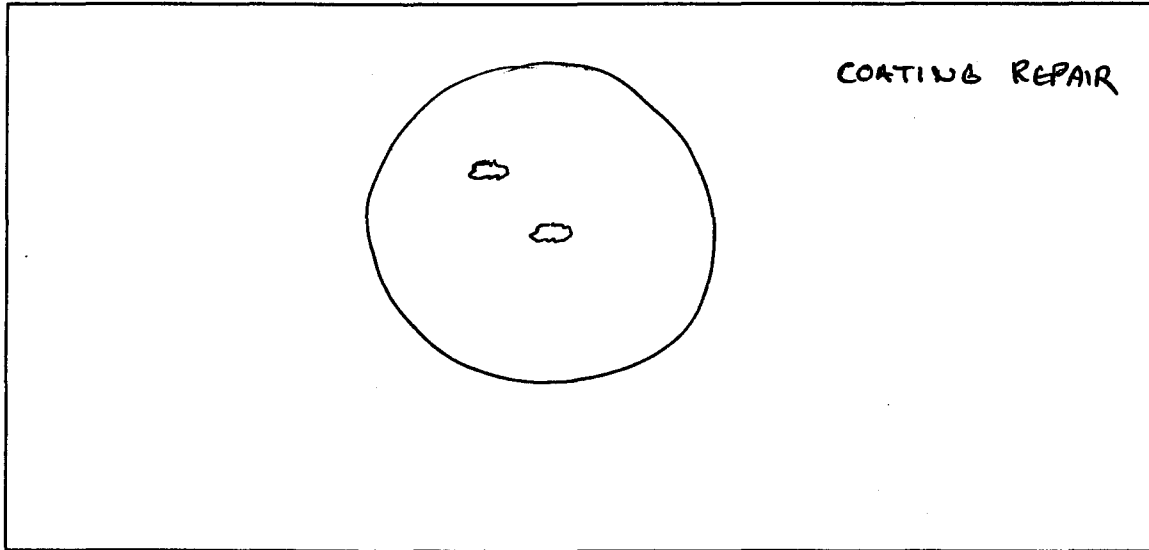
MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No.: 011	File: 8r011
LOWER DOME	Quadrant: A
Course: 2	PLATE: 8
Drawn by: Tom Kitchen	Date: 5/4/98



**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

Tank No.: 8 Repair No.: ADD 011 Type: 8 Location: A2-08



Sketch of Repair Area

Weld Repair N/A

WPS No.: \_\_\_\_\_

Welder ID: \_\_\_\_\_

NDT Performed: Visual \_\_\_\_\_ Vacuum Box \_\_\_\_\_ Dye Penetrant \_\_\_\_\_

Rework Required: \_\_\_\_\_

Repair Acceptable: \_\_\_\_\_ Date Accepted: \_\_\_\_\_

Coating Repair

Coating Type: EPOXY

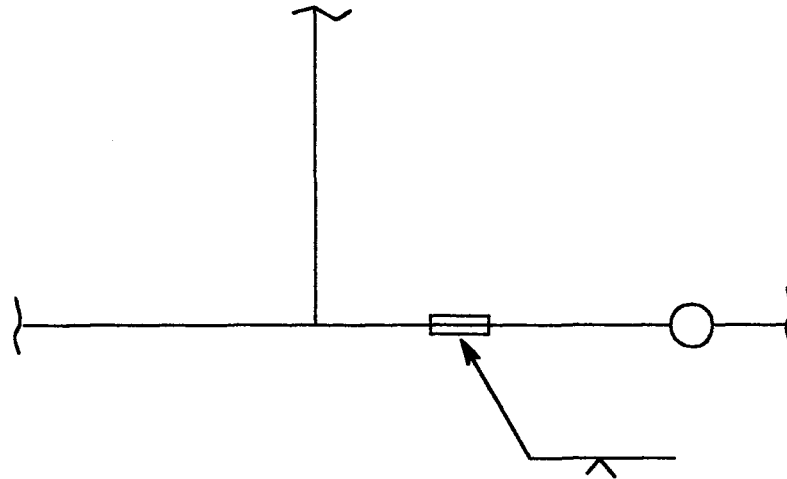
Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zichell Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 3/16/98



**TYPE 9 REPAIR**

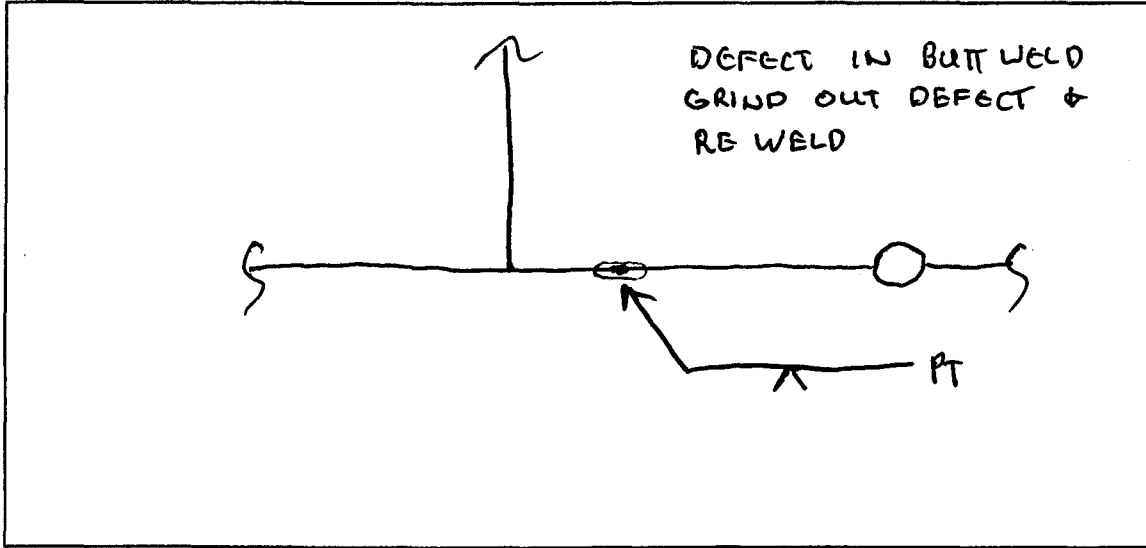
<b>MID ATLANTIC ENVIRONMENTAL</b>	
<b>EMERGENCY REPAIRS FOR RED HILL TANKS</b>	
<b>Tank #8 RECOMMENDED REPAIR DRAWING</b>	
Repair No.: 012	File: 8r012
CYLINDER	Quadrant: B
Course: 9	PLATE: 17
Drawn by: Tom Kitchen	Date: 5/4/98

**Dames & Moore**  
Emergency Repairs For Red Hill Tanks at the Fleet Industrial & Supply Center  
Contract No. N62742-96-C-1356

Repair Record

ADD

Tank No.: 8 Repair No.: 012 Type: 9 Location: B9-17



Sketch of Repair Area

Weld Repair

WPS No.: SM 1.1-1

Welder ID: John Walsh

NDT Performed: Visual  Vacuum Box  Dye Penetrant

Rework Required: N/A

Repair Acceptable: John Zahrell

Date Accepted: 4-6-98

Coating Repair

Coating Type: EPOXY

Surface Preparation:  Primer Coat:  Intermediate Coat:  Final Coat:

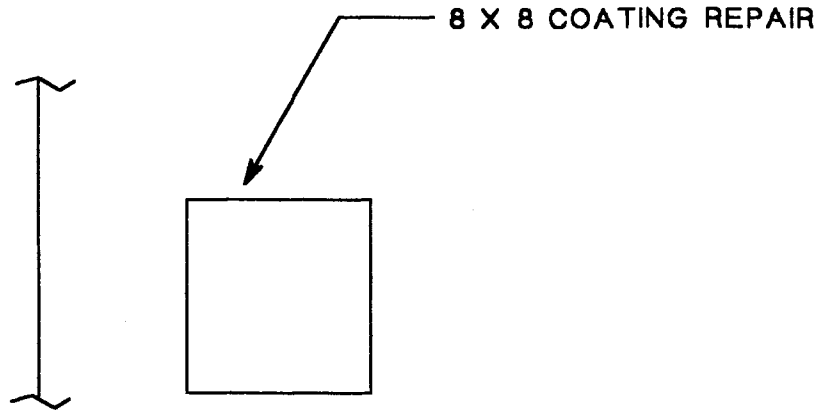
NDT Performed: Visual:  DFT:  Average DFT: 8-15 mils

Rework Required: N/A

Repair Acceptable: John Zahrell

Date Accepted: 4-13-98

DEFECT INSPECTED BY TK & JF 3/16/98



TYPE 9 REPAIR

MID ATLANTIC ENVIRONMENTAL	
EMERGENCY REPAIRS FOR RED HILL TANKS	
Tank #8 RECOMMENDED REPAIR DRAWING	
Repair No. 013	File 8r013
LOWER DOME	Quadrant B
Course 3	PLATE 11
Drawn by Tom Kitchen	Date 5/4/98

# ORDER FOR SUPPLIES OR SERVICES

1. CONTRACT/PURCH ORDER/AGREEMENT NO. <b>FA8903-04-D-8681</b>	2. DELIVERY ORDER/ CALL NO. <b>0176</b>	3. DATE OF ORDER/CALL (YYYYMMDD) <b>14 JUN 2005</b>	4. REQUISITION/PURCH REQUEST NO. <b>SEE SCHEDULE</b>	5. PRIORITY <b>DO-G3</b>
--	--	---	---	-----------------------------

6. ISSUED BY <b>HSW/PKV-W</b> CODE <b>FA8903</b> <b>AIR FORCE MATERIEL COMMAND</b> <b>311TH HUMAN SYSTEMS WING/PKV-W</b> <b>3300 SIDNEY BROOKS</b> <b>BROOKS CITY BASE TX 78235-5112</b> [REDACTED] <b>210-536-5496</b>	7. ADMINISTERED BY (If Other than 6) CODE <b>S3915A</b> <b>DCMA PHILADELPHIA</b> <b>700 ROBBINS AVE BLDG 4-A</b> <b>P O BOX 11427</b> <b>PHILADELPHIA PA 19111-0427</b>  SCD: C PAS: (NONE)	8. DELIVERY FOB <input checked="" type="checkbox"/> DEST NATION <input type="checkbox"/> OTHER <small>(See Schedule if other)</small>
--	---	--

9. CONTRACTOR CODE <b>2M222</b> FAC LITY [REDACTED] <b>WESTON SOLUTIONS, INC.</b> <b>1400 WESTON WAY</b> <b>WEST CHESTER PA 19380-1469</b> <b>(610) 701-5204</b>	10. DELIVER TO FOB POINT BY (Date) (YYYYMMDD) <b>SEE SCHEDULE</b>	11. X IF BUSINESS IS <input type="checkbox"/> SMALL <input type="checkbox"/> SMALL DISADVANTAGED WOMEN-OWNED
12. DISCOUNT ITEMS <b>N</b>		13. MAIL INVOICES TO ADDRESS IN BLOCK <b>SEE BLOCK 15 (PAYMENT OFFICE)</b>

14. SHIP TO CODE [REDACTED] <b>SEE SCHEDULE</b>	15. PAYMENT WILL BE MADE BY CODE <b>HQ0337</b> <b>DFAS-CO/NORTH ENTITLEMENT OPER</b> <b>P O BOX 182266</b> <b>COLUMBUS OH 43218-2266</b>  EFT:T	MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.
--	--	---

16. TYPE OF ORDER	DELIVERY/ CALL	<input checked="" type="checkbox"/>	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
	PURCHASE		Reference your _____ furnish the following on items specified herein.
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.			

NAME OF CONTRACTOR \_\_\_\_\_ SIGNATURE \_\_\_\_\_ TYPED NAME AND TITLE \_\_\_\_\_ DATE SIGNED (YYYYMMDD) \_\_\_\_\_

If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE  
**SEE SCHEDULE**

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICES	20. QUANTITY ORDERED/ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT

*If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.	24. UNITED STATES OF AMERICA  //signed// BY: [REDACTED]	25. TOTAL <b>\$430,170.00</b>  29. DIFFERENCES
14 JUN 2005 CONTRACTING/ORDERING OFFICER		

26. QUANTITY IN COLUMN 20 HAS BEEN <input type="checkbox"/> INSPECTED <input type="checkbox"/> RECEIVED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED			27. SHIP NO.	28. D.O. VOUCHER NO.	30. INITIALS
DATE _____ SIGNATURE AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE _____			PARTIAL F NAL	32. PAID BY	33. AMOUNT VER FIED CORRECT FOR
36. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT. DATE _____ SIGNATURE AND TITLE OF CERT FYING OFFICER _____			COMPLETE PARTIAL F NAL		34. CHECK NUMBER
37. RECEIVED AT	38. RECEIVED BY (Print)	39. DATE RECEIVED (YYYYMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

1. In accordance with the terms and conditions of the Basic Contract FA8903-04-D-8681 and this task order 0176, the contractor shall accomplish the effort described in the attached Statement of Work (SOW) dated 8 Apr 05 at a total cost plus fixed fee amount of \$430,170.00.

**2. SECTION B - Supplies/Services:**

Pursuant to FAR 52.232-20, entitled "Limitation of Cost", estimated cost is \$407,744.00.

The estimated cost and fee for this task order is shown below. The applicable fixed fee set for target fee set forth below may be increased or decreased only by negotiation and modification of the contract for added or deleted work. As determined by the Contracting Officer, it shall be paid as it accrues, in regular installments based upon the percentage of the completion of work (or the expiration of the agreed-upon periods(s) for term contracts).

Cost: \$ 407,744.00  
 Fixed Fee: \$ 22,426.00  
 Total CPFF: \$ 430,170.00

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
0005		1	EST \$430,170.00
		Lot	EST \$430,170.00
	<i>Noun:</i>	ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS	
	<i>ACRN:</i>	9	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>	The contractor shall provide the necessary effort for environmental remediation in accordance with the attached Statement of Work, dated 8 Apr 05.	
000501			
	<i>Noun:</i>	Funding Info Only	
	<i>ACRN:</i>	[REDACTED] \$404,360.00	
	<i>PR/MIPR:</i>	[REDACTED]	\$404,360.00
	<i>Descriptive Data:</i>		
	<i>PR/MIPR:</i>	[REDACTED]	
000502			
	<i>Noun:</i>	Funding Info Only	
	<i>ACRN:</i>	[REDACTED] \$25,810.00	
	<i>PR/MIPR:</i>	[REDACTED]	\$25,810.00
	<i>Descriptive Data:</i>		
	<i>PR/MIPR:</i>	[REDACTED]	

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
0006		1 Lot	NSP NSP
	<i>Noun:</i> DATA <i>ACRN:</i> U <i>NSN:</i> N - Not Applicable <i>Contract type:</i> U - COST PLUS FIXED FEE <i>Inspection:</i> DESTINATION <i>Acceptance:</i> DESTINATION <i>FOB:</i> DESTINATION <i>Item project mgr.:</i> IWA <i>Descriptive Data:</i> The contractor shall provide data in accordance with CDRL Tables contained in Exhibits A, B, & C as implemented by direction provided in the SOW, dated 8 Apr 05. This CLIN is Not Separately Priced (NSP). The prices associated with this CLIN are included in CLIN 0005.		

3. **SECTION C - Description/Specs/Work Statement:**

Description/Specifications: Work is to be performed in accordance with the Statement of Work (SOW) dated 8 Apr 05, entitled "Clean, Inspect, and Repair Tanks 15 & 16 FISC Pearl Harbor, Hawaii."

4. **SECTION D - Packaging and Marking:**

a. D-001 entitled, "PRESERVATION, PACKAGING, PACKING AND MARKING REQUIREMENTS (FEB 1997)":

PKV-D1 MARKING OF SHIPMENTS (ALTERNATE I)(SEP 2000)".

(a) The contractor shall mark all shipments under this contract in accordance with MIL-STD-129 entitled "Marking for Shipment and Storage".

(b) Each shipment of material and/or data/reports shall be clearly marked to show the following information:

**SHIP TO:** AFCEE/IWA  
 3300 Sidney Brooks  
 Brooks-City Base, TX 78235-5112

**MARK FOR:** Contract Number: FA8903-04-D-8681  
 Task Order No: **0176**  
 Data Item No: (see block 1 of CDRL Table for data item no.)  
 Title/Subtitle (as applicable): (see blocks 2 & 3 for title and/or subtitle)

b. All shipments submitted under this order shall be forwarded prepaid.

5. **SECTION E - Inspection and Acceptance:**

Inspection and acceptance (including the pre-final) will be performed by the Contracting Officer's designated representative. Final inspection and acceptance location is at **Pearl Harbor, Hawaii**.

6. **SECTION F - Schedule Data:**

ITEM	SUPPLIES SCHEDULE DATA	QTY	SHIP TO	MARK FOR	TRANS PRI	DATE
0005		1	U			30 Jan 2006
	<i>Noun:</i>					ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS
	<i>ACRN:</i>					9
	<i>Descriptive Data:</i>					The contractor shall deliver the remediation effort in accordance with the Statement of Work, dated 8 Apr 05.
0006		1	U			30 Jan 2006
	<i>Noun:</i>					DATA
	<i>ACRN:</i>					U
	<i>Descriptive Data:</i>					The contractor shall deliver data in accordance with the Contract Data Requirements List Exhibits A, B, & C dated 11 Apr 05 and as directed by the SOW dated 8 Apr 05, Section J of this task order.

7. **SECTION G - ACCOUNTING AND CLASSIFICATION DATA:**

1. Direct **electronic** copies of all invoices/public vouchers and supporting documentation to the following:
  - a. AFCEE\_ACW\_INVOICES@brooks.af.mil
  - b. cc: Contracting Officer Representative (COR)
  - c. cc: Base point of contact, if applicable and
  - d. cc: AFCEE.MSCMSCS@brooks.af.mil
2. Ensure that subject line shall use the following format: Contract/Task Order Number, Invoice/Voucher Number, Base, Major Command), an contract type (i.e. FA8903-04-D-8681-0176, Invoice/Voucher #3, NONAF, CPFF)
3. All other documents are to be submitted per the CDRL tables.
4. Invoices/vouchers and supporting documentation **hard copies not acceptable.**



ACRN	Appropriation/Lmt Subhead/Supplemental Accounting Data	Obligation Amount
■	<div style="background-color: black; height: 15px; width: 100%;"></div> <i>Funding breakdown:</i> : \$404,360.00 <i>PR/MIPR:</i> \$404,360.00 <i>Descriptive data:</i> <b>PR COMPLETE:</b>	\$404,360.00
	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>	\$404,360.00
■	<div style="background-color: black; height: 15px; width: 100%;"></div> <i>Funding breakdown:</i> : \$25,810.00 <i>PR/MIPR:</i> \$25,810.00 <i>Descriptive data:</i> <b>PR COMPLETE:</b>	\$25,810.00
	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>	\$25,810.00

8. The Contractor's confirmation of negotiations letter, dated 10 Jun 05, is hereby incorporated by reference and made a part hereof.

9. **SECTION J - Attachments:** See next page

## LIST OF ATTACHMENTS

DOCUMENT	PGS	DATE	TITLE
EXHIBIT A	1	08 APR 2005	CONTRACT DATA REQUIREMENTS LIST
EXHIBIT B	1	08 APR 2005	CONTRACT DATA REQUIREMENTS LIST
EXHIBIT C	1	08 APR 2005	CONTRACT DATA REQUIREMENTS LIST
ATTACHMENT 1	13	08 APR 2005	STATEMENT OF WORK - "CLEAN, INSPECT AND REPAIR TANKS 15 & 16 FISC PEARL HARBOR, HAWAII"
ATTACHMENT 2	1	28 JAN 2004	BASE SUPPORT LETTER
ATTACHMENT 3	18	27 MAY 2005	WAGE DETERMINATION, GENERAL DECISION: HI20030001 03/11/2005 HI1

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE U - CPFF	PAGE OF PAGES 1 of 5
2. AMENDMENT/MODIFICATION NO. 01		3. EFFECTIVE DATE 07 FEB 2006	4. REQUISITION/PURCHASE REQ.NO. SEE SCHEDULE		5. PROJECT NO. (If applicable)
6. ISSUED BY HSW/PKV-W CODE  AIR FORCE MATERIEL COMMAND 311TH HUMAN SYSTEMS WING/PKV-W 3300 SIDNEY BROOKS BROOKS CITY BASE TX 78235-5112 [REDACTED] 210-536-5496		7. ADMINISTERED BY (If other than Item 6) DCMA PHILADELPHIA 700 ROBBINS AVENUE, BLDG. 4-A P.O. BOX 11427 PHILADELPHIA PA 19111-0427 DCM_PHILADELPHIA@DCMA.MIL	CODE S3915A		
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) WESTON SOLUTIONS, INC 1400 WESTON WAY WEST CHESTER PA 19380-1492 (610) 701-7501				(X)	9A. AMENDMENT OF SOLICITATION NO.
					9B. DATED (SEE ITEM 11)
				X	10A. MODIFICATION OF CONTRACT/ORDER NO. FA8903-04-D-8681 0176
CODE 2M222 FACILITY CODE					10B. DATED (SEE ITEM 13) 14 JUN 2005
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input type="checkbox"/> The above numbered solicitation is amended as set forth in tem 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required) SEE SCHEDULE					
13. THIS ITEM APPLIES ONLY TO MODIFICATION OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
(X)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (52.243-2 Changes, Alt III -- Cost Reimbursement) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. ITEM 10A.				
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc ) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).				
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
	D. OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign his document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible ) SUBJECT: Increase Ceiling Amount, Revise SOW, and Extend Performance Period TECHNICAL TEAM CHIEF: [REDACTED], AFCEE/IWA, Brooks City-Base, TX 78235-5344 PAYMENT OFFICE: DFAS-CO/NORTH ENTITLEMENT OPER P.O. BOX 182266 COLUMBUS, OHIO 43218-2266					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF SIGNER (Type or print)		
			[REDACTED] Contracting Officer		
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
			//signed//		07 FEB 2006
(Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)		

1. In accordance with FAR 52.243-2 entitled "Changes -- Cost Reimbursement (AUG 1987)", the subject task order is hereby modified to Block 25 of the DD Form 1155 as reads \$430,170.00 is changed to read \$813,354.00. This is a net increase of \$383,184.00.

2. The Weston Solutions, Inc. letter dated 6 Feb 06 confirming the terms and conditions of this task order modification 01 is hereby incorporated and made a part hereof.

3. SECTION B - Supplies/Services is changed to increase the task order amount and reference revised SOW dated 16 Nov 05 as follows:

a. In accordance with provision B-001 entitled Estimated Cost (Fully Funded)(MAY 1997): Pursuant to FAR 52.232-20, entitled "Limitation of Cost", estimated cost is \$771,725.00.

b. In accordance with 5352.216-9001 entitled "PAYMENT OF FEE (AFMC)(JUL 1997)":

The estimated cost and fee for this contract are shown below. The applicable fixed fee set for target fee set forth below may be increased or decreased only by negotiation and modification of the contract for added or deleted work. As determined by the Contracting Officer, it shall be paid as it accrues, in regular installments based upon the percentage of the completion of work (or the expiration of the agreed-upon periods(s) for term contracts.

	BASIC	MOD 01	TOTAL
<b>COST</b>	\$407,744.00	\$363,981.00	\$771,725.00
<b>FIXED FEE</b>	\$ 22,426.00	\$ 19,203.00	\$ 41,629.00
<b>TOTAL</b>	\$430,170.00	\$383,184.00	\$813,354.00

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
0005	CLIN Change		EST \$813,354.00
		Lot	<b>EST +\$383,184.00</b>
	<i>Noun:</i>	ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS	
	<i>Total Quantity:</i>	1	
	<i>New Total Item Amount:</i>	\$813,354.00	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>	<b>The contractor shall provide the necessary effort for environmental remediation in accordance with the attached revised Statement of Work, dated 16 Nov 05.</b>	
000502	CLIN Change		
	<i>Noun:</i>	Funding Info Only	
	<i>ACRN:</i>	[REDACTED] +\$383,184.00	
	<i>PR/MIPR:</i>	[REDACTED]	\$383,184.00
	<i>Descriptive Data:</i>	[REDACTED]	
	<i>PR/MIPR:</i>	[REDACTED]	

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
<b>0006</b>	CLIN Change	Lot	NSP NSP
	<i>Noun:</i>	DATA	
	<i>Total Quantity:</i>	1	
	<i>Total Item Amount:</i>	\$0.00	
	<i>ACRN:</i>	U	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>		
	<b>The contractor shall provide data in accordance with CDRL Tables contained in Exhibits A, B, &amp; C as implemented by direction provided in the revised SOW, dated 16 Nov 05. This CLIN is Not Separately Priced (NSP). The prices associated with this CLIN are included in CLIN 0005.</b>		

4. SECTION C - Description/Specs/Work Statement is unchanged.
5. SECTION D - Packaging and Marking is unchanged.
6. SECTION E - Inspection and Acceptance is unchanged.
7. SECTION F - Sechedule Data is unchanged.

ITEM	SUPPLIES SCHEDULE DATA	QTY	SHIP TO	MARK FOR	TRANS PRI	DATE
<b>0005</b>		1	<b>F1JFAA</b>			<b>31 Jul 2006</b>
	<i>Noun:</i>		ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS			
	<i>ACRN:</i>	9				
	<i>Descriptive Data:</i>					
	<b>The contractor shall deliver the remediation effort in accordance with the revised Statement of Work, dated 16 Nov 05.</b>					
<b>0006</b>		1	<b>F1JFAA</b>			<b>31 Jul 2006</b>
	<i>Noun:</i>	DATA				
	<i>ACRN:</i>	U				
	<i>Descriptive Data:</i>					
	<b>The contractor shall deliver data in accordance with the Contract Data Requirements List Exhibits A, B, &amp; C dated 11 Apr 05 and as directed by the revised SOW dated 16 Nov 05, Section J of this task order.</b>					

**8. SECTION G - CONTRACT ADMINISTRATION DATA:**

AFCEE is implementing a paperless system known as the Wide Area Work Flow (WAWF) for receipt, acceptance, and payment of cost vouchers and invoices (fixed price). This contract/task order is WAWF-eligible. Submit cost vouchers and invoices electronically through the WAWF at <https://wawf.eb.mil> with the pertinent supporting documentation, cost/schedule/status reports, as attachments. Contractors will utilize the specific project number and associated ACRN(s) called out in the contract/task order for the work performed. Send e-mail notification through the WAWF using the feature "SEND ADDITIONAL E-MAIL NOTIFICATIONS", to the pertinent Contracting Officer's Representative (COR), base POC, simultaneously with your submittal to the WAWF. AFCEE review of cost vouchers, invoices and supporting documentation will occur in the WAWF. Other required data must be distributed in accordance with the DD Form 1423, Contract Data Requirements List (CDRL) or CDRL table in the pertinent contract/task order.

ACRN	Appropriation/Lmt Subhead/Supplemental Accounting Data	Obligation Amount
■	ACRN Change [REDACTED]	<b>+\$383,184.00</b>
	<i>New ACRN Amount:</i> \$408,994.00	
	<i>Funding breakdown:</i> [REDACTED]:	+\$383,184.00
	<i>PR/MIPR:</i> [REDACTED]	\$383,184.00
	<i>Descriptive data:</i> <b>PR COMPLETE:</b> [REDACTED]	
	[REDACTED]	- \$383,184.00

9. SECTION H - Special Contract Requirements (SCR) remains unchanged.

10. SECTION I - Contract Clauses remains unchanged.

LIST OF ATTACHMENTS

DOCUMENT	PGS	DATE	TITLE
ATTACHMENT 1	13	16 NOV 2005	STATEMENT OF WORK - "CLEAN, INSPECT AND REPAIR TANKS 15 & 16 FISC PEARL HARBOR, HAWAII"
ATTACHMENT 3	18	06 JAN 2006	WAGE DETERMINATION, GENERAL DECISION: HI20030001 01/06/2006 HI1

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE U - CPFF	PAGE OF PAGES 1 of 5
2. AMENDMENT/MODIFICATION NO. 02		3. EFFECTIVE DATE 11 MAY 2006	4. REQUISITION/PURCHASE REQ.NO. SEE SCHEDULE		5. PROJECT NO. (If applicable)
6. ISSUED BY HSW/PKV-W CODE AIR FORCE MATERIEL COMMAND 311TH HUMAN SYSTEMS WING/PKV-W 3300 SIDNEY BROOKS BROOKS CITY BASE TX 78235-5112 ██████████ 210-536-5496		FA8903	7. ADMINISTERED BY (If other than Item 6) DCMA PHILADELPHIA 700 ROBBINS AVENUE, BLDG. 4-A P.O. BOX 11427 PHILADELPHIA PA 19111-0427 DCM_PHILADELPHIA@DCMA.MIL		CODE S3915A
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) WESTON SOLUTIONS, INC 1400 WESTON WAY WEST CHESTER PA 19380-1469 (610) 701-5094				(X)	9A. AMENDMENT OF SOLICITATION NO.
					9B. DATED (SEE ITEM 11)
				X	10A. MODIFICATION OF CONTRACT/ORDER NO. FA8903-04-D-8681 0176
CODE 2M222 FACILITY CODE					10B. DATED (SEE ITEM 13) 14 JUN 2005
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required) SEE SCHEDULE					
13. THIS ITEM APPLIES ONLY TO MODIFICATION OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
(X)					
X A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (52.243-2 Changes, Alt III -- Cost Reimbursement) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) SUBJECT: Increase Ceiling Amount, Revise SOW & Exhibit A, and Extend Performance Period TECHNICAL TEAM CHIEF: ██████████ AFCEE/IWA, Brooks City-Base, TX 78235-5344 PAYMENT OFFICE: DFAS-CO/NORTH ENTITLEMENT OPER P.O. BOX 182266 COLUMBUS, OHIO 43218-2266					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF SIGNER (Type or print)		
			██████████ Contracting Officer		
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
			//signed//		11 MAY 2006
(Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)		



SCHEDULE OF CHANGES

1. In accordance with FAR 52.243-2 entitled "Changes -- Cost Reimbursement (AUG 1987)", the subject task order is hereby modified to Block 25 of the DD Form 1155 as reads \$813,354.00 is changed to read \$1,198,723.00. This is a net increase of \$385,369.00.

2. The Weston Solutions, Inc. letter dated 10 May 06 confirming the terms and conditions of this task order modification 02 is hereby incorporated and made a part hereof.

3. SECTION B - Supplies/Services is changed to increase the task order amount and reference revised SOW and Exhibit A dated 28 Feb 06 as follows:

a. In accordance with provision B-001 entitled Estimated Cost (Fully Funded)(MAY 1997): Pursuant to FAR 52.232-20, entitled "Limitation of Cost", estimated cost is \$1,137,218.00.

b. In accordance with 5352.216-9001 entitled "PAYMENT OF FEE (AFMC)(JUL 1997)":

The estimated cost and fee for this contract are shown below. The applicable fixed fee set for target fee set forth below may be increased or decreased only by negotiation and modification of the contract for added or deleted work. As determined by the Contracting Officer, it shall be paid as it accrues, in regular installments based upon the percentage of the completion of work (or the expiration of the agreed-upon periods(s) for term contracts.

	BASIC	MOD 01	MOD 02	TOTAL
<b>COST</b>	\$407,744.00	\$363,981.00	\$365,493.00	\$1,137,218.00
<b>FIXED FEE</b>	<u>\$ 22,426.00</u>	<u>\$ 19,203.00</u>	<u>\$ 19,876.00</u>	<u>\$ 61,505.00</u>
<b>TOTAL</b>	\$430,170.00	\$383,184.00	\$385,369.00	\$1,198,723.00

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
0005	CLIN Change		EST \$1,198,723.00
		Lot	EST +\$385,369.00
	<i>Noun:</i>	ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS	
	<i>Total Quantity:</i>	1	
	<i>New Total Item Amount:</i>	\$1,198,723.00	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>	<b>The contractor shall provide the necessary effort for environmental remediation in accordance with the attached revised Statement of Work, dated 28 Feb 06.</b>	
000503	CLIN Establish		
	<i>Noun:</i>	Funding Info Only	
	<i>ACRN:</i>	+	\$385,369.00
	<i>PR/MIPR:</i>		\$385,369.00
	<i>Descriptive Data:</i>		
	<i>PR/MIPR:</i>		

SCHEDULE OF CHANGES

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
0006	CLIN Change	Lot	NSP NSP
	<i>Noun:</i>	DATA	
	<i>Total Quantity:</i>	1	
	<i>Total Item Amount:</i>	\$0.00	
	<i>ACRN:</i>	U	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>		
	<p><b>The contractor shall provide data in accordance with CDRL Tables contained in revised Exhibit A dated 28 Feb 06, Exhibit B &amp; Exhibit C as implemented by direction provided in the revised SOW, dated 28 Feb 06. This CLIN is Not Separately Priced (NSP). The prices associated with this CLIN are included in CLIN 0005.</b></p>		

- 4. SECTION D - Packaging and Marking is unchanged.
- 5. SECTION E - Inspection and Acceptance is unchanged.

ITEM	SUPPLIES SCHEDULE DATA	QTY	SHIP TO	MARK FOR	TRANS PRI	DATE
0005		1	F1JFAA			30 Nov 2006
	<i>Noun:</i>	ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS				
	<i>ACRN:</i>	9				
	<i>Descriptive Data:</i>	<p><b>The contractor shall deliver the remediation effort in accordance with the revised Statement of Work, dated 28 Feb 06.</b></p>				
0006		1	F1JFAA			30 Nov 2006
	<i>Noun:</i>	DATA				
	<i>ACRN:</i>	U				
	<i>Descriptive Data:</i>	<p><b>The contractor shall deliver data in accordance with the Contract Data Requirements List Exhibits A dated 28 Feb 06 and Exhibit B and C dated 8 Apr 05 and as directed by the revised SOW dated 28 Feb 06, Section J of this task order.</b></p>				

**6. SECTION G - CONTRACT ADMINISTRATION DATA:**

AFCEE is implementing a paperless system known as the Wide Area Work Flow (WAWF) for receipt, acceptance, and payment of cost vouchers and invoices (fixed price). This contract/task order is WAWF-eligible. Submit cost vouchers and invoices electronically through the WAWF at <<https://wawf.eb.mil>> with the pertinent supporting documentation, cost/schedule/status reports, as attachments. Contractors will utilize the specific project number and associated ACRN(s) called out in the contract/task order for the work performed. Send e-mail notification through the WAWF using the feature "SEND ADDITIONAL E-MAIL NOTIFICATIONS", to the pertinent Contracting Officer's Representative (COR), base POC, simultaneously with your submittal to the WAWF. AFCEE review of cost vouchers, invoices and supporting documentation will occur in the WAWF. Other required data must be distributed in accordance with the DD Form 1423, Contract Data Requirements List (CDRL) or CDRL table in the pertinent contract/task order.

ACRN	Appropriation/Lmt Subhead/Supplemental Accounting Data	Obligation Amount
[REDACTED]	ACRN Establish [REDACTED]	\$385,369.00
	<i>New ACRN Amount:</i> \$385,369.00	
	<i>Funding breakdown:</i> [REDACTED] +\$385,369.00	
	<i>PR/MIPR:</i> [REDACTED] \$385,369.00	
	<i>Descriptive data:</i>	
	<i>PR/MIPR:</i> [REDACTED] - \$385,369.00	
	<b>PR COMPLETE</b>	

7. SECTION H - Special Contract Requirements (SCR) remains unchanged.

8. SECTION I - Contract Clauses remains unchanged.

9. SECTION J - Is changed as follows on the next page.

LIST OF ATTACHMENTS

<u>DOCUMENT</u>	<u>PGS</u>	<u>DATE</u>	<u>TITLE</u>
EXHIBIT A	1	28 FEB 2006	REVISED CONTRACT DATA REQUIREMENTS LIST
ATTACHMENT 1	14	28 FEB 2006	REVISED STATEMENT OF WORK - "CLEAN, INSPECT AND REPAIR TANKS 15, 16 & INTERNAL INSPECTION OF TANK 6 (JP5), FISC PEARL HARBOR, HAWAII"

**CONTRACT DATA REQUIREMENTS  
EXHIBIT A**

1. Data Item #	2. Title	10. Frequency	14. Distribution			
			Addressee	Draft	Copies	
	3. Subtitle	12. Date of First Submission			Reg	Final
A001A	2. Technical Report	10. ONE/R	AFCEE/IWA	1	1	1
			AFCEE/MSCD	LT	0	LT
	3. Final Report	12. 30 days after completion of field activities	HSW/PKVW	0	0	LT
			BASE POC	2	2	1
A001B	2. Technical Report	10. ONE/R	AFCEE/IWA	0	0	1
			AFCEE/MSCD	0	0	LT
	3. Final Inspection Report	12. Preliminary Inspection Report - One (1) Week after completion of inspection activities Final Inspection Report - 30 days after completion of inspection activities	HSW/PKVW	0	0	LT
			BASE POC	0	0	1
A002	2. Production or Delivery Problem Report	10. ASREQ	AFCEE/IWA	1	2	1
			AFCEE/MSCD	LT	LT	0
	3. NA	12. Within 3 days of telephone notification	HSW/PKVW	0	LT	0
			BASE POC	2	2	1
A003	2. Permits	10. ASREQ	AFCEE/IWA	0	0	1
			AFCEE/MSCD	0	0	LT
	3. NA	12. Prior to commencement of Work	HSW/PKVW	0	0	LT
			BASE POC	0	0	1
A004	2. Work Plan (WP)	10. ONE/R	AFCEE/IWA	0	0	1
			AFCEE/MSCD	0	0	LT
	3. NA	12. Within 30 days of project award	HSW/PKVW	0	0	LT
			BASE POC	0	0	1
A005	2. Health and Safety Plan (HSP)	10. ONE/R	AFCEE/IWA	0	0	1
			AFCEE/MSCD	0	0	LT
	3. QPP Part 1	12. 30 days after award	HSW/PKVW	0	0	LT
			BASE POC	0	0	1

All submittals to AFCEE/IWA must be electronic.

**STATEMENT OF WORK**  
**CLEAN, INSPECT AND REPAIR TANKS 15, 16**  
**&**  
**INTERNAL INSPECTION OF TANK 6 (JP5)**  
**FISC PEARL HARBOR, HAWAII**

**Project Numbers: PRL 99-21, PRL 02-11, & PRL 03-12**

**Contract Number: FA8903-04-D-8681**  
**Task Order 0176, MOD 02**

**28February 2006**

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>TITLE</u></b>	<b><u>PAGE</u></b>
1.0	SCOPE.....	4
2.0	APPLICABLE DOCUMENTS.....	4
3.0	GOVERNMENT FURNISHED INFORMATION, EQUIPMENT, AND PROPERTY (GFI, GFE, GFP).....	5
4.0	MANAGEMENT, PLANNING, AND REPORTING REQUIREMENTS.....	5
4.1	WORK BREAKDOWN STRUCTURE (WBS).....	5
4.1.1	WBS Requirements (Environmental Projects).....	5
4.1.2	WBS In CSI Format (Traditional Construction).....	5
4.2	SCHEDULE AND PLANNING REQUIREMENTS.....	5
4.2.1	PROJECT PLANNING CHART (PPC).....	5
4.2.2	Integrated Master Schedule (IMS).....	5
4.3	COST AND STATUS REPORTING.....	5
4.3.1	Contractor's Progress, Status, and Management Report (CPSMR).....	6
4.3.2 - 4.3.6	.....	6
4.4	MEETING AND CONFERENCE REQUIREMENTS.....	6
4.4.1	Meeting/Teleconference Support.....	6
4.4.2 - 4.4.3	.....	6
4.5	CONTRACTOR DOCUMENTATION.....	6
4.6	GEOGRAPHIC INFORMATION SYSTEM (GIS) DEVELOPMENT, PERFORMANCE, ANALYSIS AND IMPLEMENTATION SUPPORT.....	7
4.7	NOTIFICATION REQUIREMENTS.....	7
4.8	PERMITS.....	7
4.9	PHOTO DOCUMENTATION.....	7
4.10	REMOTE SITES.....	7
4.11	SITE ACCESS BADGES.....	7
4.12	WORKSITE ACTIVITIES AND COORDINATION.....	8
4.12.1	Coordination of Activities.....	8
4.12.2	Hazardous Material and Hazardous Waste Activities.....	8
5.0	CHEMISTRY REQUIREMENTS.....	8
6.0	PLANS AND REPORTS.....	8
6.1	QUALITY PROGRAM PLANS.....	8
6.2	TECHNICAL PLANS AND REPORTS.....	9
6.2.1	Technical Plans.....	9
6.2.2	Technical Reports.....	9
7.0	SITE WORK.....	10
7.1	Conservation.....	10
7.2	Demobilization.....	10
7.3	Site Characterization.....	10
7.4	Site Preparation.....	11
8.0	ENVIRONMENTAL REQUIREMENTS.....	11
9.0	TRADITIONAL REQUIREMENTS.....	11
9.1	CONSTRUCTION.....	11
9.1.1	Pre-Final Inspection.....	11

9.1.2	<i>Final Inspection</i> .....	11
9.2	DEMOLITION .....	11
9.3	EMERGENCY RESPONSE .....	12
9.4	MAINTENANCE AND REPAIR.....	12
<b>10.0</b>	<b>POINTS OF CONTACT (POCS)</b> .....	<b>144</b>



## **1.0 SCOPE**

This task order statement of work (SOW) defines the scope of construction and engineering activities necessary to clean, inspect, and repair tanks 15, 16 & perform internal inspection of Tank 6 at FISC Pearl Harbor. This SOW encompasses the full range of methods and technologies supporting activities necessary to remedy site conditions in accordance with technical and regulatory requirements, and to provide construction and ancillary services as required herein. Work to be performed under this task order (TO) shall include, but not necessarily be limited to, the following:

**Project PRL 99-21: Clean, Inspect, and Repair Tank 15**

**Project PRL 02-11: Clean, Inspect, and Repair Tank 16**

**Project PRL 03-12: Perform Internal Inspection of Tank 6 (JP5)**

Requirements are further detailed in section 9.4 of this SOW. The Contractor shall function as an integral team member in support of the AFCEE mission, to include the sharing of information with other AFCEE contractors, and cooperation with communities, regulators, and other government entities. Requirements include efficient management of this TO including accurate, on-time submittals of contract deliverables and timely identification and solution of impediments to successful project execution. Technical requirements include early involvement in the process to allow for the development of the most cost-effective and technically sound solution. AFCEE will rely on the Contractor's expertise in recognizing and addressing problematic issues and successful execution of this TO. The Contractor shall perform all work in accordance with federal, state, and local statutes and regulations. Remedies shall conform to environmental permits, decision document requirements, or other legal requirements.

## **2.0 APPLICABLE DOCUMENTS**

The Contractor shall identify and comply with all applicable federal, state, and local statutes; Air Force/Military instructions, manuals, handbooks, regulations, guidance, and policy letters; Executive Orders (EOs); American Petroleum Institute (API) Codes; National Association of Corrosions Engineers (NACE); National Fire Protection (NFPA); Steel Structures and Painting Counsel (SSPC); National Electrical Code (NEC); Uniform Fire Code (UFC); and International Building Code (IBC) including all changes and amendments in effect on the date of issuance of this TO. In addition, the Contractor shall comply with Mil Handbook 1022A and all applicable ASME standards. It is the Contractor's responsibility to identify and comply with all applicable requirements. In addition, the Contractor shall refer to the AFCEE Technical Services Quality Assurance Program, the current version of The United States Air Force Construction Management Implementation Guide, and Guidance for Contract Deliverables (GCD). This GCD is a reference document to be used in the generation of contract deliverables.

### **3.0 GOVERNMENT FURNISHED INFORMATION, EQUIPMENT, AND PROPERTY (GFI, GFE, GFP)**

As required.

### **4.0 MANAGEMENT, PLANNING, AND REPORTING REQUIREMENTS**

The Contractor shall implement a full range of construction and engineering activities as specified in this TO and in accordance with all applicable compliance documents. The Contractor shall supply all labor, equipment, and materials necessary to accomplish the work assigned unless otherwise specified in this TO. The Contractor shall perform management and planning functions, including performance measurement and fund status reporting, through the course of this effort.

#### **4.1 Work Breakdown Structure (WBS)**

##### **4.1.1 WBS Requirements (Environmental Projects)**

Not applicable to this TO.

##### **4.1.2 WBS In CSI Format (Traditional Construction)**

The Contractor shall prepare and submit for approval a WBS in the Construction Standard Institute (CSI) format for traditional construction activities. The WBS shall be used to report the cost and schedule status for each project. All tasks required under this type of TO shall be included in the WBS. (CDRL B001)

#### **4.2 Schedule and Planning Requirements**

The Contractor shall provide schedules for tracking work progress as specified in this TO.

##### **4.2.1 Project Planning Chart (PPC)**

The Contractor shall prepare and submit a PPC for approval. The PPC shall detail the project schedule and status through the use of Gantt charts, which shall depict percent complete for each task. The project schedule shall be reported using the approved WBS. (CDRL B002)

##### **4.2.2 Integrated Master Schedule (IMS)**

Not applicable to this TO.

#### **4.3 Cost and Status Reporting**

The Contractor shall provide cost and status reports as indicated below.

#### **4.3.1 Contractor's Progress, Status, and Management Report (CPSMR)**

The Contractor shall prepare and submit a CPSMR. The CPSMR shall be used to review and evaluate the overall progress of the project, along with any existing or potential problem areas. The report shall be prepared in a Contracting Officer's Representative (COR)-approved format. The CPSMR shall include a summary of the events that occurred during the reporting period, discussion of performance, identification of problems, proposed solutions, corrective actions taken, and outstanding issues. Status of funding shall be included. Report shall include % complete, % expended, schedule variance (days), and an estimated completion date. All invoices submitted must identify expenditures by the specific project and ACRN # to which they apply. (CDRL B004)

#### **4.3.2 Funds and Man-Hour Expenditure Report (FMER)**

The Contractor shall implement and maintain a cost accounting system and prepare a FMER to correlate the status of expensed funds and man-hours against the progress of the work completed and the negotiated budget. The FMER and associated graphics shall detail the current project status and identify funds and man-hours required to complete the assigned tasks. All invoices submitted must identify expenditures by the specific project and ACRN # to which they apply. (CDRL C001)

#### **4.3.3-4.3.6**

Not applicable to this TO.

#### **4.4 Meeting and Conference Requirements**

##### **4.4.1 Meeting/Teleconference Support**

The Contractor shall attend and support meetings and teleconferences to discuss technical or regulatory issues and project progress and status as required. The Contractor shall prepare, and submit for review meeting agenda as required. The Contractor shall prepare minutes for all meetings attended. (CDRLs B006 & B007)

##### **4.4.2 - 4.4.3**

Not applicable to this TO.

#### **4.5 Contractor Documentation**

The Contractor shall create and maintain a Master Document List (MDL) for the project that includes all documents, whether the document is a deliverable or not, which are prepared during the course of this TO. The MDL and its documents shall be maintained in libraries readily

available for submittal to the Government. All Material submittals shall be submitted in a timely manner upon project award for approval prior to field mobilization. Submittals shall be incorporated and submitted with accompanying AF Form 66 in a 3 ring binder and in accordance with the instructions pertaining to AF Form 3000, Material Approval Submittal. (CDRL B008)

#### **4.6 Geographic Information System (GIS) Development, Performance, Analysis and Implementation Support**

Not applicable to this TO.

#### **4.7 Notification Requirements**

The Contractor is required to notify the Contracting Officer (CO) and COR of critical issues that may affect the contract performance and/or human health and the environment. The types of issues that require notification include, but are not limited to, health risks, spills, and changes in critical personnel, and finding unexploded ordnance (UXO). On critical issues, verbal notification should be made immediately, followed by written notification as soon as practical. (CDRL A002)

#### **4.8 Permits**

The Contractor shall develop, coordinate, and assist the installation in applying for and obtaining all federal, state, local, and other applicable permits, access (including off-base easements and leases), agreements, licenses, and certificates required to perform and complete this TO. The Contractor shall maintain a library of these documents at the Contractor's site office on base as well as the corporate facility handling this TO. The Contractor shall comply with all applicable permit conditions. (CDRL A003)

#### **4.9 Photo Documentation**

The Contractor shall prepare digital photo documentation, including site(s) and building(s) under investigation and/or construction, field activities, and sample locations. Digital photos will be submitted in JPEG format unless otherwise approved by the COR. The contractor shall provide an index for each set of photographs submitted identifying the base, project number, contractor, and a brief description. Photography of any kind must be coordinated through the installation Point of Contact (POC). (CDRL B010)

#### **4.10 Remote Sites**

The Contractor shall be responsible for all personnel, supplies, equipment, and infrastructure (including, but not limited to, potable water, utility systems, housing, dining, transportation, and medical care) when there are no facilities and services available.

#### **4.11 Site Access Badges**

The Contractor shall obtain and monitor assigned security badges (used by both prime contractor and subcontractor staff) used during the duration of this contract. All security badges or passes shall be returned to the base POC upon expiration of the badge, upon completion of the project, or when possession of the badge is no longer necessary (e.g., upon removal of contracted personnel from specific projects).

#### **4.12 Worksite Activities and Coordination**

##### **4.12.1 Coordination of Activities**

The Contractor shall coordinate worksite activities with all applicable personnel to ensure the protection of human health and the environment; the prevention of damage to property, utilities, materials, supplies, and equipment; and the avoidance of work interruptions. The Contractor shall provide physical security to work areas with security equipment and personnel. For areas not covered by OSHA, the contractor shall comply with host-nation laws and regulations regarding safety and health and the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1.

##### **4.12.2 Hazardous Material and Hazardous Waste Activities**

The Contractor shall handle all hazardous materials and waste in accordance with applicable federal, state, and local requirements. The Contractor shall provide all hazardous materials use and hazardous waste disposal documentation to the installation POC, and shall register with the Hazardous Materials Pharmacy program (if available) at the installation to ensure appropriate and efficient tracking of the Contractor's hazardous material purchases, inventories, use, and releases such as required by the Emergency Planning and Community Right-to-Know Act (EPCRA), EOs, or any installation reporting requirements.

The Contractor shall also comply with federal, state, and local requirements for any task involving the transportation of hazardous wastes and/or contaminated materials to off-site treatment, storage and/or disposal facilities. This includes 40 CFR 260, 49 CFR 172, 173, 178, 179 and all other applicable local, state, and federal transportation regulations.

#### **5.0 CHEMISTRY REQUIREMENTS**

Not applicable to this TO.

#### **6.0 PLANS AND REPORTS**

##### **6.1 Quality Program Plans (QPP)**

The Contractor shall prepare, for AFCEE review and approval, a site-specific QPP for each TO. The Contractor must implement, maintain, and comply with the approved site-specific QPP.

The QPP shall include the Health and Safety Plan (HSP) (as required by 29 Code of Federal Regulations (CFR) 1910.120). The contractor shall use the existing HSP to the fullest extent possible and provide addendum as necessary. (CDRL A005)

## **6.2 Technical Plans and Reports**

The Contractor shall provide technical plans and reports and shall complete these documents according to the most appropriate industry standard.

### **6.2.1 Technical Plans**

- a. Community Relations (Not applicable)
- b. Work Plan. The Contractor shall prepare a Project Activities Work Plan that may include, but is not limited to, the subsections listed below. The implementation Work Plan shall consist of the concept submittal requirements updated to reflect final plan development and incorporation of review comments. (CDRL A004)
  - 1) Air Monitoring Plan
  - 2) Demobilization and Closure Plan
- c. RPO Work Plan (Not applicable)
- d. Construction Quality Plan (Not applicable)
- e. Design Work Plan (Not applicable)
- f. Health and Safety Plan (CDRL A005)
- g. Sampling and Analysis Plan (Not applicable)
- h. DD Form 1391 (Not applicable)
- i. Operations and Maintenance Plan (Not applicable)
- j. Innovative Technology Plan (Not applicable)
- k. Integrated Solid Waste Management Plan (Not applicable)
- l. Explosive Safety Plan (Not applicable)
- m. Test Plan (Not applicable)

### **6.2.2 Technical Reports**

- a. Miscellaneous Technical Report, Detailed Final Report (CDRL A001A)
- b. Analytical Data Report Package (Not Applicable)
- c. Site/Project Summary (Not Applicable)
- d. Production or Delivery Problem Report (CDRL A002)
- e. Technical/Field Reports
- f. Permits (CDRL A003)
- g. Closure Reports (Not Applicable)
- h. Investigation Report (Not Applicable)
- i. Conceptual Site Model/Development Profile (Not Applicable)
- j. Baseline Risk Assessment (Not Applicable)
- k. Innovative Technologies Report (Not Applicable)
- l. Integrated Solid Waste Report (Not Applicable)
- m. Hazardous Materials Survey Report (Not Applicable)

- n. Hazardous Material and/or Hazardous Waste Disposal Report (Not Applicable)
- o. Design Plans (Not Applicable)
- p. Shop Drawings and/or As-built Drawings (Not Applicable)
- q. Design Specifications (Not Applicable)
- r. Long-Term Operations/Long-Term Monitoring Report (Not Applicable)
- s. Double Blind QA/AC Laboratory Proficiency Testing Program (Not Applicable)
- t. Digital Imaging (CDRL B010)
- u. Color Photograph Prints (Not Applicable)
- v. Geographical Information Systems Updates (Not Applicable)
- w. Computer Aided Design Drawings (Not Applicable)
- x. Inspection Reports (CDRL A001B)
- y. Survey Reports (Not Applicable)
- z. RPO Reports (Not Applicable)

## **7.0 SITE WORK**

The Contractor shall perform site preparation, conservation, and demobilization of sites as required in this TO.

### **7.1 Conservation**

Activities shall be planned and implemented in a manner that protects existing site utilities, structures, surface features, service operations, monitoring and other types of wells, and the general site environment. This includes the protection of trees, shrubs and other vegetation not in the affected zone from dust damage, soil compaction, and physical contact with machines and equipment. If appropriate, the Contractor shall conserve uncontaminated topsoil by removal, storage, or redistribution. All reasonable measures shall be taken to minimize and suppress fugitive emissions of dust, vapors, and other site materials during site work. The Contractor shall conduct all operations and activities with the intent of reducing the amount of pollution generated. Specific areas to be focused on are generation of solid waste, use of hazardous materials, use of ozone depleting chemicals, generation of hazardous waste, and use of energy and water. The Contractor shall plan, construct, operate, maintain, optimize, and decommission systems necessary to control storm water run-on and run-off; and transport surface water drainage to a treatment plant, discharge location, or any other destination.

### **7.2 Demobilization**

The Contractor shall decontaminate equipment and facilities, decommission facilities as necessary, and restore the site. The Contractor shall remove any temporary facilities and shall document and report on activities and train Government personnel to perform required maintenance, as requested.

### **7.3 Site Characterization**

Not applicable.

#### **7.4 Site Preparation**

The Contractor shall perform site work as necessary to prepare sites for construction activities. Security and access controls shall be implemented to prevent unauthorized entry to sites and to protect wildlife from site exposure. The Contractor shall survey existing utilities to determine adequacy and need for modifications to support site activities. The Contractor shall obtain appropriate approvals and shall construct connections or new systems for electrical power, water, sewer, gas distribution, telephone, and other utilities, as required, to accomplish the activities specified in this TO.

#### **8.0 ENVIRONMENTAL REQUIREMENTS**

Not applicable.

#### **9.0 TRADITIONAL REQUIREMENTS**

The Contractor shall perform a full range of activities to meet all requirements as described in this TO. The Contractor shall perform all necessary work and shall document all activities as stated herein.

The Contractor shall perform incidental support such as designing, planning, programming, scoping, studying, investigating, evaluating, and consulting on traditional engineering and construction efforts. The Contractor shall also provide training and operational support to Government and other contractor personnel regarding the operations and maintenance of equipment, systems, and facilities.

#### **9.1 Construction**

See section 9.4.

##### **9.1.1 Pre-Final Inspection**

Not applicable to this TO.

##### **9.1.2 Final Inspection**

Not applicable to this TO.

#### **9.2 Demolition**

Not applicable to this TO.



### 9.3 Emergency Response

Not applicable to this TO.

### 9.4 Maintenance and Repair

#### Project PRL 99-21: Clean, Inspect, and Repair Tank 15

Inspections services will be electromagnetic inspections followed by Ultrasonic Thickness (UT) measurements prove up. The areas of the tank (upper dome area, extension area, barrel area, and lower dome area) and percentages of each to be tested are given in the details below. Electromagnetic scanner will be used to test the surface plates of the tank. If any defects are found, then U.T. will be performed to prove these areas. Welds will also be inspected with eddy current probes. At the end of inspection by TESTEX, a preliminary report will be provided, which includes all of the defect information (location, size, etc.). A final full color report will be issued which will include review and recommendations by a certified API 653 inspector who is also a registered Professional Engineer.

- Perform API 653 Inspection (A001B)
  - Item A: course A and extension
    - • 180 degrees row 2 extension quadrants C & D (36" band)
    - • 180 degrees row 3 extension quadrants A & B (36" band)
    - • 360 degrees row 1 extension quadrants A, B, C, & D (30" band)
    - • 360 degrees row 4 extension quadrants A, B, C, & D (24" band)
    - • 46 plates course A
    -
  - Item B: Lower dome and under catwalk
    - • 180 degrees quadrants A & B interface between barrel (36" scan) and lower dome (36" scan).
    - • 13 plate's quadrants A & B course 3 (lower dome) lower 44" scan.
    - • Scanning under catwalk
    -
  - Item C: Course B, C, & D
    - • 360 degrees course B (36" band)
    - • 360 degrees course C (36" band)
    - • 360 degrees course D (36" band)
    -
  - Item D: 100% Barrel Scan
    - • Includes approximately 42,000 square feet of scanning on the Barrel (total barrel square footage is approximately 44,000 sq. ft.) from the extension to the lower dome (approximately 140 vertical feet) \* Note: 2,484 square feet was completed in the previous inspection on 1/26/05 and 1/27/05
    -
  - Item E: Course E and F upper dome

- • Includes scanning in courses E and F of the upper dome using the magnetic
- wheeled crawlers
  
- Install strapping charts to support the mass tank gauging system and installation of a datum plate

**Project PRL 02-11: Clean, Inspect, and Repair Tank 16**

- Install covers for 59 probes
- Install strapping to support the mass tank gauging system and installation of a datum plate
- Perform API 653 Inspection

**Project PRL 03-12: Perform Internal Inspection of Tank 6 (JP5)**

Inspections services to include electromagnetic inspections followed by Ultrasonic Thickness (UT) measurements. The areas of the tank (upper dome area, extension area, barrel area, lower dome area and bottom) and percentages of each to be tested are given in the details below. Electromagnetic scanner to be used to test the surface plates of the tank. If any defects are found, U.T. to be performed to evaluate these areas. Welds to be inspected with eddy current probes. At the end of inspection, a preliminary report will be provided, which is to include detailed information of defects found (location, size, etc.). The preliminary report is to be supplemented by an engineering cost estimate for the completion of the recommended repairs. A final full color report is to be issued, which will include review and recommendations by a certified API 653 inspector who is also a registered Professional Engineer.

**Perform modified API 653 Inspection**

**Floor**

- Entire floor surface (using LFET scanners)

**Course 1, 2, 3, and 4**

- 360 degrees course 1 quadrants A, B, C, & D (36" bands using LFET scanners)
- 360 degrees course 2 quadrants A, B, C, & D (36" bands using LFET scanners)
- 360 degrees course 3 quadrants A, B, C, & D (36" bands using LFET scanners)
- 360 degrees course 4 quadrants A, B, C, & D (36" bands using LFET scanners)

**100% Barrel**

- Includes approximately 44,000 square feet of scanning on the Barrel from the extension to the lower dome (approximately 140 vertical feet using the LFET scanners)

**Under catwalk**

- Scanning under catwalk

**Extension**

- 360 degrees row 1 extension quadrants A, B, C, & D (using LFET scanners)
- 360 degrees row 2 extension quadrants A, B, C, & D (using LFET scanners)
- 360 degrees row 3 extension quadrants A, B, C, & D (using LFET scanners)
- 360 degrees row 4 extension quadrants A, B, C, & D (using LFET scanners)

**Courses A and B Upper Dome**

- 72 plates course A(36" band using LFET scanners)
- 72 plates course B(36" band using LFET scanners)

**Course C and D Upper Dome**

- 360 degrees course C (36" band using the U.T. magnetic wheel crawler)
- 360 degrees course D (36" band using the U.T. magnetic wheel crawler)

**Courses E and F Upper Dome**

- 360 degrees course E (36" band using the U.T. magnetic wheel crawler)
  - U.T. spot survey of course F from the gallery
- Provide strapping charts to support the mass tank gauging system and install a datum plate

**10.0 POINTS OF CONTACT (POCs)**

AFCEE/MSCD

Contract Data Library

3300 Sidney Brooks, Building 532

Brooks City-Base, TX 78235-5112

Email: afceemscd@brooks.af.mil

CONTRACTING OFFICER

HSW/PKVW

3300 Sidney Brooks, Building 532

Brooks City-Base, TX 78235-5112

██████████  
HQ AFCEE/IWA – COR

3300 Sidney Brooks, Building 532

Brooks City-Base, TX 78235-5112

COM: 210-536-5226

Email: ██████████

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE U - CPFF	PAGE OF PAGES 1 of 4
2. AMENDMENT/MODIFICATION NO. 03		3. EFFECTIVE DATE 30 NOV 2006	4. REQUISITION/PURCHASE REQ.NO.		5. PROJECT NO. (If applicable)
6. ISSUED BY HSW/PKV-ACW  AIR FORCE MATERIEL COMMAND 311TH HUMAN SYSTEMS WING/PKV-W 3300 SIDNEY BROOKS BROOKS CITY BASE TX 78235-5112 [REDACTED] (210) 536-4489		CODE FA8903	7. ADMINISTERED BY (If other than Item 6)  DCMA PHILADELPHIA 700 ROBBINS AVENUE, BLDG. 4-A P.O. BOX 11427 PHILADELPHIA PA 19111-0427 DCM_PHILADELPHIA@DCMA.MIL		CODE S3915A
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)  WESTON SOLUTIONS, INC 1400 WESTON WAY WEST CHESTER PA 19380-1492 (610) 701-5094			(X)	9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
			X	10A. MODIFICATION OF CONTRACT/ORDER NO. FA8903-04-D-8681 0176	
CODE 2M222 FACILITY CODE				10B. DATED (SEE ITEM 13) 14 JUN 2005	
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended.					
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:					
(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATION OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
(X)					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: ( ) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).					
X C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 52.249-14 entitled "Excusable Delays, (APR 1984)"					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) CPFF - SUBJECT: CPFF - POP TEAM CHIEF: [REDACTED] AFCEE/IWA, 3300 Sidney Brooks City Base, TX 78235-5112 PAYMENT OFFICE: HQ0337 DFAS COLUMBUS CENTER DFAS-CO/NORTH ENTITLEMENT OPS P.O. BOX 182381 COLUMBUS OH 43218-2381. [REDACTED]					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF SIGNER (Type or print)		
			[REDACTED] Contracting Officer		
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
			//signed//		11 JAN 2007
_____ (Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)		

SCHEDULE OF CHANGES

1. Pursuant to the authority of FAR 52.249-14 entitled "Excusable Delays, (APR 1984)" of the basic contract FA8903-04-D-8681, the POP for Task Order 0176 is hereby extended from 30 NOV 06 2006 to 31 JAN 2007, with no increase in the ceiling amount.

ITEM	SUPPLIES OR SERVICES	Qty Purch Unit	Unit Price Total Item Amount
0005	CLIN Change		EST \$1,198,723.00
		Lot	EST +\$0.00
	<i>Noun:</i>	ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS	
	<i>Total Quantity:</i>	1	
	<i>Total Item Amount:</i>	\$1,198,723.00	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>	The contractor shall provide the necessary effort for environmental remediation in accordance with the attached revised Statement of Work, dated 28 Feb 06.	
0006	CLIN Change		NSP
		Lot	NSP
	<i>Noun:</i>	DATA	
	<i>Total Quantity:</i>	1	
	<i>Total Item Amount:</i>	\$0.00	
	<i>ACRN:</i>	U	
	<i>NSN:</i>	N - Not Applicable	
	<i>Contract type:</i>	U - COST PLUS FIXED FEE	
	<i>Inspection:</i>	DESTINATION	
	<i>Acceptance:</i>	DESTINATION	
	<i>FOB:</i>	DESTINATION	
	<i>Item project mgr.:</i>	IWA	
	<i>Descriptive Data:</i>	The contractor shall provide data in accordance with CDRL Tables contained in revised Exhibit A dated 28 Feb 06, Exhibit B & Exhibit C as implemented by direction provided in the revised SOW, dated 28 Feb 06. This CLIN is Not Separately Priced (NSP). The prices associated with this CLIN are included in CLIN 0005.	

2. **SECTION B - Supplies/Services:** No changes

3. **SECTION F - Deliveries or Performance:**

SCHEDULE OF CHANGES

ITEM	SUPPLIES SCHEDULE DATA	QTY	SHIP TO	MARK FOR	TRANS PRI	DATE
0005		1	F1JFAA			31 Jan 2007
	<p><i>Noun:</i> ENVIRONMENTAL REMEDIATION AND CONSTRUCTION EFFORTS</p> <p><i>ACRN:</i> 9</p> <p><i>Descriptive Data:</i> The contractor shall deliver the remediation effort in accordance with the revised Statement of Work, dated 28 Feb 06.</p>					
0006		1	F1JFAA			31 Jan 2007
	<p><i>Noun:</i> DATA</p> <p><i>ACRN:</i> U</p> <p><i>Descriptive Data:</i> The contractor shall deliver data in accordance with the Contract Data Requirements List Exhibits A dated 28 Feb 06 and Exhibit B and C dated 8 Apr 05 and as directed by the revised SOW dated 28 Feb 06, Section J of this task order.</p>					

**4. SECTION G - Accounting and Appropriation Classification Data.**

AFCEE is implementing a paperless system known as the Wide Area Work Flow (WAWF) for receipt, acceptance, and payment of cost vouchers and invoices (CPFF). This task order is WAWF eligible.

- a. Submit cost vouchers and invoices electronically through the WAWF at <https://wawf.eb.mil> with the pertinent supporting documentation, cost/schedule/status reports, as attachments. Utilize the specific contract/task order for the work performed FA8903-04-D-8681, 0176, Invoice/Voucher #\*, FISC Pearl Harbor, Hawaii, DESC, CPFF)
- b. Send e-mail notification through the WAWF using the feature "SEND ADDITIONAL E-MAIL NOTIFICATIONS" to the following simultaneously with your submittal to the WAWF:
  - (1). Contracting Officer Representative [COR] @brooks.af.mil
  - (2). Base POC if applicable
  - (3). (insert others as necessary i.e., Contracting Officer or Alternate COR)
- c. AFCEE review of cost vouchers, invoices and supporting documentation will occur in the WAWF.
- d. Other required data must be distributed in accordance with the CDRL tables pertinent to the task order.

SCHEDULE OF CHANGES

5. The Contractor's letter dated 30 NOV 2006 requesting this action and is hereby incorporated by reference.
6. All other Terms and Conditions remain unchanged and in full force and effect.