



## **WILLBROS GOVERNMENT SERVICES (U.S.), LLC**

A WILLBROS COMPANY

06 November 2014

To Whom It May Concern:

Willbros Government Services has completed the Free Product Reclamation Procedure described in Appendix M of the TK 5 Warranty Work Plan. No free product was located or collected during this recovery operation. A total of thirteen (13) locations were checked in TK 5 per the procedures outlined in Appendix M. Twelve (12) were new locations created in each quadrant and elevation of the tank and one (1) was an existing location uncovered, by the previous removal of a repair plate, during the initial leak investigation inspection. The results of this operation have been recorded in the QC Log and the details are described in the following pages with field notes, sketches and photographs. If free product is encountered in the future, as we continue our inspection and repairs in TK 5, the procedures outlined in Appendix M will be utilized to recover and collect said product and should it occur, this activity will be documented and recorded in the same fashion as described above.

Should you need more information please feel free to contact me at the number or email below.

Very Respectfully,

**James Hagen**  
**Project Manager**  
**Willbros Government Services, LLC**

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Fax: 918-481-4317  
E-mail: [james.hagen@willbros.com](mailto:james.hagen@willbros.com)



**Willbros Government Services, (U.S.) LLC**  
A Willbros Company

Date: 10/30/14  
Subject: Potential Free Product Recovery Notes

Summary:

WGS used various criteria to identify and locate Potential Free Product Recovery ports including previous LT testing results, sounding for hollow spots indicating voids between the steel liner and concrete encasement, and the location of previous repairs.

Steps taken were as follows:

- 1) Determine Port Location
- 2) Drill Port
- 3) Test port for presence of hydrocarbons
- 4) Vacuum drilled port
- 5) Re-test port for presence of hydrocarbons

\*Please see notes below for each port.

**001- C1-P2 Lower Dome Quadrant A:**

This area was chosen because of its relation to 32" issue / receipt lines exiting the tank to lower level. Sounding located a hollow spot.

- 1) Course C1 Plate 2
- 2) Dry / no liquid (1/8" clearance behind plate)
- 3) Readings: LEL- 4%, O2- 12% VOC- 895 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**002- C1-P20 Lower Dome Quadrant B:**

This area was chosen because of its relation to 18" issue / receipt lines exiting the tank to lower level. Sounding located a hollow spot.

- 1) Course C1 Plate 20
- 2) Dry / no liquid (1/8" clearance behind plate)
- 3) Readings: LEL- 8%, O2- 7% VOC- 963 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**003- C2-P42 Lower Dome Quadrant C:**

This area was chosen because of its position in the tank and sounding located a hollow spot.

- 1) Course C2 Plate 42
- 2) Dry / no liquid (1/8" clearance behind plate)
- 3) Readings: LEL- 7%, O2- 9% VOC- 907 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**004- C3-P60 Lower Dome Quadrant D:**

This area was chosen because of its position in the tank and sounding located a hollow spot.

- 1) Course C3 Plate 60
- 2) Dry / no liquid (3/4" clearance behind plate)
- 3) Readings: LEL- 6%, O2- 13% VOC- 748 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**005- R8-P12 Barrel Quadrant C/D:**

This area was chosen because of its position in the tank, sounding located a hollow spot, plate bulging and relation to previous repair WP403.

- 1) Course 8 Plate 12
- 2) Dry / no liquid (1/8" clearance behind plate)
- 3) Readings: LEL- 7%, O2- 14% VOC- 813 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**006- R26-P15 Barrel Quadrant D:**

This area was chosen because of its position in the tank; sounding located a hollow spot, and relation to previous repairs WP383, WP379, and WP381.

- 1) Course 26 Plate 15
- 2) Dry / no liquid (1/4" clearance behind plate)
- 3) Readings: LEL- 5%, O2- 11% VOC- 827 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**007- E2-P16 Extension Ring Quadrant D:**

This area was chosen because of its position in the tank; sounding located a hollow spot, and relation to previous repairs WP076, WP077, and WP078.

- 1) Course E2 Plate 16
- 2) Dry / no liquid (3/4" clearance behind plate)
- 3) Readings: LEL- 9%, O2- 12% VOC- 984 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**008- E4-P13 Extension Ring Quadrant C/D:**

This area was chosen because of its position in the tank, sounding located a hollow spot, and growth out of WP075.

- 1) Course E4 Plate 13
- 2) Dry / no liquid (1/16" clearance behind plate)
- 3) Readings: LEL- 0%, O2- 19% VOC- 40 ppm
- 4) Mist of dust & moisture- volume not relevant or collectable
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**009- A-P68 Upper Dome Quadrant D:**

This area was chosen because of previously failed LT which indicated the possible presence of fuel.

- 1) Course A Plate 68
- 2) Dry / no liquid (1/16" clearance behind plate)
- 3) Readings: LEL- 2%, O2- 18% VOC- 300 ppm
- 4) Mist of dust & moisture- volume not relevant or collectable
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**010- R3-P3 Barrel Quadrant A:**

This area was chosen because of its position in the tank, sounding located a hollow spot, and relation to previous repairs.

- 1) Course 3 Plate 3
- 2) Dry / no liquid (1/16" clearance behind plate)
- 3) Readings: LEL- 7%, O2- 13% VOC- 780 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 0 ppm

**011- R11-P6 Barrel Quadrant B:**

This area was chosen because of previous failed LT and repair plate (WP301) had been removed.

- 1) Course 11 Plate 6
- 2) Dry / no liquid (1/16" clearance behind plate)
- 3) Readings: LEL- 6%, O2- 11% VOC- 800 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 400 ppm

**012- E3-P6 Extension Ring Quadrant B:**

This area was chosen because of its position in the tank, sounding located a hollow spot, plate bulging and relation to previous repair.

- 1) Course 11 Plate 6
- 2) Dry / no liquid (1/8" clearance behind plate)
- 3) Readings: LEL- 9%, O2- 7% VOC- 1000 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 39 ppm

**013- E2-P13 Extension Ring Quadrant A:**

This area was chosen because of its position in the tank, sounding located a hollow spot and relation to previous repair.

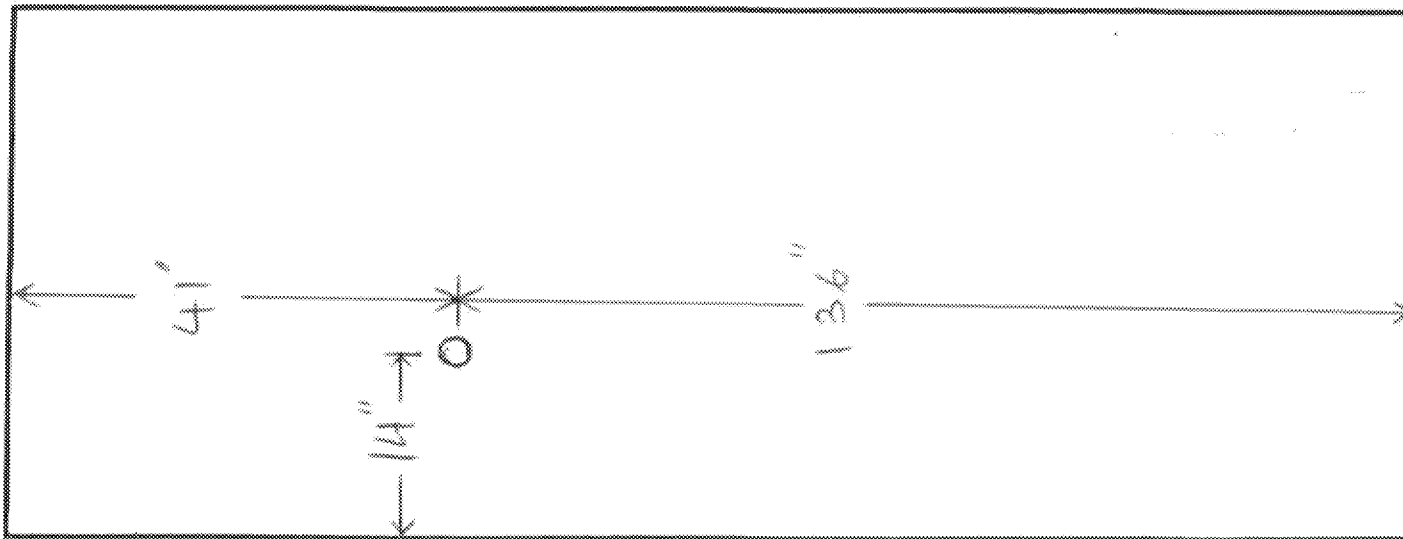
- 1) Course E2 Plate 3
- 2) Dry / no liquid (1/4" clearance behind plate)
- 3) Readings: LEL- 4%, O2- 16% VOC- 850 ppm
- 4) Dry / no liquid
- 5) Readings: LEL- 0%, O2- 20.9% VOC- 37 ppm



# Willbros Government Services

|              |                                     |                               |                        |
|--------------|-------------------------------------|-------------------------------|------------------------|
| Location:    | Red Hill - Tank 5 WW                |                               |                        |
| Location:    | Free Product Reclamation Test Ports |                               |                        |
| Description: | Tank # 5                            | Row or Course - LOWER DOME C1 | Sheet No - 001 Plate 2 |

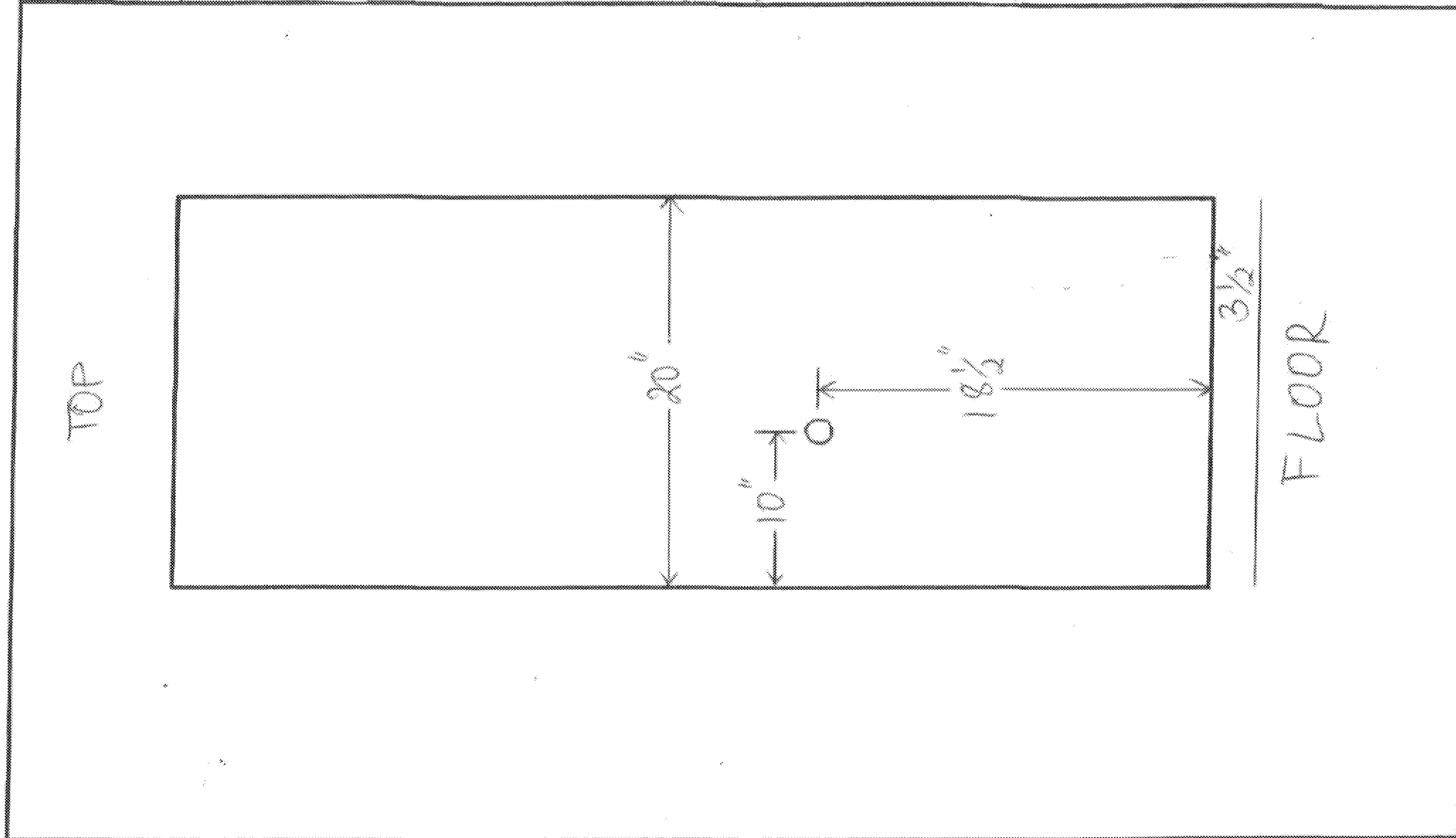
TOP





# Willbros Government Services

|              |                                     |                               |                         |
|--------------|-------------------------------------|-------------------------------|-------------------------|
| Location:    | Red Hill - Tank 5 NW                |                               |                         |
| Location:    | Free Product Reclamation Test Ports |                               |                         |
| Description: | Tank # 5                            | Row or Course - Lower DOME CL | Sheet No - 002 Plate 20 |

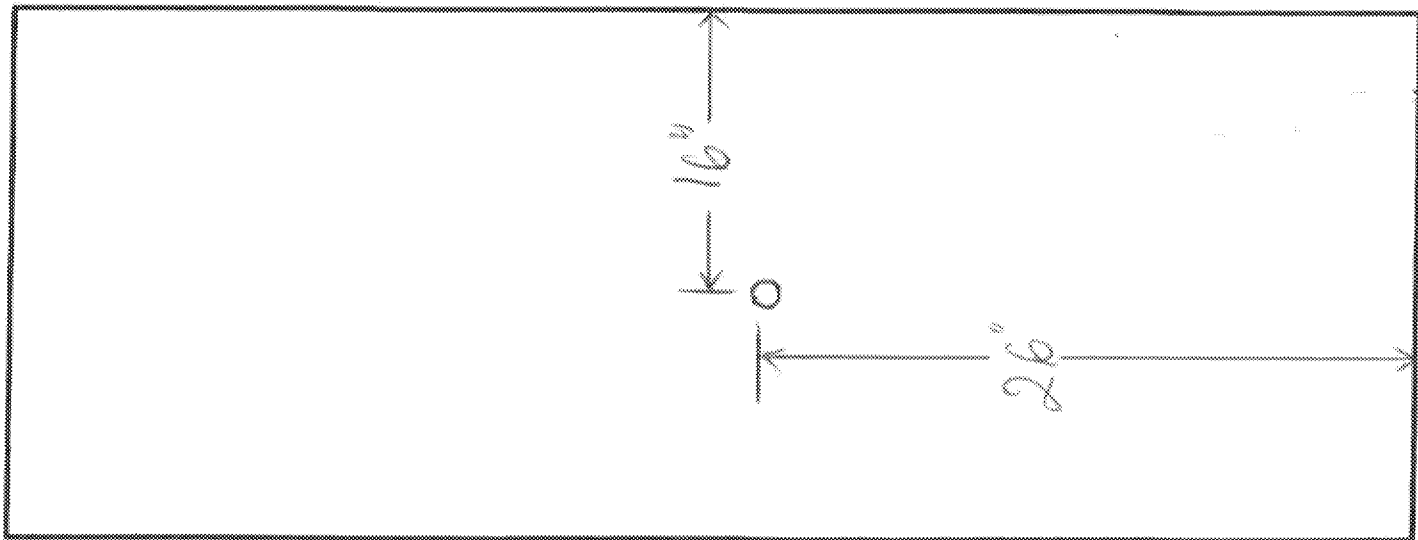




# Willbros Government Services

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|--------------|-------------------------------------|-----------------------|-------------------------|
| Location:    | Red Hill - Tank 5 WW                |                       |                         |
| Location:    | Free Product Reclamation Test Ports |                       |                         |
| Description: | Tank # 5                            | Row or Course - 4D C2 | Sheet No - 603 Plate 42 |

TOP



4"

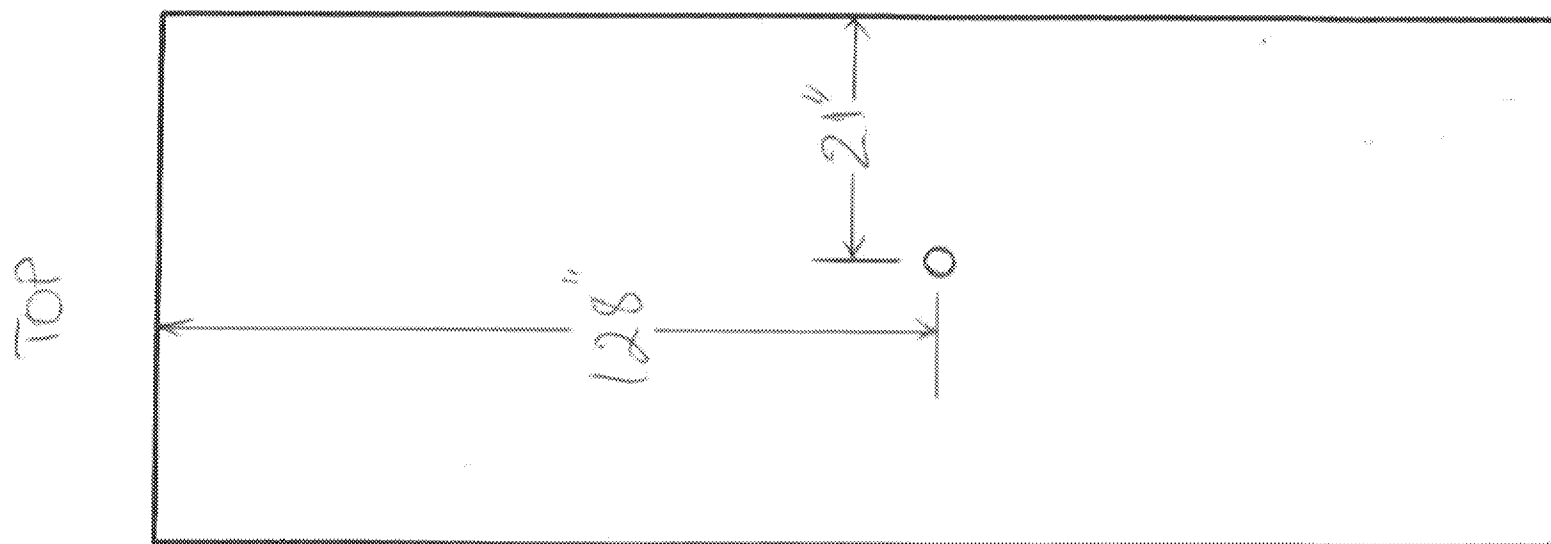
C1





# Willbros Government Services

|              |                                     |                               |                         |
|--------------|-------------------------------------|-------------------------------|-------------------------|
| Location:    | Red Hill - Tank 5 WW                |                               |                         |
| Location:    | Free Product Reclamation Test Ports |                               |                         |
| Description: | Tank # 5                            | Row or Course - LOWGE DONE C3 | Sheet No - 004 Plate 60 |

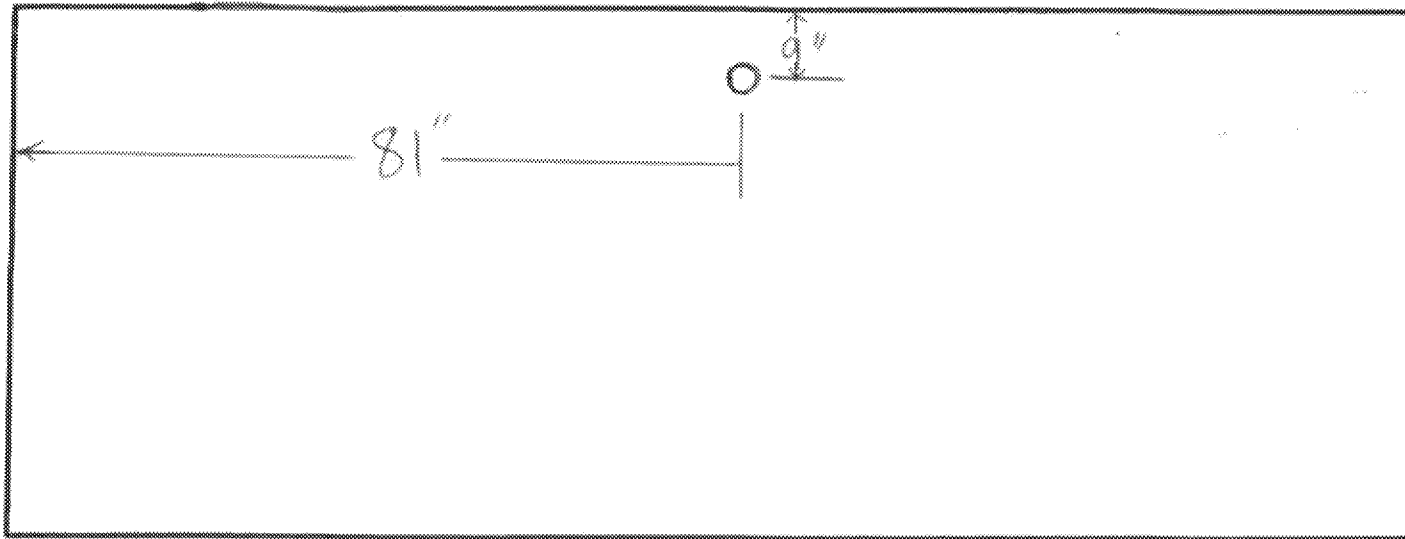




# Willbros Government Services

|              |                                     |                     |                         |
|--------------|-------------------------------------|---------------------|-------------------------|
| Location:    | Red Hill - Tank 5 WW                |                     |                         |
| Location:    | Free Product Reclamation Test Ports |                     |                         |
| Description: | Tank # 5                            | Row or Course - # 8 | Sheet No - 005 Plate 12 |

TOP

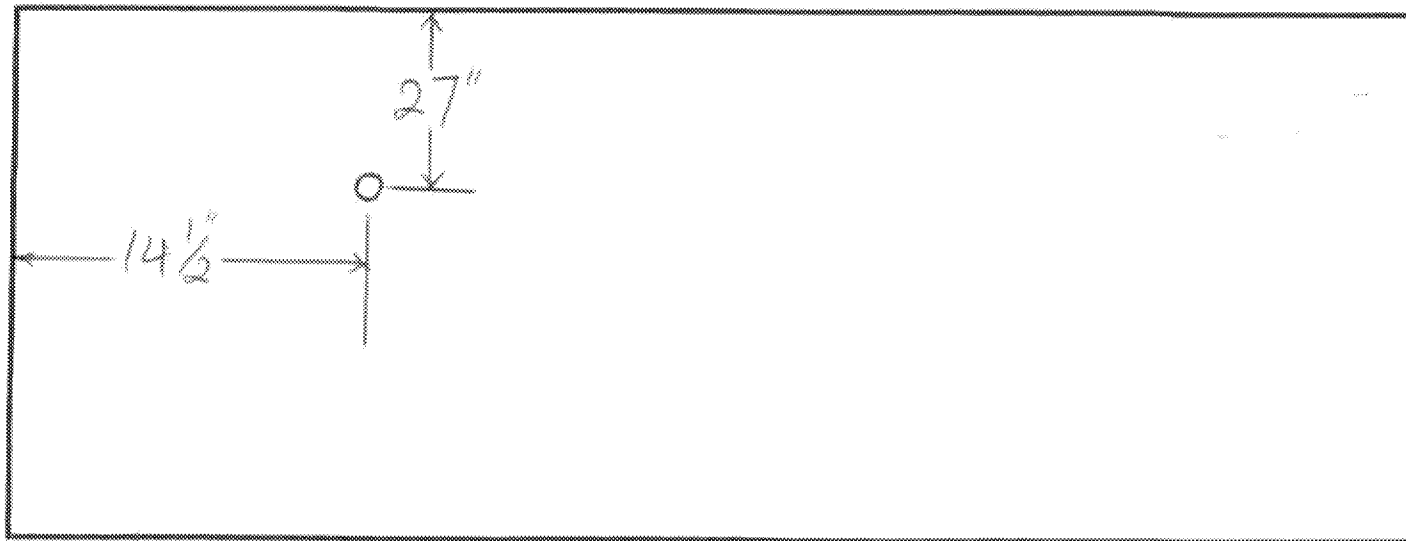




# Willbros Government Services

|              |                                     |                      |                         |
|--------------|-------------------------------------|----------------------|-------------------------|
| Location:    | Red Hill - Tank 5 WW                |                      |                         |
| Location:    | Free Product Reclamation Test Ports |                      |                         |
| Description: | Tank # 5                            | Row or Course - # 26 | Sheet No - 006 Plate 15 |

Top

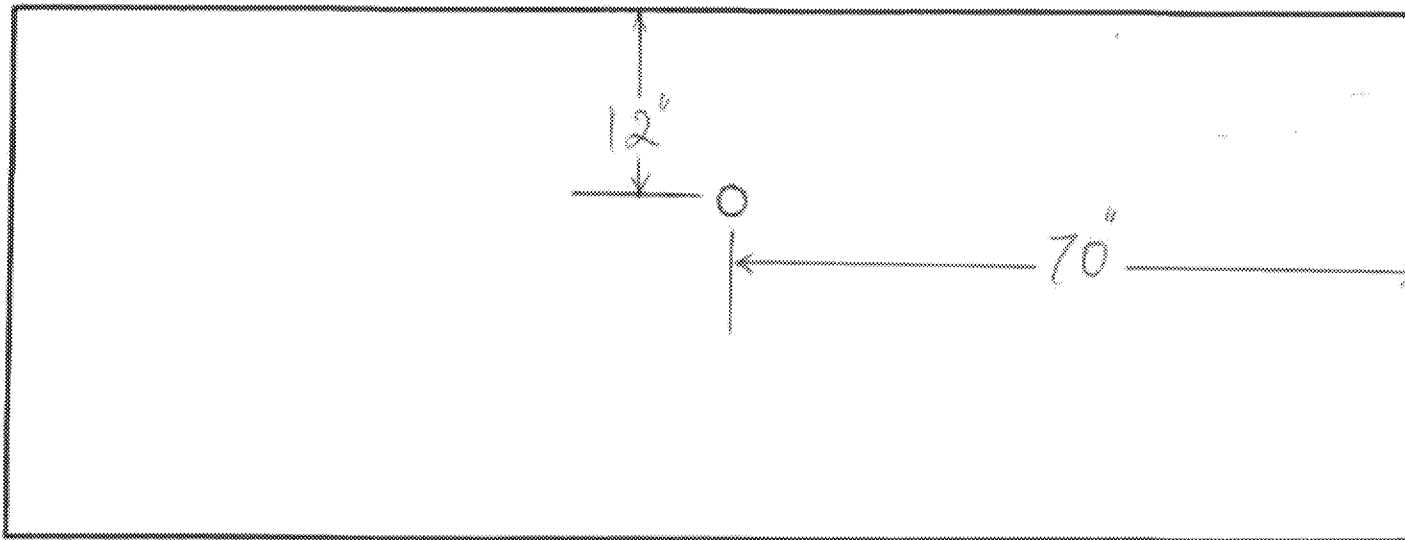




# Willbros Government Services

|              |                                     |                    |                         |
|--------------|-------------------------------------|--------------------|-------------------------|
| Location:    | Red Hill - Tank 5 WW                |                    |                         |
| Location:    | Free Product Reclamation Test Ports |                    |                         |
| Description: | Tank # 5                            | Row or Course - E2 | Sheet No - 007 plate 16 |

TOP

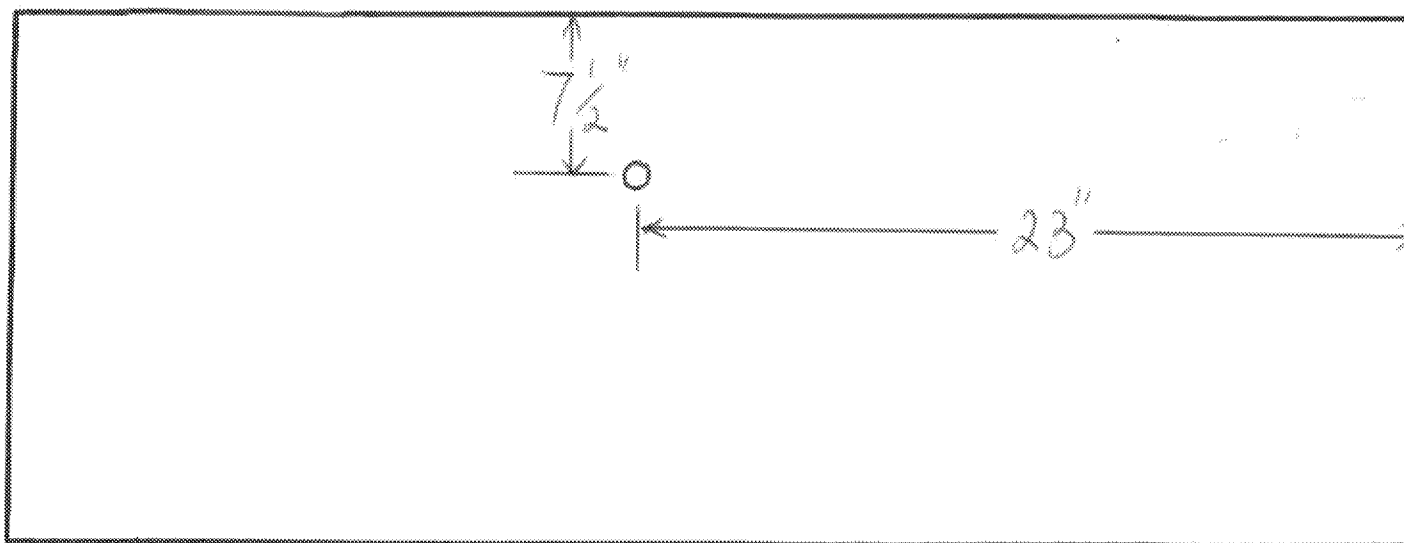




# Willbros Government Services

|              |                                     |                     |                         |
|--------------|-------------------------------------|---------------------|-------------------------|
| Location:    | Red Hill - Tank 5WW                 |                     |                         |
| Location:    | Free Product Reclamation Test Ports |                     |                         |
| Description: | Tank # 5                            | Row or Course - E 4 | Sheet No - 008 Plate 13 |

TOP

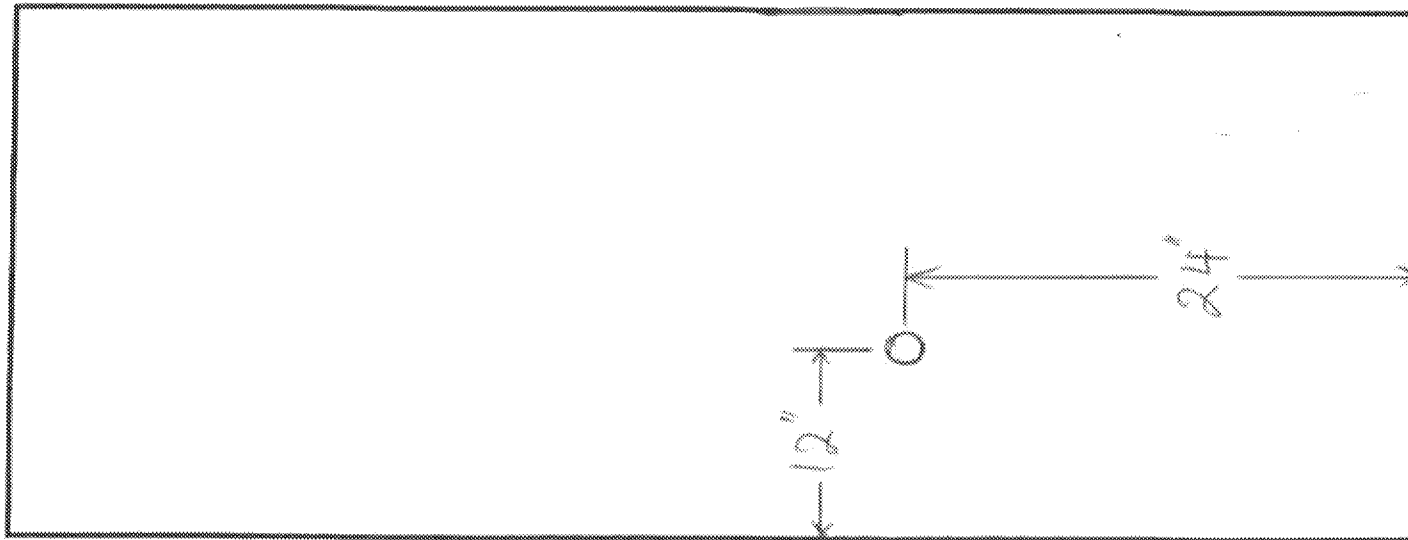




# Willbros Government Services

|              |                                     |                   |                         |
|--------------|-------------------------------------|-------------------|-------------------------|
| Location:    | Red Hill - Tank 5 WW                |                   |                         |
| Location:    | Free Product Reclamation Test Ports |                   |                         |
| Description: | Tank # 5                            | Row or Course - A | Sheet No - 009 Plate 68 |

TOP

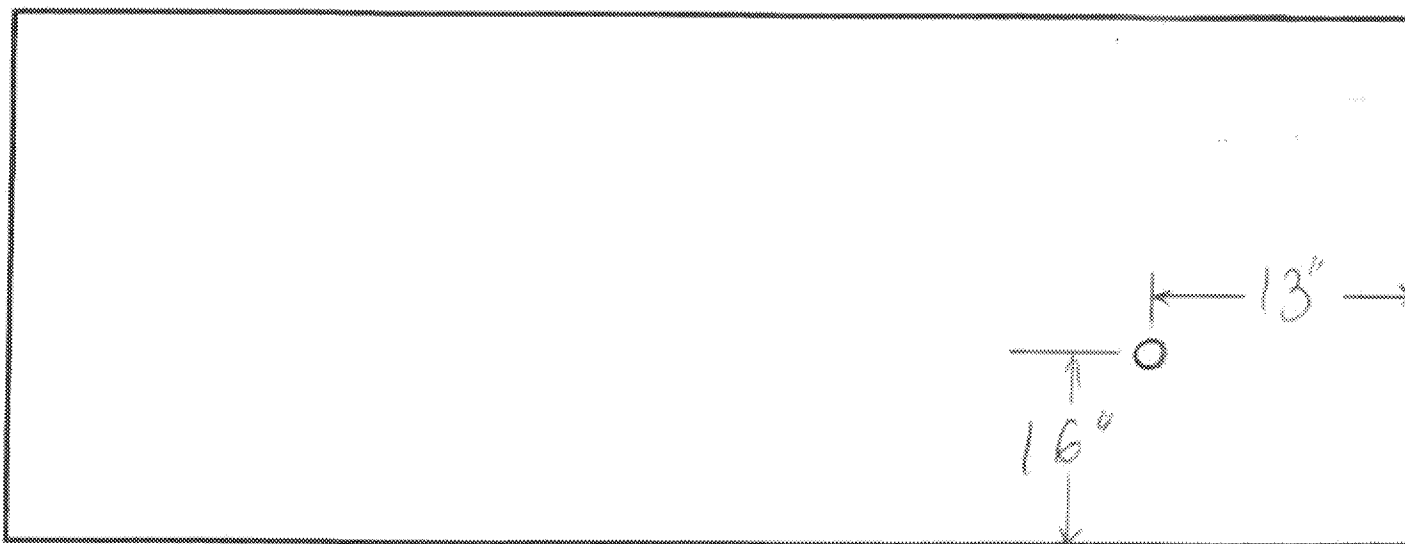




# Willbros Government Services

|              |                                     |                     |                        |
|--------------|-------------------------------------|---------------------|------------------------|
| Location:    | Red Hill - Tank 5 WW                |                     |                        |
| Location:    | Free Product Reclamation Test Ports |                     |                        |
| Description: | Tank # 5                            | Row or Course - # 3 | Sheet No - 010 Plate 3 |

Top

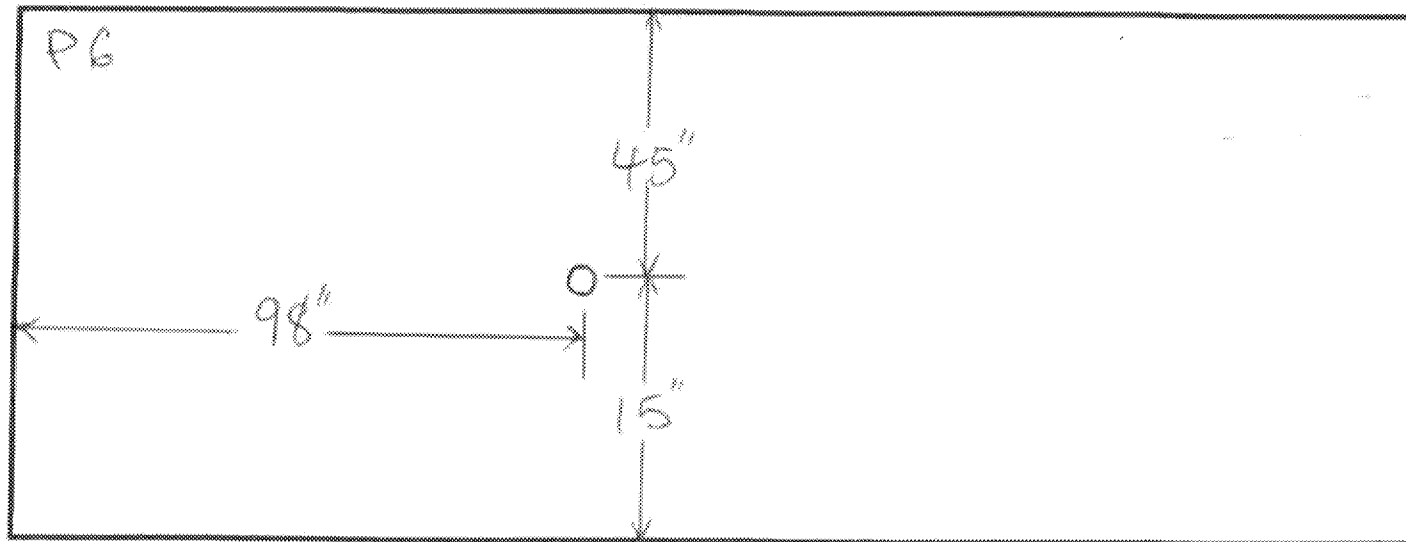




# Willbros Government Services

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|--------------|-------------------------------------|----------------------|------------------------|
| Location:    | Red Hill - Tank 5 WW                |                      |                        |
| Location:    | Free Product Reclamation Test Ports |                      |                        |
| Description: | Tank # 5                            | Row or Course - 3 11 | Sheet No - 071 Plate 6 |

TOP



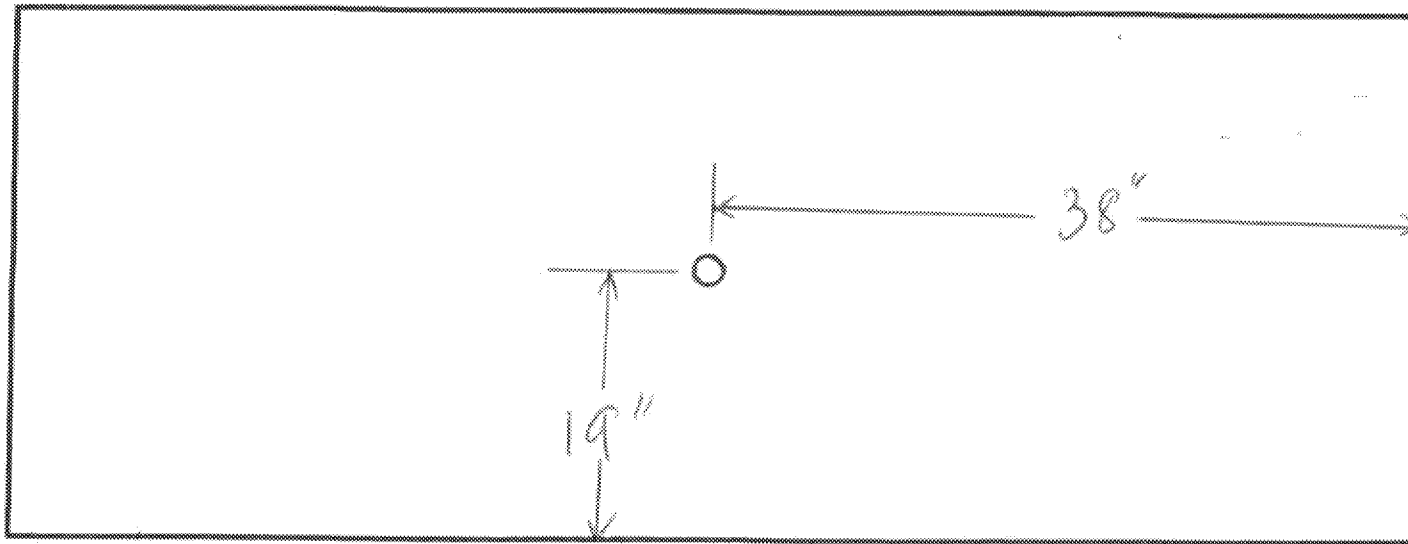




# Willbros Government Services

|              |                                     |                    |                        |
|--------------|-------------------------------------|--------------------|------------------------|
| Location:    | Red Hill - Tank 5 WW                |                    |                        |
| Location:    | Free Product Reclamation Test Ports |                    |                        |
| Description: | Tank # 5                            | Row or Course - E3 | Sheet No - 012 Plate 6 |

TOP

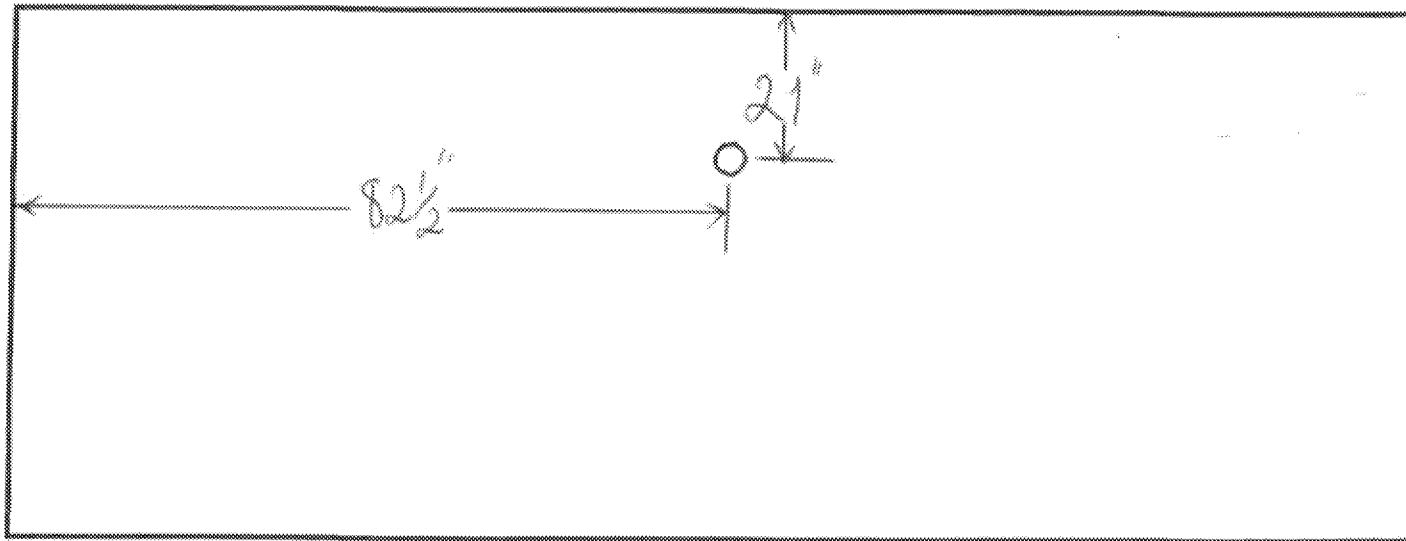




# Willbros Government Services

|              |                                     |                     |                        |
|--------------|-------------------------------------|---------------------|------------------------|
| Location:    | Red Hill - Tank 5 WW                |                     |                        |
| Location:    | Free Product Reclamation Test Ports |                     |                        |
| Description: | Tank # 5                            | Row or Course - E 2 | Sheet No - 013 Plate 3 |

TOP





## Potential Free Product Reclamation Photo's

|                |                       |                |   |
|----------------|-----------------------|----------------|---|
| TASK ORDER #:  | N 62583-09-D-0132/003 | PROJECT TITLE: | CLEAN, INSPECT & REPAIR TANKS 5 & 17 RED HILL COMPLEX |
| WGS PROJECT #: | 54118 WW              | DATE:          | OCTOBER 28 & 29, 2014                                 |

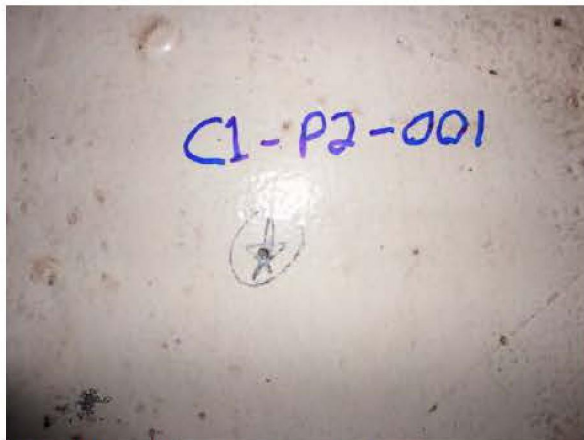
### SITE PHOTOGRAPHS



Port 001- C1 Plate 2; Located



Port 001- C1 Plate 2; Vacuumed



Port 001- C1 Plate 2; Drilled



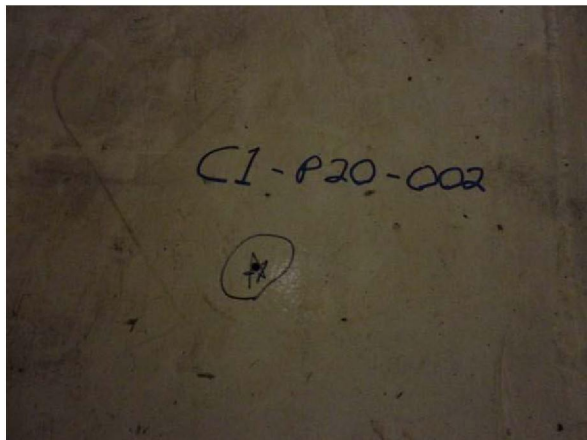
Port 001- C1 Plate 2; Air Monitoring



Port 002- C1 Plate 20; Located



Port 002- C1 Plate 20; Vacuumed



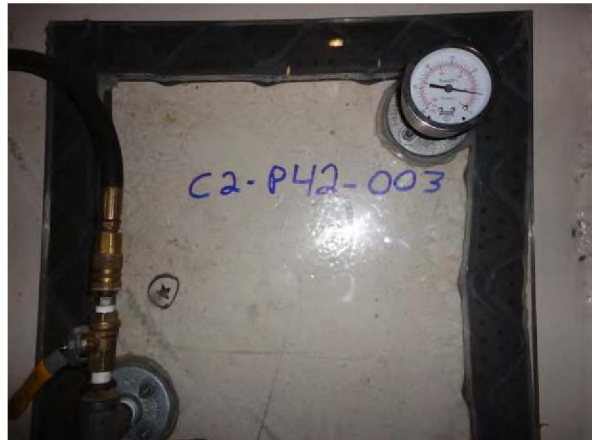
Port 002- C1 Plate 20; Drilled



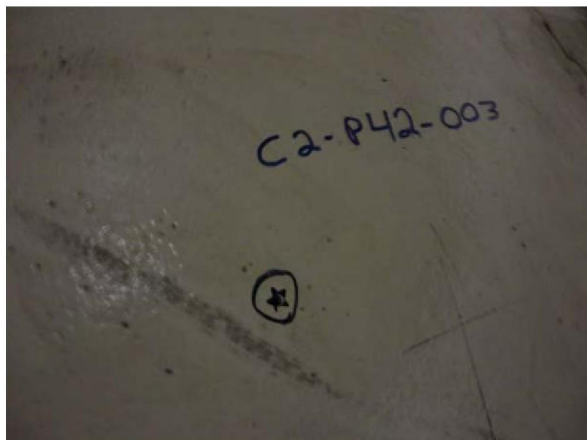
Port 002- C1 Plate 20; Air Monitoring



Port 003- C2 Plate 42; Located



Port 003- C2 Plate 42; Vacuumed

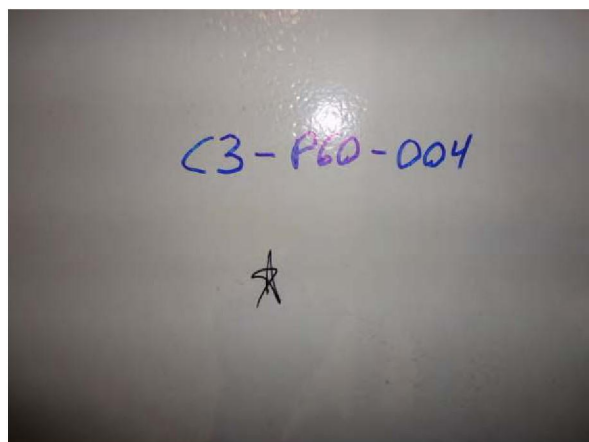


Port 003- C2 Plate 42; Drilled



Port 003- C2 Plate 42; Air Monitoring

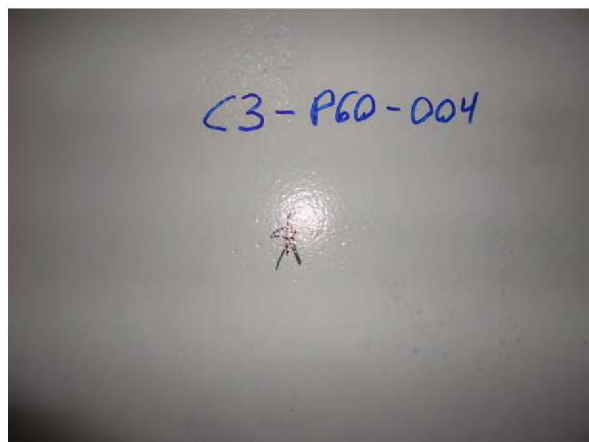




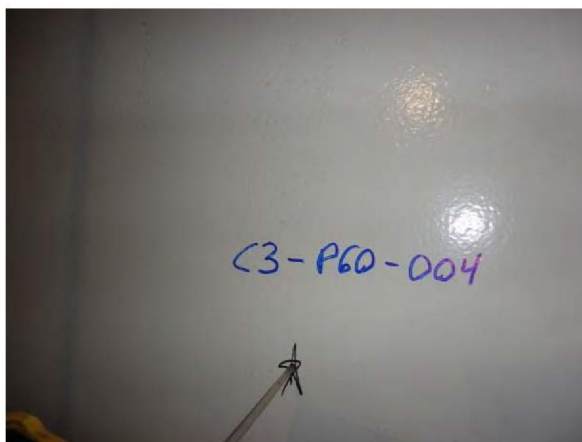
Port 004- C3 Plate 60; Located



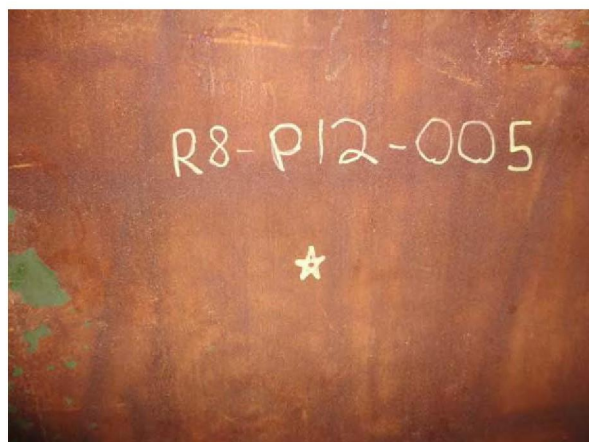
Port 004- C3 Plate 60; Vacuumed



Port 004- C3 Plate 60; Drilled



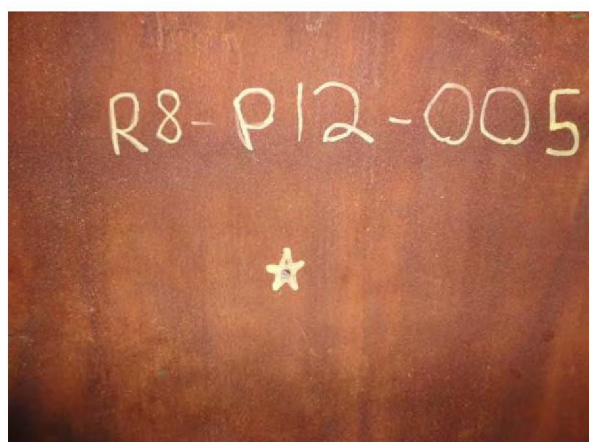
Port 004- C3 Plate 60; Air Monitoring



Port 005- R8 Plate 12; Located



Port 006- R26 Plate 15; Located



Port 005- R8 Plate 12; Drilled



Port 006- R26 Plate 15; Drilled



Port 005- R8 Plate 12; Vacuumed

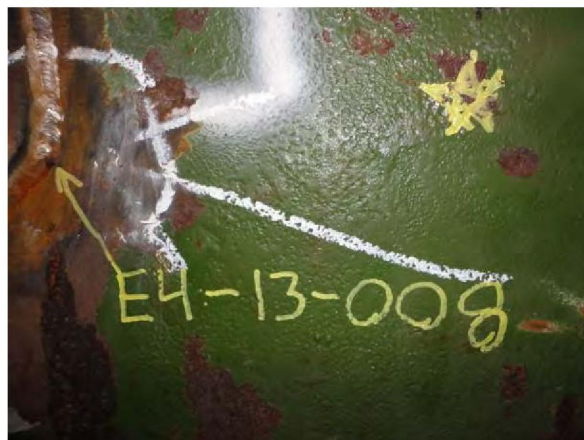


Port 006- R26 Plate 15; Vacuumed

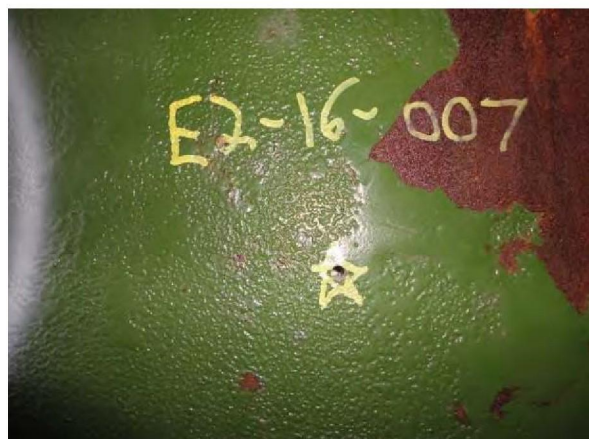




Port 007- E2 Plate 16; Located



Port 008- E4 Plate 13; Located



Port 007- E2 Plate 16; Drilled



Port 008- E4 Plate 13; Drilled



Port 007- E2 Plate 16; Vacuumed



Port 008- E4 Plate 13; Vacuumed





Port 009- A Plate 68; Located



Port 010- R3 Plate 3; Located



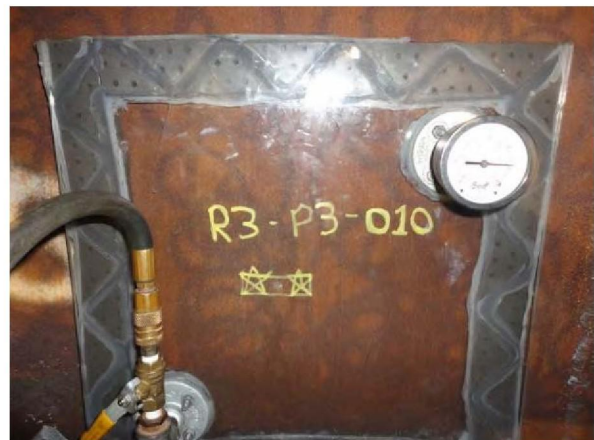
Port 009- A Plate 68; Drilled



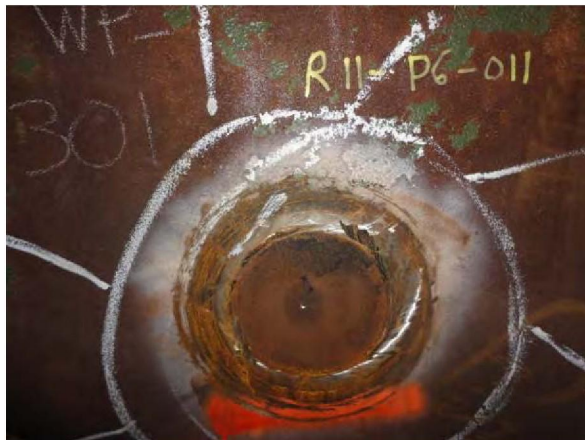
Port 010- R3 Plate 3; Drilled



Port 009- A Plate 68; Vacuumed



Port 010- R3 Plate 3; Vacuumed



Port 011- R11 Plate 6; Located



Port 012- E3 Plate 6; Located



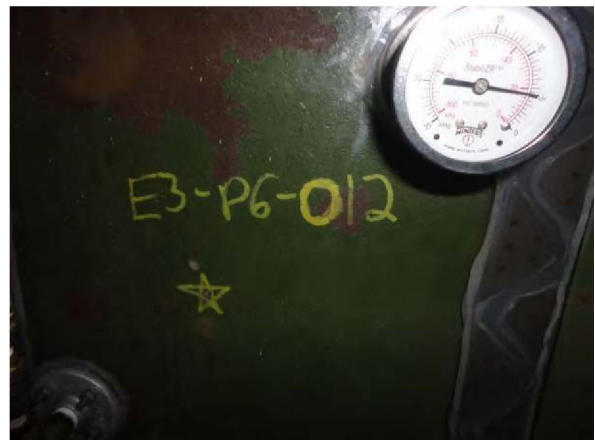
Port 011- R11 Plate 6; Under WP301



Port 012- E3 Plate 6; Drilled

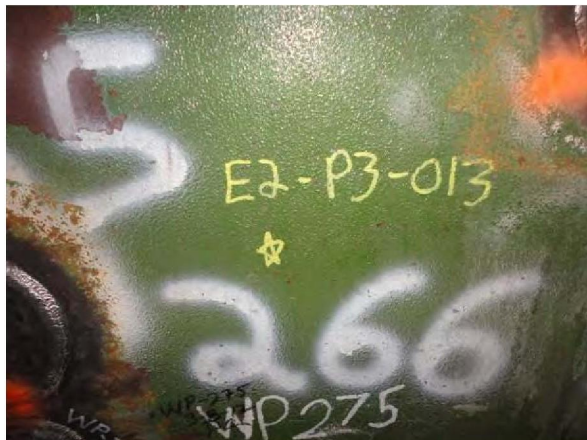


Port 011- R11 Plate 6; Vacuumed

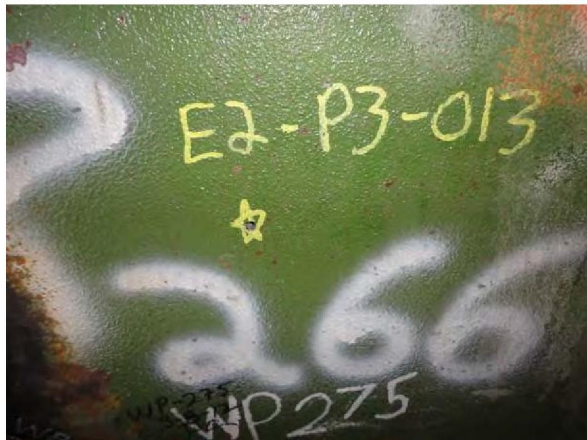


Port 012- E3 Plate 6; Vacuumed

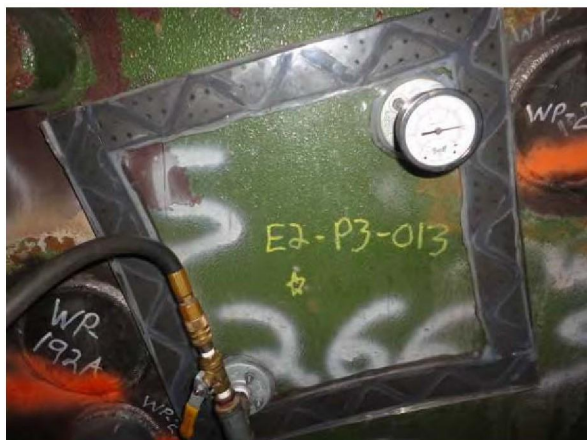




Port 013- E2 Plate 3; Located



Port 013- E2 Plate 3; Drilled



Port 013- E2 Plate 3; Vacuumed