



No. 01511

A. GENERAL INFORMATION:

1. Spill incident Number: 636964
2. Name of Location OTUMARA W/44S RISER AT THE WELLHEAD
3. Name of nearest community OTUMARA
4. State DELTA LGA WARRI SOUTH WEST
5. Type of Production facility/Installation WELLHEAD Asset owner /District NWS1

B. INCIDENT INFORMATION:

6. Details of incident
- a. Date of incident 21ST MARCH 2011
- b. Date/Period of investigation, 28TH MARCH 2011 12:13HRS
- c. Description of spill point environment

- Firmed soil [Y] ~~[X]~~
- Loose soil [Y] ~~[X]~~
- Previously excavated area [Y] ~~[X]~~
- Under water [Y] ~~[X]~~
- Swampy [Y] ~~[X]~~
- Exposed pipe surface ~~[X]~~ [N]

- d. Description of leak point (tick as applicable);
- Drilled hole, [Y] ~~[X]~~
 - Hack saw cut, [Y] ~~[X]~~
 - Explosive tear, [Y] ~~[X]~~
 - Complete Rupture [Y] ~~[X]~~
 - Inward dent, [Y] ~~[X]~~
 - Well head tampering [Y] ~~[X]~~
 - Failed Weld-on illegal hot tap valve, [Y] ~~[X]~~
 - Missing pipeline (flowline) [Y] ~~[X]~~
 - Crude oil theft (illegal bunkering) point, [Y] ~~[X]~~
 - Third party tampering with Clamp Bolt/Nut, [Y] ~~[X]~~
 - Third party tampering with valve setting, [Y] ~~[X]~~
 - Third party tampering with flange Nuts/bolts, [Y] ~~[X]~~
 - Corrosion, ~~[X]~~ [N]
- Type: _____
- Saver-pit over flow, [Y] ~~[X]~~
 - Surge vessel overflow, [Y] ~~[X]~~
 - Outward dent [Y] ~~[X]~~
 - Others (specify). _____

e. Spill point coordinates

Northing: 183708_mN

Easting: 302603_mE



C. RISK/DAMAGE ASSESSMENT

7. Type of environment of spill site:

- Land
- Swamp (DREDGED SLOT)
- water

Type of environment of which oil has spread:

- Land
- Swamp
- water

8. Distance from the nearest sensitive habitat

- Government reserved and designated protected area
- Drinking water source
- Built up area
- Farmlands
- Fish Farm/Pond
- Fishing net
- Others (specify).

[N/A ,m]
 [N/A ,m]
 [N/A ,m]
 [N/A ,m]
 [N/A ,m]

NOT APPLICABLE

9. Containment measures put in place;

- Booms
- Trench
- Dyke

[Y] [N]
 [Y] [X]
 [Y] [X]

Others: _____

10. Any pictures or video coverage?

[Y] [N]

11. Was there any disruption to the investigation?

[Y] [X]

If yes give brief description:

 N/A (NOT APPLICABLE)

D. TYPE/NUMBERS OF PROPERTIES, IF ANY, FOUND WITHIN THE AREA OF SPREAD OF OIL

A. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
		N/A (NOT APPLICABLE)			



B. Crops/Economic Trees

S/N	Types of crops	Young	Medium	Matured	Quantity	Comments
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A

NOT APPLICABLE

C. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A

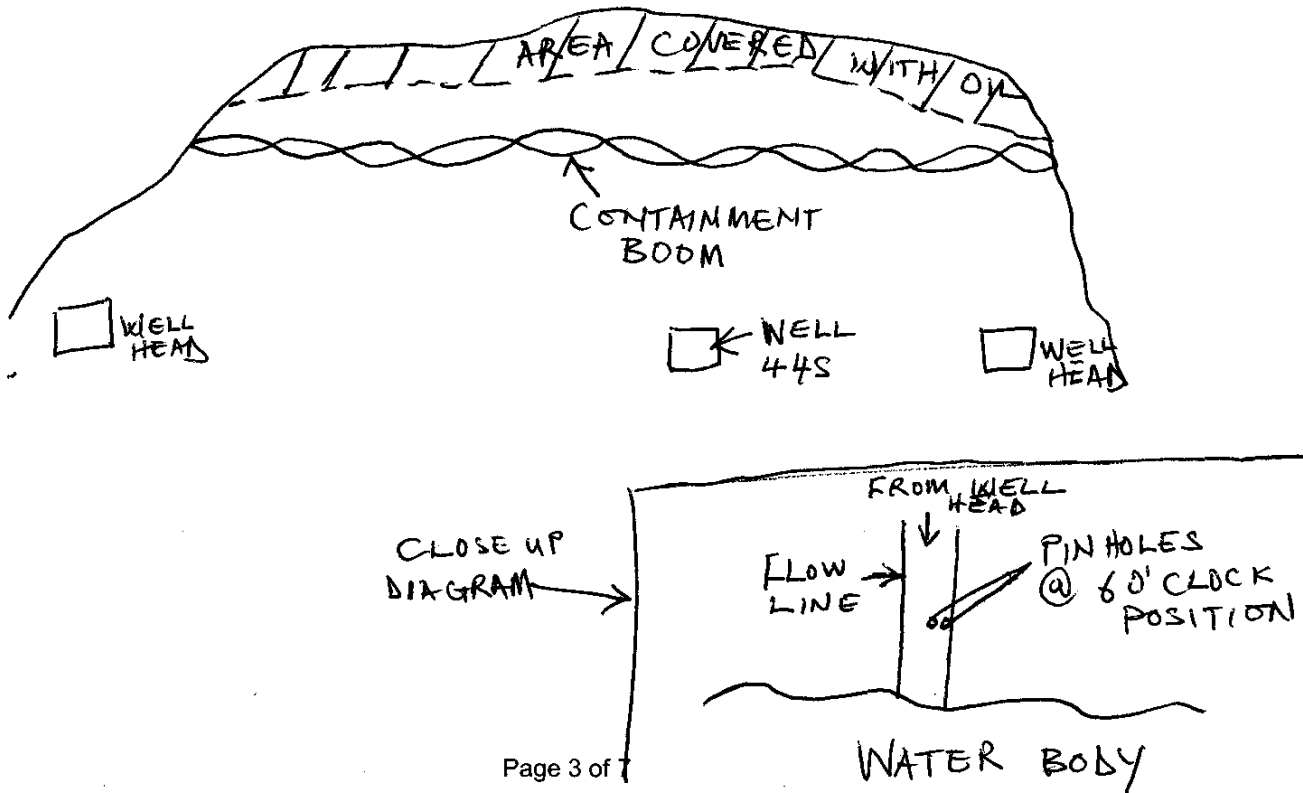
NOT APPLICABLE

D. Others (Specify) i.e. Animal Traps

S/N	Others	Description	Quantity/Size	Comments
	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A

NOT APPLICABLE

E. GRAPHIC DESCRIPTION OF LEAK POINT (Details should be contained in leak repair report)





No. 1511

G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 376 m²
- Impact within SPDC R.O.W 376 m²
 - Impact outside R.O.W N/A (NOT APPLICABLE)

18 Volume of oil recovered before completion of JIV (V_{rec}):

Recovered oil V_{recj}:

N/A	barrels
-----	---------

19. Computation of the residual volume on site

a. Computation of the volume of pooled free phase oil (on land or confined water body).

- i. Area (m²) occupied by pool of free phase oil N/A (NOT APPLICABLE)
- ii. Average Depth (m) of pool of free phase oil N/A (NOT APPLICABLE)
- iii.

Volume of pooled of free phase oil. V_{pool}:

N/A	barrels
-----	---------

iv.

b. Computation of volume of infiltrated oil in the soil (V-3).

- i. Area (m²) covered by the oil: N/A (NOT APPLICABLE)
- ii. Average Depth (m) below ground surface of infiltration of oil: N/A
- iii. Soil type: N/A (NOT APPLICABLE)
- iv. p_e (effective porosity of the soil): N/A (NOT APPLICABLE)
- v.

Volume of infiltrated oil. V_{inf}:

N/A	barrels
-----	---------

20. Computation of volume of oil on open water based on standard coloration.

	Thickness (mm)	Percentage coverage	Volume (m3)
Barely Visible	0.00004	0	
Silvery	0.00008	0	
Slight Colour	0.00015	0	
Bright Colour	0.0003	0	
Dull	0.001	0	
Dark	0.002	0	
Black oil	0.1	0	
Emulsion (30% Oil)	1	100	0.376
	Percent Total	100%	Total Volume

$376 \times \frac{1}{1000} \times 1$
 0.376 m^3
 $0.376 \times 6.29 = 2.365 \text{ bbl}$
2.365 bbl

Spill Factors from USCG FOG (2000 Edition)



Volume of oil on open water V_{wat} : 2.365 barrels

21. Calculation of evaporated volume:

- i. Oil type: BONNY MEDIUM $V_{spill} = \frac{V_{cal}}{1 - E.F} = \frac{2.365}{1 - 0.15} = 2.782 \text{ bbl}$
- ii. E-Factor: 15% $V_{vap} = E.F \times V_{spill} = 0.15 \times 2.782 = 0.417 \text{ bbl}$
- iii.

Volume of evaporated oil V_{vap} : 0.417 barrels

Oil Type		Bonny Light	Bonny Medium
		E-Factor	E-Factor
Period Since Oil Spill	<1 day	10%	5%
	1-7 days	25%	15%
	>7 days	40%	25%

9. Gross Total Estimated Spilled Volume $V_{Est}(\text{bbls}) = V_{vap}(\text{bbls}) + V_{wat}(\text{bbls}) + V_{inf}(\text{bbls}) + V_{pool}(\text{bbls}) + V_{recJ}(\text{bbls})$
 $V_{Est} = 0.417 + 2.365 + \text{NIL} + \text{NIL} + \text{NIL}$

$V_{Est}(\text{bbls}) =$ 2.782

10. Net Total Estimated Spilled Volume $V_{Est}(\text{bbls}) = V_{vap}(\text{bbls}) + 0.6 \times V_{wat}(\text{bbls}) + V_{inf}(\text{bbls}) + V_{pool}(\text{bbls}) + V_{recJ}(\text{bbls})$
 $= 0.417 + 0.6 \times 2.365 + \text{NIL} + \text{NIL} + \text{NIL} = 1.84 \text{ bbl}$

$V_{Est}(\text{bbls}) =$ 1.84 bbl

- *Calculation of the respective estimated volume is to done using the new spill estimation software on site
- *Conversion of m3 to barrel is Total volume VT (m3) x6.29
- *Emulsification factor for spill on water to consider is 60% of volume of oil.

This report was filled and signed on the 28 / 03 / 20 11 at incident site by joint investigation representative from

- Host Community
- Department of Petroleum Resources [DPR]:
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Nigeria Police Force [NPF]:
- Shell Petroleum Development Company [SPDC]:

Tick as applicable