



No. 00756

A. GENERAL INFORMATION:

1. Spill incident Number: 670756
2. Name of Location 10" EKULAMA 2 DELIVERY LINE AT EKULAMA
3. Name of nearest community EKULAMA
4. State RIVERS LGA AKUKUTORU
5. Type of Production facility/Installation PIPELINE Asset owner /District UIG/P/NESP

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 8TH JUNE, 2011
- b. Date/Period of investigation, 13TH JUNE, 2011
- c. Description of spill point environment

- | | | | |
|--|-----|-----|--|
| <input type="checkbox"/> Firmed soil | [Y] | [N] | AFTER JOINT INVESTIGATION OF THE INCIDENT SPILL WAS FOUND TO BE DUE TO HUMAN ERROR |
| <input checked="" type="checkbox"/> Loose soil | [X] | [N] | |
| <input type="checkbox"/> Previously excavated area | [Y] | [N] | |
| <input type="checkbox"/> Under water | [Y] | [N] | |
| <input checked="" type="checkbox"/> Swampy | [X] | [N] | |
| <input type="checkbox"/> Exposed pipe surface | [Y] | [N] | |

d. Description of leak point (tick as applicable);

- | | | |
|--|-----|-----|
| <input type="checkbox"/> Drilled hole, | [Y] | [N] |
| <input type="checkbox"/> Hack saw cut, | [Y] | [N] |
| <input type="checkbox"/> Explosive tear, | [Y] | [N] |
| <input type="checkbox"/> Complete Rupture | [Y] | [N] |
| <input type="checkbox"/> Inward dent, | [Y] | [N] |
| <input type="checkbox"/> Well head tampering | [Y] | [N] |
| <input type="checkbox"/> Failed Weld-on illegal hot tap valve, | [Y] | [N] |
| <input type="checkbox"/> Missing pipeline (flowline) | [Y] | [N] |
| <input type="checkbox"/> Crude oil theft (illegal bunkering) point, | [Y] | [N] |
| <input type="checkbox"/> Third party tampering with Clamp Bolt/Nut, | [Y] | [N] |
| <input type="checkbox"/> Third party tampering with valve setting, | [Y] | [N] |
| <input type="checkbox"/> Third party tampering with flange Nuts/bolts, | [Y] | [N] |
| <input type="checkbox"/> Corrosion, | [Y] | [N] |

Type: _____

- | | | |
|--|-----|-----|
| <input type="checkbox"/> Saver-pit over flow, | [Y] | [N] |
| <input type="checkbox"/> Surge vessel overflow, | [Y] | [N] |
| <input type="checkbox"/> Outward dent | [Y] | [N] |
| <input type="checkbox"/> Others (specify). <u>EXTERNAL TEAR DUE TO CONSTRUCTION DAMAGE</u> | [Y] | [N] |

e. Spill point coordinates (MINNA MID-BELT)

Northing: 60928.640m

Easting: 467327.30m



No. 0756

C. RISK/DAMAGE ASSESSMENT.

7. Type of environment of spill site:

- Land
- Swamp
- 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 [~~Nil~~,m]
 - Drinking water source [~~Nil~~,m]
 - Built up area [~~Nil~~,m]
 - Farmlands [~~Nil~~,m]
 - Fish Farm/Pond [~~Nil~~,m]
 - Fishing net [~~Nil~~,m]
 - Others (specify). [~~Nil~~,m]
- NOT APPLICABLE

9. Containment measures put in place;

- Booms [] [N]
- Trench [Y] []
- Dyke [Y] []

Others: _____

10. Any pictures or video coverage? [] [N]

11. Was there any disruption to the investigation? [Y] []

If yes give brief description:

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
	NONE WITHIN AREA OF IMPACT				



No. 0756

B. Crops/Economic Trees

S/N	Types of crops	Young	Medium	Matured	Quantity	Comments
	NONE	WITHIN	AREA	OF	IMPACT	

C. Fish/Nets/Ponds

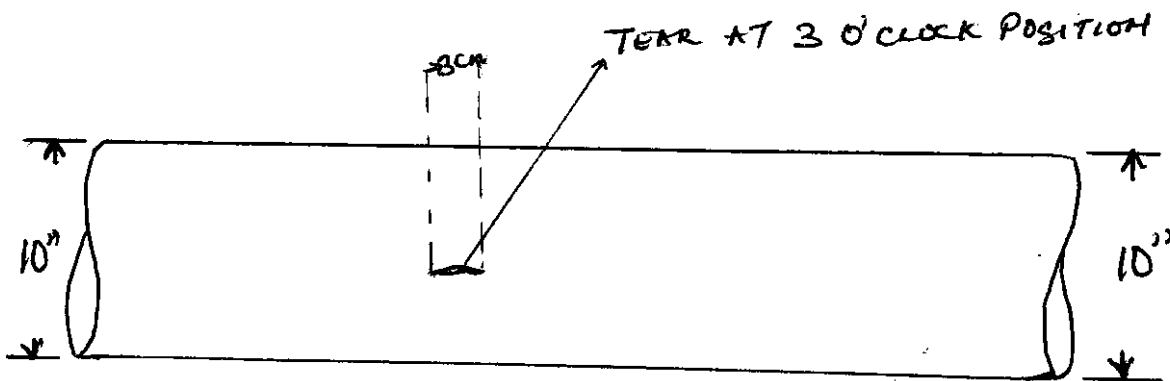
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	NONE	WITHIN	AREA	OF IMPACT

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

S/N	Others	Description	Quantity/Size	Comments
	NONE	WITHIN	AREA	OF IMPACT

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

A SECTION OF 10" EKULAMA 2 PIPELINE SHOWING AT 3 O'CLOCK POSITION





F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

E. Coordinates (IMPACTED) AREA BOUNDARY COORDINATES - MINNA MID BELT)

S/N	Northing	Easting
A1	60871.511	466843.357
A2	60901.653	466838.597
2	46690 61019.916	466903.717
15	61034.995	467465.374
20	61009.531	467705.583
22	60957.822	467709.376
35	60798.602	467234.606
37	60805.674	467080.528
40	60849.301	466916.333



No. 0756

G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 8.6839 Ha (86839 m²)
- Impact within SPDC R.O.W 62.4646 Ha (62464.6 m²)
 - Impact outside R.O.W 24.3748 Ha (24,374.8 m²)

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

Recovered oil V_{recj} :	<u>NIL</u>	barrels
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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 NOT APPLICABLE
- ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE
- iii.

Volume of pooled of free phase oil. V_{pool} :	<u>NIL</u>	barrels
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iv.

b. Computation of volume of infiltrated oil in the soil (V_3).

- i Area (m²) covered by the oil: 80,024
- ii Average Depth (m) below ground surface of infiltration of oil: 0.0002
- iii Soil type: CLAY
- iv. P_e (effective porosity of the soil): 8%
- v.

Volume of infiltrated oil. V_3 :	<u>8.18</u>	barrels
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20. Computation of volume of oil on open water based on standard coloration.

	Thickness (mm)	Percentage coverage	Volume (m ³)
Barely Visible	0.00004		
Silvery	0.00008		
Slight Colour	0.00015		
Bright Colour	0.0003		
Dull	0.001		
Dark	0.002		
Black oil	0.1	<u>100%</u>	<u>0.7 m³</u>
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>4.4</u> bbl

AREA OF IMPACT ON
 OPEN WATER IS
6815 m²

Spill Factors from USCG FOG (2000 Edition)



Volume of oil on open water V_{wat} 4.4 barrels

21. Calculation of evaporated volume:

- i. Oil type: BONNY LIGHT
- ii. E-Factor: 25%
- iii.

Volume of evaporated oil V_{vap} 4.22 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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$
 $= 4.22 + 4.4 + 8.18 + N/A + N/A$

$V_{Est}(bbls) = 16.8 \text{ B BLS}$

10. Net Total Estimated Spilled Volume $VEst(bbls) = V_{vap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$
 $= 4.22 + 0.6 * 4.4 + 8.18 + N/A + N/A$

$VEst(bbls) = 15 \text{ B BLS}$

*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 13 / 08 / 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