



No. 00106

**A. GENERAL INFORMATION:**

1. Spill incident Number: 653037
2. Name of Location 36" RUMUEKPE - NKPOKY TRUCK LINE AT ALUZI
3. Name of nearest community ALUZI
4. State RIVERS LGA IKWERRE
5. Type of Production facility/Installation PIPELINE Asset owner /District MIG/P/NESP

**B. INCIDENT INFORMATION:**

6. Details of incident

- a. Date of incident 27TH APRIL, 2011
- b. Date/Period of investigation, 29TH APRIL, 2011
- c. Description of spill point environment

- |  |     |     |
|--|-----|-----|
| <input type="checkbox"/> Firmed soil               | [Y] | [N] |
| <input type="checkbox"/> Loose soil                | [X] | [N] |
| <input type="checkbox"/> Previously excavated area | [X] | [N] |
| <input type="checkbox"/> Under water               | [Y] | [N] |
| <input type="checkbox"/> Swampy                    | [Y] | [N] |
| <input type="checkbox"/> Exposed pipe surface      | [Y] | [N] |

**AFTER JOINT INVESTIGATION OF THE INCIDENT SPILL WAS FOUND TO BE DUE**

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,         | [X] | [N] |
| <input type="checkbox"/> Missing pipeline (flowline)                   | [Y] | [N] |
| <input type="checkbox"/> Crude oil theft (illegal bunkering) point,    | [X] | [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] |

**TO THIRD PARTY INTERFERENCE**

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). _____ |     |     |

e. Spill point coordinates **(MINNA MID-BELT)**

Northing:

104882.248m  
104579.347m

Easting:

496821.763m  
497597.498m



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

9. Containment measures put in place;

- Booms [Y] [~~N~~]
- Trench [Y] [~~N~~]
- Dyke [Y] [~~N~~]
- Others: NOT APPLICABLE

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
	<b>NONE WITHIN AREA OF IMPACT</b>				



B. Crops/Economic Trees

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

C. Fish/Nets/Ponds

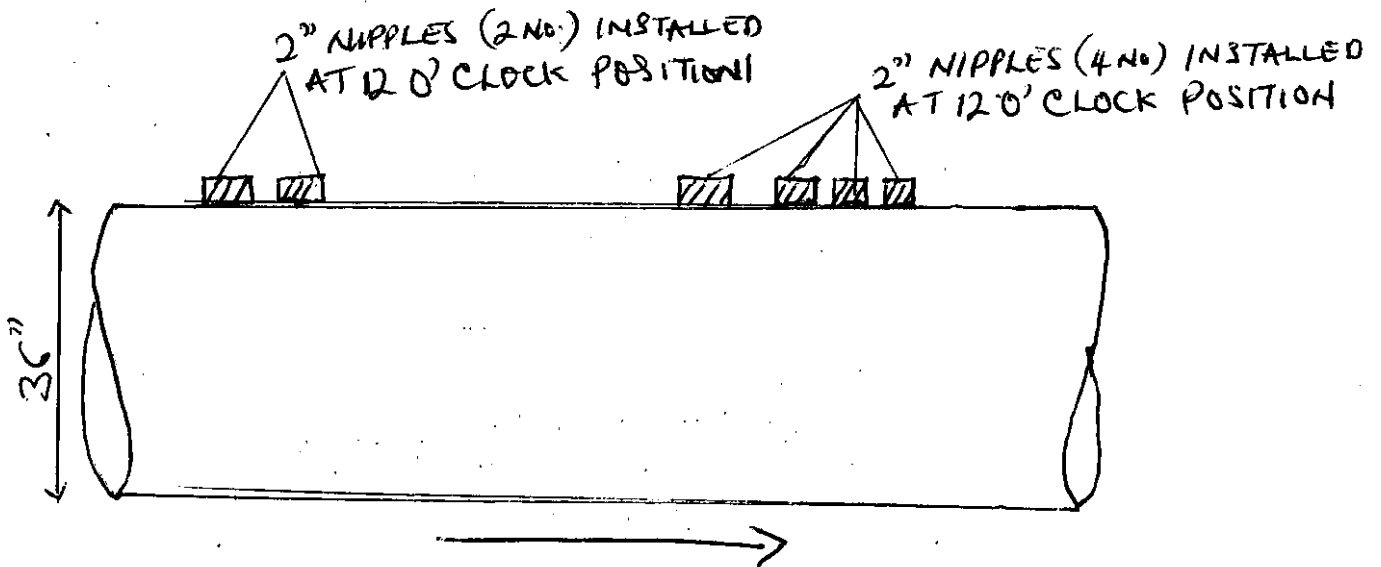
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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 36" RUMUEKPE-NKPOKU TRUCK LINE AT ALU4  
SHOWING SIX ILLEGAL BUNKERING POINTS FITTING





THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 653037

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

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

S/N	Northing		Easting	
3	104583.678		497594.653	
4	104571.816	24	104511.348	497637.836
5	104570.730	25	104505.182	497637.547
6	104557.683	26	104499.03	497665.233
7	104557.676	27	104489.734	497668.314
8	104542.221	28	104480.467	497708.822
9	104548.358	29	104483.539	497719.428
10	104539.098	30	104477.359	497729.893
11	104529.896	31	104468.15	497723.709
12	104554.611	32	104474.352	497665.225
13	104557.326	33	104489.828	497664.939
14	104570.037	34	104505.218	497637.531
15	104568.974	35	104520.665	497636.727
16	104577.753	36	104529.933	497605.062
17	104574.593	37	104571.660	497604.301
18	104533.005	38	104576.283	497708.311
19	104529.918	39	104580.920	497714.466
20	104526.817	40	104582.427	497726.783
21	104523.723			497736.091
22	104514.471			497757.403
23	104508.29			497766.794



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**G INCIDENT INFORMATION:**

**17 Impacted Area Details**

- a. Total calculated area of impact 2227 m<sup>2</sup>
- Impact within SPDC R.O.W 2227 m<sup>2</sup>
  - Impact outside R.O.W NIL

**18 Volume of oil recovered before completion of JIV (V<sub>rec</sub>):**

Recovered oil V <sub>rec</sub> :	<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 (m<sup>2</sup>) 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 <sub>pool</sub> :	<u>NIL</u>	barrels
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iv.

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

- i Area (m<sup>2</sup>) covered by the oil: 2227
- ii Average Depth (m) below ground surface of infiltration of oil: 0.005
- iii Soil type: CLAY
- iv. P<sub>e</sub> (effective porosity of the soil): 8%

v.	<u>5.6</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 <sup>3</sup> )
Barely Visible	0.00004		
Silvery	0.00008	<u>NOT</u>	
Slight Colour	0.00015		
Bright Colour	0.0003		
Dull	0.001	<u>APPLICABLE</u>	
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>NIL</u> bbl

Spill Factors from USCG FOG (2000 Edition)



Volume of oil on open water,  $V_{wat}$ : NIL barrels

21. Calculation of evaporated volume:

- i. Oil type: BONNY MEDIUM
- ii. E-Factor: 15%
- iii.

Volume of evaporated oil,  $V_{vap}$ : 1 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  $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) = 1 + NIL + 5.6 + NIL + NIL = 6.6 \text{ BARREL}$

10. Net Total Estimated Spilled Volume  $V_{Est}(bbls) = V_{vap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) = 1 + NIL + 5.6 + NIL + NIL = 6.6$

$V_{Est}(bbls) = 6.6 \text{ BARREL}$

\*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 29 / 04 / 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*