

**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0124 728747

(Note: As practicable as possible the JIT report is to be signed in the field by all the participating parties)

**A. GENERAL INFORMATION:**

1. Spill incident Number: 728747 2. Type of incident\* OIL SPILL  
 3. Name of Location 8" UMUECHAM - NKPOKU PIPELINE  
 4. Name of nearest community IGWURUTA 5. State: RIVERS 6. LGA \_\_\_\_\_  
 7. Type of Production facility/Installation PIPELINE 8. Asset owner/District UIG/PI/NESP

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 18<sup>TH</sup> OCTOBER, 2011  
 b. Date/Period of investigation: 21<sup>ST</sup> OCTOBER, 2011

c. Description of spill point environment

- Firmed soil                       Loose soil                       Previously excavated area  
 Under water                       Swampy                       Exposed pipe surface  
 Well Platform (on Water)                       Rig

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

- Drilled hole                       Hack saw cut                       Explosive tear,  
 Complete Rupture                       Inward dent,                       Well head tampering  
 Failed Weld-on illegal hot tap valve,                       Missing Pipeline/Flowline)  
 Crude oil theft (illegal bunkering) point,                       Third party tampering with Clamp  
 Third party tampering with valve setting,                       Third party tampering with flange,  
 External Corrosion                       Internal Corrosion  
 Saver-pit over flow,                       Surge vessel overflow,  Outward dent  
 Flare System/Bund wall Failure                       Valve Failure                       com unit failure  
 Cold vent                       Relief valve failure                       Others (specify) NOT APPLICABLE

e. Incident due to:

- Third party interference                       Operational                       Others (specify NOT APPLICABLE)

f. Spill point coordinates

Measuring unit <u>METER</u> <u>MINNA MID-BELT.</u>	
Northing:  <u>108643.61</u>	Easting:  <u>506966.95</u>

\*This can be: a) Oil Spill b) Drilling fluid/Chemical c) Siltation d) construction e) Encroachment f) Fire,

**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**

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**C. RISK ASSESSMENT**

10. Type of environment:

- Land       Swamp       Water       Seasonal swamp

i. Type of environment to which oil has spread:

- Land       Swamp       Water       River (identify) \_\_\_\_\_

ii. Weather condition

- Raining       Sunny

11. 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 [ 5 ,m]  
 Fish Farm/Pond [ Nil ,m]  
 Fishing net [ Nil ,m]  
 Others (specify). NOT APPLICABLE.

12. Containment measures put in place;

- Booms       Trench       Dyke

Others: NOT APPLICABLE.

13. Any pictures or video coverage? [Y]  [N]

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

If yes give brief description:

NOT APPLICABLE

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

15. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
	<u>NONE WITHIN AREA OF IMPACT.</u>				

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0124 728747

16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
✓	CASSAVA	NUL	✓	✓	10m x 1m	
NONE WITHIN AREA OF IMPACT.						

17. Fish/Nets/Ponds

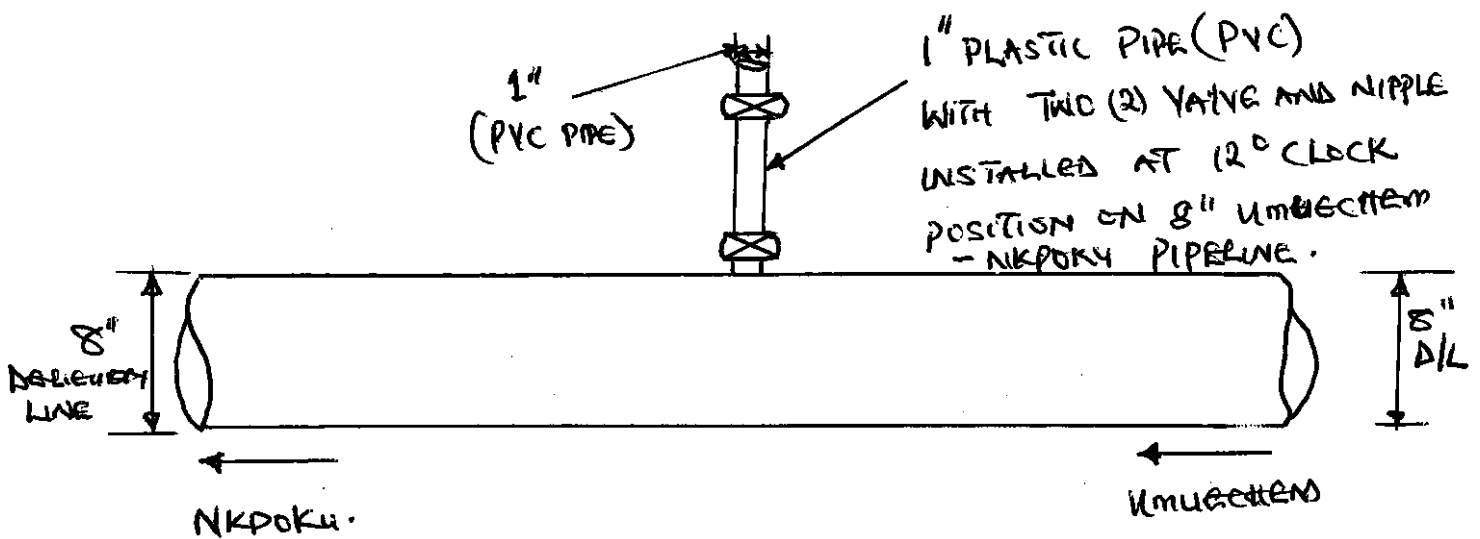
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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

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

E. GRAPHIC DESCRIPTION OF LEAK POINT (Overview sketch of the site should be added as an appendix)

8" Umuechem - NKPOKY PIPELINE AT IGWURITA WITH



**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0124 728 747

**F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION**  
 19. Impacted area boundary Coordinates (If more than 12 points, Attach as an appendix 2)

S/N	Northing	Easting
124	108640.54	506966.95
125	108640.55	506963.87
126	108643.64	506957.71
127	108649.79	506954.64
128	108659.00	506957.75
129	108658.99	506960.83
130	108662.06	506960.83
131	108677.43	506954.71
132	108680.50	506957.79
133	108686.64	506957.81
135	108680.49	506960.88
136	108680.49	506963.96
137	108652.82	506970.06

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 0.04 Ha
- Impact within SPDC R.O.W \_\_\_\_\_
- Impact outside R.O.W \_\_\_\_\_

21. Volume of oil recovered before completion of JIV ( $V_{recJ}$ ):

Recovered oil $V_{recJ}$ :	<u>NIL</u>	barrels
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20. Computation of the residual volume on site

- a. Computation of volume of pool of free phase oil (on land or confined water body). 6 m<sup>2</sup>
- Area (m<sup>2</sup>) occupied by pool of free phase oil \_\_\_\_\_
  - Average Depth (m) of pool of free phase oil 0.02 m
  - Emulsification factor: NIL

iv. Volume of pool of free phase oil. $V_{pool}$ :	<u>0.75</u>	barrels
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**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0124 728747

b. Computation of volume of infiltrated oil in the soil ( $V_{inf}$ ).

- i. Area ( $m^2$ ) covered by the oil: 400  $m^2$
- ii. Area of the pool of free phase oil in touch with soil: 0.01
- iii. Average Depth (m) below ground surface of infiltration of oil: \_\_\_\_\_
- iv. Soil type: CLAY
- v.  $P_e$  (effective porosity of the soil): 8%

iv. Volume of infiltrated oil. $V_{inf}$	2.01	barrels
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21. Computation of volume of oil on open water based on standard coloration.

- i. Total area of oil on open water: NOT APPLICABLE
- ii. Table of average depth of oil on water based on coloration \*

	Thickness (mm)	Percentage coverage	Volume (m3)
Barely Visible	0.00004	<b>NOT APPLICABLE</b>	
Silvery	0.00008		
Slight Color	0.00015		
Bright Color	0.0003		
Dull	0.001		
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>NIL</u> bbl

iii. Volume of oil on open water. $V_{wat}$	NIL	barrels
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22. Calculation of evaporated volume:

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

iii. Volume of evaporated oil. $V_{evap}$	0.50	barrels
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Evaporation Factors (E-Factor) for SPDC Crude oil			
Oil Type	Days on site	Bonny Light	Bonny Medium
Period Since Oil Spill	< 1 day	10%	5%
	1-7 days	25%	15%
	> 7 days	40%	25%

23. Gross Total Estimated Spilled Volume  $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$   
 $0.50 + NIL + 2.01 + 0.75 + NIL = 3.26 \text{ BARRELS}$

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0124 728747

$$V_{Est}(bbls) = 0.50 + NIL + 2.01 + 0.75 + NIL = 3.26 \text{ Barrels}$$

24. Net Total Estimated Spilled Volume  $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec1}(bbls)$

$$V_{Est}(bbls) = 3.26 \text{ Barrels}$$

\*Calculation of the respective estimated volume is to be done using the new spill estimation software on site

\*Conversion of m3 to barrels is Total volume VT (m3) x 6.29

\*Emulsification factor for spill on water to consider is 60% of volume of oil.

25. GENERAL STATUS OF THE SITE

A. Joint investigation of the incident site found that there is no residual impact After the initial response and therefore recommend that the site be closed out

B. Investigation of the incident site showed that there is residual impact on site requiring further works

26 Signatories

This report was filled and signed on the 21/10/2011 at incident site by joint investigation representatives 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

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0124  
728747

20. Appendix 1: Overview sketch of the site

