

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

**JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0513**

*(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: 894360      2. Type of incident\* OIL SPILL  
 3. Name of Location ORONI WELL 1 FLOWLINE  
 4. Name of nearest community OKPOLE-ENWHEA      5. State: DELTA      6. LGA ISOKO SOUTH  
 7. Type of Production facility/Installation FLOWLINE      8. Asset owner/ District NWL 2

**B. INCIDENT INFORMATION:**

**9. Details of Incident**

- a. Date of incident: 19/11/2012  
 b. Start date/time of investigation: 22/11/2012 AT 1300HRS  
 c. Investigation End date: \_\_\_\_\_

**d. Description of spill point environment**

- |   |                                     |  |
|---|-------------------------------------|--|
| <input type="checkbox"/> Firmed soil              | <input type="checkbox"/> Loose soil | <input type="checkbox"/> Previously excavated area |
| <input checked="" type="checkbox"/> Under water   | <input type="checkbox"/> Swampy     | <input type="checkbox"/> Exposed pipe surface      |
| <input type="checkbox"/> Well Platform (on Water) |                                     | <input type="checkbox"/> Rig                       |

**e. Description of leak point (tick as applicable);**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Drilled hole                                | <input type="checkbox"/> Hack saw cut   | <input type="checkbox"/> Explosive tear,                    |
| <input type="checkbox"/> Complete Rupture                            | <input type="checkbox"/> Inward dent,   | <input type="checkbox"/> Well head tampering                |
| <input type="checkbox"/> Failed Weld-on illegal hot tap valve,       |   | <input type="checkbox"/> Missing Pipeline/Flowline)         |
| <input type="checkbox"/> Crude oil theft (illegal) bunkering) point, |   | <input type="checkbox"/> Third party tampering with Clamp   |
| <input type="checkbox"/> Third party tampering with valve setting,   |   | <input type="checkbox"/> Third party tampering with flange, |
| <input type="checkbox"/> Corrosion                                   | <input type="checkbox"/> Saver-pit over flow,                                       | <input type="checkbox"/> Surge vessel overflow              |
| <input type="checkbox"/> Outward dent                                | <input type="checkbox"/> Flare System/Bund wall failure                             |   |
| <input type="checkbox"/> Valve Failure                               | <input type="checkbox"/> com unit failure   | <input type="checkbox"/> Cold vent                          |
| <input type="checkbox"/> Relief valve failure                        | <input checked="" type="checkbox"/> Others (specify) <u>FLOOD INDUCED SECONDARY</u> |   |

**f. Incident caused by:**

- Third party interference       Operational       Mystery \_\_\_\_\_

SPILL DUE TO NON REPAIR OF AN INITIAL DAMAGED FLOWLINE BRINGING OUT DEAD CRUDE.

**g. Spill point coordinates**

Measuring unit	
Northing:  <u>150970m</u>	Easting:  <u>412111m</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**

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0513 894360

**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 [        ,m]
- Drinking water source [        ,m]
- Built up area [        ,m]
- Farmlands [        ,m]
- Fish Farm/Pond [        ,m]
- Fishing net [        ,m]
- Others (specify). [        ,m]

12. Containment measures put in place:

- Booms     Trench     Dyke

Others: \_\_\_\_\_

13. Any pictures or video coverage?     [N]

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

If yes give brief description:

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**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
	NONE WITHIN AREA OF IMPACT				

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

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0513 894360

**16. Crops/Economic Trees**

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1	RUBBER	/	/	YES	LOT	/
2	PALM	/	YES	/	LOT	/
/	/	/	/	/	/	/

**17. Fish/Nets/Ponds**

S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
1	POND	NATURAL [5x3M]	1	/
/	/	/	/	/

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

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

**E. GRAPHIC DESCRIPTION OF LEAK POINT** *While detail report of the leak point should be contained in the Leak report, overview sketch of the site should be added as an appendix 1)*

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

**JOINT INVESTIGATION REPORT FOR INCIDENT NO:**

**0513 894360**

**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
	150965	412104
	150958	412108
	150958	412070
	150953	412079
	150928	412092
	150914	412111
	150907	412109
	150904	412111
	150962	412132
	150962	412162
	150936	412155
	150914	412137

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 3433.3 m<sup>2</sup>
- Impact within SPDC R.O.W NIL
- Impact outside R.O.W 3433.3 m<sup>2</sup>

21. 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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20. Computation of the residual volume on site

- a. Computation of volume of pool of free phase oil (on land or confined water body).
- i. Area (m<sup>2</sup>) occupied by pool of free phase oil NIL
  - ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE

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

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0513 894360

iii. Emulsification factor: NOT APPLICABLE

iv. 

Volume of pool of free phase oil, $V_{pool}$ :	<u>NIL</u>	barrels
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b. Computation of volume of infiltrated oil in the soil ( $V_{inf}$ ).

- i Area  $^*(m^2)$  covered by the oil: NIL
- ii Area of the pool of free phase oil in touch with soil: NIL
- iii Average Depth (m) below ground surface of infiltration of oil: NOT APPLICABLE
- iv Soil type: NOT APPLICABLE
- v  $P_e$  (effective porosity of the soil): NOT APPLICABLE

iv. 

Volume of infiltrated oil, $V_{inf}$	<u>NIL</u>	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: 3433.3 m<sup>2</sup>
- ii. Table of average depth of oil on water based on coloration\*\*

	Thickness (mm)	Percentage coverage	Volume (m <sup>3</sup> )
Barely Visible	0.00004	<u>30%</u>	<u>0.0000411996</u>
Silvery	0.00008	<u>60%</u>	<u>0.0001647984</u>
Slight Color	0.00015	<u>10%</u>	<u>0.0000514995</u>
Bright Color	0.0003		
Dull	0.001		
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>0.00025713</u>

iii. 

Volume of oil on open water, $V_{wat}$ :	<u>0.001619</u>	barrels
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22. Calculation of evaporated volume:

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

iii. 

Volume of evaporated oil, $V_{evap}$ :	<u>0.00</u>	barrels
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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%

\*\* If area is not same as the total area of impact, please indicate in the overview sketch  
 \*\* Spill Factor from USCG FOG (2000 Edition)

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

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0513 894 360

<b>23. Gross Total Estimated Spilled Volume</b>	
$V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{air}(bbls) + V_{pool}(bbls) + V_{rec}(bbls)$	=
$V_{Est}(bbls) =$	0.0019 BBLs
<b>24. Net Total Estimated Spilled Volume</b>	
$V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{air}(bbls) + V_{pool}(bbls) + V_{rec}(bbls)$	
$V_{Est}(bbls) =$	0.0013 BBLs $\approx$ 0.1 BBLs

\*Calculation of the respective estimated volume is to be done on site as far as practicable using the new spill volume 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 <input type="checkbox"/>
B. Investigation of the incident site showed that there is residual impact on site requiring further works <input checked="" type="checkbox"/>

**26 REPRESENTATIVES**

This report was filled and signed on the 22/11/2012 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: 0513 894360

27. Appendix I: Overview sketch of the site



