

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO.: 0096

(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: 867828 2. Type of incident\* OIL SPILL  
 3. Name of Location 16 INCH UZERE - ERIEMU TRUNKLINE  
 4. Name of nearest community IYEDG 5. State: DELTA 6. LGA ISOKO SOUTH  
 7. Type of Production facility/Installation TRUNKLINE 8. Asset owner/District PIPELINE

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 17/9/2012  
 b. Date/Period of investigation: 18/9/2012 AT 1420 HRS  
 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) ILLEGAL HOT TAP  
 e. Incident due to:  
 Third party interference                       Operational                       Others (specify \_\_\_\_\_)

f. Spill point coordinates

| Measuring unit  |  |
|---|--|
| Northing:<br><br><div style="text-align: center; font-size: 2em;">163582m</div> | Easting:<br><br><div style="text-align: center; font-size: 2em;">409122m</div> |

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

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

12. Containment measures put in place;

- Booms       Trench       Dyke

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

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

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

If yes give brief description:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**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 |                    |             |      |        |          |
|                            |                    |             |      |        |          |
|                            |                    |             |      |        |          |

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16. Crops/Economic Trees

| S/N | Type of crops              | Young | Medium | Matured | Quantity | Comments |
|-----|----------------------------|-------|--------|---------|----------|----------|
|     | NONE WITHIN AREA OF IMPACT |       |        |         |          |          |

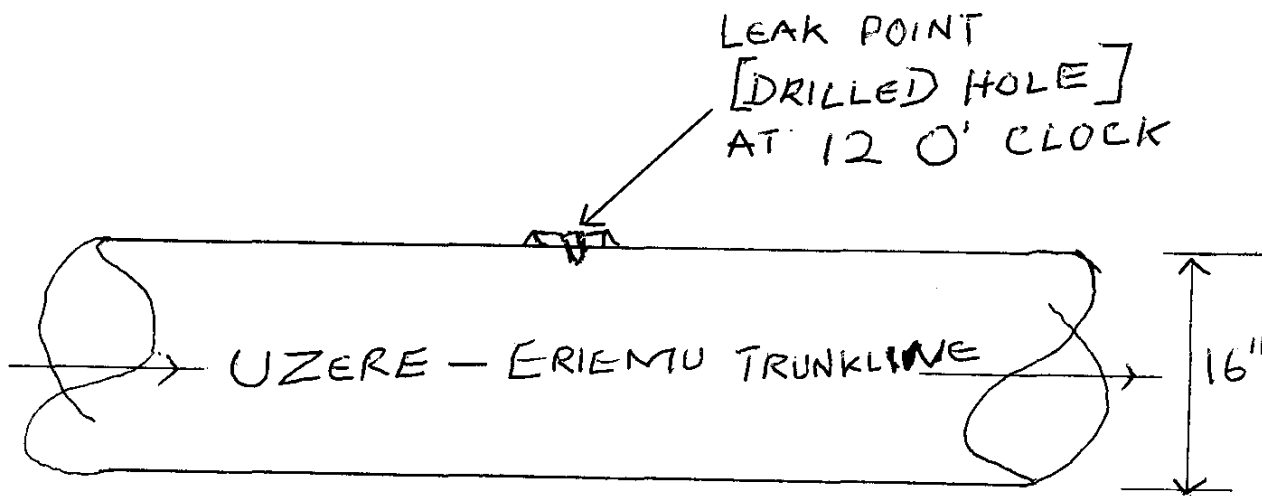
17. Fish/Nets/Ponds

| 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 I)



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**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 (m) | Easting (m) |
|-----|--------------|-------------|
|     | 163 591.00   | 409 130     |
|     | 163 579      | 409 154     |
|     | 163 569      | 409 146     |
|     | 163 582      | 409 133     |
|     | 163 585      | 409 137     |
|     | 163 588      | 409 119     |
|     | 163 607      | 409 091     |
|     | 163 633      | 409 063     |
|     | 163 649      | 409 067     |
|     | 163 638      | 409 077     |
|     | 165 631      | 409 077     |
|     | 163 619      | 409 096     |
|     | 163 601      | 409 134     |

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 524 m<sup>2</sup>
- Impact within SPDC R.O.W 524 m<sup>2</sup>
- Impact outside R.O.W NIL

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

|                           |            |         |
|---------------------------|------------|---------|
| Recovered oil $V_{rec}$ : | <u>NIL</u> | barrels |
|---------------------------|------------|---------|

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 158 m<sup>2</sup>
  - ii. Average Depth (m) of pool of free phase oil 0.002 m
  - iii. Emulsification factor: NOT APPLICABLE

|  |             |         |
|--|-------------|---------|
| iv. Volume of pool of free phase oil. $V_{pool}$ : | <u>1.99</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: 366  $m^2$
  - 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: 0.1M
  - iv. Soil type: CLAY
  - v.  $P_e$  (effective porosity of the soil): 8%
- |  |                      |
|--|----------------------|
| iv. Volume of infiltrated oil. $V_{inf}$ | <u>18.42</u> barrels |
|--|----------------------|

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

- i. Total area of oil on open water: NIL
- ii. Table of average depth of oil on water based on coloration \*

|                    | Thickness<br>(mm) | Percentage<br>coverage | Volume ( $m^3$ )                         |
|--------------------|-------------------|------------------------|--|
| Barely Visible     | 0.00004           |                        |  |
| 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 <math>m^3</math></u> |

NOT APPLICABLE

|   |            |         |
|---|------------|---------|
| iii. Volume of oil on open water. $V_{wat}$ | <u>NIL</u> | barrels |
|---|------------|---------|

22. Calculation of evaporated volume:

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

|   |             |         |
|---|-------------|---------|
| iii. Volume of evaporated oil. $V_{evap}$ | <u>3.60</u> | barrels |
|---|-------------|---------|

| 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%          |

|  |
|--|
| <p>23. Gross Total Estimated Spilled Volume <math>V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls)</math></p> |
|--|

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|   |
|---|
| $V_{Est}(bbls) = 24 \text{ BBLs}$   |
| 24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$ |
| $V_{Est}(bbls) = 24 \text{ BBLs}$   |

\*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 <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 Signatories

|  |
|--|
| This report was filled and signed on the <u>18/9/2012</u> at incident site by joint investigation representatives from   |
| <ul style="list-style-type: none"><li>• Host Community <input checked="" type="checkbox"/></li><li>• Department of Petroleum Resources [DPR]: <input type="checkbox"/></li><li>• National Oil Spill Detection and Response Agency [NOSDRA]: <input checked="" type="checkbox"/></li><li>• State Ministry of Environment [SME]: <input checked="" type="checkbox"/></li><li>• Nigeria Police Force [NPF]: <input checked="" type="checkbox"/></li><li>• Shell Petroleum Development Company [SPDC]: <input checked="" type="checkbox"/></li></ul> |
| <i>Tick as applicable</i>  |

20. Appendix 1: Overview sketch of the site

Location: 16" UZERE - ERIEMU TRUNKLINE SPILL SITE

