

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0050 715086

(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: 715086 2. Type of incident\* OIL SPILL  
 3. Name of Location 28 INCH TRANS FORCADOS PIPELINE AT BATAN  
 4. Name of nearest community BATAN 5. State: DELTA 6. LGA WARRI-SOUTH WEST  
 7. Type of Production facility/Installation TRUNKLINE 8. Asset owner/District PIPELINE

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 19/9/2011 @ 1659 HRS  
 b. Date/Period of investigation: 23/9/2011 @ 1340 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) \_\_\_\_\_

e. Incident due to:

- Third party interference  Operational  Others (specify) \_\_\_\_\_

f. Spill point coordinates

Measuring unit	
Northing:  <p style="text-align: center;"><u>172768<sub>m</sub></u></p>	Easting:  <p style="text-align: center;"><u>347246<sub>m</sub></u></p>

\*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 [ NILm]  
 Drinking water source [ NILm]  
 Built up area [ NILm]  
 Farmlands [ NILm]  
 Fish Farm/Pond [ NILm]  
 Fishing net [ NILm]  
 Others (specify) [ NILm]

12. Containment measures put in place;

- Booms     Trench     Dyke

Others: NOT APPLICABLE

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

14. 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**

15. Structures / Properties

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

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1	MANGROVE	YES		YES	LOT	
/	/	/	/	/	/	/
/	/	/	/	/	/	/

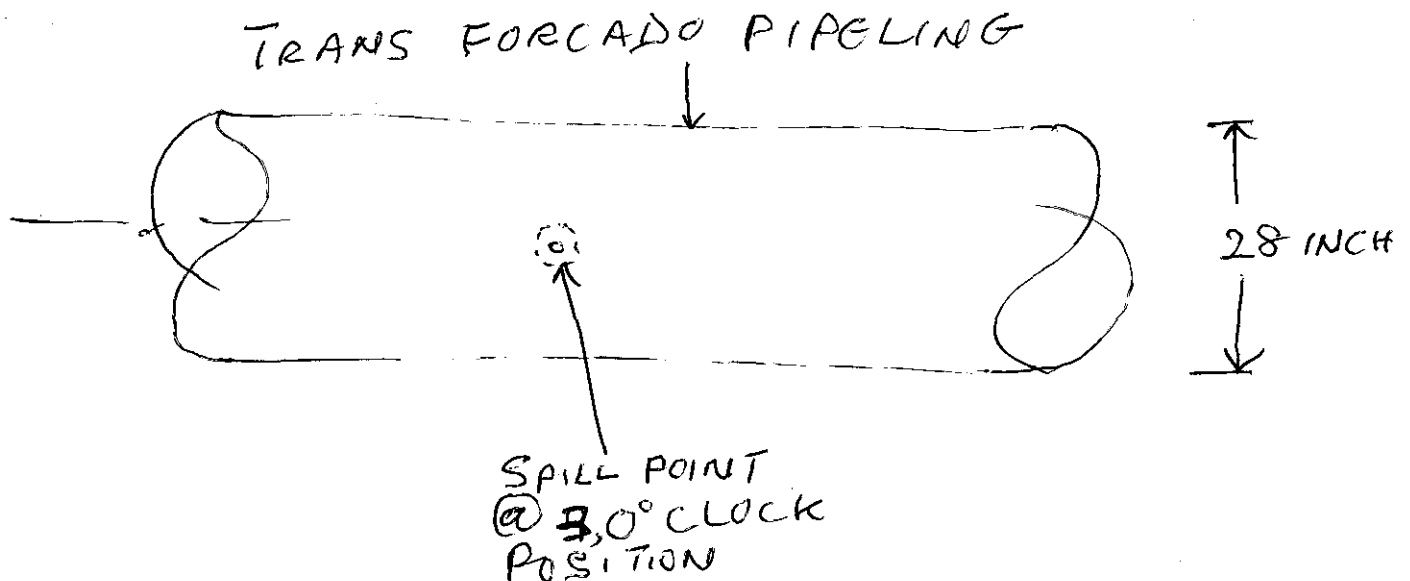
17. Fish/Nets/Ponds

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 appendix1)



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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)
SP	172768	347246
	172509	347145
	172525	347146
	172760	347192
	172951	347203
	172787	347381
	172887	347928
	172809	348100
	173030	347843
	172883	348765
	172712	349370
	173711	349016
	173648	349091

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 346,008.5 m<sup>2</sup>
- Impact within SPDC R.O.W 94733.59 m<sup>2</sup>
- Impact outside R.O.W 251274.92 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).

- Area (m<sup>2</sup>) occupied by pool of free phase oil NIL
- Average Depth (m) of pool of free phase oil NIL
- Emulsification factor: NOT APPLICABLE

iv. Volume of pool of free phase oil. V <sub>pool</sub> :	<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: NIL
- 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: 346,008.5  $m^2$
- ii. Table of average depth of oil on water based on coloration \*

	Thickness (mm)	Percentage coverage	Volume ( $m^3$ )
Barely Visible	0.00004	<u>38%</u>	<u>0.005259329</u>
Silvery	0.00008	<u>40%</u>	<u>0.011072272</u>
Slight Color	0.00015		
Bright Color	0.0003	<u>2%</u>	<u>0.002076051</u>
Dull	0.001	<u>15%</u>	<u>0.051901275</u>
Dark	0.002		
Black oil	0.1	<u>5%</u>	<u>1.7300425</u>
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>1.80 <math>m^3</math></u>

iii. Volume of oil on open water. $V_{wat}$	<u>11.32</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>2.00</u>	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 $V_{Est}(bbls) = V_{cvap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls)$
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$V_{Est}(bbls) =$ <u>13.32 BBLs</u>
24. <u>Net Total Estimated Spilled Volume</u> $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$
$V_{Est}(bbls) =$ <u>8.79 BBLs</u>

\*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

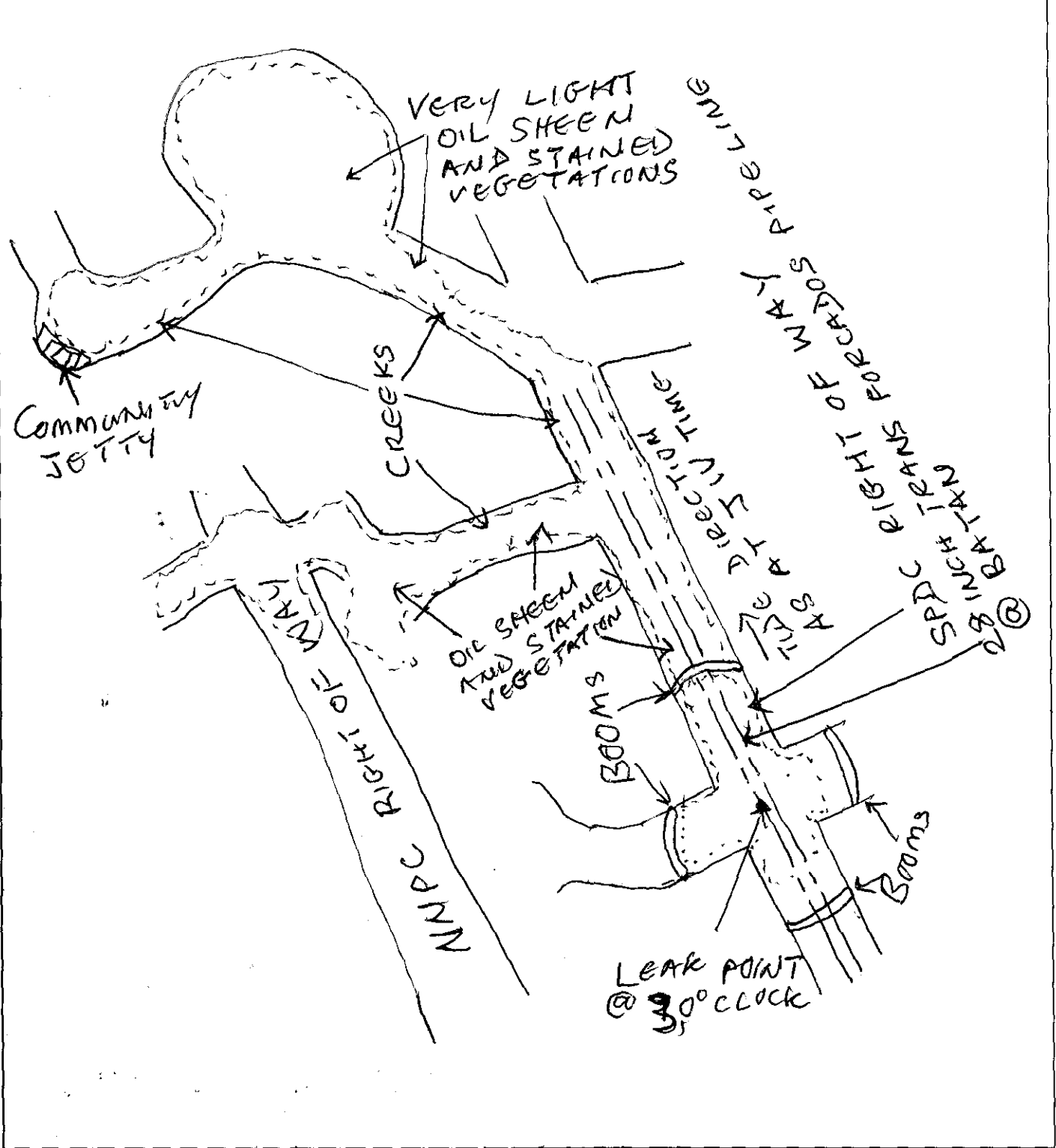
This report was filled and signed on the <u>23/09/2011</u> at incident site by joint investigation representatives from
<ul style="list-style-type: none"><li>• Host Community <input checked="" type="checkbox"/></li><li>• Department of Petroleum Resources [DPR]: <input type="checkbox"/></li><li>• National 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 type="checkbox"/></li><li>• Shell Petroleum Development Company [SPDC]: <input checked="" type="checkbox"/></li></ul>
<i>Tick as applicable</i>

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20. Appendix 1: Overview sketch of the site

Location: 28 INCH TRANS FORCADOS PIPELINE @ BATAN



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21. Appendix 2: TABLE SHOWING ADDITIONAL COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

S/N	Northing	Easting
	173715	349010
	173633	348971
	173526	348953
	173575	349022
	173318	349076
	173557	349030
	173276	349366
	173246	349482
	173197	349305
	173120	349466
	173115	349592
	172952	349500
	172804	349238
	172760	349342
	172748	349388
	172670	349365
	172747	349193
	172818	349014