

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0052 723250

(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: 723250 2. Type of incident* OIL SPILL
 3. Name of Location 28 INCH TRANS FORCADOS PIPELINE @ 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: 04/10/2011 @ 1200HRS AND 13/10/2011 @ 1240
 b. Date/Period of investigation: 08/10/2011 @ 1230HRS

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, (OLD) 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: <u>170745m</u>	Easting: <u>343358m</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: 0052 723250

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 [120 ,m]
 Farmlands [100 ,m]
 Fish Farm/Pond [000 ,m]
 Fishing net [000 ,m]
 Others (specify): _____

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] [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: 0052 723250

16. Crops/Economic Trees

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

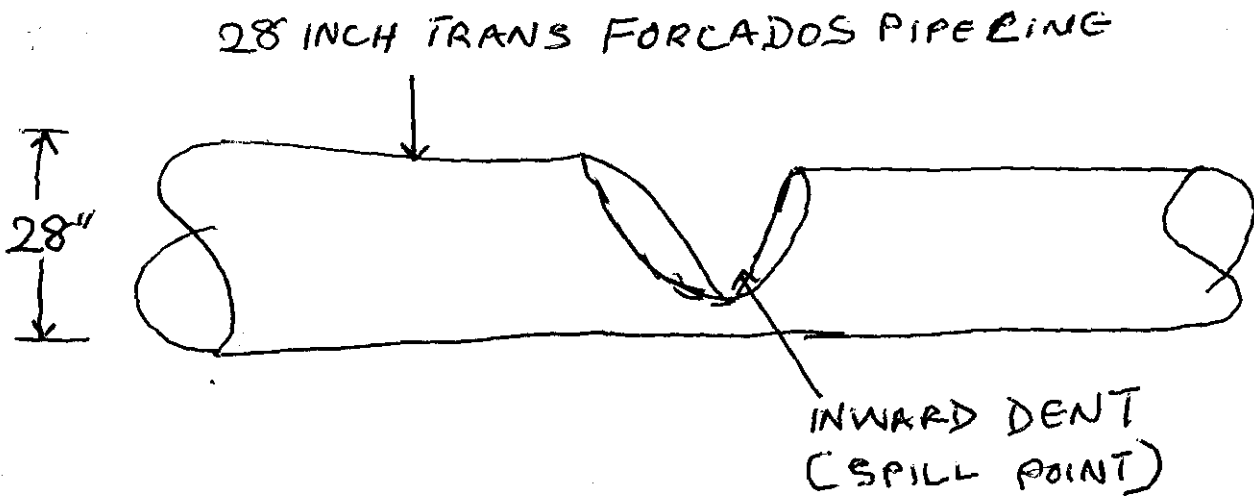
17. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
1	NETS		150	/
2	FISH	SEVERAL TYPE	LOT	/
/	/	/	/	/

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 1)



THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0052 723250

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
SP	170745	343358
	170744	343367
	170758	343367
	170724	343324
	170737	343321
	170662	343168
	170560	342944
	170451	342706
	170378	342521
	172061	343336
	170897	342366
	170944	342025
	170473	343737

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 1,367,905.82 M²
- Impact within SPDC R.O.W 118080 M²
- Impact outside R.O.W 1,249,825.82 m²

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

Recovered oil V_{rec} :	<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). 788 M²
- Area (m²) occupied by pool of free phase oil 788 M²
 - Average Depth (m) of pool of free phase oil 0.004 M
 - Emulsification factor: 60%

iv. Volume of pool of free phase oil. V_{pool} :	<u>7.93</u>	barrels
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THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO.: 0052 723250

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: 1,367,117.82 m^2
- ii. Table of average depth of oil on water based on coloration *

	Thickness (mm)	Percentage coverage	Volume (m3)
Barely Visible	0.00004	7%	0.00382793
Silvery	0.00008	/	/
Slight Color	0.00015	45%	0.092280453
Bright Color	0.0003	5%	0.020506767
Dull	0.001	23%	0.314437098
Dark	0.002	5%	0.136711782
Black oil	0.1	15%	20.50676726
Emulsion (30% Oil)	1	/	/
Percent Total		100%	Total Volume <u>21.07 m^3</u>

iii. Volume of oil on open water. V_{wat}	<u>132.54</u>	barrels
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22. Calculation of evaporated volume:

- i. Oil type: BONNY MEDIUM
- ii. E-Factor: 25%

iii. Volume of evaporated oil. V_{evap}	<u>46.82</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 $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls)$

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0052 723250

$V_{Est}(bbls) =$	187.30 BBLs
24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$	
$V_{Est}(bbls) =$	134.28 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

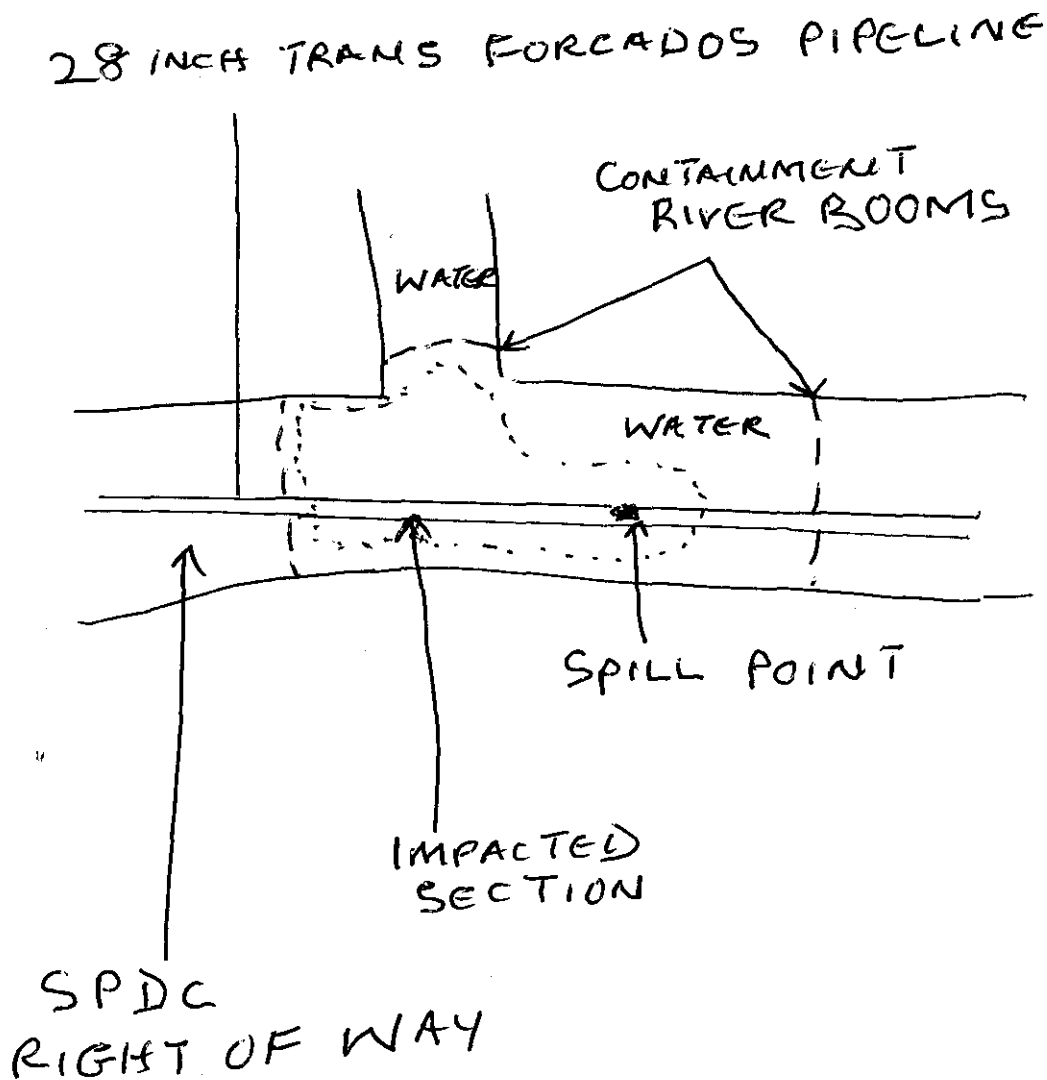
<p>This report was filled and signed on the <u>08/13/10/2011</u> at incident site by joint investigation representatives from</p> <ul style="list-style-type: none">• Host Community <input checked="" type="checkbox"/>• Department of Petroleum Resources [DPR]: <input type="checkbox"/>• National Oil Spill Detection and Response Agency [NOSDRA]: <input checked="" type="checkbox"/>• State Ministry of Environment [SME]: <input checked="" type="checkbox"/>• Nigeria Police Force [NPF]: <input checked="" type="checkbox"/>• Shell Petroleum Development Company [SPDC]: <input checked="" type="checkbox"/> <p style="text-align: right;"><i>Tick as applicable</i></p>
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20. Appendix 1: Overview sketch of the site

Location: 28 INCH TRANS FORCADOS PIPELINE @ BATAN
AS AT 08/10/2011



THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: _____

0052 723250

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

S/N	Northing	Easting
	170193	344599
	170004	344252
	169811	344484
	169550	344010
	168106	344779
	169160	343579
	169524	343392
	169678	344353
	172459	345979
	172001	345051
	171406	344629
	170797	343461
	170773	343428
	170736	343396
	172428	345916
	168476	344989
	170984	344684
	170989	344869

OVERVIEW OF SITE SKETCH AS AT 13/10/2011
28 INCH TRANS FORCADOS PIPELINE @ BATAN

APPENDIX 3

TOTAL AREA = 1,367,905.8
OF IMPACT

