

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0077 791732

(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: 791732 2. Type of incident\* OIL SPILL  
3. Name of Location 12 INCH KORORI - ERIEMU DELIVERY LINE @ OTERI  
4. Name of nearest community OTERI 5. State: DELTA 6. LGA UHELLI NORTH  
7. Type of Production facility/Installation DELIVERY LINE 8. Asset owner/District PIPELINE

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 22/3/2012 @ 0215 HRS  
b. Date/Period of investigation: 22/3/2012 @ 1434 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:	Easting:
<u>173691m</u>	<u>403635m</u>

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

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:

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
	NONE WITHIN AREA OF IMPACT				

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1	CASSAVA	/	YES	/	15	/
2	PALM TREES	/	YES	/	4	/
	/	/	/	/	/	/

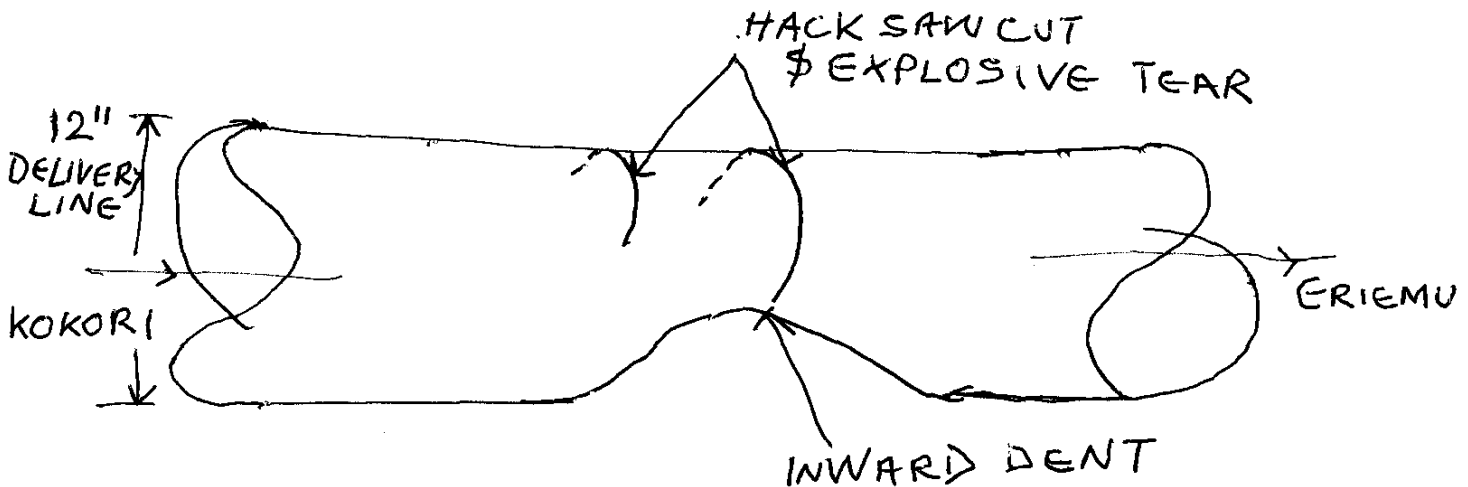
17. Fish/Nets/Ponds

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 1)



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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	Easting
	173676	403642
	173674	403638
	173660	403632
	173668	403623
	173691	403627
	173696	403605
	173692	403596
	173697	403588
	173700	403586
	173709	403576
	173716	403571
	173738	403576
	173766	403583

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 6000 m<sup>2</sup>
- Impact within SPDC R.O.W 1242 m<sup>2</sup>
- Impact outside R.O.W 4,758 m<sup>2</sup>

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).
- i. Area (m<sup>2</sup>) occupied by pool of free phase oil 337 m<sup>2</sup>
  - ii. Average Depth (m) of pool of free phase oil 0.07 m
  - iii. Emulsification factor: NOT APPLICABLE

iv. Volume of pool of free phase oil. $V_{pool}$ :	<u>148.36</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: 5663  $m^2$
- ii. Area of the pool of free phase oil in touch with soil: NOT APPLICABLE
- iii. Average Depth (m) below ground surface of infiltration of oil: 0.05m
- iv. Soil type: CLAY
- v.  $P_e$  (effective porosity of the soil): 8%

iv. Volume of infiltrated oil. $V_{inf}$	<u>142.47</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: NIL
- ii. Table of average depth of oil on water based on coloration \*

	Thickness (mm)	Percentage 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
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22. Calculation of evaporated volume:

- i. Oil type: BONNY MEDIUM
- ii. E-Factor: 5%

iii. Volume of evaporated oil. $V_{evap}$	<u>15.31</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%

23. Gross Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recl}(bbls)$
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$V_{Est}(bbls) =$	<u>306.14 BBLs</u>
<b>24. Net Total Estimated Spilled Volume <math>V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recj}(bbls)</math></b>	
$V_{Est}(bbls) =$	<u>306.14 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.

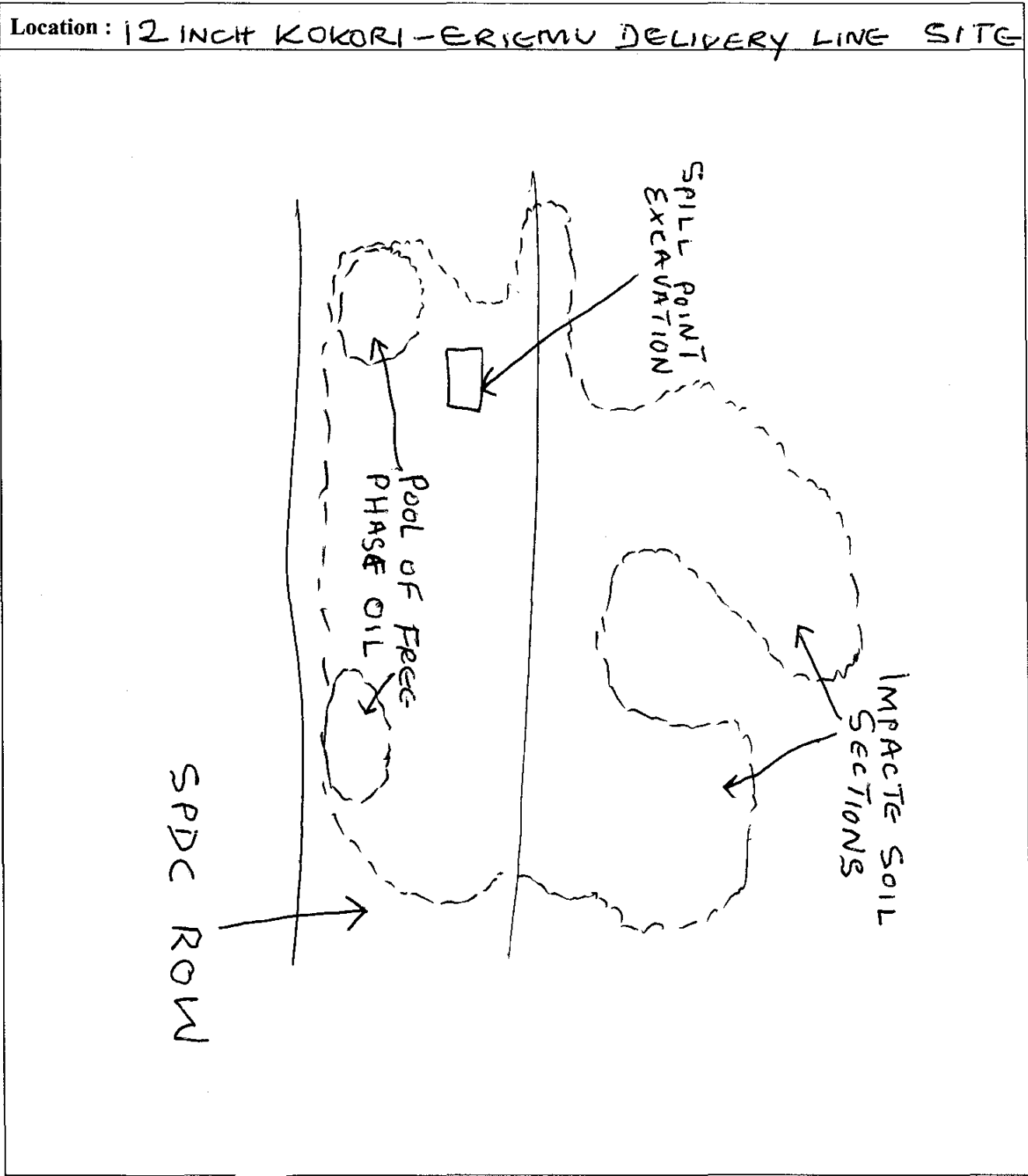
**25. GENERAL STATUS OF THE SITE**

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**

<p>This report was filled and signed on the <u>22/03/2012</u> at incident site by joint investigation representatives from</p> <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> <p style="text-align: right;"><i>Tick as applicable</i></p>
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20. Appendix 1: Overview sketch of the site



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

S/N	Northing	Easting
	173772	403582
	173771	403584
	173762	403591
	173758	403595
	173749	403599
	173735	403590
	173721	403591
	173719	403599
	173724	403605
	173719	403618
	173746	403627
	173751	403606
	173774	403610
	173787	403631
	173777	403639
	173787	403645
	173788	403654
	173811	403667