

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0193775841

(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: 775841 2. Type of incident* OIL SPILL
3. Name of Location 6" OBIGBO NORTH - OGALE PIPELINE
4. Name of nearest community OGALE 5. State: RIVERS 6. LGA EL EME
7. Type of Production facility/Installation PIPELINE 8. Asset owner/District NPE/PH I

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 10TH FEBRUARY, 2012
b. Date/Period of investigation: 15TH FEBRUARY, 2012.

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 (m) <u>MINNA MID BELT</u>	
Northing: <u>91785.03</u>	Easting: <u>521489.61</u>

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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). **NOT APPLICABLE**

12. Containment measures put in place;

- Booms Trench Dyke

Others: NONE

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
NONE WITHIN AREA OF IMPACT						

17. Fish/Nets/Ponds

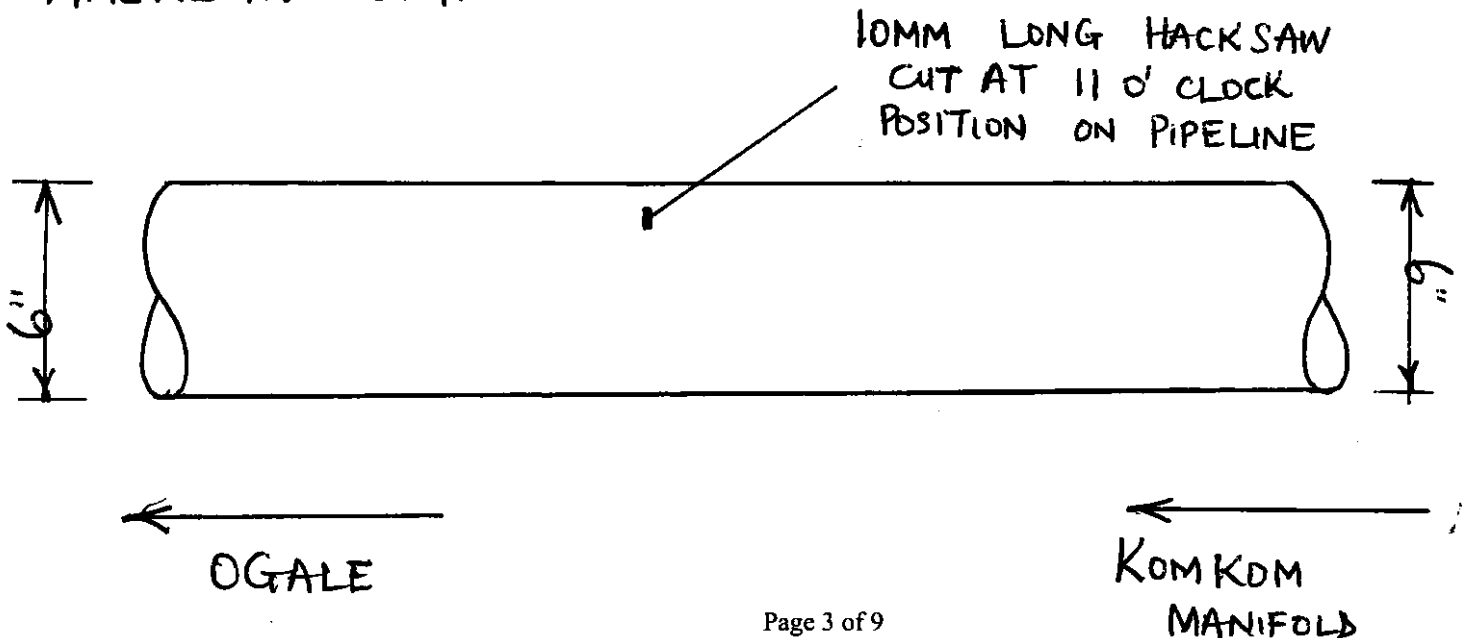
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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 1)*

SECTION OF 6" OBIGBO NORTH - OGALE PIPELINE AT OGALE SHOWING POSITION OF HACKSAW CUT.



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b. Computation of volume of infiltrated oil in the soil (V_{inf}).

- i. Area (m^2) covered by the oil: 397
- ii. Area of the pool of free phase oil in touch with soil: 3
- iii. Average Depth (m) below ground surface of infiltration of oil: 0.005
- iv. Soil type: CLAY
- v. P_e (effective porosity of the soil): 8%

iv. Volume of infiltrated oil. V_{inf}	<u>1.01</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 (m3)
Barely Visible	0.00004	NOT APPLICABLE	
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</u> bbl

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: 15%

iii. Volume of evaporated oil. V_{evap} :	<u>0.18</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 $V_{Est}(bbls) = V_{cvap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls) = 0.18 + NIL + 1.01 + 0.02 + NIL = 1.21$

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$V_{Est}(bbls) =$ 1.2 BARRELS
24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recl}(bbls) = 0.18 + NIL + 1.01 + 0.02 + NIL = 1.21$
$V_{Est}(bbls) =$ 1.2 BARRELS.

*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.

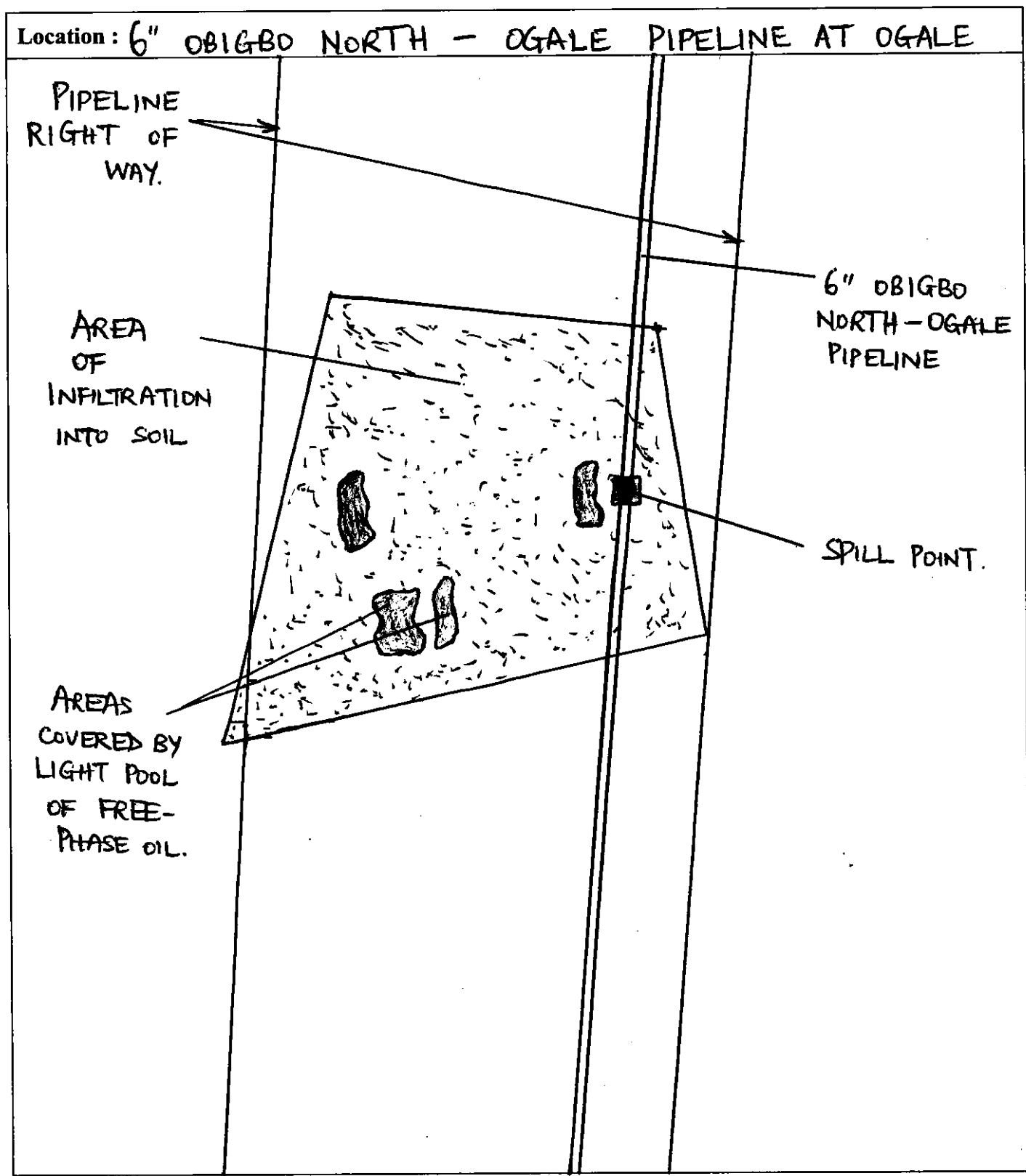
25. GENERAL STATUS OF THE SITE

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>15/02/2012</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 checked="" 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"/> • National Petroleum Investment Management Services [NAPIMS]: <input checked="" type="checkbox"/> <p style="text-align: right;"><i>Tick as applicable</i></p>	<p>DPR INCIDENT INVESTIGATION REPORT ATTACHED.</p>
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20. Appendix 1: Overview sketch of the site





DEPARTMENT OF PETROLEUM RESOURCES

FIELD JOINT INVESTIGATION REPORT

(Note: As practicable as possible the field report is to be signed in the field by all the participating parties)

1. Company SHELL PETROLEUM DEVELOPMENT COMPANY
2. Incident Serial Number 775841
3. Name of Location/Facility 6" OBIGBO NORTH - OGARE DELIVERY LINE

4. Type of Incident: (Indicate check where appropriate and X where not applicable)

- Crude Oil Spill [checked]
Product Spill (Specify) []
Drilling Mud/Chemicals Spill []
Fire []
Others (specify) []

5. Details of Incident

- i. Date of Incident: 10/02/2012
ii. Date Reported to the DPR:
iii. Date/Period of First Investigation: 15/02/2012
iv. Date/Period of Second/Subsequent Investigation:
v. Cause of Incident (Indicate check where appropriate and X where not applicable)

- Corrosion []
Equipment Failure []
Human Error (Production/Maintenance) []
Third Party Interference [checked] HACKSAW CUT
Mystery Spill []
Others (Specify) []

Additional description of cause of incident (if any): An approximate 1cm hacksaw cut by unknown person(s) at 11 o'clock position on the delivery line.

6. Coordinates of Spill Point/Location(s):

7. Brief Description of Circumstances Around Spill Point(s) (Please indicate containment measures put in place, point of breach along pipeline and any necessary details observed at site. Attach additional sheets if necessary)

Before excavation of the spill point, a gentle seeping of crude was observed. On excavation, a cut likely from a hacksaw was observed at 11 o'clock position on the pipeline.

8. Delineation of Impacted Area: (Indicate ✓ where appropriate and X where not applicable)

- a) Within company's facilities/ROW
- b) Outside company's facilities/ROW

9. Description of Environment Around Spill Point/Location(s): (Indicate ✓ where appropriate and X where not applicable)

- Land
- Seasonal Swamp
- Swamp
- Coastland
- Inland waters
- Near shore
- Offshore

Please provide a graphic sketch of spill site/leak point (Detailed sketches and maps can be attached where necessary)

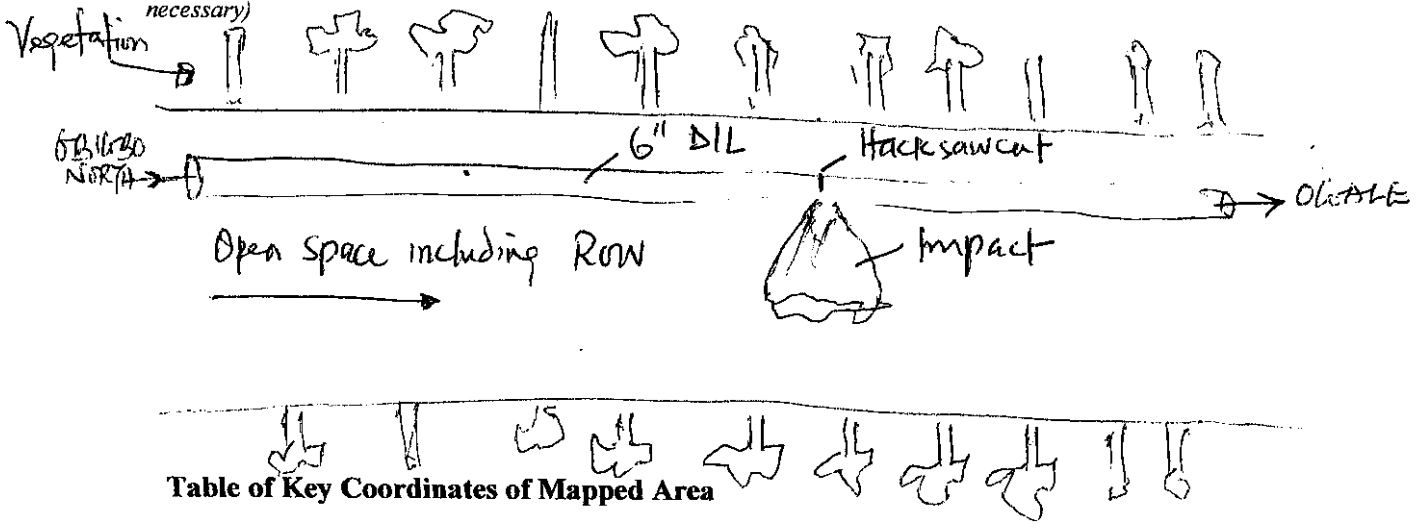


Table of Key Coordinates of Mapped Area

S/N	Eastings	Northings
	521489.63m	91794.25m
	521489.59m	91775.82m
	521468.02	91772.19m
	521474.73	91797.35m

S/N	Eastings	Northings

10. Property Impacted (Provide details)

11. Communities Impacted

- a)
- b)
- c)
- d)
- e)
- f)

12. Estimated Quantity Spilled (bbls): 1.2 barrels

(Please provide below, the methodology used, standards adopted and any assumptions made in the estimate. Where relevant, make brief comments on quantities unaccounted for. Attach and endorse additional sheets if necessary)

13. Quantity Recovered (As at time of the investigation):

14. Any Photograph or Video Recording? (Provide details): Photograph taken but
SPDC took video of investigation.

15. Additional Comments/Remarks, if any:

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