

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0254819045

(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: 819045 2. Type of incident: OIL SPILL
 3. Name of Location: IMO RIVER WELL 59FL [6" FLOW LINE]
 4. Name of nearest community: IGIRIUKWU 5. State: ABIA STATE 6. LGA: UKWA WEST
 7. Type of Production facility/Installation: FLOW LINE 8. Asset owner/ District: LAND 1

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 26TH MAY 2012
 b. Start date/time of investigation: 29TH MAY 2012
 c. Investigation End date: 29TH MAY 2012
 d. Description of spill point environment
 Firmed soil Loose soil Previously excavated area
 Under water Swampy Exposed pipe surface
 Well Platform (on Water) Rig
 e. 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,
 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) _____

- f. Incident caused by:
 Third party interference Operational Mystery _____

g. Spill point coordinates

Measuring unit [M]	
MINNA (MID-BELT)	
Northing: <u>109204mN</u>	Easting: <u>526941mE</u>

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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

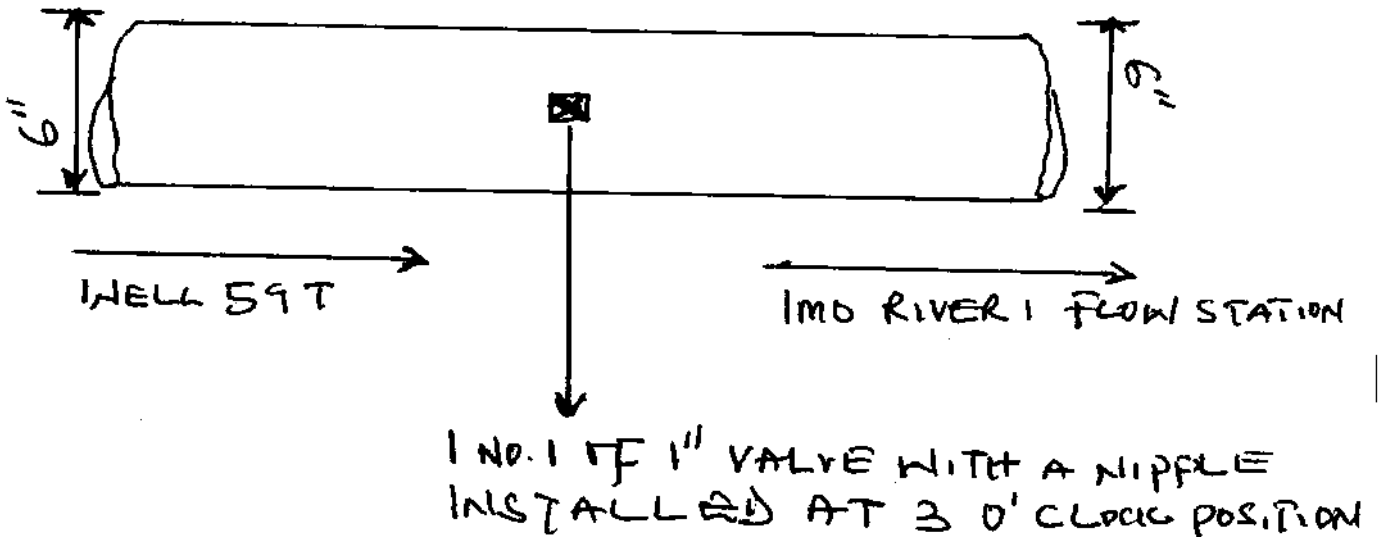
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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 While detail report of the leak point should be contained in the Leak report, overview sketch of the site should be added as an appendix 1)

SECTION OF 6" IMO RIVER 1 FLOW LINE AT IGIRIKWU SHOWING 3" VALVE WITH NIPPLE INSTALLED AT 3 O'CLOCK POSITION



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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
1.	109200mN	526947mE
2.	109200mN	526950mE
3.	109210mN	526937mE
4.	109204mN	526937mE

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 0.0045 Ha
- Impact within SPDC R.O.W _____
- Impact outside R.O.W _____

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

Recovered Oil Volume	<u>0.94 BBL</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^2) occupied by pool of free phase oil NIL
 - Average Depth (m) of pool of free phase oil NIL

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iii. Emulsification factor: NIL

iv.

Volume of pool of free phase oil	NIL	barrels
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b. Computation of volume of infiltrated oil in the soil (V_{soil}).

i. Area (m^2) covered by the oil: .45 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: 0.01

iv. Soil type: CLAY

v. P_e (effective porosity of the soil): 8%

iv.

Volume of infiltrated oil	0.23	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		
Silvery	0.00008		
Slight Color	0.00015	NOT APPLICABLE	
Bright Color	0.0003		
Dull	0.001		
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		
	Percent Total	100%	Total Volume

iii.

Volume of oil on open water	NIL	barrels
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22. Calculation of evaporated volume:

i. Oil type: BONNY MEDIUM

ii. E-Factor: 15%

iii.

Volume of evaporated oil	0.21	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%

** If area is not same as the total area of inspect, please indicate in the overview sketch
 ** Spill Factor from USCG FOG (2000 Edition)

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<p>23. Gross Total Estimated Spilled Volume</p> <p>$V_{Est} (bbbls) = V_{evap} (bbbls) + V_{wat} (bbbls) + V_{in} (bbbls) + V_{pool} (bbbls) + V_{rec} (bbbls)$</p> <p>$V_{Est} (bbbls) = 0.21 + 0.94 + 0.23 + NIL + NIL = 1.36 \text{ Barrels}$</p>
<p>24. Net Total Estimated Spilled Volume</p> <p>$V_{Est} (bbbls) = V_{evap} (bbbls) + 0.6 * V_{wat} (bbbls) + V_{in} (bbbls) + V_{pool} (bbbls) + V_{rec} (bbbls)$</p> <p>$V_{Est} (bbbls) = 0.21 + 0.94 + 0.23 + NIL + NIL = 1.36 \text{ BARRELS}$</p>

*Calculation of the respective estimated volume is to be done on site as far as practicable using the new spill volume 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

<p>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 checked="" type="checkbox"/></p>
<p>B. Investigation of the incident site showed that there is residual impact on site requiring further works <input type="checkbox"/></p>

26 REPRESENTATIVES

<p>This report was filed and signed on the <u>29/05/2012</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"/> <p style="text-align: right;"><i>Tick as applicable</i></p>
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27. Appendix 1: Overview sketch of the site

