

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0032 713673

(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: 713673 2. Type of incident* SPILL
 3. Name of Location MUN RIVER WELL 15 FLOWLINE
 4. Name of nearest community ONYONMA 5. State: BAYELSA 6. LGA SOUTHERN IJAW
 7. Type of Production facility/Installation FLOWLINE 8. Asset owner/District NEL2 / LAND 2

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 2TH SEPTEMBER 2011
 b. Date/Period of investigation: 14TH SEPTEMBER 2011

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: <u>87299.57m</u>	Easting: <u>40222.22m</u>

MINNA MID BELT

*This can be: a) Oil Spill b) Drilling fluid/Chemical c) Sitation 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 NOT [NIL ,m]
 Built up area APPLICABLE [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? [N]

14. Was there any disruption to the investigation? [N]

If yes give brief description:

THE COMMUNITY REPRESENTATIVE DISAGREED WITH THE CAUSE OF SPILL WHICH WAS A DRILLED HOLE AS REPORTED BY THE REGULATORS AND OTHER PARTIES.

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
	NONE WITHIN AREA OF IMPACT					

17. Fish/Nets/Ponds

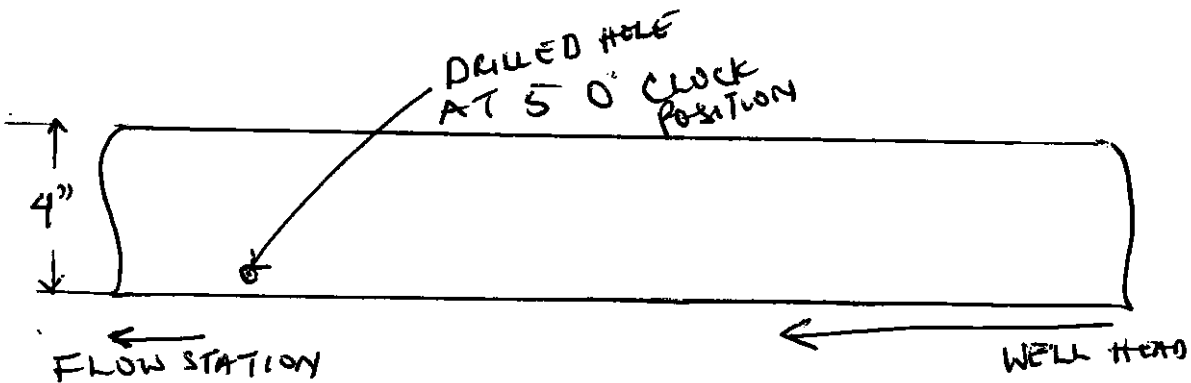
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	NONE WITHIN AREA OF IMPACT			

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)

A SECTION OF NUM RIVER WELL IS'S FLOWLINE SHOWING
DRILLED HOLE AT 5 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)

MINNA MID BELT

S/N	Northing	Easting
	87307.71m	402231.70m
	87290.38m	402211.94m
	87284.25m	402205.75m
	87256.64m	402190.23m
	87247.47m	402177.87m
	87247.48m	402174.78m
	87262.83m	402177.92m
	87278.20m	402177.97m
	87284.46m	402147.16m
	87275.24m	402147.13m
	87293.74m	402128.69m
	87299.87m	402134.88m
	87287.39m	402187.26m

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 0.17 Ha
- Impact within SPDC R.O.W 0.04 Ha
- Impact outside R.O.W 0.13 Ha

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).

- Area (m^2) occupied by pool of free phase oil Nil
- Average Depth (m) of pool of free phase oil Nil
- Emulsification factor: _____

iv. Volume of pool of free phase oil. V_{pool} :	<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: 1700
- 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: 0.003
- iv. Soil type: CLAY
- v. P_e (effective porosity of the soil): 8%

iv. Volume of infiltrated oil. V_{inf}	<u>2.6</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	<u>NOT</u>	
Silvery	0.00008		
Slight Color	0.00015		
Bright Color	0.0003	<u>APPLICABLE</u>	
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 LIGHT
- ii. E-Factor: 25%

iii. Volume of evaporated oil. V_{evap} :	<u>0.9</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 $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls) = 0.9 + Nil + 2.6 + Nil + Nil = 3.5 \text{ BARRELS}$

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$V_{Est}(bbls) = 3.5 \text{ BARRELS}$
24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recj}(bbls) = 0.9 + 1.1 + 2.6 + 1.1 + 1.1 + 1.1 = 3.5$
$V_{Est}(bbls) = 3.5 \text{ BARRELS}$

*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

This report was filled and signed on the <u>14/09/2011</u> at incident site by joint investigation representatives from
<ul style="list-style-type: none">• Host Community <input 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"/>
<i>Tick as applicable</i>

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20. Appendix 1: Overview sketch of the site

