

**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0167 746242

(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: 746242 2. Type of incident\* OIL SPILL  
 3. Name of Location AWOBA WELL 8 T FLOWLINE  
 4. Name of nearest community BILLE 5. State: RIVERS 6. LGA DEGEMA  
 7. Type of Production facility/Installation FLOWLINE 8. Asset owner/District NESI/ CAWTHORNE CHANNEL

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 26TH NOVEMBER, 2011.  
 b. Date/Period of investigation: 6TH DECEMBER, 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) PIN HOLE

e. Incident due to:

- Third party interference  Operational  Others (specify) NOT APPLICABLE

f. Spill point coordinates

Measuring unit <u>m</u> <u>Minna (mid belt)</u>	
Northing:  <u>58918.30 mN</u>	Easting:  <u>484129.22 mE</u>  <u>Minna (mid belt)</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) NOT APPLICABLE

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: NOT APPLICABLE

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
<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

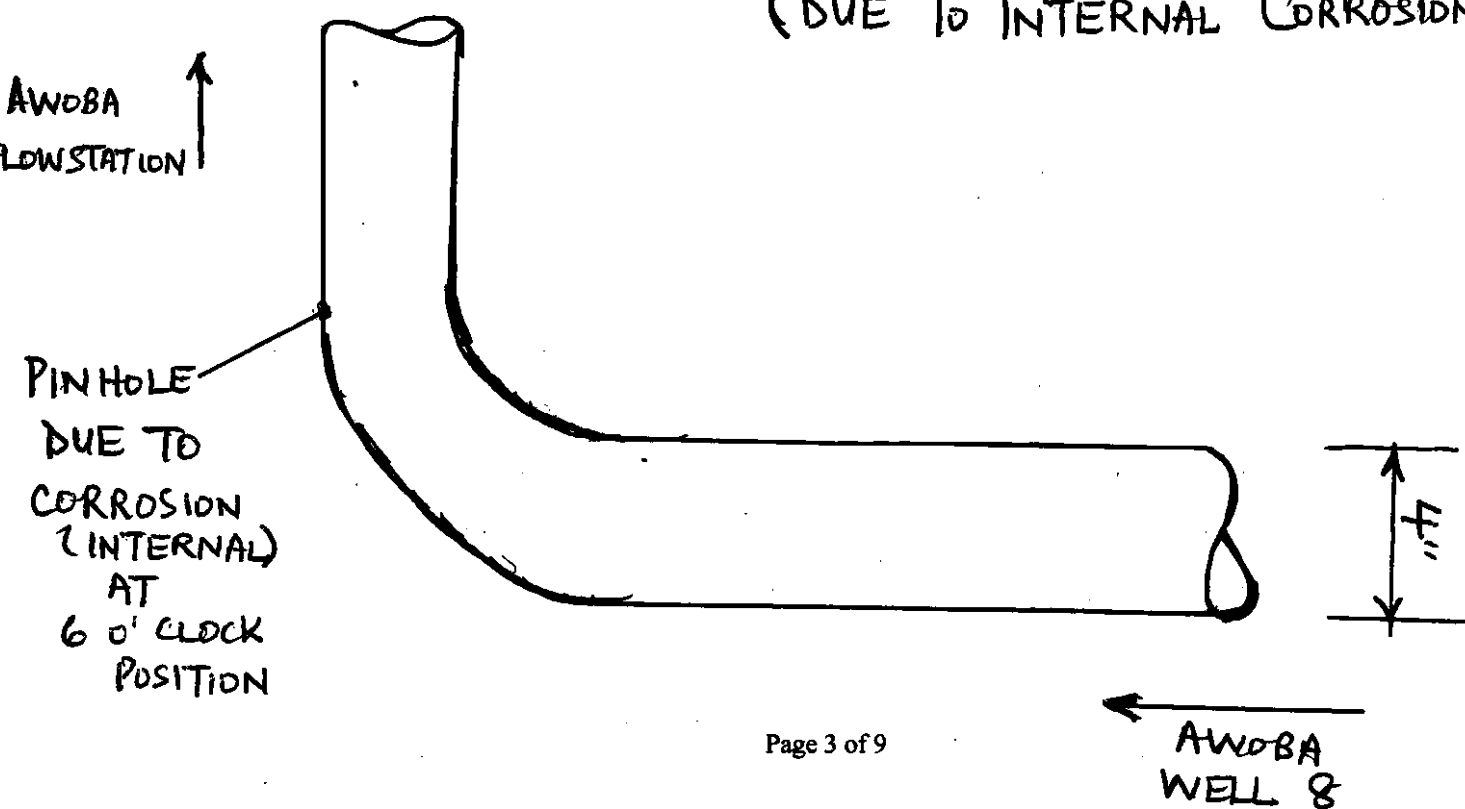
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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)

SECTION OF AWQBA WELL 8T FLOWLINE (RISER)  
 AT BILLE SHOWING POSITION OF PINHOLE  
 (DUE TO INTERNAL CORROSION).



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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)

*Munra (mid belt)*

S/N	Northing (m)	Easting (m)
1.	58918.3mN	484129.22mE
2.	58920.31mN	484127.24mE
3.	58916.81mN	484127.25mE
4.	58916.80mN	484130.72mE
5.	<del>58918</del> 58920.35mN	484130.75mE

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 8800 ~~0.0007 Ha~~ 0.0011 Ha
- Impact within SPDC R.O.W 8800 ~~0.0007 Ha~~ 0.0011 Ha
- Impact outside R.O.W NIL

21. Volume of oil recovered before completion of JIV (V<sub>rec.i</sub>):

Recovered oil V <sub>rec.i</sub> :	NIL	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 \_\_\_\_\_
- ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE
- iii. Emulsification factor: \_\_\_\_\_

iv. Volume of pool of free phase oil. V <sub>pool</sub> :	NIL	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: 10.5
- 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: 0.057
- iv. Soil type: CLAY
- v.  $P_e$  (effective porosity of the soil): 8%

iv. Volume of infiltrated oil, $V_{inf}$	<u>0.3</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: 40%

iii. Volume of evaporated oil, $V_{evap}$ :	<u>0.2</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  $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls) = 0.2 + NIL + 0.3 + NIL + NIL = 0.5$

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<u>V<sub>Est</sub>(bbls)=</u>	<b>0.5 BARREL</b>
24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recf}(bbls) = 0.2 + NIL + 0.3 + NIL + NIL = 0.5$	
<u>V<sub>Est</sub>(bbls)=</u>	<b>0.5 BARREL.</b>

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

**26 Signatories**

This report was filled and signed on the <u>06/12/2011</u> at incident site by joint investigation representatives from
<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 type="checkbox"/></li><li>• Shell Petroleum Development Company [SPDC]: <input checked="" type="checkbox"/></li></ul>
<i>Tick as applicable</i>

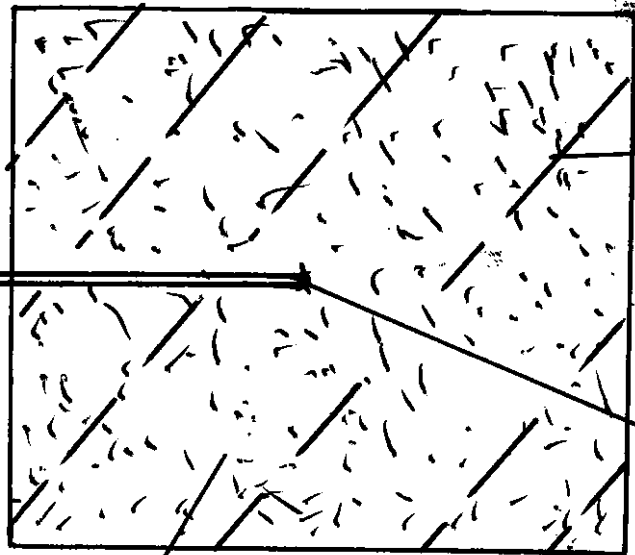
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20. Appendix 1: Overview sketch of the site

Location: AWOBA WELL 8 T FLOWLINE AT BILLE (RISER).

AWOBA  
WELL 8 T  
FLOWLINE



AREA  
OF  
INFILTRATION (INTO SOIL),

EXTENT  
OF  
IMPACT  
(COMPLETELY  
WITHIN  
SPDC  
RIGHT OF  
WAY),

SPILL  
POINT  
ON  
FLOWLINE  
RISER,  
(LEADING  
TO  
FLOWSTATION).

