

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0349 867125

(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: 867125 2. Type of incident \* OIL SPILL  
 3. Name of Location 16" EGBEMA - ASSA PIPELINE  
 4. Name of nearest community UMUDIKE 5. State: IMO 6. LGA DHAJI / EGBEMA  
 7. Type of Production facility/Installation OIL PIPELINE 8. Asset owner/ District NPE / EGBEMA

**B. INCIDENT INFORMATION:**

**9. Details of incident**

- a. Date of incident: 14TH SEPTEMBER 2012.  
 b. Start date/time of investigation: 29TH SEPTEMBER, 2012.  
 c. Investigation End date: 29TH SEPTEMBER, 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	
MINNA MID BELT	
Northing: <u>160476.86m</u>	Easting: <u>478560.96m</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). **PALM TREES**

**PALM TREES IMPACTED BY SPILL**

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:

**PLACARD-CARRYING COMMUNITY YOUTH AND WOMEN PREVENTED THE JOINT INVESTIGATION TEAM FROM ACCESSING THE SPILL SITE AT THE FIRST JOINT INVESTIGATION VISIT ATTEMPT ON 20TH SEPTEMBER 2012, DEMANDING FOR \$4 BILLION COMPENSATION PAYMENT (BASED ON COURT JUDGEMENT) FOR A 1997 SPILL AND ALSO COMPENSATION FOR THE DEATH OF 13 COMMUNITY YOUTH IN THE AFTERMATH OF A 2001 SPILL.**

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
<b>NONE WITHIN AREA OF IMPACT</b>					

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1	PALM TREES	15 No.	5 No.	10 No.	30 (TOTAL)	WITHIN AN AREA OF 950m <sup>2</sup> IMPACTED AREA.
2	GMEINA					
3	ICHEKU	1 No.		5 No.	6 (TOTAL)	
4	UBILE		5 No.	10 No.	15 (TOTAL)	
5	OKAZI (VEGETABLE)			1 No.	1 (TOTAL)	

17. Fish/Nets/Ponds

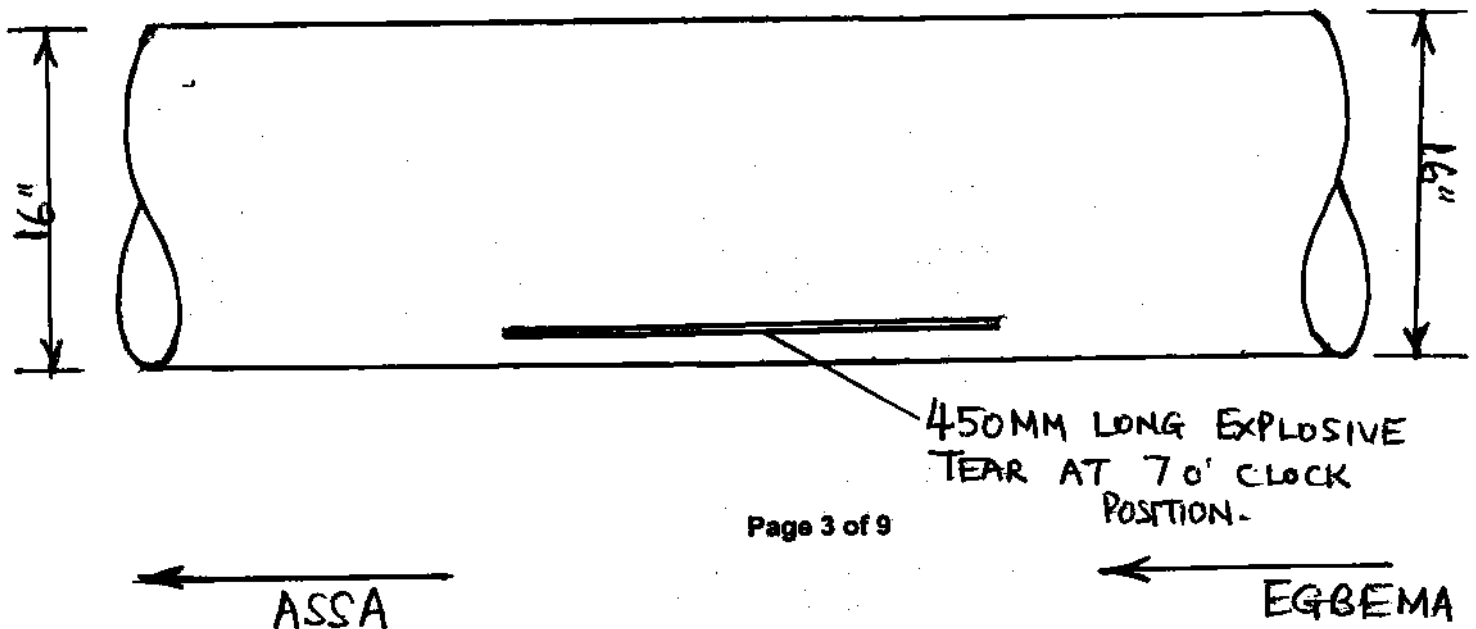
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
		NONE WITHIN AREA OF IMPACT		

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 16" EGBEMA - ASSA PIPELINE AT UMUDIKE SHOWING POSITION OF EXPLOSIVE TEAR.



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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
1.	160658.43m	478456.79m
2.	160664.51m	478481.44m
3.	160664.49m	478487.60m
4.	160590.62m	478533.57m
5.	160492.18m	478573.32m
6.	160446.04m	478594.74m
7.	160421.43m	478603.90m
8.	160421.48m	478588.51m
9.	160446.07m	478582.42m
10.	160470.70m	478567.10m
11.	160476.87m	478557.88m
12.	160483.02m	478554.82m
13.	160553.75m	478533.47

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 0.39Ha
- Impact within SPDC R.O.W YES
- Impact outside R.O.W YES

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

Recovered oil $V_{rec}$	49	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 722
- Average Depth (m) of pool of free phase oil 0.009

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iii. Emulsification factor: NIL

iv. 

Volume of pool of free phase oil, $V_{pool}$	12.57	barrels
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b. Computation of volume of infiltrated oil in the soil ( $V_{inf}$ ).

- i. Area \*(m<sup>2</sup>) covered by the oil: 3676
- 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: 0.005
- iv. Soil type: LATERITE
- v.  $P_e$  (effective porosity of the soil): 20%

iv. 

Volume of infiltrated oil, $V_{inf}$	8.3 + 23.12 = 31.42	barrels
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VOLUME OF OIL INFILTRATION OUTSIDE SPILL POINT = 23.12 BARRELS.

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\*\*

COMPUTATION OF VOLUME OF OIL-INFILTRATION AT SPILL POINT:  
 AREA = 2m<sup>2</sup>.  
 DEPTH = 3.3m  
 VOLUME = 2m<sup>2</sup> x 3.3m x 20%  
 = 8.3 BARRELS.

(EFFECTIVE POROSITY OF LATERITE SOIL) Barely Visible  
 X 6.29 = 8.3 BARRELS.

Thickness (mm)	Percentage coverage	Volume (m3)
0.00004		
0.00008		
0.00015		
0.0003		
0.001		
0.002		
0.1		
1		
Percent Total	100%	Total Volume <u>NIL</u> bbl

NOT APPLICABLE

iii. 

Volume of oil on open water, $V_{ow}$	NIL	barrels
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22. Calculation of evaporated volume:

- i. Oil type: BONNY LIGHT
- ii. E-Factor: 40%

iii. 

Volume of evaporated oil, $V_{evap}$	61.99	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 impact, please indicate in the overview sketch  
 \*\* Spill Factor from USCG FOG (2000 Edition)

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<b>23. Gross Total Estimated Spilled Volume</b>	<b>= 61.99 + NIL + 31.42 + 12.57 + 49 = 154.98</b>
$V_{Est}(bbbls) = V_{evap}(bbbls) + V_{wat}(bbbls) + V_{inf}(bbbls) + V_{pool}(bbbls) + V_{recj}(bbbls)$	
$V_{Est}(bbbls) =$	<b>155 BARRELS.</b>
<b>24. Net Total Estimated Spilled Volume</b>	<b>= 61.99 + NIL + 31.42 + 12.57 + 49 = 154.98</b>
$V_{Est}(bbbls) = V_{evap}(bbbls) + 0.6 * V_{wat}(bbbls) + V_{inf}(bbbls) + V_{pool}(bbbls) + V_{recj}(bbbls)$	
$V_{Est}(bbbls) =$	<b>155 BARRELS.</b>

\*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**

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 REPRESENTATIVES**

This report was filled and signed on the	<u>29/09/2012</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 checked="" type="checkbox"/></li> <li>• Shell Petroleum Development Company [SPDC]: <input checked="" type="checkbox"/></li> </ul>		
<i>Tick as applicable</i>		

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27. Appendix 1: Overview sketch of the site

