



No. 01027

**A. GENERAL INFORMATION:**

1. Spill incident Number: 632811
2. Name of Location 24" BOMU - BONNY PIPELINE AT MOGHOR
3. Name of nearest community MOGHOR
4. State RIVERS LGA GOKANA
5. Type of Production facility/Installation PIPELINE Asset owner /District UIG/P/NESP

**B. INCIDENT INFORMATION:**

6. Details of incident

- a. Date of incident 9TH MARCH, 2011
- b. Date/Period of investigation, 10TH MARCH, 2011
- c. Description of spill point environment

- |  |      |      |
|--|------|------|
| <input type="checkbox"/> Firmed soil               | [Y]✓ | [N]  |
| <input type="checkbox"/> Loose soil                | [Y]  | [N]✓ |
| <input type="checkbox"/> Previously excavated area | [Y]✓ | [N]  |
| <input type="checkbox"/> Under water               | [Y]  | [N]✓ |
| <input type="checkbox"/> Swampy                    | [Y]  | [N]✓ |
| <input type="checkbox"/> Exposed pipe surface      | [Y]  | [N]✓ |

SPILL POINT ENVIRONMENT  
 BURNT BY FIRE.

d. Description of leak point (tick as applicable);

- |  |      |      |
|--|------|------|
| <input type="checkbox"/> Drilled hole,                                 | [Y]  | [N]✓ |
| <input type="checkbox"/> Hack saw cut,                                 | [Y]✓ | [N]  |
| <input type="checkbox"/> Explosive tear,                               | [Y]  | [N]✓ |
| <input type="checkbox"/> Complete Rupture                              | [Y]  | [N]✓ |
| <input type="checkbox"/> Inward dent,                                  | [Y]  | [N]✓ |
| <input type="checkbox"/> Well head tampering                           | [Y]  | [N]✓ |
| <input type="checkbox"/> Failed Weld-on illegal hot tap valve,         | [Y]  | [N]✓ |
| <input type="checkbox"/> Missing pipeline (flowline)                   | [Y]  | [N]✓ |
| <input type="checkbox"/> Crude oil theft (illegal bunkering) point,    | [Y]  | [N]✓ |
| <input type="checkbox"/> Third party tampering with Clamp Bolt/Nut,    | [Y]  | [N]✓ |
| <input type="checkbox"/> Third party tampering with valve setting,     | [Y]  | [N]✓ |
| <input type="checkbox"/> Third party tampering with flange Nuts/bolts, | [Y]  | [N]✓ |
| <input type="checkbox"/> Corrosion,                                    | [Y]  | [N]✓ |
| Type: _____  |      |      |
| <input type="checkbox"/> Saver-pit over flow,                          | [Y]  | [N]✓ |
| <input type="checkbox"/> Surge vessel overflow,                        | [Y]  | [N]✓ |
| <input type="checkbox"/> Outward dent                                  | [Y]  | [N]✓ |
| <input type="checkbox"/> Others (specify). _____                       |      |      |

AFTER JOINT  
 INVESTIGATION  
 OF THE  
 INCIDENT,  
 SPILL WAS  
 FOUND TO BE  
 DUE TO  
 THIRD  
 PARTY  
 INTERFERENCE.

e. Spill point coordinates (MINNA MID-BELT)

Northing:

Easting:

71769.142m

534977.999m



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C. RISK/DAMAGE ASSESSMENT

7. Type of environment of spill site:

- Land
- Swamp
- water

Type of environment of which oil has spread:

- Land
- Swamp
- water

8. Distance from the nearest sensitive habitat

- Government reserved and designated protected area
- Drinking water source
- Built up area
- Farmlands
- Fish Farm/Pond
- Fishing net
- Others (specify).

[ ,m]  
 [ ,m]  
 [ ,m]  
 [ NIL ,m] FARMLAND OF CASSAVA  
 [ ,m] SLIGHTLY BURNT BY FIRE.  
 [ ,m]

9. Containment measures put in place;

- Booms
- Trench
- Dyke

[ Y ] [ N ]  
 [ Y ] [ N ]  
 [ Y ] [ N ]

Others: \_\_\_\_\_

10. Any pictures or video coverage?

[ Y ] [ N ]

11. 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

A. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
NONE WITHIN AREA OF IMPACT					



B. Crops/Economic Trees

S/N	Types of crops	Young	Medium	Matured	Quantity	Comments
1	CASSAVA STEMS		✓		A FEW STEMS.	CASSAVA STEMS BURNT BY FIRE

C. Fish/Nets/Ponds

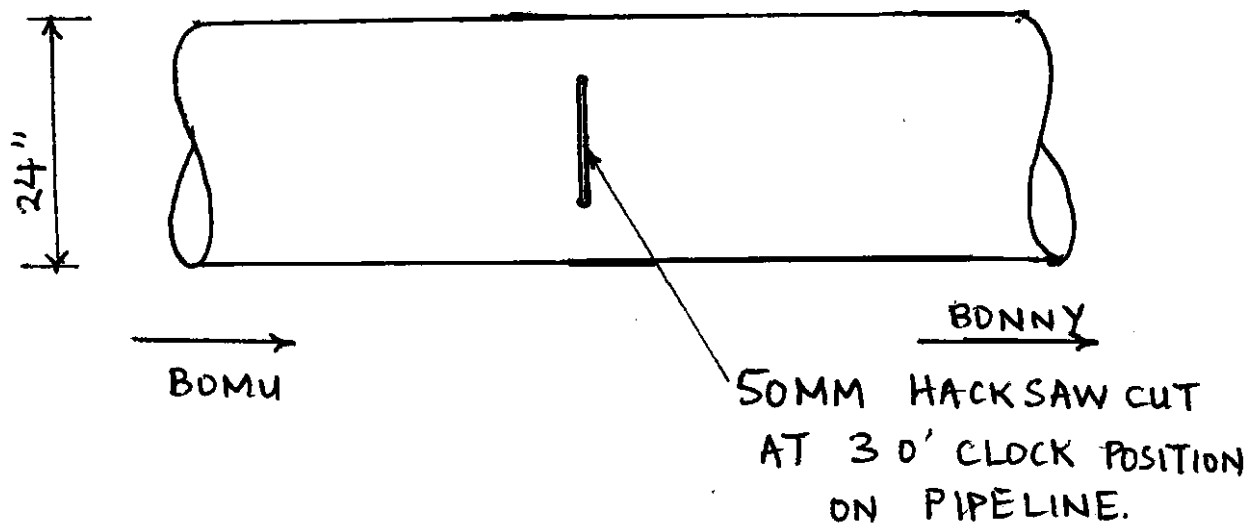
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	NONE WITHIN AREA OF IMPACT			

D. Others (Specify) i.e. Animal Traps

S/N	Others	Description	Quantity/Size	Comments
	NONE WITHIN AREA OF IMPACT.			

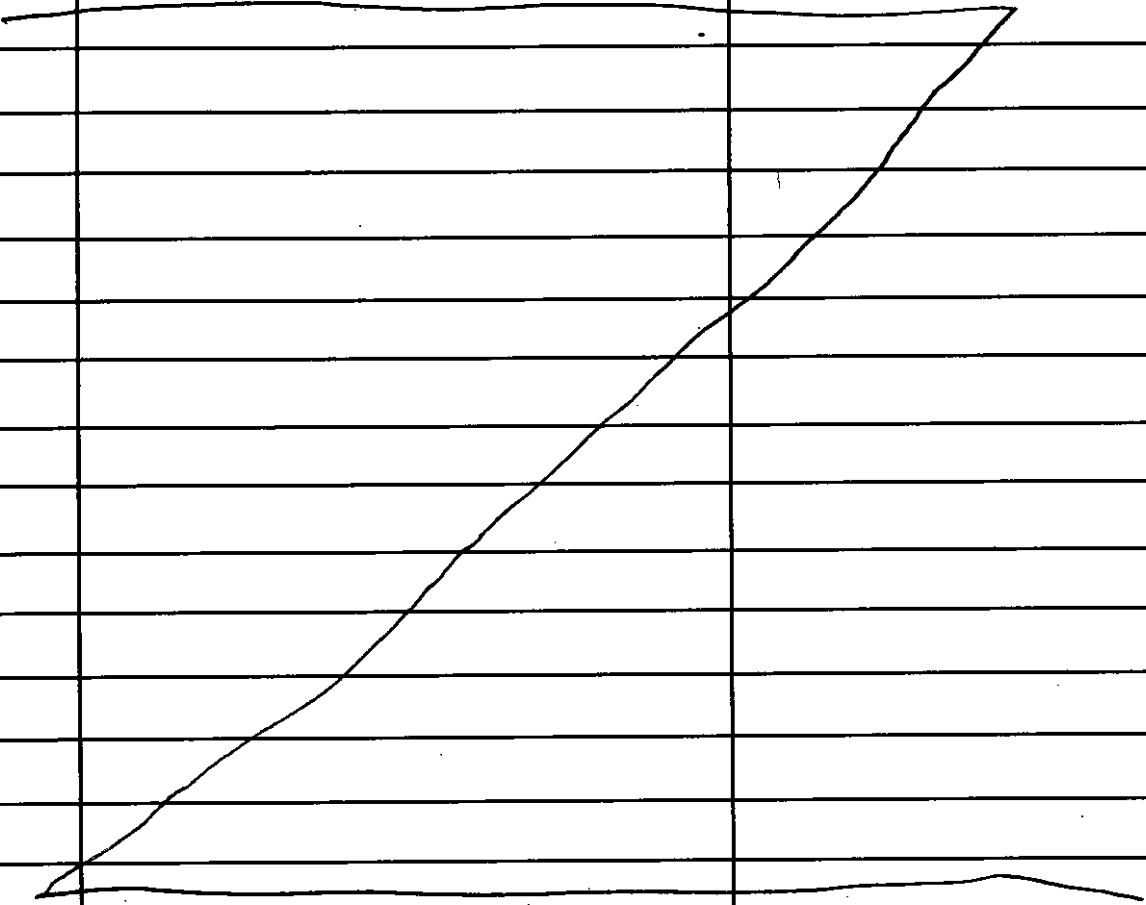
E. GRAPHIC DESCRIPTION OF LEAK POINT (Details should be contained in leak repair report)

SECTION OF 24" BOMU - BONNY PIPELINE AT MOGHOR  
 SHOWING POSITION OF HACK SAW CUT ON PIPELINE  
 (AT 3 O' CLOCK POSITION).





**F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION**  
**E. Coordinates (MINNA MID-BELT)**

S/N	Northing (m)	Easting (m)
974	71772.23	534968.758
975	71772.224	534971.840
976	71769.153	534971.835
977	71769.142	534977.999
978	71766.081	534971.829
980	71769.158	534968.753
		



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G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact OIL-IMPACTED (24 m<sup>2</sup>); FIRE-BURNT (213 m<sup>2</sup>)
- Impact within SPDC R.O.W OIL-IMPACTED (3 m<sup>2</sup>); FIRE-BURNT (92 m<sup>2</sup>)
  - Impact outside R.O.W OIL-IMPACTED (21 m<sup>2</sup>); FIRE-BURNT (121 m<sup>2</sup>)

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

Recovered oil V<sub>recj</sub>: 

NIL	barrels
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NOTE:  
 THE TOTAL OIL-IMPACTED AREA OF 24m<sup>2</sup> IS A SUBSET OF THE TOTAL FIRE-BURNT IMPACTED AREA, OF 213M<sup>2</sup>.

19. Computation of the residual volume on site

a. Computation of the volume of pooled free phase oil (on land or confined water body).

- i. Area (m<sup>2</sup>) occupied by pool of free phase oil 24
- ii. Average Depth (m) of pool of free phase oil 0.001
- iii. Volume of pooled of free phase oil, V<sub>pool</sub>: 

0.15	barrels
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RESIDUAL OF BURNT OIL SAT IN A PUDDLE OF

WATER (IN A PIT) THUS NO INFILTRATION INTO SOIL WAS OBSERVED.

b. Computation of volume of infiltrated oil in the soil (V-3).

- i. Area (m<sup>2</sup>) covered by the oil: NOT APPLICABLE
- ii. Average Depth (m) below ground surface of infiltration of oil: NOT APPLICABLE
- iii. Soil type: CLAY
- iv. p<sub>e</sub> (effective porosity of the soil): 8%

v. Volume of infiltrated oil, V<sub>inf</sub>: 

NOT APPLICABLE	barrels
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20. Computation of volume of oil on open water based on standard coloration.

	Thickness (mm)	Percentage coverage	Volume (m3)
Barely Visible	0.00004		
Silvery	0.00008	<b>NOT</b>	
Slight Colour	0.00015		
Bright Colour	0.0003		
Dull	0.001	<b>APPLICABLE</b>	
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>NIL</u> bbl

Spill Factors from USCG FOG (2000 Edition)



**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**  
 JOINT INVESTIGATION REPORT FOR INCIDENT NO: 632811

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Volume of oil on open water $V_{wat}$	NIL	barrels
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21. Calculation of evaporated volume:

- i. Oil type: BONNY MEDIUM
- ii. E-Factor: 15%
- iii.

Volume of evaporated oil $V_{vap}$	0.03	barrels
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Oil Type		Bonny Light	Bonny Medium
		E-Factor	E-Factor
Period Since Oil Spill	<1 day	10%	5%
	1-7 days	25%	15%
	>7 days	40%	25%

9. Gross Total Estimated Spilled Volume  $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls) = 0.03 + NIL + NIL + 0.15 + NIL = 0.18$

$V_{Est}(bbls) = 0.18$  BARREL

10. Net Total Estimated Spilled Volume  $VEst(bbls) = V_{vap}(bbls) + 0.6*V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls) = 0.03 + NIL + NIL + 0.15 + NIL = 0.18$

$VEst(bbls) = 0.18$  BARREL

- \*Calculation of the respective estimated volume is to done using the new spill estimation software on site
- \*Conversion of m3 to barrel is Total volume VT (m3) x6.29
- \*Emulsification factor for spill on water to consider is 60% of volume of oil.

This report was filled and signed on the 10 / 03 / 20 11 at incident site by joint investigation representative from

- Host Community
- Department of Petroleum Resources [DPR]:
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Nigeria Police Force [NPF]:
- Shell Petroleum Development Company [SPDC]:

*Tick as applicable*