



**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**  
**JOINT INVESTIGATION REPORT FOR INCIDENT NO: 626342**

No. 00023

**A. GENERAL INFORMATION:**

1. Spill incident Number: 626342
2. Name of Location KOLOCREEK WELL 3T FLOWLINE
3. Name of nearest community OTOSIGA
4. State BAYELSA LGA OGBIA
5. Type of Production facility/Installation FLOWLINE Asset owner /District NEL2/KOLOCREEK.

**B. INCIDENT INFORMATION:**

6. Details of incident

- a. Date of incident 24TH FEBRUARY, 2011
- b. Date/Period of investigation, 1ST MARCH, 2011

c. Description of spill point environment

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

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

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

99245.236 m

Easting:

433463.842 m



No. 0023

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 [ ,m]
- Drinking water source [ ,m]
- Built up area [ ,m]
- Farmlands [ ,m]
- Fish Farm/Pond [ ,m]
- Fishing net [ ,m]
- Others (specify). **NOT APPLICABLE**

9. Containment measures put in place;

- Booms [Y] [N]
- Trench [Y] [N]
- Dyke [Y] [N]

Others: NOT APPLICABLE

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



B. Crops/Economic Trees

S/N	Type of crop	Young	Medium	Matured	Quantity	Comments
NONE WITHIN AREA OF IMPACT						

C. Fish/Nets/Ponds

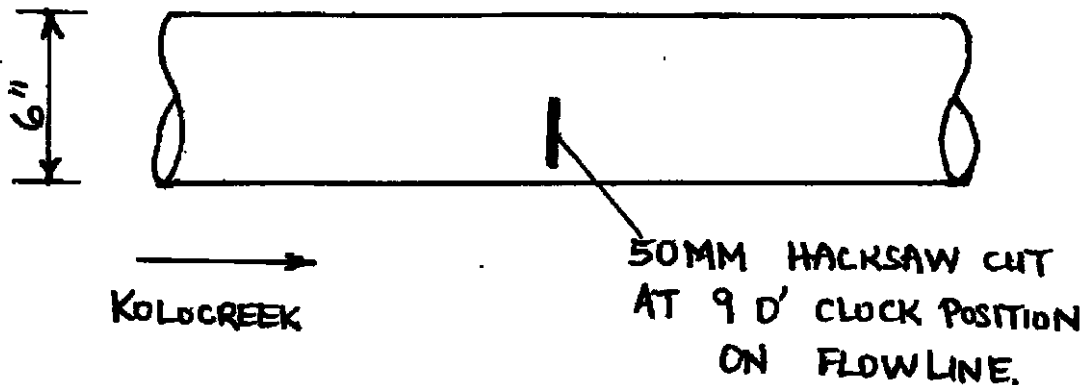
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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 KOLDCREEK WELL 3T FLOWLINE  
SHOWING POSITION OF HACKSAW CUT.





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No 00023

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

S/N	Northing (m)	Easting (m)
946	99245.226	433466.924
947	99242.153	433466.914
948	99242.172	433460.750
<del>949</del>	<del>99248.309</del>	<del>443463.852</del>
949	99248.309	433463.852



No. 0023

G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 24 m<sup>2</sup>
- Impact within SPDC R.O.W 17 m<sup>2</sup>
  - Impact outside R.O.W 7 m<sup>2</sup>

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

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

NOT APPLICABLE	barrels
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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 \_\_\_\_\_
- ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE
- iii. \_\_\_\_\_

Volume of pooled free phase oil V<sub>pool</sub>: 

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

- i. Area (m<sup>2</sup>) covered by the oil: 24
- ii. Average Depth (m) below ground surface of infiltration of oil: 0.01
- iii. Soil type: CLAY
- iv. P<sub>e</sub> (effective porosity of the soil): 8%

v. 

0.12	barrels
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20. Computation of volume of oil on open water based on standard coloration.

	Thickness (mm)	Percentage coverage	Volume (m <sup>3</sup> )
Barely Visible	0.00004		
Silvery	0.00008		
Slight Colour	0.00015	NOT APPLICABLE	
Bright Colour	0.0003		
Dull	0.001	APPLICABLE	
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)



[REDACTED]	NIL	barrels
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21. Calculation of evaporated volume:

- i. Oil type: BONNY LIGHT
- ii. E-Factor: 25%
- iii.

[REDACTED]	0.04	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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recf}(bbls)$ $= 0.04 + NIL + 0.12 + NIL + NIL = 0.16$
$V_{Est}(bbls) =$ <u>0.16 BARREL</u>
10. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{vap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recf}(bbls)$ $= 0.04 + NIL + 0.12 + NIL + NIL = 0.16$
$V_{Est}(bbls) =$ <u>0.16 BARREL</u>

\* Calculation of the respective estimated volume is 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 01 / 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*