



THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED
JOINT INVESTIGATION REPORT FOR INCIDENT NO: 684765

No. 00993

A. GENERAL INFORMATION:

1. Spill incident Number: 684765
2. Name of Location ETELEBOU WELL 8 T FLOWLINE
3. Name of nearest community OGBOLOMA
4. State BAYELSA LGA YENAGOA
5. Type of Production facility/Installation FLOWLINE Asset owner /District NEL2/GBARAN-UBIE

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 7TH JULY, 2011
- b. Date/Period of investigation, 12TH JULY, 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]✓ |

(FLOODED AT TIME OF
JOINT INVESTIGATION
VISIT)

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: NOT APPLICABLE

- | | | |
|-------------------------------------------------|-----|------|
| <input type="checkbox"/> Saver-pit over flow, | [Y] | [N]✓ |
| <input type="checkbox"/> Surge vessel overflow, | [Y] | [N]✓ |
| <input type="checkbox"/> Outward dent | [Y] | [N]✓ |
| ✓ Others (specify). <u>NOT ASCERTAINED</u> | | |

AFTER JOINT
INVESTIGATION
OF THE
INCIDENT,
SPILL CAUSE
COULD NOT BE
ASCERTAINED.

e. Spill point coordinates

(MINNA MIDBELT)

Northing: (METRES)

113316.01

Easting:

(METRES)

431916.08



C. RISK/DAMAGE ASSESSMENT

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7. Type of environment of spill site:

- ☐ Land
☒ Swamp (SEASONAL)
☐ water

Type of environment of which oil has spread:

- ☐ Land
☒ Swamp (SEASONAL)
☐ water

8. Distance from the nearest sensitive habitat

- ☐ Government reserved and designated protected area [,m]
☐ Drinking water source [,m]
☐ Built up area [,m]
☒ Farmlands (PLANTAIN TREES) [2 ,m]
☐ Fish Farm/Pond [,m]
☐ Fishing net [,m]
☐ Others (specify). [,m]

9. Containment measures put in place;

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

☒ Others: WOODEN STRUCTURES

10. Any pictures or video coverage? [Y] [N]

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

If yes give brief description:

ON ARRIVAL AT SITE, THE JOINT INVESTIGATION TEAM (J.I.T) WAS UNABLE TO EXPOSE THE AFFECTED DISUSED FLOWLINE TO ASCERTAIN THE ACTUAL CAUSE OF LEAK AS THE AREA WAS COVERED WITH WATER. AFTER DELIBERATIONS, THE J.I.T AGREED TO STATE THAT THE CAUSE OF LEAK COULD NOT BE ASCERTAINED.

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				



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B. Crops/Economic Trees

S/N	Types of crops	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)

LEAK POINT COULD NOT BE
EXPOSED FOR INVESTIGATION
THUS NO GRAPHIC DESCRIPTION
COULD BE DONE.



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E. Coordinates (IMPACTED AREA BOUNDARY COORDINATES - MINNA MID-BELT)

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G INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 0.0714 Ha
- Impact within SPDC R.O.W 0.0587 Ha
 - Impact outside R.O.W 0.0127 Ha

18 Volume of oil recovered before completion of JIV (V_{rec}):

Recovered oil V_{rec} : NIL barrels

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^2) occupied by pool of free phase oil 354
- ii. Average Depth (m) of pool of free phase oil 0.001
- iii. **EMULSIFICATION FACTOR DISCOUNTED IS 40%**
- Volume of pooled of free phase oil. V_{pool} : 1.34 barrels

iv.

- b. Computation of volume of infiltrated oil in the soil (V_3).

- i. Area (m^2) covered by the oil: 360
- ii. Average Depth (m) below ground surface of infiltration of oil: 0.003
- iii. Soil type: SAND MEDIUM
- iv. p_e (effective porosity of the soil): 25%
- v.

Volume of infiltrated oil. V_{inf} : 1.70 barrels

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		
Slight Colour	0.00015		
Bright Colour	0.0003		
Dull	0.001		
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)



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Volume of oil on open water V_{wt} :

NIL

barrels

21. Calculation of evaporated volume:

i. Oil type: BONNY LIGHT

ii. E-Factor: 25%

iii.

Volume of evaporated oil V_{ev} :

1.01

barrels

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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls) = 1.01 + NIL + 1.70 + 1.34 + NIL = 4.05$

$V_{Est}(bbls) =$ 4.05 BARRELS

10. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{vap}(bbls) + 0.6 \cdot V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls) = 1.01 + NIL + 1.70 + 1.34 + NIL = 4.05$

$V_{Est}(bbls) =$ 4.05 BARRELS

* 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 12 / 07 / 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