



No. 01041

A. GENERAL INFORMATION:

1. Spill incident Number: 659695
2. Name of Location 36" RUMUKEPE - NKEKUKU PIPELINE
3. Name of nearest community RUMUKEPE
4. State RIVERS LGA EMOHUA
5. Type of Production facility/Installation PIPELINE Asset owner /District UIG/P/NESP

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 12TH MAY, 2011
- b. Date/Period of investigation, 14TH MAY, 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] ✓ |

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: <u>NOT APPLICABLE</u> | | |
| <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). <u>NOT APPLICABLE.</u> | [Y] | [N] ✓ |

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

e. Spill point coordinates

Northing: (NINNA MID - BEIT) Easting:
108350 - 36m 470880 - 09m



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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]
 [,m]
 [,m]
 [,m]

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
	NONE WITHIN AREA OF IMPACT				



B. Crops/Economic Trees

S/N	Types of crops	Young	Medium	Matured	Quantity	Comments
	NONE WITHIN AREA OF IMPACT					

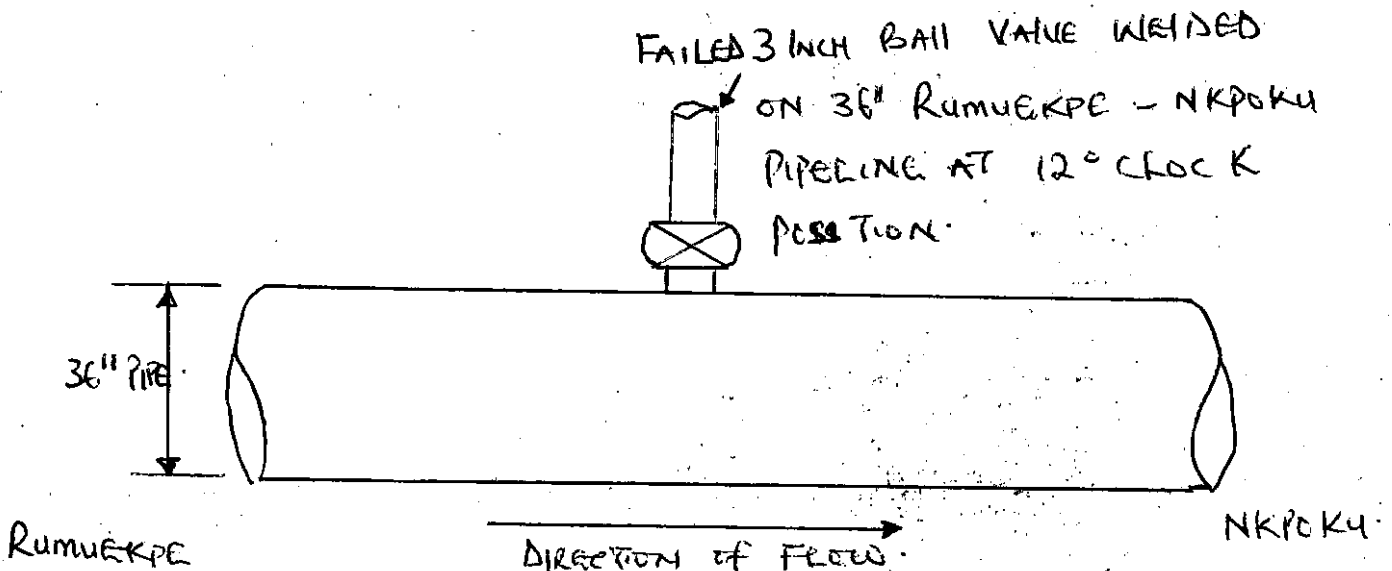
C. Fish/Nets/Ponds

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)





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

S/N	Northing (meter)	Easting (meter)
1.	108287.97m	470917.03m
2.	108294.09m	470926.29m
3.	108306.44m	470901.67m
4.	108312.58m	470904.77m
5.	108318.76m	470892.46m
6.	108331.03m	470898.60m
7.	108318.78m	470886.30m
8.	108328.07m	470858.59m
9.	108315.77m	470852.40m



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G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 0.1283 Ha
- Impact within SPDC R.O.W 0.1283 Ha
 - Impact outside R.O.W NIL

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

Recovered oil V_{rec} :	<u>NIL</u>	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^2) occupied by pool of free phase oil 435.5 m^2
- ii. Average Depth (m) of pool of free phase oil 0.002 m
- iii.

Volume of pooled of free phase oil. V_{pool} :	<u>5.48</u>	barrels
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iv.

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

- i. Area (m^2) covered by the oil: 738.5 m^2
- ii. Average Depth (m) below ground surface of infiltration of oil: 0.0013
- iii. Soil type: clay
- iv. p_e (effective porosity of the soil): 8%
- v.

Volume of infiltrated oil V_{inf} :	<u>0.48</u>	barrels
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20. Computation of volume of oil on open water based on standard coloration.

	Thickness (mm)	Percentage coverage	Volume (m^3)
Barely Visible	0.00004		
Silvery	0.00008		
Slight Colour	0.00015	<u>NOT</u>	
Bright Colour	0.0003		
Dull	0.001	<u>APPLICABLE</u>	
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: 859659

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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_{ev}	1.05	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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) = 1.05 + 0.48 + 5.48 = 7.01 \text{ BARRELS}$

10. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{vap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) \approx 7 \text{ BARRELS}$

- *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 14 / 05 / 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