



No. 00769

A. GENERAL INFORMATION:

1. Spill incident Number: 673476
2. Name of Location 12" IMO RIVER 2 PIPELINE AT ODAQWA
3. Name of nearest community ODAQWA
4. State RIVERS LGA ETCHE
5. Type of Production facility/Installation PIPELINE Asset owner /District MIG/INESP

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 16TH JUNE 2011
- b. Date/Period of investigation, 17TH TO 18TH JUNE 2011
- c. Description of spill point environment

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

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

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

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

INTERFERENCE.

Type: _____

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

e. Spill point coordinates (MINNA MID-BLELT)

	Northing: (metres)	Easting: (metres)
SP1	108559.95	523125.39
SP2	108546.14	523139.47
SP3	108541.49	523143.83
SP4	108534.40	523151.90
SP 6	108507.62	523180.73



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

9. Containment measures put in place;

- Booms [Y]
- Trench [Y]
- Dyke [Y]
- Others: NATURAL DEPRESSION

10. Any pictures or video coverage? [N]

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

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			



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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

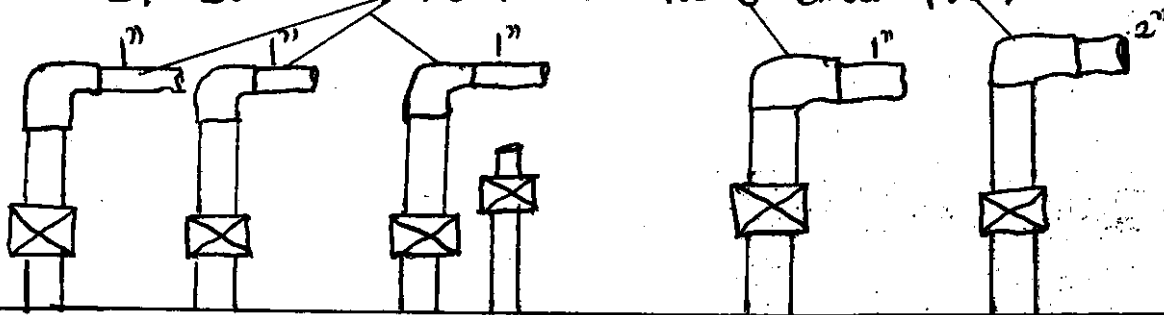
D. Others (Specify) i.e. Animal Traps

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)

A SECTION OF 12" IMO RIVER 2 PIPELINE AT ODAGWA

SHOWING THE ILLEGAL BUNKERING POINT FITTINGS
 SIX BUNKERING POINTS AT 12 O' CLOCK POSITION





F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

E. Coordinates (MINNA MID-BELT)

S/N	Northing (meters)	Easting (meters)
368	108559.96	523122.31
369	108563.01	523131.55
370	108578.37	523131.58
371	108590.65	523134.69
372	108593.72	523137.78
373	108602.93	523137.80
374	108593.71	523143.94
375	108581.36	523171.64
376	108566.00	523171.61
377	108541.43	523171.56
378	108544.57	523137.68
379	108507.62	523180.73
380	108532.25	523153.06
381	108544.57	523137.68



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G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 0.26 Ha
- Impact within SPDC R.O.W 0.14 Ha
 - Impact outside R.O.W 0.12 Ha

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

Recovered oil V_{recj} : 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 2100
- ii. Average Depth (m) of pool of free phase oil 0.07
- iii.

Volume of pooled of free phase oil. V_{pool} : 132.09 barrels

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

- i Area (m^2) covered by the oil: 500
- ii Average Depth (m) below ground surface of infiltration of oil: 0.03
- iii Soil type: CLAY
- iv. p_e (effective porosity of the soil): 8%
- v.

Volume of infiltrated oil. V_{in} : 7.54 barrels

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

	Thickness (mm)	Percentage coverage	Volume (m3)
Barely Visible	0.00004	NOT	
Silvery	0.00008		
Slight Colour	0.00015		
Bright Colour	0.0003	APPLICABLE	
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)



Volume of oil on open water V_{wat} : Nil barrels

21. Calculation of evaporated volume:

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

Volume of evaporated oil V_{vap} : 24.6 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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) = 24.6 + Nil + 7.54 + 132.09 + Nil = 164.2$

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

$V_{Est}(bbls) = 24.6 + Nil + 7.54 + 132.09 + Nil = 164.2$

* 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 18 / 08 / 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