



No. 00114

A. GENERAL INFORMATION:

1. Spill incident Number: 670867
2. Name of Location 6" IMO RIVER WELL 597 FLOWLINE AT 19IRUKWU
3. Name of nearest community 19IRUKWU
4. State ABIA LGA UKWA WEST
5. Type of Production facility/Installation FLOWLINE Asset owner /District LAND 1

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 27th JUNE 2011
- b. Date/Period of investigation, 15th JUNE 2011

c. Description of spill point environment

- Firmed soil [Y] [N]
- Loose soil [X] [N]
- Previously excavated area [X] [N]
- Under water [Y] [N]
- Swampy [Y] [N]
- Exposed pipe surface [Y] [N]

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

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

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

INTERFERENCE.

Type: _____

- Saver-pit over flow, [Y] [N]
- Surge vessel overflow, [Y] [N]
- Outward dent [Y] [N]
- Others (specify). NOT APPLICABLE [Y] [X]

e. Spill point coordinates (M.D.B.E.I)

Northing: (m)

Easting: (m)

SPILL POINT 1 109718.48
 SPILL POINT 2 109785.96

525952.66
525002.08



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

9. Containment measures put in place;

- Booms [Y] [N]
- Trench [Y] [N]
- Dyke [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	
	NONE	WITHIN AREA OF IMPACT					

C. Fish/Nets/Ponds

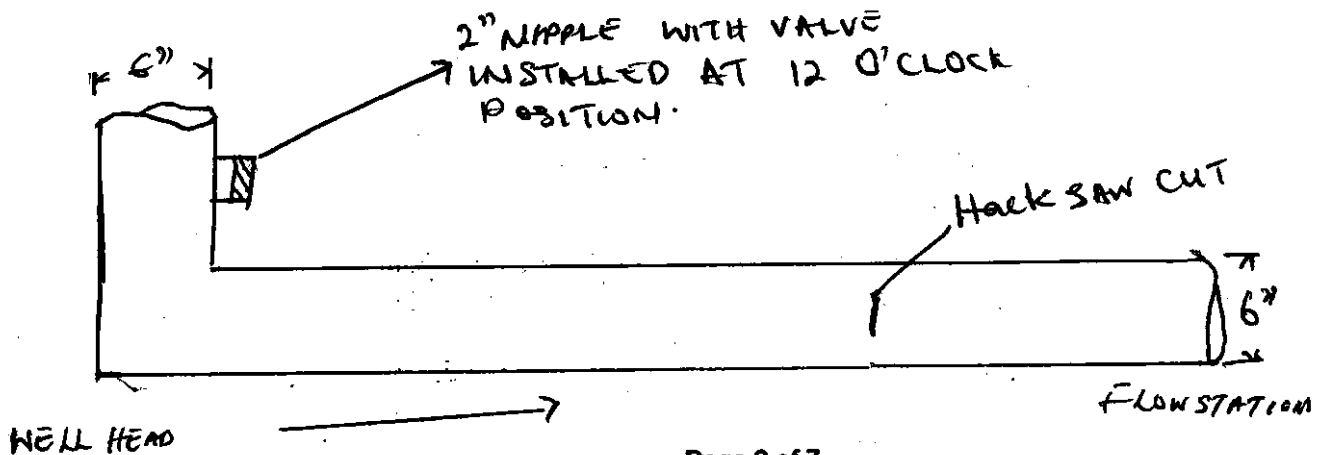
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	NONE	WITHIN AREA OF IMPACT		

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 6" IMO RIVER WELL 597 FLOWLINE AT
IGARIUKWU SHOWING THE POSITION OF ILLEGAL BUNKERING POINT





THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED
JOINT INVESTIGATION REPORT FOR INCIDENT NO: 670867

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

E. Coordinates (MID BELT) SITE 1

S/N	Northing (M)	Easting (M)
1	109724.62	525955.75
2	109721.55	525955.74
3	109697.01	525937.21
4	109697.02	525931.05
5	109632.69	525844.67
6	109693.98	525915.64
7	109709.32	525927.99
8	109700.09	525934.14
9	109700.08	525937.22
	SITE 2 (MID BELT)	
1	109786.81	526005.11
2	109749.84	525980.57
3	109752.22	525977.37
4	109789.03	526002.09



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G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 0.0707 Ha
- Impact within SPDC R.O.W 0.0288 Ha
 - Impact outside R.O.W 0.0422 Ha

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

Recovered oil V_{rec}	<u>6</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 NOT APPLICABLE
- ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE
- iii.

Volume of pooled of free phase oil, V_{pool}	<u>NM</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: 707
- ii. Average Depth (m) below ground surface of infiltration of oil: 0.002
- iii. Soil type: MEDIUM SAND
- iv. p_e (effective porosity of the soil): 20%

	<u>1.8</u>	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	<u>NOT</u>	
Silvery	0.00008		
Slight Colour	0.00015	<u>APPLICABLE</u>	
Bright Colour	0.0003		
Dull	0.001		
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		
	Percent Total	100%	Total Volume <u>NM</u> bbl

Spill Factors from USCG FOG (2000 Edition)



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Volume of oil on open water	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	1.4	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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$ $= 1.4 + NIL + 1.8 + NIL + 6$
$V_{Est}(bbls) = 9.2$ BARRELS
10. Net Total Estimated Spilled Volume $VEst(bbls) = V_{vap}(bbls) + 0.6 * V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$ $= 1.4 + NIL + 1.8 + NIL + 6$
$VEst(bbls) = 9.2$ 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 15 / 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