



No. 00987

A. GENERAL INFORMATION:

1. Spill incident Number: 677598
2. Name of Location CAWTHORNE CHANNEL II 32S FLOWLINE.
3. Name of nearest community MBIAMA - CAWTHORNE CHANNEL II.
4. State RIVERS LGA DEGEMA.
5. Type of Production facility/Installation FLOWLINE Asset owner /District NEST

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 26TH JUNE, 2011
- b. Date/Period of investigation, 28TH TO 29TH JUNE, 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:
60892.70M

Easting:
505529M



No. 0987

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]
 [,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					

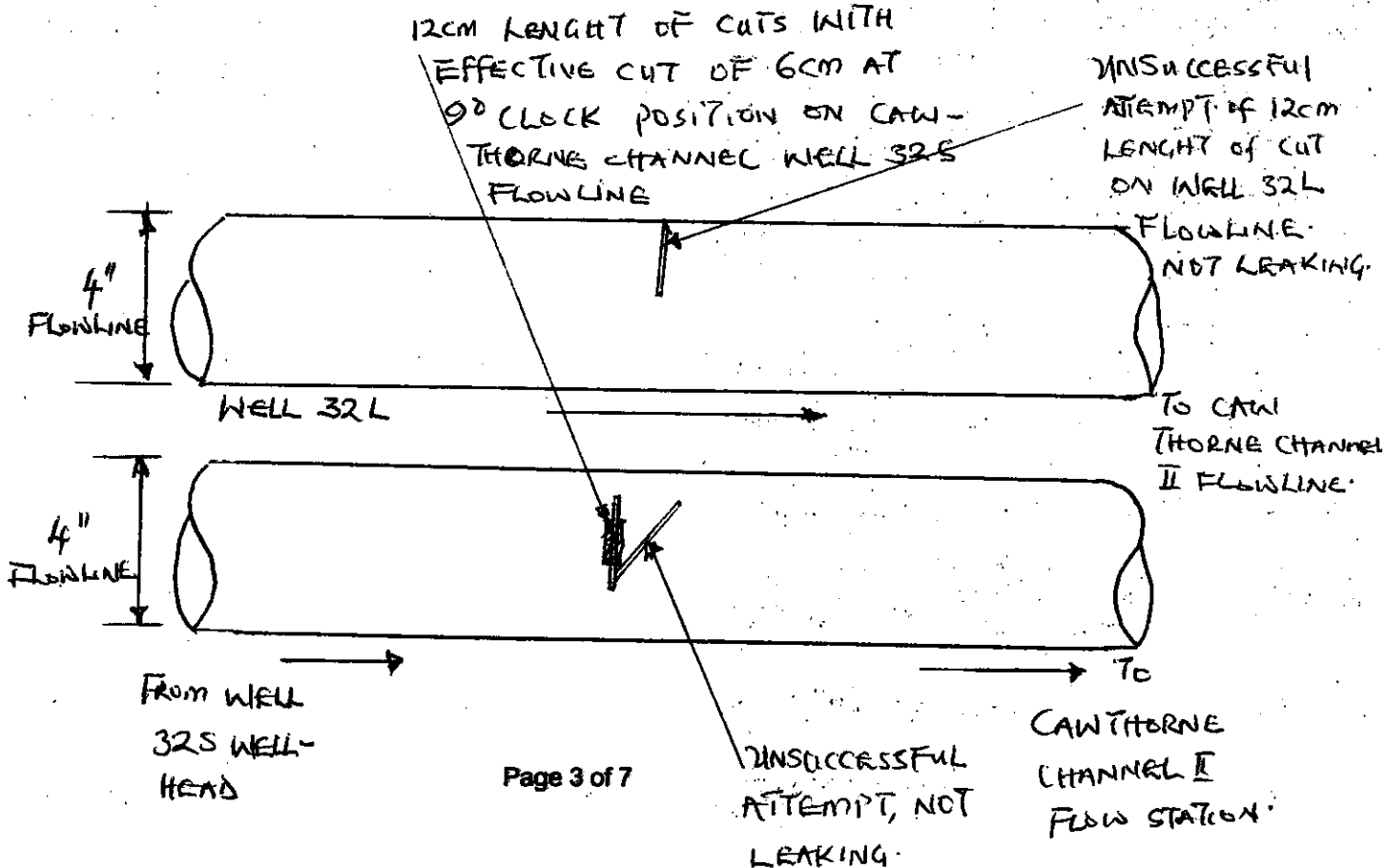
C. Fish/Nets/Ponds

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)





No. 0937

G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 0.1036 Ha
- Impact within SPDC R.O.W 0.1036 Ha
 - Impact outside R.O.W NIL

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

Recovered oil V_{recj} :	<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 40m²
- ii. Average Depth (m) of pool of free phase oil 0.005 m
- iii.

Volume of pooled of free phase oil. V_{pool} :	<u>1.23</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: 1000 m²
- ii. Average Depth (m) below ground surface of infiltration of oil: 0.002 m
- iii. Soil type: CLAY
- iv. p_e (effective porosity of the soil): 8%
- v.

Volume of infiltrated oil. V_{inr} :	<u>1.006</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		
Silvery	0.00008		
Slight Colour	0.00015		
Bright Colour	0.0003	<u>NOT</u>	
Dull	0.001		
Dark	0.002	<u>APPLICABLE</u>	
Black oil	0.1		
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume

"NO IMPACT TO OPEN WATER, BOOMED WORK WAS EFFECTIVE."

NIL bbl

Spill Factors from USCG FOG (2000 Edition)



Volume of oil on open water V_{wat}	NIL	barrels
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21. Calculation of evaporated volume:

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

Volume of evaporated oil V_{vap}	0.74	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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) = 0.74 + 1.006 + 1.23 = 2.976 Bbl$

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

$V_{Est}(bbls) = 2.98 \text{ BARRELS} \approx 3 \text{ BARRELS}$

- * 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 29 / 06 / 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