



No. 00767

A. GENERAL INFORMATION:

1. Spill incident Number: 672877
2. Name of Location 12" IMO RIVER 1 - OCALE PIPELINE
3. Name of nearest community OWAZA
4. State ABIA LGA UKWA WEST
5. Type of Production facility/Installation PIPELINE Asset owner /District UIQ/P/NESP

B. INCIDENT INFORMATION:

6. Details of incident

- a. Date of incident 14TH JUNE, 2011
- b. Date/Period of investigation, 15TH 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> | | |

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

e. Spill point coordinates

Northing: (MINNA MID-BEIT)
104698.45 N

Easting:
524787.40 M



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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 [20 ,m]
- Fishing net [Nil ,m]
- Others (specify). NOT APPLICABLE [Nil ,m]

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 |
|-----|-----------------------------------|-------------|------|--------|----------|
| | | | | | |
| | <u>NONE WITHIN AREA OF IMPACT</u> | | | | |
| | | | | | |
| | | | | | |



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B. Crops/Economic Trees

| S/N | Types of crops | Young | Medium | Matured | Quantity | Comments |
|-----|----------------|-------|--------|---------|-----------|----------|
| 1. | Palm Trees | ✓ | NIL | ✓ | 10m x 15m | |
| | | | | | | |
| | | | | | | |

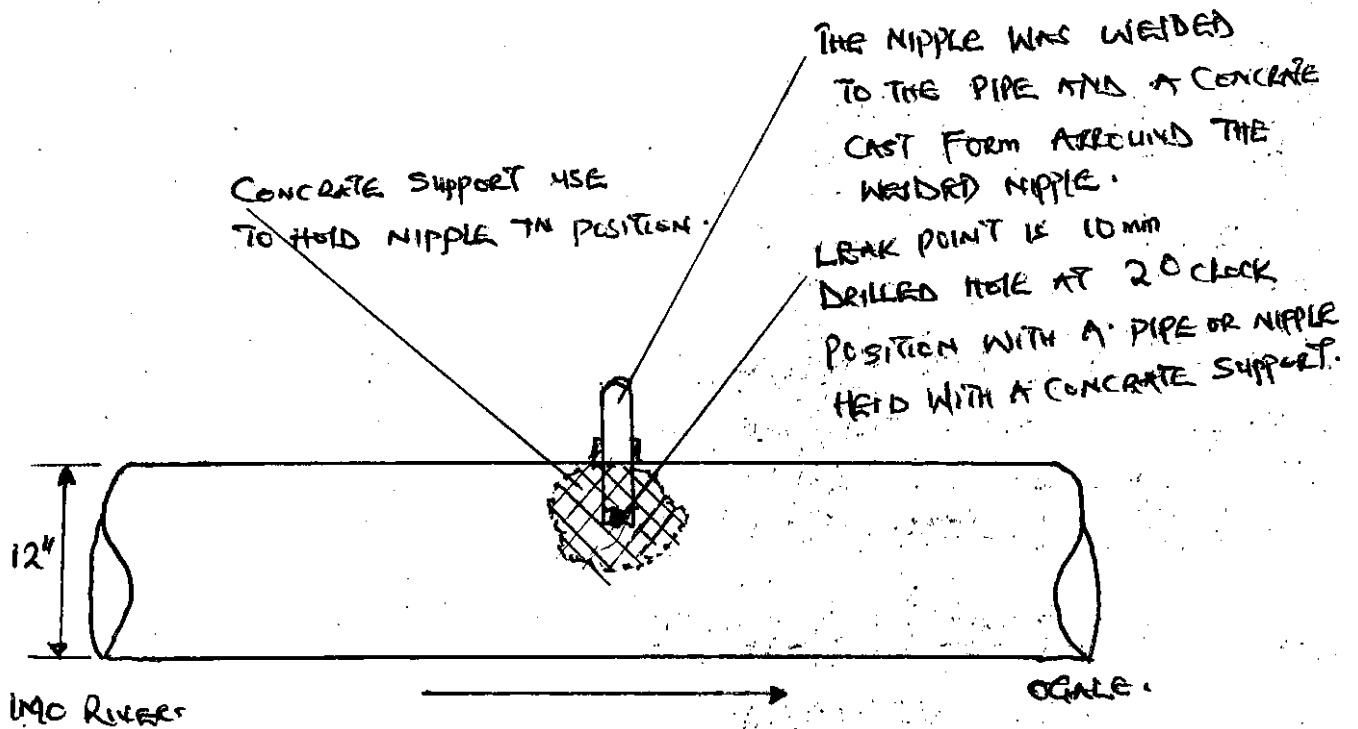
C. Fish/Nets/Ponds

| 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)





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

E. Coordinates (MINNA MID - BEIT)

| S/N | Northing meter | Easting meter |
|-----|----------------|---------------|
| 334 | 104703.06 | 524755.81 |
| 335 | 104707.71 | 524762.77 |
| 336 | 104710.76 | 524775.10 |
| 337 | 104707.67 | 524784.34 |
| 338 | 104698.45 | 524787.40 |
| 339 | 104695.39 | 524778.15 |
| 340 | 104627.83 | 524768.77 |
| 341 | 104587.90 | 524768.69 |
| 342 | 104587.92 | 524756.37 |
| 343 | 104597.13 | 524762.55 |
| 344 | 104630.92 | 524762.62 |
| 345 | 104689.27 | 524765.81 |
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G. INCIDENT INFORMATION:

17 Impacted Area Details

- a. Total calculated area of impact 0.1264 Ha
- Impact within SPDC R.O.W _____
 - Impact outside R.O.W 0.1231 Ha

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

Recovered oil V_{rec} :

| | |
|--|---------|
| | 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 400 m^2
- ii. Average Depth (m) of pool of free phase oil 0.0015 m^2
- iii.

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

| | |
|------|---------|
| 3.77 | barrels |
|------|---------|

iv.

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

- i. Area (m^2) covered by the oil: 1260 m^2
- ii. Average Depth (m) below ground surface of infiltration of oil: 0.002
- iii. Soil type: CLAY
- iv. p_s (effective porosity of the soil): 8%
- v.

Volume of infiltrated oil. V_{in} :

| | |
|------|---------|
| 1.27 | 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 | NOT | |
| Bright Colour | 0.0003 | | |
| Dull | 0.001 | | |
| Dark | 0.002 | APPLICABLE | |
| 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: 672877

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| | | |
|---|-----|---------|
| 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_{ev} : | 0.89 | 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 $V_{Est}(bbls) = V_{vap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recJ}(bbls)$

$V_{Est}(bbls) = 0.89 + 127 + 3.77 = 593 \text{ BARRELS}$

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

$V_{Est}(bbls) = 5.93 \text{ barrel} \approx 6 \text{ BARRELS}$

- *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 15 / 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