



THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED  
JOINT INVESTIGATION REPORT FOR INCIDENT NO: 689015

No. 61590

**A. GENERAL INFORMATION:**

1. Spill incident Number: 689015
2. Name of Location 10 INCH UTOROGU - UPS DELIVERY LINE @ OTUJEREM
3. Name of nearest community OTUJEREMI
4. State DELTA LGA UGHELLI - SOUTH
5. Type of Production facility/Installation DELIVERY LINE Asset owner /District PIPELINE

**B. INCIDENT INFORMATION:**

6. Details of incident

- a. Date of incident 19/07/2011
- b. Date/Period of investigation, 23/07/ @ 1240 HRS
- c. Description of spill point environment

- |  |   |   |
|--|---|---|
| <input checked="" 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 type="checkbox"/> [Y]            | <input checked="" 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] |

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 type="checkbox"/> [Y] | <input checked="" 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 type="checkbox"/> [Y] | <input checked="" 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] |

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),      | <input type="checkbox"/> [Y] | <input checked="" type="checkbox"/> [N] |

EQUIPMENT FAILURE  
[FAILED] CLAMP

e. Spill point coordinates

Northing:

159152M

Easting:

384143M



No. 1599

7. Type of environment of spill site:

- Type of environment of which oil has spread:

8. Distance from the nearest sensitive habitat

9. Containment measures put in place;

10. Any pictures or video coverage? ☒ [Y] ☐ [N]

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

If yes give brief description:

---

---

---

---

### A. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
					NONE WITHIN AREA OF IMPACT



No. 1531

B. Crops/Economic Trees

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

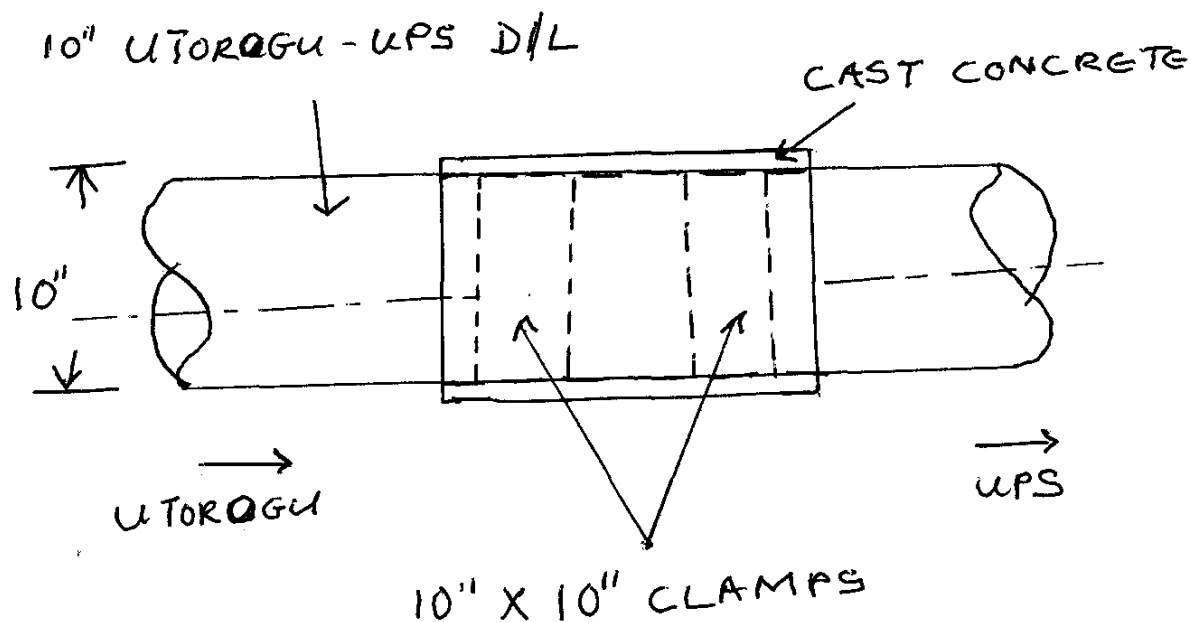
C. Fish/Nets/Ponds

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 01590

### E. Coordinates

Page 4 of 7



No. 1530

**G. INCIDENT INFORMATION:**

**17 Impacted Area Details**

- a. Total calculated area of impact 31 m<sup>2</sup>
- Impact within SPDC R.O.W 31 m<sup>2</sup>
  - 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
------------	---------

**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<sup>2</sup>) occupied by pool of free phase oil 31 m<sup>2</sup>
- ii. Average Depth (m) of pool of free phase oil 0.0005 m
- iii. EMULSIFICATION FACTOR 60%
- Volume of pooled of free phase oil,  $V_{pool}$ : 

<u>0.04</u>	barrels
-------------	---------
- iv.

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

- i. Area (m<sup>2</sup>) covered by the oil: \_\_\_\_\_
- ii. Average Depth (m) below ground surface of infiltration of oil: \_\_\_\_\_
- iii. Soil type: \_\_\_\_\_
- iv.  $p_e$  (effective porosity of the soil): \_\_\_\_\_
- v.

Volume of infiltrated oil,  $V_{inf}$ : 

<u>NIL</u>	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		
Bright Colour	0.0003		
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)



# THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 689015

No. 1530

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:  $V_{vap}$ :

0.01

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

$V_{Est}(bbls) =$  0.05 BBLs

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

$V_{Est}(bbls) =$  0.05 BBLs

\* 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 23/07/2011 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

DPR WAS INFORMED/INVITED BUT COULD NOT PARTICIPATE IN THE VISIT