

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0185 768354

(Note: As practicable as possible the JIT report is to be signed in the field by all the participating parties)

**A. GENERAL INFORMATION:**

1. Spill incident Number: 768354 2. Type of incident\* OIL SPILL/FIRE  
 3. Name of Location 8' UMUECHEM - NKPOKU PIPELINE, IGWURUTA  
 4. Name of nearest community OMUNWEI 5. State: RIVERS 6. LGA IKWERRE  
 7. Type of Production facility/Installation PIPELINE 8. Asset owner/District NPE/PHI

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 24TH JANUARY, 2012.  
 b. Date/Period of investigation: 26TH JANUARY, 2012.

c. Description of spill point environment

- Firmed soil  Loose soil  Previously excavated area  
 Under water  Swampy  Exposed pipe surface  
 Well Platform (on Water)  Rig

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

- Drilled hole  Hack saw cut  Explosive tear,  
 Complete Rupture  Inward dent,  Well head tampering  
 Failed Weld-on illegal hot tap valve,  Missing Pipeline/Flowline  
 Crude oil theft (illegal bunkering) point,  Third party tampering with Clamp  
 Third party tampering with valve setting,  Third party tampering with flange,  
 External Corrosion  Internal Corrosion  
 Saver-pit over flow,  Surge vessel overflow,  Outward dent  
 Flare System/Bund wall Failure  Valve Failure  com unit failure  
 Cold vent  Relief valve failure  Others (specify) \_\_\_\_\_

e. Incident due to:

- Third party interference  Operational  Others (specify) \_\_\_\_\_

f. Spill point coordinates

Measuring unit	
Northing: (m)	Easting: (m)
108637.46	506970.02

NACHTA - MID BELT

\*This can be: a) Oil Spill b) Drilling fluid/Chemical c) Siltation d) construction e) Encroachment f) Fire.

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**C. RISK ASSESSMENT**

10. Type of environment:

- Land       Swamp       Water       Seasonal swamp

i. Type of environment to which oil has spread:

- Land       Swamp       Water       River (identify) \_\_\_\_\_

ii. Weather condition

- Raining       Sunny

11. Distance from the nearest sensitive habitat

- Government reserved and designated protected area [            ,m]  
 Drinking water source [            ,m]  
 Built up area [            ,m]  
 Farmlands [ NIL ,m] **FARMLAND PARTLY BURNED BY FIRE**  
 Fish Farm/Pond [            ,m]  
 Fishing net [            ,m]  
 Others (specify). [            ,m]

12. Containment measures put in place;

- Booms       Trench       Dyke

Others: NONE

13. Any pictures or video coverage? [Y]  [N]

14. 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**

15. Structures / Properties

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

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1.	CASSAVA STEMS			✓	50	FIRE-BURNT IMPACTED AREA WITHIN FARMLAND

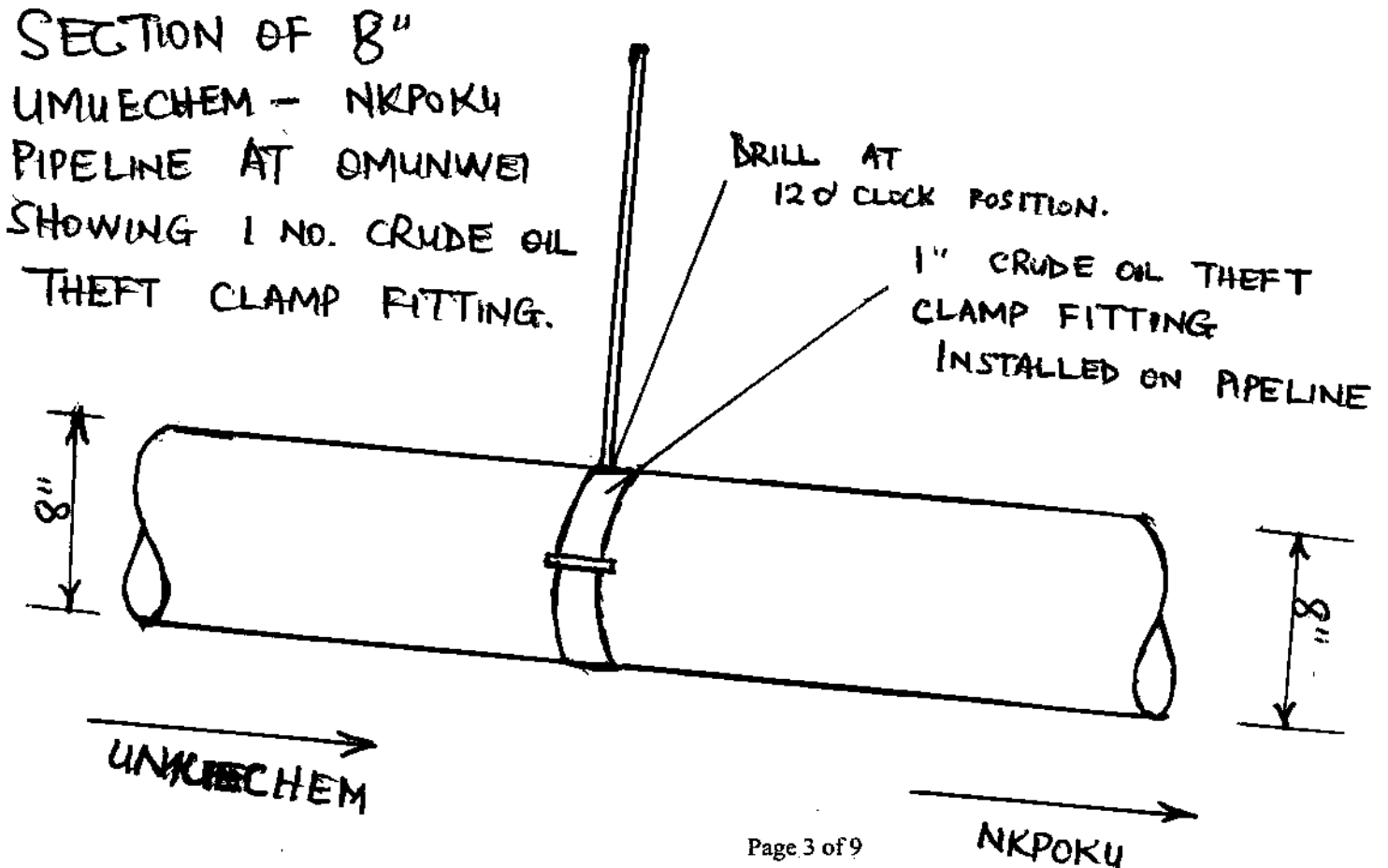
17. Fish/Nets/Ponds

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

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

S/N	Others	Description	Quantity/Size	Comments
		NONE WITHIN AREA OF IMPACT		

E. GRAPHIC DESCRIPTION OF LEAK POINT (Overview sketch of the site should be added as an appendix 1)



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

19. Impacted area boundary Coordinates (If more than 12 points, Attach as an appendix 2)

MUNNA MAIN BSLF

S/N	Northing (m)	Easting (m)
622	108622.11	506966.91
621	108628.28	506957.62
650	108631.84	506960.77
649	108646.70	506960.80
647	108646.69	506963.88
646	108662.05	506963.92
644	108662.07	506957.75
643	108665.15	506954.68
642	108668.22	506954.69
640	108671.30	506951.61
639	108674.38	506945.46
638	108683.59	506948.56
637	108683.57	506957.80

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 0.124
- Impact within SPDC R.O.W \_\_\_\_\_
- Impact outside R.O.W \_\_\_\_\_

21. Volume of oil recovered before completion of JIV ( $V_{rec}$ ):

Recovered oil $V_{rec}$	<u>0.24</u>	barrels
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20. Computation of the residual volume on site

a. Computation of volume of pool of free phase oil (on land or confined water body).

- Area ( $m^2$ ) occupied by pool of free phase oil 43
- Average Depth (m) of pool of free phase oil 0.002
- Emulsification factor: NIL

iv. Volume of pool of free phase oil. $V_{pool}$ :	<u>0.54</u>	barrels
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b. Computation of volume of infiltrated oil in the soil ( $V_{inf}$ ).

TOTAL AREA  
OF BURNT  
AND INFILTRATED  
OIL - IMPACTS  
IS APPROXIMATELY

- i. Area ( $m^2$ ) covered by the oil: 349.2
- ii. Area of the pool of free phase oil in touch with soil: NIL
- iii. Average Depth (m) below ground surface of infiltration of oil: 0.006
- iv. Soil type: CLAY
- v.  $P_e$  (effective porosity of the soil): 8%

iv. Volume of infiltrated oil. $V_{inf}$	<u>1.05</u>	barrels
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1164  $m^2$   
ABOUT  
30% OF  
WHICH  
COVERS  
OIL  
INFILTRATION  
= 349.2  $m^2$

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

- i. Total area of oil on open water: NIL
- ii. Table of average depth of oil on water based on coloration \*

	Thickness (mm)	Percentage coverage	Volume ( $m^3$ )
Barely Visible	0.00004	<b>NOT APPLICABLE</b>	
Silvery	0.00008		
Slight Color	0.00015		
Bright Color	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

iii. Volume of oil on open water. $V_{wat}$ :	<u>NIL</u>	barrels
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22. Calculation of evaporated volume:

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

iii. Volume of evaporated oil. $V_{evap}$ :	<u>0.61</u>	barrels
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Evaporation Factors (E-Factor) for SPDC Crude oil			
Oil Type	Days on site	Bonny Light	Bonny Medium
Period Since Oil Spill	< 1 day	10%	5%
	1-7 days	25%	15%
	> 7 days	40%	25%

23. Gross Total Estimated Spilled Volume  $V_{Est}(bbls) = V_{cvap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls) = 0.61 + NIL + 1.05 + 0.54 + 0.24 = 2.44$

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$V_{Est}(bbls)=$	<b>2.4 BARRELS</b>
24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6*V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls) = 0.61 + NIL + 1.05 + 0.54 + 0.24 = 2.44$	
$V_{Est}(bbls)=$	<b>2.4 BARRELS</b>

\*Calculation of the respective estimated volume is to be done using the new spill estimation software on site

\*Conversion of m3 to barrels is Total volume VT (m3) x 6.29

\*Emulsification factor for spill on water to consider is 60% of volume of oil.

**25. GENERAL STATUS OF THE SITE**

- A. Joint investigation of the incident site found that there is no residual impact After the initial response and therefore recommend that the site be closed out
- B. Investigation of the incident site showed that there is residual impact on site requiring further works

**26 Signatories**

This report was filled and signed on the 26/01/2012 at incident site by joint investigation representatives from

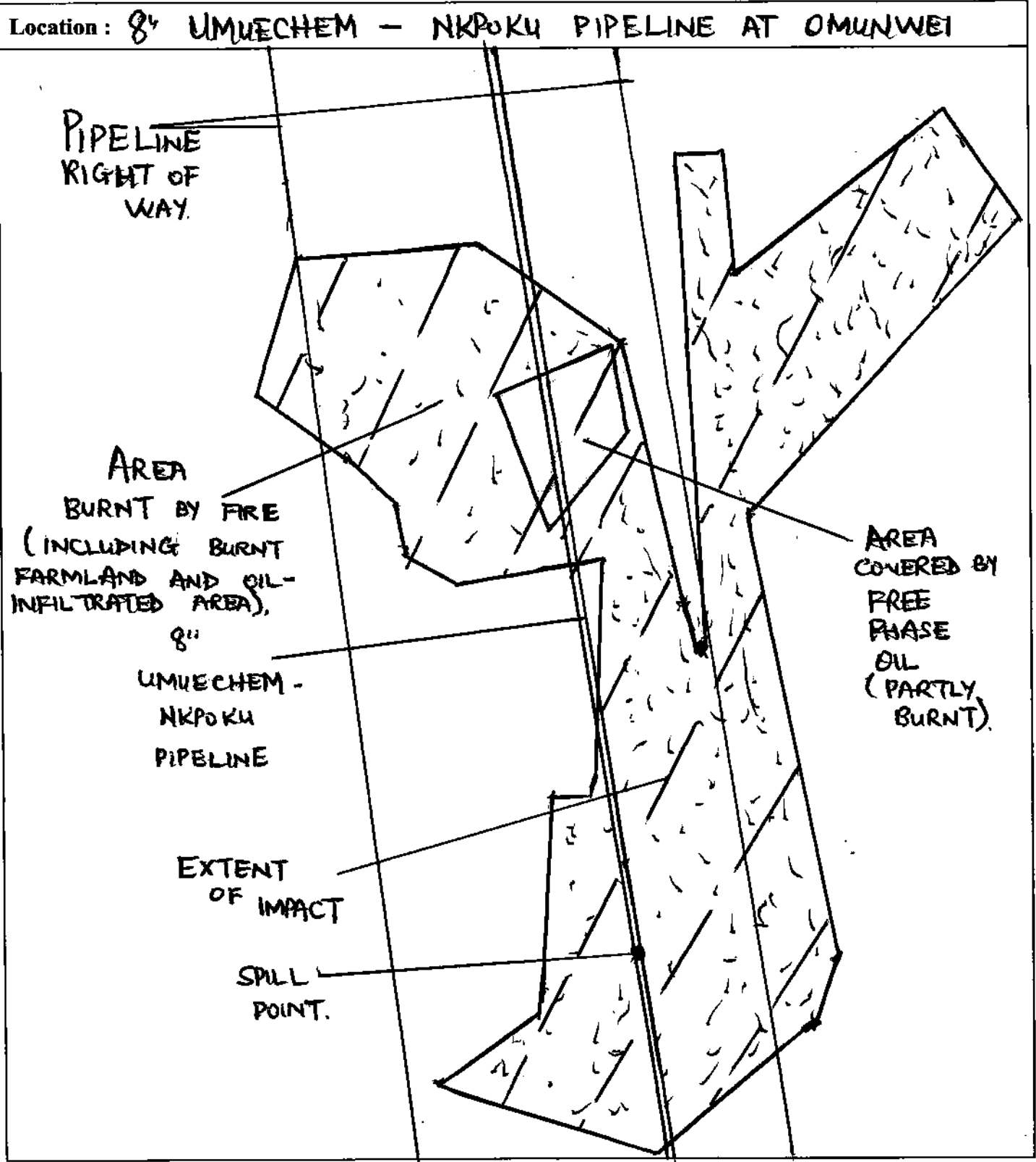
- Host Community
- Department of Petroleum Resources [DPR]:
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Nigeria Police Force [NPF]:
- Shell Petroleum Development Company [SPDC]:

*Tick as applicable*

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20. Appendix 1: Overview sketch of the site



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21. Appendix 2: TABLE SHOWING ADDITIONAL COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

MINTNA MID-BELT

S/N	Northing (m)	Easting (m)
636	108677.41	506963.95
634	108658.97	506966.99
635	108662.05	506966.99
630	108677.41	506967.03
633	108686.62	506967.05
632	108686.62	506970.13
631	108677.40	506970.11
629	108683.53	506976.29
628	108695.29	506988.64
627	108692.70	506994.79
626	108677.37	506982.43
625	108665.10	506973.16
624	108634.37	506979.26
623	108628.23	506976.16