

(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: 987213 2. Type of incident* OIL SPILL
 3. Name of Location 14" OKORDIA - RUMUEKPE PIPELINE
 4. Name of nearest community IKARAMA 5. State: BAYELSA 6. LGA YENAGOA
 7. Type of Production facility/Installation OIL PIPELINE 8. Asset owner/District PIPELINE

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 4TH JUNE, 2013.
 b. Start date/time of investigation: 7TH JUNE, 2013 / 12:48 HOURS
 c. Investigation End date: 8TH JUNE, 2013 Actual investigation duration, days: TWO (2) DAYS
 d. Description of spill point environment

- Firmed soil Loose soil Recently excavated area
 Under water ~~Swampy~~ **SEASONAL** Exposed pipe surface
 Well Platform (on Water) Drill Rig
 e. Description of leak point (tick as applicable);
 Drilled hole Hack saw cut Tear (_____),
 Complete Rupture Inward dent, Well head tampering
 Failed Weld-on illegal hot tap valve, Failed Clamp 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,
 Corrosion Saver-pit over flow, Surge vessel overflow,
 Bulging Outward Flare System/Bund wall failure Accidental 3rd party equipment
 impact Valve Failure com unit failure Cold vent
 Relief valve failure Others (specify) _____

- f. Incident caused by:
 Third party interference (Sabotage ; crude theft ; Line theft ; Accidental 3rd party damage
 Operational Others (including Mystery spills) _____

g. Spill point coordinates

Measuring unit	
Northing: (m)	Easting: (m)
127782.45	443694.19

*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 Shoreline/Waterfront

i. Type of environment to which oil has spread:

- Land **SEASONAL** Swamp Water River (identify) _____

ii. Weather condition

- Rain Sunny Dry Wet Windy Hot Cool

11. Distance from the nearest sensitive habitat

- Government reserved and designated protected area [,m]
- Drinking water source [,m]
- Built up area [,m]
- Farmlands [,m]
- Fish Farm/Pond [,m]
- Fishing net [,m]
- Others (specify). **PALM TREES**

IMPACTED BY SPILL.

12. Containment measures put in place;

- Booms Trench Dyke Natural depression Pit
 Others: _____

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
NONE WITHIN AREA OF IMPACT					

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1.	PALM TREES			✓	5	WITHIN SPILL - IMPACTED REGION.

17. Fish/Nets/Ponds

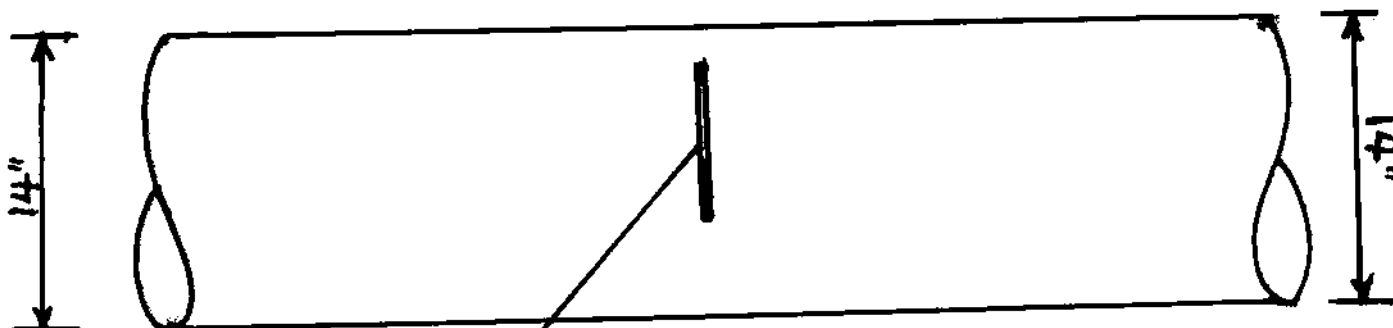
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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 (while detail report of the leak point should be contained in the leak report, overview sketch of the site should be added as an appendix 1)

SECTION OF 14" OKORDIA - RUMUEKPE PIPELINE AT IKARAMA SHOWING POSITION OF HACKSAW CUT.



200MM LONG HACKSAW CUT FROM 9 TO 11 O' CLOCK POSITION (WITH 60MM EFFECTIVE CUT AT 9 O' CLOCK POSITION).

← FROM OKORDIA TO RUMUEKPE.

14" OKORDIA TO RUMUEKPE TRUNKLINE AT IKARAMA		
APPENDIX A		
IMPACTED AREA COORDINATES		
INCIDENT NO:987213		
MINNA_MID BELT		
POINT	NORTHING(m)	EASTING(m)
135	127788.64	443681.88
136	127776.34	443681.84
137	127770.19	443684.91
138	127764.07	443675.64
139	127764.08	443672.56
140	127764.11	443663.32
141	127788.64	443681.88
142	127767.22	443651.01
143	127770.31	443647.93
144	127776.43	443654.12
145	127779.51	443654.13
146	127770.32	443644.85
147	127779.56	443638.72
148	127782.63	443638.73
149	127788.77	443638.75
150	127794.92	443638.77
151	127797.97	443644.94
152	127804.15	443635.72
153	127782.66	443629.49
154	127782.69	443620.25
155	127765.22	443653.31
156	127761.07	443654.07
157	127761.08	443650.99
158	127761.09	443647.9
159	127767.23	443647.92
160	127758.05	443638.65
161	127758.06	443635.57
162	127767.25	443641.76
163	127748.76	443660.19
164	127745.68	443660.18
165	127739.58	443647.84
166	127724.29	443623.14
167	127782.45	443694.19
168	127791.71	443681.89
169	127800.88	443697.33
170	127791.66	443697.3
171	127791.62	443709.62
172	127788.54	443712.69
174	127785.46	443712.68
175	127779.32	443712.66
176	127779.31	443715.75
177	127782.37	443718.84
178	127782.34	443728.08
179	127785.4	443731.17

180	127785.38	443737.33
181	127782.29	443743.48
182	127782.28	443746.56
183	127773.07	443743.45
184	127742.34	443743.36
185	127739.26	443746.43
186	127730.03	443749.48
187	127726.95	443752.55
188	127720.81	443749.45
189	127720.83	443743.29
190	127711.66	443727.85
191	127699.4	443718.57
192	127696.35	443712.4
193	127696.36	443709.32
194	127693.32	443700.06
195	127684.16	443681.55
196	127684.18	443675.39
POND		
198	127705.56	443715.51
199	127711.7	443715.53

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 0.98 Ha
- Impact within SPDC R.O.W YES
- Impact outside SPDC R.O.W YES

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

Recovered oil V_{rec} :	<u>10</u>	Barrels
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22. Computation of estimated residual volume on site

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

- i. Area (m^2) occupied by pool of free phase oil 9,780
- ii. Average Depth (m) of pool of free phase oil 0.006
- iii. Emulsification factor: No

iv.

Estimated Volume of pool of free phase oil. V_{pool} :	<u>369.1</u>	barrels
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b. Computation of estimated volume of infiltrated oil in the soil (V_{inf}).

1. Estimated Volume of infiltrated oil at spill point ($V_{inf a}$)

- i. Area* (m^2) of soil covered by the oil: 1
- ii. Average Depth (m) above leaking facility i.e. pipeline/flowline: 1.55
- iii. Soil type: CLAY iv. P_e (effective porosity of the soil): 8%
- v. Cause of spill: THIRD PARTY INTERFERENCE vi. Oil type: BONNY MEDIUM
- vii. Oil Residence time on site, day: 4 DAYS
- viii. Average depth of infiltration below leaking facility i.e. pipeline/flowline: 0.001m
- ix. Estimated depth of infiltration around spill point: 1.551m

x.

Estimated Volume of infiltrated oil at spill point. $V_{inf a}$:	<u>0.78</u>	barrels
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2. Estimated Volume of infiltrated oil at second spill point [if applicable] ($V_{inf b}$)

- i. Area* (m^2) of soil covered by the oil: _____
- ii. Average Depth (m) above leaking facility i.e. pipeline/flowline: _____
- iii. Soil type: _____ iv. P_e (effective porosity of the soil): _____
- v. Cause of spill: _____ vi. Oil type: _____
- vii. Oil Residence time on site, day: _____
- viii. Average depth of infiltration below leaking facility i.e. pipeline/flowline: _____
- ix. Estimated depth of infiltration around spill point: _____

NOT APPLICABLE

Estimated Volume of infiltrated oil at spill point. $V_{inf b}$:	<u>NIL</u>	barrels
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3. Estimated Volume of infiltrated oil outside immediate spill point(s) region ($V_{inf c}$)

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- i. Area (m²) of soil covered by the oil: NIL
- ii. Area (m²) of the pool of free phase oil in touch with soil: 100
- iii. Average Depth (m) below ground surface of infiltration of oil: 0.001
- iv. Soil type: CLAY
- v. P_e (effective porosity of the soil): 8%
- vi.

Estimated Volume of infiltrated oil. At V _{inf} :	<u>0.06</u>	barrels
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23. Computation of estimated 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 ***Spill Factors from USCG FOG (2000 Edition)*

	Thickness (mm)	Percentage coverage	Volume (m ³)
Barely Visible	0.00004	NOT	
Silvery	0.00008		
Slight Color	0.00015		
Bright Color	0.0003		
Dull	0.001	APPLICABLE	
Dark	0.002		
Black oil	0.1		
Emulsion (30% Oil)	1		

- iii.

Percent Total	100%
Estimated Volume of oil on open water. V _{wat} :	<u>NIL</u>

Barrels

24. Calculation of evaporated volume:

- i. Estimated Volume available for evaporation within surface area: 379.93 BARRELS
- ii. E-Factor: 15%
- iii.

Estimated Volume of evaporated oil. V _{evap} :	<u>67.05</u>	Barrels
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Evaporation Factors (E-Factor) for SPDC Crude oil			
Oil Type	Days on site	Bonny Light	Bonny Medium
Oil Residence time	< 1 day	10%	5%
	1-7 days	25%	15%
	> 7 days	40%	25%

25. Net Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rej}(bbls) =$ 67.05 + NIL + 0.84 + 369.1 + 10 ≈ 446.98

Estimated Reported Volume** $V_{rep}(bbls) =$ 447 BARRELS.

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Calculation of the respective estimated volume is to be done on site as far as practicable using the new spill volume estimation software on site; Conversion of m³ to barrels is Volume (m³) x 6.29; **Round up estimated volume to next whole number using the following rules:

- Any spill volume in excess of 1 bbl is rounded up to the next whole number.
- Any spill volume in less than 1 bbl is rounded up to the next 0.1 bbl.

Examples: Calculated volume = 15.3 bbl ----- Reported volume = 16 bbl
Calculated volume = 0.35 bbl ----- Reported volume = 0.4 bbl
Calculated volume = 0.01 bbl ----- Reported volume = 0.1 bbl.

Wherever this estimation tool is not applicable please refer to paragraph 6c (Deviations) of the JIV procedure to use appropriate steps for column estimation; record the calculation in a plain sheet of paper and attach to the JIV report.

26. 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. <input type="checkbox"/>
B. Investigation of the incident site showed that there is residual impact on site requiring further works. <input checked="" type="checkbox"/>

27. REPRESENTATIVES

This report was filled, agreed and signed on the 08/06/2013 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]:
- Signatories agree with reported findings:
- Separate DPR form has been filled out with same findings:

Tick as applicable

28. Appendix 1: Overview sketch of the site

