

JOINT INVESTIGATION REPORT

INCIDENT NO: 2066027 JIV report S/N: 1134

(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: 2066027 2. Type of incident* OIL SPILL
3. Name of Location 24" TRANS - RAMOS PIPELINE
4. Name of nearest community ODIMODI 5. State: DELTA 6. LGA BURUTU
7. Type of Production facility/Installation OIL PIPELINE
8. Asset owner/District THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED / PIPELINE

B. INCIDENT INFORMATION:

9. Details of incident
a. Date of incident: 25TH APRIL 2018
b. Start date/time of investigation: 4TH MAY, 2018 AT 13:30 HRS
c. Investigation End date: 17TH JULY 2018 Actual investigation duration, days: 5 DAYS
d. Description of spill point environment

- | | | |
|---|-------------------------------------|--|
| <input type="checkbox"/> Firm soil | <input type="checkbox"/> Loose soil | <input type="checkbox"/> Recently excavated area |
| <input checked="" type="checkbox"/> Under water | <input type="checkbox"/> Swampy | <input type="checkbox"/> Exposed pipe surface |
| <input type="checkbox"/> Well Platform (on Water) | <input type="checkbox"/> Drill Rig | |

Additional observations around the spill point: AS AT TIME OF JOINT INVESTIGATION THE AFFECTED SECTION OF THE PIPELINE WAS COMPLETELY SUBMERGED IN WATER BECAUSE THE INCIDENT HAPPENED AT A CREEK CROSSING.

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

- | | | |
|---|--|--|
| <input type="checkbox"/> Drilled hole | <input type="checkbox"/> Hack saw cut | <input type="checkbox"/> Tear (_____), |
| <input type="checkbox"/> Complete Rupture | <input type="checkbox"/> Inward dent, | <input type="checkbox"/> Well head tampering |
| <input type="checkbox"/> Failed Weld-on illegal hot tap valve | <input type="checkbox"/> Failed Clamp, | <input type="checkbox"/> Missing Pipeline/Flowline |
| <input type="checkbox"/> Crude oil theft (illegal bunkering) point, | <input type="checkbox"/> Saver-pit over flow | <input type="checkbox"/> Third party tampering with Clamp |
| <input type="checkbox"/> Third party tampering with valve setting | <input type="checkbox"/> Bulging Outward | <input type="checkbox"/> Third party tampering with flange, |
| <input type="checkbox"/> Flare System/Bund wall failure | <input type="checkbox"/> Cold vent | <input type="checkbox"/> Surge vessel overflow, |
| <input type="checkbox"/> Valve Failure | <input type="checkbox"/> Relief valve failure | <input type="checkbox"/> Accidental 3 rd party equipment impact |
| <input checked="" type="checkbox"/> Corrosion | <input type="checkbox"/> Others(specify) _____ | |

f. Incident caused by:

- Third party interference (Sabotage; crude theft; Line theft; Accidental 3rd party damage
 Operational Mystery spills Others(specify) _____

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

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g. Spill point coordinates

h. Measuring unit

WGS 84

Northing: <u>LATITUDE</u>	Easting: <u>LONGITUDE</u>
<u>5.287130</u>	<u>5.370905</u>
/	/

C. RISK ASSESSMENT

10. Type of environment:

- Land
 Swamp
 Water
 Seasonal swamp
 Shoreline/Waterfront

i. Type of environment to which oil has spread:

- Land
 Swamp
 Water
 River (identify) ODIMODI RIVER

ii. Weather condition

- Rain
 Sunny
 Dry
 Wet
 Windy
 Hot
 cool

11. Distance from the nearest sensitive habitat

- | | | | | |
|---|---|------------|-----|---------------------|
| <input type="checkbox"/> Government reserved and designated protected area | [| <u>411</u> | m] | |
| <input type="checkbox"/> Drinking water source | [| <u>111</u> | m] | |
| <input checked="" type="checkbox"/> Built up area | [| <u>2</u> | ,m] | |
| <input checked="" type="checkbox"/> Farmlands | [| <u>3</u> | ,m] | |
| <input checked="" type="checkbox"/> Fish Farm/pond | [| | ,m] | → IMPACTED BY SPILL |
| <input checked="" type="checkbox"/> Fishing net | [| | ,m] | → IMPACTED BY SPILL |
| <input checked="" type="checkbox"/> Others (specify) <u>MANGROVES AND RAFFIA PALM</u> | | | | → IMPACTED BY SPILL |

12. Containment measures put in place;

- Booms
 Trench
 Dyke
 Natural depression
 Pit
 None
- Others: _____

13. Any pictures or video coverage?

[N]

14. Further response/repair initiated as at the time of JIV?

[N]

if yes to item 14. give brief description:

RECOVERY AND REPAIR ACTIVITIES ARE ONGOING

15. Was there any disruption to the investigation?

[Y]

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If yes to item 15 give brief description:

NOT APPLICABLE

D. TYPE/NUMBERS OF PROPERTIES, IF ANY, FOUND WITHIN THE AREA OF SPREAD OF OIL

16. Structures / Properties

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

17. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1	MANGROVES	✓	✓	✓	LOT	IMPACTED
2	RAFFIA PALM	✓	✓	✓	FEW	BY THE
3	COCONUT	—	—	✓	3 NOS	SPILL

18. Fishing Nets/Fish Ponds

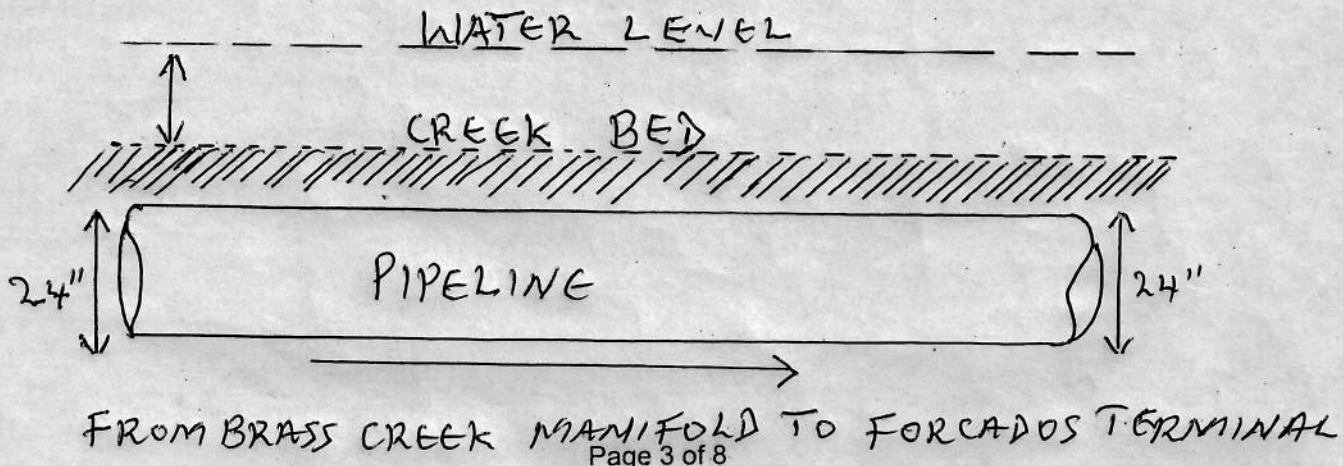
S/N	Nets/Ponds	Description	Quantity/Size	Comments
1	FISH POND	4 X 5 (METRES)	5 NOS	IMPACTED BY
2	FISHING NET	STANDARD SIZE	31 NOS	THE SPILL
3	FISH CAGE	OIL STAIN	15 NOS	

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

S/N	Others	Description	Quantity/Size	Comments
1	FISH TRAP	OIL STAIN	56 NOS	IMPACTED BY THE SPILL

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 I)


SECTION OF 24" TRANS - RAMOS PIPELINE AT ODIMODI SHOWING POSITION OF AFFECTED SUBMERGED PART OF THE PIPELINE



PT_ID	LONG_X	LAT_Y	REMARKS
18	5.370905	5.28713	SP
34	5.37002	5.29017	LIGHT IMPACT ON LAND
33	5.37046	5.2898	LIGHT IMPACT ON LAND
32	5.37051	5.28964	LIGHT IMPACT ON LAND
31	5.37071	5.28917	LIGHT IMPACT ON LAND
30	5.37075	5.28891	LIGHT IMPACT ON LAND
26	5.37083	5.28869	LIGHT IMPACT ON LAND
25	5.37064	5.28871	LIGHT IMPACT ON LAND
24	5.37085	5.28787	LIGHT IMPACT ON LAND
23	5.37101	5.28773	LIGHT IMPACT ON LAND
22	5.37119	5.2874	LIGHT IMPACT ON LAND
42	5.37119	5.28726	LIGHT IMPACT ON LAND
40	5.37073	5.28733	LIGHT IMPACT ON LAND
39	5.3706	5.28813	LIGHT IMPACT ON LAND
38	5.37038	5.28822	LIGHT IMPACT ON LAND
37	5.37047	5.28855	LIGHT IMPACT ON LAND
36	5.37017	5.28915	LIGHT IMPACT ON LAND
35	5.37034	5.28961	LIGHT IMPACT ON LAND
34	5.37002	5.29017	LIGHT IMPACT ON LAND
74	5.36144	5.28369	SHEEN
72	5.36043	5.28327	SHEEN
70	5.3583	5.28242	SHEEN
69	5.35721	5.28191	SHEEN
68	5.35598	5.28142	SHEEN
65	5.35478	5.28143	SHEEN
64	5.35428	5.2809	SHEEN
1915	5.353763	5.280917	SHEEN
62	5.35372	5.28092	SHEEN
61	5.35376	5.28096	SHEEN
60	5.35424	5.28093	SHEEN
59	5.3549	5.28188	SHEEN
58	5.35599	5.28166	SHEEN
57	5.35779	5.28259	SHEEN
56	5.35872	5.28281	SHEEN
55	5.35887	5.28324	SHEEN
54	5.36052	5.28337	SHEEN
53	5.36083	5.28359	SHEEN
101	5.37273	5.29135	LIGHT IMPACT ON WATER
165	5.37358	5.29104	LIGHT IMPACT ON WATER
160	5.37377	5.28984	LIGHT IMPACT ON WATER
161	5.37452	5.28944	LIGHT IMPACT ON WATER
162	5.37546	5.28856	LIGHT IMPACT ON WATER
163	5.37565	5.28744	LIGHT IMPACT ON WATER
164	5.37424	5.28683	LIGHT IMPACT ON WATER
154	5.37314	5.28623	LIGHT IMPACT ON WATER
41	5.37132	5.28695	LIGHT IMPACT ON WATER

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07.2018

1907 5.35243 5.27405 SHEEN
1906 5.352157 5.272858 SHEEN
1904 5.351824 5.271659 SHEEN
1902 5.3515 5.270441 SHEEN
190 5.35119 5.26922 SHEEN
189 5.35118 5.26898 SHEEN
191 5.35068 5.26849 SHEEN
185 5.3507 5.26802 SHEEN
181 5.34987 5.2677 SHEEN
180 5.34937 5.26774 SHEEN
179 5.34895 5.26752 SHEEN
178 5.3491 5.26724 SHEEN
1700 5.349196 5.26711 SHEEN
176 5.34861 5.26652 SHEEN
175 5.34838 5.26676 SHEEN
172 5.34786 5.26646 SHEEN
171 5.34769 5.26636 SHEEN
170 5.34732 5.26627 SHEEN
2070 5.347019 5.266414 SHEEN
2080 5.346799 5.266051 SHEEN
2090 5.346442 5.265445 SHEEN
168 5.34603 5.26506 SHEEN
210 5.34603 5.26512 SHEEN
209 5.34643 5.26547 SHEEN
208 5.34676 5.26605 SHEEN
207 5.34701 5.26646 SHEEN
206 5.34739 5.26632 SHEEN
205 5.34767 5.26641 SHEEN
204 5.34788 5.26657 SHEEN
202 5.34828 5.26676 SHEEN
201 5.34835 5.26688 SHEEN
200 5.34864 5.2666 SHEEN
177 5.34916 5.26708 SHEEN
199 5.34911 5.26718 SHEEN
198 5.3489 5.26756 SHEEN
197 5.34934 5.26779 SHEEN
196 5.34989 5.26783 SHEEN
184 5.35041 5.26797 SHEEN
194 5.35066 5.26806 SHEEN
188 5.35059 5.26853 SHEEN
1890 5.351141 5.268996 SHEEN
1900 5.351165 5.269234 SHEEN
1901 5.351486 5.270448 SHEEN
1903 5.351809 5.271659 SHEEN
1905 5.352147 5.272868 SHEEN
1914 5.35241 5.274057 SHEEN
1909 5.353232 5.2767 SHEEN

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 23.46 Ha
- Impact within R.O.W YES
- Impact outside R.O.W YES

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

Recovered oil V_{rec} :	693	Barrels
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Controlled recovery/evacuation from source with no impact to environment:

NIL	Barrels
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c. Net Estimated Spilled Volume V_{Est} (bbls)* =

923.92 BARRELS

Estimated Reported Volume V_{rep} (bbls) =**

924 BARRELS

***Notes:**

- Volume estimation was done using an excel based tool. (see attached for details on the calculation)
- Reported spilled volume is an estimate

Write other relevant notes taken into consideration for estimating the spilled in the box below:

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 m^3 to barrels is Volume: (m^3) 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 6e (Deviations) of the JIV procedure to use appropriate steps for volume estimation: record the calculation in a plain sheet of paper and attach to the JIV report.

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d. General Status of the site

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

e. Representatives

This report was filled, agreed and signed by the following joint investigation team representatives:

- Host Community:
- Department of Petroleum Resources [DPR]:
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Asset Owner:
- Signatories agree with reported findings:
- Separate DPR form has been filled out with same findings

Tick as applicable

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f. Appendix 1: Overview sketch of the site

