

JOINT INVESTIGATION REPORT

INCIDENT NO: 1470550 JIV report S/N: Nº 0000050

(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: 1470550 2. Type of incident* OIL SPILL
3. Name of Location 28" BOMU - BONNY PIPELINE
4. Name of nearest community AYAMINIMA 5. State: RIVERS 6. LGA BONNY
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 AUGUST, 2015
b. Start date/time of investigation: 27TH AUGUST, 2015 / 08:35 HOURS
c. Investigation End date: 28TH AUGUST 2015 Actual investigation duration, days: TWO (2) DAYS
d. Description of spill point environment

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

Additional observations around the spill point: A DITCH (WITH CRUDE OIL) HAD BEEN DUG AROUND THE SPILL POINT BY UNKNOWN PERSON(S) PRIOR TO FURTHER EXCAVATION, IN THE COURSE OF JOINT INVESTIGATION VISIT, TO EXPOSE LEAK POINT. ON EXPOSURE, A SECTION OF THE PIPELINE CONCRETE COATING SURROUNDING THE LEAK POINT WAS OBSERVED REMOVED BY UNKNOWN PERSON(S). IMPACTED SOIL ON SITE IS DARK BROWN SILTY CLAY WITH ORGANIC MATTER.

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 checked="" 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 type="checkbox"/> Others(specify) _____ | | |

f. Incident caused by:

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

*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>LAT</u>	Easting: <u>LONG</u>
<u>4.44886</u>	<u>7.17800</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) _____

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) RAFFIA PALM AND MANGROVE VEGETATION [.m]

IMPACTED BY SPILL

12. Containment measures put in place:

- Booms
 Trench
 Dyke
 Natural depression
 Pit
 None

Others: EXCAVATED DITCH AROUND SPILL POINT.

13. Any pictures or video coverage?

[Y] [N]

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

[Y] [N]

If yes to item 14, give brief description:

RECOVERY OF FREE-PHASE OIL WAS DONE TO ENABLE EXPOSURE OF SPILL POINT WHICH WAS PLUGGED TO STOP FURTHER LEAK.

15. Was there any disruption to the investigation?

[Y] [N]

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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.	RAFFIA PALM	✓	✓	✓	WITHIN AN IMPACTED AREA OF APPROXIMATELY 0.19 Ha.	IMPACTED BY SPILL.
2.	MANGROVE VEGETATION	✓	✓	✓		

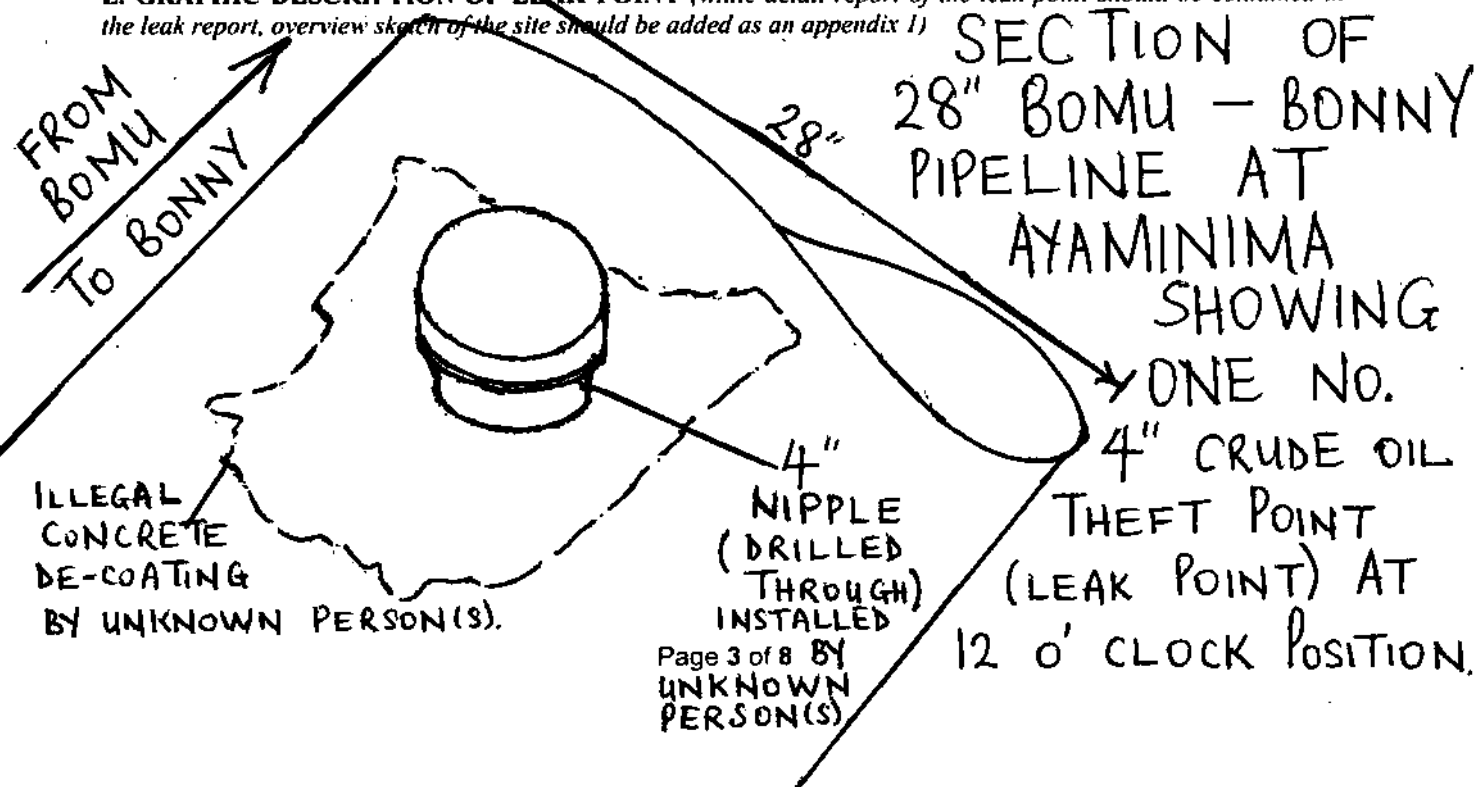
18. Fishing Nets/Fish Ponds

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

19. 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)



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

20. Impacted area boundary Coordinates (If more, Print and attach as an appendix)

S/N	Northing ^{WGS 84} LAT	Easting ^{WGS 84} LONG.
1	4.44886	7.17800 Spill point.
2	4.44728	7.17675
3	4.44775	7.17681
4	4.44769	7.17700
5	4.44764	7.17700
6	4.44761	7.17703
7	4.44811	7.17761
8	4.44808	7.17761
9	4.44836	7.17789
10	4.44833	7.17789
11	4.44844	7.17806
12	4.44842	7.17808
13	4.44850	7.17814
14	4.44847	7.17817
15	4.44853	7.17825
16	4.44856	7.17825
17	4.44853	7.17831
18	4.44858	7.17831
19	4.44856	7.17833
20	4.44856	7.17819
21	4.44853	7.17822
22	4.44872	7.17843
23	4.44872	7.17844
24	4.44894	7.17803
25	4.44892	7.17786
26	4.44875	7.17783
27	4.44861	7.17797
28	4.44858	7.17817
29	4.44878	7.17822
30	4.44867	7.17822
31	4.44278	7.17703
32	4.44747	7.17717
33	4.44808	7.17686
34	4.44803	7.17689
35	4.44756	7.17689

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 0.313 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} :	<u>3.77</u>	Barrels
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Controlled recovery/evacuation from source with no impact to environment:

<u>NIL</u>	Barrels
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c. Net Estimated Spilled Volume $V_{Est}(bbls)^* =$ 63.96

Estimated Reported Volume** $V_{rep}(bbls) =$ 64 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:

NOT APPLICABLE

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 6c (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

