

JOINT INVESTIGATION REPORT

INCIDENT NO: 2038808 JIV report S/N: 1023

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

A. GENERAL INFORMATION:

1. Spill incident Number: 2038808 2. Type of incident* OIL SPILL
3. Name of Location 28" BOMU - BONNY PIPELINE
4. Name of nearest community AYAMBO-BONNY 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: 15TH MARCH, 2018
b. Start date/time of investigation: 17TH MARCH, 2018/14:15 HOURS
c. Investigation End date: 18TH MARCH, 2018 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"/> Drill Rig | |

Additional observations around the spill point: UPON ARRIVAL AT SITE, THE JOINT INVESTIGATION TEAM OBSERVED THAT A BUND WALL, SERVING AS A CONTAINMENT MEASURE, HAD BEEN CONSTRUCTED AROUND THE SPILL POINT. UPON EXPOSURE OF THE SPILL POINT, A SECTION OF THE PIPELINE CONCRETE COATING SURROUNDING IT WAS OBSERVED TO HAVE BEEN REMOVED BY UNKNOWN PERSON(S).

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"/> 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,

JOINT INVESTIGATION REPORT

INCIDENT NO: 2038808 JIV report S/N: 1033

g. Spill point coordinates

h. Measuring unit

WAS 84

Northing: LATITUDE	Easting: LONGITUDE
4.44557	7.17445

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/MANGROVE IMPACTED BY SPILL

12. Containment measures put in place;

- Booms
 Trench
 Dyke
 Natural depression
 Pit
 None

Others: BUND WALL CONSTRUCTED 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 BEING DONE.

15. Was there any disruption to the investigation?

[Y] [N]

JOINT INVESTIGATION REPORT

INCIDENT NO: 2038808 JIV report S/N: 1099

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	IMPACTED BY SPILL
2	MANGROVE VEGETATION			✓	AREA OF 4.12 Ha	

18. Fishing Nets/Fish Ponds

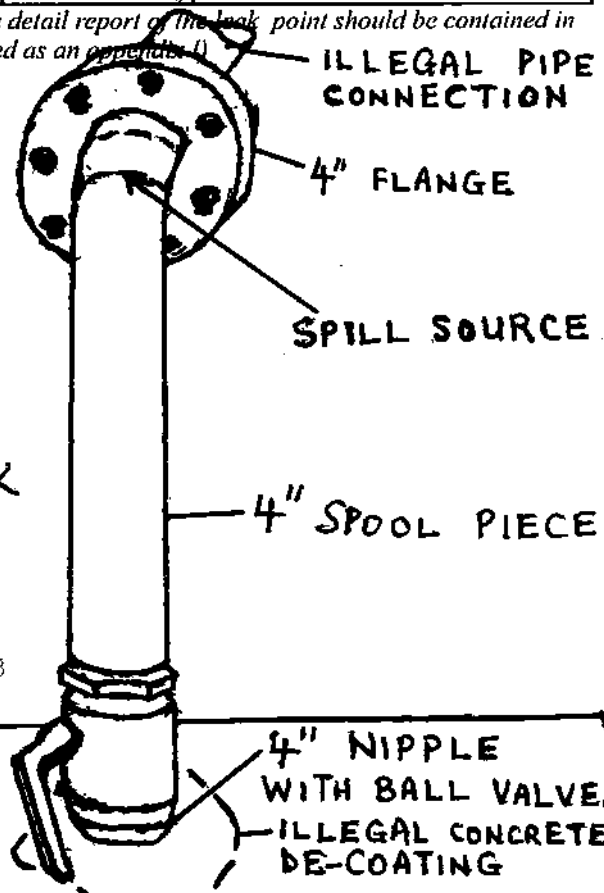
S/N	Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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

S/N	Others	Description	Quantity/Size	Comments
1	CRABS	DEAD CRABS	7 NO.	WITHIN SPILL - IMPACTED REGION.

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.)

SECTION OF 28"
BOMU - BONNY PIPELINE
AT AYAMBO - BONNY
SHOWING ONE (1) NO. 4"
CRUDE OIL THEFT POINT
INSTALLED AT 12 O' CLOCK
POSITION BY UNKNOWN
PERSON(S).



APPENDIX A**IMPACTED AREA COORDINATES****28" BOMU-BONNY TRUNKLINE SPILL AT AYAMBO-BONNY****INCIDENT NUMBER:2038808**

POINT	LATITUDE	LONGITUDE
201	4.44261	7.17385
202	4.44254	7.17379
203	4.44243	7.17384
204	4.44245	7.17381
205	4.44229	7.17378
206	4.44235	7.17371
207	4.44234	7.17368
208	4.44237	7.17366
209	4.44234	7.1736
210	4.44202	7.1733
211	4.44244	7.17398
212	4.44242	7.17403
213	4.44326	7.17451
214	4.44721	7.17533
215	4.44688	7.17558
216	4.44659	7.17573
217	4.44668	7.17566
218	4.4468	7.17487
219	4.44643	7.17456
220	4.44601	7.17432
221	4.4453	7.17396
222	4.44642	7.17541
223	4.44605	7.17523
224	4.44575	7.17496
225	4.44503	7.17464
226	4.44381	7.17414
227	4.44326	7.17418
228	4.4429	7.17396
229	4.44275	7.17434
230	4.4438	7.17481
231	4.4445	7.175
232	4.4456	7.17558
233	4.44161	7.17336
234	4.44126	7.1732
235	4.44128	7.17302
236	4.44137	7.17291

JOINT INVESTIGATION REPORT

INCIDENT NO: 2038808 JIV report S/N: 1033

G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 4.89 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} :	21	Barrels
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Controlled recovery/evacuation from source with no impact to environment:

NIL	Barrels
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<p>c. Net Estimated Spilled Volume $V_{Est}(bbls)^* =$ 115.56</p>
<p>Estimated Reported Volume $V_{rep}(bbls) =$ 116 BARRELS</p>

***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 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.

JOINT INVESTIGATION REPORT

INCIDENT NO: 2038808 JIV report S/N: 1033

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

JOINT INVESTIGATION REPORT

INCIDENT NO: 2038808 JIV report S/N: 1033

f. Appendix 1: Overview sketch of the site

