

JOINT INVESTIGATION REPORT

INCIDENT NO: 2098167 JIV report S/N: 1091

(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: 2098167 2. Type of incident* OIL SPILL
3. Name of Location 24th NKPOKU - BOMU (JNP) PIPELINE
4. Name of nearest community EGBALOR 5. State: RIVERS 6. LGA ELEME
7. Type of Production facility/Installation OIL PIPELINE
8. Asset owner/District THE SHELL PETROLEUM DEVELOPMENT COMPANY / PIPELINE

B. INCIDENT INFORMATION:

9. Details of incident
a. Date of incident: 12th JUNE 2018
b. Start date/time of investigation: 14th JUNE 2018 / 15:30 HRS
c. Investigation End date: 22nd JUNE 2018 Actual investigation duration, days: 3 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 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: THE JOINT INVESTIGATION TEAM OBSERVED EVIDENCE OF MISSING CLAMP AND DRILLED HOLE AT 12 O'CLOCK POSITION FROM PREVIOUS INCIDENT.

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

- | | | |
|---|--|--|
| <input checked="" 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 type="checkbox"/> Corrosion | <input checked="" type="checkbox"/> Others(specify) <u>MISSING CLAMP</u> | |

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

Northing: <u>WGS 84</u>	Easting: <u>WGS 84</u>
<u>4.79234 N</u>	<u>7.17525 E</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

- | | | |
|--|---|-----|
| <input type="checkbox"/> Government reserved and designated protected area | [| ,m] |
| <input type="checkbox"/> Drinking water source | [| ,m] |
| <input type="checkbox"/> Built up area | [| ,m] |
| <input type="checkbox"/> Farmlands | [| ,m] |
| <input type="checkbox"/> Fish Farm/pond | [| ,m] |
| <input type="checkbox"/> Fishing net | [| ,m] |
| <input type="checkbox"/> Others (specify). | [| ,m] |
- } NONE WITHIN
THE VICINITY

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 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
<u>NONE WITHIN AREA OF IMPACT</u>					

17. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1	<u>BAMBOO TREE</u>	<u>—</u>	<u>✓</u>	<u>—</u>	<u>FEW</u>	<u>IMPACTED BY SPILL</u>

18. Fishing Nets/Fish Ponds

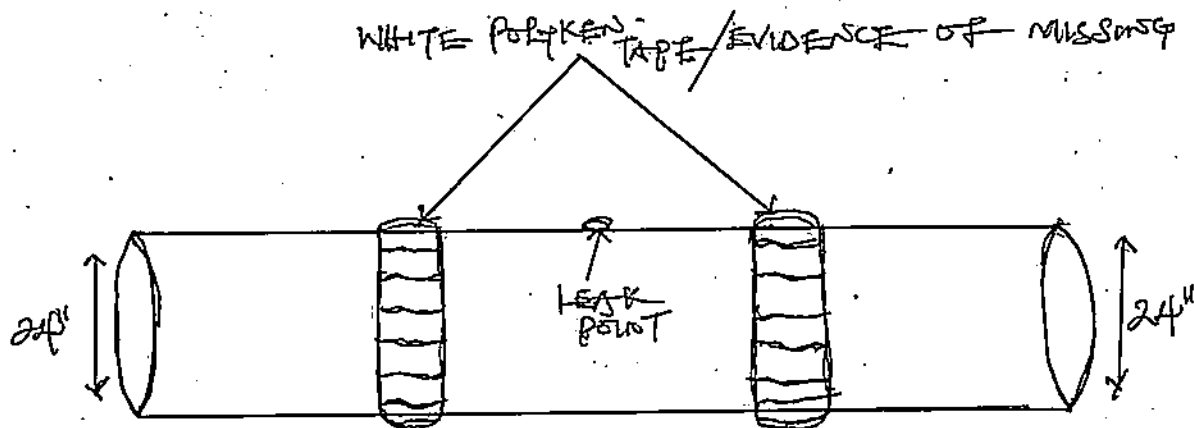
S/N	Nets/Ponds	Description	Quantity/Size	Comments
<u>NONE WITHIN AREA OF IMPACT</u>				

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

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

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" NKPOKU - BOMU PIPELINE AT EQUATOR SHOWING POSITIONS OF THE MISSING CLAMP AND DRILLED HOLE AT 12 O'CLOCK POSITION (LEAK POINT)



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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	Easting
	KGS 84	KGS 84
1	4.79237	7.17528
2	4.79233	7.17528
3	4.79233	7.17525
4	4.79230	7.17519
5	4.79236	7.17517
6	4.79240	7.17503
7	4.79248	7.17502
8	4.79247	7.17499
9	4.79249	7.17493
10	4.79257	7.17497
11	4.79250	7.17514

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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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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 0.045386 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} :	Barrels
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Controlled recovery/evacuation from source with no impact to environment:

	Barrels
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c. Net Estimated Spilled Volume V_{Est} (bbls)* = 11.32 bbls

Estimated Reported Volume V_{rpt} (bbls) = 12 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 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 volume estimation: record the calculation in a plain sheet of paper and attach to the JIV report.

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f. Appendix 1: Overview sketch of the site

