

JOINT INVESTIGATION REPORT

INCIDENT NO: 1966586 JIV report S/N: 0909

(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: 1966586 2. Type of incident* OIL SPILL
3. Name of Location 28" NKPOKU - BOMU PIPELINE
4. Name of nearest community NORKPO 5. State: RIVERS 6. LGA TAI
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: 11TH NOVEMBER, 2017
b. Start date/time of investigation: 12TH NOVEMBER, 2017/11:16 HOURS
c. Investigation End date: 13TH NOVEMBER 2017 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 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 EXPOSURE BY EXCAVATION, THE SPILL POINT WAS OBSERVED TO BE PARTLY CONCEALED IN CONCRETE.

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,

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g. Spill point coordinates

h. Measuring unit

WGS 84

Northing:	Easting:
4.735505	7.205557
←	←
↘	↘
↙	↙

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 checked="" type="checkbox"/> Farmlands | [| 3 | , | m] |
| <input type="checkbox"/> Fish Farm/pond | [| | , | m] |
| <input type="checkbox"/> Fishing net | [| | , | m] |
| <input type="checkbox"/> Others (specify). | [| | , | m] |

12. Containment measures put in place;

- Booms
 Trench
 Dyke
 Natural depression
 Pit
 None
- Others: BUND WALL

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 AND REPAIR WAS TEMPORARILY DONE BY BLIND-FLANGING THE SPILL POINT.

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
NONE WITHIN AREA OF IMPACT						

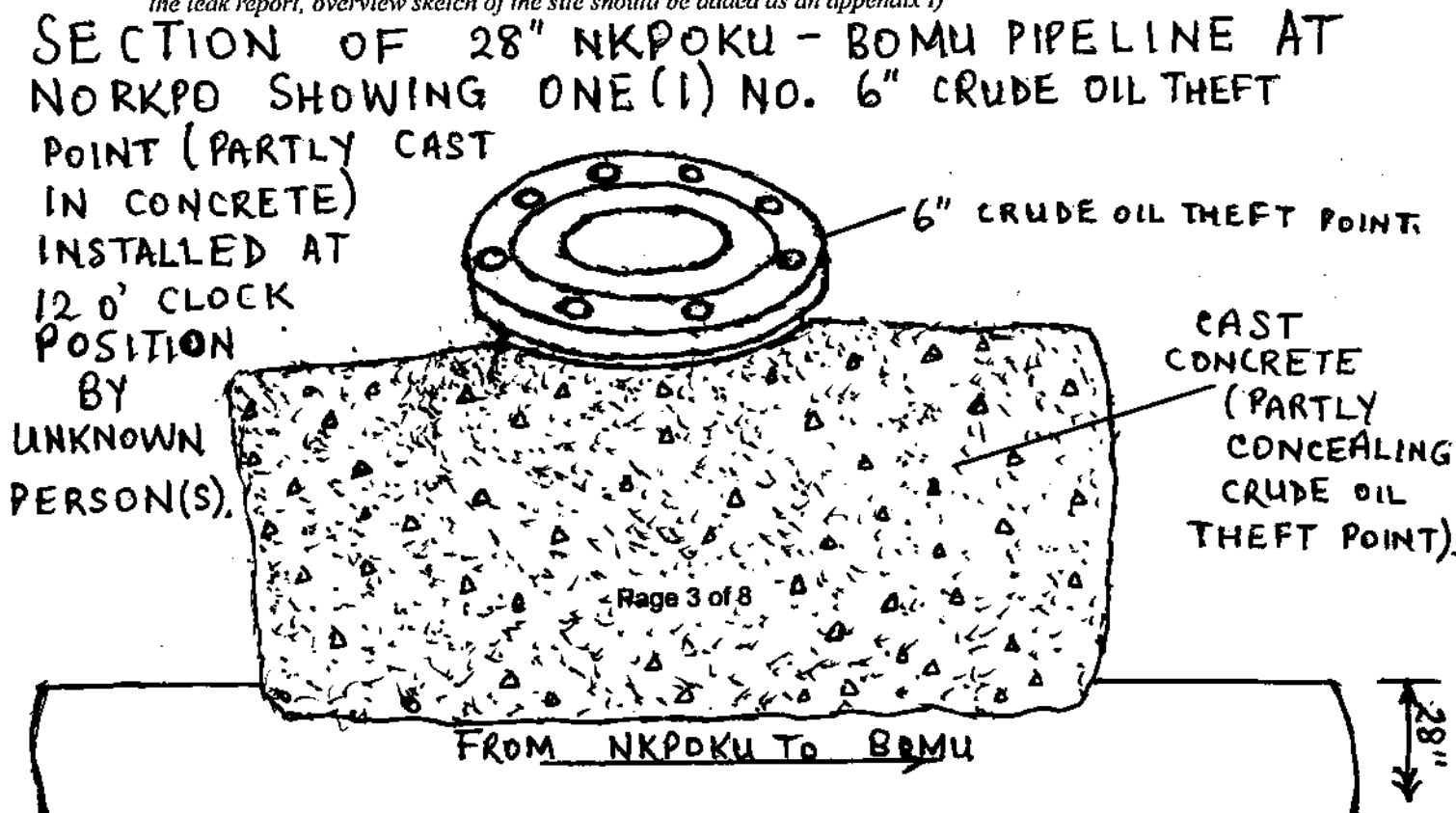
18. Fishing Nets/Fish Ponds

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 I)*



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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

See Appendix A For Impacted Area Coordinates

APPENDIX A**IMPACTED AREA COORDINATES (WGS 84)****28" NKPOKU - BOMU PIPELINE AT NORKPO****INCIDENT NO. 1966586**

PTS	NORTHING (Y)	EASTING (X)
449	4.73546	7.20558
450	4.73555	7.20557
451	4.73553	7.2055
452	4.73547	7.20553
453	4.7356	7.20549
454	4.73555	7.20537
455	4.7355	7.20532
456	4.73539	7.20539
457	4.73538	7.20534
458	4.73551	7.20512
459	4.73556	7.20496
460	4.7358	7.20469
461	4.73569	7.20465
462	4.7358	7.20451
463	4.73583	7.20442
467	4.73566	7.20449
468	4.73562	7.2046
469	4.73579	7.20455
470	4.73587	7.20439
471	4.73589	7.20429
472	4.73592	7.20426
473	4.73596	7.20421
474	4.73596	7.20421
475	4.73588	7.20422
476	4.73597	7.20424
477	4.73602	7.20418
478	4.73606	7.20411
479	4.73608	7.20407
480	4.73608	7.204
481	4.73604	7.20399
482	4.73602	7.20407
483	4.73593	7.20418
484	4.73605	7.20403
485	4.73612	7.20383
486	4.73608	7.20379
487	4.73601	7.20381
488	4.736	7.20386
489	4.736	7.20389
490	4.73605	7.20393
491	4.73611	7.20377
492	4.73616	7.20368
493	4.73619	7.20358
494	4.73627	7.20349
495	4.73635	7.20332
496	4.7365	7.203

APPENDIX A (CONTINUED)

IMPACTED AREA COORDINATES (WGS 84)

28" NKPOKU - BOMU PIPELINE AT NORKPO

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497	4.73646	7.20301
498	4.7363	7.20337
499	4.73623	7.20339
500	4.73608	7.2037
501	4.73663	7.20295
502	4.73658	7.2029
503	4.73647	7.20298
504	4.73652	7.20292
505	4.7365	7.20281
506	4.73656	7.2028
507	4.73656	7.20265
508	4.7366	7.20267
509	4.73666	7.20273
511	4.7358	7.20438
512	4.73574	7.20435
513	4.7356	7.20465
514	4.73554	7.20476
515	4.73549	7.20483
516	4.73545	7.20491
517	4.73544	7.20497
518	4.7354	7.20499
519	4.73548	7.20505
520	4.73536	7.2051
521	4.73534	7.20522
522	4.73533	7.20538
523	4.73539	7.20555
525	4.73543	7.20545

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 0.37ha
- 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>54</u>	Barrels
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Controlled recovery/evacuation from source with no impact to environment:

<u>NIL</u>	Barrels
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<p>c. Net Estimated Spilled Volume V_{Est}(bbls)* = <u>102.99</u></p>
<p>Estimated Reported Volume** V_{rep}(bbls) = <u>103 BARRELS</u></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 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

- | |
|--|
| <p>i. Joint investigation of the incident site found that there is no residual impact after the initial response and JIV therefore recommend that the site be closed out <input type="checkbox"/></p> <p>ii. Investigation of the incident site showed that there is residual impact on site requiring further works <input checked="" type="checkbox"/></p> |
|--|

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

