

JOINT INVESTIGATION REPORT

INCIDENT NO: 1649883 JIV report S/N: N° 0000169

(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: 1649883 2. Type of incident* OIL SPILL
3. Name of Location 28" BOMU - BONNY PIPELINE
4. Name of nearest community OKOLO LAUNCH 5. State: RIVERS 6. LGA BONNY/ANDONI
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: 8TH JUNE, 2016
b. Start date/time of investigation: 11TH JUNE, 2016 / 14:45 HOURS
c. Investigation End date: 24TH JUNE, 2016 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: TWO METAL SHEETS (ONE ON TOP OF THE OTHER) USED AS LOCAL SHORING AND WITH APPROXIMATE CROSS-SECTIONAL AREAS OF 1.5M X 1.2M WERE INSTALLED AROUND THE LEAK POINT BY UNKNOWN PERSON(S). SURROUNDING THE ILLEGAL METAL SHEETS WAS A COFFERDAM WHICH HAD BEEN CONSTRUCTED BY THE SPDC ASSET OWNER, PREPARATORY TO THE SECOND DAY OF J.I.V.

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) Situation d) construction e) Encroachment f) Fire.

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g. Spill point coordinates

h. Measuring unit

WGS 84

Northing:	Easting:
4.504562	7.222955
/	/

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). MANGROVE VEGETATION

IMPACTED BY SPILL.

12. Containment measures put in place;

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

NOT APPLICABLE

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.	MANGROVE VEGETATION		✓	✓	WITHIN AN APPROXIMATE AREA OF 1.2 Ha.	WITHIN SPILL-IMPACTED AREA.

18. Fishing Nets/Fish Ponds

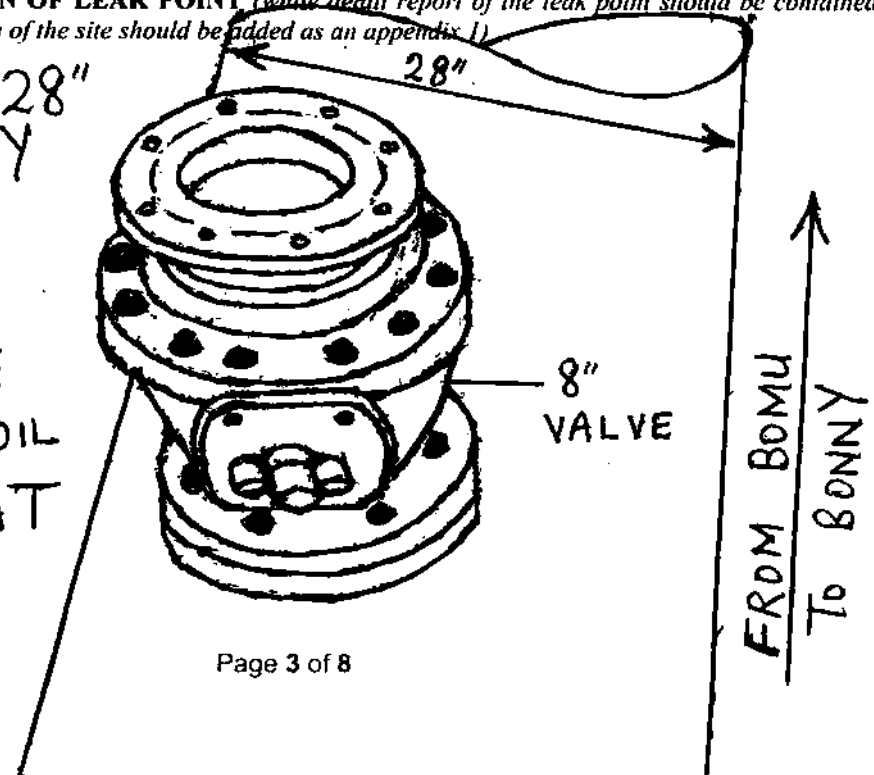
S/N	Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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

S/N	Others	Description	Quantity/Size	Comments
1.	CRABS	DEAD	20 NO.	WITHIN SPILL-IMPACTED AREA.

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)

SECTION OF 28"
BOMU — BONNY
PIPELINE AT
OKOLO LAUNCH
SHOWING ONE
NO. 8" CRUDE OIL
THEFT POINT AT
12 O' CLOCK
POSITION.



APPENDIX A**INC.NO=1649883.****IMPACTED AREA COORDINATES FOR 28" TNP SPILL INCIDENT AT OKOLO-LAUNCH.****WGS 84**

PTS	Eastings	Northings
338	7.22196	4.50401
339	7.22204	4.50394
340	7.2221	4.50379
341	7.22319	4.50365
342	7.223102	4.503722
3420	7.223248	4.503045
343	7.22353	4.504115
344	7.2236	4.50405
345	7.224002	4.504472
346	7.22392	4.50452
347	7.224341	4.505022
3480	7.225025	4.505822
350	7.2242	4.50468
351	7.224983	4.505179
352	7.225	4.50497
353	7.22582	4.50538
354	7.225811	4.505507
3540	7.226782	4.505664
355	7.22631	4.50491
356	7.22645	4.505007
357	7.22795	4.50532
358	7.22809	4.50548
3580	7.227539	4.505607
359	7.22382	4.50425
360	7.22256	4.50334
361	7.22352	4.50222
362	7.22403	4.5017
3620	7.223708	4.503902
3621	7.225035	4.50483
3622	7.226335	4.504715
3623	7.227624	4.54779
366	7.22172	4.50492
367	7.2217	4.50482
3670	7.222984	4.505964
368	7.22138	4.50463
369	7.22077	4.50517
370	7.21916	4.50655
3700	7.220942	4.50645
371	7.21857	4.50715
3710	7.219343	4.50685

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 15.38 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>NIL</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_{ES} (bbls)* = 75.57

Estimated Reported Volume** V_{rsb} (bbls) = 76 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 on 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 <input type="checkbox"/> |
| ii. Investigation of the incident site showed that there is residual impact on site requiring further works <input checked="" type="checkbox"/> |

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

