

JOINT INVESTIGATION REPORT

INCIDENT NO: 1896813 JIV report S/N: Nº 5000400

(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: 1896813 2. Type of incident* OIL SPILL
3. Name of Location 4" TUNU. WELL - 4L FLOWLINE
4. Name of nearest community AGBIDIAMA 5. State: BAYELSA 6. LGA EKEREMOR
7. Type of Production facility/Installation FLOWLINE
8. Asset owner/District THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED / SWAMP WEST

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 24TH JULY, 2017
b. Start date/time of investigation: 28TH JULY, 2017 AT 1130 HRS
c. Investigation End date: 28TH JULY, 2017 Actual investigation duration, days: ONE DAY
d. Description of spill point environment

- | | | |
|---|--|--|
| <input type="checkbox"/> Firm soil | <input type="checkbox"/> Loose soil | <input 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: ON LIFTING THE FLOWLINE, THE JOINT INVESTIGATION TEAM OBSERVED A CORRODED LEAK POINT (ABOUT 4CM LONG) AT THE HEAT AFFECTED ZONE, NEAR A WELDED JOINT AT 6 O' CLOCK POSITION. THE LEAK WAS OBSERVED TO HAVE STOPPED AS AT THE TIME OF THIS INVESTIGATION.

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 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 checked="" type="checkbox"/> Others (specify) <u>CORROSION</u> | | |

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 (DECIMAL - DEGREE)

Northing: (LATITUDE)	Easting: (LONGITUDE)
4.8819	5.61438
/	/
/	/

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) _____

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?

[Y]

If yes to item 14, give brief description:

NOT APPLICABLE

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
NONE WITHIN AREA OF IMPACT					

17. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
1.	MANGROVES	FEW	---	---	FEW	OIL STAINED (WITHIN SPDC ROW)
/						

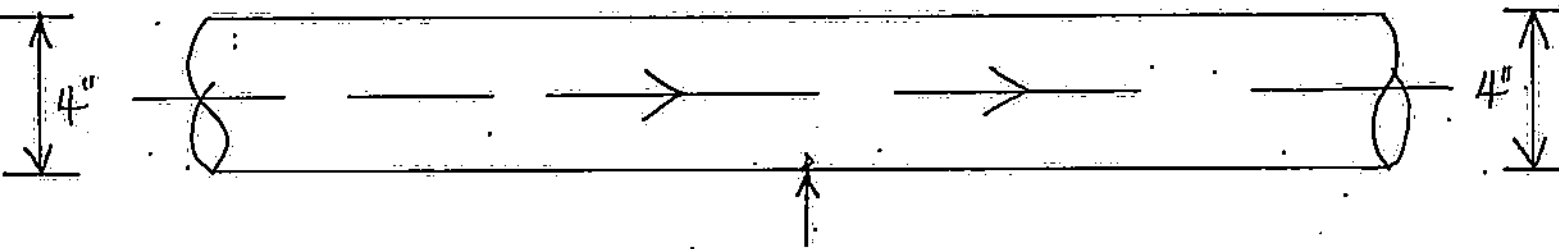
18. Fishing Nets/Fish Ponds

S/N	Nets/Ponds	Description	Quantity/Size	Comments
1.	FISHING NETS	OIL STAINED FISH NETS	4	ALL WITHIN SPDC RIGHT OF WAY
/				

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

S/N	Others	Description	Quantity/Size	Comments
1.	FISHING TRAPS	OIL STAINED FISH TRAPS	94	ALL WITHIN SPDC RIGHT OF WAY
/				

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 4" TUNU WELL-4L FLOWLINE AT AEBDIAMA, SHOWING POSITION OF CORRODED LEAK POINT (ABOUT 4CM LONG) AT 6 O' CLOCK.



CORRODED LEAK POINT (ABOUT 4CM LONG)
AT 6 O' CLOCK POSITION

APPENDIX 1

Coordinate List for 4" Tunu Well-4L Flowline at Agbidiana_1896813		
PT_ID	LAT_Y	LONG_X
SP	4.8819	5.61438
0	4.88189	5.61439
1	4.88183	5.61433
2	4.88179	5.61428
3	4.88186	5.61434
4	4.882	5.61446
5	4.88208	5.61471
6	4.88201	5.61516
7	4.88193	5.61583
8	4.8823	5.61688
9	4.88209	5.61685
10	4.88231	5.6179
11	4.88317	5.61903
12	4.88277	5.61866
13	4.88284	5.62072
14	4.88187	5.62219
15	4.88202	5.62232
16	4.88235	5.6217
17	4.88307	5.62154
18	4.8833	5.62137
19	4.88339	5.621
20	4.88341	5.62074
21	4.88266	5.62071
22	4.88199	5.61447
23	4.8818	5.61427
24	4.88179	5.61428
25	4.88186	5.6144
26	4.88205	5.61471
27	4.88198	5.61517
28	4.88189	5.61584
29	4.88236	5.6168
30	4.88247	5.61687
35	4.88249	5.61694
36	4.88206	5.61684
37	4.88232	5.61789
38	4.88185	5.61685
39	4.88344	5.62144
40	4.88214	5.61669
41	4.88186	5.61432
42	4.88186	5.61436
43	4.88205	5.61788
44	4.88263	5.61914
45	4.88183	5.61685
46	4.88203	5.61788
47	4.88261	5.61914
48	4.88263	5.62071
49	4.88185	5.62218
50	4.88204	5.62233
51	4.88237	5.6217
52	4.88343	5.62073
53	4.88285	5.62071
54	4.88319	5.61903
55	4.88279	5.61865
56	4.88213	5.6167

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 0.4258 HA
- Impact within R.O.W YES
- Impact outside R.O.W NO

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_{Est} (bbls)* =

10.97 BBLS

Estimated Reported Volume** V_{rep} (bbls) = 11 BBLS

*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 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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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 JIV 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

