

JOINT INVESTIGATION REPORT

INCIDENT NO: 2157619 **JIV report S/N:** 1150

(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: 2157619 2. Type of incident* OIL SPILL
- 3. Name of Location FORCADOS TERMINAL SINGLE POINT MOORING 2 (SPM2)
- 4. Name of nearest community OGULAGHA KINGDOM 5. State: DELTA 6. LGA BURUTU
- 7. Type of Production facility/Installation SPM2 FLOATING HOSE
- 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: 5TH SEPTEMBER, 2018
 - b. Start date/time of investigation: 12TH SEPTEMBER, 2018 AT 11:18 HRS
 - c. Investigation End date: 15TH OCTOBER, 2018 Actual investigation duration, days: 4 DAYS
 - d. Description of spill point environment

<input type="checkbox"/> Firm soil	<input type="checkbox"/> Loose soil	<input type="checkbox"/> Recently excavated area
<input checked="" 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:

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

WGS 84

Northing: <u>LATITUDE</u>	Easting: <u>LONGITUDE</u>
<u>5.17033</u>	<u>5.16318</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

- Government reserved and designated protected area [,m]
- Drinking water source [,m]
- Built up area [,m]
- Farmlands NONE SEEN [,m]
- Fish Farm/pond WITHIN VICINITY [,m]
- Fishing net [,m]
- Others (specify). [,m]

12. Containment measures put in place;

Booms Trench Dyke Natural depression Pit None

Others: _____

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
	NONE WITHIN AREA OF IMPACT					

18. Fishing Nets/Fish Ponds

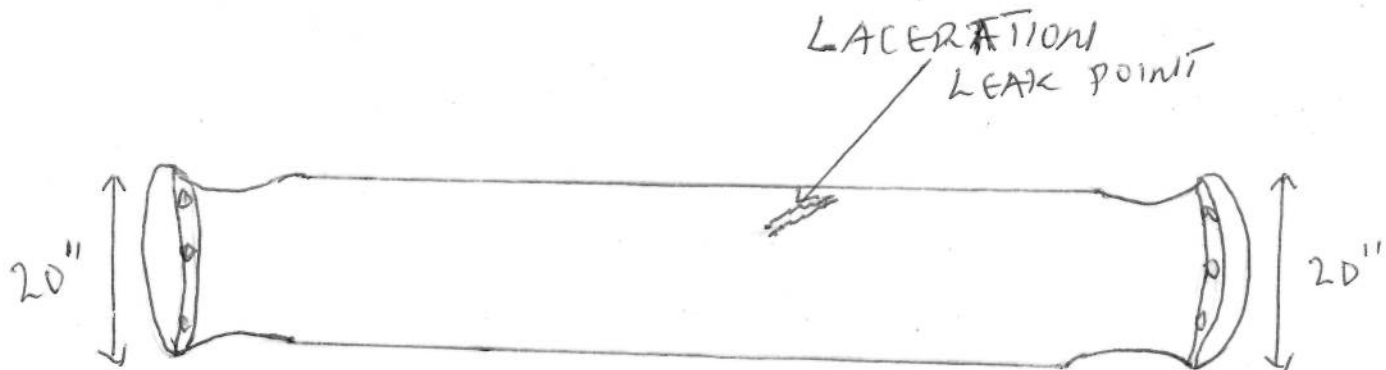
S/N	Nets/Ponds	Description	Quantity/Size	Comments
	NONE WITHIN AREA OF IMPACT			

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)

SECTION OF FORCADO'S TERMINAL SINGLE POINT MOORING 2 AT OGULAGHA KINGDOM SHOWING LACERATION AT 1 O'CLOCK POSITION.



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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 18.602 Ha
- Impact within R.O.W NIL
- 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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<p>c. Net Estimated Spilled Volume V_{Est}(bbls)* =</p> <p style="text-align: center; font-size: 1.2em;"><u>1.16 BARRELS</u></p>
<p>Estimated Reported Volume** V_{rep}(bbls) =</p> <p style="text-align: center; font-size: 1.2em;"><u>2 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:

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.

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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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f. Appendix 1: Overview sketch of the site

