

JOINT INVESTIGATION REPORT

INCIDENT NO: 1907894 JIV report S/N: 1038

(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: 1907894 2. Type of incident* SUSPECTED CONDENSATE SEEPAGE
 3. Name of Location SOKU GAS PLANT CONDENSATE SPIKING PUMP AREA
 4. Name of nearest community ELEM-SANGAMA 5. State: RIVERS 6. LGA AKUKU-TORU
 7. Type of Production facility/Installation GAS PLANT
 8. Asset owner/District THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED/SWAMP EAST HUB

B. INCIDENT INFORMATION:

9. Details of incident
 a. Date of incident: 5TH AUGUST, 2018
 b. Start date/time of investigation: 27TH MARCH, 2018/15:00 HOURS
 c. Investigation End date: 27TH MARCH Actual investigation duration, days: ONE (1) DAY
 d. Description of spill point environment 2018
NO SPILL POINT WAS OBSERVED AS AT TIME OF INVESTIGATION
 Firm soil Loose soil Recently excavated area
 Under water Swampy Exposed pipe surface
 Well Platform (on Water) Drill Rig

Additional observations around the spill point: **THE JOINT INVESTIGATION TEAM NEITHER OBSERVED ANY SPILL POINT NOR NOTICED ANY SPILL IMPACT WITHIN THE SOKU GAS PLANT, THOUGH ON INCIDENT DATE, SUSPECTED CONDENSATE SHEEN HAD BEEN NOTICED BY THE ASSET OWNER WITHIN THE STORM WATER DRAIN BEHIND THE CONDENSATE SPIKING PUMPS. THE COORDINATES OF THE ORIGINAL POSITION WHERE THE SUSPECTED CONDENSATE SEEPAGE WAS NOTICED ARE 4.65733N AND 6.61357E.**

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>NOT APPLICABLE</u>	

f. Incident caused by:

Third party interference (Sabotage; crude theft; Line theft; Accidental 3rd party damage)
 Operational Mystery spills Others(specify) SUSPECTED CONDENSATE SEEPAGE AT THE SPIKING PUMP AREA

**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:	Easting:
NOT APPLICABLE	NOT APPLICABLE

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 **NONE OBSERVED** [,m]
 Farmlands **WITHIN VICINITY** [,m]
 Fish Farm/pond [,m]
 Fishing net [,m]
 Others (specify) [,m]

12. Containment measures put in place;

Booms Trench Dyke Natural depression Pit None

Others: **ABSORBENT MATERIALS HAD BEEN PLACED WITHIN THE STORM WATER DRAIN BY THE ASSET OWNER ON INCIDENT DATE**

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
	<u>NOT</u>	<u>APPLICABLE</u>			

17. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
	<u>NOT</u>	<u>APPLICABLE</u>				

18. Fishing Nets/Fish Ponds

S/N	Nets/Ponds	Description	Quantity/Size	Comments
	<u>NOT</u>	<u>APPLICABLE</u>		

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

S/N	Others	Description	Quantity/Size	Comments
	<u>NOT</u>	<u>APPLICABLE</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)*

NOT APPLICABLE (NO LEAK POINT WAS OBSERVED AT SITE AS AT TIME OF INVESTIGATION)

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact NIL (NO IMPACT WAS OBSERVED AS AT TIME OF INVESTIGATION)
- Impact within R.O.W NIL
- Impact outside R.O.W NIL

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 $V_{Est}(bbls)^* =$	0.002 LITRE
Estimated Reported Volume $V_{rep}(bbls) =$	1 LITRE

***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:

SINCE AS AT THE TIME OF JOINT INVESTIGATION VISIT, NO SPILL IMPACT WAS OBSERVED AT SITE, THE VOLUME OF THE SUSPECTED CONDENSATE SHEEN NOTICED ON INCIDENT DATE WAS COMPUTED REFERENCING SHEEN COLORATION IN 'SPILL FACTORS FROM USCG FOG' AND CERTAIN PARAMETERS PROVIDED BY THE ASSET OWNER AS SHOWN IN THE ATTACHED "APPENDIX A".

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: $(m^3) \times 6.29$: **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.

APPENDIX A

ESTIMATION OF VOLUME OF SUSPECTED CONDENSATE SHEEN NOTICED BY THE ASSET OWNER ON INCIDENT DATE WITHIN STORM WATER DRAIN AT THE CONDENSATE SPIKING PUMP AREA, SOKU GAS PLANT (INCIDENT NO. 1907894)

THE DIMENSIONS OF THE STORM WATER DRAIN SECTION WHERE THE SUSPECTED CONDENSATE SHEEN HAD BEEN NOTICED ON INCIDENT DATE BY THE ASSET OWNER ARE GIVEN AS:

- 1) LENGTH = 33.5 METRES
- 2) WIDTH = 0.3 METRE.

IN REFERENCE TO "SPILL FACTORS FROM USCG FOG", THE SHEEN COLORATION OBSERVED ON INCIDENT DATE WAS "SLIGHT COLOUR", THEREFORE, THE VOLUME OF SHEEN NOTICED WITHIN THE STORM WATER DRAIN IS COMPUTED AS:
 $33.5\text{m} \times 0.3\text{m} \times 0.00015\text{mm}$ (APPLICABLE THICKNESS IN MM FOR 'SLIGHT COLOUR' IN ACCORDANCE WITH "SPILL FACTORS FROM USCG FOG") $\times 100\%$ (BEING THE PERCENTAGE COVERAGE OF THE SUSPECTED CONDENSATE SHEEN AS OBSERVED OVER THE STORM WATER DRAIN SURFACE AREA BY THE ASSET OWNER ON INCIDENT DATE) $\approx 0.000002\text{m}^3$
 ≈ 0.00001 BARREL ≈ 0.002 LITRE.

THE ESTIMATED VOLUME OF 0.002 LITRE IS HEREBY ROUNDED OFF TO 1 LITRE

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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

