

THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0227 807705

(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: 807705 2. Type of incident * OIL SPILL
 3. Name of Location AHIA WELL 3 S FLOWLINE
 4. Name of nearest community DMUDIOGA 5. State: RIVERS 6. LGA EMOHUA
 7. Type of Production facility/Installation OIL FLOWLINE 8. Asset owner/ District NEL 2/ EGBEMA

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 28TH APRIL, 2012.
 b. Start date/time of investigation: 2ND MAY, 2012
 c. Investigation End date: 2ND MAY, 2012.
 d. Description of spill point environment
 Firmed soil Loose soil Previously excavated area
 Under water Swampy Exposed pipe surface
 Well Platform (on Water) Rig
 e. Description of leak point (tick as applicable);
 Drilled hole Hack saw cut Explosive tear,
 Complete Rupture Inward dent, Well head tampering
 Failed Weld-on illegal hot tap valve, Missing Pipeline/Flowline)
 Crude oil theft (illegal) bunkering) point, Third party tampering with Clamp
 Third party tampering with valve setting, Third party tampering with flange,
 Corrosion Saver-pit over flow, Surge vessel overflow
 Outward dent Flare System/Bund wall failure
 Valve Failure com unit failure Cold vent
 Relief valve failure Others (specify) _____
 f. Incident caused by:
 Third party interference Operational Mystery _____

g. Spill point coordinates MINNA MID-BELT

Measuring unit (M)	
Northing: <p style="text-align: center; font-size: 1.2em;">132360.51</p>	Easting: <p style="text-align: center; font-size: 1.2em;">477680.92</p>

*This can be a) Oil spill b) Drilling fluid/Chemical c) siltation d) construction e) Encroachment f) Fire,

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C. RISK ASSESSMENT

10. Type of environment:

- Land Swamp Water Seasonal swamp

i. Type of environment to which oil has spread:

- Land Swamp Water River (identify) _____

ii. Weather condition

- Raining Sunny

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). **NOT APPLICABLE.**

12. Containment measures put in place;

- Booms Trench Dyke

Others: NONE

13. Any pictures or video coverage? [Y] [N]

14. Was there any disruption to the investigation? [Y] [N]

If yes give brief description:

NOT APPLICABLE

D. TYPE/NUMBERS OF PROPERTIES, IF ANY, FOUND WITHIN THE AREA OF SPREAD OF OIL

15. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
NONE WITHIN AREA OF IMPACT					

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16. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
	NONE WITHIN AREA OF IMPACT					

17. Fish/Nets/Ponds

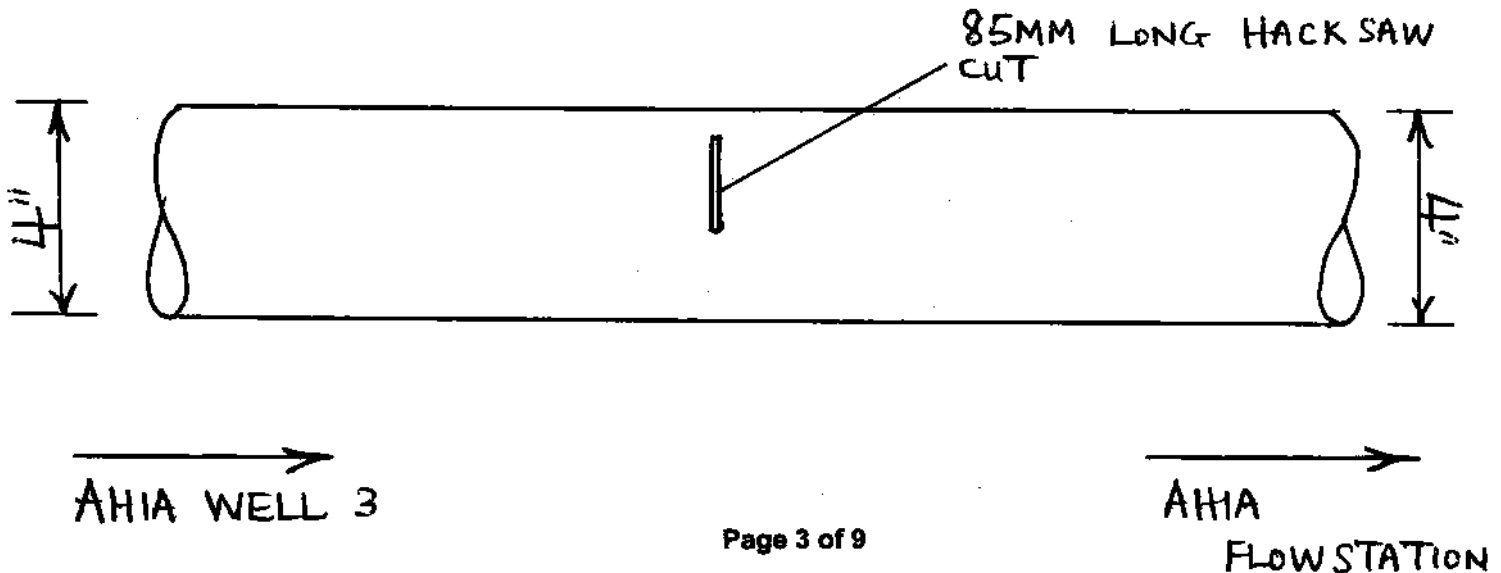
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	NONE WITHIN AREA OF IMPACT			

18. 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 1)

SECTION OF AHIA WELL 3 S FLOWLINE AT OMUDIAGA SHOWING HACK SAW CUT BETWEEN ONE AND THREE O' CLOCK POSITIONS.



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F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

19. Impacted area boundary Coordinates (If more than 12 points, Attach as an appendix 2) MINNA MID-BELT

S/N	Northing (M)	Easting (M)
WP602	132360.50	477684.00
WP600	132363.57	477684.01
WP601	132366.65	477684.01

G. INCIDENT INFORMATION:

20. Impacted Area Details

- Total calculated area of impact 0.0009 Ha
- Impact within SPDC R.O.W _____
- Impact outside R.O.W _____

21. Volume of oil recovered before completion of JIV (V_{rec}):

Recovered oil V _{rec}	NIL	barrels
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20. Computation of the residual volume on site

- a. Computation of volume of pool of free phase oil (on land or confined water body).
- i. Area (m²) occupied by pool of free phase oil _____
 - ii. Average Depth (m) of pool of free phase oil NOT APPLICABLE

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iii. Emulsification factor: NIL

iv.

Volume of pool of free phase oil, V_{pool} :	<u>NIL</u>	barrels
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b. Computation of volume of infiltrated oil in the soil (V_{inf}).

- i Area *(m²) covered by the oil: 9
- ii Area of the pool of free phase oil in touch with soil: NIL
- iii Average Depth (m) below ground surface of infiltration of oil: 0.05
- iv Soil type: CLAY
- v P_e (effective porosity of the soil): 8%

iv.

Volume of infiltrated oil, V_{inf} :	<u>0.23</u>	barrels
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21. Computation of volume of oil on open water based on standard coloration.

- i. Total area of oil on open water: NIL
- ii. Table of average depth of oil on water based on coloration **

	Thickness (mm)	Percentage coverage	Volume (m3)	
Barely Visible	0.00004	NOT APPLICABLE		
Silvery	0.00008			
Slight Color	0.00015			
Bright Color	0.0003			
Dull	0.001			
Dark	0.002			
Black oil	0.1			
Emulsion (30% Oil)	1			
Percent Total			100%	Total Volume <u>NIL</u> bbl

iii.

Volume of oil on open water, V_{wat} :	<u>NIL</u>	barrels
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22. Calculation of evaporated volume:

- i. Oil type: BONNY LIGHT
- ii. E-Factor: 25%

iii.

Volume of evaporated oil, V_{evap} :	<u>0.08</u>	barrels
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Evaporation Factors (E-Factor) for SPDC Crude oil			
Oil Type	Days on site	Bonny Light	Bonny Medium
Period Since Oil Spill	< 1 day	10%	5%
	1-7 days	25%	15%
	> 7 days	40%	25%

*If area is not same as the total area of impact, please indicate in the overview sketch
 ** Spill Factor from USCG FOG (2000 Edition)

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23. Gross Total Estimated Spilled Volume	
$V_{Est}(bbbs) = V_{evap}(bbbs) + V_{wat}(bbbs) + V_{inf}(bbbs) + V_{pool}(bbbs) + V_{recj}(bbbs)$	$= 0.08 + NIL + 0.23 + NIL + NIL = 0.31$
$V_{Est}(bbbs) =$	0.3 BARREL.
24. Net Total Estimated Spilled Volume	
$V_{Est}(bbbs) = V_{evap}(bbbs) + 0.6 * V_{wat}(bbbs) + V_{inf}(bbbs) + V_{pool}(bbbs) + V_{recj}(bbbs)$	$= 0.08 + NIL + 0.23 + NIL + NIL = 0.31$
$V_{Est}(bbbs) =$	0.3 BARREL

*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 Total volume VT (m3) x 6.29

*Emulsification factor for spill on water to consider is 60% of volume of oil.

25. GENERAL STATUS OF THE SITE

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

26 REPRESENTATIVES

This report was filled and signed on the 02/05/2012 at incident site by joint investigation representatives from

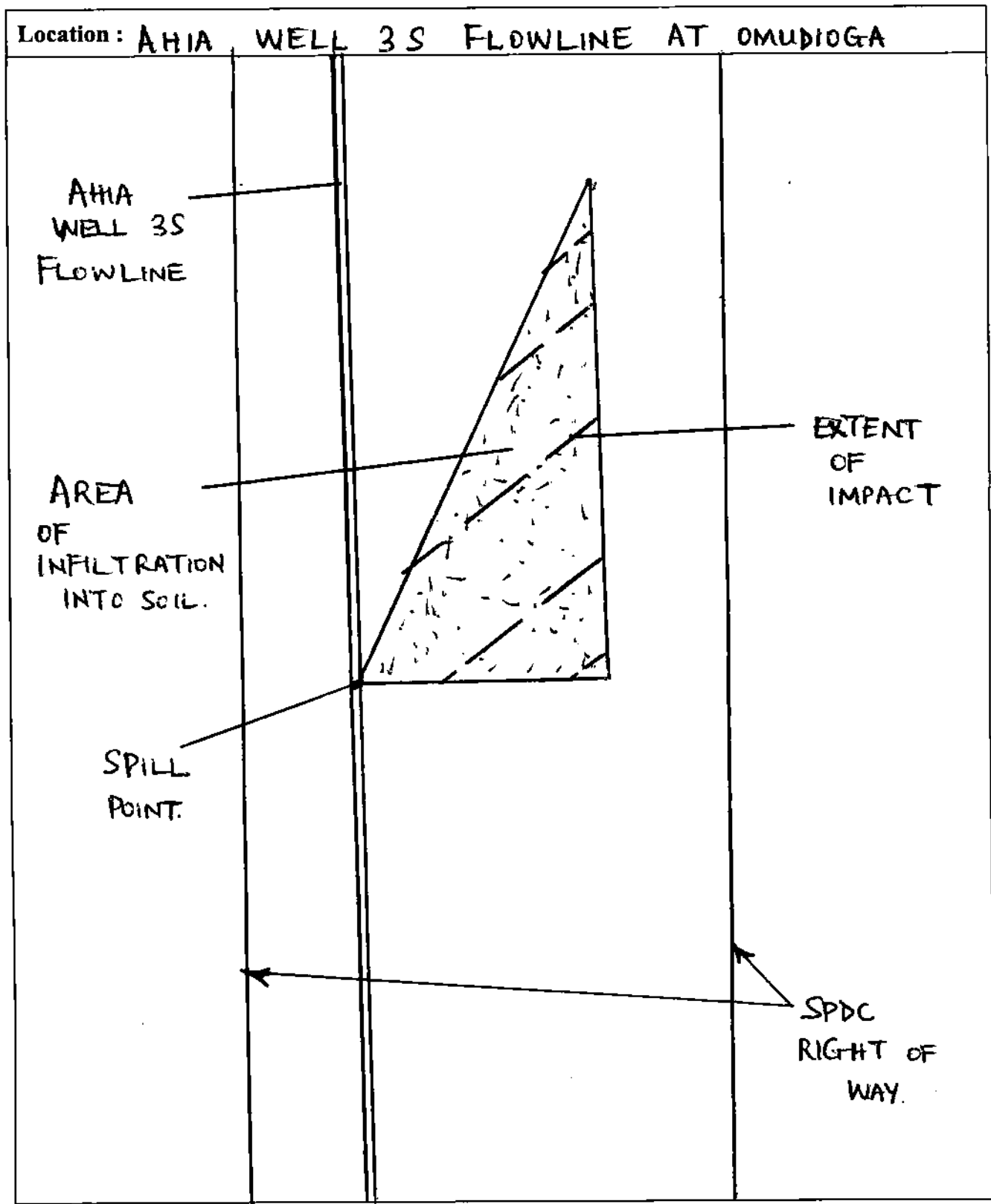
- Host Community
- Department of Petroleum Resources [DPR]: DPR INCIDENT INVESTIGATION REPORT ATTACHED
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Nigeria Police Force [NPF]:
- Shell Petroleum Development Company [SPDC]:

Tick as applicable

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27. Appendix 1: Overview sketch of the site



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21. Appendix 2: TABLE SHOWING ADDITIONAL COORDINATES TAKEN DURING JIV FOR AREA CALCULATION

S/N	Northing	Easting



DEPARTMENT OF PETROLEUM RESOURCES

FIELD JOINT INVESTIGATION REPORT

(Note: As practicable as possible the field report is to be signed in the field by all the participating parties)

1. Company... SHELL PETROLEUM DEVELOPMENT COMPANY (SPDC)

2. Incident Serial Number... 807705

3. Name of Location/Facility... AHA W3S FLOWLINE @ Amudioga

4. Type of Incident: (Indicate ✓ where appropriate and X where not applicable)

- Crude Oil Spill ✓
Product Spill (Specify) ✗
Drilling Mud/Chemicals Spill ✗
Fire ✗
Others (specify) ✗

5. Details of Incident

i. Date of Incident: 28th APRIL, 2012

ii. Date Reported to the DPR: 30th APRIL, 2012

iii. Date/Period of First Investigation: 2nd MAY, 2012

iv. Date/Period of Second/Subsequent Investigation:

v. Cause of Incident (Indicate ✓ where appropriate and X where not applicable)

- Corrosion ✗
Equipment Failure ✗
Human Error (Production/Maintenance) ✗
Third Party Interference ✓
Mystery Spill ✗
Others (Specify) ✗

Additional description of cause of incident (if any): 85mm Hacksaw cut was observed @ 1-3 o'clock position on the 4" Aha Well 3S Flowline.

6. Coordinates of Spill Point/Location(s): N05° 11' 44.0" E006° 45' 34.1"

7. Brief Description of Circumstances Around Spill Point(s) (Please indicate containment measures put in place, point of breach along pipeline and any necessary details observed at site. Attach additional sheets if necessary)

8. Delineation of Impacted Area: (Indicate ✓ where appropriate and X where not applicable)

- a) Within company's facilities/ROW
- b) Outside company's facilities/ROW

9. Description of Environment Around Spill Point/Location(s): (Indicate ✓ where appropriate and X where not applicable)

- Land
- Seasonal Swamp
- Swamp
- Coastland
- Inland waters
- Near shore
- Offshore

Please provide a graphic sketch of spill site/leak point (Detailed sketches and maps can be attached where necessary)

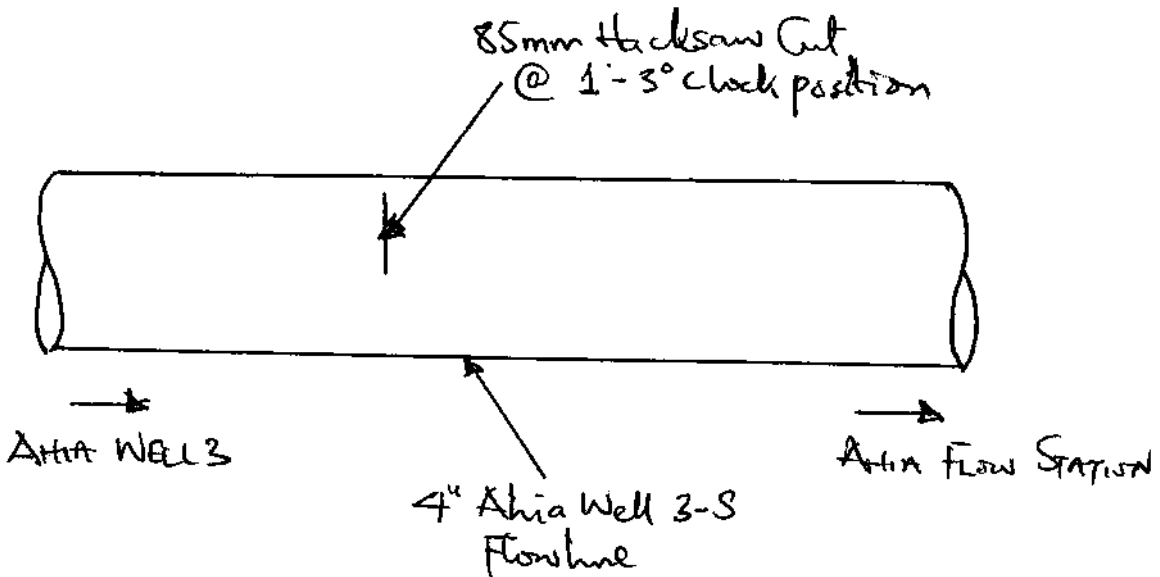


Table of Key Coordinates of Mapped Area

S/N	Eastings	Northings
01	477684.50	132360.50
02	477684.01	132363.57
03	477684.01	132366.65

S/N	Eastings	Northings

10. Property Impacted (Provide details)

NIL

11. Communities Impacted

- a) OmuDioGA
- b)
- c)
- d)
- e)
- f)

12. Estimated Quantity Spilled (bbls): 0.30 BBLs

(Please provide below, the methodology used, standards adopted and any assumptions made in the estimate. Where relevant, make brief comments on quantities unaccounted for. Attach and endorse additional sheets if necessary)

METHODOLOGY ATTACHED IN ADDITIONAL SHEET.

13. Quantity Recovered (As at time of the investigation): NIL

14. Any Photograph or Video Recording? (Provide details): YES

15. Additional Comments/Remarks, if any:

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