

**THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED**

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 0186 768008

(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: 768008 2. Type of incident\* OIL SPILL/FIRE  
 3. Name of Location ETELEBOU WELL 11  
 4. Name of nearest community AKENFA-EPIE 5. State: BAYELSA 6. LGA YENAGOA  
 7. Type of Production facility/Installation WELL HEAD 8. Asset owner/District NEL2/GBARAN

**B. INCIDENT INFORMATION:**

9. Details of incident

- a. Date of incident: 22ND JANUARY, 2012  
 b. Date/Period of investigation: 24TH JANUARY, 2012.

c. Description of spill point environment

- Firmed soil  Loose soil  Previously excavated area  
 Under water  Swampy  Exposed pipe surface  
 Well Platform (on LAND Water)  Rig

d. 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,  
 External Corrosion  Internal 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) \_\_\_\_\_

e. Incident due to:

- Third party interference  Operational  Others (specify) \_\_\_\_\_

f. Spill point coordinates (MINNA MID-BELT)

Measuring unit <u>M</u>	
Northing:  <u>111402.08</u>	Easting:  <u>434227.19</u>

\*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 [ 70 ,m]  
 Fish Farm/Pond [      ,m]  
 Fishing net [      ,m]  
 Others (specify). [      ,m]

12. Containment measures put in place;

- Booms       Trench       Dyke  
 Others: NATURAL DEPRESSION

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
<u>NONE WITHIN AREA OF IMPACT</u>					

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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

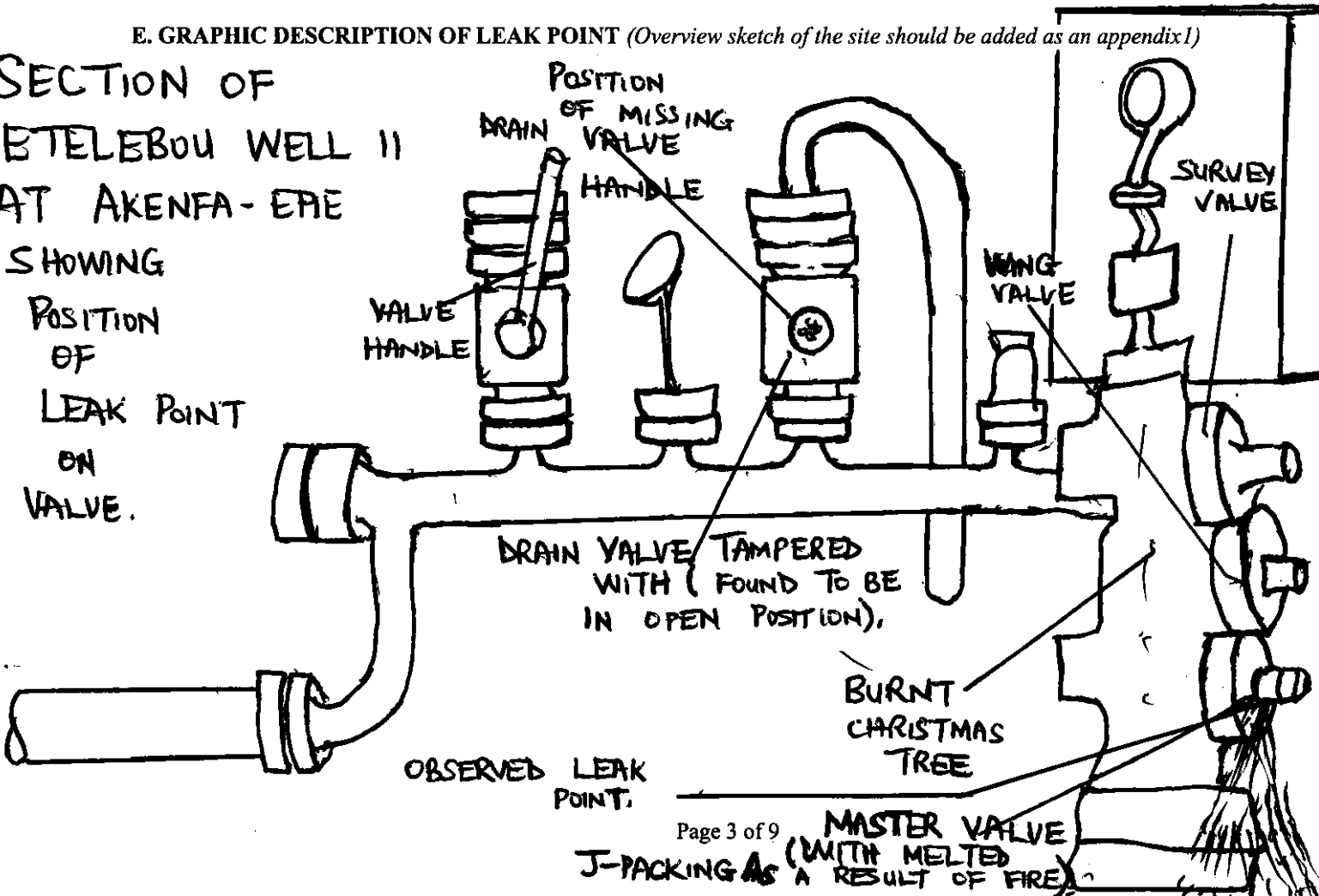
S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE WITHIN AREA OF IMPACT				

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 (Overview sketch of the site should be added as an appendix 1)

SECTION OF  
 BTELEBOU WELL II  
 AT AKENFA-ERIE  
 SHOWING  
 POSITION  
 OF  
 LEAK POINT  
 ON  
 VALVE.



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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) (MUNA MD-BELT)

S/N	Northing (m)	Easting (m)
wp231	111 387.69	434 236.56
wp232	111 400.01	434 230.44
wp233	111 396.94	434 227.35
wp234	111 396.97	434 218.10
wp235	111 409.28	434 211.98
wp236	111 415.42	434 215.08
wp237	111 418.45	434 227.42
wp200	111 387.76	434 214.99
wp201	111 400.06	434 215.03
wp202	111 403.15	434 208.87
wp203	111 424.66	434 208.94
wp204	111 427.71	434 215.12
wp205	111 430.81	434 208.96

**G. INCIDENT INFORMATION:**

20. Impacted Area Details

- Total calculated area of impact 0.30 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 $V_{rec}$ :	<u>NIL</u>	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).

- Area ( $m^2$ ) occupied by pool of free phase oil 289
- Average Depth (m) of pool of free phase oil 0.03
- Emulsification factor: NIL

iv. Volume of pool of free phase oil. $V_{pool}$ :	<u>54.53</u>	barrels
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20. Computation of volume of infiltrated oil in the soil ( $V_{inf}$ ).

NOTE:  
THE AREA  
BURNT BY  
FIRE IS  
APPROXIMATELY  
2,694 M<sup>2</sup>  
(ABOUT  
50%  
OF WHICH  
REPRESENTS  
THE  
OIL-BURNT  
AND  
INFILTRATED  
AREA).

- i. Area (m<sup>2</sup>) covered by the oil: 1,347
- 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: 0.016
- iv. Soil type: CLAY
- v.  $P_e$  (effective porosity of the soil): 8%

iv. Volume of infiltrated oil, $V_{inf}$	<u>10.84</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 (m <sup>3</sup> )
Barely Visible	0.00004	<b>NOT APPLICABLE</b>	
Silvery	0.00008		
Slight Color	0.00015		
Bright Color	0.0003		
Dull	0.001		
Dark	0.002		
Blackoil	0.1		
Emulsion (30% Oil)	1		
Percent Total		100%	Total Volume <u>NIL</u> bbl

APPROXIMATE  
THICKNESS OF OIL  
WITHIN VICINITY OF  
OIL-BURNT AREA  
= 0.001 M  
ESTIMATED  
VOLUME  
OF BURNT  
OIL  
= 1,347 X  
0.001 X  
6.29  
= 8.47  
BARRELS.

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>24.61</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%

23. Gross Total Estimated Spilled Volume  $V_{Est}(bbls) = V_{evap}(bbls) + V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{rec}(bbls) = 24.61 + NIL + 10.84 + 54.53 + NIL + 8.47$   
(VOLUME BURNT BY FIRE) = 98.45 BARRELS

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$V_{Est}(bbls)=$	<b>98.5 BARRELS</b>
24. Net Total Estimated Spilled Volume $V_{Est}(bbls) = V_{evap}(bbls) + 0.6*V_{wat}(bbls) + V_{inf}(bbls) + V_{pool}(bbls) + V_{recl}(bbls)$ $= 24.61 + NIL + 10.84 + 59.53 + NIL + 8.47$ <b>(VOLUME BURNT BY FIRE) = 98.45</b>	
$V_{Est}(bbls)=$	<b>98.5 BARRELS.</b>

- \*Calculation of the respective estimated volume is to be done using the new spill 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
- B. Investigation of the incident site showed that there is residual impact on site requiring further works

26 Signatories

This report was filled and signed on the 24/01/2012 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]:

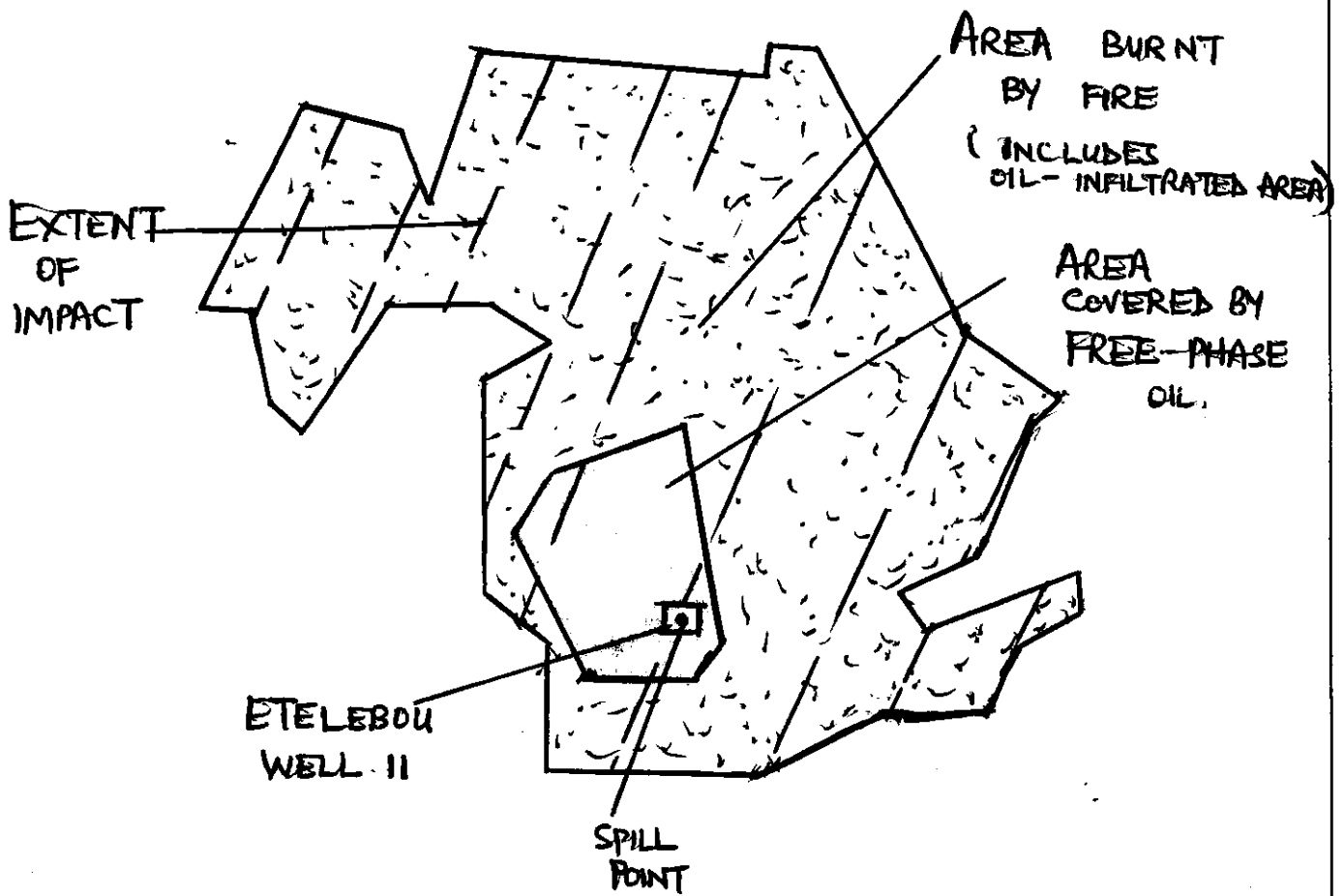
*Tick as applicable*

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20. Appendix 1: Overview sketch of the site

Location # ETELEBOU WELL II AT AKENFA - EPIE



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21. Appendix 2: TABLE SHOWING ADDITIONAL COORDINATES TAKEN DURING JIV FOR AREA CALCULATION (MUNA MID-BELT)

S/N	Northing (m)	Easting (m)
WP206	111 430.84	434 199.72
WP207	111 418.56	434 193.52
WP208	111 421.65	434 196.44
WP209	111 430.88	434 187.39
WP210	111 430.89	434 184.31
WP211	111 452.38	434 190.54
WP212	111 449.27	434 199.78
WP213	111 443.12	434 202.84
WP214	111 455.40	434 205.96
WP215	111 455.36	434 218.29
WP216	111 455.34	434 224.45
WP217	111 455.32	434 230.62
WP218	111 458.39	434 230.62
WP219	111 458.38	434 233.71
WP220	111 430.68	434 249.03
WP221	111 424.50	434 258.25
WP222	111 421.44	434 255.16
WP223	111 412.237	434 248.97
WP224	111 409.18	434 242.80
WP225	111 406.10	434 245.87
WP226	111 409.13	434 258.20
WP227	111 406.06	434 258.19
WP228	111 403.01	434 252.02
WP229	111 396.87	434 248.92
WP230	111 396.89	434 242.76





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
- 2. Incident Serial Number 768008
- 3. Name of Location/Facility ETELEBOW WELL IIT @ AKENFA-EMIE COMM  
YENEGOA LGA BAYELSA STATE

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: 22/01/2012
- ii. Date Reported to the DPR: 23/01/2012
- iii. Date/Period of First Investigation: 22/01/2012
- iv. Date/Period of Second/Subsequent Investigation: 24/01/2012
- 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): An in-house assessment was carried out by SPDC after the fire was put out on 22/01/12. Their observation indicated both master and wing valves in OPEN position. The valves had been closed before the fire.

6. Coordinates of Spill Point/Location(s): N 5° 18' 1" E 6 24' 48.1"

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)

The spill site was a well head location. According to SPDC operation personnel, the J-Packing had melted due to heat from the fire, thus there was still ongoing spillage of crude (though minimal)

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
	6 22' 06.2"	5 0' 17.1"
	6 22' 06.0"	5 0' 17.5"
	6 22' 05.9"	5 0' 17.4"
	6 22' 05.3"	5 0' 17.6"
	6 22' 05.5"	5 0' 18.4"
	6 22' 05.0"	5 0' 18.5"
	6 22' 04.7"	5 0' 18.2"
	6 22' 06.6"	5 0' 18.5"
	6 22' 06.7"	5 0' 18.3"
	6 22' 06.8"	5 0' 18.2"

S/N	Eastings	Northings

10. Property Impacted (Provide details):  
 spill and impacts are limited to the SPDC well head location.

11. Communities Impacted

- a)
- b)
- c)
- d)

12. Estimated Quantity Spilled (bbls):

98.5

(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)

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

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

Still photographs were taken by DPR representative. Video recording was done by SPDC.

15. Additional Comments/Remarks, if any:

The location is not fenced and used as thoroughfare to farm locations etc. There is need to fence location in order to secure it from saboteurs. The well location should be cleaned and the burnt facility should be repaired.