THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMTED. JOINT INVESTIGATION REPORT FOR INCIDENT NO: 1258760 JIV report S/N: 00726 (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: 1258760 2. Type of incident * OIL SPILL 3. Name of Location 12" IMO RIVER - OGALE PIPELINE 4. Name of nearest community KOMKOM 5. State: KIVER 6. LGA OMIGBO 7. Type of Production facility/Installation OIL PIPELINE 8. Asset owner/District PIPELINE **B. INCIDENT INFORMATION:** tails of incident 281H. SEPTEMBER, 2014 9. Details of incident b. Start date/time of investigation: 3ND OCTOBER, 2014 /14: 40 PM. c. Investigation End date: 51+0CIDBG 20 Actual investigation duration, days: 3 DAYS. d. Description of spill point environment Loose soil Recently excavated area ☐Firmed soil ☐Exposed pipe surface Under water **☑**Swampy Drill Rig ☐Well Platform (on Water) Additional observations around the spill point: SAND BAGS AND PLANK WIAS OBSERVED AT THE SPILL POINTS DURING THE JOINT INVESTIGATION VISIT. THE DISTANCE BETWEEN THE FIRST POINT (NON/LEAKING) AND SECOND POINT (LEAKING) WAS 437 METERS. e. Description of leak point (tick as applicable); ☐ Tear (________), ☐ Hack saw cut Drilled hole ☐Inward dent, ☐Well head tampering Complete Rupture ☐Missing Pipeline/Flowline Failed Weld-on illegal hot tap valve, Failed Clamp ☐ Third party tampering with Clamp Crude oil theft (illegal bunkering) point, ☐Third party tampering with flange, Third party tampering with valve setting, ☐Surge vessel overflow, ☐Saver-pit over flow, □ Corrosión □Flare System/Bund wall failure □Accidental 3rd party equipment Bulging Outward Cold vent Com unit failure ☐ Valve Failure Relief valve failure Others (specify) f. Incident caused by: Third party interference (Sabotage□; crude theftଢ; Line theft□; Accidental 3rd party damage□) Others (including Mystery spills) ☐ Operational

^{*}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 coordinate Measuring unit		NA MIO BELT	
Northing: CM)	,	Easting: (no)	
Non-leaking			3408-82
LENGING	96659.04	523	5420.08
C. RISK ASSESSMENT		-	
10. Type of env	ironment:		
□Land □S	Swamp Dwater	☑Seasonal swamp□	Shoreline/Waterfront
i. Type of envi	ronment to which oil has spi	read:	
□Land ☑	Swamp	River (identify)	
ii. Weather con	dition		
Rain S 11. Distance from the nea	•	□Wet □Windy	□ _{Hot} □cool
□ Drinking water so	wed and designated protected protected burden SEEN WITHIN VIC	l mi	
12. Containment measure:	s put in place;		
⊠Booms □1 □Others:	rench Dyke	Natural depression	□Pit □None
13. Any pictures or video	coverage?	[N]	·.'
14. Further response/repa	air initiated as at the time of	лv? [N]	* 1 ₂
If yes to item 14, give brief descrip	tion: R . Co. 1897	activities was	S DONE SIMULTAN
WITH REPAIRS DA	1 AFFECTED SEC	Times of THE	DOCLUSE:
15. Was there any disrupti			-
	•	[Y] [N]	
If yes to item 15 give brief desc	приоп:		
NOT APPL	ICABLE.		

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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
Nont WI	HM	ARCA	OF	IMPACT
17 Crops/Reconomic Tree				

Crops/Economic Trees

	e of crops	Young	Medium	Matured	Quantity	Comments
1 KM	MA PALM			<u> </u>	Ftul	IMPALIED BY
				ļ <u>.</u>		SPILL.
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<u> </u>				<u></u>		

18. Fish/Nets/Ponds

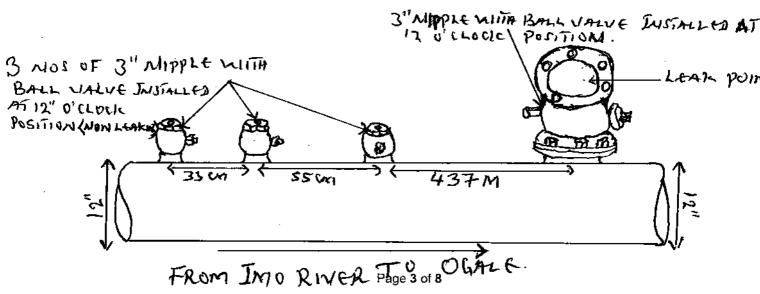
S/N Fish/Nets/Ponds	Description	Quantity/Size	Comments
NONE W	ITHAL AR	EA C	FIMPHET

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

S/N Others	Description	Quantity/Size	Comments
11011	1 1.341n1	ADCA (TAMPAT
MUNT	M1111111 -		JE JEINICI
E Chaptuc proces	PTION OF LEAK BOINT		

E. GRAPHIC DESCRIPTION OF LEAK POINT (while detail report of the leak point should be contained in the

SECTION of 12 Into RIVER - OGALE PIPELINE AT KONGKONG SHOWING CRUSE OIL THEFT MINET 12" O' CLOCK POSITION.



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F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION 20. Impacted area boundary Coordinates (If more, Print and attach as an appendix)

20.	A CONTINUE CONTINUE OF THE PROPERTY OF THE PRO	MIO BELT
S/N	Northing (M)	Easting (m)
37	96714.53	523412.85
38	96720.64	523431.35
39	96748.28	523431 · 40
40	96748.26	523443 · 73
41	96735.94	523459 · 11
42	96652. 53	523460.55
43	96652. 86	523414.91
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L	<u> </u>	

ESTIMATION OF OIL SPILL VOLUME

impacted Area Betalis Total Calculated Area of Impact i Impact within SPDC R.O.W ii Impact outside SPDC R.O.W ii Impact outside SPDC R.O.W ii Estimated Recovered oil (Net) V _{mal} 0.00 bbls Computation of estimated residual volume on atte a Computation of volume of fire phase oil on land or confined water body) i I data area coupled by pool of fire phase oil on land or confined water body ii Average depth of pool of free phase oil on land or confined water body ii Average depth of pool of free phase oil, V _{gent} Estimated Volume of pool of free phase oil, V _{gent} Estimated Volume of pool of free phase oil, V _{gent} Solution of estimated volume of infiltrated oil in the soil (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltrated oil at apill point (V _{ful}) J Volume of Infiltration above leaking facility i.e. pipelineflowline iii Soil type V Cause of spill The pany incorrectory the soil) V Cause of spill The pany incorrectory w Approximated in the treatment of the pant on pipeline or flowline Incident Date J V Date Days on Site 9/2/2/2/3/2/3/14 17:00 J (V _{ful}) J (V _{ful}) J (V _{ful}) Approximated in the treatment of the pant on J (V _{ful}) Estimated Volume of Infiltration below leaking facility i.e. pipelineflowline ii Total area covered by the oil (filtration) J (V _{ful}) L Total depth below ground surface of Infiltration of oil J (V _{ful}) J (V _{ful}) L (V _{ful}) I Total depth below ground surface of Infiltration of oil J (V _{ful}) J (V _{ful}) L (V _{ful}) J			/OFFSHORE (Leak stopped a	t source)		
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ii impact outside SPDC R.O. W Volume of oil recovered before completion of JIV IV			•			
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vii Oil type viii Average depth of infiltration below leaking facility i.e. pipeline/flowline ix Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V total Estimated Volume of Infiltrated oil, V total 2 Volume of Infiltrated oil at second spill point [if applicable] (V total i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv P _e (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V total 0.000 m Estimated Volume of Infiltrated oil, V total 0.000 m Estimated Volume of Infiltrated oil, V total 0.000 m 0.000 m	[Oil type	Sand	Loam	Clay	<u>_</u>
vii Oil type viii Average depth of infiltration below leaking facility i.e. pipeline/flowline ix Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V Ind a Estimated Volume of Infiltrated oil, V Ind a 2 Volume of Infiltrated oil at second spill point [if applicable] (V Ind b) i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv P _c (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V Ind b 0.000 m Estimated Volume of Infiltrated oil, V Ind b 0.000 m Country Infiltrated oil, V Ind b 0.000 m		Bonny Medium	3 weeks	3 years	> 10 years	
ix Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V int a Estimated Volume of Infiltrated oil, V int a Estimated Volume of Infiltrated oil, V int a 1.51 bbls 2 Volume of Infiltrated oil at second spill point [if applicable] (V int b) i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv P _e (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V int b 0.000 m	[Bonny Light	2 days	2 months	> 10 years	
ix Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V Ind a Estimated Volume of Infiltrated oil, V Ind a 1.51 bbls 2 Volume of Infiltrated oil at second spill point [if applicable] (V Ind b) i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv Pe (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V Ind b 0.000 m		- •				
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Estimated Volume of Infiltrated oil, V inf.e 2 Volume of Infiltrated oil at second spill point [if applicable] (V inf.h) i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv P _e (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V inf.h 1.51 bbls m ² iv P _e (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline 0.000 m	ix	Total depth below ground	surface of infiltration of oil			1.002 m
2 Volume of infiltrated oil at second spill point [if applicable] (V _{inf.b.}) i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv P _e (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of infiltrated oil, V _{kel.b.} nm² - Select - v 0.000 m 0.000 m		Estimated Volume of Infl	itrated oil, V _{lota}			0.24 m ³
i Total area covered by the oil (infiltration) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv Pe (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of infiltrated oil, V int b 0.000 m	[Estimated Volume of Infi	Itrated oil, V inf.a			1.51 bbls
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ii Average depth of infiltration above leaking facility i.e. pipeline/flowline iii Soil type iv Pe (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of infiltrated oil, V Intib				(inf b)		
iii Soil type iv Pe (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of infiltrated oil, V int b - Select - 0.000 m 0.000 m		•	•	uliae		
iv P _e (effective porosity of the soil) v Average depth of infiltration below leaking facility i.e. pipeline/flowline vi Total depth below ground surface of infiltration of oil Estimated Volume of infiltrated oil, V int b 0.000 m			н ароче геакінд гасліту і.е. ріреліпелюч	Amig		
vi Total depth below ground surface of infiltration of oil Estimated Volume of infiltrated oil, V int b 0.000 m			e soil)			
Estimated Volume of infiltrated oil, V int b	v	Average depth of infiltratio	n below leaking facility i.e. pipeline/flow	v tine		0.000 m
- 707	vi	Total depth below ground	surface of infiltration of oil			0.000 m
- 707		Estimated Volume of infi	itrated oil, V _{ist b}			0.00 m ³
Estimated Volume of Infiltrated oil, V _{ief b} 0.00 bbls						0.06 bbis

P. (effective porosity of the soil) Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{exf} c Estimated Volume of Infiltrated oil, V _{exf} c Volume of Infiltrated oil outside Immediate spill point(s) region (superficial Impact, V _{exf} d) Total Area covered by the oil (infiltration) Total Area covered by the oil (infiltration) Total Area of the pool of free phase oil in touch with soil Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Estimated Total Volume of Infiltrated oil, V _{exf} d Barely Visible Thickness (mm) Percentage coverage Visual Add Thickness (mm) Percentage coverage Visual Add Silvery 0.00000 Silght Color 0.00000 Silght Color 0.00000 Park 0.00000 Dark 0.00000 Dark 0.00000 Emulsion (30% Oil) Percent Total 0% 0.00000 Estimated Volume of Oil on open water, V _{ext} Estimated Volume of Oil on open water, V _{ext} ustation of evaporated volume Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (deys on site) Evaporation Factors (E-Factor) for SPDC Crude oil Noil type Bonny Light Bonny Medium 10% 5% 1-7 daye 25% 10% 25% Was oil recovery before JiV completion done before JIV date?	
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V Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{tot c} Estimated Volume of Infiltrated oil, V _{tot c} Estimated Volume of Infiltrated oil, V _{tot c} 4 Volume of Infiltrated oil outside immediate spill point(s) region (superficial impact, V _{tot d}) i Total Area of the pool of free phase oil in touch with soil if Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{tot d} Estimated Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Estimated Total Volume of Infiltrated oil, V _{tot d} Barely Visible Thickness (nm) Total area of oil on open water 1 Total area of oil on open water 1 Total area of oil on open water 2	m²
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Volume of Infiltrated oil outside immediate spill point(s) region (superficial Impact, V _{int d}) i Total Area covered by the oil (infiltration) i Total Area of the pool of free phase oil in touch with soil i Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{int d} Estimated Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} Estimated Total Volume of Infiltrated oil, V _{int d} I Total area of oil on open water Table of average depth of oil on water based on coloration I total area of oil on open water Table of average depth of oil on water based on coloration I total area of oil on open water I total Area of the power of oil on open water of the open open of the open of the open open open open open open open ope	0.03 m ³
i Total Area covered by the oil (infiltration) i Total Area of the pool of free phase oil in touch with soil i Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{brd} Estimated Total Volume of Infiltrated oil, V _{brd} Estimated Total Volume of Infiltrated oil, V _{brd} Estimated Total Volume of Infiltrated oil, V _{brd} Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Splil Factors from USCG FOG (2000 Edition) Thickness (mm) Percentage coverage (%) Volume (m3) Barely Visible 0.00000 Silybey 0.00000 Silybey 0.00000 Bright Color 0.00010 Dark 0.0000 Dark 0.0000 Dark 0.0000 Black oil 0.1 0.0000 Estimated Volume of oil on open water, V _{test} Estimated Volume of oil on open water, V _{test} Estimated Volume of oil on open water, V _{test} Estimated Volume of oil on open water, V _{test} 1-7 days 1-7 days 1-7 days 25% No Was oil recovery before JIV completion done before JIV date?	0.16 bbls
i Total Area covered by the oil (infiltration) i Total Area of the pool of free phase oil in touch with soil i Average depth below ground surface of infiltrated on of the phase oil in touch with soil i Average depth below ground surface of infiltrated oil, V _{brd} Estimated Volume of Infiltrated oil, V _{brd} Estimated Total Volume of Infiltrated oil, V _{brd} Estimated Total Volume of Infiltrated oil, V _{brd} Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Thickness (mm) Thickness (mm) Percentage coverage (%) Volume (m3) Barely Visible 0.0000 Silybry 0.0000e Silybry 0.0000e Silybry 0.0000e Distriction Distriction Distriction Distriction Distriction Distriction Emulsion (30% Oil) Percent Total: 0% 0.0000 Estimated Volume of oil on open water, V _{treet} Estimated Volume	
i Average depth below ground surface of infiltration of oil Estimated Volume of Infiltrated oil, V _{brd} Estimated Volume of Infiltrated oil, V _{brd} Estimated Volume of Infiltrated oil, V _{brd} Estimated Total Volume of Infiltrated oil, V _{brd} Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Spill Factors from USCG FOG (2006 Edition) Ald Thickness (mm) Percentage coverage (%) Volume (m3) Ald Percentage coverage (%) Volume (m3) Ald Volume (m3) Barely Visible 0.0000 Silvery 0.00000 Silvery 0.00000 Silvery 0.00000 Silvery 0.00000 Datk 0.0000 Datk 0.0000 Datk 0.0000 Emulsion (30% Oil) 0.0000 Percent Total: 0% 0.0000 Estimated Volume of oil on open water, V _{vett} Estimated Volume of oil on open water, V _{vett} Estimated Volume of oil on open water, V _{vett} Estimated Volume of oil on open water, V _{vett} Estimated Volume of oil on open water, V _{vett} Was oil recovery before JIV completion done before JIV date? No	 ,
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Estimated Volume of Infiltrated oil, V _{lot d} Estimated Total Volume of Infiltrated oil, V _{lot d} Estimated Total Volume of Infiltrated oil, V _{lot d} Estimated Total Volume of Infiltrated oil, V _{lot d} Estimated Total Volume of Infiltrated oil, V _{lot d} Estimated Total Volume of Infiltrated oil, V _{lot d} Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Spill Factors from USCG FOG (2000 Edition) Barely Visible Thickness (mm) Percentage coverage (Ys) Volume (m3) Ald Thickness (mm) Percentage coverage (Ys) Volume (m3) 0.0000 Silight Color 0.0000 Silight Color 0.0000 Bright Color 0.0000 Duil 0.0001 0.0000 Dark 0.0000 Dark 0.0000 Emulsion (30% Oil) 1 0.00000 Percent Total: 0% 0.00000 Estimated Volume of oil on open water, V _{vest} Estimated Volume of oil on open water, V _{vest} Utation of evaporated volume Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (days on site) Coli type Bonny Light Bonny Medium 1 10% 5% 1-7 days 25% 15% > 7 days 40% 25%]m
Estimated Volume of Inflitrated oil, V _{tet} Estimated Total Volume of Inflitrated oil, V _{tet} Estimated Total Volume of Inflitrated oil, V _{tet} Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Spill Factors from USCG FOG (2000 Edition) Barely Visible Thickness (mm) Thickness (mm) Percentage Goverage (%) Volume (m3) Barely Visible 0.00004 Sillysty 0.00006 Sillysty 0.00006 Picipht Color 0.0003 Duil 0.0000 Picipht Color 0.0003 Duil 0.0000 Dark 0.0002 Dark 0.0002 Dill 0.001 Emulsion (30% Oil) 1 0.00000 Emulsion (30% Oil) 1 0.00000 Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Water of spilled oil (days on site) Residence time of spilled oil (days on site) 1.7 days 25% 1.7 days 25% 15% 7 days 40% 25% No	0.002 m
Estimated Volume of Inflitrated oil, V _{tet} Estimated Total Volume of Inflitrated oil, V _{tet} Estimated Total Volume of Inflitrated oil, V _{tet} Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Spill Factors from USCG FOG (2000 Edition) Barely Visible Thickness (mm) Thickness (mm) Percentage Goverage (%) Volume (m3) Barely Visible 0.00004 Sillysty 0.00006 Sillysty 0.00006 Picipht Color 0.0003 Duil 0.0000 Picipht Color 0.0003 Duil 0.0000 Dark 0.0002 Dark 0.0002 Dill 0.001 Emulsion (30% Oil) 1 0.00000 Emulsion (30% Oil) 1 0.00000 Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Water of spilled oil (days on site) Residence time of spilled oil (days on site) 1.7 days 25% 1.7 days 25% 15% 7 days 40% 25% No	0.00 m ³
Estimated Total Volume of Inflitrated Oil, Ver Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Spill Factors from USCG FOG (2000 Edition) Barely Visible Thickness (mm) Thickness (mm) Barely Visible 0.00004 Silvery 0.00006 Silvery 0.00006 Bright Color Dull 0.0001 Dark 0.0000 Dark 0.0000 Black oil 0.1 0.0000 Emulsion (30% Oil) Percent Total: 0% 0.0000 Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Wat oil recovery before JIV completion done before JIV date? No No No No No No No No No N	0.00 bbls
Estimated Total Volume of Inflitrated Oil, Ver Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Spill Factors from USCG FOG (2000 Edition) Barely Visible Thickness (mm) Thickness (mm) Barely Visible 0.00004 Silvery 0.00006 Silvery 0.00006 Bright Color Dull 0.0001 Dark 0.0000 Dark 0.0000 Black oil 0.1 0.0000 Emulsion (30% Oil) Percent Total: 0% 0.0000 Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Wat oil recovery before JIV completion done before JIV date? No No No No No No No No No N	
Computation of volume of oil on open water based on standard coloration Total area of oil on open water Table of average depth of oil on water based on coloration Link to Coverage Visual Ald	0.27 m ³
Table of average depth of oil on water based on coloration Link to Coverage Visual	1.67 bbls
Table of average depth of oil on water based on coloration Link to Coverage Visual	m²
Spill Factors from USCG FOG (2000 Edition) Compared Processing	
Thickness (mm)	
Thickness (mm) (%) Volume (m3)	
Silvery 0.00008 0.0000	
Slight Color	
Bright Color 0.0003 0.0000	
Dull 0.001 0.0000 Dark 0.002 0.0000 Black olf 0.1 0.0000 Emulsion (30% Oit) 1 0.0000 Percent Total: 0% 0.0000 Estimated Volume of oil on open water, V _{vest}	
Dark 0.002 0.0000	
Black oil 0.1 0.0000	
Emulsion (30% Oit) Percent Total: 0% 0.0000 Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (days on site) Coll type Bonny Light Bonny Medium 1.7 days 10% 5% 1.7 days 25% 15% > 7 days 40% 25% No	
Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Estimated Volume of oil on open water, V _{wat} Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (days on site) Oil type	
Estimated Volume of oil on open water, V _{est} Luiation of evaporated volume Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (days on site) Oil type Bonny Light Bonny Medium <1 day 10% 5% 1-7 days 25% 15% >7 days 40% 25% No No	
Estimated Volume of oil on open water, V _{est} Lulation of evaporated volume Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (days on site) Coll type Bonny Light Bonny Medium 10% 5% 1-7 days 25% 15% > 7 days 40% 25%	3
Residence time of spilled oil (days on site) C1 day 1.7 days C3 days Was oil recovery before JIV completion done before JIV date?	0.00 m³
Evaporation Factors (E-Factor) for SPDC Crude oil Residence time of spilled oil (days on site) Oil type Bonny Light Bonny Medium < 1 day	0.00 bbls
Coll type Bonny Light Bonny Medium	
Bonny Light Bonny Medium	
Bonny Light Bonny Medium	
1-7 days 25% 15% > 7 days 40% 25% Was oil recovery before JIV completion done before JIV date?	
> 7 days 40% 25% Was oil recovery before JIV completion done before JIV date?	
Was oil recovery before JIV completion done before JIV date?	
<u></u>	
<u></u>	
Estimated volume available for evaporation	35.92 bbls
	33.32 DUIS
E-factor	25 %
Estimated Volume of evaporated oil, V _{evap}	44.07 bbls
	11.97 bbls

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 1258760 JIV report S/N: 00726

G. INCIDENT INFORMATION

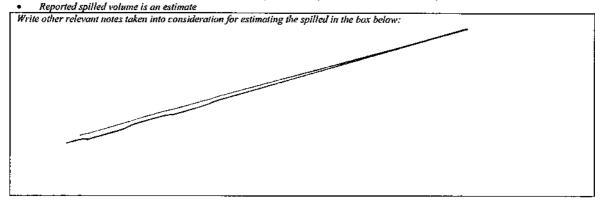
20. I	mpacted	Area	Details
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•	Total calculated area of impac	<u>: 0·38tfa</u>		
•	Impact within SPDC R.O.W_	YES		
•	Impact outside SPDC R.O.W	7E5		
21. Volume o	f oil recovered before comp	letion of JIV (VreeJ):		
	Re	ecovered oil V _{recJ} :	NIL	Barrels
Controlled 1	ecovery/evacuation from so	urce with no impact	to environment:	_
	MIL	Barrels		

22. Net Estimated Spilled Volume V _{rst} (bbls)* =	300	
47.90 BARRELS		
Estimated Reported Volume** V _{rep} (bbls)= 48 BARR	ELS	

*Notes:

Volume estimation was done using an excel based tool (see attached for details on the calculation)



Calculation of the respective estimated volume is to be done on site as for as practicable using the new spill volume estimation software on site; Conversion of m^3 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.

Wherever this estimation tool is not applicable please refer to paragraph 6c (Deviations) of the JIV procedure to use appropriate steps for column estimation; record the calculation in a plain sheet of paper and attach to the JIV report.

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23. GENERAL STATUS OF THE SITE

A.	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
В.	Investigation of the incident site showed that there is residual impact on site requiring further works

This report was filled, agreed and signed by the following joint investigation rep	presentatives:
Host Community:	
Department of Petroleum Resources [DPR]: □	
National Oil Spill Detection and Response Agency [NOSDRA]:	•
State Ministry of Environment [SME]:	
Nigeria Police Force [NPF]: □	
Shell Petroleum Development Company [SPDC]:	
Signatories agree with reported findings:	
Separate DPR form has been filled out with same findings ☐	
	Tick as applicable

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25. Appendix 1: Overview sketch of the site

