#### THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMTED. JOINT INVESTIGATION REPORT FOR INCIDENT NO: 1328417 JIV report SIN: 00826 (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: 1328417 2. Type of incident\* OIL SALL 3. Name of Location 28" BOMY - BONNY TRANS NIGER PIPELINE 4. Name of nearest community BODD WEST 5. State: RIVERS 6. LGA GOKANA 7. Type of Production facility/Installation PIPELINE 8. Asset owner/District NELINE | BCON1 B. INCIDENT INFORMATION: 9. Details of incident a. Date of incident: 29 TH JANUARY 2015 b. Start date/time of investigation: 300 FEBRUACT, 2015 c. Investigation End date: 320 FEBRUAR Actual investigation duration, days: ONE DAT d. Description of spill point environment Recently excavated area Loose soil ☐Firmed soil **⊡**Swampv Exposed pipe surface Under water □Drill Rig ☐Well Platform (on Water) Additional observations around the spill point: THE ILLEGAL THEFT POINT WAS OBSERVED TO BE NON LEAKING WHEN THE ILLEGALLY INSTAULD VAIVE IS CLOSED WHILE HEAVY IMPACT WAS OF CRUDE OIL WAS SEEM WITHIN AND OUTSIDE THE COTTERDAM DUE TO THIRD PARTY (BUNKOU) ACTIVITIES. e. Description of leak point (tick as applicable); ☐ Tear ( | \_\_\_\_\_), Hack saw cut Drilled hole ☐Well head tampering ☐Inward dent, 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 Com unit failure □Cold vent ☐ Valve Failure Relief valve failure Others (specify) f. Incident caused by: Third party interference (Sabotage□; crude theft□; 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,

IT INVESTIGATION	REPORT FOR IN	CIDENT NO: 1	<u> 3284</u>	<u>:17</u> .	JIV report	5/N:	0082
g. Spill point co	ordinates		MINN	4 (NLO	-Bēlī)		<u>.                                    </u>
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C. RISK ASSESSA	·		[				
	pe of environment:						
□Land	Swamp	□Water	□Se	asonal swa	mp 🗆 Shor	eline/Waterf	ront
i, <b>Ту</b> р	e of environment to	which oil has sp	read:				
Land	Swamp	□Water	□Ri	ver (identif	fy)		
ii. We	ather condition					_	
☐Rain 11. Distance from	Sunny m the nearest sensit		□wet	□win	dy l	Hot!	□cool
	ids m/Pond net	esignated protect	ted area	[ [ [ [	[m,	NONE WITH Vicini	N
12. Containmen	t measures put in pl	ace;					
⊠Booms □Others:	Trench	□Dyke	□N	atural depr	ession	<b>⊠</b> Pit	None
13. Any pictures	s or video coverage	?		[ Y <b>Y</b>	[N]		
14. Further res	ponse/repair initiate	d as at the time o	of JIV?	[Y <b>]</b>	/[N]		
If yes to item 14, give b	rief description:	EMDER	ARY	R <del>c.</del>	PAIR	BY	BLIND
FLANGE	THE TH		CINT	,			
15. Was there a	ny disruption to the		•	[Y]	[N]	,	<del></del> -
If yes to item 15 give	brief description:						
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	OFI	1 1/1		<u> </u>	ンロスコ	$\neg$	

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

D. TYPE/NUMBER	RS OF PROPERTIES.	, IF ANY, FOUNI	) WITHIN THE	AREA OF SPR	EAD OF OIL	
16. Structures /	Properties					
S/N Type of Stru	ictures Descript	on Size	Number	Com	ments	
NOT	ADDE	1CA-0	<u>                                     </u>	-		
	MALL					
17. Crops/Econd	omic Trees			<del></del>		•
S/N Type of crops	Young	Medium	Matured	Quantity	Comments	
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18. Fish/Nets/Po	onds					
S/N Fish/Nets/Por	<u> </u>	<del></del>	Quantity/Size	Comments		
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MANE	WI ITT	1 7/K	<del></del>	)L 11,	TACI	
<u> </u>						
19. Others (Spec	cify) i.e. Animal Traps					
S/N Others	Description		Quantity/Size	Comments		
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1 N O 1 Y C	<u> </u>		(NW/)		11100	
E. GRAPHIC DESC leak report, overview	CRIPTION OF LEAK sketch of the site should	POINT (while de d be added as an a	tail report of the appendix 1)	leak point should	be contained in the	
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BODO WEST	MIGIGHE	ei- Cam	NE FOL	THEFT III	ernt Doint.	
<u> </u>	Ser- Vice of	d				
THE THEFT	POINT		/'		Activities	
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1 2001 21	Arriva and him			6" BAH		
	The state of the s			. INSTAIL		
YALVE	ion :	X <b>)</b> #	177. Cr	ock Posi	(10 M.	
		<b></b>	<del></del>	<del></del>		e. II
	· <u> </u>	<del></del>			() 1希	5" 49'

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Banu - BENNY PROFFINE.

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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)

CAL		MA (MID-BELT)
S/N	Northing NETER	Easting METER
	63370.37	532377-13
	63376.8	532353 •74
	63397,17	532319-6
	63415.43	532293-4
	63429 98	532259 -55
	63464.37	532291.56
	63449.03	532315.11
	63435.27	532329.40
	63418-60	532350.3
	6:3400-08	53 2388 - 66
	63382.35	532378.34
	63426.33	532268-70
	63462 · 88	532294.10
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Troub Calculation Area of Impact i Impact distins SPDC R.O.W ii Impact outside SPDC R.O.W ii Inpact outside SPDC R.O.W ii Impact out	pacted Area Details	OFFSHORE (Leak stopped a	t acurcej		l	
i Impact outside SPDC R.O.W   m²   m²   m²   m²   m²   m²   m²   m						4 002
il Impact outside SPDC R.O.W    Includent Coll Praceward Defects completion of JIV (V <sub>min</sub> )   105.00 bbls		• • • • •			4,62	
Limite of all riscovered before completion of JIV IV	•				<u> </u>	
i Estimated Recovered oil (Net) V <sub>total</sub> moutation of astimated residual volume on site  Computation of volume of free phase oil (on land or confined water body)  170tal area coursied by pool of the phase oil in itemulations foctor (if applicable, else 0%)  124.00 m²  170tal area coursied by pool of free phase oil in itemulations foctor (if applicable, else 0%)  Estimated Volume of pool of free phase oil, V <sub>pool</sub> Estimated Volume of pool of free phase oil, V <sub>pool</sub> S.8.8 m²  Estimated Volume of pool of free phase oil, V <sub>pool</sub> S.8.8 m²  Estimated Volume of pool of free phase oil, V <sub>pool</sub> S.8.8 m²  Estimated Volume of pool of free phase oil, V <sub>pool</sub> S.8.8 m²  Soll type  Volume of infiltration above leaking facility i.e. pipeline/flowline  Incident Date  If 200 m²  If calculation of days for infiltration below the leaking point on pipeline or flowline Incident Date  If Youse of spill  If Youse of spill  If Youse of spill is operational, use I week as word case  Soll type  If Youse of spill is operational, use I week as word case  Soll type  Soll ty	II Impact outside SPDC R.O.	W			<u> </u>	m^
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Computation of volume of free phase oil (on land or confined water body)  if Average depth of pool of free phase oil  if Emulatication factor (if applicable, else 0%)  if Emulatication factor (if applicable, else 0%)  Estimated Volume of pool of free phase oil, V <sub>pool</sub> Estimated Volume of pool of free phase oil, V <sub>pool</sub> Computation of estimated volume of infiltrated oil in the soil (V <sub>tot</sub> )  I Volume of infiltrated oil at apill point (V <sub>tot</sub> )  I Total area covered by the oil (infiltration)  if average depth of infiltration above leaking facility i.e. pipeline/flowline  if Calculation of days for infiltration below the leaking point on pipeline or flowline  Infiltration of oil types in various soil types vs time.    Value of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   V'cause of spill is apparational, use 1 week as worst case   Soil type   Approximate time to reach 1 m depth below ground level   Oil type   Sand   Loem   Clay     Sanny Light   2 days   2 months   > 10 years     iii Oil type   Sand   Loem   Clay     Sanny Light   2 days   2 months   > 10 years     iii Oil type   Sand   Loem   Clay     iii Average depth of infiltration below leaking facility i.e. pipeline/flowline   0.002 m     x Total depth below ground surface of infiltration of oil   1.002 m     Estimated Volume of infiltrated oil, V <sub>total</sub>   0.12 m²     iii Total area covered by the oil (infiltration   1.002 m   1.003 m     iverage depth of infiltration above leaking facility i.e. pipeline/flowline   0.000 m     iii Total area covered by the oil (infiltration   1.000 m   1.000 m   1.000 m   1.000 m   1.000 m   1.000	Estimated Recovered oil (	Net) V <sub>recJ</sub>	· •		1	105.00 bbis
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i Volume of infiltrated all at spill point (V <sub>orf a</sub> ) i Total area covered by the oil (infiltration) i Average depth of infiltration above leaking facility i.e. pipeline/flowline ii Soil type v P <sub>c</sub> (effective porosity of the soil)  v Cause of spill  fi Calculation of days for infiltration below the leaking point on pipeline or flowline Incident Date II/29/2015 13:40 II/2015 1	Estimated Volume of pool	of free phase oil, V <sub>pool</sub>				54.60 bbls
i Volume of infiltrated oil at apill point (V <sub>Nf*</sub> ) i Total area covered by the oil (infiltration)  if Total area covered by the oil (infiltration)  if Average depth of infiltration above leaking facility i.e. pipeline/flowline  if Soil type  v P, (effective porosity of the soil)  v Cause of spill I  Calculation of days for infiltration below the leaking point on pipeline or flowline Incident Date  JIV Date  Days on Site  If 'Calculation of spill is operational, use 1 week as worst case scanario excent where thexe on site 'exceeds 7 7  Infiltration of oil types in various soil types vs time.  Soil type  Soil type  Approximate time to reach 1 m depth below ground level  Oil type  Sand  Loem  Clay  Bonny Hight  2 days  2 months  1 total depth below ground surface of infiltration of oil  Estimated Volume of Infiltrated oil, V Note  Estimated Volume of Infiltrated oil, V Note  v P, (effective porosity of the soil)  v Average depth of infiltration below leaking facility i.e. pipeline/flowline  i Total depth below ground surface of infiltration)  if Volat depth below ground surface of infiltration of oil  D.002 m  Estimated Volume of Infiltrated oil, V Note  0.002 m  Estimated Volume of Infiltrated oil, V Note  0.002 m  Estimated Volume of Infiltrated oil, V Note  0.0002 m	Computation of estimated	l volume of infiltrated oil in the soil	f (V <sub>tot</sub> )			
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v Cause of spill    Calculation of days for infiltration below the teaking point on pipeline or flowline	_	above teaking facility i.e. pipeline/flo	wiine		.	1.000 m
V Cause of spill    Calculation of days for infiltration below the tesking point on pipeline or flowline   Incident Date					Silty or vandy o	±ay▼
A Calculation of days for infiltration below the leaking point on pipeline or flowline  Incident Date  JIV Date  Days on Site  1/29/2015 13:40  2/4/2015 14:45  8  If cause of spill is operational, use 1 week as worst case scenario excent where 'days on site' exceeds 7.  Infiltration of oil types in various soil types vs time.  Soil type  Approximate time to reach 1m depth below ground level  Oil type  Sand  Loem  Clay  Bonny Medium  3 weeks  3 years  > 10 years  Bonny Light  2 days  2 months  > 10 years  10 Oil type  if Oil type  if Average depth of infiltration below leaking facility i.e. pipeline/flowline  Estimated Volume of Infiltrated oil, V of s  Estimated Volume of Infiltrated oil, V of s  V Pe (affective porosity of the soil)  V Average depth of infiltrated oil infiltration of oil  Average depth of infiltrated oil at second spill point [if applicable] (V <sub>rid to</sub> )  1 Total depth below ground surface of infiltration)  if Average depth of infiltrated oil, V of s  V Pe (affective porosity of the soil)  V Average depth of infiltration below leaking facility i.e. pipeline/flowline  if Average depth of infiltration below leaking facility i.e. pipeline/flowline  if Total depth below ground surface of infiltration of oil  Average depth of infiltration below leaking facility i.e. pipeline/flowline  if Total depth below ground surface of infiltration of oil  Estimated Volume of Infiltrated oil, V of s  0.002 m  Fastimated Volume of Infiltrated oil, V of s  0.002 m  Estimated Volume of Infiltrated oil, V of s  0.000 bbls	v Pe (effective porosity of the	soil)				12 %
Total depth below ground surface of infiltration of oil.  **Estimated Volume of Infiltration below the leaking facility i.e. pipeline/flowfine  1/29/2015 13:40  2/4/2015 14:45  8  1/29/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/29/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  1/19/2015 13:40  1/19/2015 13:40  1/19/2015 13:40  2/4/2015 14:45  8  1/19/2015 13:40  1/19/2015	v Cause of spill				Third centy inte	rference ♥
Incident Date  1/29/2015 13:40  2/4/2015 14:45  6  1/ 'cause of spill' is operational, use I week as worst case    Incident Date   Soil type   Soil type   Soil type   Soil type   Approximate time to reach 1m depth below ground level					11	<u>-</u> -
1/29/2015 13:40 2/4/2015 14:45 6  If cause of splif is operational, use 1 week as worst case scanario except where Yelvs on site' exceeds 7. 7  Infiltration of oil types in various soil types vs time.  Soil type Approximate time to reach 1m depth below ground level Oil type Sand Loam Clay Bonny Medium 3 weeks 3 years > 10 years Bonny Light 2 days 2 months > 10 years  Bonny Light 2 days 2 months > 10 years  ii Oil type  X Total depth of infiltration below leaking facility i.e. pipeline/flowline 0.002 m  Estimated Volume of infiltrated oil, V by s  2 Volume of infiltrated oil at second splil point [if applicable] (V into) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline m ii Soil type  2 Volume of infiltrated oil at second splil point [if applicable] (V into) ii Average depth of infiltration above leaking facility i.e. pipeline/flowline m ii Soil type  2 Volume of infiltration above leaking facility i.e. pipeline/flowline m ii Soil type  3 Silty or sandy day  4 Verage depth of infiltration below leaking facility i.e. pipeline/flowline m ii Total depth below ground surface of infiltration of oil  Estimated Volume of infiltrated oil, V into ii Total depth below ground surface of infiltration of oil  Estimated Volume of Infiltrated oil, V into  0.002 m  Estimated Volume of Infiltrated oil, V into 0.000 m	1					
If cause of spilf is operational, use 1 week as worst case scanario except where 'days op site' exceeds 7.    Infiltration of oil types in various soil types vs time.	<del></del>		<del></del>			
Infiltration of oil types in various soil types vs time.   Soil type			- 6			
Soil type			7			
Soil type	_	Infiltration of oil types in various soil	types vs time	······································	1	
Coli type	Soil type			nd level	1	
Bonny Medium  3 weeks 3 years > 10 years  Bonny Light 2 days 2 months > 10 years  Bonny Medium  Coll type  ii Average depth of infiltration below leaking facility i.e. pipeline/flowline  Coll type  ii Average depth of infiltrated oil, V <sub>inf s</sub> Estimated Volume of Infiltrated oil, V <sub>inf s</sub> Coll type  Coll			<del>' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' </del>		1	
Bonny Light   2 days   2 months   > 10 years	<del></del>	3 weeks			1	
ii Average depth of infiltration below leaking facility i.e. pipeline/flowline  2. Total depth below ground surface of infiltration of oil  2. Estimated Volume of infiltrated oil, V tota  2. Volume of infiltrated oil infiltrated oil, V tota  3. Volume of infiltrated oil infiltrated oil infiltration)  4. Total area covered by the oil (infiltration)  5. Average depth of infiltration above leaking facility i.e. pipeline/flowline  6. Silty or sandy day  7. Verage depth of infiltration below leaking facility i.e. pipeline/flowline  8. Silty or sandy day  8. Total depth below ground surface of infiltration of oil  8. O.002 m  8. Estimated Volume of Infiltrated oil, V tota  9. O.002 m  8. Estimated Volume of Infiltrated oil, V tota  9. O.003 m  9. Estimated Volume of Infiltrated oil, V tota  9. O.004 m  9. O.005 blis			<del>                                     </del>	<del></del>	1	
ii Average depth of infiltration below leaking facility i.e. pipeline/flowline  7. Total depth below ground surface of infiltration of oil  8. Estimated Volume of infiltrated oil, V but s.  8. Estimated Volume of infiltrated oil, V but s.  9. Volume of infiltrated oil at second spill point [if applicable] (V but b.)  1. Total area covered by the oil (infiltration)  1. Average depth of infiltration above leaking facility i.e. pipeline/flowline  1. Silt voe  1. V but s.  1. O.76 bbls  2. Volume of infiltrated oil at second spill point [if applicable] (V but b.)  2. Volume of infiltrated oil (infiltration)  3. In Total area covered by the oil (infiltration)  4. Average depth of infiltration above leaking facility i.e. pipeline/flowline  5. Silt voe  6. O.002 m  6. Total depth below ground surface of infiltration of oil  6. O.002 m  6. Estimated Volume of Infiltrated oil, V but b.  7. O.00 bbls	Damy Lgin	z dayo	Littoriale	10 7023	,	
Estimated Volume of infiltrated oil, V but s  Estimated Volume of infiltrated oil, V but s  2 Volume of infiltrated oil it second splil point [if applicable] (V but b)  i Total area covered by the oil (infiltration)  ii Average depth of infiltration above leaking facility i.e. pipeline/flowtine  iii Soil type  v Po (effective porosity of the soil)  v Average depth of infiltration below leaking facility i.e. pipeline/flowtine  ii Total depth below ground surface of infiltration of oil  Estimated Volume of infiltrated oil, V but b  Estimated Volume of Infiltrated oil, V but b  Estimated Volume of Infiltrated oil, V but b  0.000 bbits	rii Oil type				Bonny Medium	₹
Estimated Volume of Infiltrated oil, V <sub>lot A</sub> Estimated Volume of Infiltrated oil, V <sub>lot A</sub> 2 Volume of Infiltrated oil at second spill point [if applicable] (V <sub>Inf b</sub> )  i Total area covered by the oil (Infiltration)  if Average depth of Infiltration above leaking facility i.e. pipeline/flowtine  ii Soil type  v P <sub>c</sub> (effective porosity of the soil)  v Average depth of Infiltration below leaking facility i.e. pipeline/flowline  if Total depth below ground surface of Infiltration of oil  Estimated Volume of Infiltrated oil, V <sub>lot b</sub> Estimated Volume of Infiltrated oil, V <sub>lot b</sub> 0.000 bblis	ii Average depth of infiltration	below leaking facility i.e. pipeline/flo	wline			0.002 m
Estimated Volume of Infiltrated oil, V <sub>lot A</sub> Estimated Volume of Infiltrated oil, V <sub>lot A</sub> 2 Volume of Infiltrated oil at second spill point [if applicable] (V <sub>Inf b</sub> )  i Total area covered by the oil (Infiltration)  if Average depth of Infiltration above leaking facility i.e. pipeline/flowtine  ii Soil type  v P <sub>c</sub> (effective porosity of the soil)  v Average depth of Infiltration below leaking facility i.e. pipeline/flowline  if Total depth below ground surface of Infiltration of oil  Estimated Volume of Infiltrated oil, V <sub>lot b</sub> Estimated Volume of Infiltrated oil, V <sub>lot b</sub> 0.000 bblis						
Estimated Volume of Infiltrated oil, V int a  2 Volume of infiltrated oil at second spill point [if applicable] (V int b)  1 Total area covered by the oil (infiltration)  1 Average depth of infiltration above leaking facility i.e. pipeline/flowtine  2 Sity or sandy day  2 Note the soil of the soil of infiltration above leaking facility i.e. pipeline/flowtine  3 Note the soil of infiltration below leaking facility i.e. pipeline/flowtine  4 Average depth of infiltration below leaking facility i.e. pipeline/flowtine  5 O.002 m  6 Estimated Volume of infiltrated oil, V int b  6 O.002 m  6 Estimated Volume of Infiltrated oil, V int b  7 O.002 bblis	x Total depth below ground s	urface of infiltration of oil				1.002 m
Estimated Volume of Infiltrated oil, V int a  2 Volume of infiltrated oil at second spill point [if applicable] (V int b)  1 Total area covered by the oil (infiltration)  1 Average depth of infiltration above leaking facility i.e. pipeline/flowtine  2 Sity or sandy day  2 Note the soil of the soil of infiltration above leaking facility i.e. pipeline/flowtine  3 Note the soil of infiltration below leaking facility i.e. pipeline/flowtine  4 Average depth of infiltration below leaking facility i.e. pipeline/flowtine  5 O.002 m  6 Estimated Volume of infiltrated oil, V int b  6 O.002 m  6 Estimated Volume of Infiltrated oil, V int b  7 O.002 bblis	Coding at a literary and in 18th	transfer of a 14 MP				a]3
2 Volume of infiltrated oil at second spill point [If applicable] (V <sub>int b</sub> )  i Total area covered by the oil (infiltration)  ii Average depth of infiltration above leaking facility i.e. pipeline/flowtine  iii Soil type  v P <sub>c</sub> (effective porosity of the soil)  v Average depth of infiltration below leaking facility i.e. pipeline/flowline  ii Total depth below ground surface of infiltration of oil  Estimated Volume of Infiltrated oil, V <sub>Int b</sub> 5.000 bblis					<del>-   -</del>	
i Total area covered by the oil (infiltration)  ii Average depth of infiltration above leaking facility i.e. pipeline/flowtine  ii Soil type  v P <sub>c</sub> (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 <sub>INI D</sub> ii Total depth below ground surface oil, V <sub>INI D</sub> 5.88	EDUNIATO VOIDING OF INTE	ando on, a prij				0.10 0010
ii Average depth of infiltration above leaking facility i.e. pipeline/flowtine ii Soil type V P <sub>e</sub> (effective porosity of the soil)  Average depth of infiltration below leaking facility i.e. pipeline/flowtine  if Total 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 Volume of Infiltrated oil, V INT D  0.000 biblis			V <sub>Int b</sub> )			
ii Soil type V P <sub>e</sub> (effective porosity of the soil)  V Average depth of infiltration below leaking facility i.e. pipeline/flowline  ii Total depth below ground surface of infiltration of oil  Estimated Volume of Infiltrated oil, V <sub>INI D</sub> Sity or landy day  0.002 m  0.002 m  Estimated Volume of Infiltrated oil, V <sub>INI D</sub> 0.000 bbis						m²
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 <sub>INI D</sub> Estimated Volume of Infiltrated oil, V <sub>INI D</sub> 12 %  0.002 m  0.002 m  0.000 m  0.000 bbis	• •	above leaking facility i.e. pipeline/flo	wtine			ŵ
Average depth of infiltration below leaking facility i.e. pipeline/flowline  7. Total depth below ground surface of infiltration of oil  8. Estimated Volume of Infiltrated oil, V int b  8. Estimated Volume of Infiltrated oil, V int b  9.00 pb/s		18			Silty or landy o	
Estimated Volume of Infiltrated oil, V <sub>lot b</sub> Estimated Volume of Infiltrated oil, V <sub>lot b</sub> 0.002 m  0.002 m  0.002 m	v Pe (affective porosity of the	SOII)				12 %
Estimated Volume of Infiltrated oil, V <sub>lot b</sub> Estimated Volume of Infiltrated oil, V <sub>lot b</sub> 0.002 m  0.002 m  0.002 m	v Average depth of infiltration	below leaking facility i.e. pipeline/flor	<b>M</b> ine			0.002 m
Estimated Volume of inflitrated oil, V <sub>lot b</sub> 0.00 bbis						
Estimated Volume of Infiltrated oil, V <sub>lat b</sub> . 0.00 bbis	n Total depth below ground s	unace of infiltration of oil			Ч—	0.002 m
		1-2				0.00 m <sup>3</sup>
	Estimated Volume of Infili	rated oil, V <sub>ist b</sub>				eldd 00.0
3 Volume of infiltrated oil outside immediate spill point(s) region (V <sub>info</sub> )	2 Valore of : 8444	<u> </u>	44			
		, . •	A. 14 C.		<del></del>	100 nn m²
ii Total Area of the pool of free phase oil in touch with soil	i Total Area covered by the o	il (infiltration)	en (e due)		4,4	99.00 m <sup>2</sup>

				Sifty o	
P <sub>e</sub> (effective porosity of the	e soil)				12 %
Average denth below group	end surface of infiltration of oil			ľ	0.003
	and street or tringagor or on				0.002 m
Estimated Volume of Infi	itrated oil, V <sub>infe</sub>				0.89 m <sup>3</sup>
Estimated Volume of infi	itrated oil, V <sub>infe</sub>				5.58 bbls
Volume of infiltrated oil o	outside immediate spill point(s) regio				
Total Area covered by the		on (aupernciai impaci	, V infd)		m²
Total Area of the pool of free phase oil in touch with soil.					m²
				<b></b>	<b>,</b> ,,,
Average depth below grou	nd surface of infiltration of oil				0.002 m
F-44-136-1					
Estimated Volume of infiltrated oil, V <sub>irf d</sub> Estimated Volume of infiltrated oil, V <sub>irf d</sub>					0.00 m³
Cantigued Activisis of Mili	itrated Oil, V <sub>kef d</sub>	<del></del> -			0.00 bbls
Estimated Total Volume	of inflitrated oil, V <sub>inf</sub>				1.01 m³
Estimated Total Volume	of Inflitrated oil, V <sub>ht</sub>				6.34 bbls
	of oil on open water based on stands	ard coloration	ı		
Total area of oil on open w				L	15.00 m²
rapie or average depth or	oit on water based on coloration	Link to Coverage Visual			
Spill Factors from USCG FOG	(2000 Edition)	Aid			
	Thickness (mm)	Percendige coverage (%)	Volume (m3)		
Barely Visible	0.00004		0.0000		
Silvery	0.00008		0.0000		
Slight Color	0.00015		0.0000		
Bright Color	0.0003	[ .	0.0000		
		· · · · · · · · · · · · · · · · · · ·			
<u>Duil</u>	0.001	60%	0,0000		
<u>Duil</u> Dark	0.001 0.002	60% 40%	0.0000 0.0000		
<u>Duil</u>	0.001		0.0000 0.0000 0.0000		
<u>Duil</u> Dark Black oil	0.001 0.002	40%	0.0000 0.0000		
<u>Duil</u> <u>Dark</u> <u>Black oil</u> Emulsion (30% Oil)	0.001 0.002 0.1 1 Parcent Total:	40%	0,0000 0,0000 0,0000 0,0000		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil	0.001 0.002 0.1 Percent Total: on open water, V <sub>wat</sub>	40%	0,0000 0,0000 0,0000 0,0000		0.00 m³
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil	0.001 0.002 0.1 Percent Total: on open water, V <sub>wat</sub>	40%	0,0000 0,0000 0,0000 0,0000		0.00 ភា³ 0.00 bbls
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil	0.001 0.002 0.1 Percent Total: on open water, V <sub>wat</sub>	40%	0,0000 0,0000 0,0000 0,0000		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil	0.001 0.002 0.1 Percent Total: on open water, V <sub>wat</sub>	40%	0,0000 0,0000 0,0000 0,0000		
Duil Dark Black oil Emulsion (30% Oil)  Estimated Volume of oil Estimated Volume of oil ulation of evaporated voluments	0.001 0.002 0.1 Percent Total: on open water, V <sub>wat</sub>	40% 100% SPDC Crude oil	0,0000 0,0000 0,0000 0,0000 <b>0,0000</b>		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil ulation of evaporated voluments	0.001 0.002 0.1 1 Percent Total; on open water, V <sub>wat</sub> on open water, V <sub>wat</sub>	100%  100%  PDC Crude oil  Oil ty	0,0000 0,0000 0,0000 0,0000 0,0000		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil ulation of evaporated voluments	0.001 0.002 0.1 1 Percent Total: on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> wine Evaporation Factors (E-Factor) for S	A0% 100% 100% SPDC Crude oil Oil ty Bonny Light	0,0000 0,0000 0,0000 0,0000 <b>0,0000</b> pe		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil ulation of evaporated voluments	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> with  Evaporation Factors (E-Factor) for Set of spilled oil (days on site) < 1 day	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%	0,0000 0,0000 0,0000 0,0000 0,0000 pe Banny Medium		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil ulation of evaporated voluments	0.001 0.002 0.1 1 Percent Total: on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> wine Evaporation Factors (E-Factor) for S	A0% 100% 100% SPDC Crude oil Oil ty Bonny Light	0,0000 0,0000 0,0000 0,0000 0,0000		
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil ulation of evaporated volume Residence time	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> et al. (Compared to the state of spilled oil (days on site)  < 1 day 1-7 days  > 7 days	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%  25%	0,0000 0,0000 0,0000 0,0000 0,0000 pe Banny Medium		
Duil Dark Black oil Emulsion (30% Oil)  Estimated Volume of oil Estimated Volume of oil Residence time  Was oil recovery before Jl	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> ume  Evaporation Factors (E-Factor) for Se of spilled oil (days on site) < 1 day 1-7 days > 7 days	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%  25%	0,0000 0,0000 0,0000 0,0000 0,0000	No	0.00 bbis
Duil Dark Black oil Emulsion (30% Oil) Estimated Volume of oil Estimated Volume of oil ulation of evaporated volume Residence time	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> ume  Evaporation Factors (E-Factor) for Se of spilled oil (days on site) < 1 day 1-7 days > 7 days	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%  25%	0,0000 0,0000 0,0000 0,0000 0,0000	No	0.00 bbls
Duil Dark Black oil Electronic (30% Oil) Estimated Volume of oil Estimated Volume of oil Residence time Residence time Was oil recovery before Ji Estimated volume available	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> ume  Evaporation Factors (E-Factor) for Se of spilled oil (days on site) < 1 day 1-7 days > 7 days	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%  25%	0,0000 0,0000 0,0000 0,0000 0,0000	No	0.00 bbls
Duil Dark Black oil Emulsion (30% Oil)  Estimated Volume of oil Estimated Volume of oil Residence time  Was oil recovery before Jl	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> ume  Evaporation Factors (E-Factor) for Se of spilled oil (days on site) < 1 day 1-7 days > 7 days	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%  25%	0,0000 0,0000 0,0000 0,0000 0,0000	No	0.00 bbis
Duil Dark Black oil Electronic (30% Oil) Estimated Volume of oil Estimated Volume of oil Residence time Residence time Was oil recovery before Ji Estimated volume available	0.001 0.002 0.1 1 Percent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> Evaporation Factors (E-Factor) for S the of spilled oil (days on site)  < 1 day 1-7 days > 7 days  V completion done before JIV date? the for evaporation	AO%  100%  FPDC Crude oil  Oil ty  Bonny Light  10%  25%	0,0000 0,0000 0,0000 0,0000 0,0000	No.	0.00 bbls
Duil Dark Black oil Emulsion (30% Oil)  Estimated Volume of oil Estimated Volume of oil Residence time  Was oil recovery before JI Estimated volume available	0.001 0.002 0.1 1 Parcent Total:  on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> on open water, V <sub>wat</sub> Evaporation Factors (E-Factor) for Se of spilled oil (days on site)  < 1 day 1-7 days > 7 days  V completion done before JIV date? le for evaporation	AO%  100%  100%  SPDC Crude oil  Oil ty Bonny Light  10% 25%	0,0000 0,0000 0,0000 0,0000 0,0000	No.	0.00 bbls

NT INVESTIGATION REPORT FOR INCIDENT NO: 1328417 JIV report s/	N: 00826
G. INCIDENT INFORMATION:	
20. Impacted Area Details	
D.ACHo	
Total calculated area of impact     U 1619     VEC	
Impact within SPDC R.O.W      Vec	
Impact outside SPDC R.O.W	
21. Volume of oil recovered before completion of JIV (V <sub>recJ</sub> ):	
Recovered oil V <sub>rect</sub> :   105	Barrels
Controlled recovery/evacuation from source with no impact to environment:    Nt L_   Barrels	
22. Net Estimated Spilled Volume V <sub>Est</sub> (bbls)* =	
195.22 barrels	
Estimated Reported Volume** Vrep(bbls)= 196 BARREGS	
*Notes:  Volume estimation was done using an excel based tool (see attached for details on the valculation)  Reported spilled volume is an estimate  Write other relevant notes taken into consideration for estimating the spilled in the box below:	
NOT APPLICABLE	
Calculation of the respective estimated volume is to be done on site as far as practicable using the new spill volume Conversion of m³ to barrels is Volume (m3) x 6.29; **Round up estimated volume to next whole number using the Any spill volume in excess of 1 bbl is rounded up to the next whole number.	e estimation software on sit following rules:
<ul> <li>Any spill volume in less than - I bbl - is rounded up to the next 0.1 bbl.</li> </ul>	
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 6c (Deviations) of the JIV procedured to the JIV report.	re to use appropriate step

	Joint investigation of the incident site found that there is no residual response and JIT therefore recommend that the site be closed out	mpact after the i
В,	Investigation of the incident site showed that there is residual impact o works	n site requiring fu
24.	REPRESENTATIVES	
This r	eport was filled, agreed and signed by the following joint investigation represe	ntatives:
. •	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]:	
•		

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 1328417 JIV report \$/N: 00826

25. Appendix 1: Overview sketch of the site

