A. GENERAL IN	FORMATIO	N:				00113
			655645	<u>.</u>		
1. Spill incident N			<i>0</i>			
2. Name of Location	on <u>24"</u>	ALAKIRI	- BONNY	<u> 41</u>	)HSL	
3. Name of neares	t community	C	REEK C			
4 State	RIVERS		LGA		Bonny	
	** ***********************************					
5. Type of Product	tion facility/In	stallation P	LINE_Asset own	er /Distric	et <u>wall</u>	11/602
b. Date/Per c. Descript  d. Descript  d. Descript	ent ncident 2 Nt ncident soil Loose soil Previously ex Under water Swampy Exposed pipe ion of leak po Drilled hole, Hack saw cu	gation, 7 Tet Notice that the state of the s	(Y) [N] [Y] [N] [Y] [N] [Y] [N] [Y] [N] [Y] [N] [Y] [N]	;[Y] [Y]	[N ] [N]	AFTER JOINT INVESTIGATION OF
0 0 0 0	Missing pipe Crude oil the Third party t	pture	ng) point, amp Bolt/Nut,	[Y] [Y] [Y] [Y] [Y] [Y] [Y]	[n] [n] [n] [n] [n] [n]	THE INCIDENT, SPILL WAS FOUND TO BE DUE TO
		Type:er flow, overflow,		[Y] [Y] [Y] [Y] [Y]	[N] [N] [N] [N]	THEN PARTY INTERFERENCE
e. Spill po	int coordinate	s				
	Northing:	(MINNA 1	MIN BERT)	Eastir	ıg:	
$\Gamma = 2$	02 - 12	`		CC3	· 89 mc	₹r. a

C	RISK/D	AMAGE	<b>ASSESSM</b>	FNT
v.			MODEGOIN	

No. 0113

7.	Type of environment of spill site:			
	Land Swamp ✓ water ✓	٠		
	Type of environment of which oil has spread:			
	Land Swamp  water  Distance from the nearest sensitive habitat			
0 I 0 F 0 F 0 F 0 F	Government reserved and designated protected area Drinking water source Built up area Garmlands Fish Farm/Pond Fishing net Others (specify).  Containment measures put in place;	[ [ [	704 [m, [m, [m, [m, [m, [m, [m, [m, [m, [m,	APPLICABLE
	ooms rench lyke	[ Y] [ Y] [ Y]	[N] [N] [N]	
□ C	thers:			
10. Any	pictures or video coverage?	[Y] <b>/</b>	[N]	
11. Wa	s there any disruption to the investigation?	[Y]	[N]	
If yes give brie	f description:			
				-
D. TYPE/NU	MBERS OF PROPERTIES, IF ANY, FOUND WIT	THIN THE	AREA OF SPR	EAD OF OIL

## A. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
<u> </u>					
<b>-</b>	1 15 15		A 00 A		10.
	MONE M	THIN !	AREA	<del>- 0F (1</del>	ALPAC (

## THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA-LIMITED JOINT INVESTIGATION REPORT FOR INCIDENT NO: 455645

No. 0113

## B. Crops/Economic Trees

S/N	Types of crops	Young	Medium	Matured	Quantity	Comments
				<u> </u>		
	NONE	MITHIN	ARRI	N OF	MPAC	<del>l'</del>
			<u> </u>	<del></del>		1

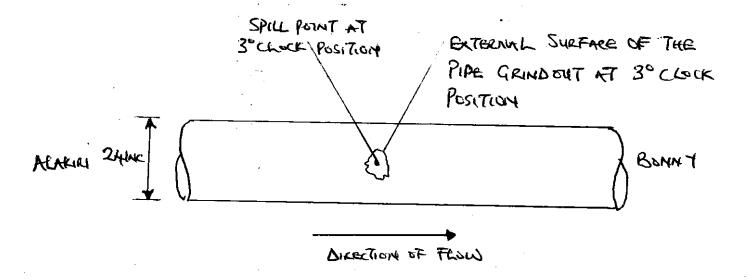
#### C. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
	NONE K	ITHIN M	CA OF	IMPACT

## D. Others (Specify) i.e. Animal Traps

S/N	Others	Description		Quanti	ty/Size	Comments
	NONE	MITHIN	A	<del>CA</del>	OF	IMPACT

## E. GRAPHIC DESCRIPTION OF LEAK POINT (Details should be contained in leak repair report)



A SECTION OF 24" ALAKIRI - BONNY GPHSL AT CREEK SIX(6)

# THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIALIMITED JOINT INVESTIGATION REPORT FOR INCIDENT NO:

No 00113

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

E. Coordinates (NINA NI) - Be(7)

	(1011414 1011) - De(()	
S/N	Northing	Easting
PTI	5537739 m	517558.92m
772	55381 08m	517558·68m
P73	55380 · 96 m	517551 07 m
PT4	55377.03m	517551 · 07m
P75	55375.92 m	517523 96 M
PTL	55369 67 m	517524 · 08m
P-7	55370 · 53 m ·	517 558 · 80 m
-		
٠,		

G I	NCIDE	NT INFORM	IATION:			No.	0113	
	a. Tota	Impact v     Impact c     of oil recovery.	rea of impactvithin SPDC R.O.W_outside R.O.W	N etion of JIV (V <sub>rec</sub>	۱ <u>ــــــــــــــــــــــــــــــــــــ</u>	H9 H9 NIL	l b	parrels
19.	Compu a. Cor	mputation of the	e residual volume of the volume of pooled five a (m²) occupied by p terage Depth (m) of p Volume of pooled of	ree phase oil (on la ool of free phase o	oil	e c	.0064	m²_ parrels
	b. Co	omputation of i ii iii iv. v.	volume of infiltrated Area (m²) covered t Average Depth (m) Soil type:	below ground sur	face of inf	iltration of oil:	m <sup>2</sup>	barrels
20.	Compu	utation of vol	ume of oil on open	water based on	standard		<u> </u>	

	Thickness (mm)	Percentage coverage	Volume (m3)	Approximate Area
Barely Visible	0.00004			OF SHEEN IN WAR
Silvery	0.00008			
Slight Colour	0.00015			BODY 1 229m2
Bright Colour	0.0003			
Dull	0.001	100	2.29×10+	
Dark	0.002			
Black oil	0.1			
Emulsion (30% Oil)	1			
	Percent Total	100%	Total Volume	O 001 ppl

Spill Factors from USCG FOG (2000 Edition)

# 

4								
Volume of oil on open water $V_{wai}$ : 6 001 barrels  21. Calculation of evaporated volume:								
i. Oil type: Bonny Light								
ii. E-Fa	ii. E-Factor: 25 %							
iii.								
	Volt	ime of evaporated	l oil. V ve	80.0	barrels			
Oil Type		Bonny Light	Bonny Medium	]				
		E-Factor	E-Factor	<b>-</b>   ,				
Period Since Oil Spill	<1 day	10%	5%	1				
	1-7 days	25%	15%	<del>-</del>				
	>7 days	40%	25%	+				
37 (11)				(bbls) + V <sub>inf</sub> (bbls) + V <sub>p</sub>				
10. <u>Net Total Estimated</u> (bbls) + VrecJ (bbl.	d Spilled Volum s)	e VEst(bbls) = V	vap (bbls) + 0.6	*Vwat (bbls) + Vinf (bbls	)+Vpool			
*Calculation of the respo *Conversion of m3 to ba *Emulsification factor fo	urel is lotal vol	une VT (m3) x6.2	29	oill estimation software or	ı site			
This report was fil investigation repres  • Host Comm	entative from	ed on the <u>67</u>	/ <u>05</u> /20	11 at incident site b	y joint			
• Department	of Petroleum	Resources [DP	R]: <b>⊡</b> ∕					
National Oil Spill Detection and Response Agency [NOSDRA]:								
State Ministry of Environment [SME]:								
• Nigeria Police Force [NPF]:								
• Shell Petrole	ım Developm	ent Company [S	SPDC]:					
				Tick as ap	plicable			

Δ	GEN	ERAL I	NFORMA1	TION:						00040	
				ion.	65.	5643					
	_		Number:								
2.	Name	of Locat	<sub>tion</sub> <u>24"</u>	ALAKI	RI.	- BONN	i	GPH	SL	_	
3	Name	of neare	et communi	tv	K.A	HIBIAMA	·				
			RIVERS					10	ا د د د		
	State.					LGA					
5	Type	of Produ	ction facility	v/Installation	PIPE	LINE Asset	wner	/District	44	PINESP	
J.	ı,pe	oi i i ouu	ction facility	, mytanation .					`		
B.	INC	DENT I	NFORMA'	TION:							
	Detai	ls of inci	dent		<b>a</b>						
				,racm an			,	•			
	b.	Date/Pe	eriod of inve	estigation, B	fer Jey	Ft 2011					
	C.			point enviror	ment		/	•			
			Firmed so				i <b>j</b>				
			Loose soil								
				excavated as	ea						-
			Under wat	er		/ "	1				
			Swampy			[Y] [N	-			ATTOR	T ~
d.			Exposed p			[Y] [N	۱ ]			AFTER	TMOL
u.		-		point (tick as	applica	ıble);	,	1371	ENTI	1.34007	CATLANT
			Drilled ho				5	[Y]	[N]	MARRE	ication of
			Hack saw	•				[Y]			•
			Explosive			•		[Y]	[N] [N]	THE IN	iedent,
			Complete					[Y]			
			Inward de	•				[Y]		SPILL 1	NAS FOUND
			Well head			•		[Y]	[N]		
				ld-on illegal h		alve,		[Y]		TO BE	DUE TO
				peline (flowli				[Y]			- 10
				theft (illegal b				[Y]			0
						mp Bolt/Nut,		[Y]	[N]	MIKD	PARTY
				y tampering v		ve seung, 1ge Nuts/bolts,		[ Y] [ Y]	[N]	,	PARTY EFERENCE
			~ .		viui iiai	ige Nuis/bons,		[Y]		NIE	FERENCE
			Collosion		Not	APPLICAS	าห	[ 1]	[ 11 JV		0 - 10 - 10
		_	Saver-pit	- 1	14- 1	11/1		[Y]	[N]		
			_	-				[Y]	[N]		
			Outward of	sel overflow,	_	-1 .055		[Ŷ]	INV		
			Others (sp	ecify) No	7 <b>/</b> T	PLICABLE		r - 1	1-11		
		U	oalors (sp								
	e.	Spill no	oint coordin	ates							
		-F P		_			`	17 a a 4 !			
			Northing:	(K) (MNA	N	DID - BELT	)	Easting	, <del>,</del>		
		<b>546</b>	R5-81	) n.			Ε	.J r C	う2 <b>5</b> 2	Q	

RISK/DAMAGE ASSESSMENT		No.	0623
7. Type of environment of spill site:			
□ Land			
□ Swamp ✓ □ water ✓		•	
u water 🗸			
Type of environment of which oil has spread:			
□ Land			
□ Swamp ✓			
8. Distance from the nearest sensitive habitat			
8. Distance from the nearest sensitive habitat			
☐ Government reserved and designated protected area	ſ	$\int_{\mathbb{R}}$	
□ Drinking water source	[	,m]	
☐ Built up area☐ Farmlands	[ [ [	,m]	NOT ADDI LABIG
☐ Fish Farm/Pond	[	′ = 1	not applicable
☐ Fishing net	L r	,m]   m]	
□ Others (specify).	L	,m] <i>)</i>	
9. Containment measures put in place;			
□ Booms	[ Y]	[N <b>Y</b>	
□ Trench	[Y]	[N] [N] [N]	
□ Dyke	[Y]	[N]	
Others: NOT MIPLICABLE.	<u> </u>		
10. Any pictures or video coverage?	[Y] <b>&gt;</b>	[N]	
11. Was there any disruption to the investigation?	[Y]	[N <b>/</b>	
give brief description:			

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

### A. Structures / Properties

S/N	Type of Structur	es	Description	Size	Number	Comments
		<u>.</u>		<u> </u>		
	NINC	1	<del></del>	LOCA		DACI.
	1 (01 +2	Vari	11/17	4 NEA	07 114	PACT
				<del>                                     </del>	-	

# THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED JOINT INVESTIGATION REPORT FOR INCIDENT NO:

No. 0623

#### B. Crops/Economic Trees

S/N	Types of crops	Young	Medium	Matured	Quantity	Comments
	NONE	ALTHIN	ARCA		1K) PACT	
	1 ( 3 / ( 3 /		+ ***	<del></del>	<u> </u>	

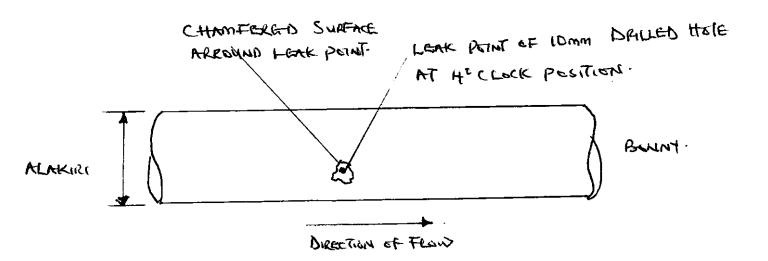
#### C. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds		Fish/Nets/Ponds Description Quant		Quantit	tity/Size Comments		
							Ļ	
	NANC	1	1-74121	10	<u> </u>	0 F	HM PAR	$\neg \top$
	140111	<u> </u>	1116/114	177		01	6.41.10	<u> </u>
	ļ				_			

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

S/N	Others	Hi .	Description		Quantit	y/Size	Comments
	NIVACC	1	THEAL	6	-	<u> </u>	HADACT
	140145	W V	11103		ICH_	<u> </u>	14 PACT

E. GRAPHIC DESCRIPTION OF LEAK POINT (Details should be contained in leak repair report)



A SECTION OF 24" MLAKIRI - BOANT GIHSL PIPELIME AT KALIBIMMA

# THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED JOINT INVESTIGATION REPORT FOR INCIDENT NO:

No 00623

## F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION E. Coordinates (MINNA NO - BEST)

S/N	Northing	Easting
	1 to tung	
771	54613.04M	520524.71m
Pr2	54626.09m	520532 55 m
P73	54618·16m	526549.06m
Pī4	54604 - 36 M	520 542·25 m
PTS	54595 04 m	520560 · 43 m
PT6	54588-88 m	520557 -45M
Pr 7	54666 · 51 m	520521 ·73m
		7
		·

	INO.	0623
0.0572	<del>ll</del> 9	. <u> </u>
0:0572	Ha	
بالم		
	,	
ered oil V <sub>recj</sub> :	NL	barrels
phase oil Ypool	6.73	barrels
n the soil (V-3).	458	m²-
e oil:	Siltration of oil:	0.000 lm
e oil:	filtration of oil:	0.600 [w
w ground surface of in		<u>6.600 [m</u>
		0.600/111
	of JIV (V <sub>rec.</sub> ):  rered oil V <sub>rec.</sub> ;  te hase oil (on land or contof free phase oil of free phase oil obhase oil. V <sub>pool</sub> ;  n the soil (V-3).	O OS 72 Hq O: OS 72 Hq NIL  of JIV (Vrec.): rered oil Vrec.: Nul  te hase oil (on land or confined water body) of free phase oil of free phase oil obase oil. Vpool:  on the soil (V-3).

20. Computation of volume of oil on open water based on standard coloration.

	Thickness (mm)	Percentage coverage	Volume (m3)	NOTE THE TOTAL
Barely Visible	0.00004			AREA OF IMPACT ON
Silvery	0.00008			
Slight Colour	0.00015			OPEN WATER IS
Bright Colour	0.0003			122 × 100 702-1
Dull	0.001	100	0.0002834	APPROXIMATE
Dark	0.002			283 m <sup>2</sup>
Black oil	0.1	. /		
Emulsion (30% Oil)	1		h	
	Percent Total	100%	Total Volume	0.002 bbl

Spill Factors from USCG FOG (2000 Edition)



# 

	Volun	ne of oil on open v			
21. Calculation of	evaporated vo	lume:	vater v <sub>wat</sub> :	0:062	barrels
i. Oil	type: BENT	IT LIGHT			
	actor: 25			•	
iii.					
111.		***		····	
	Val	ume of evaporate	d oil. V <sup>upi</sup>	0.25	barrels
Oil Type		Bonny Light	Bonny Medium	]	
D-: 10: 0:		E-Factor	E-Factor	, ,	
Period Since Oil Spill	<1 day	10%	5%		
	1-7 days	25%	15%		
	>7 days	40%	25%		
V <sub>Est</sub> (bbls) = 0.25 -	Spilled Volum	t 0 02 + 6	· 73 = 1·	002 Breet _	1 Braces
10. Net Total Estimated (bbls) + VrecJ (bbls	s)	<u>e vesudois)</u> = V		Wwat (bbls) + Vinf (bb	ls) +Vpool
VEst(bbls)= 4 P		<u></u>	en de la companya de La companya de la companya de	<u> </u>	· · · · · · · · · · · · · · · · · · ·
Calculation of the respective Conversion of m3 to ba Emulsification factor fo	ctive estimated rrel is Total volu r spill on water	volume is to done ume VT (m3) x6.2 to consider is 60%	using the new spil 9 6 of volume of oil.	l estimation software o	on site
This report was fill investigation representation of Host Communication.	ed and signe entative from	d on the 68		_at incident site	by joint
• Department o	f Petroleum 1	Resources [DP]	R]:□		
• National Oil S	pill Detection	and Response	Agency [NOSD]	RA]:	
• State Ministry	•				
• Nigeria Police	Force [NPF]:				
Shell Petroleur	m Developme	nt Company [S]	PDC]:		
				Tick as ap	plicable