THE SHEEL FE HIOLEON DEVELOR	MENT COMPANIES INCLUMENTED.
JOINT INVESTIGATION REPORT FOR INCIDENT NO:	926957 JIV report S/N: 0008
(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: 926957	
3. Name of Location 8" UMUECHEN	1 - NKPOKU PIPELINE
4. Name of nearest community <u>DMUNWEL</u>	State: RIVERS 6. LGA IKWERRE
7. Type of Production facility/Installation OIL PIP	ELINE8. Asset owner/District NPE/PH I
B. INCIDENT INFORMATION:	
9. Details of incident a. Date of incident: 8TH FERRUA b. Start date/time of investigation: 9TH c. Investigation End date: 10TH FERRUA d. Description of spill point environment	FRUARY 2013 Actual investigation duration, days: TWD (2) DAYS
☐Firmed soil ☐Loose s	oil Recently excavated area
☐Under water ☐Swamp	y Exposed pipe surface
☐Well Platform (on Water)	□Drill Rig
e. Description of leak point (tick as applicable);	w cut Tear (),
☐ Drilled hole ☐ Hack sa☐ Complete Rupture ☐ Inward	
☐Complete Rupture ☐Inward ☐Failed Weld-on illegal hot tap valve, ☐Failed	<u> </u>
Crude oil theft (illegal bunkering) point,	☐ Third party tampering with Clamp
Third party tampering with valve setting,	☐Third party tampering with flange,
	oit over flow, Surge vessel overflow,
•	ystem/Bund wall failure Accidental 3rd party equipment
impact	☐com unit failure ☐Cold vent
Relief valve failure Others	(specify)
f. Incident caused by: Third party interference (Sabotage□; crude th □Operational □Others (including My	eft [7 ; Line theft□; Accidental 3 rd party damage□) vstery spills)
g. Spill point coordinates Measuring unit New third 12	a (Mid belt) Easting: (m) SP1 =506951-78
Northing: (M)	SPI SPI
100740 10	-506951.7R
=100 +46.10	1200

SP2=506951.78 SP2 = 108747.40

THE SHELL	PETROLEUM	DEVELOP	MENT CO	MPANY OF NI	GERIA LII	MTED.
OINT INVESTIGATION R	EPORT FOR INC	CIDENT NO:	9260	157_JIV rep	ort S/N:	3008
C. RISK ASSESSME	NT					
10. Type	of environment:					
Land	□ Swamp	□Water	□Se	asonal swamp□S	horeline/Wa	terfront
i. Type o	of environment to	which oil has	spread:			
Land	□Swamp	□Water	□Ri	ver (identify)		
ii. Weath	er condition					
☐Rain 11. Distance from	Sunny the nearest sensitive	□Dry ve habitat	□Wet	□Windy	□Hot	□cool
□ Drinking v □ Built up ar □ Farmlands □ Fish Farm □ Fishing ne	Pond t ecify). PALM	Trees	ected area	[,m] [,m] [,m] [,m] [,m] [,m]	Ed by sp	ግ LL -
□Booms □Others:	Trench	□Dyke	⊠ N:	atural depression	D Pit	
13. Any pictures o	r video coverage?			[N] (X)		
14. Was there any	disruption to the i	nvestigation?		[Y] [N)	/	
If yes give brief descrip	tion:	AP	PLI	CAB	LE	<u>-</u>
D. TYPE/NUMBERS	OF PROPERTI	ES, IF ANY, I	FOUND WI	THIN THE ARE	A OF SPRE	EAD OF OIL

15. Structures / Properties

S/N	Type of Str	uctures	Description	Size	Number	•	Comments
			<u> </u>		_		
1	,		1	\vdash \dashv			
H	~~ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		.		AF	MANT
	DNE	$-\Lambda\Lambda$		1 +	KEA		HMIYACI.
1	0140	<u> </u>	1 1 1 1 1 1	,	1.12.1		· · · · · · · · · · · · · · · · · · ·

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i i		1	
1			
*** 6	P***		
16 Crops/Economi	c Trees		
16. Crops/Economi	LILEEN		

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
	PALM				2 NO.	IMPACTED
	TREFS					RY SPILL
						
	_					
		-			-	<u> </u>

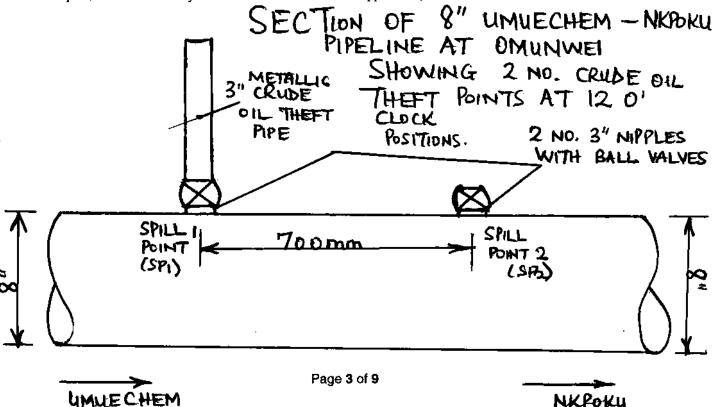
17. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds	Description		Quantity/Size	Comments
<u> </u>		_			
 		-	٨		
+	INVIE /	AATUKI	$\Delta \varrho$	EV VI	MDACT
		Minn			IMINCI

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

S/N	Others	Description	Quantity/Size	Comments	
N	ONE W	ITHIN AR	EA 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)



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F: TABLE SHOWING SOME OF COORDINATES TAKEN DURING JIV FOR AREA CALCULATION 19. Impacted area boundary Coordinates (If more, Print and attach as an appendix)

	Minna (Mid	be(t),
S/N	Northing (m) Minna (Mid	Easting (M)
WP 978	108717:38	506951.72
	108738.89	506951·72 506948.68
W980	108772.68	506 948.76
WP981	108 760 -38	506 954.89
W 982	108729.66	506 9 54 .82
. <u>-</u>	·	
<u> </u>		
-		
		

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G. INCIDENT INFORMATION:
20. Impacted Area Details
• Total calculated area of impact 0.02507ha (0.025ha)
,).
• Impact within SPDC R.O.W
Impact outside SPDC R.O.W
21. Volume of oil recovered before completion of IIV (V _{recJ}):
Recovered oil V _{recJ} : Barrels
22. Computation of estimated residual volume on site
a. Computation of estimated 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
iii. Emulsification factor: N12
Estimated Volume of pool of free phase oil. V _{pool} : 2.74 barrels
b. Computation of estimated volume of infiltrated oil in the soil (V_{inf}) .
1. Estimated Volume of infiltrated oil at spill point (Vinf a)
i. Area* (m²) of soil covered by the oil:
ii. Average Depth (m) above leaking facility i.e. pipeline/flowline:
iii. Soil type: Clay iv. P_e (effective porosity of the soil).
v. Cause or spin, Intigge Personale. On type. 1501414 7 LIGHT (
vii. Oil Residence time on site, day: _ DAY
viii. Average depth of infiltration below leaking facility i.e. pipeline/flowline: 0.0003
ix. Estimated depth of infiltration around spill point: 1.0003
Estimated Volume of infiltrated oil at spill point. V _{inf_a} : barrels
2. Estimated Volume of infiltrated oil at second spill point [if applicable] (Vinf b)
· · · · · · · · · · · · · · · · · · ·
i. Area* (m²) of soil covered by the oil:
ii. Average Depth (m) above leaking facility i.e. pipeline/flowline: ITLIUTIOLE iii. Soil type: iv. Pe (effective porosity of the soil)
v. Cause of spill: APPLICABVIE Oil type: APPLICABLE
vii. Oil Residence time on site, day:
viii. Average depth of infiltration below leaking facility i.e. pipeline/flowline:
ix. Estimated depth of infiltration around spill point: APPLICABLE
Estimated Volume of infiltrated oil at spill point V barrels
L
3. Estimated Volume of infiltrated oil outside immediate spill point(s) region (Vinf c)

OINT INVESTIGATION R	EPORT FOR IN	CIDENT NO:_	926957	JlV rep	ort S/N: 000	8
i. A	rea (m2) of soil o	covered by the oil		233.8	! !	
		ool of free phase o			15	-
	•) below ground su				_
			mace of miniman	(MI OI OII	U-0003	
	oil type:CL	• • •	001			
v. <i>1</i>	- <u>-</u>	sity of the soil)				
V	i. Estimat	ed Volume of infi	iltrated oil. At Vi	inf:	0.03	barrels
23. Computation	of estimated vo	dume of oil on o	pen water based	i on standa	ard coloration.	
-	of oil on open wa			_		
ii. <u>Table of av</u>	verage depth of o	il on water based	on coloration (**Spill Fa	actors from USCG	FOG (2000
		.		Edition)		
	Thickness (mm)	Percentage coverage	Volume (m3)	_		
Barely Visible	0.00004					
Silvery	0.00008	k 1 -	•			
Slight Color	0.00015					
Bright Color	0.0003	1 401				
Dull	0.001	1		_		
Dark	0.002	Λ_{n}				
Black oil	0.1	AYYL	CABLE	3		
Emulsion (30% Oil)	1					
iii.	Percent Total Estimated Volu	100% me of oil on open	water. V _{wat} :		В	arrels
24. Calculation of	of evanorated vo	olume:		1/1/1		
i. Estir	nated Volume a	vailable for eva	poration within	surface ar	ea: 3:37	_
ii. E-Fa	ctor: 25 L	<u> </u>				
iii.	EstimatedV	olume of evaporat	ted oil. V _{evap} :	1-12	2 B	arrels
Even	paration Easters	(E-Factor) for S	PDC Crude oil		j	
Oil Type	Days on site	Bonny Light	Bonny Me	dium		
Oil Residence time	< 1 day	10%	201113	5%		
-	1-7 days	25%	- 1	15%		
	> 7 days	40%		25%		
	. 1 21 111 1 2 7	. W7 /2 1 3 1	\$7 A.11.5	17 /L1	1a) , 37 /LL1-	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
25. Net Estimat						
(bbis) + V _{rec.}) (DDIS) = 1-	12 + NIL	1- 6.64.	T & 14	FT NIL =	7.5
Estimated Reported	Volume** <u>Vrep(b</u>	bls)= Z r	BARRELS	_		
		<u></u>	WKKEP2			

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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 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.

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 procedure to use appropriate steps for column estimation; record the calculation in a plain sheet of paper and attach to the JIV report.

26. 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

27. REPRESENTATIVES

This report was filled, agreed and signed on the 10/02/2015 by joint investigation representatives from

- Host Community:
- Department of Petroleum Resources [DPR]: □
- National Oil Spill Detection and Response Agency [NOSDRA]: 🕏
- State Ministry of Environment [SME]: D
- 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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28. Appendix 1: Overview sketch of the site

