JOINT INVESTIGATION REPORT FOR INCIDENT NO: 12/44/ JIV report S/N: UU591
(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: 1214447 2. Type of incident* OIL SPILL  3. Name of Location BOMU WELL 9 WELL HEAD
3. Name of Location BOMU WELL 9 WELL HEAD
4. Name of nearest community K-Dece & KPORS. State: RIVERS 6. LGA GOKAMA COM
7. Type of Production facility/Installation WELL HEAD 8. Asset owner/District LAND WELLH
B. INCIDENT INFORMATION:
9. Details of incident  a. Date of incident: 15 The July 2014
b. Start date/time of investigation: 17th July 2514
c. Investigation End date: 17 TH JULY 2014Actual investigation duration, days: 5NC DAY
d. Description of spill point environment
Firmed soil Loose soil Recently excavated area
☐Under water ☐Swampy ☐Exposed pipe surface
₩ell Platform (on Water) □Drill Rig
Additional observations around the spill point: THE OBSERVED MISSING BOTG AN
Additional observations around the spill point: THE OBSERVED MUSSING BOTTS AND NUTS AND THE CHRUSTMAX TREE COMPINED REMOVE BY
ANKHAMA BERZOM.
e. Description of leak point (tick as applicable);
Drilled hole Hack saw cut Tear (),
☐Complete Rupture ☐Inward dent, ☐Well head tampering
Failed Weld-on illegal hot tap valve, Failed Clamp Missing Pipeline/Flowline
Crude oil theft (illegal bunkering) point,  Third party tampering with Clamp
☐ Crude oil theft (illegal bunkering) point, ☐ Third party tampering with Clamp ☐ Third party tampering with valve setting, ☐ Third party tampering with flange,
☐ Crude oil theft (illegal bunkering) point, ☐ Third party tampering with Clamp ☐ Third party tampering with valve setting, ☐ Corrosión ☐ Saver-pit over flow, ☐ Surge vessel overflow,
□ Crude oil theft (illegal bunkering) point, □ Third party tampering with Clamp □ Third party tampering with valve setting, □ Third party tampering with flange, □ Corrosión □ Saver-pit over flow, □ Surge vessel overflow, □ Bulging Outward □ Flare System/Bund wall failure □ Accidental 3 <sup>rd</sup> party equipment
□ Crude oil theft (illegal bunkering) point, □ Third party tampering with Clamp □ Third party tampering with valve setting, □ Third party tampering with flange, □ Corrosión □ Saver-pit over flow, □ Surge vessel overflow, □ Bulging Outward □ Flare System/Bund wall failure □ Accidental 3 <sup>rd</sup> party equipment impact □ Valve Failure □ com unit failure □ Cold vent
□ Crude oil theft (illegal bunkering) point, □ Third party tampering with Clamp □ Third party tampering with valve setting, □ Third party tampering with flange, □ Corrosión □ Saver-pit over flow, □ Surge vessel overflow, □ Bulging Outward □ Flare System/Bund wall failure □ Accidental 3 <sup>rd</sup> party equipment
□ Crude oil theft (illegal bunkering) point, □ Third party tampering with Clamp □ Third party tampering with valve setting, □ Third party tampering with flange, □ Corrosión □ Saver-pit over flow, □ Surge vessel overflow, □ Bulging Outward □ Flare System/Bund wall failure □ Accidental 3 <sup>rd</sup> party equipment impact □ Valve Failure □ com unit failure □ Cold vent □ Relief valve failure □ Others (specify) □ Incident caused by:
□ Crude oil theft (illegal bunkering) point,       □ Third party tampering with Clamp         □ Third party tampering with valve setting,       □ Third party tampering with flange,         □ Corrosión       □ Saver-pit over flow,       □ Surge vessel overflow,         □ Bulging Outward       □ Flare System/Bund wall failure       □ Accidental 3 <sup>rd</sup> party equipment         impact       □ Valve Failure       □ com unit failure       □ Cold vent         □ Relief valve failure       □ Others (specify)

<sup>\*</sup>This can be: a) Oil Spill b) Drilling fluid/Chemical c) Siltation d) construction e) Encroachment f) Fire,

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 124447 JIV report S/N: 00591 g. Spill point coordinates MINION MID BELT . Measuring unit Easting: Cm Northing: Cm 533505:00 72155.00 C. RISK ASSESSMENT 10. Type of environment: Mand. Swamp □ Water ☐ Seasonal swamp ☐ Shoreline/Waterfront Type of environment to which oil has spread: Land □Swamp □Water ☐River (identify)\_ Weather condition Sunny Rain  $\square_{\text{Dry}}$ ☐Windy □Hot □cool | 11. Distance from the nearest sensitive habitat ☐ Government reserved and designated protected area M(L ,m] ☐ Drinking water source NL ,m] ☐ Built up area □ Farmlands ·— [m, (w**7**2 ☐ Fish Farm/Pond (Yel ... ,m] ☐ Fishing net ، عدد سm] □ Others (specify). 12. Containment measures put in place; ☐Booms Trench ☐ Natural depression □None Others: [Y] [N] 13. Any pictures or video coverage? 14. Further response/repair initiated as at the time of JIV? If yes to item 14, give brief description: 15. Was there any disruption to the investigation? [Y] [N] If yes to item 15 give brief description:

Page 2 of 8

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 1214447 JIV report S/N: 00591

# 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
NONE W	1 Itti	AR	EA O	FIMPACT

17. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
<u></u>	(485~VA	<b></b>			16PCS 1	FEW
			<u> </u>		OR STEMS	
			<u> </u>			

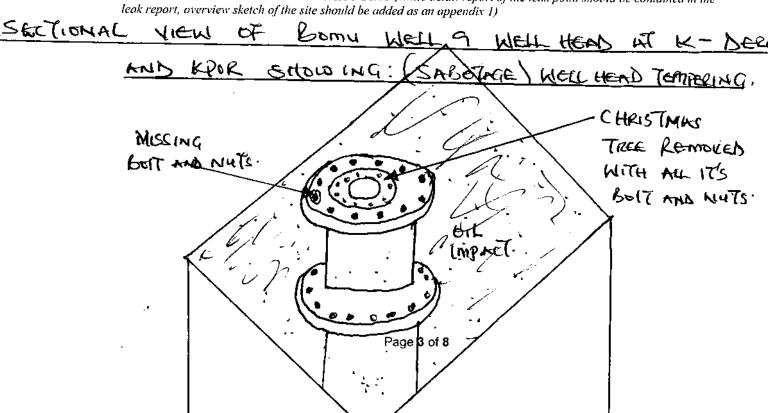
18. Fish/Nets/Ponds

S/N Fish/Nets/Ponds	Description	Quantity/Size	Comments	
NONE W	ALIN ARI	AC	F IMPRE	£

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

S/N Others	Description	Quantity/Size	Comments
MONE	MITHIN	ARCA	of MProt

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



	BOMU WELL 009 WELL HEAD SPILL AT K-DERE AND KPOR					
	INCIDENT NUMBER:1214447					
	IINNA_MID BELT					
POINT	NORTHING(m)	EASTING(m)				
1	72174.12	533496.25				
2	72174.13	533490.08				
3	72167.99	533486.99				
4	72158.78	533483.89				
. 5	72146.47	533499.28				
6 .	72134.16	533511.59				
7	72109.84	533519.87				
8	72081.93	533520.74				
9	72054.26	533533.02				
10	72035.85	533520.66				
11	71995.88	533542.16				
12	71986.67	533539.07				
13	71983.6	533539.06				
14	71980.54	533535.97				
15	71977.46	533535.97				
16	71959	533554.43				
17	71922.12	533569.77				
18	71925.18	533572.86				
19	71903.65	533588.23				
20	71866.76	533606.66				
21	71866.75	533609.74				
22	71892.08	533597.55				
23	71891.3	533627.31				
24	71880.09	533649.11				
25	71854.4	533646.71				
26	71854.4	533649.79				
27	71880.78	533652.5				
28	71894.14	533627.23				
29	71895.2	533597.33				
30	71928.7	533574.5				
31	71928.91	533571.14				
32	71960.78	533557.44				
33	71979.01	533539.96				
34	71998.95	533545.25				
35	72035.71	533525.05				
36	72054.21	533535.98				
37	72083.83	533523.17				
38	72109.75	533521.57				
39	72143.38	533511.6				
40	72148.09	533504.07				
41	72152.59	533511.62				
		333311.02				

.



JOINT INVESTIGATION REPORT FOR INCIDENT NO: 125447 JIV report S/N: 00591

## 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)

		INNA KUD BELT
S/N	Northing (M)	Easting CVM
(	72174.12	533496.25
1	72174.13	<i>53</i> 3496·08
જી	72167.99	<i>5</i> 33486.99
4	72158.78	533483.89
5	72146.47	<u>533499 · 2-8</u>
<u>ي</u>	72134.16	533511.59
7	72109.84	533519,87
8	72081.93	533520.74
٩	72054.26	533533.02
10	72035.85	533520.66
H	71995.88	533542.16
- 12	71986.67	533539 107
13	71983-60	533539.06
14	71980.54	533535-97
15	71977 - 46	533535.97
16	71959.00	533554 - 43
17	71922.12	533569.77
18	71925.18	533572.86
19	71903.65	533588 · 23
20	71866.76	533606.66
21	71866.75	53369.74
22		533597.55
23	71891.30	533627.31
24		533649 - 11
25	71854.40	533646 - 71
26	71854.40	533 649 . 29

#### ESTIMATION OF OIL SPILL VOLUME

	FID =1214447 AT BOMU	J WELL 9 WELL HEAD AT K-DERE /	AND KPOR JIV VOLU	ME CAL REPORT	
OIL		JOFFSHORE (Leak stopped at			
	acted Area Details	,	•		
	Total Calculated Area o	f Impact			1,700.00 m²
- 1	Impact within SPDC R.O.	•		•	m²
ii	Impact outside SPDC R.	O.W			m²
1 <u>Volu</u>	ime of oil recovered bet	fore completion of JIV (Vmai)			
j	Estimated Recovered oil	(Net)			ekdd 00.5
					<u> </u>
	Estimated Recovered of	oil (Net) V <sub>resJ</sub>			2.00 bbls
					•
	putation of estimated r				
		of free phase oil (on land or confine	id water body)		
	Total area occupied by p	*			210.00 m²
	Average depth of pool of Emulsification factor				0.001 m
19	Emplementation (acto)	(If applicable, else 0%)			40.000 %
	Estimated Volume of p	ool of free phase oil, V <sub>pool</sub>			0.13 m³
		ool of free phase oil, V <sub>pool</sub>			0.79 bbis
		poten			0.70 0015
b	Computation of estimat	led volume of infiltrated oil in the so	(m)		
1	Volume of infiltrated of		. 1 . 402		
	Total area covered by the				4.00 m <sup>2</sup>
	-	ion above leaking facility i.e. pipeline/fl	owline		0.002 m
	Soil type				Laterita
iv	P. (effective porosity of the	he soil)			%
٧	Cause of spill				That party interference
اد	Calculation of deep for	- 1.484 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4		1	
٧l		r inflitration below the leaking point on		-	
	//15/2014 13:40	JIV Date . 7/17/2014 14:35	Days on Site	1	
		vational, use 1 week as worst case	2	•	
		vhere 'days on site' exceeds 7	7	J	
			_	_	-
		Infiltration of oil types in various soil			-1
	Soil type	Approximate time to reach	1m don'th bolow area	und lovel	
					-{
	Oil type	Sand	Loam	Clay	1
	Oil type Banny Medium	Sand 3 weeks	Loam 3 years	Clay > 10 years	<u>-</u> -
	Oil type	Sand	Loam	Clay	
vii	Oil type Banny Medium	Sand 3 weeks	Loam 3 years	Clay > 10 years	Bannay Medium 👳
	Oil type Banny Medium Bonny Light Oil type	Sand 3 weeks	Loam 3 years 2 months	Clay > 10 years	Bankay Medium P
	Oil type Banny Medium Bonny Light Oil type	Sand 3 weeks 2 days	Loam 3 years 2 months	Clay > 10 years	
₩ii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati	Sand 3 weeks 2 days	Loam 3 years 2 months	Clay > 10 years	
₩ii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati	Sand 3 weeks 2 days  on below leaking facility i.e. pipeline/fk	Loam 3 years 2 months	Clay > 10 years	m m
γiil	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in	Sand 3 weeks 2 days  on below leaking facility i.e. pipeline/file d surface of infiltration of oil  fittrated oil, V res	Loam 3 years 2 months	Clay > 10 years	m m 0.00]m³
γiil	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati	Sand 3 weeks 2 days  on below leaking facility i.e. pipeline/file d surface of infiltration of oil  fittrated oil, V res	Loam 3 years 2 months	Clay > 10 years	m m
viil	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in	Sand 3 weeks 2 days  on below leaking facility i.e. pipeline/file d surface of infiltration of oil filtrated oil, V let s	Loam 3 years 2 months	Clay > 10 years	m m 0.00]m³
viil ix 2	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated ol	Sand 3 weeks 2 days  on below leaking facility i.e. pipeline/file d surface of infiltration of oil filtrated oil, V inte	Loam 3 years 2 months	Clay > 10 years	0.00 m <sup>3</sup>
wii ix 2 i	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated of Total area covered by the	Sand 3 weeks 2 days  on below leaking facility i.e. pipeline/file d surface of infiltration of oil filtrated oil, V inte	Loam 3 years 2 months  white	Clay > 10 years	0.00 m <sup>3</sup>
viil ix 2 i ji	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated of Total area covered by the	Sand  3 weeks  2 days  lon below leaking facility i.e. pipeline/file d surface of infiltration of oil filtrated oil, V <sub>lot a</sub> filtrated oil, V <sub>lot a</sub> Il at second spill point (if applicable e oil (infiltration)	Loam 3 years 2 months  white	Clay > 10 years	0.00 m <sup>3</sup>
viil ix 2 i ji ili	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of infi Volume of infiltrated of Total area covered by the Average depth of Infiltrated	Sand 3 weeks 2 days  lon below leaking facility i.e. pipeline/file d surface of infiltration of oil  filtrated oil, V <sub>infa</sub> Ill at second spill point (if applicable e oil (infiltration) on above leaking facility i.e. pipeline/file	Loam 3 years 2 months  white	Clay > 10 years	0.00 m³ 0.02 bbie
viil ix 2 i ii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the	Sand 3 weeks 2 days  Ion below leaking facility i.e. pipeline/file d surface of infiltration of oil filtrated oil, V ints filtrated	Loam 3 years 2 months  white	Clay > 10 years	0.00 m³ 0.02 bbis
viil ix 2 i ii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the	Sand 3 weeks 2 days  lon below leaking facility i.e. pipeline/file d surface of infiltration of oil  filtrated oil, V <sub>infa</sub> Ill at second spill point (if applicable e oil (infiltration) on above leaking facility i.e. pipeline/file	Loam 3 years 2 months  white	Clay > 10 years	m 0.00 m³ 0.02 bbis
viil ix 2 i ii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infilitrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated oi Total area covered by the Average depth of infiltrati Soil type Pa (effective porosity of the	Sand 3 weeks 2 days  Ion below leaking facility i.e. pipeline/fic d surface of Inflitration of oil fittrated oil, V lets fittrated oil, V lets If at second spill point (if applicable e oil (inflitration) ion above leaking facility i.e. pipeline/fic he soil)	Loam 3 years 2 months  2 white	Clay > 10 years	0.00 m³ 0.02 bbis  m² m  unimize   %
viil ix 2 i ii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infilitrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated oi Total area covered by the Average depth of infiltrati Soil type Pa (effective porosity of the	Sand 3 weeks 2 days  Ion below leaking facility i.e. pipeline/file d surface of infiltration of oil filtrated oil, V ints filtrated	Loam 3 years 2 months  2 white	Clay > 10 years	m  0.00 m³  0.02 bbis  m² m  Laterita   **
viii ix 2 i ii iii iii vi	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of inf Estimated Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground	Sand 3 weeks 2 days  lon below leaking facility i.e. pipeline/file d surface of infiltration of oil  filtrated oil, V lets  filtrated oil, V lets  Il at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/file he soil)  ion below leaking facility i.e. pipeline/file f surface of infiltration of oil	Loam 3 years 2 months  2 white	Clay > 10 years	m  0.00 m³  0.02 bbie  m²  m  w  m  m
viii ix 2 i ii iiv v	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of in	Sand 3 weeks 2 days  Ion below leaking facility i.e. pipeline/fix d surface of inflitration of oil  fittrated oil, V <sub>int a</sub> Ill at second spill point (if applicable e oil (inflitration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix if surface of inflitration of oil	Loam 3 years 2 months  2 white	Clay > 10 years	m  0.00 m³  0.02 bbie  m²  m  w  %  m  G.00 m³
viii ix 2 i ii iiv v	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of inf Estimated Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground	Sand 3 weeks 2 days  Ion below leaking facility i.e. pipeline/fix d surface of inflitration of oil  fittrated oil, V <sub>int a</sub> Ill at second spill point (if applicable e oil (inflitration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix if surface of inflitration of oil	Loam 3 years 2 months  2 white	Clay > 10 years	m  0.00 m³  0.02 bbie  m²  m  w  m  m
viii ix 2 i ii iii v vi	Oil type Banny Medium Banny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of inf Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of infiltrati Estimated Volume of infiltration	Sand 3 weeks 2 days  Ion below leaking facility i.e. pipeline/fix d surface of inflitration of oil  fittrated oil, V <sub>int a</sub> Ill at second spill point (if applicable e oil (inflitration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix if surface of inflitration of oil	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³  0.02 bbie  m²  m  w  %  m  G.00 m³
viii ix 2 1 iii iv v vi	Oil type Banny Medium Banny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of inf Volume of infiltrated of Total area covered by the Average depth of infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of infiltrati Estimated Volume of infiltration	Sand 3 weeks 2 days  lon below leaking facility i.e. pipeline/fict surface of infiltration of oil  filtrated oil, V <sub>lot s</sub> filt at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fict surface of infiltration of oil  filtrated oil, V <sub>lot b</sub> filtrated oil, V <sub>lot b</sub> filtrated oil, V <sub>lot b</sub>	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³  0.02 bbie  m²  m  w  %  m  G.00 m³
viii ix 2 ii iii iv v vi	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated of Intolal area covered by the Average depth of infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of im Estimated Volume of im Volume of infiltrated of Total Area covered by the	Sand 3 weeks 2 days  lon below leaking facility i.e. pipeline/fict surface of infiltration of oil  filtrated oil, V <sub>lot s</sub> filt at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fict surface of infiltration of oil  filtrated oil, V <sub>lot b</sub> filtrated oil, V <sub>lot b</sub> filtrated oil, V <sub>lot b</sub>	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³  0.02 bbis  m² m  m  m  coo m³ coo bbis
viii ix 2 i ii iii iv vi 3 ii iii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated oi Total area covered by the Average depth of infiltrati Soil type Pa (effective porosity of th Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated oi Total Area covered by the Total Area of the pool of the Soil type	Sand  3 weeks  2 days  Ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fit at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fittrated oil (infiltration) free phase oil in touch with soil	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³ 0.02 bbis  m² m  m  m  m  m  m  m  m  m  m  1,486.00 m²
viii ix 2 i ii iii iv vi 3 ii iii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of infiltrated of Infiltrated volume of infiltrated of Infiltrated of Infiltrated of Infiltrati Soil type P, (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of im Estimated Volume of im Volume of infiltrated Infiltra	Sand  3 weeks  2 days  Ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fit at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fittrated oil (infiltration) free phase oil in touch with soil	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³ 0.02 bbis  m² m  m  m  m  m  m  m  m  m  1,486.00 m² 0.00 bbis
viii ix 2 i ii iii iv vi 3 ii iii iii	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated oi Total area covered by the Average depth of infiltrati Soil type Pa (effective porosity of th Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated oi Total Area covered by the Total Area of the pool of the Soil type	Sand  3 weeks  2 days  Ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fit at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fittrated oil (infiltration) free phase oil in touch with soil	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³ 0.02 bbis  m² m  m  m  m  m  m  m  m  m  m  1,486.00 m² 0.00 bbis
viii ix 2 i ii iii iv vi 3 iii ii iiv	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated oi Total area covered by the Average depth of infiltrati Soil type P <sub>a</sub> (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated oi Total Area covered by the Total Area of the pool of the Soil type P <sub>a</sub> (effective porosity of the Total Area of the pool of the Soil type P <sub>a</sub> (effective porosity of the	Sand  3 weeks  2 days  Ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fit at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fix he soil) ion below leaking facility i.e. pipeline/fix d surface of infiltration of oil  fittrated oil, V inte  fittrated oil (infiltration) free phase oil in touch with soil	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³ 0.02 bbis  m² m  m  m  m  m  m  m  m  m  m  1,486.00 m² 0.00 bbis
viii ix 2 i ii iii iv vi 3 i iii iiv	Oil type Banny Medium Banny Light  Oil type Average depth of infiltrati Total depth below ground Estimated Volume of infiltrated of Total area covered by the Average depth of infiltratis Soil type P, (effective porosity of the Average depth of infiltratis Total depth below ground Estimated Volume of infiltration Estimated Volume of infiltration Union of Infiltrated of Total Area covered by the Total Area of the pool of the Soil type P, (effective porosity of the Average depth below gro	Sand  3 weeks 2 days  Ion below leaking facility i.e. pipeline/file d surface of infiltration of oil  filtrated oil, V <sub>int a</sub> Ill at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/file in below leaking facility i.e. pipeline/file if surface of infiltration of oil  filtrated oil, V <sub>int b</sub> If outside immediate spill point(s) re e oil (infiltration) free phase oil in touch with soil me soil)  und surface of infiltration of oil	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	m  0.00 m³ 0.02 bbis  m² m  m  m  m  c.00 m³ 0.00 bbis  1,486.00 m² 0.00 m²  0.00 m²
viii ix 2 i ii iii iv v vi 3 i ii ii iv v	Oil type Banny Medium Bonny Light Oil type Average depth of infiltrati Total depth below ground Estimated Volume of in Estimated Volume of in Volume of infiltrated oi Total area covered by the Average depth of infiltrati Soil type P <sub>a</sub> (effective porosity of the Average depth of infiltrati Total depth below ground Estimated Volume of in Volume of infiltrated oi Total Area covered by the Total Area of the pool of the Soil type P <sub>a</sub> (effective porosity of the Total Area of the pool of the Soil type P <sub>a</sub> (effective porosity of the	Sand  3 weeks 2 days  lon below leaking facility i.e. pipeline/fict surface of infiltration of oil  filtrated oil, V <sub>ints</sub> If at second spill point (if applicable e oil (infiltration) ion above leaking facility i.e. pipeline/fict surface of infiltration of oil  filtrated oil, V <sub>ints</sub> If outside immediate spill point(s) re e oil (infiltration) free phase oil in touch with soil me soil)  and surface of infiltration of oil filtration of oil infiltration)	Loam 3 years 2 months  2 months  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )  () (V <sub>iora</sub> )	Clay > 10 years	0.00 m³ 0.02 bbis  0.02 bbis  m² m  m  coo m² coo m² coo bbis  1,486.00 m² coo m² coo m²

Estimated Total Volum Estimated Total Volum	e of Infiltrated oil. V			3.43 bbls
SANDAMAN I AMI I AIMII	· · · · · · · · · · · · · · · · · ·			4.40 0410
Computation of volume	of oil on open water based on stand	lent coloration		
i Total area of oil on open	•	voros 44411	A	m².
•				<sup></sup>
ii i anis oi sveisde debiti d	f oil on water based on coloration	Link to Coverage Visual		
Spill Factors from USCG FOG	(2000 Edition)	Aid	·	_
	Thistoness teams	Percentage coverage (%)	Volume (m3)	
Barely Visible	7)ščkresa (mm) 0,0004	177	0.0000	1
Silvery			0.0000	4
Stight Color			0.0000	4
Bright Color	·		0.0000	4
Dull	0.0013		0.0000	4
Dark			0.0000	+
Black oil	0.302		0.0000	
Emulsion (30% Off)			0.0000	•
	Percent Total:	0%	0.0000	4
		U70	3,0300	J
Estimated Volume of o	il on open water. V			0.00 m³
Estimated Volume of o				0.00 bbls
				1.01 0.00
Residence tim	Evaporation Factors (E-Factor) for a	Oilty	^	]
Residence tim	Evaporation Factors (E-Factor) for a	Oilty	pe Bonny Medium	
Residence tim			^	
Residence tim	e of spilled oil (days on site)	Oil ty Banny Light 10% 25%	Bonny Medium 5% 15%	
Residence tim	e of spilled oil (days on site)	Oil t Bonny Light 10%	Bonny Medium 5% 15%	
	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	
j Was oil recovery before	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date?	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Yas 🔻
	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date?	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	
j Was oil recovery before ii Estimated volume availa	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date?	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Ves. Dbls
j Was o <i>il recovery before</i> ii Estimated volume availa	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date?	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Yas 🔻
i Was oil recovery before ii Estimated volume availa ii E-factor	e of spitled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Ves. Dbls
j Was o <i>il recovery before</i> ii Estimated volume availa	e of spitled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Yes Dbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of a	e of spitled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub>	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Yes Dbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of a	e of spitled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of a	e of spitled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub>	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of e	e of spilled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A WA	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of e  Net Total Estimated  CALCULATION OF  Daily Gross Production rate (c	e of spilled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A WA	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa iii E-factor  Estimated Volume of e  Not Total Estimated  CALCULATION OF Daily Gross Production rate ( Well Gas-OS-Ratio	e of spilled oil (days on site)  <1 day  1-7 days  >7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A WA	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15% 25%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa iii E-factor  Estimated Volume of e  Not Total Estimated  CALCULATION OF Daily Gross Production rate ( Well Gas - Oil-Ratio Well on Fire	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A With	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15% 25%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of a  Net Total Estimated  CALCULATION OF Daily Gross Production rate ( Well Gas-Gil-Ratio Well on Fire Ratio of Oil production from W	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A With	Oil ty Banny Light 10% 25% 40%	Bonny Medium 5% 15% 25%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of e  Net Total Estimated  CAL CULATION OF Daily Gross Production rate (c) Well Gas-Gil-Retin Well on Fire Ratio of Oil production from V	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A WARNER  SPILLED	Oil ty Bonny Light 10% 25% 40%  FLLHEAD Yes 0%	Bonny Medium 5% 15% 25%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of a  Net Total Estimated  CAL CULATION OF Daily Gross Production rate (c) Well Gas Oil-Ratio Well on Fire Ratio of Oil production from V  Avarage hourly oil flow rate Automatic shut down (Coope	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A With	Oil ty Bonny Light 10% 25% 40%  FLLHEAD Yes 0%	Bonny Medium 5% 15% 25%	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of e  Net Total Estimated  CAL CULATION OF Daily Gross Production rate (c) Well Gas-Gil-Retin Well on Fire Ratio of Oil production from V	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A WARNER  SPILLED	Oil ty Bonny Light 10% 25% 40%  FLLHEAD Yes 0%	Bonny Medium 5% 15% 25% bbl/d	Ves Dbls % 0.75 bbls
j Was oil recovery before ii Estimated volume availa iii E-factor  Estimated Volume of e  Net Total Estimated  CALCULATION OF Daily Gross Production rate (r  Well on Fire Average hourly of flow rate Automatic shut down (Coope Percentage of Valve opening	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A Williams  SPILLED VOL	Oil ty Banny Light 10% 25% 40%  **ELLHEAD  Yes 0% 0.0  Yes 1%	Bonny Medium 5% 15% 25% bbl/d	Ves Dbls % 0.75 bbls
i Was oil recovery before ii Estimated volume availa ii E-factor  Estimated Volume of e  Net Total Estimated  CALCULATION OF Daily Gross Production rate ( Well Gas Oil-Ratin Well on Fire Ratio of Oil production from it Average hourly oil flow rate Automatic shut down (Coope Percentage of Valve opening  Avg Hourly lesk to the environ	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A Williams  SPILLED VOL	Oil ty Banny Light 10% 25% 40%  **ELLHEAD  Yes 0% 0.0  Yes 1%	Bonny Medium 5% 15% 25% bbl/d	Ves Dbls % 0.75 bbls
j Was oil recovery before ii Estimated volume availa iii E-factor  Estimated Volume of e  Net Total Estimated  CAL CULATION OF Daily Gross Production rate (c Well Gas Oil Retin Well on Fire Ratio of Oil production from M Avarage hourly oil flow rate Automatic shut down (Goops Percentage of Valve opening  Avg Hourly leak to the environ Leak duration (hours)	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A Williams  SPILLED VOL	Oil ty Banny Light 10% 25% 40% 40%  Yes 0% 0.0 Yes	Bonny Medium 5% 15% 25% bbl/d bbl/hr	Ves Dbls % 0.75 bbls
i Was oil recovery before i Estimated volume availa  E-factor  Estimated Volume of a  Net Total Estimated  CALCULATION OF Daily Gross Production rate (s) Well Gas-Os-Ratio Well on Fire Automatic shut down (Coope Percentage of Valve opening Avg Hourly leek to the environ	e of spilled oil (days on site)  <1 day  1-7 days  > 7 days  > 7 days  JIV completion done before JIV date? ble for evaporation  vaporated oil, V <sub>evap</sub> I Spilled Volume, V <sub>Est</sub> SPILLED VOLUME FROM A Williams  SPILLED VOL	Oil ty Banny Light 10% 25% 40%  **ELLHEAD  Yes 0% 0.0  Yes 1%	Bonny Medium 5% 15% 25% bbl/d bbl/hr	Ves  bbls % 0.75 bbls

	INE SHEL	LPEIROLEU	IN DEVEL	OF WIEN 1 CC	JMIFAN	OF MIGE	MA LIMITED.
IT INVE	STIGATION	REPORT FOR	INCIDENT I	10:1214	447	_JIV report S	<sup>3/N:</sup> 0059 <b>1</b>
G. INCI	DENT INFO	RMATION:					
20. Ir	npacted Area	ı Details					
				0121	_		
		l calculated area		West	4		<del></del>
		act within SPDC		<u> </u>			
	_	act outside SPDC	◆ —	162			
21. <u>V</u>	olume of oil	recovered before		on of JIV (V <sub>red</sub> ered oil V <sub>red</sub> :	ন):		Barrels
<u> </u>		1				<u> </u>	Barreis
Cor	itrolled recov	very/evacuation	**	Barrels	act to env	ironment:	
		L	HIL_	Dariels			
22. N	et Estimate	d Spilled Volur	ne Vr. (bbl	s)* =		····	
			,				
			<b>.</b>	, 97 B	ALCEL	.2.	
			•				
Fetimet	ed Reported	Volume** Vrenth	hls)=	~ ^			
2001311112	OLI ICOPOLICO	, , , , , , , , , , , , , , , , , , , ,		1 15m	refs	•	
*Notes:							
•		on was done using an		i.(see attached for t	details on the	e calculation)	
02-0	Reported spilled	l volume is an estimat otes taken into consid	e Investion for setie		n tha boy bal		
WFII	e otner retevant n	otes taken mio consid	teranon jor esun	nanng me spinea n	a melood ben	ou.	
1							
Calculation	on of the respectiv	re estimated volume is	to he done on s	ite as far as practic	able using th	ie new spill volun	ne estimation software on
		s is Volume (m3) x 6.2				number using the	? following rules:
•	Апу ѕрин уошто	e in excess of 1 bbl	is roimaea up	to the next whole t	umver.		
•	Any spill volume	e in less than — I bbl	is rounded up	to the next 0.1 bb	i.		
	Examples:	Calculated volume =					
		Calculated volume					
		Calculated volume	= 0.01 bbl	Reported volume	e = 0.1  bbl.		

Wherever this estimation tool is not applicable please refer to paragraph 6c (Deviotions) 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.

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 1214447 JIV report S/N: 00591

# 23. GENERAL STATUS OF THE SITE

A.	Joint investigati response and JII	on of the incident therefore recomm				pact after the	initial
В.	Investigation of works	the incident site s	showed that the	ere is residual	impact on	site requiring	further

### 24. REPRESENTATIVES

This re	eport was filled, agreed and signed by the following joint investigation representatives:	
•	Host Community:	
•	Department of Petroleum Resources [DPR]:	
•	National Oil Spili Detection and Response Agency [NOSDRA]:	
•	State Ministry of Environment [SME]: S	
•	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 a	pplicable

JOINT INVESTIGATION REPORT FOR INCIDENT NO: 121447 JIV report S/N: 00591

25. Appendix 1: Overview sketch of the site

