

JOINT INVESTIGATION REPORT

INCIDENT NO: 2854086 JIV report S/N:

0655

(Note: As practicable as possible the JIT report is to be signed in the field by all the participating parties)

A. GENERAL INFORMATION:

1. Fountain Incident Number: 2854086 2. Type of incident* OIL SPILL
3. Name of Location BONNY TERMINAL SINGLE POINT MOORING 3 (SPM3)
4. Name of nearest community BONNY 5. State: RIVERS 6. LGA BONNY
7. Production Facility/Installation SPM3 FLOATING HOSE
8. Asset Owner/Hub THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED (SPDC)/CENTRAL EAST HUB

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date Reported: 5TH FEBRUARY 2021
b. Start date/time of Investigation: 6TH FEBRUARY 2021/1124HRS
c. Investigation End date: 24TH FEBRUARY 2021 Day(s) on site: 2 DAYS
d. Description of spill point environment

- | | | |
|---|-------------------------------------|--|
| <input type="checkbox"/> Firm soil | <input type="checkbox"/> Loose soil | <input type="checkbox"/> Recently excavated area |
| <input checked="" type="checkbox"/> Under water | <input type="checkbox"/> Swampy | <input type="checkbox"/> Exposed pipe surface |
| <input type="checkbox"/> Well Platform (on water) | <input type="checkbox"/> Drill Rig | <input checked="" type="checkbox"/> Sand bag(s) |

Additional observations around the spill point:

e. Description of leak point (tick as applicable);

- | | | |
|---|---|---|
| <input type="checkbox"/> Smooth round-edge hole | <input type="checkbox"/> Rough-edge hole | <input type="checkbox"/> Hack saw cut |
| <input type="checkbox"/> Complete Rupture | <input type="checkbox"/> Inward dent, | <input type="checkbox"/> Well head tampering |
| <input type="checkbox"/> Failed Weld-on illegal hot tap valve | <input type="checkbox"/> Failed Clamp, | <input type="checkbox"/> Missing Pipeline/Flowline |
| <input type="checkbox"/> Crude oil theft (illegal bunkering) point, | <input type="checkbox"/> Saver-pit over flow | <input type="checkbox"/> Third party tampering with Clamp |
| <input type="checkbox"/> Third party tampering with valve setting | <input type="checkbox"/> Bulging Outward | <input type="checkbox"/> Third party tampering with flange, |
| <input type="checkbox"/> Flare System/Bund wall failure | <input type="checkbox"/> Cold vent | <input type="checkbox"/> Surge vessel overflow, |
| <input type="checkbox"/> Valve Failure | <input type="checkbox"/> Relief valve failure | <input checked="" type="checkbox"/> Accidental 3 rd party equipment impact |
| <input type="checkbox"/> Tear (_____) | | |
| <input type="checkbox"/> Others (specify) _____ | | |

f. Incident caused by:

- Third party interference (Sabotage ; crude theft ; Line theft ; Accidental 3rd party damage),
 Operational Others (including Mystery spills) _____

*This can be: (a) Oil Spill (b) Drilling fluid/Chemical (c) Siltation (d) Water Leak (e) Fire (f) Non-leaking theft point removal

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Distribution of copies: White (Asset Owner); Pink (DPR); Green (NOSDRA); Yellow (State Ministry of Environment); Blue (Host Community)

JOINT INVESTIGATION REPORT

0655

INCIDENT NO: 2854086 JIV report S/N:

g. Spill Point Coordinates (*Incidents $\leq 100m$ apart to be aggregated into one Joint Investigation Report)

h. Measuring unit WGS 84

Northing:	Easting:
4.109085	7.125854
/	/
/	/

C. RISK ASSESSMENT

10. Details of Environment

i. Type of environment where spill occurred (select one):

- Land
 Swamp
 Water
 Seasonal swamp
 Shoreline/Waterfront

ii. Type of environment to which oil has spread:

- Land
 Swamp
 Waterbody (specify) OPEN WATER

iii. Weather condition

- Dry
 Wet
 Windy
 Hot

11. Distance to Sensitive habitat within 100m radius

- | | | | | |
|---|---|-----|---|---------------------------------|
| <input type="checkbox"/> Government reserved and designated protected area | [| ,m] | } | NONE SEEN
WITHIN
VICINITY |
| <input type="checkbox"/> Drinking water source | [| ,m] | | |
| <input type="checkbox"/> Surface water <input type="checkbox"/> Borehole | [| ,m] | | |
| <input type="checkbox"/> Built up Area | [| ,m] | | |
| <input type="checkbox"/> Residential Area <input type="checkbox"/> Commercial/Industrial Area | [| ,m] | | |
| <input type="checkbox"/> Farmlands | [| ,m] | | |
| <input type="checkbox"/> Fish Farm/Pond | [| ,m] | | |
| <input type="checkbox"/> Fishing net | [| ,m] | | |
| <input type="checkbox"/> Others (specify) _____ | [| ,m] | | |

12. Containment measures put in place:

- Booms
 Trench
 Dyke
 Pit
 Natural depression
 None
- Others: _____

13. Any pictures or video coverage? [N]

14. Further response/repair initiated as at the time of JIV? [N]

If yes to item 14, give brief description:

OIL SPILL RESPONSE AND REPAIR ACTIVITIES ONGOING

JOINT INVESTIGATION REPORT

INCIDENT NO: 2854086 JIV report S/N: 0655

15. Was there any disruption to the investigation? [Y] [X]

If yes to item 15 give brief description:

NOT APPLICABLE

16. Was JIV delayed? [Y] [X]

Reason(s): NOT APPLICABLE

- Delayed Community Access Approval Security Challenges Access constraint due to terrain
 Others (specify) _____

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

17. Structures / Properties

S/N	Type of Structures	Description	Size	Number	Comments
<u>NONE WITHIN AREA OF IMPACT</u>					

18. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
<u>NONE WITHIN AREA OF IMPACT</u>						

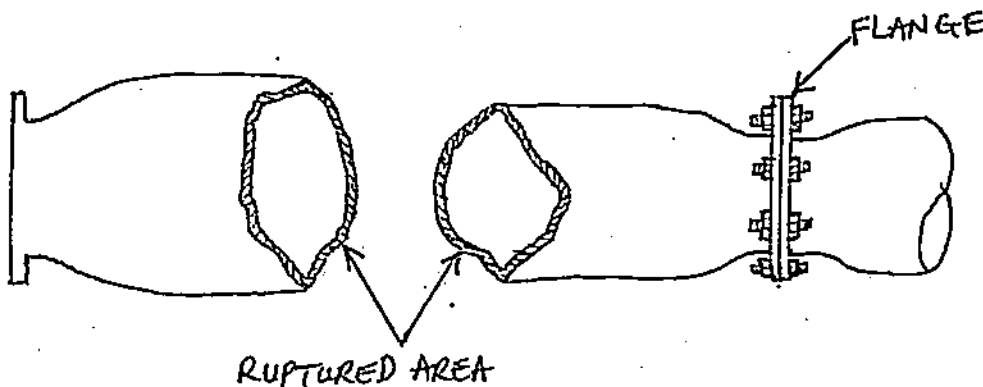
19. Fish/Nets/Ponds

S/N	Fish/Nets/Ponds	Description	Quantity/Size	Comments
<u>NONE WITHIN AREA OF IMPACT</u>				

20. Others (Specify) e.g. Animal Traps

S/N	Others	Description	Quantity/Size	Comments
<u>NONE WITHIN AREA OF IMPACT</u>				

E. GRAPHIC DESCRIPTION OF LEAK POINT (while detailed description of the leak point should be contained in the leak report, overview sketch of the site should be added as appendix 1) **A SECTION OF BONNY TERMINAL SINGLE POINT MOORING 3 (SPM3) SHOWING RUPTURED HOSE**



JOINT INVESTIGATION REPORT

INCIDENT NO: 2854086 JIV report S/N: 0655

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

21. Impacted area boundary Coordinates (If more, Print and attach as Appendix)

WGS 84

S/N	Northing	Easting
1.	4. 10746	7. 13082
2.	4. 10694	7. 12960
3.	4. 10667	7. 12847
4.	4. 10657	7. 12776
5.	4. 10654	7. 12687
6.	4. 10671	7. 25840
7.	4. 10754	7. 12441
8.	4. 10891	7. 12366
9.	4. 11236	7. 12812
10.	4. 10966	7. 12796
11.	4. 11066	7. 12462
12.	4. 10919	7. 12912
13.	4. 10990	7. 12643
14.	4. 10644	7. 12475

SEE ATTACHED LIST OF COORDINATES

SPM 3 SPILL OVERFLY		
FID: 2021_2854086		
Date: 5th February 2021		
S/N	LAT	LONG
1	4.106111734	7.121253035
2	4.111249308	7.121409103
3	4.113301451	7.123281648
4	4.114170726	7.125328582
5	4.114241145	7.12678544
6	4.112408786	7.129960176
7	4.110323537	7.135040836
9	4.109512612	7.137328652
10	4.109038293	7.13951833
11	4.109064146	7.141950456
12	4.109196783	7.143751963
13	4.109352028	7.145352476
14	4.109845313	7.14812844
15	4.110724789	7.150187589
16	4.11161869	7.151557836
17	4.11397684	7.153810538
18	4.115875481	7.154972686
19	4.117631471	7.155572013
20	4.119057015	7.155719209
21	4.12068493	7.155598569
22	4.12227688	7.155195165
23	4.123399006	7.154668213
24	4.124425295	7.153960288
25	4.125479599	7.15293558
26	4.126272247	7.151938632
27	4.127322976	7.150517353
28	4.128134968	7.149409268
29	4.128787651	7.148453488
30	4.12928999	7.147661907
31	4.129994994	7.146430818
32	4.130753252	7.144925956
33	4.131490672	7.143124897
34	4.131997449	7.141474289
35	4.13252999	7.139546526
36	4.132996755	7.137843666
37	4.133331381	7.136614809
38	4.13359477	7.135631189
39	4.133920885	7.134400537
40	4.134243745	7.133167411
41	4.134503719	7.132180883
42	4.134899337	7.130704121
43	4.135165607	7.129722882
44	4.135504982	7.128500314

45	4.13597904	7.126790583
46	4.136249526	7.125813612
47	4.136656349	7.124348383
48	4.137062479	7.122889304
49	4.137673336	7.120703812
50	4.13848129	7.117768136
51	4.139148248	7.115258889
52	4.139609712	7.113493078
53	4.140079101	7.111774639
54	4.140482002	7.110333352
55	4.141072814	7.10824926
56	4.141443885	7.106446426
57	4.141571951	7.104268396
58	4.141773628	7.102436563
59	4.14241021	7.100582283
60	4.14336701	7.099151893
61	4.14991372	7.097219315
62	4.151680311	7.097748291
63	4.157719105	7.107459967
64	4.15763837	7.108915908
65	4.157378396	7.110340686
66	4.157025841	7.111517132
67	4.156399625	7.112803576
68	4.15302199	7.116089697
69	4.153941957	7.113830646
70	4.152604641	7.117287355
71	4.15195688	7.119193898
72	4.151259267	7.121706504
73	4.150925775	7.123992153
74	4.150698231	7.12630144
75	4.150555838	7.128623628
76	4.150497265	7.130666564
77	4.150422745	7.13359428
78	4.150332683	7.136545952
79	4.150279962	7.138939659
80	4.150235139	7.14135308
81	4.150181618	7.143170143
82	4.15014704	7.144078939
83	4.150048056	7.146203514
84	4.14997183	7.147721604
85	4.149842065	7.150453555
86	4.149758173	7.152583872
87	4.149690351	7.15442208
88	4.14962952	7.156281399
89	4.149566421	7.158473269
90	4.149527227	7.160054765
91	4.149469464	7.161956539

92	4.149400682	7.16386024
93	4.14930079	7.166081304
94	4.149186598	7.167984961
95	4.149027423	7.169883553
96	4.148738741	7.172397458
97	4.148204438	7.17517078
98	4.147287005	7.17783537
100	4.146332566	7.179797266
101	4.144956523	7.181865319
102	4.143492622	7.18345063
103	4.142077065	7.184632467
104	4.139985782	7.185898293
105	4.138036234	7.186729275
106	4.135726483	7.187425554
107	4.133058814	7.187904047
108	4.130669457	7.188023976
109	4.128559293	7.187972036
110	4.126738408	7.187849492
111	4.124902101	7.187659234
112	4.122446608	7.187304311
113	4.120008457	7.18683765
114	4.118200725	7.18639723
115	4.116704353	7.185986258
116	4.115222442	7.185533224
117	4.113172718	7.18483257
118	4.110877917	7.183922585
119	4.1083668	7.182724142
120	4.106771951	7.181778635
121	4.104550725	7.18010358
122	4.102782613	7.178379975
123	4.101589411	7.176970795
124	4.100312699	7.175240863
125	4.099287984	7.17371685
126	4.098135043	7.171919879
127	4.096871173	7.169833368
128	4.095672422	7.16770792
129	4.094240888	7.164679766
130	4.093019082	7.160908506
131	4.092250515	7.157305613
132	4.091957857	7.155180304
133	4.091841941	7.151813175
134	4.092226182	7.148429196
135	4.092798566	7.146331812
136	4.093836573	7.143720092
137	4.094848308	7.141462943
138	4.09586131	7.139263452
139	4.096600598	7.137662313

140	4.097448395	7.135848874
141	4.098261535	7.134093115
142	4.099127661	7.132159305
143	4.099838161	7.130527336
144	4.100653622	7.128727942
145	4.101589184	7.12677256
146	4.103229373	7.124218263

JOINT INVESTIGATION REPORT

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G. INCIDENT INFORMATION:

a. Impacted Area Details *

- Total calculated area of impact (Ha) 2550.13 Ha
- Impact within SPDC R.O.W YES
- Impact outside SPDC R.O.W YES

* Round off to 2 decimal places if area is $\geq 100 \text{ m}^2$ or to 4 decimal places if area is $< 100 \text{ m}^2$ (e.g. 14.55, 0.0051, 0.0009)
 * Express in Hectares (Ha)

b. Volume of oil recovered before completion of JIV (V_{rec}):

Recovered oil V_{rec} :	NIL	Barrels
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Controlled recovery/evacuation from source with no impact to environment:

NIL	Barrels
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c. Net Estimated Spilled Volume V_{Est} (bbls)* =

6.24 BARRELS

Estimated Reported Volume** V_{rep} (bbls) = 7 BARRELS

***Notes:**

- Volume estimation was done using an excel based tool. (see attached for details on the calculation)
- Reported spilled volume is an estimate

Write other relevant notes taken into consideration for volume estimation or cause of spill:

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 (m^3) 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.

Version 2020/01

JOINT INVESTIGATION REPORT

INCIDENT NO: 2854086 JIV report S/N:0655

d. General Status of the site

i. Joint investigation of the incident site found that there is no residual impact after the initial response and JIT therefore recommend that the site be closed out <input checked="" type="checkbox"/>
ii. Investigation of the incident site showed that there is residual impact on site requiring further works <input type="checkbox"/>

e. Representatives

<p>This report was <u>filled</u>, <u>agreed</u> and <u>signed</u> by the following joint investigation team representatives:</p> <ul style="list-style-type: none">• Host Community: <input checked="" type="checkbox"/>• Department of Petroleum Resources [DPR]: <input type="checkbox"/>• National Oil Spill Detection and Response Agency [NOSDRA]: <input checked="" type="checkbox"/>• State Ministry of Environment [SME]: <input checked="" type="checkbox"/>• The Shell Petroleum Development Company [SPDC]: <input checked="" type="checkbox"/>• <i>Separate DPR form has been filled out with same findings</i> <input type="checkbox"/>• <i>Separate NOSDRA form has been filled out with same findings</i> <input checked="" type="checkbox"/>• <i>Separate SME form has been filled out with same findings</i> <input checked="" type="checkbox"/> <p style="text-align: right;"><i>Tick as applicable</i></p>
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f. Appendix 1: Overview sketch of the site.

