

JOINT INVESTIGATION REPORT

INCIDENT NO: 1990363 JIV report S/N: 0983

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

A. GENERAL INFORMATION:

1. Spill incident Number: 1990363 2. Type of incident* OIL SPILL
3. Name of Location SINGLE POINT MOORING ONE (SPM1)
4. Name of nearest community BONNY 5. State: RIVERS 6. LGA BONNY
7. Type of Production facility/Installation OIL AND GAS TERMINAL
8. Asset owner/District: THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LTD (SPDC)/BOGT

B. INCIDENT INFORMATION:

9. Details of incident

- a. Date of incident: 22ND DECEMBER 2017
b. Start date/time of investigation: 29TH DECEMBER 2017/1300HRS
c. Investigation End date: 17TH MAY 2018 Actual investigation duration, days: THREE (3) 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 | |

Additional observations around the spill point:

NOT APPLICABLE

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

- | | | |
|---------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------|
| <input type="checkbox"/> Drilled hole | <input type="checkbox"/> Hack saw cut | <input checked="" type="checkbox"/> Tear (<u>OPERATIONAL TEAR</u>) |
| <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 type="checkbox"/> Accidental 3 rd party equipment impact |
| <input type="checkbox"/> Corrosion | <input type="checkbox"/> Others(specify) _____ | |

f. Incident caused by:

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

*This can be: a) Oil Spill b) Drilling fluid/Chemical c) Situation d) construction e) Encroachment f) Fire.

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g. Spill point coordinates

h. Measuring unit 80 APPROXIMATE SPILL POINT COORDINATE (WGS 84)

Northing: <u>LAT.</u>	Easting: <u>LONG.</u>
<u>4.17072</u>	<u>7.22730</u>
/	/
/	/

C. RISK ASSESSMENT

10. Type of environment:

- Land
 Swamp
 Water
 Seasonal swamp
 Shoreline/Waterfront

i. Type of environment to which oil has spread:

- Land
 Swamp
 Water
 River (identify) _____

ii. Weather condition

- Rain
 Sunny
 Dry
 Wet
 Windy
 Hot
 cool

11. Distance from the nearest sensitive habitat

- | | | | | |
|----------------------------------------------------------------------------|---|-----|---|-----------------|
| <input type="checkbox"/> Government reserved and designated protected area | [| ,m] | } | NONE SEEN |
| <input type="checkbox"/> Drinking water source | [| ,m] | | |
| <input type="checkbox"/> Built up 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] | } | WITHIN VICINITY |

12. Containment measures put in place;

- Booms
 Trench
 Dyke
 Natural depression
 Pit
 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

15. Was there any disruption to the investigation?

[Y]

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If yes to item 15 give brief description:

NOT APPLICABLE

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
	<u>NONE WITHIN AREA OF IMPACT</u>				

17. Crops/Economic Trees

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

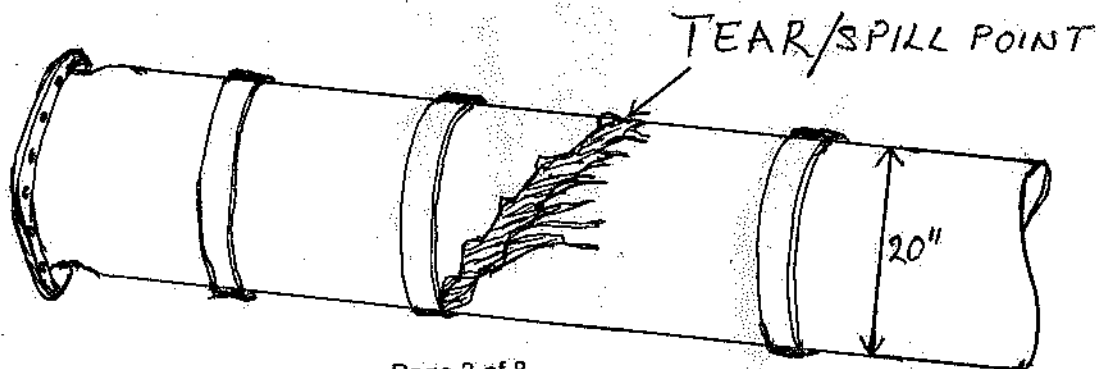
18. Fishing Nets/Fish Ponds

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

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

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

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.) A SECTION OF 20" SUBSEA HOSE SHOWING OPERATIONAL TEAR AT BONNY OIL AND GAS TERMINAL SINGLE POINT MOORING ONE (SPM1)



JIV AT SINGLE POINT MOORING ONE (SPM1) AT BONNY**INCIDENT NUMBER: 1990363**

PTS	X	Y
652	7.22156	4.17417
653	7.2195	4.17841
654	7.21156	4.18814
655	7.17876	4.21639
656	7.17293	4.22135
657	7.16598	4.22133
658	7.16152	4.22047
659	7.15357	4.21868
660	7.14774	4.21838
661	7.14204	4.21964
662	7.13529	4.22258
663	7.12724	4.22401
664	7.11877	4.22699
665	7.11431	4.23185
666	7.10305	4.23651
667	7.09448	4.2321
668	7.08469	4.22955
669	7.07306	4.22547
670	7.06446	4.22252
671	7.05286	4.22279
672	7.04677	4.22388
673	7.04021	4.22865
674	7.03624	4.2319
675	7.02531	4.23355
676	7.01136	4.24693
677	6.99862	4.24871
678	6.99417	4.25223
679	6.9856	4.25017
680	6.96672	4.23802
681	6.95993	4.23534
682	6.94885	4.23316
683	6.94557	4.21456
684	6.96292	4.20748
685	6.99963	4.19563
686	7.02065	4.19023
687	7.04371	4.18875
688	7.07371	4.18638
689	7.10762	4.19253
690	7.12892	4.19073
691	7.15014	4.17872
692	7.1723	4.17194
693	7.22077	4.17288
694	7.23489	4.17117

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G. INCIDENT INFORMATION:

a. Impacted Area Details

- Total calculated area of impact 12,903.55 Ha
- Impact within R.O.W YES
- Impact outside R.O.W YES

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

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

<u>113</u>	Barrels
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c. Net Estimated Spilled Volume V_{Est} (bbls)* =

187 BARRELS

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

187 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 estimating the spilled in the box below:

/

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 6e (Deviations) of the JIV procedure to use appropriate steps for volume estimation: record the calculation in a plain sheet of paper and attach to the JIV report.

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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
- ii. Investigation of the incident site showed that there is residual impact on site requiring further works

e. Representatives

This report was filled, agreed and signed by the following joint investigation team representatives:

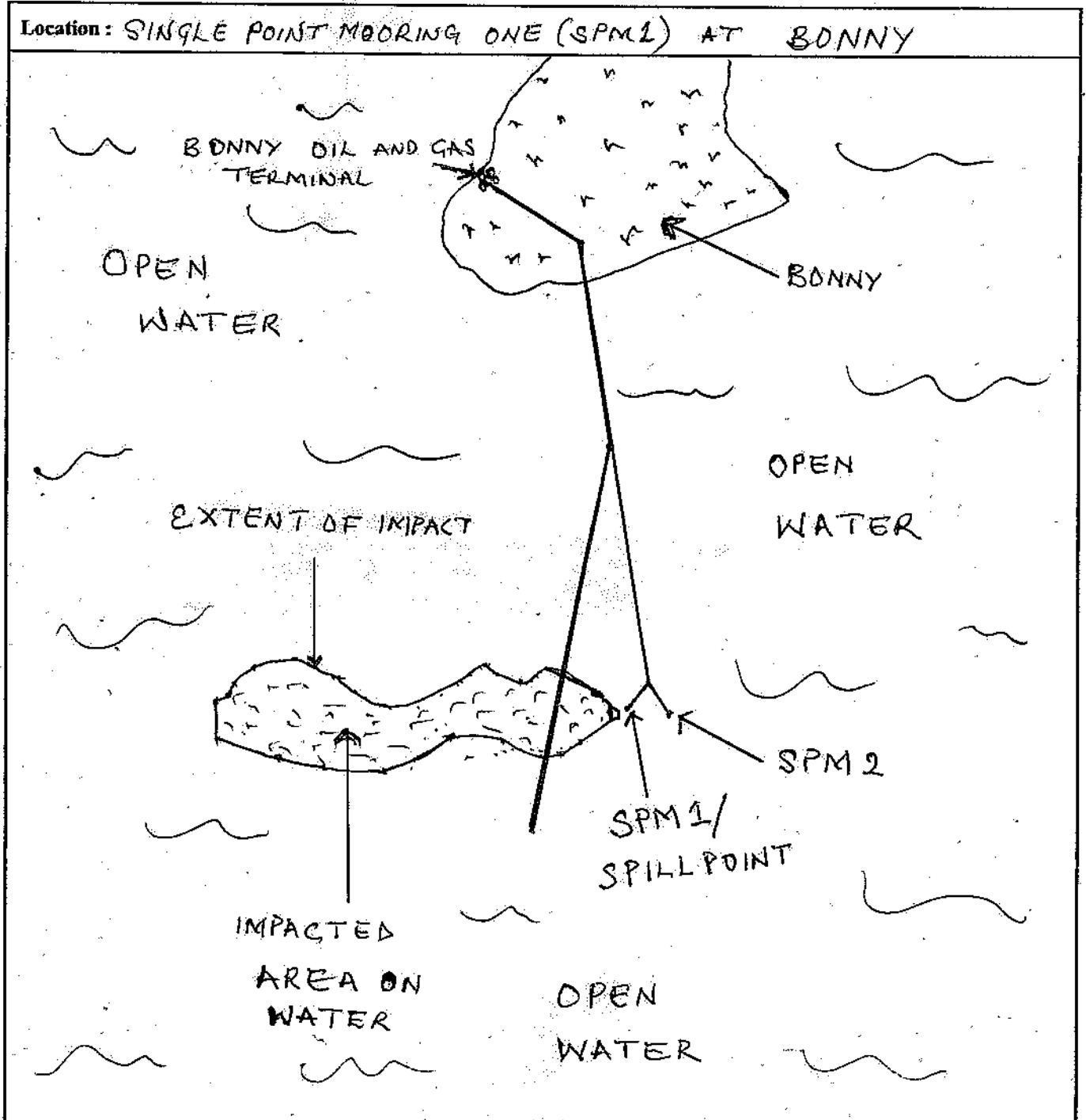
- Host Community:
- Department of Petroleum Resources [DPR]:
- National Oil Spill Detection and Response Agency [NOSDRA]:
- State Ministry of Environment [SME]:
- Asset Owner:
- Signatories agree with reported findings:
- Separate DPR form has been filled out with same findings:

Tick as applicable

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f. Appendix 1: Overview sketch of the site

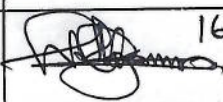
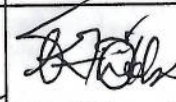
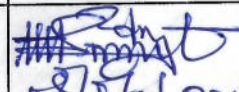



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g. SIGNATORIES: JOINT INVESTIGATION TEAM MEMBERS

Having read through the JIT report, the following representatives append their respective signatures in agreement with the content therein:

S/N	Name	Members present	Designation	Signature/Date and Time
1	OKON, WILLIAMS	DEPARTMENT OF PETROLEUM RESOURCES (DPR)	REGULATOR	 1607 HRS 11-06-2018
2	ANABRABA, TEKENA	NATIONAL OIL SPILL DETECTION AND RESPONSE AGENCY (NOSDRA)	SNR. ENVIRONMENTAL SCIENTIST	 1607 HRS 11-06-2018
3		STATE MIN. OF ENVIRONMENT		
4	ALLISON, SIONG SUNJU	HOST COMMUNITY REPRESENTATIVE	BECC MEMBER	 08/06/2018
5	IKECH AMAZWHULE	ASSET OWNER REPRESENTATIVE		 05/06/2018