

# JOINT INVESTIGATION REPORT

INCIDENT NO: 1899560 JIV report S/N: Nº 0000329

(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: 1899560 2. Type of incident\* OIL SPILL  
3. Name of Location BELEMA FLOW STATION  
4. Name of nearest community BELEMA 5. State: RIVERS 6. LGA AKUKU-TORU  
7. Type of Production facility/Installation FLOW STATION  
8. Asset owner/District THE SHELL PETROLEUM DEVELOPMENT COMPANY OF NIGERIA LIMITED / SWAMP EAST HUB

## B. INCIDENT INFORMATION:

9. Details of incident  
a. Date of incident: 28TH JULY, 2017  
b. Start date/time of investigation: 1ST AUGUST, 2017/14:39 HOURS  
c. Investigation End date: 1ST AUGUST, 2017 Actual investigation duration, days: ONE (1) DAY  
d. Description of spill point environment

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

Additional observations around the spill point: **THE SPILL POINT (A RUPTURED FLEXIBLE DISCHARGE SPOOL PIECE), WHICH WAS REMOVED FROM ITS ORIGINAL POSITION BY THE ASSET OWNER PRIOR TO THE J.I.V. TO ENABLE POSITIVE ISOLATION BY BLIND-FLANGING, WAS SHOWN TO THE INVESTIGATION TEAM OFF-SITE. PICTURES TAKEN OF THE SPILL POINT (IN POSITION) BY THE ASSET OWNER WERE ALSO SHOWN. AT SITE, OIL STAINS WERE NOTICED ON THE ROOF AND THE SECONDARY CONTAINMENT UNDER THE GRATING FLOOR OF THE FLOW STATION.**

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

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Drilled hole                               | <input type="checkbox"/> Hack saw cut         | <input type="checkbox"/> Tear (_____),                                     |
| <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 <sup>rd</sup> party equipment impact |
- Others(specify) RUPTURED FLEXIBLE DISCHARGE SPOOL PIECE

## f. Incident caused by:

- Third party interference (Sabotage; crude theft; Line theft; Accidental 3<sup>rd</sup> party damage)  
 Operational  Others (including Mystery spills) \_\_\_\_\_

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

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g. Spill point coordinates

h. Measuring unit

WGS-84

Northing:	Easting:
4.40215°	6.64887°

## 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] |
| <input type="checkbox"/> Drinking water source                             | [ | NO RESIDUAL          | ,m] |
| <input type="checkbox"/> Built up area                                     | [ | SPILL IMPACT WAS     | ,m] |
| <input type="checkbox"/> Farmlands   | [ | OBSERVED AT SITE     | ,m] |
| <input type="checkbox"/> Fish Farm/Pond                                    | [ | AS AT TIME OF J.I.V. | ,m] |
| <input type="checkbox"/> Fishing net                                       | [ |                      | ,m] |
| <input type="checkbox"/> Others (specify).                                 | [ |                      | ,m] |

12. Containment measures put in place:

- Booms     
  Trench     
  Dyke     
  Natural depression     
  Pit     
  None
- Others: OIL SHEEN WAS OBSERVED AS AT TIME OF INCIDENT

13. Any pictures or video coverage?

[Y]  [N]

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

[Y] [N]

If yes to item 14, give brief description:

NOT APPLICABLE

15. Was there any disruption to the investigation?

[Y] [N]

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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
NOT APPLICABLE					

17. Crops/Economic Trees

S/N	Type of crops	Young	Medium	Matured	Quantity	Comments
NOT APPLICABLE						

18. Fishing Nets/Fish Ponds

S/N	Nets/Ponds	Description	Quantity/Size	Comments
NOT APPLICABLE				

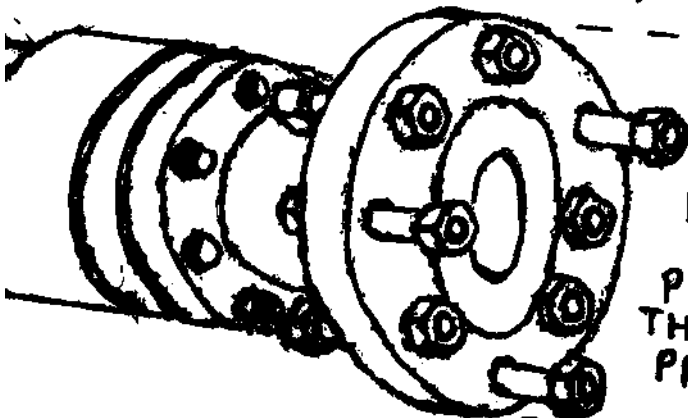
19. Others (Specify) i.e. Animal Traps

S/N	Others	Description	Quantity/Size	Comments
NOT APPLICABLE				

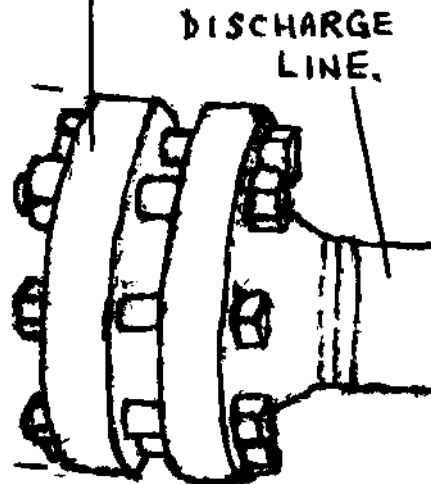
**E. GRAPHIC DESCRIPTION OF LEAK POINT** (while detail report of the leak point should be contained in the leak report, overview sketch of the site should be added as an appendix 1)

SECTION OF BELEMA FLOW STATION  
AT BELEMA SHOWING ORIGINAL  
POSITION OF LEAK POINT.

BLIND-FLANGE  
INSTALLED BY THE  
ASSET OWNER (AS  
A WAY OF POSITIVE  
ISOLATION) PRIOR  
TO THE J.I.V.



ORIGINAL POSITION  
OF RUPTURED  
FLEXIBLE DISCHARGE  
SPOOL PIECE (LEAK  
POINT) REMOVED BY  
THE ASSET OWNER  
PRIOR TO J.I.V.



DISCHARGE  
LINE.

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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)

WGS-84

S/N	Northing	Easting
	4.402554	6.650288
	4.401912	6.648793
	4.401607	6.648997
	4.401584	6.649357
	4.401733	6.649983
	4.401842	6.650922
	4.401482	6.651321
	4.401686	6.651939
	4.402296	6.652213
	4.403383	6.652526
	4.403493	6.652064
	4.403454	6.651352
	4.403039	6.651102
	4.402656	6.650859
	4.402304	6.650225
	4.402304	6.649615
	4.402445	6.649271
	4.402327	6.648981

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**G. INCIDENT INFORMATION:**

**a. Impacted Area Details**

- Total calculated area of impact 4.656546Ha AREA  
BASED ON  
OVERFLIGHT PICTURES
- 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>NIL</u>	Barrels
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<b>c. Net Estimated Spilled Volume <math>V_{Est}</math> (bbls)* =</b>	<b>0.11</b>
<b>Estimated Reported Volume** <math>V_{rep}</math> (bbls) =</b>	<b>0.2 BARREL</b>

**\*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:

SINCE NO RESIDUAL SPILL IMPACT WAS OBSERVED AS AT THE TIME OF INVESTIGATION, THE SPILLED VOLUME ESTIMATE WAS BASED ON OVERFLIGHT PICTURES OF THE LOCATION WHICH DEPICTED OIL SHEEN ON WATER.

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<sup>3</sup> to barrels is Volume (m<sup>3</sup>) 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 volume estimation; record the calculation in a plain sheet of paper and attach to the JIV report.

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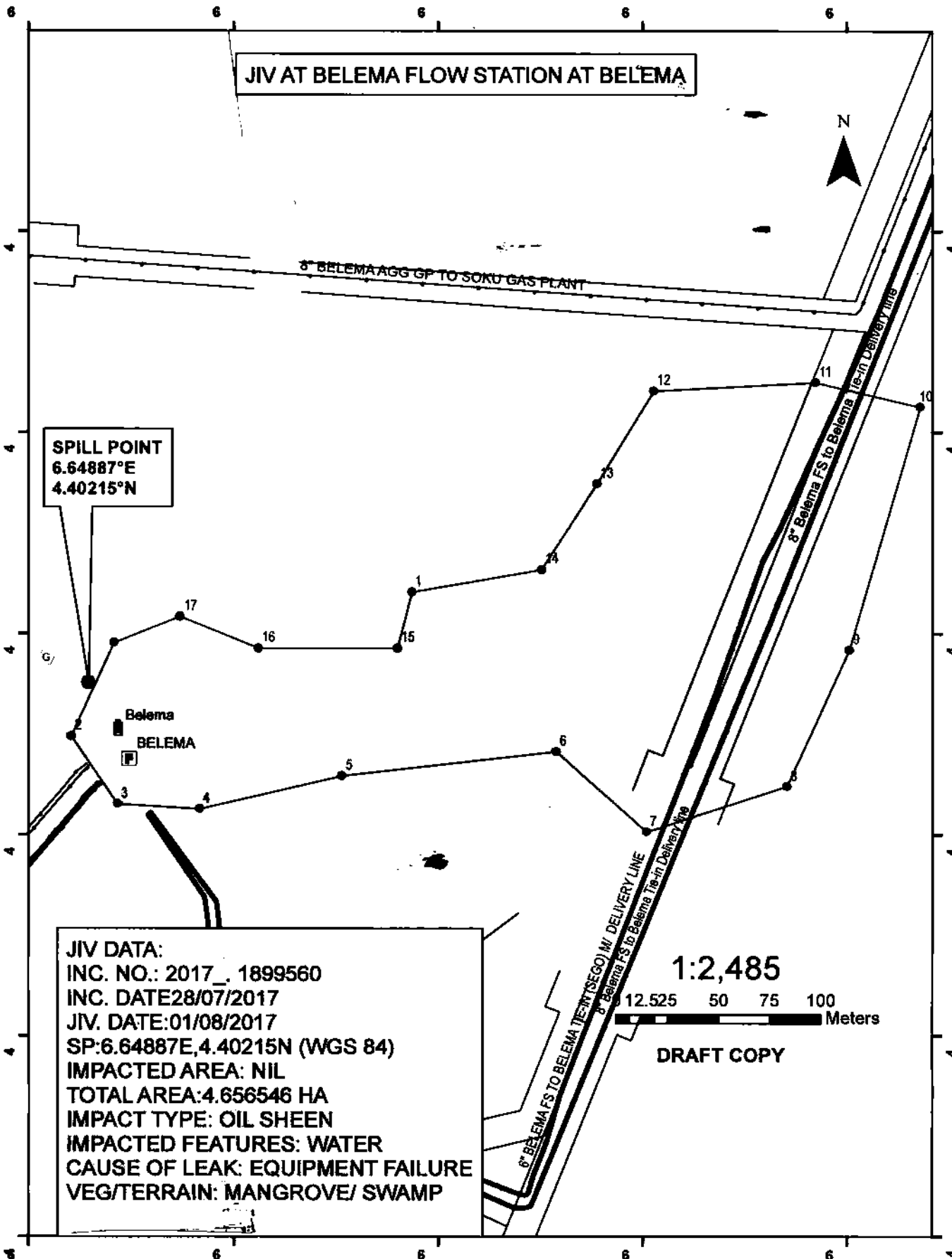
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## d. General Status of the site

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 <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><b>This report was filled, agreed and signed by the following joint investigation team representatives:</b></p> <ul style="list-style-type: none"><li>• Host Community: <input checked="" type="checkbox"/></li><li>• Department of Petroleum Resources [DPR]: <input checked="" type="checkbox"/></li><li>• National Oil Spill Detection and Response Agency [NOSDRA]: <input checked="" type="checkbox"/></li><li>• State Ministry of Environment [SME]: <input checked="" type="checkbox"/></li><li>• Asset Owner: <input checked="" type="checkbox"/></li><li>• Signatories agree with reported findings: <input checked="" type="checkbox"/></li><li>• Separate DPR form has been filled out with same findings <input type="checkbox"/></li></ul> <p style="text-align: right;"><i>Tick as applicable</i></p>
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JIV AT BELEMA FLOW STATION AT BELEMA



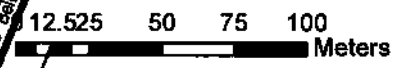
8" BELEMA AGG GP TO SOKU GAS PLANT

SPILL POINT  
6.64887°E  
4.40215°N

Belema  
BELEMA

JIV DATA:  
 INC. NO.: 2017\_ 1899560  
 INC. DATE: 28/07/2017  
 JIV. DATE: 01/08/2017  
 SP: 6.64887E, 4.40215N (WGS 84)  
 IMPACTED AREA: NIL  
 TOTAL AREA: 4.656546 HA  
 IMPACT TYPE: OIL SHEEN  
 IMPACTED FEATURES: WATER  
 CAUSE OF LEAK: EQUIPMENT FAILURE  
 VEG/TERRAIN: MANGROVE/ SWAMP

1:2,485



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f. Appendix 1: Overview sketch of the site

