

inspection of the spill site at which it was established that the spill occurred on 28 August 2008;

- 51.4 A Press statement from the CEHRD dated 13 October 2008, in which it is stated: *"Since on August 28, up till the time of filing this press release crude oil has been spewing into Bodo Creek"*;
- 51.5 A letter from the Youth Council of Bodo to the Rt Hon Chibuike Amaechi dated 14 October 2008, stating: *"Since 28 August 2008, Bodo community was thrown into disarray arising from a terrible spill of crude into creeks, estuaries and coastlines spanning over 80 kilometres of our waterways and shorelines"*;
- 51.6 An article, dated 15 October 2008, published in 'The Nation' newspaper, reporting on an oil spill in Bodo in the following terms: *"Sources say crude oil has been spewing into Bodo Creek and adjoining communities since August"*;
- 51.7 The extent of the oil contamination and mangrove damage seen in the video footage taken on 15 October 2008 video;
- 51.8 An article, dated 17 October 2008, published in the Nigerian newspaper, 'The Guardian', reporting that it had *"gathered from sources in the area that the pipeline ruptured on August 28 and started spewing crude oil into the Bodo Creek; adjoining Bodo community in the Gokana local council of Rivers State"*;
- 51.9 A letter from Kamalu, Wodu & Associates to NOSDRA dated 20 October 2008 describing their *"instruction that a massive crude oil spillage from installations of the Shell Development Company of Nigeria Limited (SPDC) at the Bodo Community commenced since about the 28th day of August, 2008"*;

- 51.10 A letter from the Bodo Council of Chiefs to NOSDRA dated 31 October referring to a spillage "*sometime in August, 2008*";
- 51.11 A report by CEHRD dated October 2008 entitled 'Persistent Oil Spillage at Bodo Creek' which states: "*According to local sources, the Bodo Creek oil spillage started since August 28, 2008 and the spilling continues as at the time of filing this report*";
- 51.12 An Article in the Nigerian newspaper, the 'Weekend Telegraph' dated 1-7 November 2008 referring to a spill in Bodo on "*August 28*";
- 51.13 A press release by CEHRD dated 14 November 2008 indicating that the spill had been ongoing "*since August 28, 2008*";
- 51.14 A letter from the Bodo Council of Chiefs to SPDC dated 27 November 2008 referring to a spillage "*sometimes [sic] in August, 2008*";
- 51.15 A letter from HRH Felix S. B. Berebon of the Bodo Community to SPDC dated 15 December 2008 discussing "*the protracted spill-Aug 28th-Nov. 8th 2008*";
- 51.16 A letter from the Bodo Youth Federation to SPDC dated 20 December 2008 and referring to the "*SPDC Oil Spill (August 28th – Nov. 2008), in Bodo Creek.*"
- 51.17 An article, dated 13 May 2009, published in 'The Nation' newspaper, referring to an oil spill that occurred "*eight months ago.*"
- 51.18 A letter from NOSDRA to SPDC dated 9 June 2009 referring to the "*Bodo spill incidents of August and December 2008*";

- 51.19 A letter from NOSDRA to Amnesty International dated 16 September 2011, discussing a spill which “*occurred on August 28, 2008*”;
- 51.20 An email from SPDC’s Head of Security dated 15 October 2008 referring to “*growing anger over a spill in Bodo that has allegedly been running since August 2008*” (document 3730);
- 51.21 An internal SPDC email dated 9 December 2008 which refers to the Second Oil Spill as being “*near to the old bodo spill of August 2008 (which impacted quite a large area before repair in Nov).*” (document 1048);
- 51.22 SPDC’s Report of Joint Pre Clean Up Assessment dated 15 April 2009 refers to the First Oil Spill as being incident number 2008_00168 with a start date of 4 August 2008 (document 1836);
- 51.23 An internal SPDC email dated 17 April 2009 refers to the “*spills that occurred on 4/8/08 and 7/12/08.*” (document 1093).

Isolation

52 As to the contention in paragraph ~~37~~36 of the Defence that the 24” Pipeline was isolated on 3 October 2008 (paragraph ~~37~~36.3) and re-opened on 29 October 2008 (paragraph ~~37~~36.7):

52.1 On the basis of the information presently in the Claimants’ possession prior to disclosure herein, it is averred that it is inherently unlikely that the Pipeline was effectively isolated as alleged, because:

52.1.1 Estimated flow volumes on the TNP are not consistent with a period of isolation during 3-29 October 2008.

Appendix II to the Bodo Individual RRFIs (as updated by SPDC on 10 April 2013) shows the throughput of oil at the Bomu Manifold every day 1 October 2008 to 28 February 2009. As can be seen from the graph set out in Appendix B to this Reply, it is apparent that the flow volumes remained much the same from 1 October 2008 through November 2008 with figures predominantly between 230,000 and 300,000 barrels of oil flowing per day through the two pipelines. The figures show no significant difference at the times SPDC says the pipeline was first isolated and then when it was reopened. Subject to further disclosure, it is the Claimants' case that the 28" pipeline alone was incapable of carrying all the oil flowing through at this time. The only alternative explanation for the figures provided is that, in fact, the 24" pipeline was not effectively isolated at this time.

52.1.2 The video footage of the oil spill on 15 October 2008 (referred to in paragraph ~~26~~25 of the Particulars of Claim, and served with the same) shows oil bubbling vigorously on the surface of the water (see in particular minutes 8:44 to 10:04), demonstrating that the pipeline was operating under pressure during the period when SPDC claims that it was isolated. The oil would then have been pushing through a layer of mud and water (the video was taken at high tide). The intensity of bubbling and rippling on the surface of the water in those circumstances suggests that the pressure in the pipeline on or around 15 October 2008 was the operating pressure and the same as the pressure on 7 November 2008 when the spill was filmed as spraying tens of metres into the air;

- 52.1.3 The leak points were located at a 12 o'clock position on the pipeline, such that oil could not have escaped unless the pipeline was still pressurised;
- 52.1.4 The pipeline was, according to paragraph ~~29~~28.4 of the Defence, buried 1 to 1.5 metres under-ground, which would have produced a significant pressure on the pipeline and oil such that oil would not have leaked out through the clay and watery mud unless the pipeline was still pressurised.
- 52.2 The pipeline installations operated by SPDC were not capable of effecting a complete isolation of the pipeline. The valve arrangements at the Bomu and Bodo manifolds do not appear to allow for:
- 52.2.1 The safe and complete isolation of the pipeline at either Bomu manifold or manifolds to the south of Bomu or at the Bonny Terminal;
- 52.2.2 The insertion or removal of spades at the Bomu Manifold, being the method of isolation averred by SPDC in the Bodo Individual RRFIs Question 10.3(iii).
- 52.3 The Claimants aver that not only was isolation ineffective on this section of the pipeline, but it was known by SPDC to be ineffective:
- 52.3.1 An SPDC email dated 5 August 2009 recalls earlier difficulties with the valves at the Bonny Terminal: *"In 2005... it was discovered that the TNP pipeline receivers at the terminal were leaking and had severe integrity issues in addition to having weld-on valves known to be passing at the time. Isolation of the lines was a major*

challenge” (document 1495). This issue was only discovered when extensive repairs were being made to the pipeline, demonstrating that SPDC was unable to monitor whether isolation was effective on the TNP.

52.3.2 An SPDC email dated 14 February 2009 from SPDC’s Head of Pipelines confirmed that there were “*cases of improper or ineffective isolation of lines during emergency response*” (document 1475).

52.3.3 Disclosure documents show that SPDC’s inability to isolate the TNP was a systemic problem. Internal SPDC emails between 23 to 26 February 2009 refer to a leak at Biara on the segment of the 24” TNP immediately north of Bodo which occurred around the time of the Second Spill (documents 4690, 4696, 4705). Despite purported isolation, the 24” TNP at Biara was still pressurised and “*jetting out in the air as we write*”. SPDC was confused as the source of the pressure and how to stop it. Oil continued to flow even after further isolation was attempted.

52.3.4 As to the ability to isolate at Bomu manifold (which purportedly occurred during both of the 2008 Oil Spills), an undated SPDC document states that the facilities there were “known to be in poor condition with leaking main isolation valves and end closures” (document 3465).

52.4 The pipeline installations operated by SPDC were not capable of monitoring whether positive isolation was effected. Effective isolation depends not only on the integrity of the isolation hardware, but also on the adequacy of the arrangements to identify each isolation point, secure the isolation, prove/monitor

the isolation and maintain overall control of the work. SPDC's installations do not allow it to know whether isolation has been completely effected, and therefore to perform isolation to international industry standards. Indeed, SPDC has admitted (Bodo Individual RRFI Question 9.1) that the Bomu-Bonny section of the TNP is not equipped with:

52.4.1 Pressure indicating instruments such as pressure gauges. As such, SPDC cannot have confirmation, by reference to instrumentation, of the depressurisation of the pipeline section to the South of the Bomu manifold;

52.4.2 Flow meters or any form of leak detection system. As such, SPDC cannot monitor diversion of the full pipeline flow from one pipeline to the other;

52.4.3 Acoustic pressure waves systems.

52.5 SPDC was therefore not capable of knowing whether isolation was positively effected during 3-29 October 2008. Its averment that the 24" Pipeline was isolated during 3-29 October 2008, or at any other time, cannot be relied on.

52.6 SPDC's case set out in paragraphs 36.1-36.3 ~~37.1-37.3~~ of the Defence is that the isolation of the 24" Pipeline on 3 October 2008 was effected as a result of three spills occurring in August 2008 and one spill occurring on 2 October 2008:

52.6.1 According to Appendix II to the Defence, the first August spill occurred on 4 August 2008. The second August spill occurred on 24-25 August 2008 at K-Dere. The spill of 24-25 August 2008 has a JIV date of 26 August 2008, suggesting that it was resolved five to six weeks prior to 3 October 2008 and would not, therefore, give rise to a

need for isolation on that date. It appears that the 24-25 August 2008 spill at K-Dere was repaired before the pipeline was isolated.

52.6.2 The third August spill occurred at the exact same location on 29 August 2008, and was not repaired until 29 October 2008. On SPDC's case, isolation did not occur until 3 October 2008, some five weeks after the last of the August spills. This suggests that SPDC did not promptly isolate the TNP in response to confirmed oil spills.

52.7 Further, information provided by SPDC to UNEP in approximately September 2010 includes information inconsistent with SPDC's case on this point:

52.7.1 According to the UNEP data, whilst there were three spills on 4, 25 and 29 August 2008, there was no spill on 2 October 2008;

52.7.2 The spill of 4 August 2008 (incident number 2008_168) is, as described above, situated at the same GPS coordinates as the First Oil Spill and has the same JIV date of 7-8 November 2008;

52.7.3 The spill of 29 August 2008 is described as being on the 28" Pipeline, and would therefore not have given rise to a need to isolate the 24" Pipeline;

52.7.4 According to the UNEP data, there was therefore no immediate need to isolate the 24" Pipeline on 3 October 2008 apart from the spill of 4 August 2008 which was not repaired before 8 November 2011 in any event. If the data provided to UNEP by SPDC is not correct, this

shows the unreliability and inconsistency of SPDC's reporting of its oil spills.

52.8 It is, further, highly unlikely that SPDC would choose to positively isolate the 24" Pipeline from 3 October to 29 October 2008, i.e. for a period of 26 days, for the following reasons:

52.8.1 In 2011, SPDC had to declare a *force majeure* in respect of its petrol loadings for June due to the TNP being shut down for two days. This declaration was to limit its liabilities to the shippers of the oil from the Bonny Terminal. Likewise, in 2010, the TNP was shut down between 5 and 7 May causing SPDC to declare a *force majeure*. By reference to SPDC's own record of declaring *force majeure* for two day interruptions, positive isolation for a 26 day period in October 2008 is not a step which SPDC would readily take.

52.8.2 It is the Claimants' case (subject to further disclosure) that switching the flow of oil from the 24" Pipeline to the 28" Pipeline could not make up the shortfall caused by the positive isolation of the 24" Pipeline because the 28" Pipeline did not have the capacity to take the additional load.

52.9 SPDC's previous statements on the First Oil Spill are at odds with its present case that the pipeline was isolated from 3 to 29 October 2008:

52.9.1 On 23 November 2008, BBC reporter Sue Lloyd Roberts visited Bodo. On 25 November 2008, she met with Basil Omiyi, the then CEO of SPDC, to report on the First Oil Spill. At that time, SPDC gave no indication that isolation had taken place on the 24" Pipeline in relation

to the First Oil Spill. Rather, in an email from SPDC's press office sent on a date between 27 November and 14 December 2008, SPDC claimed that its personnel had been denied access to Bodo until 7 November 2008 due to unrest in K-Dere. This last statement is at odds with SPDC's present case that it had access to its facilities to effect isolation on 3 October 2008, and again on 29 October 2008 to restore flow to the 24" Pipeline. Further, Bodo is accessed without passing through K-Dere, so the relevance of unrest in K-Dere is not understood.

52.9.2 SPDC failed to mention this key aspect of its case in these proceedings in its response to the Letter of Claim, or indeed in the 13 months between the issue of the claim and service of the Defence.

SPDC's purported confusion as to which pipeline was leaking

53 The Claimants aver that SPDC's contention in paragraph ~~3736~~36.8 of the Defence that it believed on 29 October 2008 that the First Oil Spill was on the 28" Pipeline and therefore re-opened the 24" Pipeline is not credible. It is averred that if this contention is correct, and SPDC staff were confused as to which pipeline was leaking, this plainly demonstrates the inadequacy of SPDC's leak detection and oil response systems:

53.1 SPDC says it received notice of a spill on the 24" Pipeline on 5 October 2008 (paragraph ~~3736~~36.4 of the Defence);

53.2 On 6 October 2008, a local surveillance team confirmed the existence of the spill (paragraph ~~3736~~36.5 of the Defence). The 24" Pipeline and the 28" Pipeline are situated 10 metres apart. The pipelines are underground but at ground level there is a right of

way, a channel, making the scrutiny of the pipelines easier for the surveillance contractors. A photograph of the two rights of way is attached. For any worker familiar with the TNP in their local area, it is impossible to mistake the course of the two pipelines;

53.3 In the area of the First Oil Spill, the 24" and 28" Pipelines run parallel to each other and the Gitto Road. The 24" is the eastern-most pipeline, closest to the Gitto Road. The site of the bubbling oil seen in the video footage of October 2008 shows that there was not enough room between the source of the bubbling and the Gitto Road for there to be another pipeline between the two. Therefore it is nearly impossible to mistake the two pipelines, particularly at the First Oil Spill site where they run parallel to the Gitto road;

53.4 On or around 9 October 2008, SPDC submitted a Form 'A' Oil Spill / Leak Notification Report for the First Oil Spill to NOSDRA, indicating that the spill was on the 24" Pipeline (paragraph ~~3736~~.12(c) of the Defence);

53.5 No amended or substitute Form 'A' Oil Spill / Leak Notification Report for the First Oil Spill appears to have been provided to NOSDRA indicating that the spill was at any time thought to be on the 28" Pipeline. SPDC has failed to answer a direct question on this point in the Bodo Individual RRFIs (Question 22.4);

53.6 In the course of October 2008, SPDC engaged a contractor (Lawrence Bale) to contain the spill, and would therefore have provided instructions as to the location of the spill (paragraph ~~3736~~.7 of the Defence). The Project Execution Reports completed by the said contractor refer to the 'site name' as "24" Bomu-Bonny T/L @ Tekuru Island Bodo City." SPDC's

contractor therefore clearly understood the spill to be on the 24" Pipeline.

53.7 Further, the Project Execution Reports note the 'work start date' as 30 October 2008, and the 'work end date' as 19 November 2008. In effect, SPDC had contractors on the site of the First Oil Spill throughout the period in which it purports to have been confused as to which pipeline the spill was on, and during which, on its own case, the 24" Pipeline had been re-opened. The contractors would therefore have been able to notify SPDC that oil was still spewing from the site.

53.8 SPDC has offered no explanation in its Defence as to why, by 29 October 2008, it came to an "*understanding that the First Oil Spill was from the 28" Pipeline*" instead of the 24" Pipeline, and again failed to provide an explanation in the Bodo Individual RRFIs when explicitly asked to do so (Bodo Individual RRFIs Questions 22.1 and 22.2).

53.9 Further, on SPDC's own admission, "*No steps were taken and no overflight took place*" to verify the location of the spill after changing its understanding as to which pipeline the spill was from and before re-opening the 24" Pipeline (Bodo Individual RRFIs Question 22.3).

53.10 Even on SPDC's own case, from the date of the reopening of the 24" Pipeline on 29 October, oil would have been pumping out of the pipeline at thousands of barrels a day. This would have carried on for 9-10 days. Despite the foregoing, no record of this is made, no report by the surveillance contractors is issued, no *force majeure* is declared.

54 SPDC's case that the 24" Pipeline was effectively isolated in October 2008 is not accepted. If, contrary to the foregoing, SPDC's purported

confusion as to which pipeline the leak was on is correct then it further demonstrates the inadequacy of SPDC's running of the TNP. Such an error could only have been possible in the absence of any effective checks by SPDC staff as to where the spill was taking place, whether isolation had been effective in stemming the spill, and whether it was safe to re-open the pipeline. If SPDC's surveillance programme had at all been effective, SPDC would have received early notice of its error.

Amount of oil spilled

55 As to paragraph 4140.2(a)(ii) of the Defence in which SPDC questions the Claimants' method of calculating the daily spillage rate for the First Oil Spill:

55.1 It is the Claimants' case that flow rate can be accurately assessed in this instance by Particle Image Velocimetry ("PIV"), including by tracking large oil droplets not least in conjunction with the modelling of jet height.

56 As to the factors set out in paragraph 4140.2(b) of the Defence,

56.1 It is denied that no further oil could pass through the 24" Pipeline when SPDC purported to isolate it from 3 to 29 October 2008, as contended in sub-paragraph (i). For the reasons set out in paragraph 52.1.2 above, the video footage taken on or about 15 October 2008 shows that the pipeline was operating under pressure during this period.

56.2 SPDC avers that the reason that oil could still be seen bubbling to the surface on footage taken on 15 October 2008 was by reason of variations in the gradient of the pipeline (Bodo Individual RRFIs Question 18.3). As set out above, oil could not continue bubbling to the surface merely under the gravitational

pressure of oil flowing by reason of variations in the gradient of the pipeline.

56.3 The contention in sub-paragraph (ii) that the earth and concrete coating around the 24" Pipeline would have reduced the amount of oil escaping from the pipeline other than marginally, when the pipeline was operating under its normal pressure is disputed. It is averred:

56.3.1 Cement is a material with tremendous strength in compression, but very low strength in tension. The purpose of the concrete casing surrounding the pipelines is not the containment of oil, but the protection of the pipeline from damage and corrosion. Oil blasting out of a broken pipe would put the cement in tension and erode it rapidly. Once the oil had cleared a path through the concrete casing and mud such as to be sighted as a spill, the remnants of concrete coating around the spill point would do little to affect the flow rate;

56.3.2 The burial of the pipeline under saturated mud would only have a marginal impact in reducing the spillage rate from a spill point. Once the oil had cleared a path through mud such that it was visible and could be seen bubbling under water vigorously at high tide, there would be an easy, unimpeded path to the surface permitting a high spillage rate.

56.4 It is denied that the hole in the welding would have been significantly smaller when the oil spill was first noticed than when it was clamped on 7 November 2008, as contended in sub-paragraph (iii). The hole would have grown rapidly once opened up because its small diameter would create high levels of contact with the moving oil, which in turn would quickly erode the

hole to a much larger size. Paragraph 48.3 is repeated in stating that on SPDC's case as to how the spill point formed, any such pinholes would not arise and certainly would not have continued to erode in circumstances where the pipeline had been isolated and depressurised.

56.5 It is denied that previous spills during August and October 2008 would have reduced the amount of oil in the pipelines, as contended in sub-paragraph (iv), on the basis that:

56.5.1 The spills of 24 and 29 August 2008 have a combined spill volume of 151 barrels (according to figures set out by SPDC in Appendix II), as against a normal throughput of oil in the 24" Pipeline of some 88,000 barrels a day (Bodo Individual RRFI Question 7.4). Any reduction as a result of these spills would have been minute. The spill of 4 August 2008 does not have an estimated spill volume, such that it is unclear how SPDC contends that this spill reduced the spillage from the First Oil Spill.

56.5.2 The spill of 2 October 2008 occurred several kilometres downstream of the First Oil Spill, and therefore would not have significantly impacted the flow rate further north.

56.6 SPDC's contemporaneous documentation supports that the Second Oil Spill resulted in a large volume of oil being lost daily. SPDC's Corporate Pipeline Incidents Update ('CPIU') for 14 February 2009 assesses the impact of the Second Oil Spill as circa 13MPOPD (meaning thirteen thousand barrels of oil per day) (document 4651).

57 SPDC refers ~~SPDC's assertion~~ in paragraph 41 40.2(c) of the Defence ~~that to~~ the assessment by the joint investigation team as to the total

amount of oil spilled ~~and concedes at~~ in paragraph 40.4 of the Defence ~~that the total amount of oil released exceeded that found by the JIV team is a reliable one, is rejected. The JIV findings are rejected for the following reasons:~~

57.1 The Direct Assessment Method ("DAM"), used to assess the amount of oil spilled, is a method for assessing the oil present at the spill site on the day that the JIV is carried out. The DAM may not be an unreasonable method for determining the extent of spills on land but in the context of spills on the waterways of Bodo it is totally inappropriate because it does not take into account the previous release of oil during the course of previous tidal cycles, as admitted by SPDC (Bodo Individual RRFIs Question 30.2(i)). On the Bodo waterways the tide comes in every 12 hours and then goes out every 12 hours. The tide would, therefore, take away from the spill site the great majority of oil that had leaked out since the previous tide. The DAM would, therefore, only ever be able to consider the amount of oil that had leaked out over the previous few hours. As such, the DAM is not an appropriate method to be applied to oil spills which have taken place over some time, particularly not to those that have taken place on or near water, where oil will be carried away by tidal patterns.

57.2 As set out in further detail in paragraph 42.2 above, most of the spills in or around Bodo prior to 2008 occurred on land. The Claimants accept that the DAM may have been a reasonable method for assessing spills on land which spanned only a few days.

57.3 However, the DAM was not an appropriate or reliable method of assessing on 7 November 2008 the amount of oil spilled since 5 October 2008 (on SPDC's case), let alone since 28 August 2008

(on the Claimants' case), particularly given the location of the First Oil Spill in an area affected by tidal waters.

- 57.4 Quantities of oil spilled over a number of days and tidal cycles are more accurately assessed from the records of the pipeline flow monitoring systems and leak detection systems. However, on SPDC's own admission, the TNP is not equipped with flow monitoring systems or leak detection systems (Bodo Individual RRFIs Questions 6.2 and 9.1) and no leak detection system was used to determine spill volume (Bodo Individual RRFIs Question 30.4).
- 57.5 Further, the DAM does not take into account the amount of oil which has been removed in the course of any containment exercise, as admitted by SPDC (Bodo Individual RRFIs Question 30.2 (ii)).
- 57.6 The DAM measures the volume of oil spill by assessing the area occupied by oil and average depth of the oil infiltration on land or of the oil sheen on the water. There are issues both as to the assessment of the area and depth of oil in the application of the DAM to the 2008 Oil Spills.
- 57.7 As to the assessment of area covered by oil, it is determined by reference to where the oil can be seen, i.e. where there are black or oily traces. This is inappropriate in deltaic and mangrove environments where (i) high sedimentation rates will quickly embed oil into the substrate where it not visible, (ii) mangroves are difficult of access, physically intricate and adapted to filter and trap excess sediment, or in this case oil, which cannot be seen from the fringes of the forest, and (iii) oil is quickly carried away by daily tidal cycles with a maximum range of 2 metres in depth of water. The DAM is generally more suited to oil spills on land where the perimeter of the spill is not in flux,

and therefore can be seen and defined. As admitted by SPDC, in DAM methodology, *“the calculations do not include any measure in relation to the tidal regime”* (Bodo Individual RRFIs Question 30.2 (ii)).

57.8 As to the assessment of the depth of oil infiltration, the JIV reports calculating the volume of oil spilled during the 2008 Oil Spills have relied on questionable estimates of the depth of oil infiltration:

57.8.1 For the First Oil Spill, the depth of oil infiltration in the soil was estimated to be 4cm, which is unrealistic for a spill which even on SPDC's case began on 5 October 2008 and was clamped on 8 November 2008, with the 24" Pipeline being under operating pressure between 29 October and 8 November 2008. Further, there was no assessment of the volume of oil in the water or carried by water.

57.8.2 For the Second Oil Spill, the depth of oil infiltration was estimated to be 0.018mm which would be invisible to the human eye. The depth of free phase oil on the water (as distinct from the oil sheen on the water) was estimated to be 0.0009 mm.

57.8.3 The results produced by the DAM are an unreliable indication of the amount of oil spilled, both by reason of the DAM methodology itself, as well as in the way it was applied to the 2008 Oil Spills.

58 The results of the DAM assessment are at odds with SPDC's own overflight conducted in December 2008 which noted that the impacted area measured 2,100 hectares (document 3769) which is yet a further indication of the unreliability of this method.

(D) EXTENT OF THE SECOND SPILL

Amount of oil spilled

59 SPDC's contention in paragraph 44.3 and 46~~45~~.2 of the Defence that the 24" Pipeline was isolated on 9 December 2008 and re-opened on 21 February 2009 (Bodo Individual RRFIs Question 32.5), such that no further oil would have passed into the affected section of the pipeline, is denied. It is averred that the 24" Pipeline was in fact not effectively isolated on 9 December 2008, but on or after 13 February 2009 (if at all), on the basis that:

59.1 Estimated flow volumes on the TNP are not consistent with a period of isolation from 9 December 2008 to 21 February 2009. Appendix II to the Bodo Individual RRFIs (as updated by SPDC on 10 April 2013) shows the throughput of oil at the Bomu Manifold every day from 1 October 2008 to 28 February 2009. It is apparent from Bodo Individual RRFI Appendix II (and Appendix B to this Reply) that, whereas SPDC claims the 24" Pipeline was isolated on 8 December 2008, the oil flow volume actually went up, albeit marginally, on 9-10 December 2008 when compared with the position in the 2-3 days before the alleged isolation. The flow of oil remained much the same during December and January 2009. In February 2009, the average level of oil throughput went down to below 200,000 barrels a day for the first time, and steadily reduced down to 100,000 between 6 and 12 February. On 13 February there was a dramatic reduction to around 39,000 barrels a day, at which level it remained until 17 February and then on 18 February it increased

to 110,000 barrels and then climbed up to its much higher levels in the following days.

59.2 This pattern of oil throughput does not support SPDC's contention that the oil in the 24" Pipeline was effectively isolated on 9 December 2008. Subject to further disclosure the schedule supports the Claimants' contention that the pipeline may well have been effectively isolated at times between 13 and 17 February 2009.

59.3 Photographs taken in the course of January 2009 show oil bubbling on the surface of the water at the site of the Second Oil Spill. This supports the Claimants' contention that the 24" Pipeline had not been effectively isolated at least prior to the date of the taking of the photographs in the course of January 2009.

59.4 An internal report (document 23356) states that the leak location was visited on 4 February 2009 and "leak pressure was high". This is inconsistent with SPDC's claim that this was an isolated, depressurised section of the pipeline.

~~59.4~~59.5 At a meeting on 13 February 2009 between SPDC and representatives of the Bodo Community, much of the discussion was regarding the leak that was still on-going at the time and as a result SPDC agreed that the "*isolation of valves*" would take place on 14 February 2009, followed by clamping of the leak on 16 February 2009. Contrary to SPDC's averment that the 24" Pipeline was isolated from 9 December 2009 to 21 February 2009, it is clear that, at least until the meeting on 13 February 2009 when this agreement was made, the 24" Pipeline was not effectively isolated.

On 18 February 2008, an SPDC internal email confirmed that *"isolation... is not effective due to a defective valve"* (document 3847). Even after SPDC made further attempts at isolation from mid-February 2009, the JIV team arrived at the spill site to find that *"crude oil was still bubbling at the spill point impacting adjoining terrain"* (document 1629).

59.6 SPDC avers in paragraph 33.3(b) and 34.2(b) that the leaking section of the pipeline was *"shut down"* or *"isolated"* due to Bonny Flow Station, to the south and downstream of the Second Oil Spill, being shut in on 9 December 2008. Internal reports (document 2692) acknowledge that in addition to any upstream isolation at Bomu Manifold, the Bonny Flow Station shutdown was required to *"control backpressure to the leak site"*. However, SPDC email exchanges (document 2971) show a request for Bonny Flow Station to be re-opened again on 13 December 2008. The flow station appears to remain open until a further email exchange (document 3847) shows a request on 18 February 2009 for Bonny Flow Station to be closed with a view to effecting repairs the following day, including a comment that *"positive isolation [is] a pre-condition for PtW [Permit to work]"*. This is in addition to an email on 13 February (document 3811) stating the need for *"further isolation"* prior to JIV repairs. Such requests would only be made if oil continued to leak from the spill point, preventing safe access for repairs. It follows that any purported shut down, isolation or other procedure actioned on 9 December 2008 had not been effective in stopping the flow of oil from the leak. Indeed, despite such further attempts at isolation in mid-February, the JIV team arrived at the spill site to find that *"crude oil was still bubbling at the spill point impacting adjoining terrain"* (document 1629).

59.7 These documents highlight the crucial difference between simple *'isolation'* at one location on the pipeline and *'positive isolation'*,

which requires isolation immediately upstream and downstream of a leak and verification as to the effectiveness of the isolation. Isolation at one point on the pipeline will not stop the flow of oil from the leak because positive isolation is required for this. To achieve positive isolation, SPDC would have needed to close and achieve an effective seal on the valves at both the Bomu Manifold and Patricks Waterside upstream of the leak. In addition, to achieve positive isolation, SPDC would have needed to close either the valves at the Opobo Channel location or at both the Bonny Flow Station and Bonny Terminal locations downstream of the leak. SPDC failed to do so. Indeed, SPDC did not attempt to close valves at the Patrick Waterside and Opobo Channel locations until 13 February 2009. SPDC's failure to positively isolate the pipeline meant that oil continued to flow from the leak for the duration of the spills despite the purported isolation carried out by SPDC at Bomu Manifold.

59.8 The effectiveness of any isolation during the leak period is further brought into question by internal documentation describing operational issues with valves in locations upstream and downstream of the Second Oil Spill leak point where isolation purportedly took place. An email on 5 February 2009 (document 4555) describes the need for repair of "leaking valves at Bomu Manifold" and an email dated 9 February (document 4573) describes in further detail the need for "evacuation of crude, valve servicing, rectification of all leaking points [and] replacement of all seals on the barrel door" at Bomu Manifold, where upstream isolation is said to have been effected. In relation to any attempt at downstream isolation, an internal email dated 18 February states "We have confirmed that isolation at the Opobo Channel BVS is not effective due to defective valve".

~~59.559.9~~ Further, for the reasons set out in paragraph 52.8 above, it is unlikely that SPDC would choose to isolate the 24" Pipeline for a period of 75 days as claimed.

60 As to the calculation of volume of oil found by the JIV Team to have been spilled, referred to in paragraph ~~456.43~~ in the Defence, it is denied that the assessment is a reliable indication of the volume of oil spilled. The Direct Assessment Method used was not an appropriate or reliable method of assessment for the reasons set out in paragraph 57 above. The Claimants note that the finding of the JIV team areis no longer relied on by SPDC in its Defence (paragraph 45.3(b)).

61 Further, on SPDC's own admission, the assessed oil spill volume for the Second Oil Spill did not include any allowance for the oil recovered before the JIV took place as would be normal practice (Bodo Individual RRFIs Question 30.2 (ii)).

(E) ASSESSMENT OF THE EXTENT OF DAMAGE

Tidal flows

62 As to the contention in paragraph ~~4140.3~~ of the Defence that net tidal flow is downstream, it is averred:

62.1 Tidal flows are only marginally downstream when there is high rainfall inland. The vast majority of the water irrigating the Delta region comes from tidal flows, which submerge the entire area of mangroves under water during the twice-daily tidal cycle. The tidal cycles would have contributed to a wide dispersal of spilled oil throughout the mangrove mud swamps.

62.2 Further, high rates of sedimentation ensure that oil penetrates quickly and deeply into the muddy sediments of the affected

areas, and is not washed away with the downstream tide. Oil persistence in similar sediments has been observed for over 20 years at other spills. Oil in sediments when it is re-suspended from the substrate, and oil on the surface of the surrounding area, is a long-term source of repeated oiling and chronic re-contamination of coastal communities. Mangrove mud swamps effectively act as long-term reservoirs of oil, which is the reason why this ecosystem is so uniquely sensitive to oil spills. There will be ongoing environmental degradation over decades to come unless and until a proper clean-up and remediation process is put in place by SPDC. Mangroves and their associated biological community will not be able to recover until the level of oil contamination is reduced.

- 62.3 The oil spilled has a high quantity of toxic (light) components that severely affect organisms and plants in low concentrations. The extensive death of mangroves, Nypa palm and algae, and all associated organisms (crabs, snails, worms, etc.) that once made up this healthy habitat is indicative of both the toxicity and the large amount of oil spilled.

The Geomatics Team survey

- 63 As to the findings of SPDC's Geomatics Team survey relied on in paragraph ~~44~~ 43.1(a) of the Defence, it is averred:

- 63.1 The purported survey was carried out during the JIV. None of the community witnesses recall this kind of environmental assessment being carried out on the days of the JIV. The focus of the JIV was to clamp the spill and to assess its cause. SPDC staff did not travel to other parts of Bodo or leave the vicinity of the spill site in the course of the JIV, such that it is entirely unlikely that they could have carried out any comprehensive assessment of the full area impacted.

- 63.2 The Geomatics team found that the total spill volume for the First Oil Spill of 1,640.63 bbls had heavily impacted 3.4 hectares. In this assessment one barrel impacted 0.0021 hectares.
- 63.3 By way of comparison, the post-7 December 2008 spills listed in Appendix I of the Bodo Individual RRFIs, together add up to a release of 3,827.2 bbls into the environment. SPDC avers that 3,827.2 bbls stemming from those spills impacted 9,230 hectares (Bodo Individual RRFIs Question 38.2 (vii)). In this assessment one barrel impacted 2.4 hectares.
- 63.4 The findings of SPDC's Geomatics Team survey suggest, therefore, that the oil released from the First Oil Spill had an impact per barrel 1,400 times less than the impact of all the other recognised oil spills. These findings are out of all proportion with SPDC's finding as to the area impacted by the post-7 December 2008 spills, such that at least one or both findings are unreliable.

63.5 The concession in paragraphs 7.4, 43.2 and 47.3 of the Defence that the extent of impact of the 2008 Oil Spills exceeded that assessed by SPDC contemporaneously is noted.

Pre Clean Up Assessments

- 64 As to the finding in the Pre Clean Up Assessment carried out in August 2009 ("the 2009 PCA"), as described in paragraphs 63 and 64 ~~and 65~~ of the Defence, that the area of impact for both the 2008 Oil Spills covered 36 hectares, it is averred that:

- 64.1 There is no indication as to the location of the impacted area of 36 hectares;

- 64.2 No methodology or explanation had been advanced as to how this area was measured and identified;
- 64.3 No methodology or explanation has been advanced as to how the investigating team distinguished between damage caused by the 2008 Oil Spills and damage caused by third parties, which release oil from the same source;
- 64.4 The report contains no sampling results, mapping results, and only a few photographs;
- 64.5 The report incorrectly states that communities upstream from Bodo could not be affected because the stream is one-directional. This reveals a basic misunderstanding of the nature of the terrain and the tidal regime.
- 64.6 This finding is at odds with the contemporaneous findings of SPDC following the 2008 Oil Spills:
- 64.6.1 SPDC staff who conducted an overflight on 8 December 2008 (several weeks before the Second Oil Spill was clamped) estimated that the area of land impacted by the oil spills was 2,100 hectares (document 3769);
- 64.6.2 An SPDC inter-office memo dated 16 March 2009 describes the 2008 Oil Spills as “*massive spills*” (document 1642);
- 64.6.3 A report on the Pre Clean-Up Assessment of 1-3 July 2009 dated 6 July 2009 stated that “*A vast area of dead mangrove was also mapped*” (document 1293).

65 As to the 2009 PCA, it is averred:

- 65.1 On a date between mid-2009 and August 2009, a first scoping exercise was carried out by SPDC in conjunction with members of the community. The group travelled by boat, whilst an SPDC officer filmed the exercise to record the extent of the spills. They followed the oil to the borders of Bodo in all directions, extending to other communities such as Andoni, many kilometres to the east of Bodo.
- 65.2 Some months later, SPDC staff returned to Bodo in order to carry out a second scoping exercise. SPDC staff indicated that the findings of the first scoping exercise had been condemned, and that a second scoping exercise was being carried out with the purpose of finding a smaller impact area. The 2009 PCA as published is based on this second, intentionally narrower scoping exercise.
- 65.3 The findings set out in the 2009 PCA are inconsistent with the observations made in the course of the first, more extensive scoping exercise. Had the data of the first scoping exercise been retained, the findings of the PCA would have revealed a much wider area of impact.
- 65.4 The 2009 PCA failed in its basic task of informing the process of cleaning up as the report was published in September 2009 when contractors had already been engaged to start to the process of cleaning up on 28 August 2009.

66 As to the contention in paragraph 6564.3 of the Defence that the 2009 PCA was signed by community members this is wholly misleading:

- 66.1 The dates of the signatures make it clear that they were collected on the day, and only served to confirm that the individuals in questions were in attendance, in the same way that representatives from SPDC, and various government

agencies named as NOSDRA, the DPR and SME, signed to confirm their attendance for each day of the exercise.

66.2 The 2009 PCA was carried out over several days from 25 to 28 August 2009. The signatures are dated on those dates.

66.3 The typed report is dated the 8 and 10 September 2009, i.e. some 10-14 days following the assessment trip. None of the community representatives who signed the attendance sheet were shown the typed report or indeed any findings. It was never suggested to the community representatives that they had a role to play in endorsing the findings of the report.

67 As to the contention in paragraphs ~~64~~63.2 and ~~64~~63.3 of the Defence that a Pre-Clean Up Assessment was attempted in May and July 2009, the Claimants aver that this is consistent with the point that a first, broader scoping exercise was carried out and subsequently abandoned, as pleaded in paragraph 65 above. See further paragraphs 77 to 81 ~~76 to 80~~ below.

(F) ACCESS

Access to the First Oil Spill

68 As to the allegations at paragraph ~~37~~36 of the Defence, the Claimants aver that SPDC was not denied or refused access to the spill site after the First Oil Spill:

68.1 The Bodo community did not impede access to the first spill site. The Bodo Community was anxious for SPDC to repair the leaks and promptly granted SPDC the Freedom to Operate ('FTO') in Bodo on four occasions in less than a month. On 6 October 2008 and again on 8 October 2008, SPDC had secured FTO in Bodo as confirmed in an SPDC email dated 4 November 2008

(SPDC's Tranche 1 disclosure at Tab 1). On 20 October 2008, the Bodo community granted SPDC further FTO in order to access the spill site to repair the leak. The Bodo community again promptly granted FTO to SPDC when this was next requested by SPDC on or around 1 November 2008. At no point did the Bodo community refuse or cancel FTO.

- 68.2 Contrary to SPDC's pleaded case, an SPDC repair crew visited the site of the First Oil Spill between 8 and 14 October 2008 (according to an SPDC chronology and SPDC inter-office memorandum dated 21 October 2008 (document numbers 11679 and 12825)). Despite gaining access to the leak site and conducting an assessment of the site, no action was taken by SPDC's team to clamp or clean up the spill and it took a further month before the leak was repaired. SPDC was able to, and did, access the spill site at Bodo after the First Oil Spill.
- 68.3 Furthermore, throughout the period of the First Oil Spill, SPDC's surveillance contractors had access to the spill site. SPDC also engaged a contractor to contain the spill with a "work start date" of 30 October 2008. Any access or security issues were not sufficiently serious to prevent SPDC, its servants or agents from working at the site over a substantial period of time during the First Oil Spill.
- 68.4 On SPDC's case, prior to 11 October 2008, SPDC believed that the First Oil Spill was occurring on the 24" pipeline, which it alleges was isolated. FTO was granted by the Bodo community on 6 and 8 October 2008. It is not clear why SPDC did not attend to the First Oil Spill at this point, particularly as an SPDC team did access the spill site during this period.
- 68.5 On SPDC's case, on or around 11 October 2008, SPDC changed its understanding of the source of the First Oil Spill and incorrectly determined that the leak was now on the 28" pipeline.

SPDC has provided no explanation for the basis of this error, which is considered in more detail at paragraphs 53 and 54 above. At the same time, a fire was occurring on the supposedly isolated 24" pipeline in neighbouring K-Dere. On SPDC's own case, therefore, from about 11 October 2008, SPDC understood the 24" pipeline to be on fire at K-Dere and the 28" pipeline to have a leak at Bodo, and yet continued to pump oil through the Bomu manifold down the 28" pipeline to the Bonny Terminal.

- 68.6 An email of 15 October 2008 from SPDC to Royal Dutch Shell (document number 3720) identified three reasons for the delay in attending to the spill: the inability to source an appropriate swamp buggy; the fact that the First Oil Spill was on the 28" line and the 24" line could not be used as an alternative because it was on fire; and that SPDC could not access K-Dere to put out the fire. There is no suggestion that access or security issues at Bodo were responsible for the delay.
- 68.7 Instead, it is clear that from around 11 October 2008, SPDC was not prepared to go to repair the leak at Bodo until the 28" pipeline (on which SPDC believed the leak was occurring) was isolated. SPDC refused to isolate the 28" pipeline whilst the 24" pipeline was also isolated due to the spill at K-Dere. The Claimants aver that SPDC's delay in attending the spill site from around 11 October 2008 was because SPDC refused to shut down both pipelines simultaneously. This is supported by (inter alia) an internal SPDC email emphasising the critical nature of the TNP which states "*sustenance/stability via the tnp is key for our survival*" (document 3743) and SPDC's CPIU dated 17 October 2008 which states that "[Bodo repairs] dependent on close of K-dere leak" (document 2742).
- 68.8 On 20 October 2008, the Bodo community again granted SPDC FTO to access the site to repair the First Oil Spill.

68.9 On 28 October 2008, the fire at K-Dere was extinguished and the leak on the 24" pipeline at K-Dere was finally repaired, for which SPDC required access to K-Dere. On 29 October 2008, SPDC's CPIU stated that repairs in Bodo were planned for that same day (29 October 2008). Access issues were not mentioned.

68.10 At this point, when it was sought, access clearance was again promptly granted by the Bodo community to SPDC to commence repairs at the site of the First Oil Spill (on or around 1 November 2008). There was a further unexplained delay before SPDC carried out the repairs at the first spill site on 8 November 2008.

68.11 At paragraph ~~3736~~³⁷³⁶.6 of the Defence, SPDC avers that it was unable to gain access to the site of the First Oil Spill because of the actions of the members of the K-Dere Community and/or their representatives and/or third parties in refusing to allow SPDC, its servants or agents to carry out necessary repairs on the 24" pipeline in respect of a spill at K-Dere. The Claimants aver that even if SPDC was denied access to K-Dere (which SPDC is required to prove), this had no impact on SPDC's ability to access Bodo. Bodo is accessed without passing through K-Dere, so the relevance of access to K-Dere is not understood.

68.12 The Claimants aver that the failure to repair the First Oil Spill promptly cannot be attributed to access issues in Bodo. The Claimants aver that the delay was the result of SPDC's failure to clamp the pipeline when its staff attended the spill point on 8-14 October 2008, and SPDC's subsequent reluctance to shut down both TNP pipelines simultaneously, even for a short period whilst repairs were effected.

Access to the Second Oil Spill

69 As to the allegations in paragraph ~~45-44~~ of the Defence, the Claimants aver that SPDC was not denied or refused access to the spill site after the Second Oil Spill:

69.1 SPDC oil spill response teams were mobilised to the site of the Second Oil Spill on 9, 13 and 18 December 2008. The SPDC teams were unable to access the spill site on each of these three occasions because they attempted to approach the site in an inappropriate boat. As to the specific contention in paragraph ~~45~~44.4(c) of the Amended Defence that SPDC could not access the spill site on 18 December 2008 because its boats could not navigate the shallow waters of mangrove, it is averred:

69.1.1 The site of the Second Oil Spill can be accessed at all stages of the tide, including low tide. The site must be approached by boat. It is nearly always possible to travel up the creek which leads to the mud-covered right of way of the pipeline. Once on the right of way, travel by foot or by swamp buggy is required regardless of the tide. As such, there is no reason why employees of SPDC could not access the site on the occasion of their visit.

69.1.2 Further, the tide changes twice a day in Bodo, such that even if they were having problems with access the SPDC employees could simply have returned a little later in the day at high tide.

69.1.3 This was the third occasion on which SPDC attempted (and failed) to access the site of the Second Spill by boat. By this stage, SPDC should have been aware of the transport requirements to access the spill site and have taken appropriate measures.

69.2 Between 11 and 16 December 2008, SPDC's further attempts to respond to the spill were unsuccessful for reasons completely independent of the Bodo Community. Some of these attempts to access the spill site were delayed due to difficulties with the JTF and lack of fuel. Further, there was a general SPDC policy in place not to attend any spill sites whilst a review of all repair and oil recovery work procedures was occurring following the pipeline explosion at Iriama on 11 November 2008 (as is stated in all of SPDC's CPIUs from 11 to 16 December 2009). The delays in attending to the Second Oil Spill were not due to access difficulties or because of the actions of the Bodo community.

69.3 On the basis of the information presently in the Claimants' possession prior to further disclosure herein, the Claimants aver that from mid-December 2008 until mid-January 2009, SPDC did not make any requests for FTO or take any significant action to respond to, repair or clean up the spill. On 19 January 2009, FTO at the community level for recovery by a local contractor was secured and contractors commenced recovery of oil.

69.4 SPDC requested and was granted FTO on or around 2 February 2009 and intended to carry out the JIV on that date. However, SPDC failed to secure a security escort for the JIV, which resulted in further postponement until 10 February 2009.

69.469.5 The Bodo Community was anxious for both of the 2008 Oil Spills to be clamped as soon as possible. Community pleas for SPDC to clamp the Second Oil Spill were on-going in early 2009 and correspondence to that effect culminated in a series of meetings in February 2009. During these meetings SPDC praised the people of Bodo for their co-operation and pledged to go in to the community to "further" isolate and repair the pipeline. The minutes of the meeting of 11 February 2009 recorded that

SPDC had sent a team to the spill site the week before, apparently with no access issues. At a subsequent meeting, it was agreed that repair of the pipeline should take place on 16 February, but this repair did not occur until 20 February.

~~69.569.6~~ SPDC avers at paragraph 44.4(d) of the Defence that SPDC was unable to effect “further isolation” because its isolation crew were prevented from accessing the relevant site by unknown third parties. This alleged incident took place at the Opobo Channel Block Valve Station (“BVS”), which is located in Bonny LGA, outside of Bodo in the creeks to the south of the community. The Claimants aver that the isolation valve at the Opobo Channel BVS was defective (as is confirmed by an SPDC email dated 18 February 2009 (document 3847)), and access to the valves would not have affected the extent of the isolation achievable on this segment of the TNP. The failure to isolate the pipeline at Opobo did not prevent SPDC clamping the spill a few days later, and is not relevant to the delay in responding to the Second Oil Spill. Further, the alleged incident took place in February 2009, shortly before the spill was finally clamped and many weeks after the spill had occurred.

- 70 As to the contention at paragraph ~~4544~~.4(a) of the Defence that SPDC’s contractors could not attend or were forced to leave the site of the Second Oil Spill on 9 and 10 December 2008 due to threats from members of the Bodo Community, it is denied that members of Bodo Community obstructed or threatened SPDC staff or contractors attending the site of the Second Oil Spill on 9 and 10 December 2008, or withheld access to the site until the said meetings in February 2009. As SPDC acknowledged in a letter to the Department for Petroleum Resources dated 10 December 2008 (document 20158), this incident involved Andoni community youths and was nothing to do with the Bodo Community. Furthermore, at a meeting between SPDC and the Bodo Community on 24 March 2009, SPDC accepted full responsibility

for the security incident in December 2008 on the grounds that they failed to properly brief one of their contractors. This was the only security incident raised either by SPDC or the Bodo Community at the meeting.

- 71 To the extent that there were access difficulties in attending to the Oil Spills (which the Claimants deny), the Claimants aver that these were foreseeable according to SPDC's account of the security situation in the wider Niger Delta. SPDC was aware of potential access and security challenges, yet SPDC failed to have procedures and systems in place to respond promptly to oil spills in the event that access difficulties arose.

(G) CONTAINMENT, CLEAN-UP AND REMEDIATION

Containment of the Oil Spills

- 72 As to the contention in paragraph ~~37~~36.7 of the Defence that SPDC engaged local contractors from the Bodo Community to contain the First Oil Spill and begin the task of cleaning up:

72.1 It is denied that the contractors engaged were from Bodo Community. As confirmed by SPDC's Bodo Individual RRFIs Question 20.1, the contracted companies were Alpha Drilling Services and Donoks Nigeria Ltd, both run by the same person, Lawrence Bale, who is not from or a resident of the Bodo Community.

72.2 The 'local contractors' in fact only amounted to one man, Lawrence Bale. He asked Chief Kottee, from the Bodo community, to supervise his work. This consisted in placing a boom in a small area of 2 or 3 square metres around the spill site and for the oil in that area to be removed. The purpose of

this exercise was to clear the immediate area around the spill site and make it safe for SPDC staff to operate in for the purpose of the JIV inspection. It was not an attempt to clean the area.

73 As to the contention in paragraph ~~37~~36.10 of the Defence that emergency containment and recovery work of the First Oil Spill was completed by two local contractors, Alpha Drilling Services and Donoks Nig. Ltd, and that the Project Execution Report was signed by Chief M. B. Kotte on 16 December 2008:

73.1 As set out above, the two contracted companies amounted to one man, Lawrence Bale. The Project Execution Reports (“PER”) produced for each company appear to have been completed by the same person, and the name of the “HSE officer” for each company is Lawrence Bale.

73.2 The PERs for both companies describe the ‘Work Start Date’ as 30 October 2008 and the ‘Work End Date’ as 19 November 2008. As such, the clean-up operation relied on by SPDC lasted 20 days.

73.3 The PERs for both companies specify that ‘Hand Bailer’ was the equipment used for recovery, the question offering the options of ‘Hand bailer / Pump / Skimmer’. The use of a hand bailer would have entailed manual scooping of oil into storage tanks.

73.4 The total amount of oil removed is described as being 225 bbls for Alpha Drilling Services and 75 bbls for Donoks Nig. Ltd, a total of 300 barrels. This is only a fraction of the oil spilled even on the Defence case. On the Claimants’ case it is less than 1% of the oil spilled during the First Oil Spill.

74 As to the assertion in paragraph ~~61~~60.1 of the Defence that SPDC took immediate steps to contain and recover free phase oil in the aftermath of the 2008 Oil Spills, it is averred:

74.1 In response to the First Oil Spill, SPDC's containment exercise did not begin until 30 October 2008, which is more than 2 months after the First Oil Spill was reported to SPDC on the Claimants' case and at least 3 weeks after on SPDC's case;

74.2 In response to the Second Oil Spill, SPDC's containment and recovery exercise did not begin until 19 January 2009. This is more than 5 weeks after this spill began.

75 As to SPDC's general averments, including in paragraph ~~61~~60 of the Defence, that SPDC was prevented from containing and recovering free phase oil by members of the Bodo community and/or their representatives, this is denied by the Claimants. See paragraphs 68 to 71 above.

76 As to the contention in paragraph 62 of the Defence that SPDC was prevented from gaining access to the 2008 Oil Spills sites during the period of March to May 2009 and/or obstructed in implementing the planned phase of clean-up:

76.1 It is averred that SPDC had FTO throughout the period of purported clean-up, including March to May 2009, or would have obtained it if sought. The Bodo Community was at all times eager for clean-up to take place as soon as possible;

76.2 It is denied as contended in paragraph 62.1 that access to the spill sites, grant of FTO, or any aspect of the clean-up was made conditional in March 2009 by the Bodo Community on delivery of relief materials. Notwithstanding the foregoing, it is averred that SPDC only approved the distribution of relief materials in May

2009, such that any delays in relation to the relief materials were caused by SPDC and not by any demands of the Bodo Community;

76.3 It is denied, as contended in paragraphs 62.2 and 62.3, that clean-up was delayed because of having to reach agreement with the Bodo community or obtain lists of contractors. SPDC made the beginning of clean-up conditional upon the carrying out of the PCA (which was itself delayed because of SPDC's failures particularised in paragraphs 78 and 79 below). This is supported by an SPDC internal email dated 17 April 2009 stating: "Nomination of contractors will come only after this Assessment exercise and should not constitute a hinderance [sic]." (document 1093) As such, it is denied that any conduct by the Bodo Community caused or contributed to any delay in the commencement and/or completion of the clean-up phase;

76.4 The purported "challenges" with contractors, relied on in paragraph 62.4 as a cause of further delay to the planned phased of clean-up in May 2009, are unparticularised. It is averred that any challenges were internal to SPDC. An internal SPDC email dated 12 May 2009 listed several action points including: "Fast track release of PO [Purchase Order] for Bodo contractors for clean up of Bodo spills".

Pre Clean Up Assessment (PCA)

7677 As to SPDC's averments in paragraph ~~6059~~.1 of the Defence that it carried out the clean-up and took reasonable steps to carry out the remediation of the areas impacted by the 2008 Oil Spills:

76-177.1 The PCA, which was supposed to underpin clean-up efforts, was commenced far too late and was fundamentally flawed for the reasons set out in paragraphs 64-67 above;

~~76.277.2~~ The basis for the clean-up was the JIV for the two spills, where the DAM method for determining the amount of oil spilled had been used. For the reasons given in paragraph 57 above, the DAM method is fundamentally inappropriate for spills in swamp areas and dramatically underestimated the amount of oil spilled by the two leaks. As a result SPDC put into operation a clean-up plan that was inadequate;

~~76.377.3~~ The quality of the work undertaken on the clean-up operation following the PCA was inappropriate in view of the scale and nature of the spilled oil;

~~76.477.4~~ Remediation was impossible until clean-up had properly been carried out;

~~76.577.5~~ To this day, a meaningful clean-up and remediation operation has not commenced in Bodo.

~~7778~~ As to the allegation at paragraph ~~64-63~~ of the Defence that members of the Community and/or their representatives were responsible for the delay in carrying out the PCA, the Claimants deny this. The Claimants aver that the delays were caused by SPDC's poor organisation of the PCA. In particular, the basic details of the boats and local guides required for the PCA had not been arranged, and SPDC had failed to consult with the Community about the contractors it intended to use.

~~7879~~ As to the contention in paragraph ~~6463.2~~ of the Defence that the PCA did not proceed on 15 May 2009 because certain communities were not ready to receive the SPDC team, Bodo was not among the communities who are alleged to have informed SPDC that they were not ready to receive the PCA team (Bodo Community RRFIs Question 30) and it was not necessary to pass through any of those communities to access Bodo. SPDC was not restricted from carrying out the PCA in

Bodo at this stage. Indeed, this is further evidence of how open and co-operative the Bodo community was in the aftermath of the Oil Spills.

7980 In July 2009, when SPDC next attempted to conduct the PCA, the failure to do so was due (inter alia) to the lack of suitable boats, the failure of persons from SPDC's Geomatics Department to attend the site when required to do so, a lack of co-operation from those on SPDC's Geomatics team (who refused to work unless they were allowed to leave early) and the non-attendance of the JTF (document 1293). The failure to conduct the PCA occurred despite the fact that between July and August 2009, the security situation in Bodo was such that SPDC approved visiting Bodo without a JTF escort.

8081 Irrespective of the causes of the delay in conducting the PCA, the Claimants aver that the PCA lacked any credibility or utility (for the reasons set out at paragraphs 64-67 above), and the Claimants therefore deny that any delays to the PCA (howsoever caused) are to blame for SPDC's continuing delay in carrying out clean-up and remediation.

Clean up

8482 As to the contention in paragraph 6362.6 of the Defence that the next phase of the clean up was completed for the 2008 Oil Spills by July 2009, it is averred:

84.182.1 Following the containment and recovery work set out above, no clean up was specifically carried out in relation to the First Oil Spill, albeit the impact of the spill was so widespread that the oil recovery exercise in relation to the Second Oil Spill may well have recovered some oil spilled in the First Oil Spill. Documents disclosed to date show that the clean up conducted in 2009 was targeted to the Second Oil Spill.

~~81.282.2~~ As for the Second Oil Spill, SPDC has clarified in Bodo Individual RRFIs Question 40.1(iii) that it began a containment and recovery exercise on 19 January 2009, rather than a clean up exercise. This was an emergency measure whilst the Second Oil Spill was ongoing. It is the Claimants' case that this lasted until early March 2009, only a few weeks after the Second Oil Spill was clamped. The contractors were asked to stop the containment and recovery exercise despite there being a considerable amount of oil still remaining. This is born out by figures provided by SPDC indicating that the total amount of oil collected was 1,125 barrels (Bodo Individual RRFIs Question 40.1(vii)), which is less than 1% of the total oil spilled from the Second Oil Spill on the Claimants' case, and less than half of the total oil spilled on SPDC's case. It is the Claimant's case that no purported clean-up exercise which followed could be effective in view of the amount of oil still to be recovered.

~~81.383~~ As to the contentions in paragraphs ~~64.4-64.7~~ ~~65.4-65.7~~ of the Defence that further contractors were engaged to continue clean-up work in August 2009, it is averred:

~~81.483.1~~ The contractors all describe the nature of the work carried out as follows: for 2 months from 29 August to 27 October 2009, the work consisted in bush clearing and weeding, and until 6 November 2009, it consisted of burning impacted vegetation. Work was suspended for 14 days from 7 to 21 November 2009 due to the expiry of pre-mobilisation certificates. For 11 days, from 22 November 2009 to 4 December 2009, the work consisted of the application of nutrients and flushing. The contractors demobilised on 4 December 2009.

~~81.583.2~~ The description of the works does not include removal or recovery of oil. This should have been the first step, or any work

in polluted sites would effectively stir up sediments and re-oil the area.

~~81.683.3~~ The clean-up work that was carried out by the contractors was only in response to the Second Oil Spill, as disclosed in documents received to date.

~~81.783.4~~ The Defendant did not conduct background checks on contractors to ensure they were suitably qualified, experienced and capable of conducting clean up work (Bodo Community RRFIs, Question 6).

~~81.883.5~~ The area that SPDC instructed the contractors to clean only totalled 27 hectares. This is only a fraction of the total area that, on the Claimants' case, was impacted by the 2008 Oil Spills. Further the area that was cleaned did not include the areas surrounding either the First or Second Oil Spill sites but was located at least 1km from the First Oil Spill and at least 2km from the Second Oil Spill site.

~~81.983.6~~ Further, the Claimants deny that SPDC can rely on project completion reports purportedly certified by a representative of the Bodo Community as evidence that the clean-up had been completed. The document signed by the Bodo Community representative, is a certificate that "*remediation of crude oil impacted materials*" has been completed. However, this contradicts SPDC's own case at paragraph ~~70-69~~ of the Defence that it was not possible for remediation to be carried out. The veracity of this document is therefore in question, and SPDC's reliance on such documentation illustrates the inadequacies in its own clean-up and remediation protocol.

Remediation

8284 As to the use of Remediation by Enhanced Natural Attenuation ('RENA') as a remediation method, as described in paragraph ~~67-66~~ of the Defence, the Claimants aver that the RENA method has been discredited. The UNEP report contains a section entitled 'The Case against RENA in Ogoniland'. UNEP finds that *"the RENA process is failing to achieve either environmental clean-up or legislative compliance... it is also failing to achieve compliance with SPDC's own procedures"*. (p145)

8385 As to the remediation described by SPDC at paragraphs ~~68-67~~ to ~~70-69~~ of the Defence, the Claimants note that the planned remediation covered an area of less than 5 hectares. The Claimants aver that this was plainly an inadequate area and that other oil from the 2008 Oil spills would have continued to impact these areas, rendering any remediation ineffective.

8486 The allegation in paragraph ~~70-69~~ of the Defence that the illegal activities of third parties led SPDC to abandon its remediation efforts is denied. The first incident of illegal activity identified by SPDC in Bodo after the Oil Spills did not occur until 5 May 2010 (Appendix 1 of the Bodo Individual RRFIs), when an estimated 10 barrels of oil were spilled, almost 2 years after the first spill. In any event, it is averred that, for the reasons set out in paragraphs 14-26 and 37 above, to the extent that the illegal activities of third parties were responsible for the release of oil, SPDC took insufficient steps to prevent, and protect its oil facilities from, such illegal activities.

SPDC's efforts to resume clean-up

8587 The Claimants aver that the Defendant's pleaded account as to the reasons why clean up and remediation is yet to commence in Bodo, at paragraphs 100 to 118 of the Defence, is factually incorrect. In

particular, the Defence fails to set out the relevant chronology fully or accurately.

8688 SPDC's averments that the Bodo Community and Leigh Day are responsible for the delay in clean-up are denied.

8789 On 4 April 2011 the Claimants' representatives wrote a Letter of Claim addressed to Royal Dutch Shell plc (copied to the Defendant) in which it was stated that "*Urgent action is required to treat the polluted water and soil as quickly as possible in order to restore it to its pre-spill state*". The correspondence noted that the Bodo creek had been left in a state of environmental devastation for some 2 ½ years since the oil spills occurred in 2008. A further letter was sent to the Defendant on 1 July 2011 seeking an urgent meeting to discuss the timetable and programme for clean up and remediation while the claim for compensation was being considered.

8890 At the outset the Claimants made it clear to the Defendant that clean up should be conducted on the following basis:

88.190.1 There had been no significant clean up since the 2008 oil spills and the Bodo Community instructed Leigh Day, as their legal representatives, to negotiate on their behalf with regard to clean up and remediation so that an agreed programme could be put in place forthwith. Failure to agree to an appropriate clean up programme would result in litigation;

88.290.2 It was noted that the Defendant's standard clean up and remediation procedures were extremely poor, not least in light of the findings contained in the 2008 *Environmental Assessment of Ogoniland* by UNEP. Therefore, clean up and remediation should be conducted to international standards by oil spill response companies who had the appropriate specialist expertise and the requisite specialist equipment.

~~88.390.3~~ Local labour and contractors should be used where possible in the clean-up process under the appropriate supervision and guidance of international oil spill clean up specialists;

~~88.490.4~~ An independent monitor should be appointed by the parties in order to regularly verify the quality of the clean up methodology which the Defendant was adopting.

~~8991~~ A Pre-Clean Up Assessment ("2011 PCA") was carried out by SPDC in May to June 2011 after the Claimants' representatives had sent their Letter of Claim in April 2011. No other Pre-Clean Up Assessment had been carried out since 2009 and no attempted clean up had taken place since 2009.

~~9092~~ The 2011 PCA failed to take into account local sensitivities as to the respective size of two proposed pilot areas and the numbers and identities of local contractors to be engaged which ran the risk of inflaming a long standing intra-community dispute as to the Governance of the community and ownership of various sections of the Bodo creek.

~~9193~~ Leigh Day sought to accommodate each faction's concerns and formulated proposals which were acceptable to the Community. In particular, Leigh Day was instructed by the Bodo Council of Chiefs and Elders to propose a list of agreed local contractors which they communicated to SPDC on three separate occasions in June 2012, November 2012 and February 2013.

~~9294~~ As to paragraphs 101.1 and 113, it is denied that engagement between the parties' English solicitors proved fruitless. SPDC and their representatives repeatedly delayed the progress of negotiations throughout 2012. However, by November 2012 all outstanding issues between the parties had been resolved but, for reasons which are

unknown, SPDC failed to commence clean up and sought instead to reopen direct discussions with the Bodo Community on 7 February 2013, without informing Leigh Day and contrary to the parties' previous understanding.

9395 On 26 February 2013, Leigh Day was instructed by the Bodo Council of Chiefs & Elders to contact SPDC and emphasise that direct contact between the Community and SPDC should not take place since it was likely to increase any factional differences and it was Leigh Day's role to obtain instructions which had the support of the whole Community.

9496 Further, the contention at paragraph 110.2 of the Defence that SPDC has been denied access to Bodo by the Community is denied.

9597 The Claimants aver that the delay in commencing clean-up is not the fault of the Bodo community or Leigh Day. Instead, the community and their representatives have made every effort to facilitate clean-up and remediation.

9698 The Community aver that clean up should commence forthwith and that a suitable monitoring mechanism should be put in place to ensure that clean up and remediation takes place to in a manner which is complaint with international standards. The Community are also engaging with initiative of the Dutch Ambassador to Nigeria to facilitate round table talks to ensure that clean up can be progressed outside the framework of this litigation. However, they retain the right to seek a mandatory order or damages in lieu should SPDC fail to clean up and remediate the Bodo creek to the appropriate standard.

9799 The Claimants will, in due course, seek permission to rely upon *Without Prejudice* correspondence and minutes of meetings between the parties to prove the above.

(H) ILLEGAL ACTIVITIES BY THIRD PARTIES

~~98.100~~SPDC avers at paragraph ~~2726~~.6 of the Defence that illegal activities perpetrated by third parties on oil installations, such as bunkering and illegal refining ('illegal activities'), are prevalent in the Niger Delta. This averment ignores the vast size of, and significant regional differences within, the Niger Delta region. As of relevance to the present claims:

~~98.1100.1~~ Bunkering did not occur in Bodo prior to 2009, as confirmed by UNEP, and arose as a direct consequence of the loss of livelihoods caused by the 2008 Oil Spills. Paragraph 46.4 of this Reply is repeated.

~~98.2100.2~~ SPDC's own data confirms that illegal activities were not occurring in Bodo prior to the 2008 Oil Spills. Appendix II to the Defence lists 19 spills over the course of eight years. When properly mapped, 17 of those spills are outside or on the periphery of Bodo, and on analysis are not in locations that have hydrological pathways to the Bodo creeks such that a spill there could be capable of affecting Bodo mangroves. Of the two which have been plotted at locations within Bodo territory:

~~98.2.1100.2.1~~ Incident 2005_00216 was described as having occurred at the Bomu Manifold. However when plotted using the co-ordinates provided, the spill was in fact found to be located south of the Manifold and within Bodo Creek. The volume spilled was estimated at only 20 barrels and likely to have caused minor impact. Satellite imagery dated 2006 and 2007 shows that any impact to the area was not evident prior to the 2008 Oil Spills;

~~98.2.2100.2.2~~ Incident 2008_00168 of Appendix II is properly within Bodo. As set out in paragraphs 42.3.3, 50.2 and 50.3 above, this incident may in fact

correspond to the First Oil Spill and be erroneously duplicated in Appendix II as a separate spill.

~~98.3~~100.3 The lack of identified illegal activity on the TNP supports the Claimants' contention that bunkering in and around Bodo only started following the 2009 spills. Extensive witness evidence confirms this, and that the illegal activities began in 2009 in direct response to the devastation caused by the oil spills in Bodo.

~~98.4~~100.4 In contrast, Appendix I to the Bodo Individual RRFIs identifies many more spills caused by both operational failure and illegal activities on the TNP pipelines in and around Bodo from 2009. On analysis Appendix I demonstrates that the first incident of illegal activity to occur in the Bodo creeks after the First and Second Spills took place on 5 May 2010 in Bodo West. The volume spilled was estimated by SPDC to be 10 barrels. This supports the Claimants' contention that the main impetus for bunkering in Bodo was the damage caused by 2008 Oil Spills.

~~98.5~~100.5 It is the Claimants' case that:

~~98.5.1~~100.5.1 The bunkering resulted from the damage caused by the 2008 Oil Spills to the local environment and the impact this had on the livelihood of the fishermen of Bodo;

~~98.5.2~~100.5.2 The 2008 Oil Spills caused a massive level of damage to the waterways, the mangroves and the fish stocks. The damage resulting from the post 2008 spills has been marginal when compared with the impact of the 2008 spills;

~~98.5.3~~100.5.3 SPDC could have taken steps to secure properly and to seal off defunct oil wells, such as Bodo West, as set out in paragraph 46.4.2 above;

~~98.5.4~~100.5.4 SPDC could have taken steps to prevent or significantly reduce the level of bunkering that was taking place in terms of the operation of the pipeline, such as those outlined in paragraph 37 above;

~~98.5.5~~100.5.5 Those steps which SPDC did take were inadequate in preventing or reducing bunkering. SPDC had only two strategies to prevent bunkering, the use of surveillance contractors, and reliance on the JTF. As shown in paragraphs 23-26 above, what surveillance systems SPDC did have were insufficient and improperly implemented. As to the JTF, SPDC have expressed concerns as to their reliability in Bodo Individual RRFIs Question 41.1 in indicating that *“even when arranged [the JTF] did not always turn up on time”*. SPDC’s contention at paragraph ~~80~~79.1(b)(i)(2) of the Defence that it worked with the Nigerian Government to provide security to the extent practicable is denied. The Claimants aver that neither the JTF nor the Supernumery Police have provided effective security of SPDC’s pipelines and that the reliance placed on both agencies, in the absence of other security and surveillance polices as outlined above, was misplaced. Furthermore, surveillance contractors employed by SPDC to survey the pipeline are actively involved with bunkering, spill incidents on 10 and 19 June 2013 having led to the arrests of SPDC surveillance contractors for involvement in the same.

~~98.5.6~~100.5.6 SPDC could further have taken steps to speedily clean up and remediate the Bodo Creek to enable the fishermen to return to their work, so reducing the reliance by some on bunkering for their economic livelihoods.

~~99~~101 As to the security measures detailed in paragraph ~~80~~79.1 of the Defence for the prevention of pollution from sabotage or bunkering, it is denied that these were adequate or sufficient to protect SPDC's installations from illegal activities. Paragraphs 14-26 and 37 of this Reply are repeated.

(I) AGGRAVATED AND EXEMPLARY DAMAGES

~~100~~102 Further to paragraph 53 of the Particulars of Claim, the Claimants rely on the following matters in claiming exemplary and aggravated damages:

Failure to maintain the TNP

~~100.1~~102.1 Matters set out in paragraph 5 of this Reply. In particular, the average number of spills of any cause on the Bomu-Bonny 24" Pipeline between 2001 and 2012 alone was 344 times higher than the average number of spills of any cause in European countries during 2006 to 2010.

~~100.2~~102.2 In fact, SPDC's performance during 2001-2012 does not even match the standards in European countries during the mid-1970s. SPDC's performance during 2001-2012 is 78 times worse than European standards in the mid-1970s.

~~100.3~~102.3 Notwithstanding leaks caused by third parties, direct responsibility for four leaks from 2009 to 2012 is attributable to

SPDC. This corresponds to an average of one spill per year on the TNP attributable to SPDC, which remains 133 times higher than the European average over the period of 2006 to 2010. The Claimants are not aware of any other country where the TNP would have been permitted to continue its operations with a record of over one spill every year caused by the operator.

~~100.4~~102.4 Despite this, SPDC failed to roll out its purported programme of upgrading its oil pipelines and infrastructure to address the need to “*to renew ageing facilities, [and] reduce the number of oil spills in the course of operations.*” (SPDC, Nigeria Brief, *The Environment*, 1995.) This programme started in 1995, and was not applied in Bodo then or since. Despite the record set out above, SPDC’s case is that “*there were no concerns about the technical integrity of the pipeline in and around Bodo*” (Bodo Individual RRFIs Question 45).

~~100.5~~102.5 Matters set out in paragraph 16-19 of this Reply. On its own admission, SPDC has failed to equip the TNP with the most basic apparatus required to operate a pipeline, not least in the highly sensitive ecology of mangrove swamps, which is by definition a “High Consequence Area” according to international standards.

~~100.6~~102.6 On its own admission, SPDC failed to implement basic pipeline security and maintenance systems, such as monthly and five yearly intelligent pigging, six monthly cathodic protection surveys of all sections of the pipeline, and various other regular maintenance activities such as valve replacement and manifold inspection in Bodo between 2000 and 2009 (Bodo Individual RRFIs Question 6.2).

SPDC knowingly operated a pipeline which was not fit for purpose