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To: [Hornsea Project Three](#)
Cc: [Karen Hamilton \(Brodies Solicitors\)](#)
Subject: Spirit Energy - Deadline 9 Submission [BRO-D.FID4510105]
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[Appendix 2 - GCA.Final Report 25 March 2019_45309744_1.PDF](#)
[Deadline 9 Submission Document - 26 March 2019_45310148_1.PDF](#)
[Appendix 1 - Sworn Statement by Rune Boge_45280779_1.PDF](#)
[Appendix 3 - Spirit Energy Note on Impact of Matters Not Agreed_45310113_1.PDF](#)
[Appendix 4 - Areas of Agreement on J6A Data Set Analysis_45310073_1.PDF](#)
[Appendix 5 - Markham Treaty \(UK version\) dated 26 May 1992_45297145_1.PDF](#)
[Appendix 6 - Sworn Statutory Declaration_45286594_1.PDF](#)

CONFIDENTIAL MESSAGE - INTENDED RECIPIENT ONLY

Dear Sirs,

Please find attached a submission document and accompanying appendices comprising the Deadline 9 Submission on behalf of Spirit Energy.

Kind regards,

Victoria

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SPIRIT ENERGY



DEADLINE 9 SUBMISSIONS
26 MARCH 2019



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SPIRIT ENERGY – DEADLINE 9 SUBMISSIONS

1 Spirit Energy's Protective Provisions

- 1.1 A revised version of Spirit Energy's draft protective provisions will follow. These will take account of recent discussions between the parties and, if relevant, any further input received from the helicopter operators.

2 Applicant's Protective Provisions

- 2.1 Comment on the Applicant's draft protective provisions will follow to assist the ExA in assessing the difference in approach by the parties.

3 C6 and C7

- 3.1 Appendices 1 and 2 provide further evidence of the status and history of the proposed sub-sea wells, C6 and C7:

3.1.1 Appendix 1 is a sworn statement from Rune Boge, who is employed as Technical Authority in Reservoir Engineering, by Spirit Energy Norway.

3.1.2 Appendix 2 is a report by Gaffney, Cline & Associates, Spirit Energy's Reserves auditor, dated 25 March 2019.

4 Spirit Energy Note on Impact of Matters Not Agreed

- 4.1 As requested by the Examining Authority at the ISH 8, Spirit Energy has prepared a brief note summarising the impact on its operations of those matters which remain in dispute between the parties. This is Appendix 3.

5 Joint Statement on Areas of Agreement on J6A Metocean Data Analysis

- 5.1 Appendix 4 is joint statement by the parties in relation to areas of agreement on the J6A metocean data set analysis.

6 Applicant's Position Statement on Turbulence

- 6.1 In response to the Applicant's Position Statement on Turbulence (submitted as Appendix 22 to the Applicant's Deadline 7 Submission), Spirit Energy comments as follows:

6.1.1 After describing the lack of published work concerning turbulence downstream of an array of large turbines, the Applicant has noted (at para 1.14) that "*it is not possible at the present time to define what is the exact distance that helicopters may be affected from a turbine as consideration must be given to the turbine size, geometry and proximity to other turbines, and the size and type of helicopters to be flown.*"

- 6.1.2 Spirit Energy had already conducted a short literature review on this subject and reached the same conclusion.
- 6.1.3 It should be noted that CAP764 also notes the lack of research and makes particular reference to consideration of critical stages of flight for aircraft of all sizes (at para 2.57 – Appendix M to Spirit Energy's Deadline 3 Submission): *“Until the result of further research is known, analysis of turbulence can only be undertaken on a case-by-case basis, taking into account the proximity of the development and the type of aviation activity conducted. Whilst being a consideration for all aircraft (particularly in critical stages of flight), turbulence is of particular concern to those involved in very light sport aviation such as gliding, parachuting, hang-gliding, paragliding or microlight operations as in certain circumstances turbulence could potentially cause loss of control that is impossible to recover from.”*
- 6.1.4 The context in which Spirit Energy raised turbulence was in determining the distance required for a take-off from a platform helideck. As described at ISH 8 in some detail by Mr Reynolds, once a helicopter has started to move away from the platform, it is not possible to go back and, in the event of an engine failure at or after the take-off decision point, the pilot only has two choices: (i) to ditch the helicopter in the sea, or (ii) to continue the ascent. The required separation from the nearest turbine to allow the latter was calculated by the Applicant to be 2.81nm. Spirit Energy is concerned that the calculation of this distance makes no allowance for environmental effects such as turbulence nor does it take account of the workload on the pilots. It has therefore been agreed with the Applicant that simulator trials, attended by the North Sea helicopter operators, should be undertaken to validate any theoretically calculated distance.
- 6.1.5 Planning for such simulator trials has commenced but it may not be possible to complete this work prior to the end of the examination phase of the DCO on 2 April 2019.
- 6.1.6 Spirit Energy submits that a helicopter that is attempting to take off flying towards a wind turbine array having lost one engine is an aircraft in a critical stage of flight and CAP764 supports the need to consider the potential effects of turbulence.

7 Other documents

- 7.1 The following documents were not able to be submitted at earlier deadlines in the Examination Timetable. Copies of the following are now provided:
- 7.1.1 Markham Treaty – A copy of the Agreement between the United Kingdom of Great Britain and Northern Ireland and the Kingdom of the Netherlands, relating to the Exploration of the Markham Field Reservoirs and the Offtake of Petroleum therefrom, (The Hague, May 1992), SI Treaty Series No. 38 (1993) (“the Markham Treaty”) as

referred to at para 1.5 of Spirit Energy's Deadline 3 Submission is submitted as Appendix 5.

- 7.1.2 Statutory Declaration – A sworn Statutory Declaration (following the signed copy submitted as Appendix ZC to Spirit Energy's Deadline 3 Submission) is now submitted as Appendix 6.

8 Note of Appendices

- 8.1 Appendix 1 – Sworn Statement by Rune Boge, Spirit Energy Norway
- 8.2 Appendix 2 - Report by Gaffney, Cline & Associates, dated 25 March 2019
- 8.3 Appendix 3 – Spirit Energy Note on Impact of Matters Not Agreed
- 8.4 Appendix 4 – Joint Statement on Areas of Agreement on the J6A met ocean data set analysis
- 8.5 Appendix 5 - the Markham Treaty
- 8.6 Appendix 6 – Statutory Declaration