



This document is a translation made by SHK of the original response in Swedish to the safety recommendation. In case of discrepancies between this translation and the Swedish original text, the Swedish text shall prevail in the interpretation of the response.

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Swedish Accident Investigation
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Report concerning the accident involving a wind turbine in Lemnhult on 24 December 2015, Jönköping County

Background

On 24 December 2015, Lemnhult wind farm, Vetlanda Municipality, Jönköping County, suffered a wind power accident when one of the wind turbines fell to the ground. The Swedish Accident Investigation Authority (SHK) has investigated the failure, and issued the final report RO 2017:01, which is the result of SHK's investigation, on 22 February 2017. SHK's issues a number of safety recommendations in this report. One of these recommendations applies to Jönköping County Administrative Board. SHK recommends that Jönköping County Administrative Board:

"Ensure that the operator has clear procedures for the reporting of events that may lead to an inconvenience to people's health and the environment according to the Ordinance (1998:901) of Owner's Own Control".

SHK would like to be notified by 22 May 2017, at the latest, of what action has been taken in response to the recommendations issued in this report.

Action taken by the County Administrative Board

The County Administrative Board agrees with SHK's safety recommendation and has, in parallel with SHK's investigation, been involved in discussions with the operator, Lemnhult Energi AB, concerning the need to update the inspection programme for Lemnhult wind farm. This also includes the procedures that have to be in place with regard to the reporting of operational disruptions under Section 6 of the Ordinance (1998:901) of Owner's Own Control.

Based on the role that the County Administrative Board has as supervisory authority and in light of the aforementioned safety recommendation, the County Administrative Board has requested that both the wind farm in Lemnhult as well as other wind farms subject to a permit that have been built in Jönköping County shall, no later than 30 June 2017, report their procedures for the reporting of identified deficiencies and occurrences that may have a detrimental impact on human health or the environment. The County Administrative Board's communications are appended to this statement.



Jönköping
County
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Date
09/05/2017

Reference
555-1644-
2017

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Based on the reports received, the County Administrative Board will undertake further work on this matter as part of its operational supervision.

[Signature]
Emma Willaredt,
Head of Department

[Signature]
Per-Olof Svensson
Environmental Protection Officer

Appendix

Communication to Lemnhult Energi AB, ref. no. 555-8293-2014
Communication to wind farms in Jönköping County, ref. no. 555-3785-2017

Copy

Environment and Spatial Planning Department (Emma Willaredt, Gustav Enander,
Oskar Karlsson, Nils Lagerkvist, Annette Rosén)



Jönköping
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COMMUNICATION

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Date

28/03/2017

Reference

555-8293-2014

0685-81-017

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Lemnhult Energi AB
Box 7123
402 33 Gothenburg

Inspection programme/procedures for inspection of operations at Lemnhult wind farm, Vetlanda Municipality

The County Administrative Board's decision

Lemnhult Energi AB, henceforth referred to as 'the Company', is requested to submit, as soon as possible,

but not later than 30 June 2017:

1. an updated proposal for an inspection programme;
2. procedures for reporting operational disruptions, accidents and incidents that may have a detrimental impact on human health or the environment in accordance with Section 6 of the Ordinance (1998:901) of Owner's Own Control.

Background

On 10 October 2011, the Company submitted an inspection programme for Lemnhult wind farm. The Company revised the inspection programme in October 2013 and submitted another updated proposal on 21 November 2014. The inspection programme shows, among other things, how the conditions in applicable permits are inspected. The inspection programme also presents an overview of how the provisions in the Ordinance (1998:901) of Owner's Own Control have been observed, for example risk management, procedures for operational monitoring, inspection of equipment, chemicals handling and procedures for reporting operational disruptions or similar occurrences that may have a detrimental impact on human health or the environment to the supervisory authority.

On 24 December 2015, the wind farm suffered a wind power accident when wind turbine number 15 failed and fell to the ground. Since then, the Company, together with the manufacturer of the wind turbine, has investigated the cause of the failure, introduced new procedures for the installation of new wind turbines, updated service intervals for existing wind turbines, etc. While the investigation has been in progress, the County Administrative Board and the Company have also been discussing the facility's inspection programme and agreed that this needs to be updated as a result of the occurrence that took place. According to the County Administrative Board, this also includes reworking and updating the procedures governing how the facility complies with the provisions of the aforementioned ordinance.



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In parallel with the Company's and the wind turbine manufacturer's own investigation, the Swedish Accident Investigation Authority (SHK) has investigated the accident. The final report presented by SHK on 22 February 2017 provides an explanation of why the accident occurred.

The report also indicates that the wind farm had suffered problems with loose and broken bolts in the wind turbines for several years. These deficiencies were not reported to the County Administrative Board, which is the supervisory authority. A number of safety recommendations are issued in the report, one of which concerns Jönköping County Administrative Board, which is recommended to:

"Ensure that the operator has clear procedures for the reporting of events that may lead to an inconvenience to people's health and the environment according to the Ordinance (1998:901) of Owner's Own Control"

The County Administrative Board's assessment

Based on what has been described above, it is the opinion of the County Administrative Board that the company shall submit an updated proposal for an inspection programme for monitoring the conditions of applicable permit decisions and an updated report concerning how the company inspects operations in accordance with the Ordinance (1998:901) of Owner's Own Control. In light of the occurrence that took place and the safety recommendation issued by SHK as reproduced above, the County Administrative Board believes it is extremely important that the Company update its procedures for the reporting of identified deficiencies and occurrences that may have a detrimental impact on human health and the environment. The County Administrative Board deems it to be reasonable that the Company submit the requested proposal for an inspection programme and updated procedures for inspection according to the Ordinance (1998:901) of Owner's Own Control no later than 30 June 2017.

[Signature]
Gustav Enander
Head of Unit

[Signature]
Per-Olof Svensson
Environmental Protection Officer

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Planning and Environment Authority in Vetlanda Municipality
Environment and Spatial Planning Department (Per-Olof Svensson, Gustav Enander, Annette Rosén, Nils Lagerqvist, Oskar Karlsson)



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As per distribution list

Procedures for the reporting and investigation of accidents and incidents at wind farms in Jönköping County

As a recipient of this communication and in your capacity as an operator, you are requested to submit to the County Administrative Board, as soon as possible, **but no later than 30 June 2017:**

- your procedures for reporting operational disruptions, accidents and incidents that may have a detrimental impact on human health or the environment in accordance with Section 6 of the Ordinance (1998:901) of Owner's Own Control.

These procedures shall state how you have defined which operational disruptions, accidents or incidents are to be reported to the supervisory authority in accordance with Section 6 of the Ordinance (1998:901) of Owner's Own Control.

Background

On 24 December 2015, one of the wind farms in Jönköping County suffered an accident when one of the wind turbines fell to the ground. In parallel with the company's and the wind turbine manufacturer's own investigation, the accident has also been investigated by the Swedish Accident Investigation Authority (SHK). The results of SHK's investigations have been compiled in final report RO 2017:1. SHK's investigation showed that the cause of the failure was that the bolted joint in one of the tower structure's six sections had failed as a result of the bolts that had held together the broken bolted joint had fatigue damage. The cause of the fatigue in the bolts was that the pre-tension force in the joint was too low.

SHK's final report also shows that the wind farm in question had suffered problems with loose and broken tower bolts in the wind turbines for several years. However, no findings of loose or broken tower bolts resulted in a notification being sent to the supervisory authority, Jönköping County Administrative Board. In its final report, SHK states that the supervisory authority, if it had been made aware of the problems, would have been able to place requirements on the company and also monitor the development of the remedial actions.



Jönköping
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Date

19/04/2017

Designation

555-3785-2017

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SHK's final report issues a number of safety recommendations, one of these recommendations relates to the County Administrative Board Jönköping. SHK recommends that Jönköping County Administrative Board:

"Ensure that the operator has clear procedures for the reporting of events that may lead to an inconvenience to people's health and the environment according to the Ordinance (1998:901) of Owner's Own Control".

Reasoning

In accordance with Section 6 of the Ordinance (1998:901) of Owner's Own Control, the operator shall continuously and systematically examine and assess the risks of the facility from the perspective of health and environment. The result of investigations and assessments shall be documented.

If the facility suffers an operational disruption or similar occurrence that may have a detrimental impact on human health or the environment, the operator shall immediately inform the supervisory authority of this.

Based on what has been described above, and in light of the safety recommendations issued by SHK in its final report, it is the opinion of the County Administrative Board that you need to report your procedures for the reporting of identified deficiencies and occurrences that may have a detrimental impact on human health or the environment. Your procedures as per the above shall be submitted to the County Administrative Board as soon as possible, but no later than 30 June 2017.

[Signature]

Oskar Karlsson
Environmental Protection Officer

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