
	<b>INVENERGY SERVICES LLC</b>	<b>Revision:</b> 0
	<b>OBSTRUCTION LIGHT FAILURE REPORTING POLICY</b>	<b>Issued:</b> 04/08/2014

## OBSTRUCTION LIGHT FAILURE REPORTING POLICY

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**PLEASANT RIDGE EXHIBIT**  
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## 1. PURPOSE(S):

- 1.1. Provides the requirements for reporting obstruction light failures.

## 2. APPLICABILITY:

- 2.1. Employees of Invenergy Services LLC, Vantage Wind Energy LLC and Invenergy Services Canada ULC (the applicable company is herein referred to “Invenergy Services” or the “Company”).

## 3. REFERENCES:


- 3.1. <http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part6-standards-standard621-3808.htm>
- 3.2. [http://www.navcanada.ca/ContentDefinitionFiles/Publications/AeronauticalInfoProducts/NOTAMProcedure/NOTAM/NOTAM\\_Manual\\_Current\\_en.pdf](http://www.navcanada.ca/ContentDefinitionFiles/Publications/AeronauticalInfoProducts/NOTAMProcedure/NOTAM/NOTAM_Manual_Current_en.pdf)
- 3.3. <http://www.navcanada.ca/navcanada.asp?Language=en&Content=ContentDefinitionFiles%5CServices%5CANSPrograms%5Cfic%5Cdefault.xml>
- 3.4. <http://oeaaa.faa.gov/oeaaa/external/content/lightOutageReporting.jsp>
- 3.5. [Reference Fleet FAA NAVCANADA Light Coordinates](#)

## 4. OVERVIEW:

- 4.1. The purpose of obstruction marking and lighting standards is to provide an effective means of indicating the presence of objects likely to present a hazard to aviation safety. Conspicuity is achieved only when all recommended lights are working. To ensure the safety of pilots, obstruction light outages will be identified and reported as soon as possible.
- 4.2. Canadian Aviation Regulations (CARs), Standard 621 – Obstruction Marking and Lighting, details marking and lighting requirements for aviation obstructions, including wind turbines and wind farms. Chapter 4.7 describes monitoring regulations and Chapter 12 concerns wind turbines in particular.
- 4.3. The Canadian NOTAM Procedures Manual describes the requirements and process for creating a NOTAM in the event of an obstruction light outage. Chapter 5.5.3 contains the information relevant to wind turbines.

## 5. POLICY

- 5.1. The ICC Control Room (“ICC”) shall report any failure or malfunction that affects a top light or flashing obstruction light, regardless of its position in the park, as soon as possible to the FAA or NAVCANADA depending on the location of the site.
- 5.2. Wind Technicians shall report to the ICC any identified obstruction light failures or completed obstruction light repairs as soon as possible so the ICC can make appropriate notification.
- 5.3. **ICC Monitoring and Reporting Requirements**
  - 5.3.1. The ICC shall run the MATLAB Gen Brush/FAA Light tool once a day during night shift to monitor for obstruction light failures.
  - 5.3.2. The ICC shall generate a Notice to Airmen (NOTAM) if the MATLAB Gen Brush/FAA light tool identifies a turbine as having an obstruction light fault *and* an obstruction light fault is present in the turbine status list.
  - 5.3.3. If an obstruction light fault is discovered in the turbines status list, a NOTAM and EAM Work Order shall be generated.

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- 5.3.4. If three (3) or more WTGs at a given site have an obstruction light warning message, a site NOTAM will be created.
- 5.3.5. If an Obstruction Light warning message appears on the warning list for two (2) consecutive days, a work order will be submitted to the site to investigate the light.
  - 5.3.5.1. Technicians *should not* be called out to investigate an obstruction light fault.
- 5.3.6. If the warning message does not appear the day after the initial warning message, the ICC will remove the NOTAM that was submitted for that WTG.
- 5.3.7. If a turbine is NETCOM for more than 24 hours, a NOTAM shall be generated because the functionality of the obstruction light cannot be verified.
- 5.3.8. During a Forced or Planned Outage, a site-wide NOTAM will be reported to the FAA or NAVCANADA, depending on which site is affected.
- 5.3.9. NOTAM ticket numbers shall be logged in the Epilog NOTAM log book.
- 5.3.10. For obstruction light outages lasting greater than 15 days, the ICC will request an extension of the NOTAM before it expires at midnight GMT.

**5.4. Wind Sites**

- 5.4.1. Wind sites (with the exception of Le Plateau) shall complete a monthly EAM PM Work Order (WO) to verify that all obstruction lights are operating and synchronized.
  - 5.4.1.1. MET Towers do not need to be synchronized with Wind towers per Attachment 8.1.
- 5.4.2. Le Plateau shall conduct a semi-annual EAM PM WO requiring personnel to verify that all obstruction lights are operating and synchronized.
- 5.4.3. Technicians should respond to obstruction light work orders by performing an initial investigation to determine if the light is out or not. This information should be reported to the ICC. If the light requires repair this should be conducted at the discretion of the O&M Manager.
- 5.4.4. Should technicians determine that the obstruction light is operating after responding to a WO, they will notify the ICC Control Room Operator so he or she can remove the NOTAM.
- 5.4.5. After technicians repair a faulty obstruction light, they shall notify the ICC Control Room Operator so the NOTAM can be removed.


**5.5. Obstruction Light Restoration**

- 5.5.1. The O&M technician will call the ICC as soon as the light failure is corrected and the light is operating properly.
- 5.5.2. The ICC will notify the FAA or NAVCANADA as soon as possible after the restoration of the obstruction light.

**6. RESPONSIBILITIES:**

**6.1. Invenergy Services O&M personnel**

- 6.1.1. All Invenergy Services O&M personnel are responsible for adhering to the requirements of this procedure and reporting any outages of obstruction lights as soon as possible to the ICC.
- 6.1.2. O&M Personnel are responsible for repairing obstruction light faults and informing the ICC when the repair is complete.

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6.2. **O&M Regional Managers**

6.2.1. O&M Regional Managers are responsible for reviewing and approving this policy.

6.3. **ICC Personnel**

6.3.1. ICC Control Room Operators are responsible for knowing the requirements of this policy and reporting obstruction light outages.

6.4. **ICC Manager**

6.4.1. The ICC Manager is responsible for ensuring that personnel are adequately trained on this policy and that they adhere to its requirements.

6.4.2. The ICC Manager is responsible for reviewing and approving this policy.


**7. DATA RETENTION:**

7.1. NOTAM ticket numbers will be logged in Epilog.

7.2. EAM Work Orders will be generated and completed, or an explanation may be provided to account for rejected or cancelled WOs.

**8. ATTACHMENTS:**

8.1. Wind and MET Tower Synchronization

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### Attachment 8.1

**From:** <[Mike.Blaich@faa.gov](mailto:Mike.Blaich@faa.gov)>  
**Date:** February 6, 2014 at 6:50:48 AM CST  
**To:** "Snow, Matthew" <[MSnow@invenergyllc.com](mailto:MSnow@invenergyllc.com)>  
**Cc:** <[brenda.mumper@faa.gov](mailto:brenda.mumper@faa.gov)>, <[donna.o'neill@faa.gov](mailto:donna.o'neill@faa.gov)>  
**Subject:** Re: **Obstruction Lighting for Met Towers and Wind Farms**

Hi Matt,

No, the met tower(s) do not need to be synchronized with the lights on the wind turbines. There are several different types and colors of lights that met towers could be approved to use.

Thanks,

Mike Blaich  
 OE Airspace Specialist -Wind Turbines East (WTE)  
 Obstruction Evaluation Group, AJV-15  
 Tel: 404-305-7081  
 Fax: 404-305-7080  
 Email: [mike.blaich@faa.gov](mailto:mike.blaich@faa.gov)  
 Public Web Site for filing/status checks: <https://oeaaa.faa.gov>


From: "Snow, Matthew" <[MSnow@invenergyllc.com](mailto:MSnow@invenergyllc.com)>  
 AJV-15, Obstructions Evaluation Group  
 To: Mike Blaich/ASO/FAA@FAA, Brenda Mumper/ACE/FAA@FAA, Donna O'Neill/ACE/FAA@FAA,  
 Date: 02/04/2014 12:58 PM  
 Subject: Obstruction Lighting for Met Towers and Wind Farms

Hello all,

I've been reviewing the FAA circular "AC 70/7460-1K - Obstruction Marking and Lighting", and I was hoping you could clarify something for me. I understand that the obstruction lights on all wind turbines within a wind farm are expected to flash synchronously, but I could not tell if permanent met towers are expected to do so as well. Technically, they don't seem to fall under the rubric of "wind farm" since they are not wind turbines, but I would appreciate it if I could get a definitive answer from you on this.


Thanks,

Matt Snow | Operations Engineer  
 Invenergy LLC | One South Wacker Drive, Suite 1900, Chicago, IL 60606  
[msnow@invenergyllc.com](mailto:msnow@invenergyllc.com) | 312-582-1455


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AMENDMENT RECORD SHEET

Revision/Review	Description:	Date:
0	Merged Procedure_Fleet_FAA_Light_Failure_Reporting_Directions and Procedure_Fleet_NAVCANADA_Light_Failure_Reporting_Directions. Added the requirements to run Matlab daily and to submit a NOTAM if an obstruction light fault is noted in the status list and if there is a forced or planned outage.	04/08/2014

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	<b>INVENERGY SERVICES LLC</b>	<b>Revision:</b> 0
	<b>FAA AND NAVCANADA NOTAM CREATION</b>	<b>Issued:</b> 03/28/2014

FAA and NAVCANADA NOTAM Creation

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	<b>FAA AND NAVCANADA NOTAM CREATION</b>	<b>Issued:</b> 03/28/2014

**1. PURPOSE(S):**

- 1.1. Provides instructions for reporting obstruction light outages for wind sites in the United States and Canada.

**2. APPLICABILITY:**


- 2.1. ICC Control Room Employees will use this procedure when submitting a Notice to Airmen (NOTAM).

**3. REFERENCES:**

- 3.1. <http://oeaaa.faa.gov/oeaaa/external/content/lightOutageReporting.jsp>
- 3.2. [Reference Fleet FAA Light Coordinates](#)
- 3.3. <http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part6-standards-standard621-3808.htm>
- 3.4. [http://www.navcanada.ca/ContentDefinitionFiles/Publications/AeronauticalInfoProducts/NOTAMProcedure/NOTAM/NOTAM\\_Manual\\_Current\\_en.pdf](http://www.navcanada.ca/ContentDefinitionFiles/Publications/AeronauticalInfoProducts/NOTAMProcedure/NOTAM/NOTAM_Manual_Current_en.pdf)
- 3.5. <http://www.navcanada.ca/navcanada.asp?Language=en&Content=ContentDefinitionFiles%5CServices%5CANSPrograms%5Cfic%5Cdefault.xml>
- 3.6. [Reference Fleet FAA NAVCANADA Light Coordinates](#)

**4. REQUIRED INFORMATION WHEN REPORTING:**

- 4.1. Reporting Person's Name and Company
- 4.2. Site's Legal Name
- 4.3. Type of structure (Wind Turbine)  
*The following information is found in the Reference Fleet FAA Light Coordinates referenced above*
- 4.4. Location of Structure (Longitude and Latitude)
- 4.5. Height of structure above ground level (AGL)
- 4.6. Height of structure above mean sea level (AMSL), if known
- 4.7. Nearest airport
- 4.8. Airport code
- 4.9. Site's main center code (site-wide NOTAMs only)
- 4.10. Radius of the site
- 4.11. Location of the site in relation to the nearest airport
- 4.12. Approximate duration of the obstruction light outage

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## 5. NOTAM REPORTING PROCEDURE

5.1. Run MATLAB Gen Brush/FAA Light tool once daily during night shift.

5.1.1. This will be the main triggering event for reporting NOTAMs.

5.2. *Complete all steps because more than one condition may be met at a time.*


Step #	IF the following condition is met...	AND...	THEN perform the required action...
5.3.	A WTG is identified on the MATLAB tool with a FAA light failure	An obstruction light fault is in the turbine status list	Generate a NOTAM for identified WTG(s) <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Fax Attachment 9.1)</li> </ul>
5.4.	≥ 3 WTG at a particular site are identified as having obstruction light failures	N/A	Generate a site-wide NOTAM for the appropriate site <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Fax Attachment 9.1)</li> </ul>
5.5.	A WTG is identified on the MATLAB tool with a FAA light failure for 2 consecutive days	An obstruction light fault is in the turbine status list	Create EAM Work Order
5.6.	An obstruction light fault is discovered in the WTG's status list	N/A	Generate a NOTAM and an EAM Work Order (if one is not already created) for the affected WTG <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Fax Attachment 9.1)</li> </ul>
5.7.	A technician informs the ICC of an obstruction light failure	N/A	Generate a NOTAM and an EAM Work Order (if one is not already created) for the affected WTG <ul style="list-style-type: none"> <li>• FAA (Phone)</li> </ul> NAVCANADA (Fax Attachment 9.1)

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Step #	IF the following condition is met...	AND...	THEN perform the required action...
5.8.	Forced or Planned Outage at a site	N/A	Generate a site-wide NOTAM for the affected site <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Fax Attachment 9.1)</li> </ul>
5.9.	A WTG is NETCOM for more than 24 hrs.	N/A	Generate NOTAM for the affected WTG <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Fax Attachment 9.1)</li> </ul>
5.10.	A WTG is <i>no longer</i> identified on the MATLAB tool as having an obstruction light failure	Fault is <i>no longer</i> active in the turbine status list	<b>Remove</b> NOTAM for the appropriate WTG <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Phone)</li> </ul>
5.11.	Being informed that an obstruction light is working or has been repaired	N/A	<b>Remove</b> NOTAM for the repaired WTG <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Phone)</li> </ul>
5.12.	Planned or Forced outage is complete	N/A	<b>Remove</b> associated NOTAM <ul style="list-style-type: none"> <li>• FAA (Phone)</li> <li>• NAVCANADA (Phone)</li> </ul>

5.13. NOTAM numbers shall be logged in the Epilog NOTAM log book.

5.14. For obstruction light outages at Des Moulins and Le Plateau, the respective site manager shall be notified of light malfunctions.

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**6. REPORTING CONTACT INFORMATION:**

	Site	FIC	Phone #	Fax #
6.1.	US Sites	FAA	877-487-6867	
6.2.	Raleigh/Dillon	London	519-452-1472	519-451-3656
6.3.	Le Plateau	Quebec	418-871-7039	418-871-4906
6.4.	Des Moulins	Quebec	418-871-7039	418-871-4906

**7. RESPONSIBILITIES:**

**7.1. ICC Control Room Employees**

7.1.1. The ICC Control Room Operator is responsible for reporting and removing NOTAMs in accordance with this procedure.

**7.2. ICC Manager**

7.2.1. ICC Manager is responsible for ensuring that Control Room Operators are properly trained in and adhere to this procedure.

7.2.2. ICC Manager is responsible for reviewing and approving this procedure.

**8. DATA RETENTION:**

8.1. None.


**9. ATTACHMENTS:**

NAVCANADA NOTAM reporting fax template

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**ATTACHMENT 9.1 – SAMPLE NAVCANADA NOTAM REPORTING FAX TEMPLATE**

<b>Aviation Light Failure Reporting Form</b>			
<b>Site</b>		<b>Time/Date of Failure</b>	
<b>Location of WTG(s) (Coordinates)</b>			
<b>Height of WTG(s) (Tip of blades)</b>		<b>Elevation of the site/WTG(s) (Highest elevation if multiple WTGs)</b>	
<b>Expected Duration of Outage</b>		<b>Closest Airport to WTG (if known)</b>	

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