



Advisory Circular

Subject: Obstacle Light Monitoring, NOTAM and Repair

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1.0 INTRODUCTION

- (1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

1.1 Purpose

- (1) The purpose of this AC is to provide guidance information regarding the monitoring of obstacle lighting and subsequent NOTAMing and repair.

1.2 Applicability

- (1) This AC is applicable to owners of obstacles that are required to have lighting for day and/or night protection. This AC is also available for information purposes to the aviation industry, equipment suppliers and designers.

1.3 Description of Changes

- (1) Not applicable.

2.0 REFERENCES AND REQUIREMENTS

2.1 Reference Documents

- (1) It is intended that the following reference materials be used in conjunction with this document:
 - (a) Standard 621 – *Obstacle Marking and Lighting*.

2.2 Cancelled Documents

- (1) Not applicable.
- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and Abbreviations

- (1) The following **abbreviations** are used in this document:
 - (a) **NOC**: Network Operations Centre (pronounced 'knock')
 - (b) **NOTAM**: Notice to AirMen
 - (c) **SMS**: Short Message Service

3.0 BACKGROUND

- (1) This AC arises from requests for interpretation of requirements for monitoring of obstacle lighting contained in Standard 621. In particular, the meaning of the subjective terms "in a timely fashion" for repair action and "as soon as possible" for initiation of a NOTAM.

4.0 DISCUSSION

4.1 Light Monitoring

- (1) Standard 621, Article 4.7, specifies the following....

4.7 Monitoring of Obstruction Lights. *The objective of monitoring is to enable the owner to maintain the lighting system in operation without failure. The occurrence of light failure is detected so that a NOTAM can be issued and repair action undertaken in a timely fashion.*

(1) *The owner of a structure with a flashing obstruction light system is responsible:*

(a) *To know there is occurrence of any failure, by observation once every 24 hours, either visually or through observation of a remote indicator designed to show failure of such lighting regardless of position or colour. For medium and high intensity lighting and dual lighting systems, observation is made for at least the day and night modes of operation.*

(b) *To have a documented program of at least annual inspection of all automatic or mechanical control devices, indicators, and alarm systems associated with the structure lighting to ensure that the such apparatus is functioning properly.*

(2) *Is exempt from paragraph 4.7(1)(b) where the alarm system has self-diagnostic features to confirm the communication link and operational status of the monitoring system itself at least once every 24 hours.*

(3) *Where it is not possible to do observation either visually or through means of a remote indicator, the objective of monitoring is accomplished through provision of lamps having a rated life of more than one year of operation and establishment of a documented program of at least annual inspection.*

(4) *For each structure, a log is maintained showing the history of observations, inspections, failures, repairs, and relamping, as applicable for the method of monitoring used.*

(5) *The owner of the structure advises NAV CANADA, as soon as possible, of any obstruction light failure so that a NOTAM can be initiated in accordance with paragraph 2.7(1).*

- (2) **Knowing.** The key element of Section 4.7 is that the owner is always "responsible to know". The means to know is by observation which may be:
- (a) by direct visual observation of the lighting, or
 - (b) by observation at a remote indicator [typically located in a NOC]. In the case of failure alarm, the indication can be as simple as a cellphone SMS message.
- (3) **Types of Lighting.** The monitoring applies to flashing light systems of CL-864, CL-865, CL-856, CL-866, and CL-885 lights.
- (4) **Control unit.**
- (a) Appendix B to Standard 621 has equipment requirements for the "control unit" located at the site of the obstacle and used to monitor the status of installed white or red flashing light systems. Each light unit is monitored for flash/fail status. A fail status is defined as either: the light unit misses four or more consecutive flashes, the light unit flashes at wrong intensity step during daytime operation, or in the case of CL-865f rotating-type flashing lights, failure of a light beam or continuous movement of the rotating device. In

the case of CL-864 red flashing light systems, there may be level(s) of CL-810 lights which are also monitored for outage of any one lamp within a level.

- (b) For stand alone CL-810 lights a control unit is not specified in Appendix B and therefore there is no electronic monitoring for this type of lighting. For CL-810 lights, monitoring is normally by means of visual observation. A failed stand-alone CL-810 light or failure of one of the lights of a dual CL-810 is not NOTAMed but repair is made as soon as possible

(5) **Examples.** Figure 1 illustrates 4 examples related to monitoring.

- (a) **Example A.** Article 4.7 begins with case A [article 4.7(1)(a)] which is for failure alarm. This is a one-way communication and the alarm is given only at the time of failure. Since it is the owner's responsibility to "know" and there is possibility that the communication means itself may fail, this case is augmented by **4.7(1)(b)** which stipulates a documented program of at least annual inspection of control devices, indicators, and alarm systems [which includes the communication means] associated with the structure lighting to ensure that such apparatus is functioning properly. The owner may also apply further mitigation by use of long life lamps.
- (b) **Example B** involves the use of a two-way communication. There is failure alarm but also a diagnostic function to verify the operational status of the communication link and monitoring system every 24 hours. The use of such diagnostic function exempts the owner from annual inspection of article **4.7(1)(b)**.
- (c) **Example C** is an instance for which it is not possible to provide communication either as a landline, cellphone or satellite link for certain locations in Canada. A control unit is still provided at the site of the obstacle, but no communication of failure status. The owner is still responsible to "know" of failure and use of this method is mitigated through use of lamps having a rated life of more than one year of operation combined with at least annual inspection and relamping [if required].
- (d) **Example D.** In this last case, monitoring would not normally be required as it is not a flashing light system and typically involves stand-alone CL-810 lights for which Appendix B of Standard 621 does not specify a control unit and consequently there is no monitoring at site and no communication to a remote location. In this case, the absence of monitoring is mitigated by provision of lamps having a rated life of more than one year of operation and at least annual inspection.

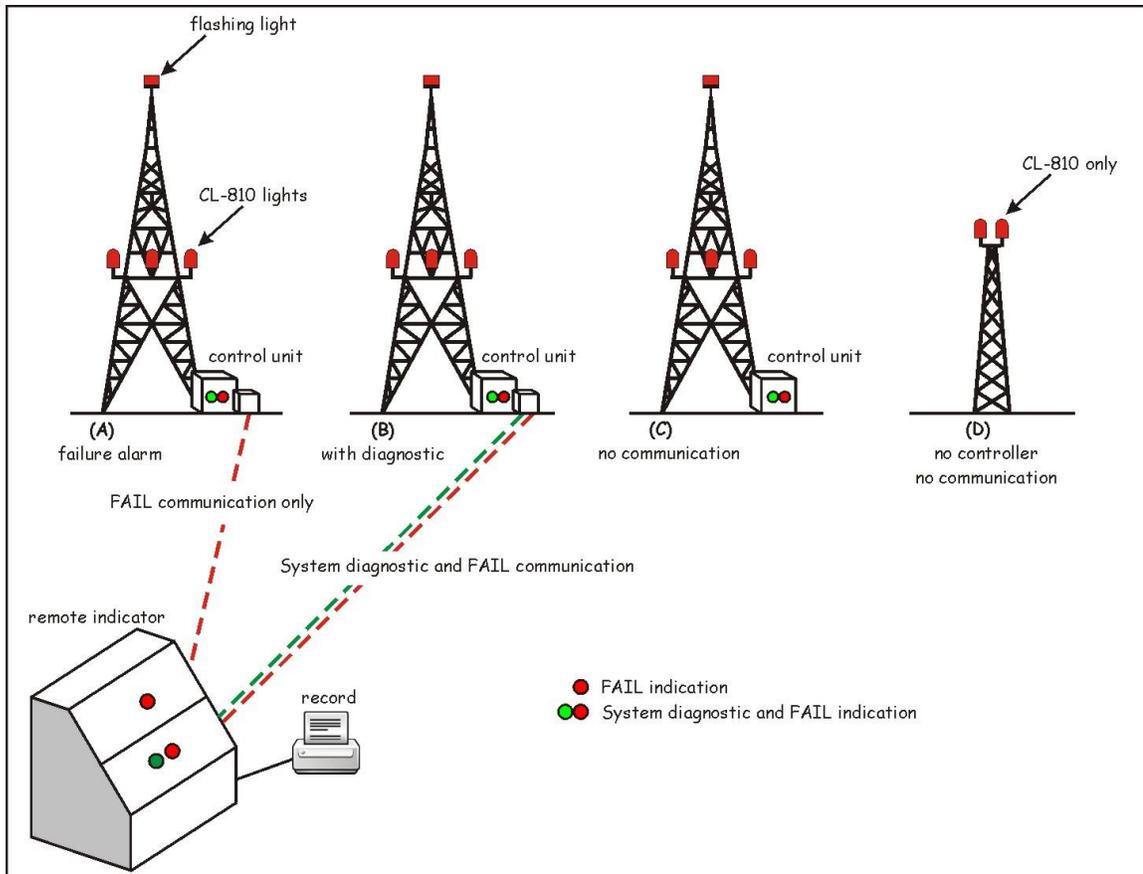


Figure 1. Means of Electronic Monitoring

4.2 Time to initiate a NOTAM

- (1) Standard 621, uses terminology of "as soon as possible" for the time to initiate a NOTAM; This terminology is subjective. As it is the responsibility of the owner to ensure the continued operation of required obstacle lighting, the intent of Standard 621 is that a NOTAM be initiated without inordinate delay as would be interpreted by a typical person, having ordinary prudence to act in this circumstance.

4.3 Time to Repair

- (1) Similar subjective terminology of "in a timely fashion" is used to specify the time in which to repair a failure. Standard 621 recognizes that there may be a delay due to factors such as; to obtain equipment, get personnel to site against constraints imposed by weather, and accomplish the repair work itself which may be lengthy depending on the height of the obstacle and what has actually failed. In consideration of these factors, the intent of Standard 621 is that repair is done without inordinate delay as would be interpreted by a typical person, having ordinary prudence to act in this circumstance.

With occurrence of failure of a flashing system, a NOTAM is required. The time duration in the NOTAM is indicated as TIL or TIL APRX, giving the date and time for completion of repair. Although it is desired to have repair done within a few days, the time to repair may be indicated in the NOTAM as up to 3 months.

- (2) If completion of repair can be accurately forecast, the abbreviation TIL is used. The NOTAM system automatically removes the NOTAM at the end time.

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170157 CZWG WINNIPEG FIR
CZWG OBST LGT U/S TOWER 545409N 983715W (APRX 30 NM NW JENPEG AD)
395 FT AGL 1170 MSL
1703141530 TIL 1706141530
```

- (3) If a date for completion of repair cannot be accurately forecast, TIL APRX is selected. The NOTAM system automatically produces a reminder that the NOTAM is to be renewed or cancelled by a human. Preferably the NOTAM should not be renewed more than once.

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170338 CYZT BELLA BELLA (CAMPBELL ISLAND)
CBBC OBST LGT U/S TOWER 520925N 1280651W (APRX 2 NM SE AD) 120 FT
AGL 220 MSL
1707120516 TIL APRX 1710111500
```

- (4) The publication of a NOTAM should not be used to justify an inordinate delay in doing repair. In brief, if a repair can be accomplished in a week, it should be done in a week, even though the NOTAM may forecast completion in 3 months in order to provide leeway for un-predictable issues.

5.0 SUMMARY

- (1) The owner of an obstacle monitors the installed lighting so as to "know" of the occurrence of failure. For lighting where there is only failure alarm as a minimum, annual inspection of the control devices and communication link is performed. Where a communication link cannot be installed, this is mitigated by the use of long-life lamps and annual inspection. Upon knowing of a failure of lighting, a NOTAM is initiated. The intent of Standard 621 is that both the NOTAM is initiated and subsequent repair is done, without inordinate delay.

6.0 INFORMATION MANAGEMENT

- (1) Not applicable.

7.0 DOCUMENT HISTORY

- (1) Not applicable.

8.0 CONTACT OFFICE

For more information, please contact:

<http://www.tc.gc.ca/eng/regions.htm>

Suggestions for amendment to this document are invited, and should be submitted via:

TC.FlightStandards-Normsvol.TC@tc.gc.ca

[Original signed by]

Robert Sincennes
Director, Standards
Civil Aviation