



# TSB Recommendation M11-01

## Stability guidance information for sail training vessels

The Transportation Safety Board of Canada recommends that the Department of Transport ensure that those officers to whom it issues sailing vessel endorsements are trained to use the stability guidance information that it requires to be on board sailing vessels.

Marine transportation safety investigation report	<a href="#">M10F0003</a>
Date the recommendation was issued	September 2011
Date of the latest response	December 2022
Date of the latest assessment	Mars 2023
<a href="#">Rating</a> of the latest response	Satisfactory in Part
<a href="#">File status</a>	Active

### Summary of the occurrence

On the afternoon of 17 February 2010, the sail training yacht *Concordia* was knocked down and capsized after encountering a squall off the coast of Brazil. All 64 crew, faculty, and students abandoned the vessel into life rafts. They were rescued 2 days later by 2 merchant vessels and taken to Rio de Janeiro, Brazil.

The Board issued the safety recommendation in September 2011.

### Rationale for the recommendation

Sailing vessels rely on the wind to provide propulsion. However, that wind is also the source of significant heeling forces. Consequently, the safe operation of a sail training vessel, such as *Concordia*, requires a comprehensive understanding of the vessel's stability at large angles of heel as well as the balance between the heeling force of the wind and the righting capability of the hull for any given wind condition and sail plan. These aspects distinguish sailing vessel stability from motor vessel stability. A lack of understanding of these aspects, or an inability to assess the margin of safety of the vessel as conditions change, may result in exceeding safe stability limits, possibly leading to the knockdown, capsize and loss of the vessel.

Following its investigation into the loss of the barque *Marques* in 1987, U.K. Maritime and Coastguard Agency (MCA) recommended that research be conducted with a view to developing a set of stability requirements for sail training vessels. The resulting requirements include the provision of squall curves to assess the vulnerability of a vessel to downflooding under the influence of wind speed increases, either due to gusts or squall conditions. The objective of this information is to provide officers with a means to continuously assess the risk to their vessel and to permit timely mitigating action.

Since the adoption of the standard by the U.K., flag states such as Canada, Malta, Sweden and the Bahamas have also adopted it. Several other flag states, such as the U.S., Poland, the Netherlands and Australia, require vessel designers to perform an initial theoretical assessment of a vessel's stability while under sail. However, they do not require officers to be provided with detailed, vessel-specific guidance information. The lack of such a requirement means that officers must rely on qualitative, experience-based knowledge when assessing risk. However, such reliance cannot ensure that an acceptable, consistent standard of safety is being achieved across the industry, due to the variations in experience and competency.

The squall curves contained in the *Concordia's* stability booklet indicated that the vessel would be safe in wind speeds approximately twice those experienced in the hour leading up to the occurrence. Although a squall was approaching, the second officer, who was not aware of this guidance, did not change the sail plan or heading despite the fact that squalls are unpredictable and could involve wind speeds several times greater than those being experienced. Had the squall curves been consulted and acted upon by either the master or the second officer, the sail plan would likely have been reduced and the heading changed significantly thereby reducing the risk of a knockdown.

Assuming that vessel-specific guidance information is provided, it is then essential that officers be competent to make effective use of it. The investigation determined that the second officer held a certificate of competency issued by the U.K. However, the stability knowledge required to obtain such a certificate is basic and does not address all stability issues, including squall curves specific to sailing vessels. Neither had the master nor the chief officer received specific training with respect to squall curves as presented in the *Concordia's* stability booklet.

The TSB has identified a safety deficiency in that the guidance information, such as squall curves, is not required on sail training vessels by many flag states. Although Canada has adopted the use of the squall curves as part of its stability standards for sail training vessels, it currently has no certification scheme in place to assess an officer's knowledge of these standards. While such a certification system is expected to be in place by the end of 2014, its contents have yet to be defined.

Currently, there are 7 Canadian-flagged sail training vessels carrying in excess of 2500 sail trainees on an annual basis. As this occurrence demonstrates, there are potentially significant consequences when officers are unaware of the stability limits of their vessel.

Therefore, the Board recommended that

the Department of Transport ensure that those officers to whom it issues sailing vessel endorsements are trained to use the stability guidance information that it requires to be on board sailing vessels.

### **TSB Recommendation M11-01**

## **Previous responses and assessments**

### **December 2011: response from Transport Canada**

The *Marine Personnel Regulations* (MPR) provide training and or certification requirements for vessels and include requirements for the officers of sail training vessels (or any other sailing vessels of at least 60 GT or of at least 24m in length that are carrying passengers) to have sailing endorsements (07 November 2011). The application date has been extended to 07 November 2013 in order to provide sufficient time for Transport Canada to develop the sailing vessel training standards under the MPR. The application deadline extension will also allow approved institutions to prepare training programs and allow affected masters and chief mates to comply with the new standards to acquire the sailing vessel endorsement.

Once these standards are developed, Transport Canada (TC) will introduce knowledge specifically related to the operation and safety of vessels under sail, including how to use stability guidance information. In addition, Transport Canada is aware of Sail Training International's plans to develop an international standard. Transport Canada will work towards this standard, with the caveat that it be practical and acceptable to Canadian operators.

### **March 2012: TSB assessment of the response (Satisfactory Intent)**

If fully implemented by 2014, officers on board sailing vessels will be required to be trained and have the knowledge necessary to use the stability guidance information that is required to be on board sail training vessels.

The response to this recommendation is assessed **Satisfactory Intent**.

### **December 2012: response from Transport Canada**

In TC's response of December 2012, they indicated that the "*Marine Personnel Regulations* (MPR) provide training and or certification requirements for vessels."

Section 262 of the MPR outlines requirements for any sail training vessel or any other sailing vessels of at least 60 GT or of at least 24 m in length that are carrying passengers to have sailing endorsements on 07 November 2011.

However, the application date to conform to subsection 262 (3) was extended to 07 November 2014 to provide sufficient time for Transport Canada to develop the sailing vessel training standards under the *Marine Personnel Regulations*, for approved institutions to prepare training programs and for affected masters and chief mates to comply with the new standards to acquire the sailing vessel endorsement.

Once these standards are developed, we will introduce knowledge specifically related to operation and safety of vessel under sail, including how to use stability guidance information.

In addition, Transport Canada is aware of Sail Training International's plans to develop an international standard. Transport Canada will work towards this standard, with the caveat that it be practical and acceptable to Canadian operators.

### March 2013: TSB assessment of the response (Satisfactory Intent)

If fully implemented, officers on board Canadian sailing vessels will be required to be trained and have the knowledge necessary to use the stability guidance information that must be on board sail training vessels.

The response to this recommendation is assessed **Satisfactory Intent**.

### November 2013: response from Transport Canada

The *Marine Personnel Regulations* (MPR) provide training, certification and manning requirements for vessels.

Section 262 of the MPR outlines requirements for any sail training vessel or any other sailing vessels of at least 60 GT or of at least 24m in length that are carrying passengers to have sailing endorsements on November 7, 2011. However, the application date to conform to subsection 262 (3) was extended to November 7, 2014 to provide sufficient time for Transport Canada to develop the sailing vessel training standards under the *Marine Personnel Regulations*, for approved institutions to prepare training programs and for affected masters and chief mates to comply with the new standards to acquire the sailing vessel endorsement.

With the review of the *Marine Personnel Regulations* to meet the STCW 2010 Convention, STCW-F 1995 Convention and the Maritime Labour Convention 2006, Transport Canada has also made proposed amendments to subsections 262 (1) and (3) of the *Marine Personnel Regulations*. The proposed amendments are as follows:

262. (1) Subject to subsection (2), the master and chief mate of a sail training vessel of at least 15 metres in overall length or any other sailing vessel of at least 24 m in length, that is carrying one or more passengers shall hold a Fore and Aft Sailing Vessel, Unlimited endorsement or a Square Rig Sailing Vessel, Unlimited endorsement, depending on the vessel's type of rig.

(3) This section applies beginning on November 7, 2014.

Once the sailing vessel training standards are developed TCMSS will introduce knowledge specifically related to operation and safety of vessel under sail, including how to use stability guidance information.

A TCMSS representative was invited to and attended the Sail Training International 2013 Annual Conference in Aalborg, Denmark (November 14 to 16, 2013) where the Sailing Endorsement Working Group was meeting. TCMSS advocated for the inclusion of stability

guidance information (and for the training of officers in the use of this information) in the STI's new sail training endorsement syllabus. It is expected that by ensuring the proper use of squall curves to assess the risk of knockdown and capsize is incorporated into the sailing endorsement syllabus the trained officers will appreciate the importance of this information and in this way be influenced to provide the stability guidance on board their own vessels.

STI expect to publish the International Sail Endorsement Scheme by July 2014. For obtaining the Canadian sailing vessel endorsement for sailing vessel's engaged on Unlimited voyages or near coastal voyages, class 1, Transport Canada is interested in adopting these international standards conditional that the stability guidance are introduced in the International Sail Endorsement Scheme. As for obtaining the Canadian Sailing vessel endorsement for sailing vessels engaged in near coastal voyage, class 2 or sheltered waters voyages, Transport Canada will develop a Domestic standard starting by using the competence and knowledge from the international syllabus that are pertinent to Domestic sailing vessels and voyages, and will complete the remaining list of knowledge and competencies required that are practical and acceptable to Canadian operators. Transport Canada will ensure that the stability guidance is part of the standards. The fact that the International standards will be made available only in July 2014, it may delay the proposed November 2014 entry into force of the requirement to hold a sailing vessel endorsement."

#### **March 2014: TSB assessment of the response (Satisfactory Intent)**

The inclusion of a requirement for an endorsement to their certificate and the establishment of a training standard that includes the use of stability guidance will mitigate the risk identified during the *Concordia* investigation. The application date to conform to this subsection of the MPR was extended to 07 November 2014.

The response to this recommendation remains **Satisfactory Intent**.

#### **December 2014: response from Transport Canada**

Transport Canada's response reiterated the information provided in its response of November 2013:

With the review of the Marine Personnel Regulations to meet the STCW 2010 Convention, STCW-F 1995 Convention and the Maritime Labour Convention 2006, Transport Canada has also made proposed amendments to subsections 262 (1) and (3) of the Marine Personnel Regulations (MPR). The proposed amendments are as follows:

262. (1) Subject to subsection (2), the master and chief mate of a sail training vessel of at least 15 metres in length overall or any other sailing vessel of at least 24 m in length, that is carrying one or more passengers shall hold a Fore and Aft Sailing Vessel, Unlimited endorsement or a Square Rig Sailing Vessel, Unlimited endorsement, depending on the vessel's type of rig.

(3) This section applies beginning on November 7, 2016.

The response also indicated that Transport Canada “is aiming to publish in the *Canada Gazette*, Part I, the proposed amendments to the MPR by the end of 2015.”

#### **March 2015: TSB assessment of the response (Satisfactory Intent)**

In September 2014, Sail Training International and the Nautical Institute introduced the International Sail Endorsement Scheme, which among other things, requires all candidates seeking an International Sail Endorsement to be able to interpret curves of steady heel (squall curves).

TC’s proposed requirements for sailing vessel endorsements and the establishment of a Canadian training standard that includes the use of stability guidance will mitigate the risk associated with this recommendation. The application date to conform to the proposed requirement of the *Marine Personnel Regulations* has now been extended to November 07, 2016.

The assessment of the response to recommendation remains **Satisfactory Intent**.

#### **December 2015: response from Transport Canada**

Transport Canada Marine Safety and Security is presently working to develop the sailing vessel training standards under the *Marine Personnel Regulations* for approved institutions to prepare training programs and for affected masters and chief mates to comply with the new standards to acquire the sailing vessel endorsement.

#### **March 2016: TSB assessment of the response (Satisfactory Intent)**

TC’s proposed amendments to the *Marine Personnel Regulations* stipulate that masters and chief mates with sail training vessel endorsements must be trained to use the stability guidance information that is required on board sail training vessels.

The assessment of the response to this recommendation remains **Satisfactory Intent**.

#### **March 2017: response from Transport Canada**

Transport Canada Marine Safety and Security will work with major Sailing Vessels associations to develop the competencies and knowledge (including stability guidance) required for the candidates to obtain a Sailing vessel endorsement. Following the development of these course outlines, TCMSS will approve major Sailing Vessels associations to provide the training for candidates wishing to obtain a Sailing vessel endorsement. On October 6th 2016, this proposition was brought forward to TSB during a meeting with Transport Canada Marine Safety and Security.

As per the proposed revised *Marine Personnel Regulations*, to be published in the *Canada Gazette*, Part I, in 2018, a person who wishes to obtain a Certificate of Proficiency for sailing vessels must provide a training certificate in sailing from an approved recognized institution

applicable to the type of rig, have the appropriate sea service and hold any master or deck certificate of competency.

### **March 2017: TSB assessment of the response (Satisfactory Intent)**

TC is proposing to work with Sailing Vessels associations to develop competencies and knowledge, including stability guidance, and approve these associations to provide the training. Further, TC is proposing to amend the *Marine Personnel Regulations* to capture the proposal to certify the training given by the associations. The rating of this response remains as **Satisfactory Intent**.

### **December 2017, April 2018, June 2018: response from Transport Canada**

TC planned to meet with sailing vessels associations in January 2018 to develop competencies and knowledge, including stability guidance, and approve these associations to provide the training for those who want to obtain sailing vessel endorsements. The meeting was postponed to March 2018 at the request of stakeholders.

In April 2018, TC advised the TSB that the meeting had taken place on March 23, 2018 and included representatives from TC and the Bytown Brigantine Foundation. In June 2018, TC clarified that it is not planning to follow up with other associations and indicates that the Bytown Brigantine Foundation is a representative of Tall Ships Canada which is replacing the Sailing Vessel Association.

The training manual for sailing vessels will be submitted by the Bytown Brigantine Foundation in consultation with Tall Ships Canada. The majority of the sailing vessel associations now fall under the umbrella of Tall Ships Canada, including Bytown Brigantine Foundation. TC is also working with industry to review best practices and training programs. The information garnered from this review may be incorporated into the new course material should it be required. Once the training manual is approved by TC, Bytown Brigantine Foundation will notify TC of the names of the sailing vessel associations that fall under the Tall Ships Canada umbrella, and subsequently authorize them to deliver the training to candidates wishing to obtain a sailing vessel endorsement (as per the current *Marine Personnel Regulations*). Those sailing vessel associations will then become Transport Canada approved course providers. TC will audit Tall Ships Canada and their associated sailing vessels associations and, upon a successful audit, will deliver an approval letter valid for 5 years. Candidates who successfully complete the training course will be issued a training certificate by Tall Ships Canada. The candidate will then go to a TC examiner office where an endorsement will be delivered. The training manual should be ready in September.

### **June 2018: TSB assessment of the response (Satisfactory Intent)**

In March 2018, TC met with the Bytown Brigantine Foundation, representing Tall Ships Canada that includes the majority of the sailing vessel associations in Canada. TC intends to review the training manual for sailing vessels submitted by the Bytown Brigantine Foundation and grant approval. Once approved, the Bytown Brigantine Foundation will advise TC of the names of

other sailing vessel associations that fall under the umbrella of Tall Ships Canada. TC will then authorize these associations to provide the training to candidates for a sailing vessel endorsement as per the current *Marine Personnel Regulations*. TC has clarified that it does not plan to amend the *Marine Personnel Regulations* to capture the proposal to certify the training given by the associations as the requirements for obtaining certification for the endorsements are not fundamentally changing.

The Board considers the response to the recommendation to show **Satisfactory Intent**. However, the Board is concerned about the repeated delays in achieving progress on this recommendation.

#### **January 2019: response from Transport Canada**

Transport Canada (TC) agrees with the recommendation. TC is expecting to receive the course syllabus, which covers stability, from sail vessel associations, by spring 2019. Once received, TC will review and assess the documentation. Following Transport Canada's approval, the operators will become an accredited training provider and be able to issue training certificates. These training certificates will then be exchanged for a TC Sail Training Certificate of Proficiency.

#### **February 2019: TSB assessment of the response (Satisfactory Intent)**

The Board notes that TC will receive the course syllabus from the sail vessel associations by spring 2019. However, TC has not provided a timeline for evaluation of the course syllabus. As a result, it is not clear when training providers will be able to start issuing training certificates. The Board is also concerned about the repeated delays in achieving progress on this recommendation.

The response to the recommendation is considered to show **Satisfactory Intent**.

#### **January 2020: response from Transport Canada**

Transport Canada (TC) agrees with this recommendation. TC received a draft of a proposed syllabus and subsequently met with the associated sailing vessel association in June 2019. A number of complexities have arisen since that time and TC is continuing to work diligently with the associations to ensure a structured training program is put into place by early 2020 in order to grant accredited operators the ability to issue training certificates.

#### **March 2020: TSB assessment of the response (Satisfactory Intent)**

The Board notes that TC has received a draft of the proposed syllabus, has met with the associated sailing vessel associations in June 2019, and expects to put a program in place by early 2020. It is not clear when training providers will be able to start issuing training certificates and when TC will exchange the training certificates for a TC Sail Training Certificate of Proficiency. The Board is concerned about the ambiguous reference made to a number of complexities and notes that there have been repeated delays in achieving progress on this recommendation.



The Board considers the response to the recommendation to show **Satisfactory Intent**.

#### **February 2021: response from Transport Canada**

Transport Canada agrees with this recommendation. Since receiving a draft of a proposed syllabus and meeting with the associated sailing vessel association in 2019, the intent has changed from issuing endorsements for masters and mates on sailing vessels, to instead requiring that masters and mates on sailing vessels hold a valid Certificate of Competency (CoC), either domestic or Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

Since Transport Canada will introduce training on stability for sail training vessels within its examination syllabus, this will become required training for anyone seeking a Certificate of Competency. Furthermore, proposed amendments to the *Marine Personnel Regulations* will place the responsibility on authorized representatives to ensure that every crew member is familiar with how the stability of the vessel is affected when under sail. The proposed *Marine Personnel Regulations* are anticipated to advance to the *Canada Gazette*, Part I, in late 2021 and be published in the *Canada Gazette*, Part II, in summer 2022.

#### **March 2021: TSB assessment of the response (Satisfactory Intent)**

The Board notes that Transport Canada (TC) will begin to require masters and mates on sailing vessels to hold a valid Certificate of Competency (CoC), according to either domestic or Standards of Training, Certification and Watchkeeping for Seafarers (STCW) requirements, and that stability for sail training vessels will become part of the examination syllabus. Upon a request for further clarification by the TSB on 04 March 2021, TC specified that this information will be included in the examinations of all seafarers seeking a CoC, not just masters and mates of sailing vessels.

Currently, TC's requirements for a sailing vessel endorsement include a training certificate applicable to the type of rigging on the vessel, and sea time (reduced if combined with an on-board training program). The proposed changes, which will eliminate the sailing vessel endorsement and add sailing vessel stability to TC's examination syllabus, will not be sufficient to evaluate seafarers' competency in sailing vessel stability. Given that the vast majority of individuals taking TC examinations are qualifying to serve on motor vessels, the training material is designed for these operations. TC's decision to make stability under sail a requirement for all seafarers thus runs the risk of rendering the training superficial in nature and, in turn, will leave masters and mates of sailing vessels inadequately trained. While STCW courses provide critical information to seafarers, none of it appears to be specific to sail training vessels. The Board notes that the investigation leading to this recommendation found that although the second officer's CoC included basic stability training, it was insufficient in the circumstances of the occurrence. TC has not provided a timeline for the integration of stability on sailing vessels into its examination syllabus, nor the details of what knowledge will be expected of seafarers.

The Board is concerned with TC’s stated change in intent, from issuing endorsements to officers on sail training vessels to placing responsibility on authorized representatives to ensure that all crew members are familiar with how the stability of their vessel is affected when under sail. It is unclear to the Board how this will be materially different from the existing requirements to develop procedures for the safe operation of a vessel in section 106 of the *Canada Shipping Act, 2001*. Also, TC has not provided any indication of how it would verify that authorized representatives are ensuring that crew members are familiar with the stability of the vessel under sail. The Board would like to draw attention to the wording of the recommendation, which states that TC ensures that officers are “trained to use the stability guidance information that it requires to be on board sailing vessels.”

As a result the lack of detail in TC’s submission, the Board is **unable to assess** the response to Recommendation M11-01.

**December 2021: response from Transport Canada**

Transport Canada does not anticipate a negative impact to vessel safety with respect to the removal of the issuance of sailing endorsements to officers on sail training vessels from the *Marine Personnel Regulations*. Departmental records show that only 4 sailing endorsements have been issued since the coming into force of the *Marine Personnel Regulations*, on July 1, 2007, and none of these endorsements remain valid today. In November 2021, Transport Canada amended the Transport Canada publication titled *The Examination of Certification of Seafarers* (TP 2293) introducing training respecting stability on sailing vessels within its examination syllabus for the following courses:

- Ship, Construction and Stability, level 3
- Ship, Construction and Stability, level 4
- Ship, Construction and Stability, level 5

Below is an excerpt of the addition to TP 2293 which specifies the knowledge that is now expected of seafarers and is subject to examination. It should be noted that these examination objectives are in addition to STCW requirements.

Subject	Knowledge required
Stability on sailing vessels	a) Stability under sails b) Effect of wind and sail c) Center of effort, Centre of lateral resistance, Bernoulli’s Principle, Venturi Effect, sail balance, sail shape and trim, lee helm, weather helm. d) Aerodynamic e) Compliance with the stability criteria indicated in the sailing vessel stability booklet against capsizing f) Sail setting as per prevailing conditions, amount of sail carried with regard to wind conditions, special care with a strong stern wind, in the event of the vessel broaching or a gust on the beam

Furthermore, proposed amendments to the *Marine Personnel Regulations* have been developed to require the authorized representative of a vessel to provide to the master more comprehensive written policies and procedures, in the form of on-board familiarization training, to be followed to ensure that every person who is employed receives the training before being assigned to their duties. Of note, familiarization training for every employed person must respect their specific duties and with respect to all vessel arrangements, installations, equipment, procedures and vessel characteristics that are relevant to their routine or emergency duties. The proposed amendments will also place an obligation on the Master, in addition to the authorized representative, to ensure every person employed receives on-board familiarization training.

Transport Canada welcomes the opportunity to discuss the amendments to TP 2293 and the proposed amendments to the *Marine Personnel Regulations* at the convenience of the Transportation Safety Board.

Transport Canada is working very closely with the Tall Ships Canada Association to develop specific language that will be incorporated into the *Marine Personal Regulations* (as part of the consultation process prior to Gazette 1) to specifically address familiarization /training specific to Sailing vessels along with the other proposed amendments.

#### **March 2022: TSB assessment of the response (Satisfactory Intent)**

The Board notes that although there are currently 7 sail training vessels flagged in Canada, Transport Canada (TC) has only issued 4 sailing vessel endorsements since the recommendation was issued in 2011. Although TC does not track the number of applications for endorsements, the low number of these endorsements that have been issued indicates that the sailing endorsement was not achieving the safety outcomes as intended; indeed, TC has determined that it will eliminate the endorsement in the next revision to the *Marine Personnel Regulations* (MPR), currently anticipated for pre-publication in the *Canada Gazette*, Part I, in late 2022.

Since this recommendation was first issued over 10 years ago, TC's approach to oversight of stability knowledge for sailing vessel officers has changed. TC has indicated that it is working with Tall Ships Canada to incorporate changes in the MPR that will address specific requirements for sailing vessels. The Board is encouraged that the revisions will also include more specific requirements for familiarization and on-board training, but remains concerned about extended delays in the publication of the revised MPR and the potential for variation between Authorized Representatives in the application of TC's guidance. Once the revised regulations are pre-published in late 2022, the TSB will review the regulatory proposal and evaluate whether it would address the safety deficiency in this recommendation.

Therefore, the Board considers the response to Recommendation M11-01 to be **Satisfactory Intent**.

## Latest response and assessment

### December 2022: response from Transport Canada

Transport Canada continues to advance work to amend the *Marine Personnel Regulations* to address this recommendation. Consultations with key stakeholders are ongoing, including at the National Canadian Marine Advisory Council (CMAC) Standing Committee on Personnel on November 10, 2022. Revised targets for amendments to the *Marine Personnel Regulations* include publication in *Canada Gazette, Part I* in Fall 2023 and *Canada Gazette, Part II* in 2024.<sup>1</sup>

### March 2023: TSB assessment of the response (Satisfactory in Part)

Transport Canada's (TC) response indicates that the pre-publication of the new *Marine Personnel Regulations* (MPR) in the *Canada Gazette, Part I* have been further delayed from late 2022 to fall 2023. The Board is concerned about ongoing delays as previous responses from TC first indicated an expected pre-publication in 2015. Once the revised regulations are pre-published, the TSB will review the regulatory proposal and evaluate whether it will address the safety deficiency in this recommendation.

Therefore, the Board considers the response to Recommendation M11-01 to be **Satisfactory in Part**.

### File status

The TSB will continue to monitor the progress made by Transport Canada.

This deficiency file is **Active**.

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<sup>1</sup> Responses are those of the stakeholders to the TSB in written communications and are reproduced in full. The TSB corrects typographical errors in the material it reproduces without indication but uses brackets [ ] to show other changes or to show that part of the response was omitted because it was not pertinent.