



## REASSESSMENT OF THE RESPONSES TO AVIATION SAFETY RECOMMENDATION A00-13

### PACKAGING STANDARDS

#### Background

The Aerospatiale AS 355 F1 Twinstar helicopter had completed a routine gas pipeline patrol and was returning to Fairview, Alberta, with the pilot and one passenger on board. During a shallow cruise descent into Fairview, at about 800 feet above ground, the red battery temperature light illuminated on the warning caution advisory panel. The pilot observed that the voltmeter and ammeter indications were normal and turned off the battery. About three minutes later, at approximately 500 feet above ground and as the pilot was contemplating a precautionary landing, the helicopter lost all electrical power and the cabin and cockpit began to fill with smoke and fumes. The pilot and passenger opened the side windows to ventilate the cabin, and the pilot accomplished an emergency landing at once on an available farm field. After landing, the pilot shut down the engines and both occupants evacuated the helicopter without further incident or injury. Flames were observed to be emanating from the vicinity of the right baggage compartment, and the helicopter was subsequently destroyed by an intense ground fire.

The Board concluded its investigation and released report A99W0061 on 28 August 2000.

#### Board Recommendation A00-13 (28 August 2000)

The survival and emergency equipment carried on board the helicopter included a five-person survival shelter and an emergency survival kit that contained emergency flares. The bags that housed the survival and emergency equipment were made of flammable nylon; the bags were not required to be flame-resistant. During testing, the bag materials ignited quickly, melted, dripped, and were totally destroyed by fire. The highly combustible nature of this packaging material contributed to the severity of this occurrence by providing a ready source of fuel in the face of the arcing event. In addition, survival equipment transported in flammable packaging reduces the likelihood that this equipment will be available for its intended purpose.

The survival kits in each of the four company helicopters contained two hand-held, marine-type, parachute flares and four day/night smoke flares. All flares on board the accident helicopter had ignited and discharged during the fire. The flares are classified as 1.2G and 1.4G

explosives. Materials classified as 1.2G explosives are forbidden to be shipped on cargo and passenger aircraft under International Air Transport Association (IATA) dangerous goods regulations. Goods classified as 1.4G explosives can be shipped on cargo aircraft, provided that they are packaged in accordance with the appropriate packaging instructions. The emergency flares in two of the three survival bags in the company sister ships were packaged in crumpled newspaper to prevent abrasion. IATA Dangerous Goods Packing Instruction 905 requires signal devices transported as dangerous goods to be packaged in plastic or fibreboard inner containers. Current dangerous goods regulations do not apply to products that are necessary for the safety of the persons on board the means of transport. Any condition that unnecessarily increases the potential for the initiation or propagation of a fire on board an aircraft is hazardous, putting passengers and crew at risk. Therefore the Board recommended that:

The Department of Transport ensure that air operators store aircraft survival gear on aircraft in flame-resistant material and package emergency pyrotechnics and other highly flammable survival equipment at least to the standards required by International Air Transport Association (IATA) *Dangerous Goods Regulations*.

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#### **Response to A00-13 (22 November 2000)**

In its letter of 22 November 2000, Transport Canada (TC) agrees with the intent of the recommendation, which is to ensure the likelihood that survival equipment will be available after an accident for the intended purposes and to reduce the potential for this equipment to initiate or propagate a fire on board an aircraft.

TC stated that it will proceed with the development and distribution of a Commercial & Business Aviation Advisory Circular (CBAAC) incorporating the TSB recommendation to store flares in survival equipment to International Civil Aviation Organization (ICAO) Technical Instruction packing standards. A Notice of Proposed Amendment (NPA) to the *Canadian Aviation Regulations* (CARs) will also be prepared. The NPA will be submitted to the Part VI Technical Committee of the Canadian Aviation Regulation Advisory Council (CARAC) for consultation with stakeholders by June 2001.

#### **Board Assessment of the Response to A00-13 (22 November 2000)**

In its reply of 22 November 2000, TC indicated that it agrees with the intent of the recommendation and that it will proceed with the development and distribution of a CBAAC incorporating the TSB recommendation to store flares in survival equipment to ICAO Technical Instruction packing standards. Additionally, an NPA to the CARs will be prepared and submitted to the Part VI Technical Committee of the CARAC for consultation with stakeholders by June 2001. Given that the CBAAC has not been issued, that the proposed amendments to the CARs may depend on a positive response from the CARAC Technical Committee, and that amendments to the CARs will not occur until after the consultative process with CARAC is completed, the response is considered **Satisfactory Intent**.

**Next TSB Action (12 March 2001)**

TSB Air Branch staff will closely monitor the progress of TC activities to determine if their action plan addresses the identified deficiency.

**Response to A00-13 (14 December 2005)**

On 14 May 2001, TC issued CBAAC 0184 entitled *Stowage and Packaging of Survival Equipment and Emergency Flares* incorporating the TSB recommendation to store flares in survival equipment to ICAO Technical Instruction packing standards. Subsequently, the Survival Equipment Working Group report was presented on 06 January 2005. An NPA to the CARs will be prepared. The NPA will be submitted at a future Part VI Technical Committee of the CARAC for consultation with stakeholders.

**Board Reassessment of the Response to A00-13 (12 Jul 2006)**

On 14 May 2001, TC issued CBAAC 0184 recommending that air operators ensure that “life-saving appliances” such as survival equipment are stored in compliance with ICAO’s Packing Instruction 905 when required to be carried on board the aircraft in accordance with pertinent airworthiness requirements or operating regulations. TC’s activity update of 14 December 2005 states that an NPA will be prepared to address the deficiency raised in Recommendation A00-13. The NPA will be submitted to a future Part VI Technical Committee of the CARAC for consultation with stakeholders.

Because the proposed action, if fully implemented, will reduce the safety deficiency described in Recommendation A00-13, the assessment remains at **Satisfactory Intent**.

**Next TSB Action (12 July 2006)**

TSB Air Branch staff will closely monitor the progress of TC activities to determine if the action plan addresses the identified deficiency.

**Response to A00-13 (07 February 2007)**

Preliminary research for the development of an NPA indicates that imposing a particular flammability standard for survival equipment packaging may be difficult, as no such standard currently exists. Research is on going.

**Board Reassessment of the Response to A00-13 (24 July 2007)**

TC is continuing to look into this issue; however, no action has yet to be taken. The stated action, if fully implemented, will substantially reduce the risks associated with Recommendation A00-13.

Therefore, the assessment remains at **Satisfactory Intent**.

**Next TSB Action (24 July 2007)**

TSB Air Branch staff will closely monitor the progress of TC activities in order to determine if their action plan addresses the identified deficiency.

**Response to A00-13 (6 March 2008)**

In its response of 6 March 2008, TC reported that, in May 2001, it distributed a Commercial & Business Aviation Advisory Circular (CBAAC - 0184) incorporating the TSB recommendation to store flares in survival equipment to the ICAO Technical Instruction packing standards.

TC also stated that research for the development of an NPA indicates that imposing a particular flammability standard for survival equipment packaging is insurmountable as no such standard currently exists to reference.

In addition, TC considers this recommendation CLOSED because:

- Implementation of the original recommendation is not feasible given that no standard exists to reference.
- Over and above the original recommendation, TC raised operator's awareness of this issue thus reducing the risks associated with the identified safety deficiency.

TC also stated that it would not be taking any further action in response to Recommendation A00-13.

**Board Reassessment of the Response to A00-13 (13 August 2008)**

TC's development and distribution, in May 2001, of a Commercial & Business Aviation Advisory Circular (CBAAC - 0184) incorporating the TSB recommendation to store flares in survival equipment to the ICAO Technical Instruction packing standards is commendable, in that it should have made air operators aware of the risks identified in TSB Recommendation A00-13 in the short term.

Although, TC states that no standard exists for reference, IATA Dangerous Goods Regulations exist and are published on a yearly basis. As well, TC has changed from its original plan to establish permanent regulatory requirements for packaging survival equipment.

TC's decision to not pursue its original plan to establish permanent regulatory requirements for packaging survival equipment and to not take further mitigating action will result in a situation wherein the action taken will reduce but not substantially reduce or eliminate the deficiency underlying Recommendation A00-13.

Therefore, the assessment rating has regressed to **Satisfactory in Part**.

**Next TSB Action (13 August 2008)**

TSB Air Branch staff will continue to communicate concerns to TC regarding the TC position that no standard exists to reference, and will continue to monitor occurrences reflecting similar type deficiencies upon which this recommendation was based.

**Response to A00-13 (15 February 2010)**

TC's latest response restates the fact that it issued CBAAC 0184 in 2001. Additionally, it states that the issue remains open and will be addressed as part of its ongoing implementation of the CARAC's Survival Equipment Working Group (SEWG) Final Report recommendations. The response does not provide details of the SEWG recommendation that deals with the deficiency identified in TSB Recommendation A00-13. However, it does state that the SEWG's recommendations have been ranked 211th in a Branch priority setting exercise.

**Board Reassessment of the Response to A00-13 (28 July 2010)**

TC's recent response does not describe the relevant SEWG recommendation or whether or not it advocates on behalf of the establishment of a regulatory requirement for packaging survival equipment. Nor does it indicate how or when, given its 211th ranking on the Branch priority list, TC plans to implement the SEWG recommendation.

The lack of information in TC's response with respect to its action plan to address the deficiency identified in Recommendation A00-13 results in a status quo situation. The planned action may reduce but not substantially reduce or eliminate the deficiency underlying Recommendation A00-13.

Therefore, the assessment rating remains as **Satisfactory in Part**.

**Next TSB Action (28 July 2010)**

The Board feels that as the residual risk associated with the deficiency identified in Recommendation A00-13 is substantial and no further action is planned by TC continued reassessments will not likely yield further results.