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Mr. Franz Reinhardt  
Director, Policy & Regulatory Services (AARB)  
Transport Canada, Tower C, 5<sup>th</sup> Floor, Place de Ville  
Ottawa, ON  
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Dear Mr. Reinhardt:

I am writing on behalf of the 18,000 members of COPA to dissent against NPAs 2007-031, 2007-032 and 2007-033 concerning Electronic Locator Transmitters (ELT) as revised by the CARC in January 2008.

Thank you for sending me copies of the NPAs as amended by CARAC VI Technical Committee on 20 November 2007, the letters of dissent from the Department of National Defence dated 10 January 2008 and the National Search and Rescue Secretariat dated 13 December 2007, and the revised version of the NPAs from the January 2008 CARC meeting.

Also, thank you for taking the time to speak with me on 21 January 2008 to clarify the intent of the NPAs and to listen to my reasoning for dissenting to the current version of the NPAs. You agreed that I should submit my concerns in writing, and this is therefore the purpose of this letter of dissent.

### **History of the Issue for COPA**

I feel it is important, given the passage of time, to provide some background information and documentation as a foundation for COPA's dissent not only for a complete understanding of our position, but also so that it is recorded in one place for future reference.

In 1998, upon learning of ICAO's proposed amendments to Annex 6 and Annex 10 to mandate ELTs capable of broadcasting on 406 MHz, COPA sent a letter to Transport Canada (kp98095 – attached) and followed up, at the request of Transport Canada, with a letter (kp98130 – attached) in which COPA detailed a recommended course of action. Some of the recommendations from that letter were accomplished. Others, to this day, remain unaddressed.

A Task Force was formed and met several times over a number of years. COPA's primary concern, emphasized many times, was and is that a fixed alerting device that depends on surviving an accident is a very unreliable method for signaling distress, and the more expensive it is to install, the less the cost-benefit analysis makes sense. Although no one could definitively determine how often ELTs fail to activate automatically and long enough to help determine the accident location, consensus from Canadian as well as international sources was that in the majority of accidents ELTs fail.

One such indication of the high failure rate is a Department of National Defence report from September 2000 (kp05011 – attached) in which it was acknowledged that at least fifty percent of the occurrences where there was “true distress” the “ELT did not activate” (see page 6 of the report for categories of cases and Table IV on page 9 for statistics). At a meeting of the Task Force, I asked the DND representatives to confirm my interpretation of the statistics and they agreed.

As pointed out in the above letters and several presentations made by me during the Task Force deliberations, while perhaps there may be some improvement with the more robust specification for 406 ELTs, the fundamental causes of failure will continue because the device, cabling and antenna must still survive the accident, and there is no evidence that the tighter specification will significantly reduce these failures.

A considerable issue was and still is the cost to purchase and install the new ELTs. In 1999, Northern Airborne Technologies investigated the possibility of reducing the cost (report TP 13496E is attached) and several recommendations were made to reduce the cost. Only one recommendation was followed; funding for low-cost ELT development. This effort failed when EMS decided for unspecified reasons not to proceed to production. Others, such as review of AD-CF-81-29R2 banning use of LiSO<sub>2</sub> batteries, would significantly increase the availability of ELTs in Canada but to date this review has not taken place even though elsewhere in the world the revised specification has solved the problem. In the eight years since this report, Transport Canada has failed to take positive action to reduce the cost of ELTs.

With the reality that ELTs do fail at an unacceptable rate that is not expected to significantly improve with 406 ELTs and with the cost to equip with the new ELTs remaining unacceptably high, COPA felt that it would be unreasonable to require aircraft owners to equip. So, we concentrated our effort on finding alternatives to 406 ELTs. This effort led to a commitment by the then Director General Civil Aviation, Art Laflamme, to not mandate 406 MHz ELTs. However, by 2004, Transport Canada began to stray from the commitment. The first attempt at NPAs that permitted alternatives was passed by CARAC VI but rejected by CARC because, in CARC’s opinion, the NPAs did not adequately address the ICAO standards.

In response to the failure of the NPAs to be accepted by CARC, the COPA Board of Directors passed the following resolution in October 2004:

- Whereas ELTs have shown themselves to not activate properly in all instances, and;
- Whereas other and potentially superior technology is finding its way into the industry.
- Be it resolved that the COPA Board does not support the forced implementation of 406 MHz ELTs, and;
- Be it resolved that COPA deplores the decision by the government to renege on its previous decision to not mandate equipage with 406 MHz ELTs.

Subsequent to this resolution and in an attempt to develop another version of the NPAs, Transport Canada decided to conduct a risk assessment. This effort culminated in development of NPAs being brought to a CARAC VI Technical meeting in November 2007.

### **Problems With The NPAs**

The NPAs that were presented at the November 2007 CARAC VI meeting were inadequate and, in my opinion, did not reflect the results of the risk assessment process. Since I do not have a copy of the decision record from that meeting, I do not know what was recorded regarding the dissents that I expressed as the NPAs were reviewed. However, changes were made to the NPAs at that meeting to the satisfaction of the CARAC VI Committee and I withdrew my dissents by the end of the meeting. I expected that the revised documents would be sent to Committee members before they went to CARC, if for no other reason than to ensure that they reflected the consensus that was achieved, but this did not occur.

I received a copy of the NPAs that went to the CARC, but not until after the CARC met. I could go into detail regarding the issues I have with these versions of the NPAs, but that would not be productive. Instead, I will concentrate on the version that resulted from the decision at the CARC meeting.

Keeping in mind that one of the goals of the NPAs should be to provide alternatives to 406 ELTs, I would like to explain how, for private aviation, the NPAs provide no alternatives, and therefore 406 ELTs are effectively being mandated. Furthermore, I will demonstrate how our sector is being held to a higher standard than commercial aviation, and in particular the airlines.

In 605.38(3) “alternative means” of providing notification and location are permitted and notification must be “without activation from the crew”. I was opposed to the requirement for notification without activation from the crew because it precludes all Personal Locator Beacons and other excellent devices, but I went along with this constraint because tracking devices providing a breadcrumb trail leading to the vicinity of an accident, a concept that does not require activation from the crew and does not have to survive an accident, were permitted by the version of the NPAs that was developed by the Technical Committee.

However, severe constraints imposed in the NPAs developed by CARC preclude all known tracking devices from serving as alternatives.

In 625.39(2) it states that the alternative means “shall be a system” and although an ELD can be part of a system, it cannot stand alone.

The acceptability of an ELD as an alternative is further constrained by 625.39(1), which refers to an occurrence as being a “distress signal” from an ELD. Although many existing tracking devices have the capability of sending a distress message, they can only do so if some action is taken by the crew. The distress signal from tracking devices is essentially the failure to continue reporting or repeated reporting from one location but I doubt this would satisfy the intent of the term developed by CARC.

The acceptability of an ELD, as part of a system, is further constrained by the requirement in 625.39(2)(a) for notification of an “aircraft occurrence” (undefined anywhere in the CARs) to be “immediate”. The dictionary definition of immediate is “accomplished without loss or interval of time”. Clearly, any device, including 406 ELTs, that reports periodically cannot meet this requirement.

The acceptability of a system is further constrained by the requirement in 625.39(3)(a) for the monitoring service of an ELD to be “continuous”. Attempts were made during the deliberations at CARAC VI meeting to tie monitoring to the expiry of the flight plan as an acceptable means but this has been removed. Even though some existing tracking devices such as SPOT have, as part of the service, continuous monitoring for the distress message (the 911 feature for SPOT) and position accuracy well within the 2.7 nautical mile requirement, activation on the part of the crew is required. Therefore, these tracking devices do not meet the requirement.

Essentially, the NPA requires automatic activation at the time of an accident. There is no existing means to do this, within the constraints imposed by the NPAs, except for an ELT.

The acceptability of any system is also severely constrained by the requirement in 625.39(2)(a)(ii) for the third party to “immediately receive and forward” information. I have contacted some of the agencies who could potentially provide this service and all have responded that liability issues would most likely prevent them from offering this service. Use of the word “immediate” should be reviewed because this alone most likely will prevent any tracking devices or services from ever being an alternative means.

Requiring any device to provide location within 2.7 nautical miles effectively precludes any tracking device from being acceptable. Even though most tracking devices provide very accurate location information, the only way that a periodically reporting device could qualify, given the above constraints and this one, would be if the time between reports was short enough so that the distance travelled from the last report to the next expected report is no longer than 2.7 nautical miles. For many aircraft, reports would have to be sent at most about every 30 seconds. Given that the cost of a tracking device monitoring service is dependent in part on the frequency of messages, it would likely be cost-prohibitive for our sector of aviation. To illustrate this assertion, although it is technically possible to provide reports every few seconds, most commercial users of existing tracking services are choosing reports of 10 minutes because of the cost for more frequent “hits”.

My extensive research into alternatives leads me to conclude that the revised wording of the NPAs prevents any existing tracking device or service from being an alternative means. Despite the obvious advantages of devices that provide a trail leading to the vicinity of an accident and very accurate GPS coordinates with every report, the only alternative that is permitted is one that provides information only if it survives the crash. If it does not survive, search crews are faced with no information to narrow down the search area. Given that there is no evidence to prove that 406 ELTs will be appreciably more reliable than their predecessors, lives will be at risk because of the revised NPAs.

### **Other Alternatives Are Not Available to Private Aviation**

Other alternatives to 406 ELTs are permitted in 625.39(3). However, our sector of aviation cannot use them.

One option is 625.39(3)(b); “an air traffic control system that provides continuous radar coverage under an IFR flight plan”. During deliberations in the CARAC VI meetings, “radar coverage” was changed to “surveillance” for a good reason. NAV CANADA is introducing multi-lateration

as a surveillance tool, initially in the Fort McMurray area and Vancouver lower mainland. I urge you to educate yourself about how it works and then reinsert “surveillance” into the regulation. Otherwise, aircraft that are adequately tracked by ATC using multi-lateration will be precluded from taking advantage of this alternate means.

Furthermore, the deliberations of the CARAC VI meeting added VFR flight following. This was done because there is no difference, as far as location of an accident is concerned, between an IFR flight and a VFR flight that is “tagged” by ATC. While I appreciate that the level of service provided by ATC is different, aircraft on VFR flight following, for the purposes of location, will be just as good as IFR. Since the vast majority of private aviation is not IFR qualified, this alternative as revised is therefore not available.

In 625.39(3)(c) ADS-B is permitted. Since it will not be available for our sector of aviation for the foreseeable future, aircraft owners will be required to invest in 406 ELTs anyway. When ADS-B comes into place, owners will be required to make further investment for what will essentially be a duplication of alerting capability. It would be much better to permit affordable alternatives during the period until ADS-B is expanded and becomes affordable for our sector.

In 625.39(3)(d) and Type A “flight dispatch system” (referred to in CARs as an “operational control system”) is only available to the airlines.

In 625.39(3)(e) other systems are permitted. There are none available to my knowledge.

Since there are no alternatives available for our sector of aviation, the revised NPAs effectively mandate 406 ELTs. Given COPA’s longstanding opposition to mandating 406 ELTs, COPA dissents to the revised NPAs.

### **ELDs and Related Systems Held to a Higher Standard Than 406 ELTs and Other Alternatives**

#### **Activation Timing, ELT vs ELD**

According to the NPAs, the requirement for a system includes “immediate” notification. As explained earlier, this means no delay in activation is permitted. According to specification C-126, it can take up to one minute for the first message to be generated and sent to a satellite after the G switch activates the unit. One minute is a long time during an accident sequence. In that time, all of the deficiencies of fixed ELTs can be realized (antenna breaks off, ELT is crushed, fire consumes etc), before the signal gets out. Furthermore, given the reality that so much of Canada is covered by water and there are many floatplanes out there, most accidents in water result in immediate inversion of the aircraft and rapid sinking. Most likely, a 406 ELT will not be useful in these situations.

#### **Resolvable Location Accuracy, Radar vs ELD**

An air traffic control system with continuous radar coverage is a lower standard than is required of an ELD system. Keeping in mind that the NPAs do not permit any action from the crew, let’s examine a situation where an aircraft comes into distress. Even if the controller immediately

notices that an aircraft is descending or that it has suddenly disappeared from the radar screen, such as from a complete power loss or in-flight break-up, the altitude and speeds at which many aircraft fly will result in a very large area of uncertainty from the last known location, certainly more than 2.7 nautical miles.

#### Resolvable Location Accuracy, Type A vs ELD

Type A Operational Control Systems are also a lower standard than for an ELD system. CAR 725.20 requires reports in domestic airspace at least once per hour. Type A systems may therefore allow resolvable location accuracies of as little as 500 miles at airliner speeds. And even if an Aircraft Situation Display System is employed with a maximum of five minutes between reports, this is a long time given the speeds at which airliners travel, and certainly well in excess of the 2.7 nautical mile accuracy that ELDs are being held to.

Since it is apparent that other alternate means are less stringent than the requirements for an ELD system, which for the most part would be employed by our sector, the NPAs are holding our sector to a higher standard than others, in particular large commercial airliners. For this reason, COPA dissents from the NPAs.

#### Transition Period For Compliance

Should you insist on proceeding with mandating 406 ELTs for our sector of aviation, I want to point out some issues that, if not addressed, will ground thousands of aircraft.

I understand from our discussion that Transport Canada is considering a twelve to eighteen month transition period for compliance. There are two factors that will affect the ability of aircraft owners to comply; availability of compliant, low cost ELTs and the level of maintenance organization that can perform the installation.

My research of available low cost ELTs indicates that there are very few available or likely to be available for the number of aircraft in the short transition period. A check with one of the largest manufacturers, Artex, revealed that the maximum production capability of their low-cost ME406 model is 500 per month for the world market. I strongly urge Transport Canada to determine a realistic availability of ELTs for Canada and then set a transition period to accommodate this availability. Otherwise, thousands of aircraft may be grounded at the end of the transition period.

It is not good enough to say that other higher priced models are available to fill the demand. The requirement to equip with 406 ELTs will be a very significant economic issue for our sector of aviation. Forcing owners to equip with much more expensive models or be grounded will only compound this significant issue. Transport Canada should be sensitive to the cost issue and provide sufficient time to equip with low cost models by setting a realistic transition period.

Also, it is important to note the reality that many owners may not become aware of the requirement to equip until their annual inspection is due, and then only if the AME knows and brings it to their attention. This reality may give owners very little time to comply if a short transition period is chosen. In order to reduce the cost to install for many aircraft that will require structural modifications and installation of cable, switch and antenna, owners should be given

time to become aware of the requirement, plan for and purchase an ELT and have it installed as part of the annual inspection when panels and seats will be removed anyway. In the airline world, ICAO provides seven years to comply with a major change. While I appreciate that the date for eliminating 121.5 monitoring is looming, there should be a reasonable period for transition. Given the issues cited above, the transition period should be more like three years.

A contributing factor in the shortage of qualified ELTs is Transport Canada's continuing reluctance to review and eliminate the prohibition on LiSO<sub>2</sub> batteries. Although some manufacturers are modifying their ELTs to include LiMnO<sub>2</sub> batteries, there are many more available with LiSO<sub>2</sub> batteries. Having ELTs with LiSO<sub>2</sub> batteries qualify for use in Canada would go part way to alleviate the shortage. The specification for airborne use LiSO<sub>2</sub> batteries was changed many years ago and to my knowledge the problems have been eliminated, certainly to the satisfaction of other CAAs. As recommended in 1999, Transport Canada should get on with eliminating the prohibition.

Another factor in the ability of owners to comply is the current requirement for ELTs to be installed by avionics shops. This requirement crept in several years ago, for no good reason that I can find. Installation of an ELT should be considered a minor modification. The advantage is obvious. With a limited number of avionics shops and tens of thousands of aircraft to equip, it will be many years before all can comply. If this recommendation is not considered or the transition period significantly lengthened, thousands of aircraft will be grounded.

### **Lack of Harmonization With the US**

During the many years that this issue has been in place, I have cautioned Transport Canada to coordinate with the US on this requirement. To date, indications are that the US will not mandate 406 ELTs. With the removal of the provision from the current regulation 605.38(2)(c) to permit foreign aircraft with other devices, and given that the NPAs effectively mandate 406 ELTs, thousands of US aircraft will be banned from Canada. In addition, this will pose a particular problem for the hundreds if not thousands of aircraft transiting to and from Alaska each year. The losses to our economy from this barrier to entry is a significant factor. To permit these aircraft without ELTs would be unfair to those who are required to equip here and ultimately to the taxpayer who would have to fund the search effort for foreign aircraft with no devices on board. I was seeking a solution that would be acceptable to both sides of the border in order to avoid this very significant issue. Permitting affordable alternatives would have solved this problem. Because of this unresolved issue, COPA dissents to the NPAs.

### **The CARAC Process**

I am dismayed by the way that this issue was handled by CARC. The extensive efforts by many people from industry and the government resulted in a report and recommendations for the CARAC VI Technical Committee, who accepted the report. The NPAs that were drafted, although not in line with the risk assessment results in many respects, at least were a good start. The CARAC VI Technical Committee meeting was the vehicle for achieving consensus and in the end it was achieved. Despite DND's explanation of an unfortunate failure to attend the meeting and NSS's no-show, this meeting was the forum for airing views and working toward a consensus. The dissents presented directly to CARC had no chance for debate or counter-point.

Furthermore, the revised NPAs from the CARAC meeting were not reviewed by members for accuracy before proceeding to CARC. Consequently, in my opinion, the CARC made a decision without complete information. Certainly, my review of the revised NPAs indicates that CARC may not fully understand the ramifications of the wording they have chosen. In the entire time that I have been involved in CARAC, I have never experienced such a blatant end-run around CARAC and NPAs being changed so drastically without being returned to the CARAC Technical Committee.

The revised NPAs in no way reflect the consensus achieved by the risk assessment process and the CARAC VI Technical Committee meeting. As a result, I question the validity of the CARAC process. I believe such significant changes to a consensus that was achieved should have resulted in sending the NPAs back to the Technical Committee for further discussion. This issue is one of the most expensive changes to face our sector of aviation. It deserves more careful consideration than was apparent in the revised NPAs. They are immature and require more work. For these reasons, COPA dissents to the NPAs.

### **Summary**

COPA remains opposed to mandating 406 ELTs. The NPAs, as revised by CARC effectively mandate 406 ELTs for our sector because none of the alternatives are available to our sector of aviation and certainly no new alternatives will be available for the foreseeable future. Private aviation is being held to a higher standard than the airlines whose alternatives to 406 ELTs meet a lower standard than the ELD system alternative. The transition period must be lengthened considerably from what is being considered and changes in qualification of ELTs and installation options must be changed in order to avoid grounding thousands of aircraft. Harmonization with the US has not been addressed and will be a significant compliance, economic and safety issue if harmonization is not achieved. And finally, the process with which the NPAs were revised by CARC is unacceptable. In the spirit of the CARAC Charter, the deficiencies in the versions developed by CARC should be addressed by sending the NPAs back to CARAC for further discussion and resolution.

For these reasons, COPA is strongly opposed to the NPAs as revised by CARC.

Yours truly,

(original signed by Kevin Psutka)

Kevin Psutka  
President and CEO

CC: CARAC Secretariat