

COMMENTS ON LDR NPA 2021-016

GENERAL

The following are general areas of concern with the NPA:

1. Ineffective consultation with Canadian industry culminating with the unavailability of responses to questions raised at the TC Q&A session to inform this submission;
2. No risk assessment (including cost benefit analysis) which includes statistics showing the need for LDRs such as the number of inclusive investigations directly resulting from a lack of data that could have been provided by an LDR;
3. Non-alignment with international regulations by exceeding what other countries are doing which creates an economic advantage for foreign operators where they compete with Canadian operators;
4. Lack of compliance with Treasury Board and CARAC Regulations, Policies and Procedures for NPA development;
5. No consideration of the impact of certification regulations for installing new avionic systems that are integrated into the flight control system and others in used aircraft operating in Canada;
6. No clearly defined standards to be achieved in the certification and installation of LDR's in aircraft;
7. No protection for personal information that will be stored in the LDR's including video from cockpit cameras which may be required for non-digital aircraft;
8. No consultation with aircraft OEM's, Avionics OEM's and other branches in Transport Canada (TC) on the viability of developing certification data for installation into the aircraft and integration with avionics;
9. No analysis of whether there are enough resources within TC to support the development and certification of TSO, LSTCs, STCs etc for the installation of LDR's in retrofits;
10. No analysis of the impact of the current skilled labour shortages for licensed Aircraft Maintenance Engineers who would carry out the installations in compliance with the regulations;
11. No specific consideration of cost impacts to Flight Training Units;
12. No guidance for repair intervals with or without an approved MEL; and
13. No defined Alternate Means of Compliance (AMOC) such as combined CVR's and Flight Data Recorders (FDR'S).

All of these have led to inconsistencies in the NPA which will eventually lead to industry compliance challenges. It is recommended that Transport Canada (TC) amend this NPA to define regulations that are achievable and deliverable in the Canadian context.

CONSULTATION

TC has made much of the numbers of meetings and consultations conducted prior to issuing the NPA; however, few if any of the industry recommendations were accepted. Specifically, recommendations to exclude the retrofit and crash worthiness requirements which are extremely problematic have been rejected. While some SMEs were present, their participation was minimal. At the very least an SME briefing on the initial and on-going certification and installation requirements for all four affected aircraft fleets (retrofit aircraft with analogue flight instruments, retrofit aircraft with digital flight instruments, new aircraft and newly certificated aircraft) should have been included.

The sole reason for promoting this regulatory change is to meet a TSB recommendation that may provide information to reduce the likelihood of an accident involving one of these aircraft-an accident

which is the unlikeliest of events. No risk assessment (inclusive of a cost benefit analysis) was provided contrary to TB and CARAC guidelines. On Page 6 of the CARAC NPA at the bottom of the page in the Consultation section it clearly states that OEM, DAO's and operators will need to be consulted regarding their capabilities, extra costs incurred and appropriate timelines for implementation. This has not happened, yet their input is crucial to RIAS preparation and the determination of the feasibility of industry compliance with these regulations.

Recently, it has been TC practice to consult the NPA and then go directly to CG Part I. While some of the changes from the original CARAC process are welcome, the lost opportunity for industry to review the technical drafts is not one of them. Especially given that pre-CG Part I consultation should include specific working groups, these groups should be tasked with a review of the technical drafts to help TC ensure that the NPA notional requirements are properly reflected in the draft regulations. This benefits TC as well as industry.

APPLICABILITY

INTERNATIONAL AGREEMENTS

Regulatory alignment with foreign countries is a stated goal of the new regulations development in Canada. The NPA clearly states that the FAA is not going down this path of requiring LDR's at the present time and EASA is only going to have the new rules apply to commercial and newly manufactured aircraft. Furthermore, ICAO requires limited retro-fit (All turbine-engined aeroplanes of a maximum certificated take-off mass of 5 700 kg or less for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 shall be equipped with...). Australia is only going to apply it to long overwater flights. So, in a nutshell, if this NPA is moved forward in its current format requiring a retrofit of all aircraft, it will put Canada at a distinct disadvantage financially as it will be more expensive to operate a Canadian registered aircraft and therefore for operators to compete with foreign operators. Unfortunately, an estimate of this impact is not available because neither a cost benefit analysis nor the required certification data and cost to acquire it is available.

CAR 604 Applicability

Mandatory LDR implementation requirements should not be applicable to CAR 604 operations since they are ***not***:

1. justified by any risk assessment (inclusive of a cost/benefit analysis);
2. required by ICAO (Annex 6 Part II Section 2.4.16.1.1.1) - they are only a Recommendation;
3. required by the FAA for any operations; and
4. required by the EU (EU proposed regulations are for commercial).

CAR 604/702/703/704 Applicability

Mandatory LDR implementation requirements should not be retroactively applicable to CAR 604/702/703/704 operations since they are ***not***:

5. justified by any risk assessment (inclusive of a cost/benefit analysis);
6. required by ICAO;
7. required by the FAA for any operations; and
8. required by the EU (EU proposed regulations are for commercial).

CAR 406 Applicability

These mandatory requirements should not be applicable to CAR 406 Flight Training Units since this is not justified by risk assessment or cost/benefit analysis.

Statistics generated by Transport Canada's General Aviation Safety Program show Flight Training Accidents between 2014-2018 totaled 112 events which was 14% of a total of 774 General Aviation accidents. Of these 112 events, 5 fatal accidents occurred in flight training during this 5-year period. Notwithstanding the desire to increase flight safety through accident investigation the outcome should reflect the costs associated. At current prices it is currently cost prohibitive to retro-fit Flight Training fleets to meet this requirement. Balancing the low fatal accident rate in Flight Training with costs suggests less costly approaches like education / prevention could be targeted to address FTU occurrences and accidents.

REQUIREMENTS

EUROCAE ED-155

Accurate information is vital to developing a project plan costing to achieve certification for installation on an aircraft. TC did not provide EUROCAE ED-155 contrary to the understanding that the Government of Canada is required to provide copies of the Standards when proposing new regulations. TC needs to review the regulation and provide copies of the full requirement to industry or develop its own standard to be part of the Canadian Aviation Regulations. EUROCAE ED-155 includes four parts. TC CARAC was queried about whether we need to meet all four parts, one part or exactly what. The following is their response "Good afternoon, To clarify, we have stipulated in the NPA the essential and recommended parameters that need to be captured for the installation of LDRs for retrofitting of existing aircraft and new aircraft. These essential and recommended parameters would typically be captured under the part Aircraft Data Recording Systems (ADRS) noted in the EUROCAE ED-155 document. Not all 4 parts of the EUROCAE ED 155 would have to be met to capture the required essential and recommended parameters."

This response implies that a new, different standard based on EUROCAE ED-155 is being developed with an NPA of its own and likely with its own TSO. The answer is vague as is the NPA with regards to the standard industry is to meet and just as importantly how to meet it. A badly drafted regulation only leads to misunderstanding and difficulties usually at the local Civil Aviation Safety Inspector the Operator works with. If an Advisory Circular was already in place identifying the Standard for both the LDR and the Certification data, it would be easier for industry to achieve this.

It is unclear how operators would work with manufacturers to meet these regulations. It is clearly impractical for each individual operator go to every new aircraft manufacturer with their requirement list for an LDR installation.

Potential LDR manufacturers advise that there appears to be a void in the capabilities of meeting this mandate with Analog Cockpit Instrumentation. There is a capability using digital instrumentation and the much more expensive FDR technology, however my understanding to date is the goal of Transport Canada not to financially burden Operator's out of business. I would expect most of the small operators are reliant on analog gauges. How does Transport Canada expect the industry to comply with proposed legislation if the technology is not there to support the equipment in legacy aircraft?

MINIMUM EQUIPMENT LIST (MEL) RELIEF

MEL relief needs to be addressed concurrently with the development of the NPA. LDR's need to be added to the Transport Canada Master MEL Guidance Book-they don't currently exist. The cost for small operators with these systems may increase twofold if a separate system has to be purchased as a spare just because of the short category for repairs. The cost impact of MEL relief must be analyzed and MEL relief form part of the RIAS.

ALTERNATE MEANS OF COMPLIANCE (AMOC)

The NPA does not address any AMOC's that might be available for aircraft already configured with a CVR or FDR. This should be assessed and documented as part of the NPA to prevent confusion later on.

CERTIFICATION

This NPA doesn't contemplate any change to the design standards required for this type of unit. At the moment, there is no specific TSO covering the LDR. FAA TSO C197 covers Information Collection and Monitoring Systems (ICMS); however, it appears that only ICMS Type II might be applicable. This needs to be studied further to determine if this TSO can be utilized. The impact on cost and implementation feasibility of LDR installation with no design standard in place cannot be determined. Furthermore, a review of the Transport Canada website for available STC's for LDR installations for the King Air 200 aircraft, for example, which is commonly used throughout Canada for Charter and Medevac operations, showed that none exist. This is likely the case for most smaller aircraft utilized by Canadian operators. This is exacerbated by the fact that no certification data for any LDR exists. The implication of this should have been discovered with a cost benefit analysis before the NPA was published and needs to be contemplated in future NPA amendments.

The OEMs do not seem to be in the loop on this regulatory development. For example, Garmin is one of the largest avionics retrofits available to smaller aircraft in the world and they have not heard of this NPA or of LDR's possibly being integrated into their systems to record data. Furthermore, small, off-shore OEMs have no incentive to develop and install LDRs for retro-fit given the small market artificially created by this regulation which further adds to the retrofit costs. OEMs will need to see a real market before committing to manufacturing products. STCs are expensive so installation agencies will need to also see a real market before developing STCs. This is going to be a significant operator cost with no benefit to the operator.

Based on discussion with some potential LDR manufacturers, there is little or no capability to meet this mandate with Analog Cockpit Instrumentation which is fitted to most small aircraft. It is clear that non-digital systems (ie analogue instrumented aircraft) would be difficult to link to LDR's. This is a known problem brought forward by industry but not addressed in the NPA.

Currently there are delays with TC certification. Changes to current STCs that took a few months are now taking years. Any new system, such as the integration of LDR's into other aircraft systems, will be a major challenge and there is no detailed analysis supporting TC capacity to deal with this influx of work if retrofits become mandatory. When you couple this with the need to make sure the LDR's are compatible with other systems for integration, and the challenges that come with that, the timelines in the NPA become impossible to achieve at any cost. A flight test program will also likely need to be developed for this system and just the development of this, if required, is roughly \$60,000 to \$100,00

USD per aircraft type on top of the other certification costs. Installation costs are additional. All of these issues have not been factored into the assessment of timelines for retrofit.

Currently the NPA is vague about requirements on EUROCAE ED-155 and TC believes that the Aircraft Data Recording System (ADRS) portion of the standard would work, but that is not stated in the NPA. Ambiguity leads to confusion which leads to mistrust. No one wants to develop a STC to find out it does not meet the intent of the regulation. TC should be working with OEMs to provide the STCs.

RIAS

The RIAS must address four different fleets: retrofit aircraft with analogue flight instruments, retrofit aircraft with digital flight instruments, new aircraft and newly certificated aircraft. TC has not identified how many aircraft need to be retrofitted. This is a key data needed to determine total cost to the industry, cost impact on each different fleet, and the workload to develop and approve TSOs, STCs, LSTCs etc.

For retrofit the RIAS must include aircraft downtime cost including expected loss of revenue.

The RIAS must cost the loss of business due to the competitive advantage provided to foreign air operators, especially US operators, because they don't have the same requirements as this. For example, the NPA clearly states that the FAA have no intention with complying with these proposed changes even though their NTSB are also recommending action in accordance with their recommendation A-09-009.

There is no certification data available today; therefore, this cost to industry must be included in the RIAS.

Assuming it is intended that there will be mandated continuing airworthiness requirements in the associated standard for LDRs as there is for FDRs these costs need to be identified in the RIAS as well as those costs associated with development and approval of STC and LSTCs.

The RIAS needs to include the inventory cost for small commercial operators with these systems since it may increase twofold if a separate system has to be purchased as a spare to avoid aircraft on the ground awaiting parts because of MMEL restrictions.

For small and older aircraft retrofit may be cost prohibitive requiring the aircraft to be scrapped. The cost of this refit must also be part of the RIAS. Even the costs of adding FDR capability to new aircraft would most likely not pass a cost/benefit analysis. (See Annexes A and B.)

DATA PROTECTION

The NPA suggests that the LDR will solely be used for accident investigation, and not be available to Transport Canada for enforcement or those seeking litigation. Currently there are protections in place for any information gathered on a CVR that it can only be used for investigating accidents under the control of the TSB. To date this has been honoured by the judicial system and is respected by industry that the data will only be used to improve safety after an accident. Given that "cameras" could be part of the LDR system, it brings in a whole new aspect of Protection of Personal Information that is not addressed. This is a major concern and until it is addressed, and protections are in place for the data

collected by these system, this NPA should not proceed to legislation. Forcing this through will risk removing the trust that is currently in place by those operating the aircraft and can possibly reduce information available during an investigation. People need to be assured that the information will be used for improving flight safety only. The only way to assure this is through changes to the CTASB Act.

LABOUR SHORTAGE

The labour shortage for licensed E and M Aircraft Maintenance Engineers has not been considered. This is not a new problem, and the Canadian Council for Aviation and Aerospace released a Labour Market Information Report for Aviation and Aerospace in 2018. It clearly identified the skilled labour shortages in the industry. The shortages since COVID have only been increased with many leaving the industry permanently and reduced graduates from the training institutes. If the NPA is revised to only apply to newly manufactured aircraft the labour shortage will not impact its implementation.

RECOMMENDATIONS

The following steps are necessary so that a workable NPA dealing with LDR's is achieved.

1. Suspend NPA 2021-016 temporarily or rescind it until all issues are analyzed and addressed;
2. Review current compliance with Treasury Board and CARAC process;
3. Work with TC Certification, TC Maintenance and Manufacturing, OEMs of aircraft and OEMs of avionics equipment to clearly identify the standard that is to be achieved for LDR's and what they are to record like the current regulation for CVR's and FDR's;
4. Strike a working group with Operators and Organized Labour to discuss Privacy concerns with a focus on a solution to being able to utilize LDR data for investigations;
5. Amend the NPA to apply to only newly manufactured aircraft to align with other jurisdictions and thereby reducing the overhead burden to allow Canadian operators to remain competitive;
6. For new production aircraft, the implementation date of LDRs should be at least 5 years and ideally 10 years in the future and
7. Develop and include Alternate Means of Compliance in the NPA for clarity.

Annex A King Air 360 (2021 data)

The NPA alludes to early adoption when that is not possible today because of lack of requirements definition ie certification data, TSOs, STCs etc. Since no LDR was available, it forced a safety conscious operator on a new aircraft purchase to add this equipment. The cost was \$283K USD which is 5% of the total cost of the aircraft (add 3-7% price increase per year going forward). The LDR weighs 72 lbs which means an ongoing payload penalty and environmental impact since additional fuel must be burned to carry this extra weight. The gift that keeps on giving! A retrofit would have been more expensive (perhaps double) than putting an FDR into the new aircraft.

Annex B Airbus Helicopter Information

Airbus Helicopters are working on a system for their light single engine turbine helicopters. This project has been 15 years plus in the making and once these systems are available they will not be able to be retrofitted to analog aircraft and the “First Gen” digital aircraft either. They did not feel retrofit to analog helicopters was a viable option.



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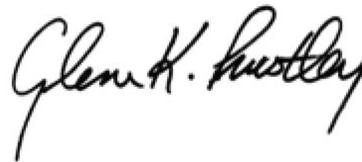
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