

**Comment/Response Document
NPA-TSO-4 (1996/1998 update)**

The following pages contain the proposal, the summaries to the comments that were received on the NPA during the consultation period, and the resulting amendment to JAR-TSO.

1. Introduction

The NPA-TSO-4 (JAR-TSO 1996/1998 update) was published by the JAA Headquarters in April 1999 (refer to JAA HQ letter 07/03-17-2 IS-99-L 113 dated 26 April 1999).

The NPA proposed the introduction or modification to a number of JTOSs, following their review by the JAR-TSO Study Group.

2. Proposal

The JTOSs included in this NPA are as follows :

Subpart B - Index 1

Existing JTOSs modified by NPA

JTOS-C22g : Safety belts

Update of existing JTOS-C22g further to a notice of change to technical standard order, related to FAA TSO-C22g, that the FAA issued on 2 September 1993.

The modification consists of the deletion of the last sentence of § 3.1.1, which reads as follows :
"Safety belts approved prior to the date of this JTOS may continue to be manufactured for an additional six months at which time they may no longer be manufactured under the provisions of their original approval."

JTOS-C85a : Survivor locator lights

Update of JTOS-C85 further to FAA TSO-C85a dated 7 March 1996.

The Minimum Performance Standard is updated from FAA Standard dated 22 April 1964 (JTOS-C85) to SAE Aerospace Standard (AS) 4492, 'Survivor Locator Lights' dated January 1995 (JTOS-C85a).

JTOS-C119b : Traffic alert and collision avoidance system (TCAS) airborne equipment, TCAS II

Update of JTOS-C119a further to FAA TSO-C119b dated 18 December 1998.

The Minimum Performance Standard is updated from RTCA DO-185 Change 1 dated 22 March 1985 (JTOS-C119a) to RTCA DO-185A dated 16 December 1997 (JTOS-C119b).

JTOS-C123a : Cockpit voice recorder systems

Update of JTOS-C123 further to FAA TSO-C123a dated 2nd August 1996.

The Minimum Performance Standard is updated from ED-56 dated February 1988 (JTOS-C123) to ED-56A dated October 1993 with amendment 1 dated 25 November 1997 (JTOS-C123a).

JTOS-C124a : Flight data recorder systems

Update of JTOS-C124 further to FAA TSO-C124a dated 1st August 1996.

The Minimum Performance Standard is updated from ED-55 dated May 1990 (JTOS-C124) to ED-55 dated May 1990 with amendment 1 dated 23 September 1998 (JTOS-C124a).

It should be noted that FAA TSO-C124a refers to fire test requirements included in ED-56A with an extension of the fire test exposure time from 30 to 60 minutes, whereas JTOS-C124a only refers to fire test requirements included in ED-55 dated May 1990 with amendment 1 dated 23 September 1998, which are in fact similar to ED-56A requirements.

In addition, in paragraph 3.1.3, the reference to ED-12A/DO-178A has been changed to ED-12B/DO-178B. Thus, the software level recommended by ED-55 in paragraph 3.1.3(i) has been modified from « level 2 » to « level C ».

New JTSOs introduced by NPA or JTSOs subject to major revision

JTSO-C26c : Aircraft wheels and wheel brakes assemblies (JAR-23, -27 and -29 aircraft)

This a new JTSO based on FAA TSO-C26c dated 18 May 1984, except that JAR-25 aircraft provisions are deleted and will be dealt with in JTSO-C135, which will be part of a separate NPA.

JTSO-C80 : Flexible fuel and oil cell material

This is a new JTSO based on FAA TSO-C80 dated 26 May 1964.

JTSO-C92c : Ground proximity warning, glide slope deviation alerting equipment

Update of JTSO-C92b further to FAA TSO-C92c dated 19 March 1996.

The update consists of the addition of a new paragraph 3.2 (Specific) which contains new requirements on different subjects (aural and visual warnings, deactivation control, smart callouts, etc.).

It should be noted that a reference in FAA TSO-C92c, § 3.3.1, to FAA TSO-C67 (Airborne radar altimeter equipment), has been replaced by a reference in JTSO-C92c to JTSO-2C87 (Low range radio altimeters). Indeed, FAA TSO-C67 has not been retained in JAR-TSO because it was deemed obsolete.

JTSO-C115b : Airborne area navigation equipment using multi-sensor inputs

This is a new JTSO based on FAA TSO-C115b dated 30 September 1994.

JTSO-C117a : Airborne windshear warning and escape guidance systems (reactive type) for transport airplanes

This is a new JTSO based on latest issue of FAA TSO-C117a dated 1st August 1996.

The following modifications have been introduced in the proposed JTSO-C117a :

- the words « Reactive type » added in the title, for clarification ;
- reference to FAR-25 replaced with reference to JAR-25 plus Appendix F in § 3.1.1.b.3 ;
- for consistency with § 3.1.1.d, reference to ED-14C/DO-160C replaced with a reference to ED-14B/DO-160B in § 3.1.2 ;
- for consistency with § 3.1.1.a.3.ii, reference to ED-12A/DO-178A replaced with a reference to ED-12B/DO-178B in § 3.1.3. (« level 2 » is replaced with « level C » and « level 1 » is replaced with « level B » accordingly).

Nevertheless, these modifications are deemed minor and do not justify JTSO-C117a to be classified in Index 2.

JTSO-C127a : Rotorcraft, transport airplane, and normal and utility airplane seating systems

This is a new JTSO based on FAA TSO-C127a dated 21 August 1998.

JTSO-C129a : Airborne supplemental navigation equipment using GPS

This is a new JTSO based on FAA TSO-C129a dated 20 February 1996.

Subpart B - Index 2

Existing JTSOs modified by NPA

JTSO-2C34f : ILS glide slope receiving equipment (328.6-335.4 MHz)

Update of JTSO-C34e, with a reference to Eurocae ED-47B dated September 1995 with amendment 1 dated 15 July 1997. It should be noted that former JTSO-C34e (Index 1) referred to EUROCAE ED-47A and RTCA DO-192, whereas proposed JTSO-2C34f (Index 2) only refers to EUROCAE ED-47B.

JTSO-2C36f : Airborne ILS localizer receiving equipment (108-112 MHz)

Update of JTSO-C36e, with a reference to Eurocae ED-46B dated September 1995 with amendment 1 dated 2 July 1997. It should be noted that former JTSO-C36e (Index 1) referred to EUROCAE ED-46A and RTCA DO-195, whereas proposed JTSO-2C36f (Index 2) only refers to EUROCAE ED-46B.

JTSO-2C112a : Air Traffic Control Radar Beacon System / Mode Select (ATCRB/Mode S) airborne equipment

Update of JTSO-2C112.

The Minimum Performance Standard is updated from Eurocae ED-73 dated May 1995 (JTSO-2C112) to Eurocae ED-73A dated February 1999 (JTSO-2C112a).

New JTSOs introduced by NPA or JTSOs subject to major revision

JTSO-2C501 : Mode S Aircraft Data Link Processor

This is a new JTSO based on Eurocae ED-82 dated March 1997 with amendment 1 dated 28 April 1997. The number used reflects the fact that there is no corresponding FAA TSO for this subject.

NB : ED-82 has been updated to ED-82A, dated November 99. As it is a new JTSO with no FAA equivalent, it has been decided to include that modification in the published JTSO-2C501.

JTSO-2C502 : Multi-Mode Receiver (ILS/MLS/GPS)

This is a new JTSO based on Eurocae ED-88 dated August 1997. The number used reflects the fact that there is no corresponding FAA TSO for this subject.

NB : following a comment from DGAC-F, it has been decided to request a clarification from the relevant JAA study groups and therefore postpone the publication of JTSO-2C502.

That proposal has been agreed by the JAR-TSO Study Group.

3. Consultation

The NPA has been circulated for comment to the Regulation Advisory Panel (RAP), the Joint Steering Assembly (JSA) and to NPA subscribers. The comment period passed on 31 July 1999.

3.1. DaimlerChrysler Aerospace Airbus, Transport Canada and the Civil Aviation Authorities of Netherlands, Luxembourg, Denmark, Hungary and Germany have informed the JAA that they agree with the proposed amendment or have no comment. These entries have not been included in the table of section 3.3.

3.2. Comments demanding alterations to the proposed text were received from the General Aviation Manufacturers Association (GAMA), the Aerospace Industries Association (AIA), Austro Control, MOT-Austria, CAA-UK, RAI and DGAC-France.

3.3. The following table summarizes the entries and the JAA responses :

1	2	3	4	5
Requirement paragraph	Position	Proposed text/comment	Organization	Response

1	All JTSOs -Editorial	Proposed text	Propose to update the address of RTCA in all JTSOs	GAMA	Accepted.
2	All JTSOs- General	General comment	Propose to replace « JAR-TSO subpart A » by « JAR-21 subpart O » (see NPA-TSO-5)	JAA Certification Division CAA-UK Austro Control MOT- Austria GAMA AIA	Accepted. Parts of JAR-TSO Subpart A will be retained to provide guidance for JTSO Authorisations.
3	All JTSOs- General	Comment	Using another Authority's material verbatim implies the use of references that do not exist in JAA terms (for example the words « Manager », « ACO » in Appendix 1 to JTSO-c127a)	CAA-UK	Rejected. Covered by Subpart A of JAR-TSO.
4	General	Comment	To reduce the lag between FAA TSO and JTSOs, propose to deal with each JTSO individually, as FAA does.	CAA-UK	Rejected. Not realistic for practical reasons.
5	JTSO-C26c Aircraft wheels and wheel brakes assemblies (JAR-23, -27 and -29 aircraft) Appendix 1, §2(b)(8)	Propose different text	In the second sentence, propose to replace « protection from » by « protection for ».	GAMA AIA	Accepted. Editorial.
6	JTSO-C26c Appendix 1, §4.2.(a)(1)(i)	Comment	Delete all references to JAR-25 as this JTSO is only applicable to JAR-23, -27 and -29 aircraft	CAA-UK	Accepted.
7	JTSO-C26c	Propose different text	Propose to add, before 4.1(d), the words : « (3) Reserved » and « Table II - Reserved ». For consistency with the FAA TSO numbering system.	RAI	Accepted.
8	JTSO-C117a Airborne windshear warning and escape	Comment	Replace « Airplane » by « Aeroplane », and « lighting » by « lightning » in § 3.1.1(d)(19)	CAA-UK	Accepted. Editorial.

1	2	3	4	5
Requirement paragraph	Position	Proposed text/comment	Organization	Response

	guidance systems (reactive type) for transport aeroplanes				
9	JTSO-C117a	Comment	The introductory paragraphs of both Appendix 1 and 2 refer to « TSO » instead of « JTSO ».	CAA-UK GAMA AIA	Noted. Covered by Subpart A of JAR-TSO.
10	JTSO-C117a	Comment	In item (16) on page 3/37 reference is made to « FAR 121.358 » - Is there an equivalent JAR-OPS reference ?	CAA-UK	Noted. There is no reference in JAR-OPS, as windshear warning systems are not mandatory.
11	JTSO-C127a Rotorcraft, transport aeroplane, and normal and utility aeroplane seating systems	Comment	See CAA-UK comment 9 on JTSO-C117a	CAA-UK	Noted. Covered by Subpart A of JAR-TSO.
12	JTSO-C127a	General comment	Propose to wait for the outcome of the Harmonisation WG rather than having a JTSO that could become obsolete soon.	RAI	Rejected. There is a need for that JTSO, and in case a new version of the FAA TSO is issued soon, the JAA will revise in time the current JTSO version, as usual.
13	JTSO-2C502 Multi-Mode Receiver (ILS/MLS/GPS)	Propose different text	Propose to delete JTSO-2C502 and modify JTSO-2C500 to make it generic and applicable to all MMR covering only ED-88 standard.	DGAC-F	Open item. Following that comment, it has been decided to request a clarification from the relevant JAA study groups and therefore postpone the publication of JTSO-2C502.

4. Amendment

Based on the conclusions outlined above, JAR-TSO Subpart B is amended by the following JTSOs :

JTSO-C22g	Safety belts
JTSO-C26c	Aircraft wheels and wheel brakes assemblies (JAR-23, -27 and -29 aircraft)
JTSO-2C34f	ILS glide slope receiving equipment (328.6-335.4 MHz)
JTSO-2C36f	Airborne ILS localizer receiving equipment (108-112 MHz)
JTSO-C80	Flexible fuel and oil cell material
JTSO-C85a	Survivor locator lights
JTSO-C92c	Ground proximity warning, glide slope deviation alerting equipment
JTSO-2C112a	Air Traffic Control Radar Beacon System / Mode Select (ATCRB/Mode S) airborne equipment
JTSO-C115b	Airborne area navigation equipment using multi-sensor inputs
JTSO-C117a	Airborne windshear warning and escape guidance systems (reactive type) for transport airplanes
JTSO-C119b	Traffic alert and collision avoidance system (TCAS) airborne equipment, TCAS II
JTSO-C123a	Cockpit voice recorder systems
JTSO-C124a	Flight data recorder systems
JTSO-C127a	Rotorcraft, transport airplane, and normal and utility airplane seating systems
JTSO-C129a	Airborne supplemental navigation equipment using GPS
JTSO-2C501	Mode S Aircraft Data Link Processor

That amendment has been agreed by the JAR-TSO Study Group.