Transport Canada Transports Canada

Transport Canada
Civil Aviation

MMEL
Guidance Book

Revision 08

Chief, Flight Test
National Aircraft Certification

Date: 2021-05-05

Canada

TRANSPORT CANADA
MMEL GUIDANCE BOOK

INTRODUCTION

This Transport Canada Civil Aviation (TCCA) MMEL Guidance Book has been compiled to provide a centralized source of guidance information to facilitate the review and standardization of TCCA MMELs and MMEL Supplements for which National Aircraft Certification Flight Test (AARDC) is responsible. This guidance material is made available to the Aviation Community at large to encourage feedback and to provide guidance to operators and manufacturers when seeking relief.

THIS MATERIAL IS FOR GUIDANCE ONLY AND DOES NOT NECESSARILY APPLY NOR WILL IT AUTOMATICALLY BE GRANTED TO ALL AIRCRAFT. RELIEF FOR EACH AIRCRAFT MUST BE JUSTIFIED THROUGH THE APPROPRIATE REVIEW GROUP.

TO PERMIT OPERATOR FLEXIBILITY, IT IS NOT REQUIRED THAT THE MEL WORDING REFLECTS PRECISELY THE WORDING IN THE GUIDANCE BOOK OR THE MMEL AS LONG AS THE INTENT OF THE RELIEF IS SATISFIED AND THE MEL IS NOT LESS RESTRICTIVE.

In developing MMELs, no item shall be included which conflicts with the limitations or invalidates the emergency procedures of the Aircraft Flight Manual or of an Airworthiness Directive (AD) unless the AFM or AD provide otherwise. In some instances when performance and or handling qualities are significantly affected, it may be necessary to have Transport Canada approve specific limitations and or operating procedures and include this detail in a Flight Manual Supplement (e.g. nose wheel steering, anti-skid braking, ground spoilers, etc. inoperative).

While some MMEL items are generic in nature and identical wording can be used for all aircraft types, other items will differ from aircraft to aircraft. The material provided herein is to be used as guidance only. To repeat from the Forward of TP9155, “Transport Canada inspectors and engineers are expected to use good judgement in matters where specific guidance has not been given”. Users are encouraged to provide feedback to correct or amplify the guidance material and to provide additional items which may be suitable for inclusion.

The format of the guidance is to provide suggested wording for the “Remarks or Exceptions” column and any amplification or explanation including references is included under DISCUSSION. It is again emphasized that an item need not contain the precise wording and every effort should be made to minimize the number of items in Canadian MMEL Supplements. Items may be applicable to both fixed and rotary wing aircraft but no specific guidance has been provided for the rotary wing community.

INTRODUCTION

The MMEL Guidance Book Working Group first formed in Ottawa on March 16, 1993 and is comprised of representatives from:

- National Aircraft Certification
  - Flight Test (Chair)
  - Engineering
- Standards
  - Commercial Flight Standards
  - Operational Airworthiness
- National Operations
- TCCA Regional Offices – Operations and Maintenance Inspectors
- Air Transport Association of Canada (ATAC)
- National Airlines Council of Canada (NACC)
- Commercial Air Operators
- Domestic Aircraft Manufacturers
- Canadian Union of Public Employees (CUPE)
- Aviation Occupational Health & Safety (AOH&S)

TRANSPORT CANADA
MMEL GUIDANCE BOOK

LIST OF EFFECTIVE PAGES

Item	Description	Page	Rev.	Date
	Approval Page	N/A	8	2021-05-05
	Introduction	I-1	8	2021-05-05
		I-2	8	2021-05-05
	List of Effective Pages	LEP-1	8	2021-05-05
		LEP-2	8	2021-05-05
		LEP-3	8	2021-05-05
		LEP-4	8	2021-05-05
		LEP-5	8	2021-05-05
		LEP-6	8	2021-05-05
		LEP-7	8	2021-05-05
		LEP-8	8	2021-05-05
		LEP-9	8	2021-05-05
	Log of Revisions	LOR-1	8	2021-05-05
	Reasons for Changes	RFC-1	8	2021-05-05
		RFC-2	8	2021-05-05
		RFC-3	8	2021-05-05
		RFC-4	8	2021-05-05
		RFC-5	8	2021-05-05
		RFC-6	8	2021-05-05
		RFC-7	8	2021-05-05
	Definitions	DEF-1	8	2021-05-05
		DEF-2	8	2021-05-05
		DEF-3	8	2021-05-05
00-00-1	CAS (Crew Alerting System) Message MMEL Relief	00-1	8	2021-05-05

LIST OF EFFECTIVE PAGES

Item	Description	Page	Rev.	Date
		00-2	8	2021-05-05
		00-3	8	2021-05-05
		00-4	8	2021-05-05
		00-5	8	2021-05-05
21-20-1	Recirculation Fans	21-1	8	2021-05-05
21-30-1	Air Conditioning and Pressurization Control Modes	21-2	8	2021-05-05
		21-3	8	2021-05-05
21-30-2	Outflow/Safety Valves	21-4	8	2021-05-05
21-30-3	Cabin Altitude Indicator	21-5	8	2021-05-05
21-30-4	Cabin Altitude Warning System	21-6	8	2021-05-05
21-30-5	Cabin Rate of Climb Indicator	21-7	8	2021-05-05
21-30-6	Differential Pressure Indicator	21-8	8	2021-05-05
21-50-1	Air Conditioning Packs	21-9	8	2021-05-05
		21-10	8	2021-05-05
21-50-2	Equipment and Avionics Cooling Fans	21-11	8	2021-05-05
21-60-1	Crew Rest Facility - Bunk	21-12	8	2021-05-05
22-10-1	Autopilot	22-1	8	2021-05-05
22-10-2	Autopilot Disconnects	22-2	8	2021-05-05
22-10-3	Autopilot Disconnected Warning System	22-3	8	2021-05-05
22-20-1	Mach Trim System	22-4	8	2021-05-05
23-10-1	Communication Systems (VHF, UHF, HF, SATCOM, etc)	23-1	8	2021-05-05
		23-2	8	2021-05-05
23-10-2	Controller Pilot Data Link Communications (CPDLC)	23-3	8	2021-05-05
23-20-1	Selective Calling (SELCAL) System	23-4	8	2021-05-05
23-20-2	ACARS (ARINC Communications Addressing and Reporting System) Including Printer	23-5	8	2021-05-05

LIST OF EFFECTIVE PAGES

LIST OF EFFECTIVE PAGES

LIST OF EFFECTIVE PAGES

LIST OF EFFECTIVE PAGES

LIST OF EFFECTIVE PAGES

LIST OF EFFECTIVE PAGES

LIST OF EFFECTIVE PAGES

Item	Description	Page	Rev.	Date
52-10-3	Narrow-Body All Cargo Aircraft Slide Relief	52-10	8	2021-05-05
52-50-1	Enhanced Flight Deck Security Door	52-11	8	2021-05-05
		52-12	8	2021-05-05
52-70-1	External Door(s) Indication System	52-13	8	2021-05-05
61-20-1	Propeller Synchrophasing System	61-1	8	2021-05-05
73-20-1	Full Authority Digital Engine Control (FADEC)	73-1	8	2021-05-05
73-30-1	Fuel Flow/Pressure Indications	73-2	8	2021-05-05
77-00-1	Engine Instruments	77-1	8	2021-05-05
77-10-1	Primary Power Setting Instruments (Three/Four Engine Aircraft)	77-2	8	2021-05-05
77-30-1	Engine Vibration Monitors	77-3	8	2021-05-05
78-30-1	Thrust Reversers	78-1	8	2021-05-05

TRANSPORT CANADA
MMEL GUIDANCE BOOK

LOG OF REVISIONS

Revision No.	Date
Original	1993-09-24
1	1994-02-11
2	1994-12-21
3	1997-03-27
4	1998-03-31
5	2000-05-05
6	2002-02-15
7	2009-04-27
8	2021-05-05

TRANSPORT CANADA
MMEL GUIDANCE BOOK

REASONS FOR CHANGES

Item	Description of Change
General	1. All items have been reviewed against the latest issue of FAA Policy Letters and CAR Amendments and revised accordingly. 2. Added new section “EASA Differences” to items, as applicable. 3. This revision includes several editorial/layout changes and therefore all pages have been re-dated. Items with technical changes are indicated by revision bars. 4. Replaced “ft” with “feet” throughout the document (without revision marks) for consistency reasons.
Definitions	➢ Revised definition of “all cargo operations”. ➢ In “as required by regulations”, replaced “Aviation Occupational Safety and Health (AOSH)” with “Aviation Occupational Health & Safety (AOH&S)”. ➢ Revised second sentence in the definition of “combi”. ➢ Added definition of “combustible materials” based on EASA-Approved MMELs for Airbus. ➢ Added definition for “extended operations (ETOPS)” as per NPA 2019-012. ➢ Revised definition of “extended over-water operations” as per CAR 101.01. ➢ Added definition for “heavy maintenance visit (HMV)” as per FAA PL 25 and CAR 101.01 interpretation. ➢ Deleted definition for “non-combustible materials”. Former Note regarding acceptable ballast has been deleted from all items.
00-00-1	Updated References and revised FAA Differences. Added paragraph in Discussion, Specific Considerations, to clarify approval expectations.
21-20-1	Revised dispatch conditions and deleted Note. Added second paragraph in Discussion. Revised FAA Differences.
21-30-1	Revised Number Installed of first and second reliefs from “2” to “-”. Revised second relief, proviso b), and third relief, proviso c), and deleted Note from both reliefs. Revised Discussion and FAA Differences.
21-30-2	Replaced “FAR” with “14 CFR” in References and Discussion.
21-30-3	Revised Repair Interval Category of second relief to harmonize with the FAA. Revised FAA Differences.
21-30-4	Revised References.
21-30-5	Revised Repair Interval Category of second relief to harmonize with the FAA. Deleted reference to B767 in Discussion. Revised FAA Differences.
21-30-6	Revised Repair Interval Category of second relief to harmonize with the FAA. Revised FAA Differences.
21-50-1	First relief: deleted “range”. Second relief: revised Repair Interval Category and proviso c); added “Except for extended operations”; deleted Note. Third relief: revised dispatch conditions and deleted Note. Updated References. Revised Discussion.
21-60-1	Deleted “Bunk” from item title, relief section, and Discussion.
22-10-1	Revised relief cases to harmonize with the FAA. Updated References. Deleted second paragraph in Discussion. Revised FAA Differences. Added EASA Differences.

REASONS FOR CHANGES

Item	Description of Change
22-10-2	Added sub-item numbering. Added relief for non-transport category aircraft when all autopilot disconnects are inoperative. Updated References. Added third paragraph in Discussion.
22-10-3	Updated References.
22-20-1	Editorial change: replaced “1)” and “2)” with “a)” and “b)” in provisos.
23-10-1	Revised Number Required of VHF first relief from “2” to “-”. Revised HF relief to align with FAA PL 106 Revision 5. Updated References. Revised last paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
23-10-2	Revised relief cases to harmonize with the FAA. Deleted references. Revised Discussion. Added EASA Differences.
23-20-1	Updated References.
23-20-2	Deleted “routine” from second relief. Deleted “routinely” from Discussion.
23-20-4	Revised relief cases to harmonize with the FAA. Updated References. Added last paragraph in Discussion.
23-30-1	Revised as per TC Global Change 9 except for proviso d) of first relief which has been revised to address operations pursuant to CAR 705.201(4). Deleted “Bunk”. Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
23-30-2	Deleted. No need for general guidance on the subject.
23-30-3	Deleted. The subject is considered aircraft-specific and therefore general guidance is not necessary.
23-40-1	Reformatted to address Flight Deck/Cabin function as 1) a) and Cabin/Cabin function as 1) b) in alignment with FAA PL 9. Under 1) a), revised first relief and added second relief as per FAA PL 9. Deleted “Bunk”. Revised sub-item 2) title. Editorial changes in 3). Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
23-40-2	Revised 1) b) and 1) d) to harmonize with FAA PL 9. Added 1) c) as per PL 9. Added second relief to 2) a), 2) b), and 2) c) as per PL 9. Updated References. Revised FAA Differences. Added EASA Differences.
23-40-3	Deleted “routine” from second relief of 1) a). Deleted “between the affected flight attendant station(s)” from 1) b). Deleted “Bunk”. Revised 2) a) to match 1) a). Revised Number Installed of 2) b). Updated References. Revised FAA Differences.
23-50-1	Deleted cat B relief as it is considered redundant (a single relief is adequate). Revised cat D relief of 1) to more closely align with EASA. Updated References. Revised FAA Differences. Added EASA Differences.
23-50-2	Revised Number Installed from “2” to “-”. Added reference document. Added second paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
23-50-3	Reformatted and revised to align with FAA PL 58. Relief cases are not dependant upon FDR. Updated References. Added second paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
23-70-1	Reformatted (editorial changes). Updated References. Added EASA Differences.
24-00-1	Updated References. Added last paragraph in Discussion.

REASONS FOR CHANGES

Item	Description of Change
25-10-1	Moved Observer Seat relief to 25-10-3. Deleted paragraph in Discussion as it is no longer necessary for 25-10-1.
25-10-2	Added EASA Differences.
25-10-3	Deleted cat B relief. Revised cat D relief to align with EASA. Updated References. Deleted second paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
25-10-4	Revised first relief of 1) a) and 2) a) to align with FAA PL 122 Rev 1. Updated References. Added EASA Differences.
25-20-1	Added information on expiration of Passenger Convenience Items. Clarified Note 1 under 1) and Note under 2) to indicate AD 74-08-09 applicability. Revised 2) and Discussion as per TP 9155 Third Edition and TC Global Change 12 Revision 1. Updated References. Revised FAA Differences. Added EASA Differences.
25-20-2	Revised Note 2 under 1) and 2) to align with FAA PL 97. Updated References. Added EASA Differences.
25-20-3	Deleted (M) and revised Note 1 of first relief to align with FAA PL 79. Revised 1) to align with PL 79. Second relief of 1), dispatch without (M), is cat C as per TCCA Engineering assessment. Renumbered 2) and 3). Revised 3) to align with PL 79. Updated References. Added last sentence in FAA Differences. Added EASA Differences.
25-20-4	Updated References.
25-20-5	Added “and used” and replaced “CLOSED” with “closed” in proviso a) of first relief. Added “/are” to proviso a) of second relief. Updated References.
25-20-6	Deleted (M) and added Note.
25-40-1	Revised as per TC Global Change 7. Updated References. Revised FAA Differences. Added EASA Differences.
25-40-2	Added information on relief applicability beside first relief. Added second relief. Updated References. Revised Discussion.
25-50-1	Deleted last sentence from Note. Revised FAA Differences.
25-50-2	Deleted “Bunk”. Deleted “Main” from title of 1). Added “, and” to proviso a) of 2). Revised FAA Differences.
25-60-1	Added “(ELT)” in item title. Added sub-item numbering. Replaced Repair Interval Category of first relief from “-” to “A”. Added second relief under 1). Updated References. Revised FAA Differences. Added EASA Differences.
25-60-2	Added “FAK”. Added “and used” to proviso b) of first relief as well as proviso d) of 1). Updated References. Revised FAA Differences. Added EASA Differences.
25-60-3	Added “EMK”. Revised as per TC Global Change 6. Updated References. Deleted paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
25-60-4	New item.
25-60-5	Renumbered from previous 25-60-4. Added “and used” to proviso c) of first relief. Updated References. Added EASA Differences.
25-60-6	Renumbered from previous 25-60-5. Editorial changes in first relief. Updated References.
26-10-1	Updated References. Added second paragraph in Discussion.

REASONS FOR CHANGES

Item	Description of Change
26-10-2	Updated References.
26-10-3	Updated References. Added last paragraph in Discussion.
26-10-4	Revised proviso c) and deleted second sentence from Note as it conflicts with proviso d).
26-10-5	Revised item title and first relief. Updated References. Revised FAA Differences.
26-10-6	Revised first and fourth reliefs to align with FAA PL 24, except that proviso regarding in-flight service waste bags is still unique to TCCA. Revised Number Required of first relief to indicate "-" to account for ATA 38 relief (min number of operative lavatories). Revised second relief. Added third relief as per PL 24. Revised first relief and deleted second relief under All Cargo Operations. Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
26-10-7	Deleted "Bunk". Added (O) to first relief.
26-20-3	Revised Number Required of first and second reliefs. Number Required of second relief accounts for ATA 38 relief (min number of operative lavatories). Revised second relief and added third relief to align with FAA PL 24. Revised fourth relief. Revised Repair Interval Category of fifth relief as well as editorial change in proviso b). Editorial change in sixth relief (All Cargo Operations). Deleted second relief under All Cargo Operations. Updated References. Deleted second paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
26-20-4	Added "and used" to proviso c). Updated References.
26-20-5	New item aligned with item 26-10-5.
27-00-1	Replaced "CRT" with "display".
27-00-2	Updated References.
27-10-1	Added last sentence in Discussion. Revised FAA Differences.
27-20-1	Revised Number Installed.
27-30-1	Added "C" to Repair Interval Category to reflect first paragraph of Discussion.
28-20-1	Updated References.
28-40-1	Added "B" to Repair Interval Category to reflect first paragraph of Discussion.
30-00-1	Editorial changes in sub-items.
30-00-2	Added sub-item numbering (editorial). Updated References.
30-20-1	Updated References.
30-30-1	Clarified that first two reliefs apply to transport category aircraft. Revised Number Installed of first and second reliefs. Added 2) for non-transport category aircraft. Updated References. Revised Discussion.
30-30-2	Added "C" to Repair Interval Category to reflect Discussion. Updated References. Added last paragraph in Discussion. Added EASA Differences.
30-30-3	Revised Number Installed. Updated References.
30-30-4	Updated References.
30-40-1	Added sub-item numbering (editorial). Updated References. Added EASA Differences.

REASONS FOR CHANGES

Item	Description of Change
30-40-2	Added sub-item numbering (editorial). Updated References.
30-40-3	Revised to address fluid not banned by Canadian environmental regulations.
30-80-1	Updated References. Added last paragraph in Discussion. Added EASA Differences.
31-20-1	Added EASA Differences.
31-30-1	Added “(FDR)” to item title. Added “(CVR)” to first relief, proviso a). Deleted “digital” in fourth relief. Added sub-item numbering as well as other editorial changes. Updated References. Added EASA Differences.
31-40-1	Updated References.
32-40-1	Added sub-item numbering. Clarified applicability of second relief (sub-item 1) a)). Updated References.
32-40-2	Updated References.
33-10-1	Revised Repair Interval Category of second relief to harmonize with FAA and EASA. Updated References. Revised FAA Differences. Added EASA Differences.
33-20-1	Added last paragraph in Discussion. Added EASA Differences.
33-20-2	Revised to align with FAA PL 123. Added sub-item numbering (editorial). Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
33-20-3	Deleted “Bunk”.
33-40-1	Revised Repair Interval Category of second relief (day operations) to align with FAA MMELs. Added EASA Differences.
33-40-2	Revised first relief to align with EASA. Revised Number Installed of second relief. Revised FAA Differences. Added EASA Differences.
33-40-3	Revised item title. Revised Number Required of first relief. Updated References. Revised FAA Differences. Added EASA Differences.
33-40-4	Revised item title and first relief. Added second relief (day operations). Deleted FAA reference. Added second paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
33-40-5	Revised to align with FAA PL 72 Revision 4. Updated References. Added paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
33-50-1	Added numbering to sub-items. Replaced “Electrical Lighting” with “Non-Photoluminescent”. Revised Number Required of Photoluminescent Systems relief. Added last sentence in second paragraph of Discussion. Replaced “exemptions” with “exceptions” in third paragraph of Discussion. Added EASA Differences.
33-50-2	Added numbering to sub-items. Deleted “Bunk”. Added relief for non-passenger carrying operations. Added last paragraph in Discussion. Added EASA Differences.
33-50-3	Added EASA Differences.
34-10-1	Updated References. Added second and third paragraphs in Discussion. Added EASA Differences.
34-10-2	Added “C” to Repair Interval Category. Updated References. Added EASA Differences.

REASONS FOR CHANGES

Item	Description of Change
34-10-3	Deleted first relief. Revised second and third reliefs (not required by design standard cases). Revised Discussion and FAA Differences. Added EASA Differences.
34-20-1	Added “if affected” to provisos. Added EASA Differences.
34-20-2	Added numbering to sub-items. Reformatted and revised Third/Standby Attitude Indicator relief cases. Revised dispatch conditions of Turn and Slip Indicator relief cases. Updated References. Added last paragraph in Discussion. Added EASA Differences.
34-20-3	Revised Number Installed/Required of third relief. Updated References. Added EASA Differences.
34-30-1	Added second relief. Updated References. Revised FAA Differences.
34-40-1	Updated References. Added EASA Differences.
34-40-2	Several changes to align with FAA PL 54. Terrain System (TAWS A and B) and Terrain Displays (TAWS A) are now required by regulations and hence cat B is more appropriate. Added relief case for TAWS A or B not required by regulations. Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
34-40-3	Revised item title. Revised first relief to align with relief for TAWS Windshear Mode (item 34-40-2). Deleted last relief (not required by regulation case). Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
34-40-4	Revised to align with FAA PL 32 Revision 7. Updated References. Added clarification on TCAS II and RVSM in Discussion. Revised FAA Differences. Added EASA Differences.
34-50-1	Added numbering to sub-items. Revised second relief (ADF/DME) as per TC Global Change 11. Deleted “If used routinely” and “If not used routinely”. Revised fourth relief. Revised Database relief to align with EASA CS-MMEL. Updated References. Revised last paragraph in Discussion. Revised FAA Differences. Added EASA Differences.
34-50-2	Revised to align with FAA PL 76 Revision 7. Updated References. Revised FAA Differences. Added EASA Differences.
35-10-1	Added numbering to sub-items. Editorial change in Discussion: replaced “ft” with “feet”. Added EASA Differences.
35-20-1	Added numbering to sub-items. Added “if applicable” to provisos b) and c) of first relief. Deleted “Individual PSUs” and reference to item 35-20-2. Added two last paragraphs in Discussion. Added EASA Differences.
35-20-2	Added “(PSU)” in item title. Deleted relief for Automatic Opening Feature of Door Latches. Revised Discussion. Added EASA Differences.
35-20-3	Revised Number Required of both reliefs from “0” to “-”. Editorial change in proviso b) of first relief. Updated References. Added EASA Differences.
35-20-4	Deleted “Bunk”.
35-30-1	Editorial change in relief: replaced “regulation” with “regulations”. Added EASA Differences.
35-30-2	Added “(PBE)” to item title. Editorial change in relief: replaced “regulation” with “regulations”. Updated References. Revised FAA Differences. Added EASA Differences.
36-00-1	Updated References.
38-10-1	Revised first relief to align with FAA PL 83. Revised Number Required and deleted (O) in second relief. Updated References. Revised Discussion and FAA Differences.

REASONS FOR CHANGES

Item	Description of Change
38-30-1	Combined first two reliefs into one and revised dispatch conditions to align with FAA PL 83. Added relief for aircraft that provide passenger access to an emergency exit through the lavatory. Added missing C/-/- information and deleted (O) in third relief. Updated References. Revised Discussion and FAA Differences.
46-20-1	Added “(EFB)” in item title. Deleted EFB classes as they are no longer used. Updated References. Revised Discussion and FAA Differences. Added EASA Differences.
47-10-1	Deleted item as relief varies according to aircraft type certification.
49-10-1	Updated References.
52-10-1	Revised item title to clarify relief only applies to wide body aircraft. Updated References. Revised FAA Differences. Added EASA Differences.
52-10-2	Updated References. Added EASA Differences.
52-10-3	Updated References.
52-50-1	Updated References. Added EASA Differences.
52-70-1	Updated References.
73-20-1	Updated References.
73-30-1	Updated References.
77-00-1	Updated References.
77-10-1	Updated References.
77-30-1	Added “day” to second relief. Added last paragraph in Discussion.
78-30-1	Updated References. Replaced “JAA” with “EASA” as well as “TC” with “TCCA” in second paragraph of Discussion.

DEFINITIONS

The following definitions either reflect the Canadian Aviation Regulations (CARs) or are unique to the Guidance Book and are provided for clarification.

"**aircraft crew**" for the purpose of this document, means the operating crew members including the flight crew members, flight attendants, aircraft maintenance personnel and supervisory crew members.

"**all cargo operations**" for the purpose of this document, refers to aircraft that are used for the carriage of cargo only, regardless of the configuration. All crew members are seated on the flight deck or in the dedicated supernumerary area. For small aircraft, which do not allow the carriage of other crew members in the flight compartment, the observer's seat is considered equivalent.

"**alternate procedures**" means that the operator needs to develop normal, abnormal and/or emergency procedures, as applicable, for the associated item.

"**any in excess of those required by regulations**" means that the equipment required by the Canadian Aviation Regulations (CARs) must be operative and only excess equipment may be inoperative.

"**as required by regulations**" may include such things as Canadian Aviation Regulations (CARs), both operational and design related; Aviation Occupational Health and Safety (AOH&S) regulations, etc. It is noted that detailed relief provided in the CARs is only applicable where a MEL is not required.

"**cargo attendants**" no definition in the CARs; however, for the purpose of this document, the persons listed as crew members in the crew member definition below are considered cargo attendants.

"**cargo configuration**", "**all cargo configuration**", "**cargo aircraft**", and "**all cargo aircraft**", for the purpose of this document, refers to aircraft that are configured to only carry cargo on the main deck. These aircraft are typically referred to as "freighters".

"**combi**", "**combi configuration**", and "**combi aircraft**", for the purpose of this document, refers to aircraft that are in a combined cargo/passenger configuration, which use the main deck for a combination of cargo space and passenger seating. They are required to have a partition to allow both uses simultaneously.

"**combustible materials**", for the purpose of this document, refers to materials which are capable of catching fire and burning (baggage, livestock, etc.)
Where loading of flammable or combustible material is prohibited, no material may be loaded except the following:

a) Cargo handling equipment (ballast or empty ULD). ULD must not contain any energy supplied device of any kind (e.g. ULD integrated trackers/monitoring devices, cooled containers), must be without oxygen supply, or any other flammable or combustible material,
b) Fly away kits (excluding e.g. cans of hydraulic fluid, cleaning solvents, batteries, capacitors, chemical generators, etc.),
c) In-flight service material (Return catering - only closed catering trolleys/boxes, no newspapers, no alcohol or duty free goods).

DEFINITIONS

"**crew member**", for the purpose of this document, unless otherwise specified, in addition to the CAR 101.01 (1) definition includes:

a) a person whose presence on board the aircraft is necessary for:

(1) the safety of the flight,

(2) the safe handling of animals,

(3) the safe handling of dangerous goods,

(4) the security of valuables or confidential cargo,

(5) the preservation of fragile or perishable cargo, or

(6) the handling of cargo.

b) aircraft maintenance personnel, and

c) supervisory crew members and non-operating crew members and/or flight attendants who are qualified on aircraft type.

"**Crew Rest Facility**" means a bunk that meets the Society of Automotive Engineers (SAE) *Aerospace Recommended Practice (ARP) 4101/3, Crew Rest Facilities*, used in conjunction with *ARP 4101, Flight Deck Layout and Facilities*, or a similar facility located elsewhere onboard the aircraft for the intent of crew rest.

"**extended operations (ETOPS)**" means an aeroplane flight operation, other than an all-cargo operation in an aeroplane with more than two engines, on a route containing a point that is farther from an adequate aerodrome than the distance that can be flown (at an approved one-engine-inoperative cruise speed under standard conditions in still air) in 60 minutes for a two-engine aeroplane or 180 minutes for an aeroplane with more than two engines.

"**extended over-water operations**" means:

a) in the case of an aircraft other than a helicopter, a flight over an area of water located at a horizontal distance of more than 50 nautical miles from the nearest shoreline, and

b) in the case of a helicopter, a flight over an area of water located at a horizontal distance of more than 50 nautical miles from the nearest shoreline or more than 50 nautical miles from the nearest offshore heliport structure.

"**flight**" means the period from the start of the takeoff roll to the first landing.

"**flight attendant**" (CARs) means a crew member, other than a flight crew member, who has been assigned duties to be performed in the interest of the passengers in a passenger-carrying aircraft.

"**flight crew member**" (CARs) means a crew member assigned to act as pilot or flight engineer of an aircraft during flight time.

"**flight cycle**" means the period from the start of the takeoff roll to the first landing.

DEFINITIONS

"**heavy maintenance visit (HMV)**" means check related items such as C or D Check tasks or other required inspection tasks where an aircraft is scheduled to be out of service for 4 or more days.

"**initial approach altitude**" - CFR 14 Aeronautics and Space Part 97 - Standard Instrument Approach Procedures - 97.3 (c) 2 Initial Approach Altitude means the altitude (or altitudes, in High Altitude Procedures) prescribed for the initial approach segment of an instrument approach.

"**long range communication system (LRCS)**" is defined in CFR 14 Section 1.1 as a system that uses satellite relay, data link, high frequency, or other approved communication system which extends beyond line-of-sight. Examples of such systems are HF-voice, HF-data link, SATCOM-voice, and SATCOM-data link.

"**non-passenger carrying operation**" for the purpose of this document, refers to aircraft that conduct operations without passengers in the cabin, regardless of the configuration. Crew members are the only occupants of the aircraft.

"**observer's seat**" refers to a seat on the flight deck of an aeroplane, of which there are usually one or two. The primary observer's seat is used for official purposes such as Transport Canada check rides, company training etc.

"**official capacity**" for the purpose of this document with respect to the occupant of the observer's seat includes flight training, Transport Canada Civil Aviation Safety Inspector company check rides, a crew member, or a person authorized by the air operator in accordance with procedures specified in the air operator's company operations manual.

"**operative**" for the purpose of this document means that a system or component will accomplish its intended function. When an MMEL item specifies that an item of equipment must be operative it does not necessarily mean that its operational status must be verified; it is to be considered operative unless reported or is known to be malfunctioning.

"**passenger**" means a person, other than a crew member, who is carried on board an aircraft.

"**passenger configuration**", and "**passenger aircraft**", for the purpose of this document, refers to aircraft that are configured to only carry passengers on the main/upper deck.

"**protective breathing equipment**" (CARs) means equipment designed to cover the eyes, nose and mouth of the wearer, or the nose and mouth where accessory equipment is provided to protect the eyes, and to protect the wearer from the effects of smoke, carbon dioxide or other harmful gases.

"**safety belt**" (CARs) means a personal restraint system consisting of either a lap strap or a lap strap combined with a shoulder harness.

"**shoulder harness**" (CARs) means any device that is used to restrain the upper torso of a person and that consists of a single diagonal upper torso strap or dual upper torso straps.

ITEM: 00-00-1 CAS (Crew Alerting System) MESSAGE MMEL RELIEF

EXAMPLE OF PROPOSED RELIEF FOR ITEM IN SECTION 2 OF MMEL

1. CAS Message		2. Dispatch Consideration
SAFETY VALVE OPEN (Advisory)	C	(O) Except for ER operations, aircraft may be dispatched provided: a) Both air conditioning packs operate normally, b) Operations are conducted unpressurized at or below 9,000 feet MSL, c) Take-offs and landings are not conducted on runways near bodies of water, and d) Extended over-water operations are prohibited.
SMALL SERV DOOR (Caution)	C	(O) Aircraft may be dispatched provided prior to each flight all small service doors are verified CLOSED, LATCHED and LOCKED.

DISCUSSION:

References: FAA PL 119 (Rev. 4)

General:

The TCCA approved MMEL for the BD 700 aircraft introduced a Section 2 to cater for the use of failure indications (a message on EICAS, ECAM, etc.) of equipment as a means to provide relief for a failed system/component. This GB item 00-00-1 is intended to provide guidance for MMEL developers to permit the use of this approach for aircraft equipped with modern technologies which allow some aircraft systems to carry out self-diagnostic tests to determine system health status and present it to the flight crew through indication in the flight deck (a message on EICAS, ECAM, etc.).

Also, some fairly simple systems may provide failure annunciation in the flight deck, which points directly to the failed system/component, such that there is no need for fault isolation procedures to be carried out by maintenance personnel to determine that this equipment has failed.

Following discussion with members of the FAA Aircraft Evaluation Group and the North American Aerospace Industry, TCCA has developed the following guidance material while attempting to harmonize as much as possible with the FAA Policy.

ITEM: 00-00-1 CAS (Crew Alerting System) MESSAGE MMEL RELIEF (cont'd)

Specific Considerations:

The MMEL item may grant relief for a failure indication (a message on EICAS, ECAM, etc. annunciating failure of aircraft equipment) rather than the failed equipment, in which case the determination of whether or not the aircraft can be dispatched in accordance with MMEL will be based on this failure indication. No failure isolation procedures are required to be carried out by maintenance personnel for such MMEL items (CAS message MMEL items) to determine the failed equipment.

The MMEL item may grant relief for a failure indication (a message on EICAS, ECAM, etc.) if the justification supporting this MMEL candidate considers all potential failures triggering this failure indication and it is shown that the provisos of this MMEL item ensure safe operation of aircraft with any one or combination of these failure(s) present.

The MMEL relief may be granted for a failure indication that annunciates:

- loss of redundancy within the system/component,
- loss of system function,
- failure of a single system/component,
- failure of multiple components.

Such MMEL items (CAS message MMEL items) may include (O) procedures requiring deactivation or securing of the specified system or component into an acceptable configuration for aircraft operation under MMEL.

In reviewing such MMEL candidates (CAS message MMEL items), TCCA should use the normal MMEL review processes that are currently used for an MMEL candidate evaluation. Special attention should be paid to the possible effects of no maintenance personnel carrying out a failure isolation procedure, since the decision of whether or not the aircraft can be dispatched in accordance with MMEL will be based, in this case, on a failure indication (a message on EICAS, ECAM, etc.).

Relief for loss of redundancy must be substantiated by showing certification conditions have not been invalidated (e.g. 25.1309 functional hazard assessment and fault tree analyses, design assurance level, etc.).

Once approved, the CAS message MMEL items may be incorporated into the MMEL in a new Section, as described and illustrated below.

INCORPORATING WITH EXISTING MMEL RELIEF

Existing aircraft MMEL programs that may wish to incorporate a CAS message section may be permitted to do so, using the same principles of justification described above.

The optional MMEL shall be divided into two sections, the "LRU-oriented" MMEL section and the CAS message section.

The first section (Section 1) continues to use the existing "LRU-oriented" MMEL format and should address the following type of equipment failures:

- failures which are not annunciated to crew, and
- failures which are annunciated, but the failure indication by itself is not considered sufficient to determine the aircraft dispatch status.

ITEM: 00-00-1 CAS (Crew Alerting System) MESSAGE MMEL RELIEF (cont'd)

The second section (Section 2) should address the equipment for which failure indication can be used to determine the aircraft dispatch status, and should be formatted as follows:

It should have only two columns. The first column should list the failure indications (messages) for which relief is given (if desired, the messages will be listed in alphabetical order with no ATA breakdown. The second column should include the corresponding MMEL limitations and/or procedures; the format of this column should be in line with the format requirements of "Remarks or Exceptions" column of the conventional "LRU-oriented" MMEL.

During the periodic revisions to existing MMELs, CAS message relief may be proposed for all new relief candidates, and also, in a process of gradual transfer from existing / approved "LRU-oriented" MMEL section, existing items and their respective relief provisos, can be transferred to the CAS message section. The transfer to this section, however, will only be possible providing the relief provisos for the associated message remain appropriate for failures of each and all of its underlying contributing causes.

In further consideration of the movement of "LRU-oriented" MMEL relief items / provisos to CAS message section, this does not necessarily exclude the "LRU-oriented" MMEL relief from continued inclusion in Section 1. Section 2 may be employed as an alternative dispatch relief methodology - Section 1 relief will be retained in order to provide maximum flexibility for relief. Flight crews / operators may dispatch failures with reference to either Section 1 or Section 2, to the advantage that either may provide.

Under this dual-use approach, it will be expected that in many cases that when comparing dispatch relief provisos for posted messages in Section 2, to those of the related LRU / Component dispatch relief in Section 1, the provisos associated with dispatching the annunciated message may generally be expected to be more restrictive in content and relief interval. Without the opportunity for fault isolation through maintenance, it must be assumed that worst-case failure conditions always underlie the posted message - commensurately, dispatch may be expected to be more restrictive. Conversely, where maintenance personnel are available and fault isolation conducted, relief provisos in Section 1 may be found to provide fewer or less stringent restrictions upon operations and offer a longer relief interval.

Where a single set of provisos cannot be proposed that adequately supports all failure causes, dispatch will continue to rely upon the standard methods of failure determination and subsequent referencing of the "LRU-oriented" MMEL section for any available relief.

Supporting analyses of CAS Message relief candidate proposals may determine that prior to dispatching, the flight crew must accomplish one or more steps to secure the affected system. Where deemed necessary, the familiar "(O)" indicates the need for such supporting tasks, the scope of which shall be at the discretion of TCCA. Acceptable tasks include, but are not necessarily limited to the following duties:

a) procedures described which exercise cockpit (or cabin) system controls utilized in normal flight operations.
b) deactivation of affected systems, as achieved by pulling system breaker or use of remote electronic system isolation.
c) visual inspection behind panels (internal or external) which are accessible without tools via quick-release latches and which clearly indicate their unlocked or unsafe state. (red/green safe window; flush fit latches) (candidates to be verified by TCCA)
d) visual confirmation of remote gauge indications, or valve positions as provided by integral external indicators.

ITEM: 00-00-1 CAS (Crew Alerting System) MESSAGE MMEL RELIEF (cont'd)

To accommodate these dispatch (O) procedures, it is recommended that a separate section be added to the MMEL dispatch procedures manual, such that the alphabetized order of the CAS message relief do not conflict with the existing ordering sequence of Section 1 items.

INCORPORATING SECTION 2 INTO THE MMEL

With respect to incorporating Section 2 into the MMEL, in order to provide standardization, MMEL documents shall be assembled with consideration of the following:

a) Front matter pages:
   i) Log of Revisions pages shall be updated to include Section 2 amendments when applicable.
   ii) Control Pages shall be expanded to include revision status and date of each page in Section 2.
   iii) Highlights of Change pages shall be updated to include Section 2 amendments when applicable.
   iv) Following Preamble page, add a new section divider page entitled: "SECTION 1 LRU/COMPONENT MMEL Relief".

b) Section 2
   i) Following the last page of relief for ATA 80 in Section 1, add a new section divider page entitled: "SECTION 2 CAS Message MMEL Relief".
   ii) A new INTRODUCTION section shall explain principles of the CAS message relief methodology. A minimum Standard wording to the INTRODUCTION is provided below.
   iii) A Table of Contents page should accompany section 2, wherein the list of included CAS Message relief items are listed in alphabetical order.
   iv) Some flexibility may be exercised to add a separate page: "NOTES:", following the INTRODUCTION, where deemed helpful to operators, in order to explain / accommodate specific aircraft variances. Such page(s) shall remain separate from those of which are standardized.

The following to be incorporated as standard wording to Section 2:

INTRODUCTION

The following new section has been authorized in accordance with the provisions of TCCA MMEL GB Item 00-00-1, Rev. 1 or later, regarding MMEL dispatching directly from displayed CAS (Crew Alerting System) messages. "CAS message" relief is an alternative to the standard method of MMEL dispatch relief, as is normally achieved through fault isolation procedures, and the subsequent dispatch under traditional LRU-oriented MMEL relief. This Section 2, as it is referred to, has been developed with the objective of allowing flight crews to dispatch from the displayed CAS message, without specifically identifying associated failed LRUs or components.

ITEM: 00-00-1 CAS (Crew Alerting System) MESSAGE MMEL RELIEF (cont'd)

As Section 2 is intended as an alternative dispatch relief methodology the LRU-oriented relief (Section 1) will be retained in order to provide maximum flexibility for dispatch relief. Flight crews / operators may dispatch failures with reference to either Section 1 or Section 2 of this MMEL to the advantage that either associated relief may provide. Upon comparison, it may be recognized in some cases that dispatch relief provisos for posted CAS messages to those of the related LRU dispatch relief, the provisos associated with the CAS message can appear more restrictive in content and/or relief interval. Without the opportunity for fault isolation through maintenance, it must be assumed that worst-case failure conditions always underlie the posted message - commensurately, dispatch should be more restrictive. However, where maintenance personnel are available and fault isolation conducted, relief provisos in Section 1 may be found to provide fewer or less stringent restrictions upon operations and offer a longer relief interval.

Section 2 has been arranged in alphabetical order of the indicated CAS message, without association to ATA Chapter. However, to avoid any possible mis-identification, each message is identified beneath as to its alert level.

Repair intervals (A, B, C & D) associated with CAS message reliefs herein, remain consistent with those of Section 1, and as described in the Definitions section in the front matter of this MMEL.

In conjunction with Section 2, a new separate dispatch procedures section has also been developed, also arranged in alphabetical order of the indicated CAS message. Where deemed necessary, the familiar "(O)" indicates the need for such supporting tasks, the scope of which shall be at the discretion of the MMEL approval authority. Acceptable tasks include, but are not necessarily limited to the following duties:

a) Procedures described which exercise cockpit (or cabin) system controls utilized in normal flight operations.
b) Deactivation of affected systems, as achieved by pulling system breaker or use of remote electronic system isolation.
c) Visual inspection behind panels (internal or external) which are accessible without tools via quick-release latches and which clearly indicate their unlocked or unsafe state. (red/green safe window; flush fit latches) (candidates to be verified by TCCA)
d) Visual confirmation of remote gauge indications, or valve positions as provided by integral external indicators.

FAA Differences: FAA policy indicated in PL 119 is similar to GB item 00-00-1, however, GB 00-00-1 contains more detailed explanation of the CAS Message MMEL relief concept. Also, FAA PL 119 does not apply to Part 121 operations (airline).

ITEM: 21-20-1 RECIRCULATION FANS

Recirculation fans	C	-	0	May be inoperative provided the associated compartment is empty or does not contain combustible materials.

DISCUSSION:

References: nil

This item only addresses recirculation fans exhausting through the cargo compartments. Aircraft certification requirements such as smoke detection capability with inoperative recirculation fans must be considered when developing MMEL relief.

If recirculation fans do not affect smoke detection capability, the above limitation is not required.

FAA Differences: FAA does not define combustible materials and instead only permits carriage of ballast, empty cargo handling equipment, and fly away kits.

ITEM: 21-30-1 AIR CONDITIONING AND PRESSURIZATION CONTROL MODES

Automatic Pressurization Control Systems.	C	-	1		May be inoperative provided the manual pressurization control system and one autopilot are operative.
Automatic Pressurization Control Systems.	C	-	0	(M)(O)	May be inoperative provided: a) Flight is conducted in an unpressurized configuration at or below 10,000 feet MSL, and b) Cargo compartments are empty or do not contain combustible materials.
Automatic and Manual Pressurization Control Systems	C/D	-	0	(M)(O)	May be inoperative provided: a) Flight is conducted in an unpressurized configuration at or below 10,000 feet MSL, b) Extended overwater operations are prohibited, and c) Cargo compartments are empty or do not contain combustible materials.

DISCUSSION:

References: CAR 605.31, CAR 605.32

ITEM: 21-30-1 AIR CONDITIONING AND PRESSURIZATION CONTROL MODES (cont'd)

This item is an example and relief for a specific aircraft will need to be tailored accordingly. For example, depending on the workload assessment it may not be necessary to have an operative autopilot in a manual pressurization situation.

The relief proposed above is based on the premise that the air conditioning packs are operating normally. In permitting auto and/or manual modes to be inoperative it must be assured that AFM emergency procedures can be accomplished.

(O) addresses unpressurized flight and manual pressurization. (M) configures aircraft for unpressurized flight, if necessary.

If no specific unpressurized configuration is defined in the AFM, it must be confirmed that the aircraft has met its basis of certification when unpressurized. If an unpressurized configuration has been certified, adequate procedures must be provided to ensure a smoke removal capability. Based on certification findings, an unpressurized configuration must account for smoke clearance, electrical equipment cooling, ditching, and ventilation. A cat D may be allowable for some aircraft and not for others, e.g. the B767 is assigned a cat C for unpressurized flight and this has been accepted by Transport Canada. In some cases the cargo compartment fire detection/extinguishing system may have been certified only with a fully operative air conditioning system. Therefore, when parts of the air conditioning system are inoperative, the smoke detection/fire extinguishing system must also be considered inoperative. In this case the MMEL must include a proviso that the affected compartment be empty or not contain combustible materials.

FAA Differences: FAA does not define combustible materials and instead only permits carriage of ballast, empty cargo handling equipment, and fly away kits.
TCCA prohibits unpressurized flight above 10,000 feet.

ITEM: 21-30-2 OUTFLOW/SAFETY VALVES

Outflow/Safety Valves	C	-	-	(M)(O)	May be inoperative provided: a) Affected valve(s) is secured OPEN, b) Flight is conducted in an unpressurized configuration at or below 10,000 feet MSL, and c) Extended overwater operations are prohibited.

DISCUSSION:

References: AWM 525.801, 14 CFR 1.1

Relief has been granted for outflow valve(s) inoperative open, however there are several things to consider:

1. Depending on their location, emergency procedures may require that the outflow valves be closed prior to ditching in order to prevent water from entering the aircraft. Hence the proviso to not operate over water greater than 50 nautical miles from shore (this is considered equivalent to the FAA “extended overwater operation” definition 14 CFR 1.1).
2. Procedures must be established for operating the aircraft unpressurized.

Relief may be granted for outflow valve(s) inoperative closed, however, smoke removal tests must be reviewed in order to determine the acceptability of permitting any outflow valve(s) inoperative closed. It may not be possible to dispatch with all valves inoperative closed because of smoke removal considerations and the possibility of over pressurization.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 21-30-3 CABIN ALTITUDE INDICATOR

Cabin Altitude Indicator	C	-	0	(O)	May be inoperative provided: a) The cabin differential pressure indicator is operative, and b) A chart is provided to convert cabin differential pressure to cabin altitude.
	C	-	0	(O)	May be inoperative provided flight is conducted in an unpressurized configuration at or below 10,000 feet MSL.

DISCUSSION:

References: nil

See item 21-30-1 DISCUSSION for unpressurized flight considerations.

The (O) for unpressurized flight will ensure that the procedures are clearly defined for the flight crew members.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 21-30-4 CABIN ALTITUDE WARNING SYSTEM

Cabin Altitude Warning System	C	1	0	May be inoperative provided flight is conducted at or below 10,000 feet MSL.

DISCUSSION:

References: AWM 523.841, AWM 525.841

The cabin altitude warning system provides an alert when the cabin altitude reaches some pre-selected altitude such as 10,000 feet above MSL. Frequently monitoring the cabin altitude during flight above this altitude is not considered sufficient to permit dispatch with the warning system inoperative.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 21-30-5 CABIN RATE OF CLIMB INDICATOR

Cabin Rate of Climb Indicator	C	1	0		May be inoperative provided all other instruments and functions of the pressurization system are operative.
	C	1	0	(O)	May be inoperative provided flight is conducted in an unpressurized configuration at or below 10,000 feet MSL.

DISCUSSION:

References: nil

See item 21-30-1 DISCUSSION for unpressurized flight considerations.

The cabin rate of climb indicator provides immediate feedback if operating in manual mode. Without this feedback the workload could be unacceptably high; therefore the proviso that all other aspects of the pressurization system must operate normally.

Some aircraft may have sufficient redundancy such that the next single failure does not result in manual mode, e.g. an aircraft may have two automatic pressurization systems. For these aircraft it would not be necessary that all other functions of the pressurization system be operative.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 21-30-6 DIFFERENTIAL PRESSURE INDICATOR

Differential Pressure Indicator	C	1	0	(O)	May be inoperative provided: a) The cabin altitude indicator is operative, and b) A chart is provided to convert cabin altitude to cabin differential pressure.
	C	1	0	(O)	May be inoperative provided flight is conducted in an unpressurized configuration at or below 10,000 feet MSL.

DISCUSSION:

References: nil

See item 21-30-1 DISCUSSION for unpressurized flight considerations.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 21-50-1 AIR CONDITIONING PACKS

Air Conditioning Packs	C	2	1	(O)	Except for extended operations, one may be inoperative provided flight is conducted at or below FL XXX.
	C	2	0	(M)(O)	Except for extended operations, both may be inoperative provided: a) Flight is conducted in an unpressurized configuration at or below 10,000 feet MSL, b) Both recirculation fans, if installed, are operative, and c) Cargo compartments are empty or do not contain combustible materials.
Pack supporting Class C Fire Protection/Fire Detection on Main Deck Combi/All Cargo Configurations	C	-	-		Main deck cargo compartment is empty or does not contain combustible materials.

DISCUSSION:

References: FAA PL 40 (Rev. 3), AWM 525.831(a)

This item is an example and for each aircraft the associated justification will specify the maximum operating altitude. This may be a function of the effects of a further failure e.g. loss of the remaining Air Conditioning Pack and also of the continued availability of essential functions such as smoke clearance. For both Air Conditioning Packs inoperative, there will need to be appropriate altitude restrictions based on compliance with CARs relating to unpressurized flight and limitations arising from certification in this configuration.

No extended operations permitted.

See item 21-30-1 for the DISCUSSION regarding unpressurized flight conditions.

For dispatch with one air conditioning unit or one bleed inoperative, the MMEL should specify the maximum operating altitude, which would have been determined during certification smoke clearing tests. There is also a requirement to ensure sufficient amount of fresh air is supplied to each occupant.

For both Air Conditioning Packs inoperative there will need to be appropriate altitude restrictions based on certification tests and no Extended Operations. On combi/all cargo, relief for the pack supporting fire protection/fire detection is possible if cargo is not carried in the main deck cargo area configurations.

The (O) procedure in the C 2 1 relief is intended to include procedures to ensure that flight attendant(s) is(are) advised of inoperative A/C Packs.

ITEM: 21-50-1 AIR CONDITIONING PACKS (cont'd)

Aircraft certified under AWM 523 may be permitted to operate with cargo with an air conditioning system inoperative.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 21-50-2 EQUIPMENT AND AVIONICS COOLING FANS

Equipment and Avionics Cooling Fans	C	-	-	Relief dependent upon certification requirements (see discussion).

DISCUSSION:

References: nil

Cooling fans are often installed to provide supplemental cooling to aircraft equipment as a means of providing a stable reduced operating temperature to enhance reliability of the equipment or to prevent the equipment from exceeding its thermal limitation thereby resulting in failure of the unit.

Equipment and/or avionics cooling fans may be inoperative provided it can be demonstrated that the equipment for which the fan has been installed does not exceed its operating thermal limit in the absence of supplemental cooling. The air temperature of the cabin, flight compartment and/or equipment location area may need to be restricted to defined values and/or exposure periods of elevated temperatures during which the protected equipment may operate without convective cooling provided by a fan(s).

If the function of the equipment being protected from excessive temperatures is deemed to be non-essential to continued safe flight and landing or for which dispatch relief has already been granted in the MMEL, the associated cooling fan may be inoperative without restrictions.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 21-60-1 CREW REST FACILITY

Crew Rest Facility Environmental Control System					
1) Temperature Control	C	1	0	(M)	May be inoperative provided: a) Heater is deactivated, and b) Associated crew rest facility is not occupied.
2) Ventilation	C	1	0	(M)	May be inoperative provided: a) Heater is deactivated, b) Supply/boost fan is deactivated, and c) Associated crew rest facility is not occupied.
3) Temperature Indicator	D	1	0		

DISCUSSION:

References: AWM 525.831(e)(2)

This item addresses the air conditioning aspects of the crew rest facility. Aircraft certification requirements must be considered when developing MMEL relief in this area.

FAA Differences: No FAA guidance currently available.

ITEM: 22-10-1 AUTOPILOT

Autopilot				
1) Transport Category Aircraft with only one Autopilot Installed	B	1	0	May be inoperative provided enroute operations and approach minimums do not require its use.
2) Transport Category Aircraft with two or more Autopilots Installed	C	-	1	Any in excess of operational requirements may be inoperative.
	B	-	0	May be inoperative provided enroute operations and approach minimums do not require their use.
3) Non-transport Category Aircraft	C	-	0	May be inoperative provided operations do not require its use.

DISCUSSION:

References: FAA PL 101 (Rev. 2)

In recognizing the foreign authority responsibility, TC will not change a cat B for a foreign airplane trusting that the cat B was assigned for valid certification and generic (human factor) operational reasons by the foreign authority. For domestic airplanes TC will assign a category appropriate to the airplane after discussion with the manufacturer and operational regulators.

FAA Differences: FAA relief is similar to TCCA. TCCA adds provisos where FAA PL 101 leaves it up to the FOEB chairman to determine.

EASA Differences: EASA requires the inoperative Autopilot (or Autopilot Channel) be disconnected, if applicable. Also, it requires that increase in pilot workload for the intended flight be assessed.

ITEM: 22-10-2 AUTOPILOT DISCONNECTS

Autopilot Disconnect Functions (Quick Release Controls)	C	-	1	One may be inoperative provided: a) The autopilot is not used below 1,500 feet AGL, b) Approach minimums do not require the use of the autopilot, and c) The pilot flying has the operative disconnect.
1) Transport Category Aircraft	B	-	0	May be inoperative provided the autopilot is not used.
2) Non-transport Category Aircraft	C	-	0	May be inoperative provided the autopilot is not used.

DISCUSSION:

References: AWM 525.1329, AWM 523.1329, FAA PL 93 (Rev. 1)

A review of autopilot certification hardover and slowover tests will determine the Autopilot Disconnect relief which can be permitted for this item and the specific altitude which will be used to define the approach minimums. Some MMELs specify the initial approach altitude but this may not be appropriate for all aircraft nor is it meaningful for VFR operations. Some operations do not have published initial approach altitudes.

Consideration must be given to what other functions are performed by the disengage buttons, e.g. stick pusher.

Autopilot Disconnect installed on sidestick of fly-by-wire (FBW) aircraft may also be used for pilots to control priority when flying manually, which is a critical function with uncoupled sidesticks, and therefore no relief may be allowed. Further engineering review of FBW systems is always necessary.

FAA Differences: TCCA requires the operative autopilot disconnect to be on the pilot flying side.

ITEM: 22-10-3 AUTOPILOT DISCONNECTED WARNING SYSTEM

Autopilot Disconnected Warning System	B	1	0	May be inoperative provided the autopilot is considered inoperative and not used.

DISCUSSION:

References: AWM 525.1309(c), AWM 525.1329(j)

Because ever increasing emphasis is being placed on the use of the autopilot for flight operations, an operative warning of disconnection is considered necessary. If required by the basis of certification, there is really no compensating factor. For some aircraft such as the B767, parts of the Disconnected Warning System may be inoperative as there are other indications. In these cases it may be appropriate to limit autopilot use to 1500 ft AGL or above.

The requirement to consider autopilot inoperative and not used may not be sufficient in some circumstances (e.g. single-pilot operations), where pilots would still be tempted to use the autopilot in specific phases of the flight to minimize workload. Therefore, operators should review the nature of their operations and consider adding an (M) procedure in the MEL to ensure the autopilot is disabled before dispatch with autopilot disconnected warning system inoperative.

FAA Differences: The FAA does not provide specific MMEL policy for Autopilot Disconnected Warning System relief.

ITEM: 22-20-1 MACH TRIM SYSTEM

Mach Trim System	C	1	0	May be inoperative provided: a) Enroute operations do not require its use, and b) Operations are conducted at or below XXX KIAS/ .XXM when autopilot disengaged.

DISCUSSION:

References: nil

Some aircraft require the Mach trim system to be functional throughout the whole flight envelope, so this relief may not be appropriate to all aircraft.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 23-10-1 COMMUNICATION SYSTEMS (VHF, UHF, HF, SATCOM, etc.)

Communication Systems (VHF, UHF, HF, SATCOM, etc.) **VHF and UHF**					
1) Transport Category Aircraft	D	-	-		Any in excess of those required by regulations may be inoperative provided: a) It is not powered by a standby or emergency bus, and b) It is not required for emergency purposes.
2) Non-transport Category Aircraft	D	-	-		Any in excess of those required by regulations may be inoperative.
HF (and SATCOM)	D	-	-		Any in excess of those required by regulations may be inoperative.
HF	C	-	1	(O)	May be inoperative while conducting operations that require two Long Range Communication Systems (LRCS) provided: a) SATVOICE or Data Link operates normally, b) SATVOICE or Data Link services are available over the intended route of flight, and c) Alternate procedures are established and used.

ITEM: 23-10-1 COMMUNICATION SYSTEMS (VHF, UHF, HF, SATCOM, etc.) (cont'd)

DISCUSSION:

References: AWM 525.1307(d), FAA PL 95 (Rev. 2), FAA PL 106 (Rev. 5)

The design standard for transport category airplanes requires "two systems for two-way radio communications ...", therefore the number required for dispatch should normally be two. Furthermore, the intent of the design standard is that no single failure should result in failure of all communications systems. Therefore, during MMEL deliberations, radio power supplies and electrical system architecture will need to be considered (e.g. it may be inappropriate to dispatch if both radios are powered from the same bus).

For non-transport category airplanes the number required for dispatch should be shown as variable. Since the design standard does not require a communication system, the operational requirements would apply.

For transport category rotorcraft the number required for dispatch should be consistent with that design standard.

The proviso regarding the emergency power situation is consistent with the principle that equipment that is required to complete an emergency procedure cannot be inoperative.

As a basic principle, the minimum operative Communication Systems required for dispatch must not only be in conformance with the CARs, but also be appropriate to the intended route to be flown. If VHF coverage is not available throughout the flight, then Long Range Communication Systems (LRCS) must be installed and operative.

LRCS is defined in 14 CFR Section 1.1 as "A system that uses satellite relay, data link, high frequency, or other approved communication system which extends beyond line-of-sight." Examples of such systems are HF-voice, HF-data link, SATCOM-voice, and SATCOM-data link. Although SATCOM can be used as a backup for an HF system, its availability is not always possible due to a gap in satellite coverage.

FAA Differences: TCCA currently accepts Data Link as an acceptable method of LRCS. TCCA does not indicate the need for the ICAO Flight Plan to be updated in the dispatch conditions as that is a regular procedure followed by air operators.

EASA Differences: For transport category aircraft, EASA does not specify emergency/standby bus power requirements but recommends additional consideration and condition to take in account. EASA HF relief is similar to TCCA.

ITEM: 23-10-2 CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)

Controller Pilot Data Link Communications (CPDLC)	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	-	0		May be inoperative provided procedures do not require its use.

DISCUSSION:

References: nil

Operators shall ascertain that aircraft equipage conform to the regulatory requirements of the State in which operations are conducted. CPDLC is an alternative to ATC clearances voice communications in designated airspace. Canadian operating regulations do not require the use of CPDLC.

Appropriate MMEL relief for CPDLC sub-systems (i.e.: CMU or ATSU, SATCOM, VDL, HFDL, CMDU or FMS, etc.) should be considered individually and in the context of their respective function and operating requirements.

The (O) procedures require the operator to establish appropriate procedures where CPDLC is required.

FAA Differences: FAA has not issued a PL on this subject.

EASA Differences: EASA relief is identical to TCCA.

ITEM: 23-20-1 SELECTIVE CALL (SELCAL) SYSTEM

Selective Call (SELCAL) System	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
1) Channels	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	-	0		May be inoperative provided procedures do not require its use.

DISCUSSION:

References: FAA PL 117 (Original)

The cat D allows extended relief for operations where the SELCAL is not used routinely.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 23-20-2 ACARS (ARINC COMMUNICATIONS ADDRESSING AND REPORTING SYSTEM) INCLUDING PRINTER

ACARS (ARINC Communications Addressing and Reporting System) Including Printer	C	-	0	(O)	May be inoperative provided alternate procedures are established and used. NOTE: Any portion of the system that operates normally may be used.
	D	-	0		May be inoperative provided procedures do not require its use. NOTE: Any portion of the system that operates normally may be used.

DISCUSSION:

References: nil

In some MMELs the system and printer are written as separate items with identical wording. The cat D allows extended relief for operations where the ACARS is not used. Similar relief could be used for Airborne Flight Information Systems.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 23-20-3 AUTOMATED FLIGHT INFORMATION REPORTING SYSTEM (AFIRS)

Automated Flight Information Reporting System (AFIRS)	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use. NOTE: Any portion of the system that operates normally may be used.
1) Global Voice SATCOM	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
a) Flight Deck Dialer Pad	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
b) Handset	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
2) Global Messaging	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use. NOTE: Any portion of the system that operates normally may be used.

DISCUSSION:

References: nil

FAA Differences: There is no FAA PL for AFIRS.

ITEM: 23-20-4 AUTOMATIC DEPENDENT SURVEILLANCE (ADS)

Automatic Dependent Surveillance – Broadcast (ADS-B)	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	-	0		May be inoperative provided procedures do not require its use.
Automatic Dependent Surveillance – Contract (ADS-C)	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	-	0		May be inoperative provided procedures do not require its use.

DISCUSSION:

References: FAA PL 105 (Rev. 4), 14 CFR 91.225, AC 700-009

ADS services may be available as an omni-directional Broadcast signal (ADS-B) or on a Contract basis (ADS-C). ADS-B and ADS-C both operate over a data link network but require distinctive equipment and serve radically different purposes. ADS-B is an on-board traffic information system available in domestic airspace whereas ADS-C is a point-to-point data communication system for intent and position reporting typically in remote and oceanic airspace as an alternate to voice communications position reporting.

Operators shall ascertain that aircraft equipment conform to the regulatory requirements of the State in which operations are conducted. Some States may have approved ADS-B as an alternate to TCAS. ADS services are available in Canada in designated airspace, however, ADS is not required by Canadian operating regulations.

Appropriate MMEL relief for ADS sub-systems not identified in the table above (i.e.: CMU or ATSU, SATCOM, VDL, HFDL, Mode S Transponder, CMDU or FMS, etc.) should be considered individually and in the context of their respective function and operating requirements.

The intent of the (O) is for operators to develop and use alternate procedures.

In accordance with 14 CFR 91.225, ADS-B Out is required in US as of January 1, 2020.

FAA Differences: TCCA provides relief for ADS-B and ADS-C.

ITEM: 23-30-1 PUBLIC ADDRESS SYSTEM

Public Address System					
1) Passenger Configuration	B	1	0	(O)	May be inoperative provided: a) Alternate, normal and emergency procedures, and/or operating restrictions are established and used, b) Flight deck to cabin interphone system (two way) with associated calls (e.g. chimes) is verified operative prior to each flight, c) Megaphone(s) is/are readily available and operative, and d) There are at least two flight attendants on operations pursuant to subsection 705.201(4) of the CARs. NOTE: Any station function(s) that operates normally may be used.
	C	1	0	(O)	May be inoperative provided: a) It is not required by regulations and b) Alternate, normal and emergency procedures, and/or operating restrictions are established and used. NOTE: Any station function(s) that operates normally may be used.
	B	1	0	(O)	For aircraft with 19 or fewer seats may be inoperative provided: a) Alternate procedures are established and used, and b) Required standard safety briefings are given to passengers using a means that will ensure the briefings are audible to each passenger.

ITEM: 23-30-1 PUBLIC ADDRESS SYSTEM (cont'd)

Public Address System (cont'd)					
1) Passenger Configuration (cont'd)	A	1	0	(O)	May be inoperative for non-passenger carrying operations for one flight day provided: a) Crew members are the only occupants of the aircraft, and b) Alternate procedures are established and used.
2) Cargo Configuration (Courier/Supernumerary Address System)	D	1	0		May be inoperative provided all crew members are on the flight deck.
3) Crew Rest Facility	C	-	-	(O)	May be inoperative provided: a) Flight deck and Cabin to Crew Rest Facility interphone systems (two way) with associated calls (e.g. chimes) is verified operative prior to each flight, b) Crew Rest Facility drop down oxygen system is operative, c) Alternate procedures are established and used, and d) The Pilot-in-Command is advised that all crew have been briefed.
	D	-	-	(M)(O)	May be inoperative provided: a) Associated Crew Rest Facility is not occupied, and b) Associated Crew Rest Facility is placarded "INOPERATIVE - DO NOT USE".

ITEM: 23-30-1 PUBLIC ADDRESS SYSTEM (cont'd)

DISCUSSION:

References: CAR 705.16(3)(c), CAR 705.16(3)(d), CAR 705.74, CAR 705.89, CAR 705.201, CAR 704.34, CASS 724.34, CAR 703.39, CASS 723.39, FAA PL 9 (Rev. 12)

Although megaphones are only required on aircraft types certified to carry 60 or more passengers, they are considered a condition for granting relief for the PA system on aircraft configured with 20 or more passenger seats.

It is noted that relief without an operative megaphone has been permitted on large airplanes (e.g. DHC 7 Ice Reconnaissance) with only crew members on board. Proposals of a "one of nature" will be reviewed by Cabin Safety Standards to ensure that an equivalent level of safety is maintained.

Proviso d) in the first relief only applies to operations pursuant to CAR 705.201(4), which addresses aeroplane configured for 50 or fewer passenger operating with one flight attendant for every 50 passengers. For that configuration, PA System is required to be operative unless operations are conducted with more than one flight attendant.

The second relief applies to CAR 703/704 operations (which do not require PA System). The third relief normally applies to large business jets (GV, GVI, BD-700) with MZFW greater than 50,000 pounds but operating under CAR 704 rules by means of Exemption.

FAA Differences: TCCA requires at least two flight attendants on operations pursuant to CAR 705.201(4). TCCA requires megaphone. For cargo configuration, TCCA requires all crew members be on the flight deck.

EASA Differences: TCCA requires at least two flight attendants on operations pursuant to CAR 705.201(4). TCCA requires megaphone.

ITEM: 23-40-1 CREW MEMBER INTERPHONE SYSTEM

Crew Member Interphone System					
1) Passenger Configuration					
a) Flight Deck to Cabin and Cabin to Flight Deck	B	-	-	(O)	May be inoperative provided: a) Flight deck to cabin and cabin to flight deck interphone functions operate normally on at least fifty percent of the cabin handsets, b) On wide body airplanes, flight deck to cabin and cabin to flight deck interphone function operates normally at one door for each pair of exit doors, c) An operative flight deck to cabin interphone system (two way) is at an operative flight attendant seat, and d) Alternate communications procedures are established and used. NOTE: Any station function(s) that operates normally may be used.
	C	-	0	(O)	May be inoperative provided: a) It is not required by regulations and b) Alternate, normal and emergency procedures, and/or operating restrictions are established and used. NOTE: Any station function(s) that operates normally may be used.
	A	-	0	(O)	May be inoperative for non-passenger carrying operations for one flight day provided: a) Crew members are the only occupants of the aircraft, and b) Alternate procedures are established and used.

ITEM: 23-40-1 CREW MEMBER INTERPHONE SYSTEM (cont'd)

Crew Member Interphone System (cont'd) 1) Passenger Configuration (cont'd) b) Cabin to Cabin	B	-	-	(O)	May be inoperative provided: a) Cabin to cabin interphone functions operate normally on at least fifty percent of the cabin handsets, b) On wide body airplanes, cabin to cabin interphone function operates normally at one door for each pair of exit doors, and c) Alternate communications procedures are established and used. NOTE: Any station function(s) that operates normally may be used.
	C	-	0	(O)	May be inoperative provided: a) It is not required by regulations and b) Alternate, normal and emergency procedures, and/or operating restrictions are established and used. NOTE: Any station function(s) that operates normally may be used.
	A	-	0	(O)	May be inoperative for non-passenger carrying operations for one flight day provided: a) Crew members are the only occupants of the aircraft, and b) Alternate procedures are established and used.

ITEM: 23-40-1 CREW MEMBER INTERPHONE SYSTEM (cont'd)

Crew Member Interphone System (cont'd)					
1) Passenger Configuration (cont'd)					
c) Flight Deck to Ground	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures are not dependent on its use.
d) Flight Deck and/or Cabin to Crew Rest Facility	B	-	-	(O)	May be inoperative provided: a) The public address system is operative, b) Alternate procedures are established and used, and c) The Pilot-in-Command is advised that all crew have been briefed.
	D	-	-	(M)(O)	May be inoperative provided: a) Associated Crew Rest Facility is not occupied, and b) Associated Crew Rest Facility is placarded "INOPERATIVE - DO NOT USE".
2) Combi Configuration (cargo compartment located between flight deck and passenger compartment)		1	1		Crew member interphone system must be operative.
3) Cargo Configuration					
a) Flight Deck to Cabin and Cabin to Cabin	D	1	0		May be inoperative provided all crew members are on the flight deck.
b) Flight Deck to Ground	C	1	0	(O)	May be inoperative provided alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures are not dependent on its use.

ITEM: 23-40-1 CREW MEMBER INTERPHONE SYSTEM (cont'd)

DISCUSSION:

References: CAR 705.73, CAR 705.16(3)(c), CAR 705.16(3)(d), CAR 705.201, FAA PL 9 (Rev. 12)

The guidance requiring that the crew member interphone system be operative at all times is based on the physical separation of the cabin from the flight deck as a result of the security recommendations that the flight deck door remain closed and locked. It is essential that flight crew members and flight attendants be able to communicate during critical phases of flight and during an in-flight emergency.

The cat B assigned to the cabin/flight deck interphone is to better ensure the availability of this equipment that might be essential in an emergency situation. The cat B must be used for all Part 25 airplanes and is consistent with the category assigned to the PA system, item 23-30-1.

FAA Differences: To permit getting the aircraft to a repair facility, TCCA relief permits non-passenger carrying operation with the entire system inoperative and no requirement for the PA System to be operative. FAA relief is similar to TCCA. TCCA requires flight deck to cabin interphone function at an operative flight attendant seat. FAA does not address relief for Crew Rest Facility. For cargo configuration, TCCA requires all crew members be on the flight deck.

EASA Differences: EASA requires adequate number of handsets be operative as opposed to fifty percent.

ITEM: 23-40-2 ALERTING SYSTEM

Alerting System					
1) Passenger Configuration					
a) Visual Alert (flight deck)	B	1	0		May be inoperative provided the flight deck aural alert is operative.
b) Visual Alert (cabin)	B	1	0	(O)	May be inoperative provided: a) The PA system is operative, b) If affected visual alerting system is used for lavatory smoke detector alerting, an alternate lavatory smoke detector alert (audio or visual) is installed and operates normally, and c) Alternate procedures for contacting flight attendants are established and used.
	B	1	0	(O)	May be inoperative provided: a) Audio alerting system operates normally, b) Audio alerting system differentiates between normal and emergency calls, c) If affected visual alerting system is used for lavatory smoke detector alerting, an alternate lavatory smoke detector alert (audio or visual) is installed and operates normally, and d) Alternate procedures for contacting flight attendants are established and used.
c) Aural Alert (flight deck)	B	1	0		May be inoperative provided: a) Flight deck visual alerting system operates normally, and b) Flight deck visual alerting system differentiates between normal and emergency calls.

ITEM: 23-40-2 ALERTING SYSTEM (cont'd)

Alerting System (cont'd) 1) Passenger Configuration (cont'd) d) Aural Alert (cabin)	B	1	0	(O)	May be inoperative provided: a) The PA system is operative, b) If affected audio alerting system is used for lavatory smoke detector alerting, an alternate lavatory smoke detector alert (audio or visual) is installed and operates normally, and c) Alternate procedures for contacting flight attendants are established and used.
	B	1	0	(O)	May be inoperative provided: a) Visual alerting system operates normally, b) Visual alerting system differentiates between normal and emergency calls, c) If affected audio alerting system is used for lavatory smoke detector alerting, an alternate lavatory smoke detector alert (visual or audio) is installed and operates normally, and d) Alternate procedures for contacting flight attendants are established and used.

ITEM: 23-40-2 ALERTING SYSTEM (cont'd)

Alerting System (cont'd)				
2) Cargo Configuration				
a) Visual Alert (flight deck)	B	1	0	May be inoperative provided the aural alert is operative.
	D	1	0	May be inoperative provided courier/supernumerary compartment remains unoccupied.
b) Courier/Supernumerary Visual Alert	B	1	0	May be inoperative provided Courier/Supernumerary address system is operative.
	D	1	0	May be inoperative provided courier/supernumerary compartment remains unoccupied.
c) Courier/Supernumerary Aural Alert	B	1	0	May be inoperative provided Courier/Supernumerary address system is operative.
	D	1	0	May be inoperative provided courier/supernumerary compartment remains unoccupied.

DISCUSSION:

References: FAA PL 9 (Rev. 12)

FAA Differences: FAA relief is similar to TCCA. For Flight Deck Visual Alerting relief, FAA requires audio alerting system differentiates between normal and emergency calls.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 23-40-3 HANDSETS

Handsets					
1) Passenger Configuration					
a) Flight Deck Handset	C	1	0	(O)	May be inoperative provided: a) Flight deck to cabin communication operates normally, and b) Alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
b) Cabin Handset(s)	B	-	-	(O)	May be inoperative provided: a) Fifty percent of cabin handsets operate normally, b) On wide-body airplanes, one handset must operate normally at each pair of exit doors, c) Operative handset(s) is located at an operative flight attendant seat, and d) Alternate communications procedures are established and used. NOTES: 1. An operative handset at an inoperative flight attendant seat shall not be counted to satisfy the fifty percent requirement. 2. Any handset(s) function(s) that operates normally may be used.
c) Crew Rest Facility Handset	B	-	-	(O)	May be inoperative provided: a) The public address system is operative, b) Alternate procedures are established and used, and c) The Pilot-in-Command is advised that all crew have been briefed.

ITEM: 23-40-3 HANDSETS (cont'd)

Handsets (cont'd)					
1) Passenger Configuration (cont'd)					
c) Crew Rest Facility Handset (cont'd)	D	-	-	(M)(O)	May be inoperative provided: a) Associated Crew Rest Facility is not occupied, and b) Associated Crew Rest Facility is placarded "INOPERATIVE - DO NOT USE".
2) Cargo/Combi Configuration					
a) Flight Deck Handset	C	1	0	(O)	May be inoperative provided: a) Flight deck to cabin communication operates normally, and b) Alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
b) Cargo Compartment Handsets	D	-	0		Handsets located in the cargo compartment may be inoperative or inaccessible provided compartment remains unoccupied. NOTE: This includes the handset at L1 (and R1 when R1 is located in the main deck cargo compartment)

DISCUSSION:

References: FAA PL 9 (Rev. 12)

FAA Differences: TCCA requires an operative handset at an operative flight attendant seat.

ITEM: 23-50-1 AUDIO CONTROL PANELS

Audio Control Panels		-	-	Must be operative for each person on flight deck duty including any person occupying the forward observer seat(s) in an official capacity.
1) Primary Observer Seat Panel	D	1	0	May be inoperative provided procedures do not require its use.
2) Secondary Observer Seat Panel	D	1	0	

DISCUSSION:

References: CAR 703.21, CAR 704.21, CAR 705.27, FAA PL 56 (Rev. 5)

For the purposes of this item, “official capacity” includes flight training, Transport Canada/company check rides, and crew member or passenger who has authority and valid reason to occupy.

The denial of relief reflects the need for flight deck crew communication while wearing smoke masks and or oxygen equipment (i.e. during an emergency).

It is noted that, at times, there may be components of the audio control panel inoperative; however, the panel is still adequate for flight. MMELs at this time do not address sub-components (e.g. ADF ident function) and it is considered the captain’s decision to dispatch with necessary equipment operative.

FAA Differences: FAA requires observer seat (or a passenger seat) to be available for their use at all times. TCCA does not have this passenger seat requirement. The deferral time in FAA PL 56 is cat A, two flight days.

EASA Differences: EASA allows relief in VFR flights.

ITEM: 23-50-2 FLIGHT DECK SPEAKERS

Flight Deck Speakers	C	-	0	May be inoperative provided: a) Procedures are not dependent on their use, b) Headsets are installed and used by each person on flight deck duty, c) All aural alerts, messages and other communication which are normally routed through the flight deck speakers must be audible through the headsets, and d) A spare headset must be readily available for crew use.

DISCUSSION:

References: AC 500-001

With smoke masks on, a typical installation has the pilot talk through the co-pilot's speaker and the co-pilot through the pilot's speaker. If there are emergency (e.g. smoke) procedures which require the crew to establish communication then relief for both cannot be granted, but depending on flight test results, relief for one might be possible.

Some aircraft (A310, A320, A330, B787, ATR42/72) do not permit both speakers to be inoperative and the above should not be considered an allowance to be less restrictive than the MMEL. The relief for this item can vary significantly between aircraft types. It is difficult to come up with generic provisos to suit all types. It is recommended to follow the MMEL relief as much as possible, however, the requirement for an extra headset must be included.

FAA Differences: FAA normally does not require a spare headset.

EASA Differences: EASA is similar to TCCA. Proviso c) requirement (aural alerts, messages, other communication) is mentioned in CS-MMEL Additional Considerations.

ITEM: 23-50-3 BOOM MICROPHONES (INCLUDING HEADSET MIC)

Boom Microphones				
1) CVR required to be capable of recording boom microphone	A	-	0	May be inoperative for three flight days provided associated hand microphone is installed and operates normally.
2) CVR not required to be capable of recording boom microphone	D	-	0	May be inoperative.

DISCUSSION:

References: CAR 605.34, CASS 625.34, FAA PL 58 (Rev. 4)

Although this relief was written in the context of a headset boom microphone, it could apply to any other boom microphone, e.g. goose neck, and the appropriate relief would apply. The title clarifies what is meant by a boom mic.

CVR installed on aircraft manufactured after October 11, 1991 must be capable of recording boom microphone.

FAA Differences: FAA relief is similar to TCCA.

EASA Differences: Relief for Boom Microphones included under Headset relief.

ITEM: 23-70-1 COCKPIT VOICE RECORDER (CVR)

Cockpit Voice Recorder (CVR)				
1) CVR and FDR required by regulations	A	1	0	May be inoperative provided: a) The Flight Data Recorder (FDR) is operative, and b) Repairs are made within three flight days.
2) CVR only required by regulations	A	1	0	May be inoperative provided repairs are made within three flight days.
3) CVR not required by regulations	D	-	0	

DISCUSSION:

References: CAR 605.33, CAR 605.34, CASS 625.33, CASS 625.34, FAA PL 29 (Rev. 5)

The MMEL may need to contain all relief options. The MEL must reflect the correct situation for each specific aircraft/operation.

FAA Differences: FAA relief is similar to TCCA. The FAA PL refers specifically to air carrier. TC relief includes cat D for equipment not required by regulations.

EASA Differences: EASA has a different deferral time.

ITEM: 24-00-1 ELECTRICAL POWER SOURCES AND BUS TIES

Electrical Power Sources and Bus Ties	B/C	-	-	See DISCUSSION.

DISCUSSION:

References: PL 40 (Rev. 3), PL 64 (Rev. 1), FAA PL 107 (Rev. 1), FAA AC 120-42B, NPA 2019-012

To the extent possible, the MMEL shall be constructed such that after any subsequent single in-flight electrical power system failure, sufficient instruments and equipment remain operative to provide for navigation, communications, and aircraft operation and monitoring. Such systems must remain operative for the period of time which is limited only by the range of the airplane. For these purposes, battery power may not be considered a power source.

For 3 and 4 engine aircraft, a category C may be applicable where more than two power sources are available. Justification for this MMEL relief may require an electrical load analysis assuming the next worst subsequent electrical failure (loss of power source) has occurred, in order to demonstrate capability for continued safe flight without a cascade failure effect upon other electrical sources or loss of essential services. It may be necessary to implement electrical load shedding procedures to substantiate acceptable electrical loads when dispatching with a power source inoperative. For new items or new aircraft a load analysis and load shedding procedures are required.

Relief must take into consideration ETOPS requirements.

ETOPS requirements have been incorporated into the Canadian regulations through NPA 2019-012.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 24-00-2 ELECTRICAL POWER SOURCE MONITORING DEVICES

Electrical Power Source Monitoring Devices	C	-	0	May be inoperative when the associated power source is inoperative.
	B	-	-	See DISCUSSION.

DISCUSSION:

References: nil

In general, electrical power source monitoring devices (voltmeters, loadmeters, temperature indicators and caution/warning lights) may be inoperative if dispatch is permitted with the associated power source inoperative. MMEL relief may be restricted to a specific monitoring equipment channel(s) associated with inoperative/disabled electrical power sources. Relief has been permitted with monitoring devices inoperative (e.g. B1900, SA226/227) with considerations such as load requirements within the capability of one generator, associated light annunciator is operative, and in some cases no flight in icing conditions, VMC, VFR, etc.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 25-10-1 FLIGHT DECK CREW MEMBER SAFETY BELTS (INCLUDES SHOULDER HARNESS)

Flight Deck Crew Member Safety Belts (Includes Shoulder Harness)			Flight deck crew member safety belts (includes shoulder harness) must be operative.

DISCUSSION:

References: CAR 605.27, CAR 703.69, CAR 704.68, CAR 705.75, AWM 523.785, AWM 525.785

FAA Differences: FAA relief is similar to TCCA.

ITEM: 25-10-2 PILOT SEAT ADJUSTMENTS

Pilot Seat Adjustments					
1) Fore/Aft Adjustment	B/C	2	0	(M)	May be inoperative provided: a) Seat is secured in fore/aft position acceptable to affected crew member, and b) Egress is not impaired.
2) Height Adjustment	B/C	2	0	(M)	May be inoperative provided: a) Seat is secured in vertical position acceptable to affected crew member, b) Egress is not impaired, and c) If HGS is installed and required for flight, the vertical position of the seat must be acceptable to affected crew member.
3) Recline Adjustment	B	-	0	(M)	May be inoperative provided backrest is secured in position acceptable to affected crew member.
4) Armrest	C	-	0	(M)	May be inoperative provided: a) Affected armrest is stowed in the retracted position or removed, and b) Seat is acceptable to affected crew member.
5) Lumbar Support	C	-	0		May be inoperative in the lowest position provided seat is acceptable to affected crew member.
6) Thigh Support	C	-	0		May be inoperative provided seat is acceptable to affected crew member.

ITEM: 25-10-2 PILOT SEAT ADJUSTMENTS (cont'd)

DISCUSSION:

References: nil

Some pilot seat adjustment designs do not lend themselves to be secured when inoperative. A practical means of securing the seat position must be developed and used.

Repair Interval Category for Fore/Aft and Height Adjustment is B or C depending on the aircraft type.

FAA Differences: No FAA PL for this item and dispatch relief varies between aircraft types.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 25-10-3 OBSERVER SEATS (INCLUDING ASSOCIATED EQUIPMENT)

	Primary Observer Seat (Including Associated Equipment)	D	1	0	(M)	May be inoperative provided: a) Procedures do not require its use, and b) The seat is removed, stowed, or secured in the retracted position.
***	Secondary Observer Seat(s) (Including Associated Equipment)	D	-	0		May be inoperative provided procedures do not require its use.

DISCUSSION:

References: AWM 525.785, CAR 703.21, CAR 704.21, CAR 705.27, FAA PL 56 (Rev. 5)

Observer's seat associated equipment includes safety belt, shoulder harness, audio control panel, oxygen system, microphone, headset, lights, etc.

FAA Differences: FAA requires observer's seat (or a passenger seat) to be available for their use at all times. TCCA does not have the passenger seat as an in lieu requirement. FAA assigns category A (two flight days). TCCA allows a cat D.

EASA Differences: EASA is identical to TCCA.

ITEM: 25-10-4 FLIGHT DECK DOOR SURVEILLANCE SYSTEMS

Flight Deck Door Surveillance Systems					
1) Electronic System	A	1	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within three flight days.
	C	1	0	(O)	May be inoperative provided: a) A flight deck door viewing port is installed and operates normally, and b) Alternate procedures are established and used.
	D	1	0		May be inoperative provided procedures do not require its use.
a) Cargo Configuration	C	1	0		May be inoperative provided the aircraft aft of the flight deck door is occupied only by those personnel authorized by regulations.
	D	1	0		May be inoperative provided procedures do not require its use.
2) Viewing Ports	A	1	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within three flight days.
	C	1	0	(O)	May be inoperative provided: a) An electronic flight deck door visual surveillance system is installed and operates normally, and b) Alternate procedures are established and used.
a) Cargo Configuration	C	1	0		May be inoperative provided the aircraft aft of the flight deck door is occupied only by those personnel authorized by regulations.
	D	1	0		May be inoperative provided procedures do not require its use.

ITEM: 25-10-4 FLIGHT DECK DOOR SURVEILLANCE SYSTEMS (cont'd)

DISCUSSION:

References: PL 122 (Rev. 1)

The reliefs proposed by this item address equipment options as well as crew procedures reviewed by regulatory agencies to enhance security in operations.

Proper crew coordination is essential prior to opening of the flight deck door, and must include both normal and abnormal conditions. Thorough viewing of the area aft of the flight deck door must be performed before the door is opened, which may be accomplished by either the use of an electronic visual surveillance system or a viewing port mounted within the flight deck door panel.

Alternate procedures in the event of failure of both electronic system and viewing port may include the use of interphone system to properly allow communication between flight deck and cabin.

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA includes a cat D relief under ATA 23.

ITEM: 25-20-1 PASSENGER CONVENIENCE ITEMS/Non-Essential Equipment and Furnishings (NEF)

Passenger Convenience/NEF Items			
*** 1) Passenger Convenience Items *(Expires on 24 February 2025)*	-	0	Passenger convenience items as expressed in this MMEL are those related to passenger convenience, comfort or entertainment, such as, but not limited to – galley equipment, movie equipment, ashtrays, stereo equipment, and overhead reading lamps. Items addressed elsewhere in this document shall not be included. (M) and (O) procedures may be required and included in the MEL. NOTES: 1. Exterior lavatory door ashtrays are not considered convenience items. *(Only applicable to transport category airplanes affected by FAA AD 74-08-09)* 2. Galley equipment restraining devices such as latches, etc. must be serviceable or the compartment must not be used for storage and placarded “INOPERATIVE - DO NOT USE”. 3. Movie equipment individual screens, if applicable, must be capable of being stowed. 4. Audio or audio-visual entertainment equipment which is used as the sole means of providing safety briefings and demonstrations is not considered a passenger convenience item.

ITEM: 25-20-1 PASSENGER CONVENIENCE ITEMS/Non-Essential Equipment and Furnishings (NEF) (cont'd)

*** 2) Non-Essential Equipment and Furnishings (NEF)	-	0	May be inoperative, damaged, or missing provided that the item(s) is deferred in accordance with the NEF program outlined in the operator's Maintenance Control Manual (MCM) or Maintenance Control System, as applicable. (M) and (O) procedures, if required, must be available to the flight crew and included in the operator's appropriate document. NOTE: Exterior lavatory door ashtrays are not considered NEF items. *(Only applicable to transport category airplanes affected by FAA AD 74-08-09)*

DISCUSSION:

References: CAR 604.127, CAR 706.05, CAR 706.08, TP 9155 (Third Edition), FAA Order 8900.1 Volume 4, Chapter 4, Section 4, FAA AD 74-08-09 R3, CS-MMEL (GM2 MMEL.110), EASA AIR-OPS (GM1 ORO.OPS.MLR.105(a))

Non-essential equipment and furnishings (NEF) are items installed on an aircraft which are not required by the applicable certification design standards or operating rules. These items form part of the original type certification, supplemental type certificate, or other form of modification and, if inoperative, damaged or missing would have no effect on the safe operation of the aircraft under all operational conditions.

NEF originates from Passenger Convenience Items (PCI) which is a similar concept, however, PCIs are limited to passenger compartment and do not include deferral of items found elsewhere throughout the aircraft.

PCIs have not been permitted in FAA MMELs since April 30, 2008 and have been replaced by NEF. NEF requirements in U.S., formerly addressed by PL 116, are now included in FAA Order 8900.1 Volume 4, Chapter 4, Section 4.

In Canada, NEF has been introduced in TP 9155 at its Third Edition. Newly developed domestic MMELs and TC Supplements no longer address PCI. Existing TC Supplements will eventually be revised to remove PCI and address NEF only.

Deferral of NEF must be conducted in accordance with the operator's NEF program as part of their Maintenance Control Manual (MCM) or Maintenance Control System, as applicable. Development requirements for an NEF program are prescribed in TP 9155.

ITEM: 25-20-1 PASSENGER CONVENIENCE ITEMS/Non-Essential Equipment and Furnishings (NEF) (cont'd)

Potable water systems and lavatory waste systems are not considered NEF and are addressed as per ATA 38 items.

FAA Differences: The FAA does not require an NEF list as part of NEF program acceptance, while TCCA does require an NEF list. Minor differences exist in development/acceptance requirements between FAA Order 8900.1 and TP 9155.

EASA Differences: EASA refers to NEF as non-safety-related items.

ITEM: 25-20-2 FLIGHT ATTENDANT SEAT/SEAT ASSEMBLY (SINGLE/DUAL POSITION)

Flight Attendant Seat Assembly (single or dual position)					
1) Required Flight Attendant Seats	B	-	1	(M)(O)	One seat position or assembly (dual position) may be inoperative provided: a) Affected seat position or seat assembly is not occupied, b) Flight attendant(s) displaced by inoperative seat(s) occupies either an adjacent flight attendant seat or the passenger seat which is most accessible to the inoperative seat(s), so as to most effectively perform assigned duties, c) Alternate procedures are established and used as published in crewmember manuals, d) Folding type seat stows automatically or is secured in the retracted position, and e) Passenger seat assigned to flight attendant is placarded “FOR FLIGHT ATTENDANT USE ONLY”. NOTES: 1. An automatic folding seat that will not stow automatically is considered inoperative. 2. A seat position with a missing or inoperative restraint system is considered inoperative.
2) Excess Flight Attendant Seats	D	-	-	(M)	Seats/assemblies in excess of requirements and not assigned to a flight attendant may be inoperative provided they are not occupied, are placarded and are: a) Properly stowed, or b) Secured in the retracted position, or c) Removed.

ITEM: 25-20-2 FLIGHT ATTENDANT SEAT/SEAT ASSEMBLY (SINGLE/DUAL POSITION) (cont'd)

Flight Attendant Seat Assembly (single or dual position) (cont'd) 2) Excess Flight Attendant Seats (cont'd)				NOTES: 1. An automatic folding seat that will not stow automatically is considered inoperative. 2. A seat position with a missing or inoperative restraint system is considered inoperative.
3) All Cargo Configuration	D	-	-	May be inoperative provided affected seat or seat assembly is not occupied.

DISCUSSION:

References: AWM 523.785, AWM 525.785, AWM 525.803, CAR 605.24, CAR 705.41, CAR 705.75, CAR 705.201, CASS 725.41, FAA PL 97 (Rev. 4)

The above mentioned relief is only permissible if more than one flight attendant is assigned to duty or more than one seat or seat assembly is located in the passenger cabin. This is for safety reasons to ensure that at least one flight attendant is seated in a proper flight attendant seat in the cabin.

A flight attendant seat must be located in the passenger cabin; this excludes a seat located in the cargo area of a passenger/cargo combi configured aircraft. Individual operators, when operating with inoperative seats must consider the locations and combinations of seats to ensure that the proximity to exits and distribution requirements of the applicable regulations are met.

This item has been split into 'seats required by regulation' and 'seats in excess of requirements and not assigned to a flight attendant' to facilitate separate categorizations. If "extra" flight attendants are carried and duties assigned, then the seat occupied by that flight attendant is no longer considered excess to requirements and that seat must meet the appropriate design requirements. Hence the wording "assigned" in the second relief.

The item will need to be tailored since not all aircraft have seat assemblies.

Consistent with the CARs, this item refers to a "safety belt", and "shoulder harness".

In response to a request for relief it has been decided that the use of flight attendant seats with no shoulder harness is not acceptable because of safety reasons and a Dryden recommendation to require a shoulder harness.

FAA Differences: FAA allows dispatch (cat A - two flight days) for aircraft with only one flight attendant seat, while TCCA requires one unit to be operative. FAA assigns category C for excess flight attendant seats.

EASA Differences: EASA assigns category C for excess flight attendant seats.

ITEM: 25-20-3 PASSENGER SEATS

Passenger Seats (includes seat back)	D	-	-		May be inoperative provided: a) Seat does not block an emergency exit, b) Seat does not restrict any passenger from access to the main aircraft aisle, and c) The affected seat(s) is blocked and placarded “DO NOT OCCUPY”. NOTE: 1. A seat with an inoperative safety belt or shoulder harness is considered inoperative. 2. For single aisle configurations and for seats in the left and right (outboard) sections of two aisle aircraft, the affected seat(s) may include the seat behind and/or the adjacent outboard seats. 3. For the centre section of two aisle configurations, the “affected” seat may only be the seat aft of the inoperative seat.
1) Positioning Controls (Mechanical and/or Electrical)	D	-	-	(M)	May be inoperative and seat occupied provided seat is secured in the taxi, takeoff, and landing position.
	C	-	-		May be inoperative and seat occupied provided seat is immovable in the taxi, takeoff, and landing position.
2) Underseat Baggage Restraining Bars	C	-	-	(O)	May be inoperative or missing provided: a) Baggage is not stowed under associated seat or seat assembly, b) Associated seat or seat assembly is placarded “DO NOT STOW BAGGAGE UNDER THIS SEAT”, and c) Procedures are established to alert crew members of inoperative or missing restraining bar.

ITEM: 25-20-3 PASSENGER SEATS (cont'd)

Passenger Seats (includes seat back) (cont'd) 3) Armrest					
a) Armrest with Positioning Controls	D	-	-	(M)	May be inoperative or missing and seat occupied provided: a) Armrest does not block an emergency exit, b) Armrest does not restrict any passenger from access to the main aircraft aisle, and c) If armrest is missing, seat is secured in the taxi, takeoff, and landing position.
b) Armrest without Positioning Controls	D	-	-		May be inoperative or missing and seat occupied provided: a) Armrest does not block an emergency exit, and b) Armrest does not restrict any passenger from access to the main aircraft aisle.

DISCUSSION:

References: CAR 725.42, 602.86, 705.42, 605.22, 605.24, FAA PL 79 (Rev. 9)

The basis of certification of the seat or seat assembly will need to be verified to determine if an inoperative or missing under seat baggage restraining bar affects the integrity of the seat.

This item includes tray tables that may, if inoperative in the unstowed position, render the seat or seat row behind the seat to which the tray table is attached inoperative. A tray table inoperative in the stowed position is considered a passenger convenience item/NEF.

CAR 605.24 requires shoulder harnesses for passenger seats under specified conditions. In this case, a missing or inoperative safety belt and/or shoulder harness renders the seat inoperative.

FAA Differences: TCCA adds a "missing" reference. Some additions in TCCA MMEL due to CARs. For clarification TCCA has added NOTES 2 and 3 regarding affected seats. The FAA MMEL statement about the number of inoperative seats not affecting the required number of flight attendants is not applicable in Canada and must be deleted from TCCA MMELs. TCCA assigns cat C for the second relief of the positioning controls (seat immovable in the taxi, takeoff, and landing position), whereas the FAA assigns cat D.

EASA Differences: EASA is similar to TCCA.

ITEM: 25-20-4 "FASTEN SEAT BELT WHILE SEATED" SIGNS OR PLACARDS

"Fasten Seat Belt While Seated", Signs or Placards C	-	-	One or more signs or placards may be illegible or missing provided a legible sign or placard is readable from each occupied passenger seat.

DISCUSSION:

References: AWM 525.791, FAA PL 89 (Rev. 2)

FAA Differences: FAA relief is similar to TCCA.

ITEM: 25-20-5 OVERHEAD STORAGE BIN(S)/CABIN AND GALLEY STORAGE COMPARTMENTS/CLOSETS

Overhead Storage Bin(s)/Cabin and Galley Storage Compartments/Closets	C	-	-	(M)	May be inoperative provided: a) Procedures are established and used to secure bins/compartments/closets closed, b) Associated bin/compartment/closet is prominently placarded “DO NOT USE”, c) Any emergency equipment located in affected bin/compartment/closet is considered inoperative, and d) Affected bin/compartment/closet is not used for storage of any item(s) except for those permanently affixed. NOTES: 1. If no partitions are installed, the entire overhead storage compartment is considered one bin or compartment. 2. An inoperative lid/door latch renders the lid/door inoperative.
	C	-	-	(M)(O)	May be inoperative provided: a) Affected bin/compartment/closet door(s) is/are removed, b) Associated bin/compartment/closet is not used for storage of any items, except those permanently affixed, c) Associated bin/compartment/closet is prominently placarded “DO NOT USE”, d) Procedures are established and used to alert crew members and passengers of inoperative bins/compartments/closets, and

ITEM: 25-20-5 OVERHEAD STORAGE BIN(S)/CABIN AND GALLEY STORAGE COMPARTMENTS/CLOSETS (cont'd)

Overhead Storage Bin(s)/Cabin and Galley Storage Compartments/Closets (cont'd)			e) Passengers are briefed that associated bin/compartment/closet is not used. NOTES: 1. If no partitions are installed, the entire overhead storage compartment is considered one bin or compartment. 2. Any emergency equipment located in the associated compartment (permanently affixed) is available for use. 3. An inoperative lid/door latch renders the lid/door inoperative.

DISCUSSION:

References: CAR 602.86, CAR 705.42, FAA PL 104 (Rev. 7)

Category D is not considered appropriate in that specific cabin luggage storage rules and regulations will drive the repair urgency.

FAA Differences: FAA relief is identical to TCCA with respect to the conditions imposed by the provisos. Wording may slightly differ, as TCCA consistently refers to "bin/compartment/closet" in both reliefs. Also, TCCA adds a Note to indicate that inoperative lid/door latch renders the lid/door inoperative.

ITEM: 25-20-6 OVERHEAD (STOWAGE) RACK WITH RESTRAINING DEVICE

Overhead (Stowage) Rack with Restraining Device	D	-	-	May be inoperative provided: a) That portion of the overhead rack is not used for stowage, and b) The rack is placarded "INOPERATIVE - DO NOT USE". NOTE: Any emergency equipment (permanently affixed) is available for use.

DISCUSSION:

References: CAR 602.86, CAR 705.42

FAA Differences: Not in FAA MMELs.

ITEM: 25-40-1 EXTERIOR LAVATORY DOOR ASHTRAYS

Exterior Lavatory Door Ashtrays				
1) For airplanes with more than one lavatory door or entry area ashtray	A	-	-	Up to and including 50 percent may be missing or inoperative for 10 calendar days.
	A	-	-	More than 50 percent may be missing or inoperative for 3 calendar days.
2) For airplanes with only one lavatory door or entry area ashtray	A	1	0	May be missing or inoperative for 10 calendar days.

DISCUSSION:

References: CAR 705.76, FAA AD 74-08-09 R3

Although industry has requested additional relief this is not possible since the Airworthiness Directive must take precedence over the MMEL. If additional relief is requested, it will need to be incorporated into the AD itself. It is also noted that an extension for this item is not possible since the AD takes precedence.

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA relief conflicts with FAA AD 74-08-09.

ITEM: 25-40-2 LAVATORY NO SMOKING PLACARDS

Lavatory NO SMOKING Placards				
1) Airline Operations (CAR 705)	B	-	-	May be missing provided the associated lavatory smoke detection system is operative.
2) Others	D	-	0	

DISCUSSION:

References: AWM 525.854, CAR 705.76(c)

This item added to address unique Canadian requirements.

The second relief (cat D) applies to non-airline operations as lavatory smoke detection is only required for CAR 705 operations.

It is also to be noted that certification standards (AWM 525.854) require lavatory smoke protection for aeroplanes with a passenger capacity of 20 or more.

FAA Differences: No FAA PL addressing this item.

ITEM: 25-50-1 CARGO COMPARTMENT LINING PANELS

Cargo Compartment Lining Panels	C	-	-	(O)	Liner panels may be damaged or missing provided cargo is not carried in the associated compartment. NOTE: Unit Load Devices (ULDs) may be carried in the associated compartment provided no cargo is carried on or in these devices.

DISCUSSION:

References: AWM 525.855

(O) is intended to provide procedures for removal of cargo and installation of ballast, if required.

FAA Differences: No FAA PL for this item.

ITEM: 25-50-2 CREW REST FACILITIES

Crew Rest Facilities					
1) Crew Rest Facility - Entry Door	C	-	0	(M)	May be inoperative provided: a) Associated Crew Rest Area is not used and personal items are removed, and b) Associated Crew Rest Area door is locked closed and placarded, “INOPERATIVE - DO NOT ENTER”. NOTE: These provisions are not intended to prohibit associated Crew Rest Area inspections by crewmembers.
2) Crew Rest Facility - Restraint System	C	-	-	(M)(O)	One or more may be inoperative provided: a) Affected bunk is placarded “INOPERATIVE - DO NOT USE”, and b) Procedures are established and used to alert crewmembers that the bunk restraint system cannot be used.

DISCUSSION:

References: nil

FAA Differences: No FAA PL for this item.

ITEM: 25-60-1 EMERGENCY LOCATOR TRANSMITTER (ELT)

Emergency Locator Transmitter (ELT)					
1) Fixed ELTs	A	-	-	(M)	May be inoperative provided: a) Placard is displayed in the flight deck indicating the date ELT has been removed, and b) Repair or replacement is made within the time interval prescribed by regulations.
	D	-	-		Any in excess of those required by regulations may be inoperative or missing.
2) Survival Type ELTs	D	-	-		Any in excess of those required by regulations may be inoperative or missing.

DISCUSSION:

References: CAR 605.38, CAR 605.39, FAA PL 120 (Rev. 3)

Recent revisions to CAR 605.38 and CAR 605.39 have introduced different repair interval criteria depending upon the operational category of the aircraft. For development of the MEL, refer to the CAR that applies to the type of operation and the specific type of aircraft involved.

FAA Differences: The FAA assigns category A (90 days) for ELTs that are required by FAR. TCCA assigns category A in accordance with CAR 605.39.

EASA Differences: EASA addresses different relief cases depending on type of ELT. Also, the deferral time differs from both FAA and TCCA.

ITEM: 25-60-2 FIRST AID KIT (FAK)

First Aid Kit (FAK)	D	-	-	(O)	Any kit or items contained in the kit in excess of those required by regulations may be incomplete or missing provided: a) Required distribution is maintained, and b) Procedures are established and used to alert crew members of missing or incomplete kits.
1) First Aid Kit Seal (Required First Aid Kits)	A	-	-	(O)	The seal affixed on the exterior of any required first aid kit may be missing or broken for three flight days provided: a) The first aid kit is fully equipped or the kit has a maximum of one missing item, b) The kit includes a list of its contents, c) An inventory is taken on the content of the kit prior to departure, and d) Procedures are established and used to alert crew members of: 1) The missing or broken seal, and 2) The need to perform an inventory under proviso c).

DISCUSSION:

References: CAR 602.60, CAR 705.90, CASS 725.90, CAR 704.84, CASS 724.84, CAR 703.82, CASS 723.82, FAA PL 73 (Rev. 5)

FAA Differences: TCCA adds (O) and provisions for missing or broken seals and/or first aid kits with up to one item missing over and above the required contents. The FAA allows the dispatch with one of the required first aid kits (when more than one is required) inoperative for one flight. The FAA does not provide separate relief for kit seal. Instead, it is considered as “associated equipment”, and it is addressed in the relief for the whole kit.

EASA Differences: EASA assigns category A, two calendar days, for one FAK when more than one kit is required. EASA also addresses relief for helicopters.

ITEM: 25-60-3 EMERGENCY MEDICAL KIT (EMK)

Emergency Medical Kit (EMK)	D	-	-	(O)	Any kit or items contained in the kit in excess of those required by regulations may be incomplete or missing provided procedures are established and used to alert crew members of missing or incomplete kits.
	A	-	0	(O)	May be inoperative or missing provided: a) The kit is sealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit, and b) Replacements are made within one flight.
1) Emergency Medical Kit Seal	B	-	-	(O)	The seal affixed on the exterior of the emergency medical kit may be missing or broken provided: a) The emergency medical kit is fully equipped, b) The kit includes a list of its contents, c) An inventory is taken on the content of the kit prior to departure, and d) Procedures are established and used to alert crew members of: 1) The missing or broken seal and 2) The need to perform an inventory under proviso c).

ITEM: 25-60-3 EMERGENCY MEDICAL KIT (EMK) (cont'd)

DISCUSSION:

References: CAR 705.91, CASS 725.91, FAA PL 73 (Rev. 5)

FAA Differences: The FAA does not provide separate relief for kit seal. Instead, it is considered as "associated equipment" and addressed in the relief for the whole kit.

EASA Differences: EASA assigns category A, two calendar days.

ITEM: 25-60-4 AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

Automatic External Defibrillator (AED)	D	-	0	(O)	May be incomplete, missing or inoperative provided procedures are established and used to alert crew members of incomplete, missing or inoperative units.

DISCUSSION:

References: FAA PL 73 (Rev. 5)

AED is not required by regulations in Canada. However, as it is an important piece of safety equipment, dispatch conditions must ensure crew members are advised of incomplete, missing, or inoperative units.

FAA Differences: FAA requires replacement within one flight for those units required by regulations.

ITEM: 25-60-5 MEGAPHONE

Megaphone	D	-	-	(M)(O)	Any in excess of those required by regulations may be inoperative or missing provided: a) The inoperative megaphone is removed from the passenger cabin and its location is placarded “INOPERATIVE”, or it is removed from the installed location, secured out of sight and the megaphone and its installed location are placarded “INOPERATIVE”. b) Required distribution is maintained, and c) Procedures are established and used to alert crew members of inoperative or missing megaphones.
All Cargo Operations	D	-	0		May be inoperative provided all crew members are on the flight deck.

DISCUSSION:

References: CAR 705.89, FAA PL 47 (Rev. 2)

The megaphone could be considered as a backup when the PA system is inoperative.

FAA Differences: TCCA allows the inoperative megaphone to remain in the cabin, because the procedures ensure that it cannot be mistaken for an operative unit.

EASA Differences: EASA relief is identical to TCCA.

ITEM: 25-60-6 FLIGHT ATTENDANT FLASHLIGHTS/FLASHLIGHT HOLDERS

Flight Attendant Flashlights/Flashlight Holders					
Flashlights	C	-	0	(O)	May be inoperative or missing provided each inoperative or missing flight attendant flashlight is replaced with a flashlight of equivalent characteristics and is readily available.
Holders	C	-	0	(M)(O)	May be inoperative or missing provided alternate stowage provisions are provided.

DISCUSSION:

References: CAR 602.60(1)(g), CAR 705.79, CAR 705.97

The (O) is to ensure that the crew are aware of the flashlight (holder) change in terms of its location and/or alternate stowage provisions.

FAA Differences: Similar. For TCCA, the item is shown as two items to ensure that stowage provisions are addressed. This will ensure that the flashlights are readily available from the flight attendant station in an emergency situation yet not stored in an inappropriate location (e.g. seat back pocket for such items of mass).

ITEM: 26-10-1 ENGINE FIRE DETECTION LOOPS

Engine Fire Detection Loops	C	-	-	Except for ETOPS beyond 120 minutes, one loop per engine may be inoperative.

DISCUSSION:

References: AWM 525.1203, FAA PL 40 (Rev. 3)

Any ETOPS limitations will be addressed during the extended range approval and it is noted that this relief is neither automatic nor necessarily retroactive.

Some aircraft (e.g. B777, B787) do not have the above ETOPS restriction based on the design, expected reliability, and extensive flight testing for obtaining ETOPS approval.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 26-10-2 ENGINE OVERHEAT DETECTION LOOPS

Engine Overheat Detection Loops	C	-	-	Except for ETOPS beyond 120 minutes, one loop per engine may be inoperative.

DISCUSSION:

References: FAA PL 40 (Rev. 3)

Any ETOPS limitations will be addressed during the extended range approval and it is noted that this relief is neither automatic nor necessarily retroactive.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 26-10-3 APU FIRE DETECTION SYSTEM

APU Fire Detection System					
Detection Loops	C/D	-	1		Except for ETOPS beyond 120 minutes, one loop may be inoperative.
	C/D	-	0	(M)	May be inoperative for ground operations only provided: a) The APU is continuously monitored, b) The APU external control system is operative, and c) The APU is shut down before taxi.

DISCUSSION:

References: FAA PL 40 (Rev. 3)

Dispatch with the detection system inoperative even if the protection (auto–shutdown) and extinguishing systems were operative is not acceptable since the flight crew would not know the reason for an auto shutdown and would be unable to carry out the appropriate emergency procedure.

Depending on monitoring and automatic shutdown features available it may be necessary to have the APU monitored by a fire guard outside the aircraft in the vicinity of the APU and consideration may also be given to not having passengers on board; hence the (M) procedure.

In the absence of an APU external control system, automatic shutdown features may be required to be operative. This would address the inability to shut down the APU from the external panel and reflect the difficulty communicating with the flight deck to initiate shutdown.

The choice of category C or D in the MEL should reflect how the MEL is used operationally, e.g. if the APU is routinely used to start the aircraft, then a category C would be considered appropriate.

Any ETOPS limitations will be addressed during the extended range approval and it is noted that this relief is neither automatic nor necessarily retroactive.

Some aircraft (e.g. B777, B787) do not have the above ETOPS restriction based on the design, expected reliability, and extensive flight testing for obtaining ETOPS approval.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 26-10-4 MAIN LANDING GEAR BAY OVERHEAT DETECTION SYSTEM

Main Landing Gear Bay Overheat Detection System	B	1	0	(M)(O)	May be inoperative provided: a) Brakes are inspected prior to each flight and are cool to the touch, b) Landing gear is left extended for a minimum of ten minutes after takeoff, c) Appropriate performance adjustments are applied, and d) Takeoff is not conducted in icing conditions. NOTE: In case of engine failure after V1, performance is the prime consideration and the landing gear should be retracted normally until performance penalty with gear down is not a problem.

DISCUSSION:

References: nil

A shorter time at b) could be acceptable if substantiation is provided.

FAA Differences: TCCA does not accept the Brake Temperature Monitoring System as an equivalent system. Cat B assigned to remaining relief (cat C for FAA) since leaving the landing gear down only addresses hot brakes and does not necessarily address other fire sources.

ITEM: 26-10-5 BAGGAGE OR CARGO COMPARTMENT SMOKE DETECTION SYSTEMS

Baggage or Cargo Compartment Smoke Detection Systems	C	-	0	May be inoperative provided the associated compartment is empty or does not contain combustible materials. NOTE: Unit Load Devices (ULDs) may be carried in the associated compartment provided no cargo is carried on or in these devices.
Smoke Detectors in excess of requirements	C	-	-	May be inoperative provided certification requirements are met with the remaining serviceable detectors.

DISCUSSION:

References: CAR 705.81, CASS 725.81, AWM 525.858, FAA PL 102 (Rev. 2)

Some alleviation to the number of detectors required may be granted depending on the class of compartment, access, and ability of remaining detectors to perform the intended function.

FAA Differences: FAA does not define combustible materials and instead only permits carriage of ballast, empty cargo handling equipment, and fly away kits.

ITEM: 26-10-6 LAVATORY SMOKE DETECTION SYSTEMS

Lavatory Smoke Detection Systems	C	-	-	(M)(O)	For each lavatory, the lavatory smoke detection system may be inoperative provided: a) Lavatory waste receptacle is empty, b) Associated lavatory door is locked closed and placarded “INOPERATIVE - DO NOT ENTER”, c) Lavatory is used only by crew members, and d) In-flight service waste bags are not stored in the lavatory. NOTE: These provisos are not intended to prohibit lavatory use or inspections by crew members.
Aircraft that provide passenger access to an emergency exit through the lavatory	C	-	0	(M)(O)	For each lavatory, the lavatory smoke detection system may be inoperative provided: a) Lavatory is not used for any purpose except in an emergency requiring a rapid deplanement or evacuation, b) Lavatory waste receptacle is empty, c) Lavatory door is locked closed and placarded “INOPERATIVE - DO NOT ENTER” except during takeoff and landing when a door MUST be secured or locked open, and d) In-flight service waste bags are not stored in the lavatory. NOTE: These provisos are not intended to prohibit lavatory use or inspections by crew members.
	D	-	0		Any in excess of that required by regulations may be inoperative.

ITEM: 26-10-6 LAVATORY SMOKE DETECTION SYSTEMS (cont'd)

Lavatory Smoke Detection Systems (cont'd)					
Non-passenger Carrying Operations	C	-	0	(O)	For each lavatory, the lavatory smoke detection system may be inoperative for non-passenger carrying operations provided: a) Crew members are the only occupants of the aircraft, b) Crew Members have been briefed as to which lavatory smoke detection system(s) is/are inoperative, and c) In-flight service waste bags are not stored in the lavatory. NOTE: These provisos are not intended to prohibit lavatory use or inspections by crew members.
All Cargo Operations	C	-	0	(O)	For each lavatory, the lavatory smoke detection system may be inoperative provided: a) Crew members have been briefed as to which lavatory smoke detection system(s) is/are inoperative, and b) In-flight service waste bags are not stored in the lavatory. NOTE: These provisos are not intended to prohibit lavatory use or inspections by crew members.

ITEM: 26-10-6 LAVATORY SMOKE DETECTION SYSTEMS (cont'd)

DISCUSSION:

References: AWM 525.854, CAR 705.76, CBAAC 0102R, FAA PL 24 (Rev. 5)

The lavatory fire extinguishing system is not in itself considered sufficient compensation for an inoperative smoke detector as it only protects against one source of fire. Periodic inspections are also required to ensure detection of smoke from sources other than the waste receptacle.

The associated NOTE with this relief emphasizes that the referenced inspections must be detailed in the (O) procedures and carried out as part of the means of demonstrating an acceptable level of safety. An aircraft may not be dispatched with an inoperative smoke detection system if in-flight service waste bags will be placed in the lavatory (Ref. CBAAC 0102R "Stowage of Disposable In-Flight Service Waste in Aircraft Lavatories").

Only CAR 705 operations require lavatory smoke detection systems. For all other types of operations, a cat D relief is considered acceptable.

It is also to be noted that certification standards (AWM 525.854) require lavatory smoke protection for aeroplanes with a passenger capacity of 20 or more.

FAA Differences: For safety reasons, TCCA requires more provisos and is more conservative in the all-cargo case. TCCA includes relief for non-passenger carrying operations.

EASA Differences: EASA allows relief provided fire extinguishing system is operative. EASA allows cat C relief for aircraft with less than 20 passengers.

ITEM: 26-10-7 CREW REST FACILITY SMOKE DETECTION SYSTEM

Crew Rest Facility Smoke Detection System					
1) Individual Bunk (If applicable)	C	-	0	(M)(O)	One or more may be inoperative provided: a) Affected bunk is placarded “INOPERATIVE - DO NOT USE”, and b) Procedures are established and used to alert crew members.
2) Common Area and/or Aisle	C	-	0	(M)	May be inoperative provided: a) Crew rest area is empty, b) Crew rest area door is locked and placarded “INOPERATIVE - DO NOT ENTER”, and c) Crew rest area is not used for any purpose.

DISCUSSION:

References: nil

Any in excess of certification requirements may be inoperative.

FAA Differences: No FAA equivalent.

ITEM: 26-20-1 ENGINE/APU FIRE EXTINGUISHER DISCS (THERMAL AND DISCHARGE)

Engine/APU Fire Extinguisher Discs (Thermal and Discharge)	C	2	0	(M)	May be missing provided adequate charge is confirmed prior to the first flight of each day.

DISCUSSION:

References: nil

FAA Differences: FAA relief is identical to TCCA.

ITEM: 26-20-2 APU FIRE EXTINGUISHING SYSTEM

APU Fire Extinguishing System C/D	1	0	May be inoperative provided the APU is considered inoperative and is not used.

DISCUSSION:

References: nil

The choice of category C or D in the MEL should reflect how the MEL is used operationally, e.g. if the APU is routinely used to start the aircraft, then a category C would be considered appropriate.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 26-20-3 LAVATORY FIRE EXTINGUISHING SYSTEMS

Lavatory Fire Extinguishing Systems	C	-	0	(O)	For each lavatory, the lavatory fire extinguishing system may be inoperative provided the lavatory smoke detection system is operative.
	C	-	-	(M)(O)	For each lavatory, the lavatory fire extinguishing system may be inoperative provided: a) Lavatory waste receptacle is empty, b) Associated lavatory door is locked closed and placarded “INOPERATIVE - DO NOT ENTER”, and c) Lavatory is used only by crew members. NOTE: These provisos are not intended to prohibit lavatory use or inspections by crew members.
	D	-	0		Any in excess of that required by regulations may be inoperative.
Aircraft that provide passenger access to an emergency exit through the lavatory	C	-	0	(M)(O)	Lavatory fire extinguishing system may be inoperative provided: a) Lavatory is not used for any purpose except in an emergency requiring a rapid deplanement or evacuation, b) Lavatory waste receptacle is empty, and c) Lavatory door is locked closed and placarded “INOPERATIVE - DO NOT ENTER” except during takeoff and landing when a door MUST be secured or locked open.

ITEM: 26-20-3 LAVATORY FIRE EXTINGUISHING SYSTEMS (cont'd)

Lavatory Fire Extinguishing Systems (cont'd)					
Non-passenger Carrying Operations	C	-	0	(O)	For each lavatory, the lavatory fire extinguishing system may be inoperative for non-passenger carrying operations provided: a) Crew members are the only occupants of the aircraft, and b) Crew members have been briefed as to which lavatory fire extinguishing system(s) is/are inoperative.
All Cargo Operations	C	-	0	(O)	For each lavatory, the lavatory fire extinguishing system may be inoperative provided crew members have been briefed as to which lavatory fire extinguishing system(s) is/are inoperative.

DISCUSSION:

References: CAR 705.76, FAA PL 24 (Rev. 5)

The first option is possible in that the smoke detection system is considered adequate to alert the crew to take appropriate action.

FAA Differences: TCCA addresses aircraft that use the lavatory as an escape route. TCCA requires an (O) for all cargo relief.

EASA Differences: EASA allows cat D relief. Also, EASA includes a cat C relief for aircraft with less than 20 passengers.

ITEM: 26-20-4 PORTABLE FIRE EXTINGUISHERS

Portable Fire Extinguishers	D	-	-	(M)(O)	Any in excess of those required by regulations may be inoperative or missing provided: a) The inoperative fire extinguisher(s) is/are removed from the passenger cabin, flight deck, and/or class E cargo compartment that is accessible to crew members during flight, and its location is placarded "INOPERATIVE", or it is removed from the installed location, secured out of sight and the fire extinguisher and its installed location are placarded "INOPERATIVE", b) Required distribution is maintained in the passenger compartment on each deck, the flight deck and each class E cargo compartment that is accessible to crew members during flight, as applicable, and c) Procedures are established and used to alert crew members of missing portable fire extinguishers.

DISCUSSION:

References: CAR 602.59, CAR 602.60, CAR 604.119, CAR 704.83, CAR 705.93, FAA PL 75 (Rev. 1)

The number of required fire extinguishers in the passenger compartment is dependent on the seating capacity of the aircraft. Proviso c), with the (O), will ensure proper crew handovers and preclude any confusion in an emergency situation. The Canadian Aviation Regulations also require a fire extinguisher on the flight deck. This fire extinguisher forms part of those required by regulations.

FAA Differences: TCCA has added the (O) and proviso (c) requirements for completeness. TCCA allows removal from the aircraft.

EASA Differences: EASA is identical to TCCA.

ITEM: 26-20-5 BAGGAGE OR CARGO COMPARTMENT FIRE SUPPRESSION SYSTEMS

Baggage or Cargo Compartment Fire Suppression Systems	C	-	0	May be inoperative provided the associated compartment is empty or does not contain combustible materials. NOTE: Unit Load Devices (ULDs) may be carried in the associated compartment provided no cargo is carried on or in these devices.

DISCUSSION:

References: CAR 705.81, CASS 725.81, AWM 525.851, AWM 525.855, AWM 525.857, FAA PL 102 (Rev. 2)

FAA Differences: FAA does not define combustible materials and instead only permits carriage of ballast, empty cargo handling equipment, and fly away kits.

ITEM: 27-00-1 CONTROL SURFACE POSITION INDICATORS

Control Surface Position Indicators (for non-fly-by-wire systems)					
Conventional Indicators	C	2	0	(M)(O)	May be inoperative provided: a) The affected control surface(s) is visually checked for full, free and correct movement prior to each flight, and b) The affected indicator is clearly identified as inoperative or covered.
Indication is on Multifunction Display, EICAS or ECAM Type Display	C	2	0	(M)(O)	May be inoperative provided: a) The affected control surface(s) is visually checked for full, free and correct movement prior to each flight, and b) A placard identifying the inoperative indicator must be affixed to the instrument panel adjacent to the applicable display.

DISCUSSION:

References: nil

There is no design requirement for control surface position indicators. However, on aircraft with powered control surfaces they are usually incorporated and may be used in the system safety analysis. The visual check prior to each flight is considered adequate compensation.

FAA Differences: FAA relief is similar to TCCA. Additional provisions are included by TCCA for aircraft that use multifunction displays for control surface position indicators.

ITEM: 27-00-2 TAKEOFF CONFIGURATION WARNING SYSTEM

Takeoff Configuration Warning System	1	1	Must be operative.

DISCUSSION:

References: AWM 523.703, AWM 525.703, FAA PL 5 (Rev. 1)

In order to avoid accidents which result from improper takeoff configuration and because there is no reliable alternative to the takeoff configuration warning system, this item must be operative.

On aircraft that do not include the system as part of the basis of certification, relief will need to be addressed on an individual basis considering service history, etc.

FAA Differences: FAA relief is similar to TCCA. FAA PL 5 specifically addresses air carrier. FAA does not include “configuration” in the title.

ITEM: 27-10-1 AILERON AND RUDDER TRIM INDICATORS

Aileron and Rudder Trim Indicators	C	-	-	(O)	May be inoperative provided, prior to each flight, the rudder (aileron) trim is: a) Visually checked for full, free and correct movement, and b) Confirmed neutral.

DISCUSSION:

References: AWM 523.677(a), 525.677(b)

On some aircraft, such as the DHC-8-400, the (O) procedure will not be sufficient to satisfy the provisos and an (M) procedure will be required. Also, some aircraft types have more restrictive repair intervals.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 27-20-1 RUDDER PEDAL ADJUSTMENT

Rudder Pedal Adjustment	C	2	0	(M)	May be inoperative provided: a) The rudder pedals can be secured in a position which meets individual pilot requirements, and b) Full and unrestricted movement of the rudder and brake pedal deflection is possible at both pilot stations.

DISCUSSION:

References: nil

FAA Differences: FAA relief is identical to TCCA.

ITEM: 27-30-1 STALL WARNING SYSTEM

Stall Warning System	B/C	1	0	(M)	May be inoperative provided: a) The inoperative system is deactivated, b) Flight is conducted in accordance with the AFM CG limitations, and c) Flight is not conducted in known or forecast icing conditions.

DISCUSSION:

References: nil

Consideration of aircraft handling qualities and stall characteristics will be a determining factor in assigning the category. A C category may be acceptable.

An inoperative stall warning system may impact other systems such as the related FAST/SLOW indicator and the stick pusher system, appropriate NOTES must be included in the MMEL.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 27-40-1 CONTROL WHEEL TRIM SWITCHES

Control Wheel Trim Switches	C	2	1	One may be inoperative for the pilot not flying provided the standby pitch trim system is operative.

DISCUSSION:

References: AWM 525.677

Relief may be granted provided a standby pitch trim system or trim wheel is available and suitably located. Trim capability through the autopilot system or a stability augmentation system is not an acceptable back-up to cater to the next failure, that is, failure of the remaining control wheel trim switch.

FAA Differences: Similar relief, but TCCA will accept a cat C.

ITEM: 27-40-2 PITCH TRIM POSITION INDICATING SYSTEM

Pitch Trim Position Indicating System	C	1	0	(O)	May be inoperative provided, prior to each flight, the longitudinal trim is visually checked for: a) Full, free and correct movement, and b) Appropriate position for takeoff.

DISCUSSION:

References: AWM 523.677(a), 525.677(b)

Relief is not appropriate for large aircraft, especially those with all moving stabilizers, if it is difficult to visually determine the trim position for takeoff. However, some aircraft have more than one indicator and relief may be permitted provided the faulty indicator is not visible.

Consideration should be given to automatic trim systems wherein trim surface positions would be unknown if this dispatch configuration were permitted.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 27-50-1 FLAP POSITION INDICATOR

Flap Position Indicator	C	1	0	(O)	May be inoperative provided: a) Flaps are visually checked for full travel prior to each takeoff, b) Flap operation is not restricted, c) Flaps are visually checked for proper setting and no asymmetry prior to each takeoff, and d) A gated flap pre-select system is installed.

DISCUSSION:

References: AWM 523.699, 525.699

It is not considered reasonable for flight crew members to have to leave the flight deck to perform this check, nor is it considered acceptable to have other crew members perform a check for which they are not qualified. Some aircraft have visual markings on the wing structure that indicate the flap position.

Notwithstanding the paragraph above, relief has been permitted on B90 type airplanes which do not have special markings to determine flap position. Considerations in granting such relief included stall speed spread zero to full flap, simple flap system, straight wing, “benign” stall characteristics, angle of attack indication and stall warning and protection equipment.

Depending on aircraft configurations, special considerations shall be given to other systems (e.g. takeoff warning, landing gear aural warning systems, etc.) that may rely on normal flap position indicator operation.

For some large aircraft relief for one of two indicators has been permitted with no proviso.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 27-60-1 LIFT DUMP AND/OR DRAG DEVICE INDICATOR

Lift Dump and/or Drag Device Indicator	B	1	0	(O)	May be inoperative provided the lift dump or drag device is verified to be in the selected position.

DISCUSSION:

References: AWM 525.697, AWM 525.699, AC 525-016 Issue 1

If relief is permitted, an operational procedure may be required to detail how the function of the indicator is transferred to the pilots (e.g. checks, aircraft response, etc.).

Relief for the device indicator will not be provided if that indication is used by the takeoff configuration warning system.

Any warning indication, if installed, may have been required by Airworthiness Manual 525.699 or equivalent. In granting relief, consideration should be given to other reliable means to determine lift and/or drag device extension. Relief could also be given if it was shown that inadvertent deployment of the device in all flight regimes was not hazardous (see AC 525-016 Issue 1).

Examples: 757, 767, MD 80 - No relief (TC Supp), A300, DC 9 - Relief permitted

FAA Differences: FAA has no Policy Letter but in general grants relief. TC is more stringent in application of the hazard evaluation principles encompassed in AC 525-016 Issue 1.

ITEM: 28-20-1 MAIN FUEL TANK PUMPS

Main Fuel Tank Pumps	C	4	3	Not usually permitted to be inoperative for ETOPS beyond 120 minutes but could be justified for a specific airplane.

DISCUSSION:

References: FAA PL 40 (Rev. 3)

Relief may be dependent upon aircraft design/configuration as well as ETOPS requirements.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 28-20-2 PRESSURE REFUELING SYSTEM

Pressure Refueling System	C	1	0	May be inoperative.

DISCUSSION:

References: nil

Relief may be dependent upon pressure refueling system design.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 28-20-3 FUEL TRANSFER SYSTEM

Center Tank Fuel Pumps	C	2	1	One pump may be inoperative provided tank remains empty.
	C	2	1	One pump may be inoperative provided: a) Fuel quantity in main tanks is adequate to reach a suitable airport in the event the remaining pump fails, b) Center tank fuel is included as part of the zero fuel weight, c) Center tank quantity indication is operative, d) Effect on airplane balance, in the event fuel cannot be used, is accounted for, and e) Low PRESS light is operative.
	C	2	0	Both pumps may be inoperative provided: a) Center tank remains empty, and b) Center tank quantity indication is operative.

DISCUSSION:

References: nil

2/0 relief may be permitted but consideration must be given to leakage possibility.

FAA Differences: FAA relief is similar on approved MMELs. FAA has no Policy Letter but should accept TCCA position.

ITEM: 28-40-1 FUEL TANK INDICATION SYSTEMS

Fuel Tank Indication Systems B/C	-	-	(O)(M)	One may be inoperative provided: a) Fuel quantity and balance is determined by other approved means prior to each flight, b) Fuel flow indications are operative, c) The low level warning (if fitted) is operative, and d) The auto and/or manual balance system is operative.

DISCUSSION:

References: AWM 525.1305

In general a C category is satisfactory. However, based on insufficient service experience a category B may be more appropriate.

The (O) should address in flight operations, particularly actions to be taken in the event of an engine failure to ensure the AFM fuel imbalance limitation is observed.

For aircraft equipped with FMS calculated fuel used or fuel flow, this may be considered equivalent to fuel flow indications. For FMS that use fuel indications to determine performance limits for calculation of speeds, weight limits, and/or centre of gravity calculations, additional AFM limits may be required when dispatching with fuel indicators inoperative.

The fuel indication for an inoperative tank is not required. For aircraft with only wet wings, i.e. no center tank, consideration should be given to dispatching such that fuel transfer is not required.

Relief has been permitted for a wing tank indication inoperative and fuel in a center tank that must be transferred to the wings.

FAA Differences: FAA has no Policy Letter but should accept TCCA position.

ITEM: 28-40-2 FUEL TANK TEMPERATURE INDICATION

Fuel Tank Temperature Indication	C	-	-	May be inoperative.

DISCUSSION:

References: nil

Each aircraft will need to be evaluated, as there may be a need to apply a minimum or maximum operating temperature if this indication is not available. Fuel temperature indications may also be required for systems that use fuel for cooling of other aircraft systems.

FAA Differences: FAA may give relief with operating temperature limitations based on the AFM.

ITEM: 28-40-3 FUEL TANK MEASURING STICKS

Fuel Tank Measuring Sticks	C	-	0	May be inoperative provided fuel quantity is determined by other approved means.

DISCUSSION

References: nil

FAA Differences: No FAA PL exists for this item.

ITEM: 30-00-1 ANTI-ICE/DE-ICE SYSTEM TEST

Anti-ice/De-ice System Test					
1) Airframe and Engine	C	1	0	(M)	May be inoperative provided an alternate means is used to confirm the system is operative prior to dispatch into known or forecast icing conditions.
2) Windows and Probes	C	-	0	(M) or (O)	Flight or maintenance crew must physically verify window/probe heat operates normally before each departure.

DISCUSSION:

References: nil

FAA Differences: FAA relief is identical to TCCA.

ITEM: 30-00-2 ICE AND RAIN PROTECTION

Ice and Rain Protection				
1) Airframe Anti-icing and/or De-icing System	C	1	0	Except for ETOPS beyond 120 minutes, may be inoperative provided flight is not conducted in known or forecast icing conditions.
2) Elevator Horn Heaters	C	1	0	Except for ETOPS beyond 120 minutes, may be inoperative provided flight is not conducted in known or forecast icing conditions.
3) Propeller Anti-icing and/or De-icing System	C	1	0	May be inoperative provided flight is not conducted in known or forecast icing conditions.

DISCUSSION:

References: FAA PL 40 (Rev. 3), FAA PL 94 (Rev. 1)

The above-mentioned alleviations must be considered in the context of each aircraft and may not be applicable in all cases. For example, at a NASA/FAA Tailplane Icing Workshop in Cleveland, Ohio (4-6 Nov. 1991), which TC attended, it was recommended that inoperative deicing equipment on turbo-prop aircraft be category B versus C. This policy was implemented on the Jetstream 3101, 3201 in the Original TC Supplement, Feb. 1992 in view of a Jetstream accident that was caused by tailplane icing.

Propeller or liquid paste deicer shall not be used in lieu of an operative Propeller Anti-icing and/or De-icing System except where the AFM specifically approves its use.

FAA Differences: FAA relief is similar to TCCA, except that the FAA PL does not address relief specifics such as category.

ITEM: 30-10-1 WING DEICER BOOT ADVISORY INDICATIONS

Wing Deicer Boot Advisory Indications	C	-	0	May be inoperative provided: a) Boot operation is monitored visually from the flight deck, and b) The appropriate wing inspection light(s) (or alternate means) are operative for night operations.

DISCUSSION:

References: nil

FAA Differences: No FAA PL available for this item.

ITEM: 30-20-1 POWERPLANT ICE PROTECTION

Engine Intake Anti-icing and/or De-icing System	C	-	-	One engine system may be inoperative provided flight is not conducted in known or forecast icing conditions.

DISCUSSION:

References: Letter 5011-1 (AARDD) dated 9 Nov. 1988, FAA PL 40 (Rev. 3)

Relief for the Engine Intake Anti-icing and/or De-icing System can only be permitted if satisfactory resistance to icing with the protection system inoperative has been demonstrated during the certification program. Powerplant instrument probes requiring ice protection must also be considered.

No relief for ETOPS if inoperative closed. Relief has been granted for a valve open with several performance related provisos (see B767).

FAA Differences: FAA relief is identical to TCCA.

ITEM: 30-30-1 PITOT HEATERS

Pitot Heaters				
1) Transport Category Aircraft	B	-	1	Except where enroute operations and/or ETOPS beyond 120 minutes require its use, one may be inoperative provided: a) Flight is conducted in day VMC, b) Flight is not conducted in visible moisture, and c) Flight is not conducted in known or forecast icing conditions.
	B	-	2	
2) Non-transport Category Aircraft	A	-	0	May be inoperative provided, a) Flight is conducted in day VMC, b) Flight is not conducted in known or forecast icing conditions, and c) Repairs are made within 3 flight days.

DISCUSSION:

References: AWM 523.1323(d), AWM 525.1323(i), TP 1490E, Manual of All Weather Operations (Cat II and III), FAA PL 40 (Rev. 3)

The second relief applies in the case where the referenced pitot systems feed the primary airspeed and altitude indication system and not the standby instruments (i.e. the standby pitot heaters are considered an additional system for this case). Consideration may also need to be given for architectures where there is more than one heating system for each pitot system.

This system may be part of the air data system function that is required to support the RVSM certification of the aircraft. With this item inoperative, RVSM qualification may be invalid and the MMEL will need a proviso for addressing the loss of RVSM capability. In the case that only one air data side is RVSM qualified, the proviso will specifically identify that side is affected only.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 30-30-2 PITOT HEAT INDICATING SYSTEM

Pitot Heat Indicating System	B/C	-	0	(M)	Except for ETOPS beyond 120 minutes, may be inoperative provided: a) Flight is not conducted in known or forecast icing conditions, and b) All elements of the pitot heat system are verified to be operative.

DISCUSSION:

References: AWM 525.1326 (no AWM 523 equivalent), CAR 704.69, CAR 705.82, FAA PL 40 (Rev. 3), FAA PL 90 (Rev. 1)

AWM 525.1326 requires an indication of pitot heat operation if that pitot system is a source for flight instruments. There is no need to check that “other elements of the pitot heat system are operative” if relief has been granted for those other elements (see Item 30-30-1).

For aircraft that do not require the system, it is acceptable to grant cat C relief.

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA relief considers the pitot heating system inoperative.

ITEM: 30-30-3 STATIC SOURCE HEATERS

Static Source Heaters	B	-	1	Except where enroute operations and/or ETOPS beyond 120 minutes require its use, one may be inoperative provided flight is not conducted in known or forecast icing conditions.

DISCUSSION:

References: AWM 523.1325(b)(3), AWM 525.1325(b), FAA PL 40 (Rev. 3)

At least one static source must be heated unless it was confirmed during icing certification that icing in flight had no effect on static sources.

The prohibition of flight into known or forecast icing conditions includes ground operations where ice and slush may be splashed onto the static sources. (See TCCA icing definition in applicable AFM).

AWM 525.1325(b) specifies that the instruments, which require static pressure, operate normally even when the airplane is exposed to icing conditions. Because of their location and as determined during certification flight tests, it may be that static sources are unaffected by flight in icing.

This system may be part of the air data system function that is required to support the RVSM certification of the aircraft. With this item inoperative, RVSM qualification may be invalid and the MMEL will need a proviso for addressing the loss of RVSM capability. In the case that only one air data side is RVSM qualified, the proviso will specifically identify that side is affected only.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 30-30-4 TOTAL AIR TEMPERATURE (TAT) PROBE HEATER SYSTEM

Total Air Temperature (TAT) Probe Heater System	C	1	0	(O)	Except where enroute operations and/or ETOPS beyond 120 minutes require its use, may be inoperative provided flight is not conducted in known or forecast icing conditions.

DISCUSSION:

References: FAA PL 40 (Rev. 3)

This system may be part of the air data system function that is required to support the RVSM certification of the aircraft. With this item inoperative, RVSM qualification may be invalid and the MMEL will need a proviso for addressing the loss of RVSM capability. In the case that only one air data side is RVSM qualified, the proviso will specifically identify that side is affected only.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 30-40-1 WINDSHIELD WIPERS

Windshield Wipers	C	2	0	One or both may be inoperative provided flight is not conducted in precipitation within five nautical miles of the airport of take-off or intended landing.
1) Low Speed	C	1	0	May be inoperative provided high speed is operative.
2) High Speed	C	1	0	May be inoperative provided the low speed is operative.
3) Park Function	C	1	0	May be inoperative provided the wipers can be parked out of the pilots' view.

DISCUSSION:

References: AWM 523.773, AWM 525.773, CAR 705.67

If an alternate means was certified then the five nautical mile restriction may not apply. For Airbus products relief for one inoperative on the pilot-not-flying side has been permitted for three flights with no "five nautical mile restriction". However, this relief is not considered appropriate in view of the requirements of AWM 525.773 and has been deleted from this item.

FAA Differences: FAA has no Policy Letter but the FAA airworthiness requirements for this item are identical to the TCCA requirements.

EASA Differences: EASA relief does not indicate five nautical miles.

ITEM: 30-40-2 WINDSHIELD/WINDOW HEATERS

Windshield/Window Heaters					
1) Forward Facing Windows	C	-	-	(M)	Except for ETOPS beyond 120 minutes, one may be inoperative provided: a) Flight is not conducted in known or forecast icing conditions, b) Associated windshield pneumatic anti-fog system (if installed) operates normally, and c) Associated window heat is deactivated.
2) Side Facing Windows	C	2	0	(M)	One or both may be inoperative provided the associated window heat is deactivated.

DISCUSSION:

References: AWM 523.773, AWM 523.775, AWM 525.773(b), AWM 525.775, FAA PL 40 (Rev. 3)

If the pilot's side window is not openable but has been shown during certification to be equivalent to a Direct Vision (DV) window, relief for its heating must not be permitted. (see RJ MMEL).

Relief has been permitted for all heaters to be inoperative with the defog system operative and no flight in icing. This sort of relief will be aircraft dependant.

FAA Differences: FAA has no Policy Letter but relief appears to be identical to TCCA.

ITEM: 30-40-3 LIQUID RAIN REPELLANT SYSTEM

Liquid Rain Repellant System D ***	-	0	

DISCUSSION:

References: nil

The system can only be used with fluid that meets Canadian environmental regulations.

Current supplier of CFC-free rain repellant fluid (FORALYKL 2211) is approved and relief is addressed in the MMEL of some aircraft types (e.g. A320, A330). Other aircraft may have the system installed by means of an STC.

The "***" symbol also addresses those operators who choose to deactivate the system due to their operational policies. In that case, relief is not required.

FAA Differences: FAA has never accepted a rain repellant system in lieu of a wiper system. The FAA position regarding the environmental issue is not known.

ITEM: 30-80-1 ICE DETECTION SYSTEMS

Ice Detection Systems	C	1	0		May be inoperative provided flight is not conducted in known or forecast icing conditions.
	C	2	1	(O)	May be inoperative provided wing and engine anti-icing equipment is turned on if the OAT on the ground is below +10 degrees C or in flight if the SAT is below +5 degrees C with visible moisture present.

DISCUSSION:

References: FAA PL 40 (Rev. 3)

Ice detection systems are not specifically required by airworthiness standards. However, aircraft design considerations have resulted in detection systems being fitted, e.g. where there is no reliable way for the pilot to visually determine the presence of ice. In granting relief for ice detection systems, airplane service history and the effect of ice on performance and handling qualities should be considered. Depending on the service history of the airplane an additional “no night flight” restriction may be appropriate.

Some Flight Manuals may have stricter temperature limits than those stated in the relief above, and thus may need to be evaluated depending upon the actual aircraft application.

However, several FAA Flight Manuals define icing conditions as visible moisture and OAT below +5 degrees C, which is less stringent than the relief above. As the MMEL cannot conflict with AFM limitations, the TC Supplement for those U.S. aircraft types (e.g. SA226/227) should reflect temperature limits indicated in their associated AFM.

FAA Differences: FAA relief is similar to TCCA, but the specific temperatures used in the TCCA icing definition are slightly higher than those used by the FAA.

EASA Differences: EASA includes a cat D relief when the system is certified as an advisory system only.

ITEM: 31-20-1 CLOCK

Clock	C	-	-	Aircraft clock may be inoperative provided a reliable and functioning timepiece is readily available to all flight deck crew members.

DISCUSSION:

References: CAR 602.59(2)(f), AWM 525.1303(a)(2) (no AWM 523 requirement)

Consideration must be given to clock inputs into other aircraft systems.

FAA Differences: FAA makes reference to VFR and IFR when granting relief.

EASA Differences: EASA relief is similar.

ITEM: 31-30-1 FLIGHT DATA RECORDER (FDR)

Flight Data Recorder (FDR)				
1) FDR and CVR required by regulations	A	1	0	May be inoperative provided: a) Cockpit Voice Recorder (CVR) is operative, and b) Repairs are made within three flight days.
2) FDR only required by regulations	A	1	0	May be inoperative provided repairs are made within three flight days.
3) FDR not required by regulations	D	1	0	
4) FDR Recording Parameters required by regulations	A	-	-	Up to three recording parameters may be inoperative provided: a) Cockpit Voice Recorder is operative, and b) Repairs are made within twenty calendar days.
5) FDR Recording Parameters not required by regulations	A	-	-	May be inoperative provided repairs are made before the completion of the next heavy maintenance visit.

DISCUSSION:

References: CAR 605.33, CAR 625.33, FAA PL 87 (Rev. 10)

The MMEL may contain all relief options. The MEL shall reflect the correct situation for each specific aircraft/operation.

FAA Differences: FAA PL 87 has incorporated the statement to the effect that dispatch is not permitted from an airport where repairs can be made, but TC does not wish to return to this convention. The FAA PL also refers to air carrier. TC includes some cat D relief for an FDR that is not required.

EASA Differences: EASA relief is very similar, however, the deferral time is 72 hours. EASA relief for recording parameters allows up to 5% of the required parameters inoperative for 90 days.

ITEM: 31-40-1 ENGINE INDICATING AND CREW ALERTING SYSTEM (EICAS)

Engine Indicating and Crew Alerting System (EICAS)	-	-	See DISCUSSION.

DISCUSSION:

References: FAA PL 25 (Rev. 21)

Relief for some aspects of the EICAS has been granted for aircraft such as the B 767 and B 747 as category A, one flight day. This relief has been accepted unchanged by Transport Canada. Relief for the RJ has been permitted for one of the two Engine Displays as a category B.

Relief will be aircraft specific depending on failure analysis, next failure, reversion capabilities, etc.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 31-50-1 AURAL WARNING SYSTEMS

Aural Warning Systems			Must be operative.

DISCUSSION:

References: nil

FAA Differences: FAA relief is identical to TCCA.

ITEM: 32-40-1 ANTI-SKID SYSTEM

Anti-Skid System				
1) Turbojet-powered Airplanes	B	-	0	May be inoperative provided: a) Crew members are the only occupants of the aircraft, and b) AFM performance penalties are applied.
a) Dual Anti-Skid Systems or Single Anti-Skid System with dual channels	B	-	1	May be inoperative provided: a) AFM performance penalties are applied, b) Thrust Reversers, if installed, are operative, c) Reduced thrust takeoff operations are prohibited, and d) Takeoff or landing is not conducted from a contaminated runway.
2) Turboprop Airplanes	B	-	0	May be inoperative provided operations are conducted in compliance with appropriate AFM limitations and performance penalties.

DISCUSSION:

References: FAA PL 113 (Original)

It has been the certification experience that the next worse case failure is the loss of at least one tire during anti-skid inoperative braking. This reduces the braking capability and the brake energy available for stopping the aircraft. Thus AFM penalties should consider a distance penalty and a weight penalty if required to address reduced brake energy capability. To date, industry has assumed that the next worse case failure is loss of the remaining anti-skid. However, this does not always represent a conservative case and the results may depend on the number of MLG brakes available on any given aircraft.

It is recommended that Operator Training Programs include braking procedures with anti-skid inoperative.

FAA Differences: FAA PL 113 allows dispatch with anti-skid inoperative in passenger-carrying operations, and it does not provide repair interval category, number installed, or number required for dispatch.

ITEM: 32-40-2 PARKING BRAKE

Parking Brake	1	1	See DISCUSSION.

DISCUSSION:

References: AWM 525.735(d) (no AWM 523 equivalent)

If relief is granted, the crew would be unable to set the parking brake following an engine fire on the ground as part of the evacuation procedure if this emergency procedure is in the AFM. The parking brake must be operative on Part 25 airplanes.

Although there is no AWM 523 requirement, prior to granting relief, consideration should be given to service experience, related accidents or incidents and single or two pilot operation.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 33-10-1 FLIGHT DECK AND INSTRUMENT PANEL LIGHTING SYSTEM

Flight Deck and Instrument Panel Lighting System	C	-	-	Individual lights may be inoperative provided remaining lights are: a) Sufficient to clearly illuminate all required instruments, controls and other devices for which it is provided, b) Positioned so that direct rays are shielded from flight crew member's eyes, and c) Lighting configuration and intensity is acceptable to the flight crew.
	C	-	0	May be inoperative for day operations.

DISCUSSION:

References: AWM 523.1381, AWM 525.1381, FAA PL 77 (Rev. 4)

Due to higher workload considerations, extra care may be required in permitting dispatch with reduced lighting for single pilot aircraft.

Consideration must be given such that adequate lighting will be available following any subsequent single in-flight electrical or lighting failure.

FAA Differences: TCCA relief is similar to FAA.

EASA Differences: EASA allows relief for co-pilot's side for single pilot operations.

ITEM: 33-20-1 PASSENGER COMPARTMENT LIGHTING

Passenger Compartment Lighting	C	-	-	Must be sufficient for crew members to perform their duties.

DISCUSSION:

References: nil

For cargo and non-passenger carrying operations there must be sufficient lighting for the inspection of cargo for the verification of cargo restraint or for fire fighting purposes.

Passenger compartment means all except flight deck and cargo areas.

For aircraft equipped with Floor Proximity Emergency Escape Path Markings (FPEEPM), specific dispatch requirements may be necessary to ensure FPEEPM are adequately charged. See item 33-50-1.

FAA Differences: FAA has no guidance but relief is similar.

EASA Differences: EASA allows cat D relief for non-passenger operations.

ITEM: 33-20-2 NO SMOKING/FASTEN SEAT BELT/RETURN TO SEAT LIGHTS/SIGNS (PASSENGER LIGHTED INFORMATION SIGNS)

No Smoking/Fasten Seat Belt/Return to Seat Lights/Signs					
1) Airline Operations (CAR 705)	C	-	-	(M)	May be inoperative provided: a) Associated passenger seat, flight attendant seat or lavatory from which a passenger lighted information sign is not readily legible is not occupied, and b) Associated seat or lavatory is blocked and placarded “DO NOT OCCUPY”.
	C	-	-	(O)	May be inoperative and associated passenger seat, flight attendant seat or lavatory may be occupied provided: a) PA system operates normally, and b) PA system is used to notify passengers and cabin crew when associated sign(s) are placed on or off.
2) Others	C	-	0	(O)	May be inoperative provided alternate procedures are established and used to notify cabin occupants.
3) All Cargo Operations	D	-	0		May be inoperative provided all crew members are on the flight deck.
4) Aural Tone Function	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.
5) Automatic Function	C	-	0	(O)	May be inoperative provided: a) Manual control function is operative, and b) Alternate procedures are established and used.

ITEM: 33-20-2 NO SMOKING/FASTEN SEAT BELT/RETURN TO SEAT LIGHTS/SIGNS (PASSENGER LIGHTED INFORMATION SIGNS) (cont'd)

DISCUSSION:

References: CAR 705.16(3)(c) and (d), AWM 523.791, AWM 525.791, FAA PL 123 (Rev. 1)

For clarification it is noted that this item refers to lights whereas item 25-20-4 addresses signs and placards.

The third relief applies to non-airline (CAR 705) operations.

FAA Differences: FAA relief is similar to TCCA. FAA does include relief for Aural Tone and Automatic functions. FAA assigns cat C relief for cargo operations.

EASA Differences: EASA is similar to TCCA. EASA includes cat C relief for non-passenger operations.

ITEM: 33-20-3 CREW REST FACILITY - INTERIOR LIGHTING

Crew Rest Facility - Interior Lighting	C	-	-	One or more lights may be inoperative provided: a) Sufficient lighting is available in common area, main entry and aisle, and b) Emergency lighting system operates normally.

DISCUSSION:

References: nil

FAA Differences: No FAA PL exists for this item.

ITEM: 33-40-1 LANDING/TAXI LIGHTS

Landing/Taxi Lights	C	-	-	As required by regulations.
	C	-	0	May be inoperative for day operations.

DISCUSSION:

References: AWM 523.1383, AWM 525.1383, CAR 605.16(1)(j), CAR 702.42, CAR 703.64, CAR 704.62(3), CAR 705.68

CAR 705 requires two landing lights for night operations whereas the other referenced CARs require only one light. The design standard does not require landing and taxi lights but only addresses what needs to be accomplished for certification. During certification it must be demonstrated by flight test that the lighting configuration (landing and/or taxi lights) anticipated for dispatch is acceptable. There is no need to cater in the MMEL to the next failure after dispatch since the consequences will be different depending on the type of operation. The MEL may need to be more restrictive (e.g. dispatch for 705 operator would require three lights and for the other operations would require two) depending on the operation, i.e. operating into poorly lit airports. Manufacturers may also wish to limit the dispatch configuration for reasons such as reliability.

FAA Differences: FAA relief is similar to TCCA.

EASA Differences: EASA includes a cat B relief that requires 50% of landing lights to be operative.

ITEM: 33-40-2 ANTI-COLLISION LIGHT SYSTEM

Anti-Collision Light System, Lights	C	-	1	Either upper or lower fuselage lights may be inoperative provided an acceptable number of white wing tip strobe lights are operative.
	C	-	0	May be inoperative for day operations.

DISCUSSION:

References: AWM 523.1401, AWM 525.1401, CAR 605.17

It is general practice to use the rotating beacon type anti-collision light(s) as an indication of engine(s) running on the ground. The example relief is from the B767 which TCCA has accepted unchanged.

Some aircraft may have strobe lights installed that are equivalent to an approved rotating beacon system. These aircraft may also have a rotating beacon(s) with the strobe, where the rotating beacon(s) does not meet the anti-collision lighting requirements. Relief will be granted accordingly.

FAA Differences: FAA relief is similar to TCCA.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 33-40-3 NAVIGATION/POSITION LIGHT SYSTEM

Navigation/Position Light System	C	-	-	One bulb at each position (wing tips and aft) must be operative.
	C	-	0	May be inoperative for day operations.

DISCUSSION:

References: AWM 523.1385 to AWM 523.1397, AWM 525.1385 to AWM 525.1397, CAR 605.17

Relief may be given for one bulb (of 2) for each of the position lights (left/right wingtip plus tail). Relief may be worded differently to reflect a specific aircraft configuration, e.g. B767.

A strobe light in close proximity to the tail position light may not be an acceptable substitute, since strobes are often turned OFF on the ground because of their high intensity.

FAA Differences: FAA relief is similar to TCCA.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 33-40-4 STROBE LIGHT SYSTEM

Strobe Light System	C	-	0	May be inoperative provided Anti-Collision Lights are operative.
	C	-	0	May be inoperative for day operations.

DISCUSSION:

References:

Although there is no Canadian operational regulation, once installed it is in the interest of safety to have the system operative. A category C is considered an acceptable compromise in order to not discourage such an installation.

Wing tip strobe lights may be considered an alternative to fuselage anti-collision lights.

FAA Differences: FAA relief is similar to TCCA.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 33-40-5 WING INSPECTION (ICE) LIGHTS

Wing Inspection (Ice) Lights				
Airplanes with wing critical surfaces visible from flight deck	C	2	0	May be inoperative provided: a) Aircraft is not operated in known or forecast icing conditions at night, and b) Ground deicing procedures do not require their use.
Airplanes with wing critical surfaces not visible from flight deck	C	2	0	May be inoperative provided ground deicing procedures do not require their use.

DISCUSSION:

References: AWM 525.1403, FAA PL 72 (Rev. 4)

Relief may differ from the above reliefs if the aircraft has been certified with greater reliance on ice protection systems (i.e. primary ice detection system).

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA allows cat D for day operations. Also, EASA accepts the use of a portable lamp in lieu of the wing inspection lights.

ITEM: 33-40-6 LOGO LIGHTS

Logo Lights	D	-	0	May be inoperative.

DISCUSSION:

References: nil

FAA Differences: FAA relief is identical to TCCA.

ITEM: 33-50-1 FLOOR PROXIMITY EMERGENCY ESCAPE PATH MARKINGS

Floor Proximity Emergency Escape Path Markings		1	1	System must be operative.
1) Non-Photoluminescent Systems	C	-	-	Individual lights may be inoperative provided compliance is shown with minimum acceptable lighting as required by certification documents.
2) Photoluminescent Systems	C	1	1	Specified sections of the photoluminescent system may be inoperative provided compliance is shown with minimum acceptable lighting as required by certification documents.
3) All Cargo Operations	D	1	0	May be inoperative.

DISCUSSION:

References: CAR 705.16, CAR 705.78, AWM 525.812(e)

As the proviso requires that the certification standard be met, category C is acceptable for either system. For the electrical lighting systems, the MMEL and MEL must identify the lamps that may be inoperative based on the certification tests.

Similarly, for the photoluminescent systems, whether installed on the aircraft as a modification or during the aircraft certification process, certification information including the following must be determined and included in the MMEL and MEL: the maximum total length of the system that can be inoperative, the maximum length of each inoperative segment, the condition that the section on the adjacent side of the aisle must be operative, and the condition that the inoperative segment is not adjacent to the wing exit or door marking strip. Also, relief must address impact with cabin lighting system inoperative (item 33-20-1) since the cabin lighting system is used to charge the photoluminescent system.

CAR 705.16 provides some exceptions to CAR 705.78 regarding the number and functions of crew members who may be carried on-board in addition to flight crew members. In cases where additional crew members are carried on-board and cannot be accommodated in flight deck seats, then they shall have access to the most convenient, readily accessible and operative passenger emergency exit. The internal emergency pathway lighting from the exit shall be operative and the emergency lights on the escape assist device (inflatable slide or stairs) shall be operative.

FAA Differences: This item will usually be included in a TC Supplement since the FAA wording refers to specific certification documents that may not be applicable in Canada. However, the FAA certification findings are normally accepted when they are specific enough to identify which lights or tape sections may be inoperative.

EASA Differences: EASA relief is cat B and specifies lights/strips that must be operative for dispatch.

ITEM: 33-50-2 EMERGENCY LIGHTING, INTERNAL

Emergency Lighting, Internal					Must be operative.
	C	-	-		Individual light bulbs, etc. may be inoperative provided compliance is shown with minimum acceptable lighting as required by certification documents.
1) Crew Rest Facility	D	-	-	(M)	May be inoperative provided: a) Crew Rest Facility is not occupied, and b) Crew Rest Facility is placarded "INOPERATIVE - DO NOT USE".
2) Non-passenger Carrying Operations	A	-	0		May be inoperative for non-passenger carrying operations for one flight day.

DISCUSSION:

References: AWM 525.812

As the proviso requires that the certification standard be met, category C is acceptable.

Although it could be argued that crew familiarity with the aircraft and flashlight availability might compensate for inoperative emergency lighting, it is necessary that all on board be able to locate and operate exits, which might include a smoke filled aircraft during day operations. Therefore, relief for all cargo operations has been deleted.

The certification documents referenced in the proviso must be obtained from the aircraft manufacturer or the holder of the Supplemental Type Certificate, whoever installed the lighting system.

Sub-item 2) relief allows very short deferral time to return to a maintenance base where system can be repaired.

FAA Differences: FAA relief is similar to TCCA.

EASA Differences: EASA relief is cat B and allows only one in four consecutive lights (or light assemblies) be inoperative. However, such relief is a proposed guidance and is provided as example of relief generally accepted in MMELs and should be validated on particular cabin design configuration. Different levels of relief may be validated through test showing compliance to requirements even in a degraded configuration. Relief could then be granted cat C.

ITEM: 33-50-3 EMERGENCY LIGHTING, EXTERNAL

Emergency Lighting, External	C	-	0		May be inoperative for day operations. Some relief may be acceptable for night operations provided certification has been shown with the reduced lighting.
	A	-	0	(O)	May be inoperative for one flight day provided: a) Aircraft crew are the only occupants of the aircraft, and b) Alternate procedures for that aircraft type are established and used. NOTE: The operator's MEL must state the maximum number of aircraft crew permitted.

DISCUSSION:

References: AWM 525.812

The Note requires the operator to state the maximum number of aircraft crew permitted. The maximum number of aircraft crew would be determined by adding the number of the operating crew members that would likely be scheduled on that aircraft type, plus the number of maintenance personnel who would likely be scheduled to remain with the aircraft when flying to destinations where the air operator does not have any contracted maintenance agreement, plus the maximum number of supervisory crew members who would likely be carrying out an in-flight check ride at one time.

For some northern operations, because of local geographical features and low light conditions, this relief may not be appropriate in that it would be too alleviating. The MEL will need to provide the appropriate relief.

FAA Differences: FAA has no Policy Letter. FAA assigns a category B whereas TC assigns a category C. TC also permits more flexibility by granting one flight day relief with no provisos other than aircraft crew only. This is considered an acceptable risk in view of the aircraft crew's familiarity with emergency exits and emergency procedures training. While some might argue that a category D would be appropriate, the external emergency lighting is considered generally necessary for crew as well as passengers, hence the cat A relief.

EASA Differences: EASA assigns cat B for day operations. Also, EASA permits relief for slide lighting provided associated door is considered inoperative.

ITEM: 34-10-1 ALTITUDE ALERTING SYSTEM

Altitude Alerting System	A	1	0	(O)	Except where enroute operations require its use, may be inoperative provided: a) Autopilot altitude hold is operative, and b) Repairs are made within three flight days.
	D	2	1		One may be inoperative.
If not required by design standard and no autopilot installed	C	1	0	(O)	May be inoperative.

DISCUSSION:

References: CAR 605.36, FAA PL 39 (Rev. 5), FAA PL 84 (Rev. 1)

The (O) must address increased altitude awareness.

CAR 605.36 requires an altitude alerting system for turbojet-powered aeroplanes.

RVSM requires an altitude alerting system.

Although there may be no requirement for an altitude alerting system in some aircraft, once installed, a category C is considered appropriate for pilot dependency and safety reasons. These aircraft may not have an autopilot installed in which case the autopilot would not be a condition of relief. For aircraft that have more than one altitude alerting system, a category D is assigned to the excess equipment.

This relief was harmonized with FAA PL 39 Rev. 3. However, Rev. 4 of this PL withdrew guidance to such relief, due to conflict with FAR 91.219 requirements.

FAA Differences: FAA does not provide guidance to this relief, due to conflict with FAR 91.219 requirements.

EASA Differences: EASA relief is cat B and includes a proviso to ensure system is not part of the equipment required for the intended operation.

ITEM: 34-10-2 OUTSIDE AIR TEMPERATURE (or equivalent)

Outside Air Temperature (or equivalent)	C	-	1	At least one outside air temperature source must be operative.

DISCUSSION:

References: CAR 605.16, CAR 605.18(e), CAR 605.30

Some indication of ambient temperature is required in order to determine icing conditions as well as correct power settings. Conversion charts may be required depending on temperature indication and format of performance information.

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA relief is cat C provided another air temperature indication is operative and convertible to OAT.

ITEM: 34-10-3 VERTICAL SPEED INDICATORS

Vertical Speed Indicators				
If not required by design standard	C	2	1	For single pilot operations, the operative VSI must be on the pilot flying side.
	C	2	0	One or both may be inoperative for day VFR.

DISCUSSION:

References: AWM 525.1303(b)(3), CAR 605.16, CAR 605.18

There is no AWM 523 design requirement for a VSI. In any case the CARs specify the requirement.

Consistent with the CARs, it is considered reasonable to require this instrument for the higher workload night environment as well as IFR. However, relief is not considered appropriate for aircraft such as the B767, DC9 (withdrawn at Rev. 22). Relief is 2/1, cat B on B1900; 2/1 cat C no restrictions on B400, but no relief on the Lear 60. The relief is clearly aircraft dependent with considerations such as size, distance of flight deck above ground, handling qualities, etc.

FAA Differences: FAA has no Policy Letter for this item. Some Part 23 MMELs permit relief similar to TCCA, however, with cat B.

EASA Differences: CS-MMEL permits relief on the pilot not flying side as well as on either side for day VMC, both as cat C. CS-GEN-MMEL permits relief on the pilot not flying side for commercial air transport (CAT) as well as on both sides for day VFR for non-commercial operations (NCO) and specialized operations (SPO).

ITEM: 34-20-1 FLIGHT DIRECTOR

Flight Director	C	-	0	Except where enroute operations require its use, may be inoperative provided: a) Approach procedures are not dependent on its use, b) Autopilot, if affected, is considered inoperative, c) Windshear escape guidance, if affected, is considered inoperative, and d) Takeoff and/or go-around switches, if affected, are considered inoperative.

DISCUSSION:

References: TP 1490E Manual of All Weather Operations (Categories II and III)

The C category may be upgraded to an A or B at the MEL level based on operational considerations such as the amount of reliance that is placed on the FD and the level of training with the FD inoperative.

AFM will identify any approaches that cannot be flown if the FD is inoperative as a result of certification flight tests.

Some autopilot installations are not dependent on flight director being operative, and basic attitude modes may still be available. For highly integrated systems the autopilot may not function without the flight director, and therefore autopilot inoperative relief would also be applicable (Item 22-10-1).

FAA Differences: No FAA PL exists for this item.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 34-20-2 FLIGHT INSTRUMENTS

Flight Instruments				
1) Third/Standby Attitude Indicator	B	1	0	May be inoperative for day VMC. NOTE: Does not include VFR OTT.
	C	1	0	May be inoperative provided it is not required by regulations.
2) Turn and Slip Indicator	B	2	1	One may be inoperative on the pilot not-flying side.
	C	2	0	One or both may be inoperative for day VFR. NOTE: Does not include VFR OTT.

DISCUSSION:

References: AWM 523.1303 and AWM 525.1303, AWM 525.1321, AWM 525.1525, CAR 605.14, CAR 605.16, CAR 605.18, CAR 605.41, CASS 625.41, FAA PL 111 (Rev. 1)

No relief for standby airspeed indicator or standby altimeter, if they were required by certification.

AWM 523 and 525.1303 and .1321 list the flight instruments and navigation equipment that must be installed at each pilot station. AWM 523 and 525.1525 state that the kind of operation to which the airplane is limited is established by the category in which it is eligible for certification and by the installed equipment.

The CARs contain operational requirements regarding flight instruments. In reviewing the operational and airworthiness requirements it may be possible to permit some instrument alleviation (not for basic “T”) with restrictions e.g. day VFR, single pilot, etc. Flight instruments in the basic “T” (airspeed, attitude, altitude and heading) must be installed and operative at each pilot station as required by the applicable regulations. Alternate instrument location or alternate means of display such as “compacted modes” or standby instruments will not be considered unless certified as a primary means of display.

For smaller aircraft operated single pilot, relief for right side T instruments has been granted with certain restrictions. Operational considerations or requirements may be more restrictive and could be reflected in the MEL. If two pilots are required, then two sets of primary flight instruments are considered necessary.

It is noted that some European manufacturers grant relief for T instruments and the TC Supp will need to be amended accordingly.

Third attitude indicator requirement is defined by CAR 605.41.

ITEM: 34-20-2 FLIGHT INSTRUMENTS (cont'd)

FAA Differences: FAA sometimes includes operational regulation details in the relief.

EASA Differences: EASA requires at least one Slip/Skid indication on the pilot flying side. With respect to Standby Attitude Indicator, EASA relief is cat B, day VMC, for commercial air transport operations, and cat D, VMC, for other operations.

ITEM: 34-20-3 NON-STABILIZED MAGNETIC COMPASS

Non-stabilized Magnetic Compass	B	1	0		May be inoperative provided any combination of three gyro or INS(IRU) stabilized compass systems are operative.
	B	1	0	(O)	May be inoperative provided: a) Any combination of two gyro or INS(IRU) stabilized compass systems operate normally, and b) Aircraft is operated: 1) With dual independent navigation capability, and 2) Under positive radar control by ATC during the en-route flight phase, or one of the navigation systems is a TSO'd GPS which provides track information.
	C	1	0	(O)	May be inoperative for flights that are entirely within areas of magnetic unreliability provided at least two stabilized directional gyro systems are installed, operative and, if necessary, used in conjunction with approved free gyro navigation techniques.

DISCUSSION:

References: CAR 605.14

Takes into account operators who have updated equipment and/or operate in areas where magnetic information is unreliable.

FAA Differences: TCCA adds the possibility of GPS in place of positive radar control. FAA is cat B for third option.

EASA Differences: EASA includes three relief cases for aeroplanes which are very different from TCCA's relief.

ITEM: 34-30-1 RADIO ALTIMETER

Radio Altimeter	C	-	0	May be inoperative provided approach minimums or operating procedures are not dependent on its use.
If TAWS functionality is affected	A	-	0	May be inoperative for three flight days provided approach minimums or operating procedures are not dependent on its use.

DISCUSSION:

References: TP 1490E Manual of All Weather Operations (Categories II and III), CAR 704.36(1), CAR 705.47(1), FAA PL 131 (Original)

Consideration should be given to other equipment which may require radio altimeter information, e.g. ILS, Autoland, GPWS, TCAS, Master Warning/Master Caution inhibits, Stick pusher inhibits. If there is other system dependency, the repair category of that other system will govern the radio altimeter repair category. (for example, if the radio altimeter is a required input to another system such as the GPWS, the repair interval for the GPWS should be applied to the radio altimeter).

Although the radio altimeter may not be required, once installed it is available to the pilots and there is some pilot dependency. Therefore a cat C is considered appropriate.

FAA Differences: FAA PL 131 addresses radio altimeter relief for rotorcraft. GB 34-30-1 is more applicable to fixed wing.

ITEM: 34-40-1 WEATHER RADAR

Weather Radar	D	-	-	Any in excess of those required by regulations may be inoperative.

DISCUSSION:

References: CAR 703.65, CAR 704.64, CAR 705.70, FAA PL 40 (Rev. 3)

ETOPS has specific requirements. TCAS may drive this relief as the same display may be used.

FAA Differences: The FAA has been inconsistent in assigning a category for the item.

EASA Differences: EASA includes two cat C reliefs for VMC operations and cases where thunderstorm is not forecasted along the route.

ITEM: 34-40-2 GROUND PROXIMITY WARNING SYSTEM (GPWS) / TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)

Terrain Awareness and Warning System (TAWS) - Class A					
1) GPWS	A	-	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within three flight days.
a) Modes 1 to 4	A	4	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within three flight days.
b) Test Mode	A	1	0		May be inoperative provided: a) The GPWS is considered inoperative, and b) Repairs are made within three flight days.
c) Glideslope Deviation (Mode 5)	C	-	1		
	B	-	0		May be inoperative.
d) Advisory Callouts (Mode 6) ***	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.
e) Windshear Mode (Mode 7) ***	C	1	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Windshear Detection and Avoidance System operates normally.
	B	1	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Takeoffs and landings are not conducted in known or forecast windshear conditions.

ITEM: 34-40-2 GROUND PROXIMITY WARNING SYSTEM (GPWS) / TERRAIN AWARENESS AND WARNING SYSTEM (TAWS) (cont'd)

Terrain Awareness and Warning System (TAWS) - Class A (cont'd)					
2) Terrain System - Forward Looking Terrain Avoidance (FLTA) and Premature Descent Alert (PDA) Functions	B	1	0		May be inoperative.
3) Terrain Displays	B	-	0		May be inoperative.
4) Runway Awareness and Advisory System (RAAS) ***	C	1	0		May be inoperative.
Terrain Awareness and Warning System (TAWS) - Class B					
1) GPWS	A	-	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within three flight days.
a) Modes 1 and 3	A	2	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within three flight days.
b) Test Mode	A	1	0		May be inoperative provided: a) The GPWS is considered inoperative, and b) Repairs are made within three flight days.
c) Modes 2, 4 and 5 ***	C	3	0		May be inoperative.
d) Advisory Callouts ***	C	-	0	(O)	May be inoperative provided alternate procedures are established and used.

ITEM: 34-40-2 GROUND PROXIMITY WARNING SYSTEM (GPWS) / TERRAIN AWARENESS AND WARNING SYSTEM (TAWS) (cont'd)

Terrain Awareness and Warning System (TAWS) - Class B (cont'd)					
e) Windshear Mode ***	C	1	0	(O)	May be inoperative provided: a) Alternate procedures are established and used, and b) Takeoffs and landings are not conducted in known or forecast windshear conditions.
2) Terrain System - Forward Looking Terrain Avoidance (FLTA) and Premature Descent Alert (PDA) Functions	B	1	0		May be inoperative.
3) Terrain Displays ***	C	-	0		May be inoperative.
4) Runway Awareness and Advisory System (RAAS) ***	C	1	0		May be inoperative.
Terrain Awareness and Warning System (TAWS) - Class C ***	C	-	0	(O)	May be inoperative provided alternate procedures are established and used. NOTE: Any mode that operates normally may be used.
Terrain Awareness and Warning System (TAWS) - Class A or B TAWS Not Required by regulations	C	-	0		NOTE: Any mode that operates normally may be used.

DISCUSSION:

References: CAR 605.37, FAA PL 54 (Rev. 10)

This relief is predicated on the air carrier's development and use of a flight crew operational procedure for increased aircraft altitude and performance awareness.

ITEM: 34-40-2 GROUND PROXIMITY WARNING SYSTEM (GPWS) / TERRAIN AWARENESS AND WARNING SYSTEM (TAWS) (cont'd)

If there is no CAR requirement for a GPWS in an aircraft and no pilot dependency argument, category D could be appropriate. However, because of the strong safety argument, it is recommended that a foreign category C be retained.

FAA PL 54 as well as FARs use TAWS as the standardized terminology for this type of equipment, which includes GPWS Modes 1 to 7 plus Terrain System elements (FLTA, PDA, and displays). Some manufacturers use GPWS for the entire equipment and refer to the Terrain elements as "Enhanced GPWS".

FAA Differences: TCCA grants three flight days for repair whereas the FAA permits only two.

EASA Differences: EASA relief is six flights or two calendar days. Also, there are some differences on individual sub-items (i.e. TAWS modes).

ITEM: 34-40-3 WINDSHEAR DETECTION and AVOIDANCE SYSTEM (PREDICTIVE)

Windshear Detection and Avoidance System (Predictive) ***				
	B	-	0	(O) May be inoperative provided: a) Alternate procedures are established and used, and b) Takeoffs and landings are not conducted in known or forecast windshear conditions.
	C	-	0	(O) May be inoperative provided: a) Alternate procedures are established and used, and b) Windshear Warning and Guidance System (Reactive) operates normally.

DISCUSSION:

References: FAA PL 67 (Rev. 4)

There is no Canadian operational or aircraft certification requirement. For aircraft that do not require this system as per 14 CFR 121.358, TCCA accepts the FAA MMEL. For the other cases, above cat B and C relief cases apply.

Windshear Warning and Guidance System (Reactive) is normally designed as a function of the GPWS/TAWS.

FAA Differences: FAA includes relief cases for system installed in accordance with 14 CFR 121.358 as well as cat C relief for installations not required by regulations.

EASA Differences: EASA assigns cat C with no dispatch conditions.

ITEM: 34-40-4 TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS/ACAS)

Traffic Alert and Collision Avoidance System (TCAS/ACAS)					
TCAS II System	B	-	0	(M)	May be inoperative provided: a) System is deactivated and secured, and b) Enroute or approach procedures do not require its use.
	C	-	0	(M)	May be inoperative provided: a) Not required by regulations, b) System is deactivated and secured, and c) Enroute or approach procedures do not require its use.
1) Combined Traffic Alert (TA) and Resolution Advisory (RA) Dual Displays ***	C	2	1		May be inoperative on the non-flying pilot side provided TA and RA visual display and audio functions are operative on flying pilot side.
2) RA Display System(s)	C	2	1		May be inoperative on non-flying pilot side.
	C	-	0	(O)	May be inoperative provided: a) Traffic Alert (TA) visual display and audio functions are operative, b) TA only mode is selected by the crew, and c) Enroute or approach procedures do not require its use.
3) TA Display System(s)	C	-	0	(O)	May be inoperative provided: a) RA visual display and audio functions are operative, and b) Enroute or approach procedures do not require its use.

ITEM: 34-40-4 TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS/ACAS) (cont'd)

Traffic Alert and Collision Avoidance System (TCAS/ACAS)					
TCAS I System	B	-	0	(M)	May be inoperative provided: a) System is deactivated and secured, and b) Enroute or approach procedures do not require its use.
	C	-	0	(M)	May be inoperative provided: a) Not required by regulations, b) System is deactivated and secured, and c) Enroute or approach procedures do not require its use.
1) TCAS Display System(s)	C	-	0		May be inoperative provided all installed audio functions are operative.

DISCUSSION:

References: CAR 702.46, CAR 703.70, CAR 704.70, CAR 705.83, FAA PL 32 (Rev. 7)

Wording may need to be changed to reflect a specific configuration.

For some designs, failure of a VSI/TRA would cause loss of the VSI function and result in a limitation for IFR flight at night; see Item 34-10-3 Vertical Speed Indicators.

TCAS II (v 7.0) is required for RVSM operations.

ACAS is required in Canada as of July 1, 2007.

FAA Differences: FAA relief is different than TCCA in that TCAS I relief for TCCA is expanded to permit dispatch with display inoperative as done for TCAS II. Also, TCCA does not include relief for Audio Functions as well as Airspace Selection Function.

EASA Differences: EASA relief is cat A, ten calendar days.

ITEM: 34-50-1 NAVIGATION AND APPROACH AID EQUIPMENT

Navigation and Approach Aid Equipment					
1) VOR/ILS	C	-	-		Any in excess of those required by regulations and not powered by an emergency or standby electrical bus may be inoperative.
2) ADF, DME Systems	D	-	-		Any in excess of those required by regulations may be inoperative.
3) GPS, FMS, MLS, INS, LORAN, Marker Beacons	C	-	-	(O)	Except where enroute operations require its use, may be inoperative provided alternate procedures are established and used.
	D	-	-		May be inoperative provided procedures do not require its use.
4) GPS/FMS Database	C	-	0	(O)	One or more may be inoperative for the intended flight route where conventional (non-RNAV/RNP) navigation is sufficient, provided: a) Current aeronautical information (e.g. charts) is available for the entire route and for the aerodromes to be used, and b) Navigation database information is disregarded, and c) Radio navigation aids, which are required to be flown for departure, arrival and approach procedures are manually tuned and identified.

ITEM: 34-50-1 NAVIGATION AND APPROACH AID EQUIPMENT (cont'd)

4) GPS/FMS Database (cont')	C	-	1	(O)	Any in excess of one may be inoperative provided: a) The operative database must be up to date for routes, departures, arrival and approach procedures that require the use of navigation Database for RNAV/RNP, and b) The operative database is available and used by the flight crew member(s) responsible for navigation, and c) Radio navigation aids, which are required to be flown for departure, arrival and approach procedures are manually tuned and identified.
	A	-	0	(O)	One or more may be out of date for a maximum of 10 calendar days provided: a) Area Navigation (RNAV/RNP) departure, arrival and approach procedures are checked not to depend on the data amended in the current database cycle or Conventional (Non- RNAV/RNP) or ANSP assistance are used as an alternative to RNAV/RNP procedures which have been amended in the current database cycle, b) Before each flight, current aeronautical information is used to verify the database Navigation Fixes, the coordinates, frequencies, status (as applicable) and suitability of Navigation Facilities required for the intended flight route, and c) Radio navigation aids, which are required to be flown for departure, arrival and approach procedures and which have been amended in the current database cycle, are manually tuned and identified.

ITEM: 34-50-1 NAVIGATION AND APPROACH AID EQUIPMENT (cont'd)

DISCUSSION:

References: CAR 605.18, FAA AC 20-138C, FAA PL 3 (Rev. 1), PL 63 (Rev. 4), PL 98 (Rev. 1)

Items such as VOR, ILS, GPS, etc., serve as primary navigation and approach aid equipment in Canada and a cat C is considered appropriate.

Cat D equipment may or may not be installed and/or used by an operator. The MEL must reflect, through categorization, the nature of a specific operation (e.g. pilot dependency, frequency of use, etc.).

FAA Differences: FAA PL 3 only addresses DME.

EASA Differences: EASA relief for navigation equipment is similar to TCCA. EASA relief for database is identical to TCCA.

ITEM: 34-50-2 ATC TRANSPONDER and AUTOMATIC ALTITUDE REPORTING SYSTEM

ATC Transponder and Automatic Altitude Reporting System	B	-	0	May be inoperative provided: a) Operations do not require its use, and b) Prior to flight, approval is obtained from ATC facilities having jurisdiction over the planned route of flight.
	D	-	1	Any in excess of those required by regulations may be inoperative.
1) Elementary and Enhanced Downlink Aircraft Reportable Parameters not required by regulations	A	-	0	May be inoperative provided: a) Operations do not require its use, and b) Repairs are made prior to completion of the next heavy maintenance visit.

DISCUSSION:

References: CAR 605.35, FAA PL 76 (Rev. 7), PL 84 (Rev. 1)

Note that TCAS relief may drive this relief.

Depending on the design (e.g. CL 604), the following may be required in the MMEL:

“NOTE:
Transponder and Flight Director/Autopilot must use same ADC data for RVSM operations.”

National regulations may prohibit transmission of incorrect ADS-B data even when it is not used for operations of the aircraft, as it can affect Air Traffic Control safety and efficiency.

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA differentiates between modes A/C and S. EASA also includes different sets of reliefs for Enhanced Surveillance Functions as well as Extended Squitter Transmissions.

ITEM: 35-10-1 FLIGHT DECK OXYGEN SYSTEM

Flight Deck Oxygen System					
1) Bottle Pressure Indication	C	1	0	(M)	May be inoperative provided an acceptable method is used to confirm that adequate oxygen is available for the intended flight.
2) EICAS (or equivalent) Pressure Indication	C	1	0	(M)	May be inoperative provided an acceptable method is used to confirm that adequate oxygen is available for the intended flight.
3) Observer Seat	B/D	1	0		May be inoperative provided it is selected OFF and the seat is not occupied. NOTE: This relief must be checked because there may be designs where shutting off the Observer oxygen disables the supply to one of the flight crew members.

DISCUSSION:

References: CAR 605.31

Although the oxygen system is not required by CARs below 10,000 feet MSL, because of the oxygen requirements of smoke removal emergency procedures, it is not appropriate to grant relief for the flight crew members' equipment.

Category B/D is consistent with observer's seat dispatch relief (see item 25-10-3).

FAA Differences: Observer seat relief may differ.

EASA Differences: EASA relief is similar to TCCA.

ITEM: 35-20-1 PASSENGER OXYGEN SYSTEM

Passenger Oxygen System					
1) Entire System	B	1	0	(O)	May be inoperative provided: a) Minimum en route altitude does not exceed 13,000 feet above MSL, b) All air conditioning packs, if applicable, are operative, c) Pressurization system, if applicable, is operative, d) Flight remains at or below FL 250, e) Portable oxygen units are provided for all crew members and 10% of the passengers for half an hour (supplemental oxygen), and f) Passengers are appropriately briefed.
2) Automatic Presentation System	B	1	0		May be inoperative provided: a) The alternate flight deck deployment system is operative, and b) Flight remains at or below FL 300.
3) All Cargo Operations	D	1	0		May be inoperative provided: a) Portable oxygen bottles are available to all crew members required to be off the flight deck, and b) An automatic warning system is installed in the cargo area to alert of a decompression, if crew members are required to be in the cargo area during flight.
	D	1	0		May be inoperative provided all crew members are on the flight deck.

ITEM: 35-20-1 PASSENGER OXYGEN SYSTEM (cont'd)

DISCUSSION:

References: CAR 605.31, CAR 605.32, (First Aid Oxygen in CAR 703.68, CAR 704.67, CAR 705.72), AWM 523.1447, AWM 525.1447

Total amount of supplemental oxygen required in Portable Passenger Oxygen units (e) is in addition to the amount required for first aid oxygen in the CARs.

For the cat D relief, the automatic warning system should be aural, visual, or both depending on the flight deck warning system. The automatic warning system must be available in the cargo compartment and any other compartment such as a lavatory where the cargo compartment warning system may not be heard or seen.

Some aircraft designs comprise a single cylinder that supplies oxygen to passengers and flight crew through a common distribution line. For these cases, as flight crew member oxygen is required for dispatch, relief for oxygen system should not be permitted (e.g. SA226/227).

Some MMELs allow passenger oxygen system inoperative provided aircraft is operated unpressurized below 10,000 feet, which is acceptable.

FAA Differences: FAA identifies automatic deployment system under Passenger Service Units, does not specify a time under e).

EASA Differences: EASA includes relief for unpressurized as well as pressurized flights. The pressurized relief case requires supplemental oxygen (10% of passengers) for the entire flight time.

ITEM: 35-20-2 PASSENGER SERVICE UNITS (PSU) (DROP DOWN OXYGEN)

Passenger Service Units (PSU) (Drop Down Oxygen)	D	-	-	(M)(O) May be inoperative with no flight altitude restriction provided: a) Affected seats or banks of seats are blocked and placarded "INOPERATIVE" to prevent occupancy, b) No more than two consecutive banks of seats and their adjacent banks of seats have an inoperative PSU, and c) Units at assigned flight attendant locations are operative.

DISCUSSION:

References: CAR 605.31, AWM 525.1441 to AWM 525.1453

Proviso b) is only applicable on aircraft when flight attendants are carried. The reason that no more than two consecutive banks (a bank of seats is a grouping of two or more seats) of seats and their adjacent (cross aisle) banks of seats may have an inoperative automatic opening feature or an inoperative PSU is to enable flight attendants to carry out their immediate action procedure during a decompression.

The (O) addresses procedures to ensure no more than two consecutive banks of seats and their adjacent banks of seats have an inoperative PSU, and for occupants to be briefed on oxygen mask access.

The (M) addresses blocking and placarding of affected seats.

Refer to item 35-20-3 for Lavatory Oxygen.

FAA Differences: TCCA adds wording for clarification. TCCA permits cat D for individual PSUs (FAA cat B).

EASA Differences: EASA relief is cat B.

ITEM: 35-20-3 LAVATORY OXYGEN

Lavatory Oxygen	C	-	-	(M)(O)	May be inoperative provided: a) The lavatory is not used for any purpose, and b) The lavatory door is locked and placarded “INOPERATIVE - DO NOT ENTER”. NOTE: This does not preclude storage of in-flight service waste bags in the associated lavatory.
	C	-	-		May be inoperative provided the aircraft is not operated above FL 250.

DISCUSSION:

References: CAR 605.31, AWM 525.1447

FAA Differences: No FAA Policy Letter exists for this item.

EASA Differences: EASA addresses lavatory oxygen as part of PSU relief with cat B.

ITEM: 35-20-4 CREW REST FACILITY - DROP DOWN OXYGEN MASKS

Crew Rest Facility - Drop Down Oxygen Masks	C	-	-	(M)(O)	One or more may be inoperative provided the associated bunk is not occupied and placarded “INOPERATIVE - DO NOT USE”.
	C	-	-	(M)(O)	One or more may be inoperative and associated bunk may be occupied provided a portable oxygen bottle with mask attached is available for the associated bunk occupant. NOTE: Portable oxygen bottle must be properly secured in the associated bunk.

DISCUSSION:

References: nil

FAA Differences: FAA does not have a policy letter for this item.

ITEM: 35-30-1 PORTABLE OXYGEN DISPENSING UNITS (BOTTLE AND MASK)

Portable Oxygen Dispensing Units (Bottle and Mask)	D	-	-	(M)(O)	Any in excess of those required by regulations may be inoperative or missing provided: a) Required distribution of operative units is maintained throughout the aircraft, b) The inoperative portable oxygen dispensing unit is removed from the passenger cabin and its location is placarded "INOPERATIVE", or it is removed from the installed location, secured out of sight and the portable oxygen dispensing unit and its installed location are placarded "INOPERATIVE", and c) Procedures are established and used to alert crew members of inoperative or missing equipment.

DISCUSSION:

References: CAR 605.31, CAR 703.68, CAR 704.67, CAR 705.72, CAR 705.94

For all cargo operations portable oxygen units would be required for crew members likely to be in the cargo area during flight.

FAA Differences: FAA MMELs include provisions for requiring that the bottles to be serviced, replaced or removed at the next maintenance facility.

EASA Differences: EASA relief is identical to TCCA.

ITEM: 35-30-2 PROTECTIVE BREATHING EQUIPMENT (PBE)

Protective Breathing Equipment (PBE)	D	-	-	(M)(O) Any in excess of those required by regulations may be inoperative or missing provided: a) Required distribution of operative units is maintained throughout the aircraft, b) The inoperative protective breathing equipment unit is removed from the passenger cabin and its location is placarded "INOPERATIVE", or it is removed from the installed location, secured out of sight and the protective breathing equipment unit and its installed location are placarded "INOPERATIVE", and c) Procedures are established and used to alert crew members of inoperative or missing equipment.

DISCUSSION:

References: CAR 604.118, CAR 703.67, CAR 704.66, CAR 705.71, FAA PL 43 (Rev. 3)

The (O) will establish procedures to alert crew members of the inoperative or missing equipment. The (M) will provide instructions to placard the unit or remove it from the aircraft.

FAA Differences: FAA relief is similar to TCCA, however, TCCA requires the inoperative unit be removed from the passenger cabin or installed location. The FAA allows the inoperative unit to remain in the installed location provided placarding is removed or obscured.

EASA Differences: EASA relief includes a note to remind flight crew that inoperative PBE units may be subject to dangerous goods requirements. PBE is found under CS-MMEL ATA 25.

ITEM: 36-00-1 PNEUMATICS (ETOPS)

Pneumatics (ETOPS)	C	-	-	No relief allowed for ETOPS beyond 120 minutes for any pneumatic component that requires the “no flight in known or forecast icing conditions” proviso.

DISCUSSION:

References: FAA PL 40 (Rev. 3)

Improved forecasting of icing conditions may permit relief of these items beyond 120 minutes, as long as the new forecasting techniques have been accepted by the applicable authority.

FAA Differences: FAA relief is similar to TCCA except that the FAA has expanded their discussion to permit alternate icing forecasting techniques.

ITEM: 38-10-1 POTABLE WATER SYSTEMS

Potable Water Systems	C	-	0	(M)(O)	May be inoperative provided: a) System is drained, and b) Procedures are established to ensure that system is not serviced. NOTES: 1. The (O) procedure addresses other means for water provision for crew members as well as the need to advise of system status during crew changes. 2. Aviation Occupational Health & Safety (AOH&S) requirements should be addressed.
	C	-	-	(M)	Individual components may be inoperative provided: a) Associated components are deactivated or isolated, and b) Associated system components are verified not to have leaks. NOTE: Any portion of the system that operates normally may be used.

DISCUSSION:

References: FAA PL 83 (Rev. 8)

Because there are two possible designs, one with the lavatory and potable water systems completely independent and one with the two systems linked, the MEL will need to provide appropriate system specific relief.

FAA Differences: First relief of TCCA includes a (O) and Notes.

ITEM: 38-30-1 LAVATORY WASTE SYSTEMS

Lavatory Waste Systems	C	-	-	(M)	Associated lavatory system may be inoperative provided: a) Associated components are deactivated or isolated to prevent leaks, and b) Associated lavatory door is secured closed and placarded, “INOPERATIVE - DO NOT ENTER”. NOTE: 1. These provisions are not intended to prohibit inspections by crewmembers. 2. Aviation Occupational Health & Safety (AOH&S) requirements should be addressed.
Aircraft that provide passenger access to an emergency exit through the lavatory	C	-	-	(M)	Associated lavatory system may be inoperative provided: a) Associated components are deactivated or isolated to prevent leaks, and b) Associated lavatory is not used for any purpose except in an emergency requiring rapid deplanement or evacuation. NOTE: Aviation Occupational Health & Safety (AOH&S) requirements should be addressed.
	C	-	-	(M)	Individual components may be inoperative provided: a) Associated components are deactivated or isolated, and b) Associated system components are verified not to have leaks. NOTE: Any portion of the system that operates normally may be used.

ITEM: 38-30-1 LAVATORY WASTE SYSTEMS (cont'd)

DISCUSSION:

References: FAA PL 83 (Rev. 8)

Because there are two possible designs, one with the lavatory and potable water systems completely independent and one with the two systems linked, the MEL will need to provide specific system relief.

Recent ETOPS approval (both in US as well as in Canada) for the CSeries (A220) aircraft requires a minimum of two operative lavatories. That is reflected in the CMP (Configuration, Maintenance and Procedures) document in compliance with Appendix K to 14 CFR Part 25. It is expected that type certification of new aircraft models will include similar limitation. For those cases, the aircraft manufacturer is to evaluate and propose the minimum number of lavatories for ETOPS taking into account the maximum passenger capacity.

Appendix K specifically requires the applicant to consider the physiological needs of occupants.

FAA Differences: FAA relief is identical to TCCA. However, TCCA includes a relief case for aircraft that provide passenger access to an emergency exit through the lavatory.

ITEM: 46-20-1 ELECTRONIC FLIGHT BAGS (EFB)

Electronic Flight Bag Systems (EFBs) ***					
	C	-	-	(O)	May be inoperative provided alternate procedures are established and used. NOTE: Any function, program or document which operates normally may be used.
	D	-	0		May be inoperative provided procedures do not require its use.
Data Connectivity	C	-	-	(O)	May be inoperative provided alternate procedures are established and used.
	D	-	0		May be inoperative provided procedures do not require its use.
Power Connection	C	-	-	(O)	May be inoperative provided alternate procedures are established and used.
	D	-	0		May be inoperative provided procedures do not require its use.
Mounting Device	C	-	0	(M)(O)	May be inoperative provided: a) Associated EFB and hardware is secured by an alternate means or removed from the aircraft, and b) Alternate procedures are established and used.
	D	-	0	(M)	May be inoperative provided: a) Associated EFB and hardware is secured by an alternate means or removed from the aircraft, and b) Procedures do not require its use.

ITEM: 46-20-1 ELECTRONIC FLIGHT BAGS (EFB) (cont'd)

DISCUSSION:

References: FAA PL 121 (Original), FAA AC 120-76A, TCCA AC 700-020

The purpose of this Guidance Book Item is to establish guidelines for Master Minimum Equipment List (MMEL) relief for Electronic Flight Bags (EFBs) and associated software applications.

FAA Differences: FAA PL 121 (original issue) refers to EFB classes.

EASA Differences: CS-MMEL and CS-GEN-MMEL refer to EFB classes.

ITEM: 49-10-1 AUXILIARY POWER UNIT (APU)

Auxiliary Power Unit (APU)	C/D	1	0	May be inoperative. (See Discussion for ETOPS considerations)

DISCUSSION:

References: FAA PL 40 (Rev. 3)

Because of the many variables to be considered in granting relief for an APU, it may be appropriate to include a NOTE in the MMEL to the effect that: Based on specific operational considerations the MEL may be more restrictive.

Assignment of a category C or D must be made in the context of:

1. Optional/standard installation,
2. Air and/or ground use, and
3. Crew dependency.

Relief may be prohibited for ETOPS if the APU has been determined to be essential equipment during the ETOPS approval process (e.g. A 310).

Other considerations might be the need to de-ice with the engines off and the need for an APU to subsequently start the engines.

It is intended that foreign MMEL relief will be accepted.

Relief for APU generated electrics, air, etc. should be the same category as the APU. It may also be necessary to review relief for APU fire protection in Section 26.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY)

Emergency Exits and Escape Slides (Passenger Carrying Operations)	A/B			(M)(O) One emergency exit/slide may be inoperative for one flight day provided: a) Affected door is not used for passenger loading, b) Affected exit is verified closed, latched and locked prior to each flight. Inoperative slide must be removed or deactivated or secured, c) A conspicuous placard indicating that the exit is inoperative is attached to the exit in accordance with Note 2, d) Emergency exit signs and lights associated only with the inoperative exit are obscured (Note 3), e) Flight crew members and flight attendants are advised of the nature (emergency exit and slide availability) and extent of the unserviceability and that evacuation procedures do not include affected exit, though opposite exit may be used, f) Passenger capacity limitations and blocked seating layouts are developed by the air carrier and approved by Transport Canada (Note 4) for inclusion in the carrier's MEL, g) Restricted seating areas are clearly indicated by blocking with barrier tape prior to passenger boarding (Notes 5 and 6), h) Main passenger aisle(s), (cross aisles if applicable), and exit access areas are not blocked,

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY) (cont'd)

Emergency Exits and Escape Slides (Passenger Carrying Operations) (cont'd)			i) A video pre-departure safety briefing that includes emergency exits is not conducted. The live pre-departure briefing must include: 1. Identification of the inoperative exit, 2. Instructions that the affected exit is not to be used, 3. Instructions regarding the most appropriate evacuation routing, and 4. Identification of the area which is prohibited from use during takeoff and landing. j) Persons other than assigned flight attendants are not seated in the blocked area for taxi, takeoff and landing, k) A flight attendant is stationed at the emergency exit opposite to the inoperative exit during take-off and landing (Note 7), and l) Smoke removal procedures are not predicated on the use of the affected exit. NOTES: 1. Relief is only permitted for a forward or overwing exit which can be readily opened. Relief for an aft exit does not require it to be readily opened. Relief is not permitted for an evacuation slide which is fed by two exits.

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY) (cont'd)

Emergency Exits and Escape Slides (Passenger Carrying Operations) (cont'd)			NOTES: (cont'd) 2. The placard shall consist of the following (or approved equivalent): a) A white circular disc of at least 25 cm in diameter with a red band around its periphery, and a red diagonal line across its diameter at a 45-degree angle ascending from left to right. The thickness of the red band and line is to be a minimum of 2.5 cm. b) The following text below the disc - "NO EXIT" "SORTIE INUTILISABLE" in red letters at least 3.5 cm in height on a white background. c) The placard shall be affixed by a means that will prevent it from being dislodged under the dynamic forces expected during an emergency landing (AWM 525.561 or equivalent depending on certification basis). It must not obscure the emergency exit window. 3. Exit locator signs and emergency aisle path markings which are shared between two exits must not be obscured. 4. Any application for MEL relief of this item must be accompanied by all supporting data including a configuration drawing indicating the seats that will be blocked. The request for relief must be submitted to the MEL approval authority for approval coordination.

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY) (cont'd)

Emergency Exits and Escape Slides (Passenger Carrying Operations) (cont'd)			NOTES: (cont'd) 5. If infrangible, the barrier tape must be removed after passenger boarding and after the announcement that the indicated areas are prohibited from use. If frangible, the tape may remain in place for takeoff and landing but must easily tear so as not to become a means of entanglement during an evacuation. 6. The seating capacity shall be determined by the use of the analysis method described in the Performance Standards Working Group Emergency Evacuation Subcommittee - Aviation Rule making Advisory Committee (ARAC) Report: "Emergency Evacuation Requirements and Compliance Methods that Would Eliminate or Minimize the Potential for Injury to Full Scale Evacuation Demonstration Participants" dated 93.04.02. In addition to the foregoing, a review of the cabin interior layout shall be conducted in order to identify appropriate zonal division lines. 7. A flight attendant may be stationed at the inoperative exit during taxi, take-off and landing.

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY) (cont'd)

Emergency Exits and Escape Slides (Passenger Carrying Operations) (cont'd)			NOTES: (cont'd) 8. For extended overwater operations, occupancy must not exceed the normal rated capacity of the remaining slide rafts, or the rated overload capacity of the slide rafts remaining after loss of one additional slide raft of greatest capacity, whichever is less. The minimum number of required ditching exits must be available as per AWM 525.807 or equivalent depending on the basis of certification. 9. Weight and balance manifest must be revised as necessary to ensure proper loading limits are observed. 10. On all-cargo and combination passenger/cargo aircraft, exit(s) located in the cargo area may be inoperative except, where applicable at least one exit must be operative for flight crew evacuation purposes.

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY) (cont'd)

Emergency Exits and Escape Slides (Passenger Carrying Operations) (cont'd)			NOTES: (cont'd) 11. The carrier must keep a record, for examination by Transport Canada, of each instance where this relief has been exercised. This record must be forwarded quarterly to the MEL approval authority. Following is a list of data which must be included in that record: a) Carrier b) Aircraft type, series and registration number c) Location of aircraft d) Date e) Exit involved f) Seating capacity, number of passengers offloaded and number of passengers carried g) Cause (including occupation of person involved) and nature of occurrence h) Point in itinerary (departure, arrival, servicing, maintenance) i) When and where repairs made j) Corrective action taken (e.g. training, procedures, design) to preclude recurrence k) Number of hours inoperative l) Flight itinerary to repair base m) Estimated cost (including details) if relief had not been available. n) Cumulative total of occurrences per 1000 departures

ITEM: 52-10-1 EMERGENCY EXITS AND ESCAPE SLIDES (PASSENGER CARRYING OPERATIONS) (WIDE BODY AIRCRAFT ONLY) (cont'd)

DISCUSSION:

References: FAA PL 1 (Rev. 4)

Since the initial door/slide relief was granted by the FAA and TCCA for the B747, DC10, L1011 and A300 aircraft, considerable discussion has taken place between industry and the regulatory authorities regarding the possible extension to other aircraft. After extensive discussion with industry and within Transport Canada, further relief for passenger carrying operations is permitted under the following conditions:

1. The conditions under which short term relief is granted are based on the TC Guidance Book MMEL Working Group guidelines as detailed above.
2. Relief is only applicable to aircraft equipped with at least four Type I or greater floor level door exits arranged essentially at the front and rear of the airplane as facing pairs. The analysis method shall be used to determine seating capacity and arrangement in applications for new aircraft (not including 747, L1011, A310 and DC 10), although the method **may** also be used in determining seating capacity and arrangement for these four aircraft. All other details of this relief are also applicable to the B747, DC10, L1011 and A300 **except for the categorization (B) which will remain unchanged**. It must be noted that the category B only applies to inoperative doors in the cargo compartment of freighter and combi aircraft. (Ref. Note 10 of provisos).
3. **The initial intention of TCCA was that all MMEL/MEL relief for emergency exits/slides would have terminated on August 1, 1996.** This was to provide short term relief to operators while defining a time frame during which Transport Canada expected operators and manufacturers to identify and correct the problems which are causing these safety critical systems to be unavailable. Although TCCA and Industry have not resolved all interested parties concerns, it is considered appropriate to continue with the relief.
4. Operators are to continue reporting each instance when this relief is utilized and provide detailed information concerning the occurrence. This information should also include the impact on their operation. This data bank will allow Transport Canada to closely track the problems being experienced and progress on their resolution, and to understand the implications if this relief is withdrawn.
5. TCCA will continue participating in domestic and international forums on this issue.

A door that is certified as an emergency exit is considered an emergency exit for MMEL purposes.

FAA Differences: TCCA uses the ARAC process to determine the seats to be blocked off while the FAA uses different techniques to determine the seats to be blocked off.

EASA Differences: Different relief and pax reduction calculation method is provided in CS-MMEL.

ITEM: 52-10-2 EMERGENCY EXITS AND ESCAPE SLIDES (AIRCRAFT CREW ONLY)

Emergency Exits/Escape Slides (Aircraft Crew Only)	A	-	-	(M)(O) One emergency exit/slide may be inoperative for three flight days provided: a) Only the aircraft crew are carried, b) Affected emergency exit is verified closed, latched and locked prior to each flight, c) Aircraft crew are advised of the nature (emergency exit and slide availability) and extent of the unserviceability and that evacuation procedures do not include affected exit, though opposite exit may be used, d) A conspicuous sign or placard indicating that the exit is inoperative is attached to the exit, and e) Emergency exit signs and lights associated only with the inoperative exit are obscured (NOTE 3). NOTES: 1. For the purpose of this item, “aircraft crew” includes the operating crew members including the flight crew members, flight attendants, aircraft maintenance personnel and supervisory crew members. 2. The operator’s MEL must state the maximum number of aircraft crew permitted. 3. Exit locator signs and emergency aisle path markings which are shared between two exits must not be obscured.

DISCUSSION:

References: FAA PL 1 (Rev. 4)

ITEM: 52-10-2 EMERGENCY EXITS AND ESCAPE SLIDES (AIRCRAFT CREW ONLY) (cont'd)

This relief pertains to large aircraft with multiple entries on each side of the aircraft. It is intended for the aircraft crew only, to facilitate flying to a maintenance facility with only the aircraft crew on board.

NOTE #2 requires the operator to state the maximum number of aircraft crew permitted. The maximum number of aircraft crew would be determined by adding the number of the operating crew members that would likely be scheduled on the aircraft type, plus the number of maintenance personnel who would likely be scheduled to remain with the aircraft when flying to destinations where the air operator does not have any contracted maintenance agreement, plus the maximum number of supervisory crew members who would likely be carrying out an in-flight check ride at one time.

Emergency Exit/Escape Slide (Aircraft Crew Only) relief is not intended for all cargo operations.

This relief would not be applicable to aircraft such as the CL 600 which have no cockpit escape routes and no multiple emergency exits on each side of the aircraft. If this relief were granted for the CL 600, safety would be significantly reduced for the crew trying to escape with one emergency exit inoperative.

There must be at least a cockpit roof escape hatch or an escape path on each side of the cockpit; OR only flight crew members (pilots, and engineer if appropriate) are carried and there is at least one operative emergency exit on each side of the aircraft.

A door that is certified as an emergency exit is considered an emergency exit for MMEL purposes.

FAA Differences: FAA only addresses all cargo aircraft. FAA allows all slides except L1 and R1 to be inoperative, cat C. Exit L1 or R1 can be inoperative, cat B. FAA specifies essential crew members whereas TCCA is more specific. FAA does not assign (O) or (M).

EASA Differences: Different relief and pax reduction calculation method is provided in CS-MMEL.

ITEM: 52-10-3 NARROW-BODY ALL CARGO AIRCRAFT SLIDE RELIEF

Narrow-Body All Cargo Aircraft Slide Relief				
Main Cabin Slides (All Cargo Configuration)	C	-	-	All slides in the cargo area with the exception of L1 and R1 may be inoperative provided: a) Exits L1 and R1 are accessible to all crew members, and b) The aisle(s) between the flight deck and the cargo crew members' assigned seating location are not wholly or partially blocked by cargo.
	B	-	0	All slides may be inoperative provided: a) All crew members are on the flight deck, and b) An alternate means of egress is available

DISCUSSION:

References: CAR 705, CAR 602.86(2)(a), AWM 525.809(a), AWM 525.810(a)(2), FAA PL 99 (Rev. 2)

Narrow-body all cargo slide relief is intended for aircraft with multiple exits on both sides of the aircraft. Narrow-body all cargo aircraft require emergency exits for the flight crew to be a door or hatch in the external wall of the fuselage (AWM 525.809(a)). One of these must be located on each side or alternately an overhead hatch. These exits may be equipped with a rope as a means to assist personnel to ground level (AWM 525.810(2)). Generally, the flight crew emergency exits are the sliding cockpit windows, equipped with ropes stored in a compartment in the upper sidewall above each sliding window. Relief is only applicable to all cargo operations conducting operations in an air transport service pursuant to Airline Operations regulated by CAR 705.

FAA Differences: FAA relief has been granted in accordance with Policy Letter 99. TCCA relief is more restrictive, as it does not provide for relief without restrictions for the L1 or R1 exits.

ITEM: 52-50-1 ENHANCED FLIGHT DECK SECURITY DOOR

Enhanced Flight Deck Security Door Primary Locking System (Passenger and Combi Aircraft Only)					
1) Decompression Function Dependent on Primary Door Locking System	A	1	0	(M)(O)	May be inoperative provided: a) Primary locking system is deactivated, b) Secondary locking system operates normally and is used to lock the door, c) Alternate procedures are established and used for locking and unlocking the door using the secondary locking system, and d) Repairs are made within two flight days.
2) Decompression Function Independent of Primary Door Locking System	C	1	0	(M)(O)	May be inoperative provided: a) Primary locking system is deactivated, b) Secondary locking system operates normally and is used to lock the door, and c) Alternate procedures are established and used for locking and unlocking the door using the secondary locking system.
Secondary Locking System (Passenger and Combi Aircraft Only)	C	1	0		May be inoperative provided primary locking system operates normally.

DISCUSSION:

References: AWM 525.795, CAR 705.80, FAA PL 112 (Rev. 2)

ITEM: 52-50-1 ENHANCED FLIGHT DECK SECURITY DOOR (cont'd)

According to the design standards specified by AWM 525.795 (applicable to Transport Category Aeroplanes), a flight deck door, as required by CAR 705.80, must meet specific intrusion and penetration resistance requirements. In addition, CAR 705.80(2) requires that such door be equipped with a locking device.

Relief cannot be granted either to the flight deck door as a whole system or to its locking system. However, relief for specific sub-systems/items is granted taking into consideration the next probable failure condition, providing the level of safety, as defined by the design standards, is maintained.

FAA Differences: FAA relief is identical to TCCA.

EASA Differences: EASA relief is different and refers to decompression function just in CS-MMEL Additional Considerations.

ITEM: 52-70-1 EXTERNAL DOOR(S) INDICATION SYSTEM

External Door(s) Indication System	N/A	1	1	No relief for a red door warning light, if opening of the door during takeoff would present a hazard.
	C	1	0	Relief may be granted for an amber door caution light but this assumes that the choice of an amber light during the certification of the aircraft was correct (see DISCUSSION). If, however, an immediate hazard could be present if a door were to become unsafe then no relief should be granted no matter what the light colour.

DISCUSSION:

References: FAA Internal Letter (17 Nov. 1989), FAA PL 69 (Rev. 2)

A red visual warning shall be used for all outward opening doors whose opening during takeoff could present an immediate hazard to the airplane.

An amber caution light shall be used for all other doors, including plug door designs. Clearly, the colour of the warning indication light(s) must be based on an assessment of hazard and MMEL relief approved accordingly.

For EICAS it is unacceptable to dispatch with an amber message visible to the pilot, i.e. there must be a capability to hide the message.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 61-20-1 PROPELLER SYNCHROPHASING SYSTEM

Propeller Synchrophasing System	C/D	1	0	May be inoperative.

DISCUSSION:

References: nil

Although a category D is possible, the workload and fatigue aspects of being required to manually synchronize the propellers may require an upgrade to category C in the MEL. Each aircraft must be evaluated on its own merit.

FAA Differences: The FAA assigns a category C.

ITEM: 73-20-1 FULL AUTHORITY DIGITAL ELECTRONIC CONTROL (FADEC)

Full Authority Digital Electronic Control (FADEC)	A	-	-	May be dispatched with FADEC faults provided repairs are made in accordance with times established by either engine or aircraft manufacturer, whichever is more restrictive. No repair or inspection interval extensions are permitted.

DISCUSSION:

References: FAA PL 45 (Rev. 2)

The above-mentioned generic phraseology is only a guide for the development of MELs. Details of reporting requirements, relief requested and granted, etc. will be resolved at the MMEL level with TCCA National Aircraft Certification.

Other items covered under the TCDS Time Limited Dispatch (TLD) analysis may also be included in the MMEL in their respective ATA chapters.

It is noted that these items must not be extended under the MEL extension program. Therefore the following guidelines apply:

1. MELs must be developed with FADEC reference specifically to the operator's equipment and applicable TCDS limitations. With respect to FADEC system TLD operations, the more restrictive of the engine or aircraft manufacturer's limitations must be applied,
2. TCDS-controlled items are not to be extended under current MEL extension guidelines,
3. TLD certification requirements are accomplished within the established time intervals,
4. TLD certification requirements are not adjusted or extended without TCCA National Aircraft Certification Engineering approval,
5. TLD reliability reporting requirements are being met, and
6. Operators are advised that failure to comply with the engine or aircraft TCDS requirements related to TLD, whichever is more restrictive, would be contrary to the intent of MMEL relief, and could result in loss of TLD authorization.

FAA Differences: FAA relief is identical to TCCA.

ITEM: 73-30-1 FUEL FLOW/PRESSURE INDICATIONS

Fuel Flow/Pressure Indications	B/C	-	-	One may be inoperative provided appropriate related engine instruments and fuel quantity indications are operative.

DISCUSSION:

References: AWM 523.1305(c)(2), AWM 525.1305(b)(5) and (c)(2)

Appropriate related engine instruments could be, for example, N1, N2, etc. (aircraft specific) which would permit an assessment of engine performance without fuel flow information.

The determination of the B or C category is dependent upon the engine instrumentation configuration of the specific aircraft being evaluated.

FAA Differences: FAA assigns cat C to B767, cat B to SAAB 340. FAA does not permit relief for analogue readout of fuel pressure indication.

ITEM: 77-00-1 ENGINE INSTRUMENTS

Engine Instruments				NOTE: See 77-10-1 PRIMARY POWER SETTING INSTRUMENTS.
	C	-	-	For primary (NH (engine core), NP (propeller), ITT, etc.) and secondary (Oil Temp, Oil Press, etc.) engine indicators which have both analogue and digital readouts, the digital displays may be inoperative. For the secondary indicators which have both analogue and digital readouts, the analogue displays may be inoperative provided the digital display uses some method such as colour changes to incorporate limitations.
	C	-	-	The N2 indicator, of a three spool engine, may be inoperative when the speed performs no control function and is effectively limited by the basic engine control and operation.

DISCUSSION:

References: FAA PL 13 (Rev. 1), PL 38 (Rev. 1)

Analogue indications provide the best rate information to assist in not exceeding limitations.

From a human factors perspective it is also easier to match analogue indicators (reduced work load) rather than having to interpret digital information. Some aircraft such as the RJ have only a digital presentation of oil pressure and oil temperature.

The A320 only presents oil pressure information to the pilot during the start, and subsequently, if some limitation is reached.

The information is available on a system synoptic page.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 77-10-1 PRIMARY POWER SETTING INSTRUMENTS (THREE/FOUR ENGINE AIRCRAFT)

Primary Power Setting Indicators	B	-	-	Relief for a primary power setting indicator (TQ (torque), N1 (fan), N2 (engine core), EPR (engine pressure ratio)) can be permitted (three/four engine aircraft) provided alternate means of setting power are certified.

DISCUSSION:

References: AWM 525.1305(d)(1), FAA PL 38 (Rev. 1)

Any relief would only be permitted if another instrument on the affected engine is also certified as a means of complying with the design standard, that is, the MMEL relief would be contingent on an airworthiness certification.

FAA Differences: FAA relief is similar to TCCA.

ITEM: 77-30-1 ENGINE VIBRATION MONITORS

Engine Vibration Monitors					
If required by the certification basis	C	-	0	(M)	May be inoperative provided an approved maintenance reliability program (which includes engine vibration monitoring) is in place.
For ETOPS	A	-	0	(M)	May be inoperative for one flight day provided an approved maintenance reliability program (which includes engine vibration monitoring) is in place.
If not required by the certification basis	D	-	0		

DISCUSSION:

References: AWM 525.1305(d)(3)

EVMs were introduced as an engine trend monitoring tool, and the loss of a single data point (during ETOPS dispatch) is not considered significant. However, it is not considered appropriate to allow the same relief as for non-ETOPS due to the increased need to be able to confirm engine health prior to an extended range departure.

Based on specific design considerations or adverse service experience a more restrictive category could be assigned.

The intent of the (M) procedure is for maintenance to verify that recent history of engine parameters shows no adverse trends.

The requirement for an indicator of rotor unbalance was added to 14 CFR 25 in Amendment 25-35 of March 01, 1974.

FAA Differences: FAA relief is slightly different than TCCA. As an example, the FAA permits EVM relief as a cat C on the B767 with no ETOPS mention.

ITEM: 78-30-1 THRUST REVERSERS

Thrust Reversers	C	-	-	(M)(O)	For large aircraft (more than 19 seats) at least 50% must be operative for dispatch provided: a) Inoperative thrust reversers are stowed and locked, and b) Applicable AFM performance penalties are applied.
	C	-	-	(M)(O)	For <u>smaller aircraft</u> (19 seats or fewer), both thrust reversers may be inoperative provided: a) Inoperative thrust reversers are stowed and locked, and b) Applicable AFM performance penalties are applied.

DISCUSSION:

References: FAA PL 26 (Rev. 1)

The requirement for 50% of the thrust reversers on <u>large aircraft</u> (more than 19 seats) to be operative has been adopted from the FAA policy (TCA AARXB, 10 May 91 refers). As an aside, it is noted that the FAA are considering requiring all thrust reversers to be operative for large two engine aircraft for increased safety (performance) reasons. Thrust reverser asymmetry will have to be considered for the four-engine configurations to ensure a double-asymmetry condition is not permitted. For these cases, inoperative thrust reversers should be located on symmetrical engines.

EASA, in general, permit all thrust reversers to be inoperative as there is no airworthiness design requirement or performance credit given. There is considerable FAA/EASA/TCCA activity regarding operation from wet and contaminated runways and in some instances performance will be based on credit for thrust reversers. In these instances, dispatch would not be permitted or some sort of performance penalty would need to be applied.

The (M) and (O) procedures must address deactivation and operational procedures beyond those included in the AFM.

FAA Differences: Except for FAA inconsistencies, TCCA relief is identical. FAA PL only addresses small turbojet airplanes.