EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

EASA Powerplant Installation Fire Certification Issues

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- 2D Nacelle (CS 25.867)
- Nacelle / Cowling Fire Withstanding capability (CS 25.1193 / CS 25J1193)
- Halon Replacement (All CS)

2D Nacelle (CS 25.867)

25.867 – the EASA view

CS 25.867 Fire protection: other components

(a) Surfaces to the rear of the nacelles, within one nacelle diameter of the nacelle centre line, must be constructed of materials at least equivalent in resistance to fire as aluminum alloy in dimensions appropriate for the purpose for which they are used.

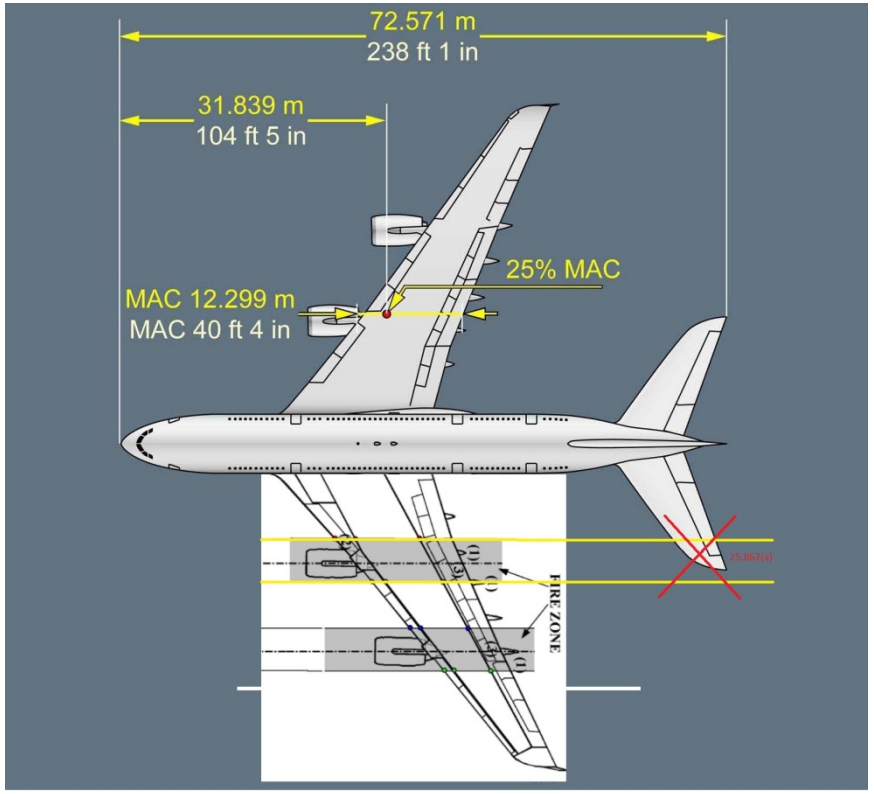
(b) Sub-paragraph (a) of this paragraph does not apply to tail surfaces to the rear of the nacelles that could not be readily affected by heat, flames, or sparks coming from a designated fire zone or engine compartment of any nacelle.

25.867 - Rule interpretation

- Rule require fire withstanding capability of the structures at the rear of the nacelle.
  - Typically:
    - the wing including leading and trailing edges for wing mounted engine,
    - fuselage for rear mounted engine,
    - nacelle and pod.
- Reference material is aluminum.
- For equivalency to aluminum, iaw CS-Definitions, EASA interpretation of CS 25.867(a) is to have fire resistant surfaces, using ISO 2685

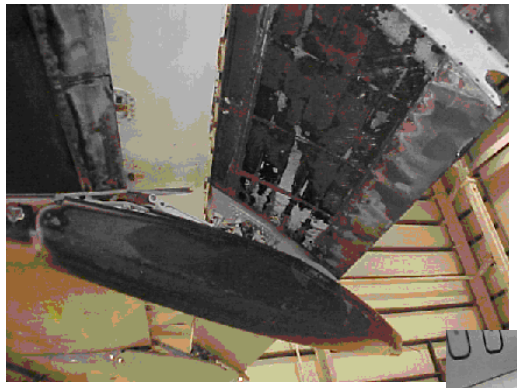
25.867 - Rule interpretation

- For wing mounted engine, CS 25.867(b) dispense tail surfaces from showing compliance with 25.867 (a), if they are not directly under threat from the engine.



25.867 - Background to the rule

- 25.867 set forth some basic heat withstanding capability for the nacelle and its surrounding structure, covering normal functioning and some recurrent issues, such as tailpipe fire.



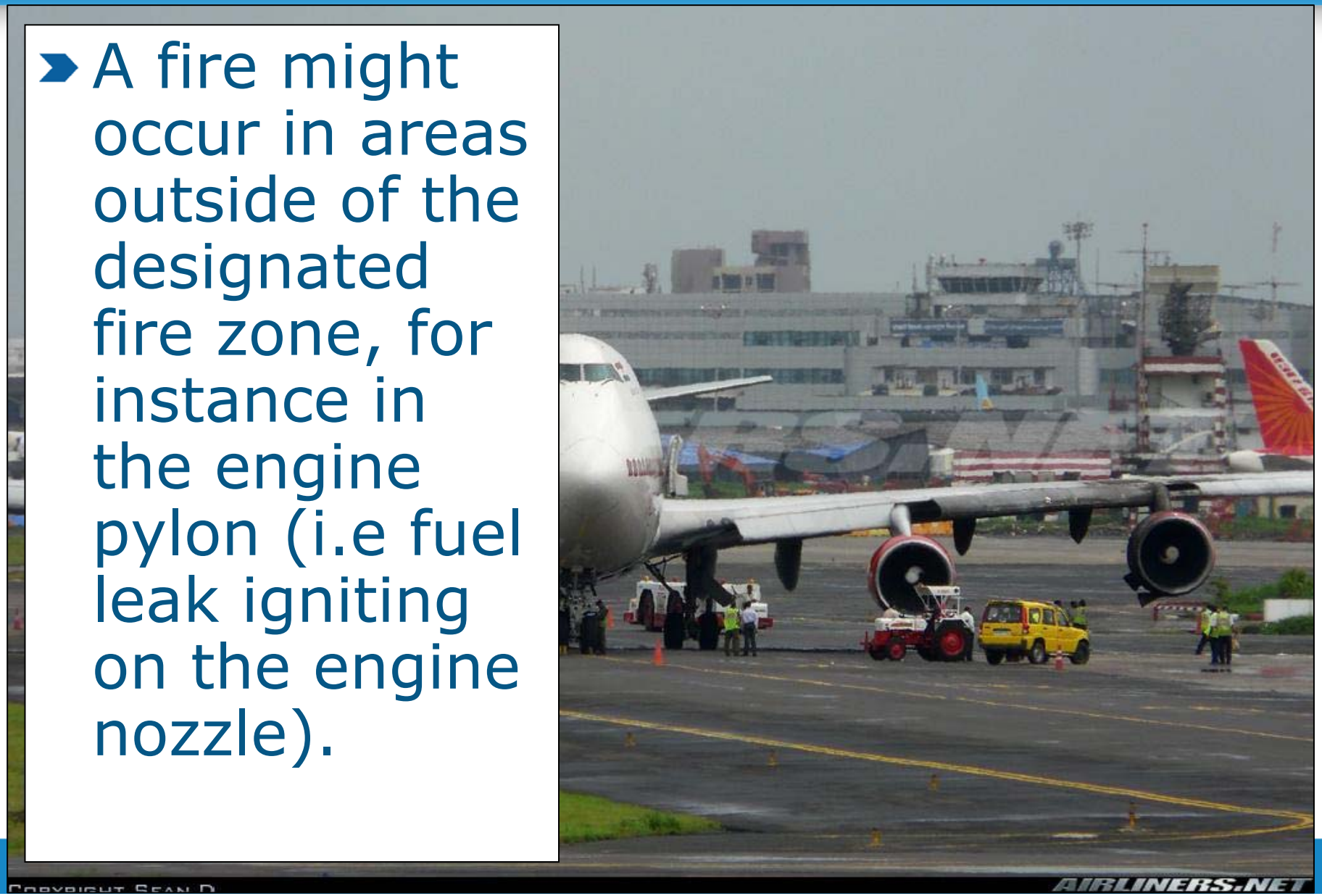
25.-867 - Background to the rule

- The normal CS 25 fire containment system has been defeated implemented by CS 25.1181 to 25.1207, and the fire breaches the firewall and/or the cowls, possibly migrating to other areas of the aeroplane.


FedEx DC-10-10F N375FE at Boston, 6 March 2001 / source: anonymous

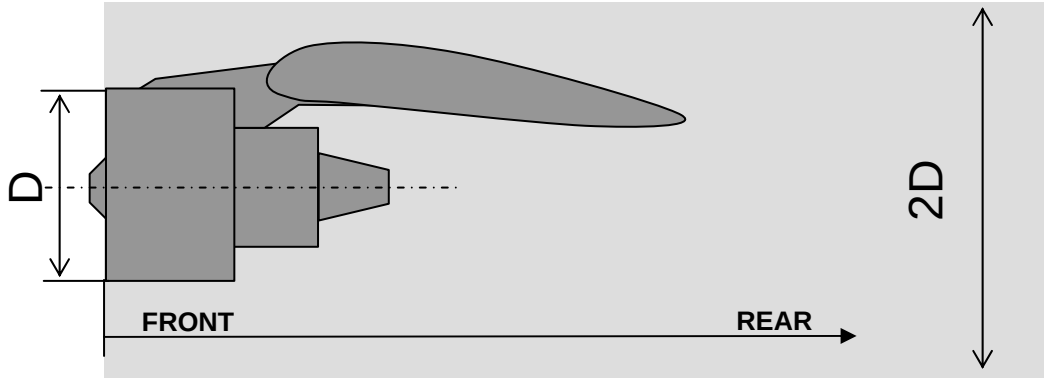
25.867 - Background to the rule

- A fire might occur in areas outside of the designated fire zone, for instance in the engine pylon (i.e fuel leak igniting on the engine nozzle).



25.867 - Rule interpretation

- EASA CRI to define scope, diameter, x-axis reference, surfaces (panels, seals,…), cross-reference to ISO,…
- Will become a Generic CRI



EASA Rulemaking Tasks
Generic CRI

RM Task 25.0070 Generic CRI

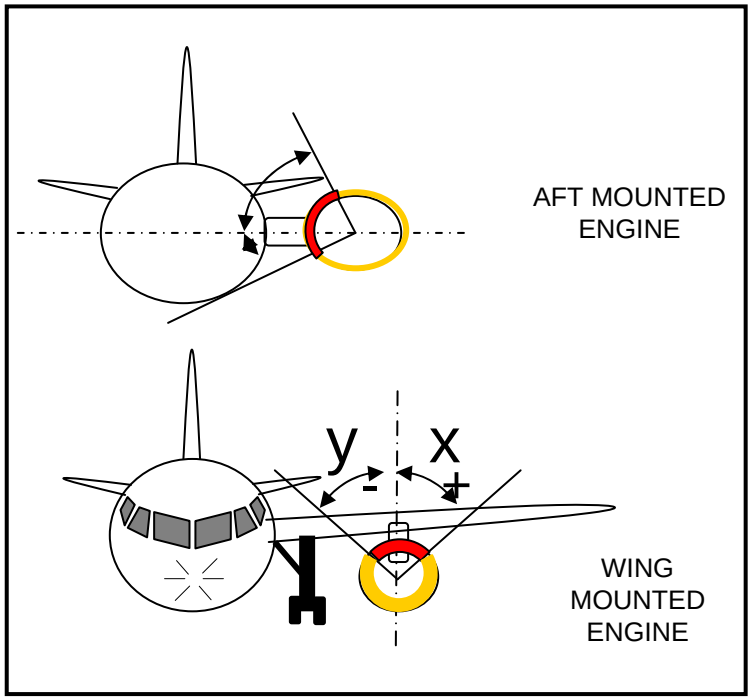
- Proposal to amend both
  - rules [CS 25.1193(e) / 25J1193(e)] and
  - interpretative material (AMC 25.1193(e) common to Engine/APU)
- Basis from recurring CRI/IP and ARAC WG
- NPA 2011-09 : Consultation period 31/05/2011 – 31/08/2011

RM Task 25.0070 Generic CRI

- New rule give a relaxation of the fireproof requirement
  - Before :
    - Fireproof
  - Now :
    - Fireproof (flight)
    - Fireproof (ground + critical radial sector)
    - Lower than fireproof (ground + not critical radial sector)

RM Task 25.0070 Generic CRI

- Credit of the relative air flow (flight)
- Flight conditions : airspeed above minimum V1 until minimum touchdown speed
- Critical area defined upon :
  - Fuel tank explosion,
  - Fire spreading
  - F/CTL damages
  - Fuselage penetration
  - Injuries to crew, passengers or ground crew
- Dependant of powerplant installation
- Symmetry may vary
- Similarity / in-service experience path
- Considerations for opening, latches, hinges, seals,….



	FLIGHT	GROUND
	FIREPROOF	FIREPROOF
	FIREPROOF	≤ FIRE RESISTANT

RM Task 25.0070 Generic CRI

- Comments reviewed and considered whenever felt necessary
- CRD ready for EASA Internal Consultation

EASA Rulemaking Tasks
Halon Replacement

Mission of EASA[1]

- the European Aviation Safety Agency (EASA) is the **Regional Safety Oversight Organisation (RSOO)** of the European Union (EU)
- Role is **not limited to audits** (i.e. standardisation inspections, similar to USOAP) of the actual behaviour of the competent aviation authorities established at national level by the Member States of the EU
- It also includes :
  - Directly issuing some certificates; and
  - Rulemaking
- In other words most of the ICAO **SARPs are no longer transposed in the EU at national level**, but at once for 30 ICAO Contracting States (27 EU + Iceland, Norway and Switzerland), through EASA
- Legally binding rules, based on proposals by EASA, are adopted by the European Commission

[1] http://easa.europa.eu/what-we-do.php

EASA (limited) task for ENV

Article 6 of Basic Regulation 216/2008[2] as amended by 1108/2009:

Essential requirements for environmental protection

1. Products, parts and appliances shall comply with the environmental requirements in Amend. 9 of Vol. I and in Amend. 6 of Vol. II of **Annex 16 to the Chicago Convention** as applicable on 20 November 2008, except for the Appendices to Annex 16

2. Measures to amend requirements referred to in § 1 in order to bring them into line with **subsequent amendments** to the Chicago Convention and its Annexes which enter into force after the adoption of this Regulation and which become applicable in all Member States, shall, in so far as such adaptations **do not broaden the scope of this Regulation**, be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 65(5)

[2] Regulation (EC) 216/2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency

Mission of DG CLIMA[3]

- develops and implements climate change policies and strategies in order for the EU to meet its targets for 2020 and beyond, especially with regard to reducing its **greenhouse gas emissions**
- aims at protecting the **ozone layer** and at ensuring that the climate is present in all Community policies; and
- that **adaptation** measures will reduce the European Union's vulnerability to the **impacts of climate change**
- leads the respective Commission task forces on the **international negotiations** in the areas of climate change and ozone depleting substances (ODS) and coordinates bi-lateral and multi-lateral partnerships on climate change and energy with third countries

The "owner" of Regulation 744/2010

[3] http://ec.europa.eu/dgs/clima/mission/index_en.htm

EU Regulation 744/2010[4]

Establishes for each application:

- **cut-off dates** after which the use of halon for new equipment or products (i.e. related to **new applications for type certification**) would no longer be permitted
- **end dates** after which the use of halon would no longer be permitted: i.e. all halon fire extinguishers and fire protection systems should be **replaced, converted or decommissioned** by the end date (i.e. retrofit may be required)

This also implies that **halon can no longer be implemented on newly produced aircraft**, on the basis of existing TCs at the "end date" (**forward fit** on aircraft not yet delivered to operators)

[4] Commission Regulation (EU) 744/2010 on substances that deplete the ozone layer, with regard to the critical uses of halons

Comparison with ICAO SARPs

Commission Regulation (EU) No 744/2010[5]					ICAO SARPs[6]	
Purpose	Type of extinguisher	Halon	Dates		Dates	
			Cut-off[7]	End[8]	New products[9]	Cut-off[10]
Normally unoccupied cargo compartments	Fixed	1301 1211 2402	2018	2040	N.A.	N.A.
Cabins & crew compartments	Portable (Handheld)	1211 2402	2014	2025	2016	N.A.
Engine nacelles and APU	Fixed	1301 1211 2402	2014	2040	N.A.	2014
Lavatory waste receptacles	Fixed	1301 1211 2402	2011	2020	2011	2014

[5] Commission Regulation (EU) No 744/2010 does NOT mention a date for newly produced aircraft, according to an existing TC.

[6] Proposed ICAO SARPs do not contain end dates for removal of halon from aircraft already in service.

[7] No new application for TC possible, if halon is present in the design

[8] After which the use of halons is no longer permitted; all halon fire extinguishers and fire protection systems should be replaced, converted or decommissioned

[9] E.g. aircraft for which individual certificate of airworthiness is issued after the stated date, but for which model TC already exists

[10] For aircraft whose application for TC will be submitted on or after 31st of December of that year

EASA RULEMAKING TASK RMT.0273 (MDM.071)

Halon –Update of CS/AMC **to comply with EU Regulations and ICAO Resolution**

- **2011**: EASA initiated a rulemaking task to amend CS-23, CS-25 and CS-29 in order to be compliant with EU legislation and with the **Amendment 103 to ICAO Annex 8.**
- **2012** : CS-23[11] and CS-25[12] have already been amended and CS-29 is being amended accordingly

CS (Book 1) : no reference to either halon or any other extinguishing agent

AMC/GM(Book 2): explain the reason for halon being phased out referring to Regulation 744/2010

[11] http://easa.europa.eu/agency-measures/docs/certification-specifications/CS-23/CS-23%20Amdt%203.pdf

[12] http://easa.europa.eu/agency-measures/docs/certification-specifications/CS-25/CS-25%20Amdt%2012.pdf

EASA RULEMAKING TASK RMT.0560

Halon- Update of **Part 26** to comply with **ICAO Standards**

- EU legislation implies compliance with applicable amendments to ICAO Annex 6 (i.e. newly produced aircraft based on existing Type Certificates) **only** in **2020 (for handheld fire extinguishers)** and **2025 (for lavatories)**
- EASA has planned RMT.0560 to comply with the dates set on ICAO Amendments to Annex 6 (i.e. **2011** ☹ for lavatories and **2016** for hand-held fire extinguishers)
- **Proposed option**: **Forward fit** for lavatory disposal receptacle and portable fire extinguishers in cabins and crew compartments

EASA RULEMAKING TASK RMT.0560

Halon- Update of Part 26 to comply with **ICAO Standards**

- **Benefits** :
  - halon alternatives sufficiently safe and suitable for portable and lavatories
  - environmental benefits, with minimum economic impact on aircraft manufacturers
  - comply with current ICAO standards
  - No amendment to EU 744/2010 needed

Notice of Proposed Amendment (NPA) available by mid 2013
(anyone can comment)

EASA RULEMAKING TASK RMT.0206

AS (Aerospace Standard) 6271 – Halon Replacement Hand Held Fire Extinguisher	In order to comply with ICAO Resolution A37-9 'halon replacement' adopted during ICAO 37th General Assembly, EASA has mandated SAE (Society of Automotive Engineers) to develop Minimum Performance Standards for (**halon free**) **portable fire extinguishers** to be used in aircrafts.

An ETSO (European Technical Standard Order) will be published:

(RMT.0206) …. NPA in 2013

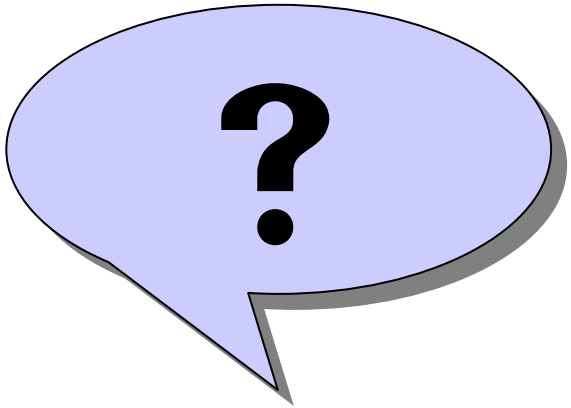
EASA RULEMAKING TASK RMT.0368 (MDM.091)

Protection against the **use of contaminated halon** by aircraft owners/operators and in maintenance, production and air operator organisations	In order to align with ICAO Resolution A37-9 'halon replacement' adopted during ICAO 37th General Assembly, amendments to of Part- 145 and Part-M shall be made. AMC/GM (Acceptable Means of Compliance /Guidance Material) will be developed for **production and maintenance organizations to verify the quality of halon** in their possession through testing and internal procedures

Notice of Proposed Amendment (NPA) planned in Q3 of 2013.

Conclusions

RMT		STATUS
0273	New applications for TC	CS-23 & 25 amended CS-29 amended before end 2012
0560	Newly produced aircraft	NPA planned in 2013
0206	ETSO for portable fire extinguishers	NPA planned in 2013
0368	Contaminated halon	ToR being drafted NPA planned in 2013
??	Engine nacelles, APU and cargo compartments	No obligation of any agent in CSs Additional RMTs could be planned



Thank You For Your Attention