Australian Government
Civil Aviation Safety Authority

SUMMARY OF CONSULTATION

Proposed amendments to Subpart 139H MOS – Aerodrome Rescue and Fire Fighting Services

Project number: AS 07/14 **File ref:** D25/154480

September 2025

1 Overview

Subpart 139.H of the *Civil Aviation Safety Regulations 1998* (CASR) and the Part 139H Manual of Standards (MOS) set out the standards for provision of aerodrome rescue and fire fighting services (ARFFS) and have been in place since 2004.

CASA is conducting a wholistic review of the Aerodrome Rescue and Fire Fighting Services (ARFFS) standards under PP 2101AS as part of the development of a new Part 176 of the *Civil Aviation Safety Regulations 1998* (CASR). However, there could be some significant delays in the project due to the availability of legal drafting resources. In the interim some amendments are required to the Subpart 139H MOS to allow for the removal of overly prescriptive requirements, advancements in technology, and consistency with International Civil Aviation Organization (ICAO) requirements.

Several changes included in the summary of proposed change (SPC) for this amendment were previously consulted on in 2023 via PP 2101AS. Some of these proposed changes are the subject of existing exemptions from the ARFFS rule set or will require a new exemption. These Part 139H MOS amendments were consulted under CD 2501AS.

Exemptions require the ARFF service provider to demonstrate an acceptable level of safety prior to them being issued and are subject to review and renewal every 3 years. This creates an unnecessary workload on the ARFF service provider and on CASA for matters which should ordinarily transition into the MOS, if they are perpetual.

The changes proposed under CD 2501AS were:

- amending the colour of fire vehicles to be predominantly a single conspicuous colour, rather than signal red
- adding Performance Level C foam as an extinguishing agent
- allowing 100% of water to be replaced by a complementary agent for category 1 and 2 aerodromes
- allowing reserve supplies of foam concentrate and expellant gas cylinders to be 100% instead of 200%
- allowing use of visual surveillance systems, such as runway view cameras, to assist in the observation of runways and aircraft approaches and departures
- allowing remote termination of fire alarms
- allowing the housing of inshore rescue boats to be more performance-based.

Subsequent to the consultation of CD 2501AS it was decided to also include an amendment allowing training facilities to be provided at a location that was not an ARFFS aerodrome, subject to CASA approval. This is subject to two current exemptions that would transition in the MOS.

Contents

Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

2 Reference material

2.1 Acronyms

The acronyms and abbreviations used in this SPC are listed in the table below.

Table 1: Acronyms

Acronym	Description
AC	advisory circular
AFASP	automatic fire alarm service provider
ARFF	Aerodrome Rescue and Fire Fighting
ARFFS	Aerodrome Rescue and Fire Fighting Service
ASM	Airport Services Manual
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
CCTV	closed-circuit television
DCP	dry chemical powder
FSCC	fire station communication centre
ICAO	International Civil Aviation Organization
MOS	Manual of Standards
NFPA	National Fire Protection Association

2.2 Definitions

Terms that have specific meaning within this SPC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this SPC and the civil aviation legislation, the definition in the legislation prevails.

Table 2: Definitions

Term	Definition
Aerodrome Rescue and Fire Fighting Service (ARFFS)	An organisation that provides aerodrome rescue and fire fighting services established under the CASA criteria.

2.3 References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Table 3: Legislation references

Document	Title
Subpart 139H Manual of Standards	Standards Applicable to the Provision of Aerodrome Rescue and Fire Fighting Services

International Civil Aviation Organization documents

International Civil Aviation Organization (ICAO) documents are available for purchase from http://store1.icao.int/

Many ICAO documents are also available for reading, but not purchase or downloading, from the ICAO eLibrary (https://elibrary.icao.int/home).

Table 4: ICAO references

Document	Title
ICAO Annex 14 Volume I	Aerodrome Design and Operations
ICAO Airport Services Manual (Doc 9137) Part 1	Rescue and Firefighting Fourth Edition, 2015

3 Respondents

A total of fourteen (14) responses to the consultation were received. One (1) respondent was a CASA officer. Two (2) respondents identified as an ARFFS provider, however Airservices Australia was the only respondent with a Subpart 139.H certificate, two (2) identified as certified aerodrome operators, four (4) identified as ARFFS personnel and five (5) identified as 'other', including two (2) associations, one (1) representing firefighting personnel and one (1) representing airline pilots. Eight (8) respondents gave permission for their responses to be published.

CASA values the contributions made by all respondents. Where permission to publish has been granted by the respondent, individual consultation responses can be found at https://consultation.casa.gov.au/regulatory-program/cd-1910os/

3.1 Key feedback

The respondents were generally supportive of the seven (7) change proposals. Specific feedback on each change proposal is provided below.

3.2 Fire vehicle colour

Eight (8) respondents agreed for fire trucks to predominantly be a single conspicuous colour.

CASA response

The Part 139H MOS will be amended to allow fire trucks to predominantly be a single conspicuous colour.

3.3 Adding performance level C foam

Seven (7) respondents agreed, or agreed with changes, to adding performance level C foam to the table of extinguishing agents. Comments provided included:

- the table of extinguishing agents should be deleted from the Part 139H MOS and reference made to the ICAO Airport Services Manual (ASM) Part 1
- the complementary agents discharge column should be included
- Australia should test foam at higher temperatures
- performance level C foam should be tested in Australian conditions
- a safety margin should be applied by adopting an application rate of 5.5 L/min/m^2 for level C foams
- the minimum fire extinguishing agent quantities should be changed to volumes recommended by the National Fire Protection Association (NFPA) for interior fire fighting operations
- the three columns titled 'Water litres' should not be under the heading 'Discharge rate foam solution' and should have their own column under the heading 'Foam Meeting Performance Level…' for each of the performance levels.

CASA response

Australian testing of foam is out of scope for this change which is adding an existing ICAO requirement for performance level C foam. Performance level C foam is a higher performing foam, hence the reduction in quantity required, and was introduced into the extinguishing agents table in 2013. CASA and Airservices, are not research organisations with the resources or expertise to undertake foam testing, therefore Australia, as a Contracting State to the Chicago Convention, relies on ICAO for its foam standards. Many of the 194 ICAO

Member States would have climatic conditions similar to Australia. Testing of foam and adopting NFPA standards can be considered during the Part 176 project.

The 'Minimum useable amounts of extinguishing agents' table is in both Annex 14 Volume I and the ASM Part 1. It is important to replicate it in Part 139H MOS as the table not only contains the amounts of foam solution and complementary agents but is also used to determine reserve supplies of the agents. ARFFS providers need ready access to the table.

The format of the table of extinguishing agents will be corrected to match that in Annex 14 Volume I and the ASM Part 1, including headings and adding a column for discharge rates for complementary agents.

3.4 Replacement of water by a complementary agent

Six (6) respondents agreed, or agreed with changes, to only allowing the replacement of water by a complementary agent for aerodrome categories 1 and 2 for foam substitution meeting performance level A. Comments provided included:

- suggest foam substitution apply to all performance levels (A, B, C), not just performance level A
- foam testing at higher temperatures should be addressed prior to any changes to foam requirements
- the proposed inclusion of the new paragraph 7.1.1.7 creates doubt that removal of category 3 to 10 aerodromes to replace water with complementary age is achieved.

CASA response

Annex 14 Vol I does not stipulate an amount of up to 30% of water to be replaced with complementary agent for Category 3 to 10 aerodromes, however it does refer in a Note which states 'When any other complementary agent is used, the substitution ratios need to be checked' which implies water can be substituted by complementary agent generally. The existing para 7.1.1.5 allows substitution of water with complementary agent, with CASA approval. Substitution ratio checking for performance level will replace existing paragraph 7.1.2.1 as section 7.2 relates to Fire Extinguisher Agent Performance Criteria.

Australian testing of foam is out of scope for this change and these changes are seeking to retain consistency with Annex 14 Volume I.

3.5 Reserve supply of complementary agent

Six (6) respondents agreed, or agreed with changes, to allowing 100% instead of 200% as a reserve supply of complementary agent and expellant gas cylinders. Comments provided included:

- ARFFS locations that are remote of major population centres should carry sufficient reserve agents of 200% to alleviate a shortfall should normal supplies be disrupted
- Additional foam etc. should be held at remote locations and those where difficulty in resupply has or may occur, noting recent floods, fires, and logistical challenges caused by COVID-19
- amounts of foam and complementary agent specified in Part 139H MOS paragraph 7.1.1.1 do not include the quantities required for fighting interior fires (Q3) recommended by the NFPA
- the proposed reduction in reserve supplies of complementary agent should only be considered in the context of a comprehensive review of ARFF fire extinguishing agent requirements informed by expert advice and with the objective of achieving best and safest practice
- The amounts referred to in Table 7.1.1.1 of the Part 139H MOS are water and discharge rates, not foam concentrate, therefore the amount of reserve foam concentrate would be difficult to determine if reference is made to the Table and propose the reserve holding for foam concentrate remains at 200% of the agent under the current wording of the Part 139H MOS.

CASA response

The reduction in reserve supplies of complementary agent from 200% to 100% is in line with Annex 14 Vol I. Additionally, the Part 139 MOS allows for situations where supplies may be delayed by more than 7 days. Furthermore, ARFFS providers are required to have contingency plans which should consider natural disasters and pandemics. Also, ARFFS providers are required to have an SMS which would require risk assessments to be conducted and emergency response planning.

The language in regard to extinguishing agents in Annex 14 Vol I and Part 139 MOS can be confusing in relation to water, foam concentrate, foam solution, complementary agents and dry chemical powders. The Table in Part 139 MOS para 7.1.1.1 contains the minimum amounts of extinguishing agents, which includes amounts in fire vehicles and otherwise stored on the aerodrome. Foam concentrate is not mentioned in Table 7.1.1.1 nor the tables in Annex 14 Vol I and the Airport Services Manual Part 1, thereby creating confusion as to the amount of reserve supplies of foam concentrate.

The language in the Part 139H MOS will be clarified that the quantity of foam concentrate to be kept as a reserve is 200% of the amount needed to make the foam solution in Table 7.1.1.1. This makes further sense when compared to existing paragraph 7.1.1.3 regarding quantities of foam concentrate provided on fire vehicles and the new para 7.1.3.1B that foam contrate carried on fire vehicles counts towards the foam concentrate reserve supply.

3.6 Visual surveillance system

Six (6) respondents agreed, or agreed with changes, to allowing Fire Station Communication Centres (FSCCs) to use a visual surveillance system to enhance or provide a complete view of runways and 'short final' approaches. Comments provided included:

- Airservices' ARFFS have not been able to provide an acceptable remote video camera (VSS) system in Brisbane
- challenge the requirement to have a ARFF watch room at 24/7 Tower Controlled aerodrome as tower controllers have far more situational awareness of aircraft movements and visibility of the aerodrome
- this should only be used to enhance human observation, but not as the only source of visual monitoring
- the proposal is misusing the ICAO requirements:
  - the ICAO guidance is unequivocal that closed-circuit television (CCTV) is to be used only to enhance human observation
  - the proposal does not take sufficient account of the need for redundancy measures
- we do not support usage of the term VSS on the basis it is restrictive and inappropriate for ARFFS technology as VSS is currently not a defined term for the Part 139H MOS. VSS is a defined term for Air Traffic Control services under Part 172 of CASR.
- the current Runway Viewing Cameras (RVCs) approved for use in ARFFS do not meet and are not required to meet the VSS requirements under Part 172 MOS.

CASA response

A visual surveillance system must be operationally effective and suitable and cannot be installed or used unless approved by CASA. This ensures the system will work as intended and won't receive CASA approval unless it does. Regulation 139.810 of CASR requires CASA approval prior to commissioning new ARFFS equipment however, prior to this, CASA approval is required before installation of a visual surveillance system.

The response stated that CASA was selectively quoting from and misrepresenting the Part 139 MOS and Airport Services Manual Part 1; however, that was not the intention. The intention was to distil the performance requirements relating to 'clear vision of the runway and ‘short final’ approaches'.

Technology has advanced considerably since the inception of closed-circuit television (CCTV) cameras, to the point where Western Sydney Airport will have a fully digital visual surveillance system with no physical air traffic control tower at the airport and remotely located at a data centre. This visual surveillance system will enable a full aerodrome control service to be provided and not simply a view of runways and approaches. visual surveillance system does not replace the human element, as there will be humans monitoring the visual surveillance system.

Visual surveillance system is a term defined in the Part 172 MOS which refers to the definition in PANS-ATM (Doc 4444). In order to avoid confusion with use of visual surveillance system in Part 172 MOS a definition of *visual surveillance system* will be added to the Part 139H MOS.

3.7 Remote monitoring of fire alarms

Eight (8) respondents agreed, or agreed with changes, to allowing aerodrome fire alarms to terminate and be monitored remotely. Comments provided included:

- we are reassured by the requirement for 'written agreement between the aerodrome operator and ARFFS provider'
- this should only be implemented if the line of communication is shown to be equal to or faster than the present system of responding to the alarm
- enabling external providers to control and monitor airport fire alarm systems adds more steps to the line of communication, creating more potential risk points
- the creation of a new term automatic fire alarm service provider (AFASP) is not supported and the current agreements are between the ARFFS provider and the fire alarm monitoring provider (not the aerodrome operator
- the conditions 22.1.2.3A c), d) and e) should be removed and instead reference the relevant Australian Standard for fire alarm monitoring systems AS 1670.3

CASA response

The proposed amendment included the requirement that ARFFS category response times must be met. However, alarm response times are in relation to non-aircraft emergencies.

Remote monitoring of aerodrome fire alarms is already permitted under CASA EX55/24 - Aerodrome Fire Alarm Monitoring (Airservices Australia) Exemption 2024. The Part 139H MOS is being amended to give permanent effect to the exemption. The exemption requires the ARFFS provider to ensure that the alarm monitoring service provider constantly monitors the aerodrome’s fire alarms and that there is a written agreement between the ARFFS provider and the alarm monitoring service provider to immediately notify the ARFFS provider when an alarm is activated. This will be included in the amendment.

In relation to removing conditions (c), (d) and (e) of para 22.1.2.3A, CASA agrees that reference to an approved AFASP can be removed as this is outside the remit of the aviation safety regulations. In order to ensure an appropriate level of safety assurance, the remote alarm monitoring needs to be in accordance with AS 1670.3:2024, titled Fire detection, warning, control and intercom systems — System design, installation and commissioning which is the appropriate and relevant industry standard. It is critical for remote alarm termination that alarm response times are met which has been included in the amendment.

3.8 Housing inshore rescue boats

Seven (7) respondents agreed, or agreed with changes, to allowing inshore rescue boats to not be housed under cover. Comments provided included:

- the new policy must not impede the ARFFS's ability to respond quickly to a water rescue

- the new conditions in paragraph 21.1.7.1A (a) through (e) are not supported as they introduce additional prescription.

CASA response

The new policy does not impact ARFFS response times and allows inshore rescue boats to be stored where access to an emergency may be more readily located. Housing of inshore rescue boats is already subject of a CASA exemption and the MOS amendment is subject to a number of conditions to provide safety assurance

The conditions in relation to housing of inshore rescue boats are:

- they allow for rapid operational deployment of the boats in an emergency
- subject to allowing for rapid deployment, they comply with the boat manufacturer's operating and maintenance requirements for the boats.

3.9 Additional comments

Eleven (11) respondents provided additional comments, including:

- the definition of an ARFF service does not make sense
- installation of Engineered Material Arresting System (EMAS) at international and regional runways
- 'aspirated monitors' needs clarifying
- the ARFF regulations are not keeping up with the changing aircraft technology and are not applicable to hydrogen flight
- the time period for consultation was very short
- incorporation of existing exemption CASA EX40/25 – ARFFS Training Facilities into the Part 139H MOS.

CASA response

This definition of 'ARFFS' is not subject to the Part 139H MOS amendments and is from the MOS Part 139H.

Comments on EMAS, aspirated monitors and hydrogen flights are outside the scope of the proposed changes.

These amendments are not intended to impact on the overall policies related to Part 176 but include necessary amendments to remove the need for repeated regulatory exemptions, increase compliance with Annex 14 Volume I and recognise the availability of new technologies. The Summary of Consultation on PP 2101AS - creation of a new Part 176 will be published and CASA acknowledges that it has been subject of a significant delay. Four (4) of the seven (7) changes are subject of current exemptions therefore have been operating safety, two (2) are seeking further compliance with Annex 14 Volume I and one (1), introduction of visual surveillance system received 82% support during consultation on PP 2101AS.

Exemptions require the ARFFS provider to demonstrate an acceptable level of safety prior to them being issued and are subject to review and renewal every 3 years. This creates an unnecessary exemptions workload on the ARFFS provider and on CASA for matters which should ordinarily transition into the MOS.

3.10 ARFFS training facilities

As stated on page 2, subsequent to the consultation of CD 2501AS CASA decided to include an amendment allowing training facilities to be provided at a location that was not an ARFFS aerodrome. This matter is subject to two current exemptions that would transition in the MOS The provision of alternative training facilities is permitted for:

- a training ground that can support fire vehicles and adequate facilities, to allow hot fires, and tactical positioning and application of fire extinguishing agents
- a raised platform, for ladder and branch work, which is suitable for the use of breathing apparatus
- a suitable lesson room for theoretical training
- a breathing apparatus training facility
- a location other than at an aerodrome where the ARFFS is provided
- locations that have been approved in writing by CASA.

4 Future direction

CASA appreciates the feedback provided to the consultation and has taken the feedback into consideration and incorporated the changes where possible in the Part 139H MOS regulations.