

AERIAL AGRICULTURAL ASSOCIATION OF AUSTRALIA LTD.

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AAAA Submission – CAO 48.1

June 2015

Introduction

While amendments to CAO 48.1 are being proposed, AAAA believes it is worthwhile restating its position on fatigue management and highlighting a range of additional amendments that should also be considered.

AAAA's position on flight and duty times has been consistent for many years – being that aerial application is a highly seasonal operation that requires considerable flexibility in flight and duty times to enable appropriate fatigue management while not unnecessarily curtailing operations that are often restricted to small windows of opportunity. See also **Appendix 1** from 2012 and **Appendix 2** from 2002.

Aerial application is not like an airline that has considerable predictability regarding rosters and opportunities for work.

Aerial application is characterised by a close relationship with client's needs which in turn are driven by issues such as rainfall, disease or pest pressure, bushfires, plant health and meteorological opportunity.

Aerial application is characterised by operational stand-downs due to meteorological conditions related to spraying or application efficacy and a clearly seasonal opportunity for work. To treat aerial application in the same manner as other aerial work operations shows a clear lack of understanding of the demands of the aerial application mission, the work environment and the opportunities for sensible fatigue management that are in many ways unique to the sector.

For these reasons, AAAA continues to support a fatigue management regime that is tailored to the sector and which is built on the considerable experience of safe operations based on the flight and duty time regime available through CASR Part 137.Q.

CASA has provided no detailed safety case that identifies why the flight and duty time regime needs changing. The science behind the proposed changes is not settled in terms of its application to the aviation environment, and certainly not the aerial application environment.

The new *DAS Directive 01/2015 – Development and Application of Risk-Based and Cost-Effective Aviation Safety Regulations* should be applied to CAO 48.1 immediately.

The final compliance date of 30 April 2016 should also be extended for at least 12 months to give industry sufficient time to convert to the new regime, especially including the need to rewrite operations manuals and have them approved by CASA.

Of particular concern is that CAO 48.1 is still being amended and yet industry is expected to comply within the original target date.

Key Issues

Prescriptive Rules Not Related to a Fatigue State

A major criticism of CAO 48.1 outcomes is that it imposes penalties on companies and individual pilots *even when the pilot may not be fatigued*.

AAAA has consistently argued that a key element of flexibility required in CAO 48.1 is that a pilot should be able to fly if they have had a 'reasonable' or 'effective' break free from all duties.

The difficulty has been in establishing what is a 'reasonable' or 'effective' break.

Given the highly seasonal nature of the aerial application industry, consideration must also be given to the essential nature of the sector, where periods of intense activity can be countered by breaks due to unacceptable meteorological conditions for the application mission. It must also be considered that some 'seasons' for the sector may be only three months or less, during which time the company must earn its entire income for the year.

Importantly, for probably several months of the year, most aerial application pilots have no work and ample opportunity to 'reset' for the season from a fatigue perspective. For several more months, flying duties are likely to be light to very light.

It is only during the core seasonal periods – of which there may only be a few weeks separated by opportunity to recover from fatigue (either acute or chronic) – that the necessary flexibility being discussed becomes essential.

This is not to say that fatigue management should be put aside during periods of high tempo operations – just the opposite. However, this understanding of the operational environment makes it clear why flexibility rather than prescription is critical.

For example, the rice season is characterised by a busy period during sowing (August/September) then a lull or relatively lower tempo operations, followed by a busier season in summer depending on pests, weeds or disease.

Similarly on cotton, there may be a medium tempo period during pre-sowing for weed control, followed by a gradual build-up in tempo of operations across the summer depending on pest loads, followed by a lull and then a busy period during defoliation.

During these generalised periods, there may be days at a time where operations are not possible due to wind speeds - for example over 20km/h, wind speeds lower the 3km/h

indicating surface temperature inversion conditions not conducive to effective spraying - rain, or even high temperatures that cause the plants to 'shut-down' requiring night spraying.

This is the type of flexibility that CAO 48.1 in its current form is unable to recognise. It is simply over-prescriptive for the needs of aerial application operations.

For example, early-start restrictions are laughable in an industry that is traditionally based on early starts and which reflect the mission need to start early, often when application parameters are ideal.

The 'science' used to argue for restrictions on early starts is not reflected in common practice in areas such as farming and is certainly not reflected in any significant number of accidents in aerial application as a result of early starts.

This appears to be the application of theory that has not been tested in the relevant operational area to see if it is backed up by scientifically repeatable outcomes.

Why is industry being forced to be the guinea pigs when CASA has not even established a clear safety case, evidence or proven and field validated research?

Another example is the problem surrounding the resetting of monthly limits and the interaction of that limit with the weekly limit of 50 hours and the 'resetting' criteria of seven days free from all duty (current resetting trigger) or five days free from all duty (proposed new resetting trigger).

AAAA believes that significant additional flexibility is required in the management of the 50 hour per week limit and also in the number of days free from all duty before the monthly limit can be reset.

Original discussions in the relevant SCC working group were around the possibility of resetting the monthly limit (within agreed seasonal limitations) after a period free from all duty of 3 days/nights. AAAA still believes this to be a valid approach within the confines of a seasonal industry.

The current inflexibility of CAO 48.1 means that pilots may lose income and operators may have increased costs because the pilot is unable to fly ***even if they are not fatigued.***

AAAA Standard Operations Manual and Significant Delay of Compliance Date

AAAA members are currently being contacted by CASA Operations staff to encourage them to shift across to the new regime and to attend information briefings on the new requirements, despite amendments being progressed.

While a commendable effort to educate industry, this appears to be premature.

Most AAAA members operate using a AAAA Standard Operations Manual that AAAA has always planned to rewrite and which is under active discussion with the Sector Risk Profile team.

In addition to amending the manual to accommodate CAO 48.1, manual amendments will be required to accommodate Part 61 changes and changes to Part 137 (when the PIR is finalised). AAAA understands significant changes will also be required to conform with a new operations manual format now required by CASA.

It seems to AAAA to be a waste of resources trying to amend the manual piecemeal for each Part. AAAA would prefer to make one major amendment – ie a ‘new’ manual – to simplify change for our members.

The April 2016 compliance date is also difficult because of the seasonal nature of the aerial application industry, with that timing coinciding with the end of the busiest part of the year for many operators. This means CASA is expecting many operators to try and change their flight and duty and fatigue management systems mid-season.

From a risk-management perspective this is an implementation miscue of significant proportions.

AAAA notes that amendments to CAO 48.1 are being brought forward soon and that AAAA is currently in positive discussions with Standards Branch staff regarding potential additional amendments to recognise the flexibility needed in seasonal operations.

Consequently, as none of the timeframes for the various regulatory changes still under development seems to align, AAAA encourages CASA to at extend the timeline for compliance with CAO 48.1 (currently April 2016) for 12 months at least.

Key Proposed Changes to Annexe 5

If CASA does not agree with the proposal to maintain a separate flight and duty time regime for aerial application operations by rescinding the abolition of CASR Part 137Q, AAAA would welcome the opportunity to explore with CASA staff the possibility of progress in the following areas in terms of the current CAO 48.1:

- Relaxation of start times / duty impact (early starts are a feature of the aerial application sector)
- Increase in weekly hours limit (up from 50) – perhaps with limits to recognise seasonality...
- Easier resetting of monthly limit (ie less days off required eg like a long weekend)
- Relaxation of night limit of 4 FDP in a row (given the good aerial application accident record at night this is certainly punitive)
- Relaxation of cross-appendix ops ie from airwork to other flying...

FRMS For Aerial Work – Key Proposed Changes to Annexe 7

Annexe 7 of the CAO 48.1 regime is clearly aimed at the airline end of the industry, with no consideration being given to why the same data requirements should be demanded of small companies operating in a relatively simple environment.

CASA must give consideration to relaxing the FRMS approach detailed in CAO 48.1 so as to permit a more flexible - but still robust and safe – framework for aerial work companies.

For example, AAAA has already developed a Standard FRMS for aerial application companies. When accompanied by an integrated management system (such as the AAAA AIMS accredited system for companies) that incorporates fatigue incident reporting and management, there is a very strong case that the systems involved would deliver both flexibility and enhanced fatigue management – certainly superior to the restrictive approach of current Annexe 5 operations.

Under current regulations and advice from CASA, it is clear that such a significant improvement would not be permissible without amendment of Annexe 7.

Recommendations

The following recommendations are presented in a cascading preference to clarify AAAA's preferred approach to improving the current and future fatigue management systems:

- 1) That CASA immediately defer the final compliance date for CAO 48.1 from 30 April 2016 to at least 30 April 2017 and preferably 30 April 2019 to allow industry adequate time to prepare for changes to operations manuals or to develop FRMS systems to provide essential flexibility for missions such as those in aerial application.
- 2) That CASA re-establish CASR Part 137.Q as the relevant controlling regulations for fatigue management in the aerial application sector.
- 3) If CASA is unwilling to return to CASR Part 137.Q, then CASA should amend the current version of CAO 48.1 to:
 - a) Establish a new section of CAO 48.1 dedicated to aerial application
 - b) Incorporate the current requirements of CASR Part 137 Q into that new section, with amendments to further improve the flexibility available to operators and pilots, such as the ability to reset weekly, monthly and annual limits when the pilot is not fatigued.
- 4) If CASA does not establish a new section in CAO 48.1 for aerial application, then CASA should immediately establish a Critical Issue Team drawn from industry to apply the *DAS Directive 1/201A5* to CAO 48.1. As a minimum, Annexe 5 should be significantly simplified to ensure the Annexe has the necessary flexibility to **not** impose a significant penalty on the industry for no safety gain.
- 5) That CASA create a new, simpler section in Annexe 7 of CAO 48.1 to enable FRMS for aerial work companies, recognising industry programs that deliver relevant integrated management systems and fatigue incident reporting and data management, such as the AAAA AIMS accreditation combined with the AAAA Standard FRMS.

Appendices

Appendix 1 – AAAA Submission to CASA on Flight and Duty Times – June 2012

Appendix 2 – Submission to CASA – Safety Case for Amendment of CAO 48.1.2 – 2002

Appendix 1 – AAAA Submission to CASA on Flight and Duty Times – June 2012

AAAA Online submission in response to CASA CAO 48 rewrite proposals.

The current proposal seeks to remove all reference to aerial application operations and consequently, termination of the existing safe regime. CASA's various assertions that the current requirements are not based on science is simply an indication of the loss of corporate knowledge within CASA. When CAO 48.1.2 was last rewritten (early 2000s) it was to incorporate the existing provisions of a wide number of exemptions that had been issued to the industry by CASA, based on 170 hours per month due to the seasonal nature of the industry. These figures, apart from having a ten year history of safe operation, were also assessed using the then relatively new and untested FADE system. The fact that FADE scores for night ag simply did not tally with the history of safer operations at night indicated to CASA that the model clearly had flaws and that it should be used with great caution - as with any model. AAAA believes the existing requirements of Part 137.Q should be maintained.

There is no consideration of the seasonal nature of aerial application in the proposed changes - in fact no consideration of aerial application's previous operating history, safety trends, or any review of ATSB reports - which, if conducted by CASA as part of what should be an expected 'due diligence' approach to changing regulations, would have disclosed that ATSB has not indicated in any accident investigations report in aerial application over at least the last 13 years that fatigue was a significant factor. CASA should consider an FRMS regime for smaller less complex operators that allows greater flexibility, based on sound safety models, for those sectors where there are other mitigating risk management circumstances. The difficulty with accessing the currently proposed FRMS models is they have been developed completely with an airline or large company model in mind and consequently, many of the benefits of an FRMS system that could accrue to smaller operators are overwhelmed by the complexity of the current proposals. AAAA believes this has come about because CASA has made no effort to try and consider how an FRMS could be offered to sectors such as aerial application so as to improve the current situation. Similarly, any attempt by CASA to say they are acting in accordance with ICAO Annex 6 makes a mockery of the consultation process, which would have quickly exposed the fact that Annex 6, in this context, does not contemplate FRMS for small companies and especially those involved in relatively less complex aerial work activities.

The standards in Appendix H are overly prescriptive in an FRMS context. CASA is highly unlikely to have the capacity to deal, in a timely manner, with the requests and approvals it

has detailed it is required to give in Annexe H 3.2. CASA should seek to work with AAAA in establishing a more effective and simpler method of FRMS establishment, modification and compliance for at least aerial application operations, including anticipating (as other sectors already have) AAAA developing an industry standard FRMS for aerial application, seeking approval from CASA, and then making it available to members to implement. AAAA has already commissioned work on an FRMS for aerial application in discussions with the CASA GA Taskforce (Peter Johns) and is hopeful that an FRMS approach will deliver a significant culture change within the industry, improve safety outcomes and improve fatigue management in the field.

While clearly AAAA supports the principle it again appears that CASA is seeking to instil inflexibility into a regulatory system that is already characterised by inflexibility. CASA should work with individual sectors to develop an FRMS approach that is matched to the complexity of the operation, rather than a 'one size fits all' model that it is attempting to impose.

Again, an FRMS that includes this principle is supported by AAAA and already seems to be covered by the regulatory requirement for a FCM to present as fit for duty. It would be hoped that if CASA were more flexible in its approach to an FRMS and structure that would be more relevant to aerial work operations, then this principle would be more likely to have traction both with management and employees. In other words, if the FRMS can be seen to be delivering a net benefit both in terms of flexibility and fatigue management, then participants would be more likely to 'play by the rules'

AAAA believes that the current regimes for fatigue management that have been in place either through exemptions or revised parts since the early 2000s for over 20 years - CAO 48.1.2 for rotary and CASR Part 137.Q for fixed wing aerial application - have a proven track record in helping the industry stay safe while managing a highly variable and seasonal work environment. Consequently, this should form both a useful baseline for any new prescriptive arrangements - which AAAA notes are not included in the current proposals - and a useful yardstick for whether any FRMS system will be able to deliver equitable and safe outcomes for aerial application operators. In terms of CASA expected inability to meet the approval requirements for the process it has outlined at Annexe H3.2, then AAAA rejects this as a reasonable requirement. CASA should be considering a simplified approach to compliance issues for at least the aerial application sector, using its normal audit program to check on operators ad FRMS compliance. Clearly, a sound way forward would be for CASA to use the very successful model AAAA has established with its Standard Operations Manual, and work with AAAA on a standard FRMS for aerial application operators. This way, any movement outside a centrally agreed model that covers a whole sector can be managed efficiently, rather than flooding CASA directly with individual AOC applications to vary an FRMS. It should be anticipated that as the industry gains more experience in working with an FRMS, that the changes requiring CASA approval (as per the proposed model) would be significant in number, therefore testing CASA resources and the commitment they must give if they maintain the current requirement for AOC holders to seek approvals direct from CASA, to provide approvals of amendments to an AOC holders FRMS in a TIMELY fashion. In this context, timely means timely with an industry timeframe, not within a CASA timeframe which is normally many times longer.

See comments above -again, as CASA has not made any effort - until recently approached by AAAA - to consult with operators in the aerial application area, CASA does not appear to be aware of the superior safety record of night operations in aerial application when compared to day operations. Clearly a range of other (not apparent to CASA) risk mitigators are in play to produce this result, but the current FRMS proposal does not seem to have the flexibility to permit these to be brought into consideration in the development of an FRMS.

Appendix 2 – Submission to CASA – Safety Case for Amendment of CAO 48.1.2 – 2002

The problem

The key restriction that the current CAO 48.1.2 places on agricultural operations and is the monthly limit of hours. Operators find themselves not being able to complete the task within those hours, but are well rested and capable of completing the task safely.

Worse still, the current situation creates competition issues where CASA has issued certain 'non-standard' exemptions to some operators but not to their competitors. I am unsure as to how CASA can substantiate this situation.

In topdressing, the annual limit of 1000 hours can also present problems. This is likely to become a more significant issue as the grazing industry is likely to increase the aerial application of fertiliser as wool and beef prices have picked up significantly in the last few years.

Importantly, recent changes to the tax system appears to be encouraging graziers to apply fertiliser at different times of the year, rather than waiting until the end of the financial year. This is likely to mean that topdressing operators will be able to spread the increase of work across the year.

Many operators are already working under 'non-standard' exemptions issued by CASA which enable the industry to have the flexibility it requires.

Proposed Changes

AAAA proposes that the current CAO 48.1.2 be amended to recognise the current 'non-standard' flight and duty time exemptions already issued by CASA and to make that flexibility available to all ag operators.

The detailed amendments proposed to the Order are at **Attachment 2**.

Risk Assessment

The aerial agricultural industry is a unique environment where mostly single seat aircraft are operated in mostly rural areas and require unique regulations. This has officially been recognised by the Minister of Transport and CASA with the allocation of Part 137 being specific to this industry. Many of the aircraft operating in ag. today do so in the 'restricted' category.

In any consideration of the agricultural industry, it is important to take into account the nature of the work that the aircraft undertake. Essentially, agricultural aircraft are simply another farming tool, albeit a sophisticated one that relies on lift rather than grip.

Agricultural aircraft:

- do not carry fare paying passengers,
- do not operate over densely populated areas,
- are well maintained
- are flown by well trained and well qualified pilots and
- are highly regulated by State chemical control-of-use regulators.

This total operational scenario is critical to consider when looking at the minimal risk exposure of the broader community and the rest of aviation to ag operations.

Importantly, many ag operators are already operating under flight and duty regimes that give significantly greater flexibility than CAO 48.1.2.

CASA has seen fit to extend to many ag operators 'non-standard' flight and duty time exemptions the content of which is reflected in this proposal.

Given operators are already safely operating under the regime proposed by AAAA, there is no additional risk to the general community, the rest of the aviation industry, or to the pilots themselves from the proposed change to CAO 48.1.2.

Precedent

The Civil Aviation Orders already recognise that agricultural flying is different to all other flying by including in the Orders a special part (Part 48.1.2) that gives greater flight and duty time flexibility to agricultural operators and pilots.

The 'standard' exemption outlined in this part for ag gives pilots the flexibility to operate up to 120 hours per month, amongst other things.

Further to this, 'non-standard' exemptions have been issued to individual operators by CASA officers for at least the last 10 years. These 'non-standard' exemptions all permit longer hours to be flown and vary around 160 hours per month to 175 hours per month, amongst other things.

It is clear that over this period there has not been any significant negative effect on the agricultural accident rate as a result of these 'non-standard' exemptions.

Accident Rate

Information on agricultural accident and fatality rates is provided at **Attachment 3**.

It is clear from this information that there has been no significant deterioration in the agricultural accident or fatality rate over the last 20 years.

If anything, the ag. accident rate over the last 5 years has actually improved as a result of better aircraft design, the impetus towards a safety culture provided by the insurers, as well as the educational activities of AAAA, in cooperation with CASA.

This AAAA proposal is based on the current 'non-standard' exemptions for agricultural flight and duty times issued and clearly endorsed by CASA.

Consequently, it cannot be rationally argued that there is any potential correlation between the proposed changes to CAO 48.1.2 and the ag safety record, as these provisions have been in use in the real world for the last ten years with no impact on the safety record of the ag industry.

Insurance - a 'de facto' regulator

A key responsibility that weighs heavily on the minds of operators and pilots is the fundamental requirement to "fly to come home". Aerial ag is a small industry (about 300 active pilots) and injury to or loss of a pilot makes a significant impression on the industry and reinforces the importance of safety at the most personal level.

Perhaps more importantly for a regulator looking for other more tangible motivation to ensure safety and the responsible management of flight and duty times, the insurance industry has become a key '*de facto*' regulator of the air ag sector.

Unsafe practices or a poor safety/accident record will be immediately addressed by insurers through direct discussions with the operator which will be reinforced by the insurer's annual reassessment of the operator at the time of policy renewal.

Most Australian ag operators pay between six and 12 per cent of the value of the aircraft hull as insurance premiums on each aircraft each year. For example, for a turbine powered Thrush or Air Tractor 502, this could amount to some \$100,000 per aircraft per year. In the case of an AT802, this cost could be more than \$150,000 per aircraft per year.

Ag operators go to considerable lengths to manage and reduce this significant business expense through good safety systems and well managed flight and duty times.

This reality is reflected in the ag accident rate.

Seasonal nature of work

The length and level of activity of aerial agriculture is dictated by farming and seasonal conditions each year. The sector's activity is characterised by intense periods of activity followed by months of little or even no activity.

For example, the rice sowing season normally begins around the 28th of September each year and can be over in as little as six weeks. This is followed by a break of some weeks where operators and pilots have the opportunity to rest and relax before the rice spraying season commences at a generally lower level of intensity.

The total cotton season, which accounts for a significant amount of the industry's activity, is now down to less than 100 days each year, with the prospect that this will reduce even further as the cotton industry introduces genetically modified cotton resistant to insects.

The intense nature of agricultural activity means that this sector is significantly different from other GA sectors, where activity may be spread out over a longer period.

The implication is that during these intense phases of activity, pilots and operators need to have the ability to undertake the task while still responsibly managing flight and duty times.

The 'non-standard' exemptions already in use for over ten years in the industry provide an excellent field study of the practicality and safety of the AAAA proposal.

The proposed regime allows essential flexibility for the industry and ensures that pilots have the opportunity for appropriate rest and sleep.

Importantly, the intense nature of the working period is such that pilots are able to get into a routine of work and rest for that period.

Current Ag Safety Programs

AAAA has taken such a strong lead in the provision and promotion of safety to the ag. sector over many years, often in cooperation with CASA.

AAAA now runs nine major conferences, meetings and a National Convention each year where at least one key speaker on safety issues is included. In recent years the safety focus has been on human factors, especially fatigue management and sleep management, where participants have heard from experts in the field on a regular basis.

In addition, AAAA was recognised last year by ASFA for its role in developing and offering the Agricultural Pilot Safety Awareness Courses (APSAC) at British Aerospace. These courses are now being run by three AAAA recognised providers. AAAA has made attendance at an APSAC course a prerequisite for operators maintaining their 'Spraysafe' accreditation - another program run by AAAA which continually improves the professionalism of the industry.

The APSAC courses focus on human factors as they specifically apply to ag. pilots and have as a key element training on the effects of fatigue and what pilots should be doing to ensure they are well rested.

AAAA is currently working with course providers on the development of a Chief Pilots Course for Ag to reinforce the safety culture that has developed within the industry.

Professional Pilot Program

AAAA has developed and will be launching a Professional Pilot's Program in June. The program is aimed at introducing a 'recency' requirement into Spraysafe accreditation and providing a significant stimulus to pilots to attend safety courses and to participate in ongoing education.

A key component of the program will be the need for pilots to attend safety courses which would obviously include information and practical skills in sleep management and the importance of that to safe flying operations.

Education support

AAAA envisages that any change to flight and duty times would be done in the context of an ongoing education campaign for ag pilots and operators.

AAAA has the means to deliver ongoing education to the entire industry, not just AAAA members, through its various meetings, newsletters, website, safety courses and other means.

Such a program could include not only speakers and written information, but also work by AAAA with researchers recognised in the field for the development of useful information and skills to be transferred to the industry.

CASA could play a key role in assisting the industry in this program.

Further Information

If you require any further information or would like to discuss any part of the proposal, please do not hesitate to contact Phil Hurst, Executive Officer of AAAA on (02) 6262 8256 or on email phil@aerialag.com.au