10 February 2019

By Email

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Dear Jason

AFAP SUBMISSION to the CASA CONSULTATION ON PROPOSED CAO 48.1 INSTRUMENT 2019

Overview

The Australian Federation of Air Pilots (AFAP) represents over 4,500 professional pilots in aviation safety and technical matters and is the largest professional pilot association in Australia. As a founding member of IFALPA, the AFAP also represents these pilots internationally with strong cooperation of over 100 international pilot associations representing well over 100,000 pilots. We welcome this opportunity to provide feedback to the latest CASA consultation on the Australian Fatigue Rules for Operators and Pilots (draft CAO 48.1 2019 Instrument).

The AFAP notes that a common thread throughout the draft Instrument and consultation proposals is that many of the changes which have been proposed are based upon limited superficial comparisons, where a much more robust and outcomes-based approach would have been to consider any changes as part of a package of protections of fatigue risk mitigation. There is also an obvious and recurrent theme to introduce substantially more flexibility for operators even though CASA is also promoting that FRMS is scalable and useable by all types and sizes of operations. We largely believe that there is sufficient flexibility provided by the inclusion of Appendix 7 and indeed 7 appendices.

The AFAP recognises the direct association of scalable responsibility with an associated gain in flexibility as an essential and underpinning fatigue management philosophy. It appears that there are many who either don't understand this, or simply refuse to accept the greater responsibility that must flow with the greater flexibility. We consider this to be an unacceptable position and suggest that this latest consultation and regulatory review outcome may have been avoided if this point had been stressed more effectively by CASA.

The AFAP notes that CASA set the terms of reference (TOR) for the Independent Review and we believe that some of these TORs have unduly restricted the ongoing regulatory review process. An example of this is the requirement to compare with *"international peer regulations"*. The AFAP believes this is a restrictive TOR because it has led to a lingering and current problem of continued preference to benchmark against international 'averages'. Furthermore, it has become clear to us that there were nil requirements in the TOR for ensuring and embedding that considerations and recommendations must adhere to a systematic risk-based approach, so to avoid the outcome where narrow focused benchmarking would occur.

The tone of that review, and now much of the latest CASA proposals, appear to dismiss scientific evidence and instead rely on averaging international data - antithetical to the tone of CASA's own paper which is very analytical and science based (A review of the case for change: Scientific support for CAO 48.1 Instrument 2013). It is unfortunate that CASA has chosen to overlook such a wealth of scientific information as described in CASA's own research summary and instead, rely so heavily on superficial comparisons to other jurisdictions, omitting fatigue science almost entirely.

Further to this, the AFAP believes that when considering fatigue management as a whole package, the scheduling of flight crew must consider various important factors, such as time of sustained wakefulness, time on task, types of tasks, extensions of normal duty periods, cumulative duty times, amount of disruption to the pilots' schedule and mix of early morning starts and late finishes.

The AFAP also has serious concerns about the composition of this public consultation survey. We believe overall the questions were not written in a way to elicit the most meaningful responses and in some cases, carried loaded assumptions. The questions do not appear to be designed to encourage responses and may result in suboptimal contributions. Furthermore, many of the AFAP's membership have commented that this was a difficult and cumbersome consultation taking well over an hour to complete, plus considerable research time to prepare.

The amendment of Flight Duty Periods (FDPs) - Appendices 2 and 3

The AFAP notes that CASA provided an FDP comparison graph, to compare the SIEs, 2013 Instrument with the 2019 Instrument, for 1 and 2 sector duties only. The AFAP finds a lack of other comparison graphs to be quite misleading in the consultation because the other sector number comparisons were considerably and consistently less advantageous for the mitigation of fatigue. As a means to provide clear evidence of the differences, the AFAP has compiled many of the other, otherwise absent, graphs and tables so that the proposed changes can be genuinely understood and compared.

Notwithstanding the newly available comparisons, the AFAP maintains that isolated comparisons of subsets of a package of mitigations is a flawed and ineffectual means to achieve outcomes-based regulations.

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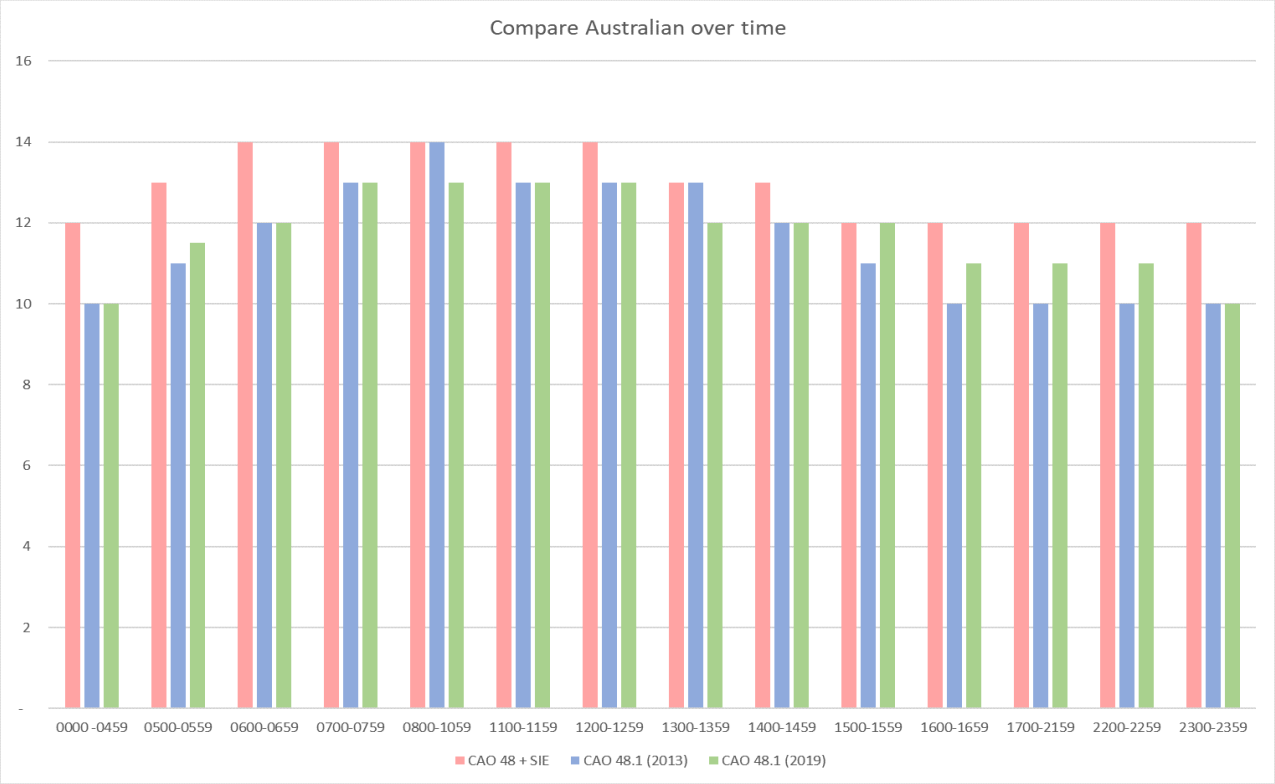
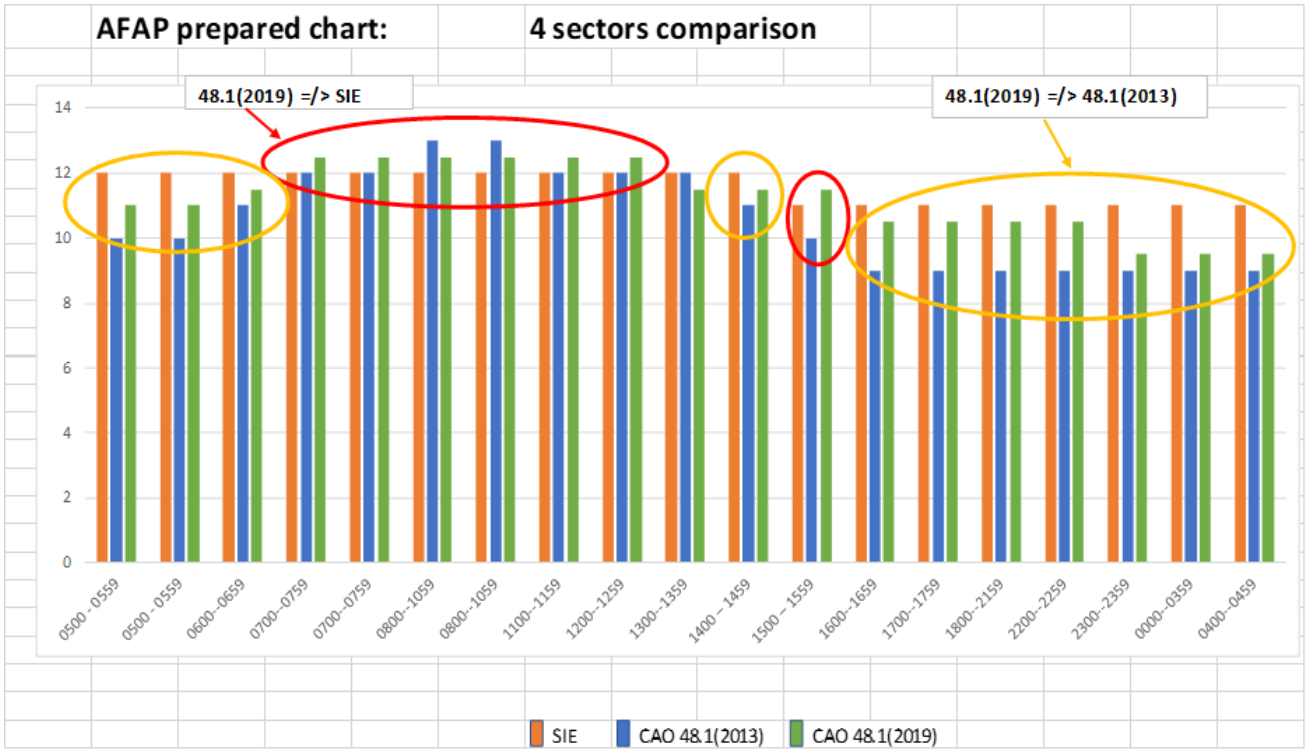
CASA prepared chart.



AFAP prepared charts: 3 & 4 sector comparisons.

The proposed instrument FDLs equal or exceed 48.1 + SIEs at most start times.



AFAP Comparison Table (appendix 2 & 3 FDPs):

Duty Limits Comparison

Start Times	SIEs	48.1 2013	48.1 2019	Sectors																		
				1-2			3			4			5			6			7+		7	8+
0500---0559	0500-0559	0500 - 0559	0500-0559	13	11(9)	11.5	12	10(8)	11.5	12	10(8)	11	11	9(8)	10.5	11	9(8)	10	10	9(8)	9.5	9
0600---0659	0600-1259	0600 - 0659	0600-0659	14	12(9)	12	13	11(9)	12	12	11(9)	11.5	12	10(8)	11	11	10(8)	10.5	10	9(8)	10	9.5
0700---0759		0700 - 0759	0700-1259		13 (9.5)	13		12(9)	13		12(9)	12.5		11(9)	12		11(9)	11.5		10(8)	11	10.5
0800---1059		0800 - 1059			14 (10)			13 (9.5)			13 (9.5)			12(9)			11(9)			11(9)		
1100---1159		1100 - 1359			13 (9.5)			12(9)			12(9)			11(9)			11(9)			10(8)		
1200---1259																						
1300---1359	1300-1459	1400 - 1459	1300-1559	13	12(9)	12	12	11(9)	12	12	11(9)	11.5	11	10(8)	11	11	10(8)	10.5	10	9(8)	10	9.5
1400 – 1459																						
1500 – 1559	1500 - 0459	1500 - 1559		12	11(9)	11	11	10(8)	11	11	10(8)	10.5	10	10(8)	10	10	9(8)	9.5	9	9(8)	9	8.5
1600---1659		1600 - 2259	1600-2259		10(8)			9(8)			9(8)			9(8)			8(7)			8(7)		
1700---1759																						
1800---2159																						
2200---2259																						
2300---2359		2300 - 0459	2300-2359		10(8)	10		9(8)	10		9(8)	9.5		8(7)	9		8(7)	8.5		8(7)	8	7.5
0000---0359			0000-0459			10			10			9.5			9			8.5			8	7.5
0400---0459																						

SIEs =	Standard Industry Exemptions
CAO 48.1 2013 =	CASA Fatigue Rules; Appendix 2 Duty and (Flight time) Limits. From the 2013 Instrument.
CAO 48.1 2019 =	CASA's Proposed Table of Duty limits for Appendix 2 & 3 operations; from the Summary of Consultation – 2019 Instrument.

CASA 2015: "A review of the case for change: Scientific support for CAO 48.1 Instrument 2013"

"CASA research: In 2001, at the request of CASA, Professor Drew Dawson and Associate Professor Greg Roach from the South Australia Centre for Sleep Research conducted a Biomathematical assessment of the existing standard industry exemptions (SIEs). They found that unacceptable levels of fatigue were legally possible across all SIEs."

CASA is proposing to abscond from its own research and fatigue science positions
These proposed increases in FDP limits are an indication that CASA is moving away from many of its first principles. Some of these first principles include; a defences-in-depth approach, considering the mitigations as a whole package that mustn't be considered in isolation and furthermore, FRMS principles.

With regard to the FRMS principles, CASA has moved from the principle that if there is to be an increase in the basic limits and flexibility, then this occurs only with an associated and proportional increase in an operator's responsibilities. These proposed FDP increases over the 2013 Instrument are certainly an example of a significant divergence from the important balance between increase in flexibility and an increase in operator responsibility. Effectively, the increased FDP limits in the 2019 Instrument could already be facilitated by the use of appendix 7 but by not utilising this approach, CASA is proposing to introduce higher fatigue risks without an associated balance of extra operator responsibility and data monitoring. This is just plain unacceptable.

Has CASA given up on the FRMS principle that to gain greater flexibility it comes with a greater share of the responsibility by the operator?

The limits of FDPs are an essential part of a suite of facets that should work together as a package. The use of "international averages" to establish what the Australian FDP limits should be, has become a superficial comparison of isolated parts of the fatigue protections and mitigators. Many of the rulesets utilised for the purposes of establishing what these averages are have other facets to their packages of protections and mitigations which the current proposals ignore. These include, but are not limited to, LNO protections, FTLs, lower cumulative duty limitations, and others. The fact that justifications based upon the use of international averages are now the basis for the increases in FDPs completely ignores these facets and the basic first principles that CASA once held on this matter.

In 2015 CASA wrote and published this position:

"…superficial comparison of specific components of differing rule-sets is unlikely to take into account other defences that may be present, and are relied upon, to manage fatigue risk."

Thus, the AFAP believes the onus in on CASA to provide evidence as to how they are not in fact allowing superficial (siloed) comparisons to alter and increase the FDP limits for appendix 2 and 3 operations. How we got to this deficient position within this ongoing review of the fatigue rules can best be understood by understanding where the idea first arose and how it grew from there.

The independent review team provided advice to utilise international averages however that review was limited by the restrictive Terms of Reference imposed upon it. Dedale noted in their report that:

"The role of the specialist(s) will be to; develop an appropriate methodology to fulfil the review Terms of Reference…"

The TOR for this review did not outline that their recommendations must consider and provide advice with a defences-in-depth approach and also nor did it outline that they should avoid superficial comparisons of specific components. The TOR did require the team to consider the DAS Directive – 01/2015 however, this document also does not provide any explicit requirements to consider regulatory reform with a defences-in-depth approach that avoids superficial comparisons of specific

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components. This is what we can see has occurred with the review team's third recommendation. Moreover, some of the proposals that have been introduced through the TWG and consultation process have further exacerbated this detrimental divergence from considering how the fatigue rules work as a package of mitigations and protections from fatigue. Some of the TORs for the independent review were inconsistent with the basic first principles which CASA themselves have previously espoused as essential and important.

The focus of the fatigue rules review must return to considering the FDPs within a suite of mitigators as a package and must remain vigilant to avoid narrowly focusing on superficial and isolated comparisons

Return to lower limits and use FRMS when there are isolated instances of a genuine need for higher FDP limits. The AFAP believes that these proposed higher FDP limits are also an example of operators wanting to gain greater flexibility in operating limits beyond the set limits without wanting to also take on an increased and proportional associated level of responsibility. This proposal is an example where the utilisation of an FRMS already provides a solution. The onus should be on proposers and or CASA to outline how such higher FDP limits cannot be facilitated through the use of an FRMS. CASA is promoting that FRMS is scalable and accessible by all.

The FDPs are now a target and not a limit

When you compare the FDPs for appendix 2 and 3 operations with the SIEs, it is clear that the limits in the 2019 Instrument have largely returned to match those of the SIEs. The SIE FDPs were developed at a period in aviation history when fatigue science was much less mature than it is today, the aviation environment was not deregulated (in terms of entrants and competition), and there didn't exist computer programs that could "optimise" and maximise the use of FCMs outside of their ODPs and minimum rest requirements. What this meant is that the old SIEs had a certain amount of fat built in and that natural buffers were provided to limit the use of fatigue limits and requirements as a target.

Today's operating environment is quite different and with aircraft that can now fly longer, the boundaries of what a human can reasonable manage to endure are regularly challenged. Furthermore, the technological advances related to computerisation have meant that the rostering programs utilised by operators can, and are, being used to ensure that the maximum non ODP of FCMs is utilised and maximised by the operator.

The fact that the limits have become targets is not a secret in the industry and the AFAP reminds CASA that many operators represented in the TWG actually confirmed this by openly acknowledging that their rostering systems are built to "optimise" the use of crew, as seen in the Summary of Proposed Changes document:

> *"Some (TWG) members expressed concern that current rosters could not be achieved with the proposed rules and that the rules might drive schedule optimisers to generate alternating early/late patterns which are acknowledged as generating fatigue reports."*

Contrast this with the position CASA provided in 2015 describing how the 2013 Instrument limits and requirements were merely measured and reasonable by stating that:

> *"The approach taken was by no means a conservative one with the resulting limits assuming relatively optimum conditions and **with inherent potential for high levels of fatigue should these assumptions not be met**."*

Does CASA now consider that the increases to these non-conservative 2013 limits can only mean that they have facilitated, and are responsible, for an increase in the inherent potential for higher levels of fatigue?

Is CASA going to ignore that operators have openly stated that their rostering programs will effectively seek to make targets of the limits that they eventually regulate?

CASA must not ignore the realities of the modern rostering programs, current rostering practices and that the SIEs were developed during a period when such roster optimisation tools and philosophies weren't available or the norm.

Limits for an FCM in an unknown state of acclimatisation
The AFAP recognises that the FDP maximums utilised by table 3.1 have increased from the 2013 Instrument to the 2019 Instrument consistent with the increases in appendix 2 table 2.1. Given that we object to those FDP limit increases, our position related to the FDP limits within table 3.1 is that these FDPs be reduced and be realigned to the reductions required in table 2.1.

The AFAP believes that the language in appendix 2 related to clauses for FCMs in an unknown state of acclimatisation is an example where the language and drafting style is difficult for the reader to understand and that CASA could modify the language used so to aid comprehension. The provision of notes to help clarify where the reader should be referred would be advantageous.

For example, Clause 3.4 of appendix 2 could better clarify that both clause 7.4 of the Instrument and clause 10.2 of appendix 2 are the relevant clauses to consider. Notes with an example would be useful.

Furthermore, the language in clause 10.2 related to how to calculate the ODP requirements isn't suited to aiding calculation. Notes and or guidance material for these calculations can aid comprehension and compliance with these clauses.

Reintroduction of Flight Time Limits (FTLs)

Flight Time Limits are a key facet of a Package of Protections
The AFAP believes that CASA, and industry, must consider how Flight Time Limits (FTLs) contribute to fatigue mitigation as part of a package of protections and to not remove FTLs from the 2019 Instrument. Furthermore, we believe that for this change to have been proposed, it only could have been considered in isolation and that it would not have been proposed at all if a defences-in-depth approach had been utilised.

Prior to the 2013 Instrument, included in the package or protections and mitigators for fatigue were the Flight Deck Duty Limits (FDDLs). In the 2013 Instrument, CASA removed the FDDLs and justified this removal with the statement:

> "*Whilst the flight deck duty limits are removed, other mechanisms such as minimum inflight rest periods and maximum flight time restrictions perform a similar function in limiting continuous time at the controls*."

https://www.legislation.gov.au/Details/F2013L00628/Explanatory%20Statement/Text

The current proposal to remove individual daily FTLs means that there is an absence of any function which limits the continuous time at the controls (non-augmented operations). From CASA's own statement we can see that the inclusion and retention of FTLs in the 2013 Instrument was considered to be an essential mitigator in order to allow the removal of the only other time-at-the-controls protection, FDDLs. Such a statement also acknowledges that time at the controls is a specific aspect of a duty which heightens the fatigue and risk of fatigue of FCMs. Research has noted an association with performance decrements with high workload and long monotonous tasks, which are analogous with FCM duties in flight. Furthermore, in the UNSW Pilot Fatigue Survey, respondents reported beginning to feel fatigue at a mean flight time of approximately 6.5 hours during the day and 4.5 hours during the night, highlighting a link between fatigue and flight time. Indeed, within the supporting commentary to this specific consultation question, CASA acknowledges:

"...there is general consensus that flight time is the most fatiguing aspect of a flight duty period."

The AFAP firmly agrees and believes that FTLs, not only form an essential part of the overall package of fatigue mitigation but that, FTLs address one of the most important facets that no other part of the suite of mitigators specifically addresses. This is especially so since the removal of the FDDLs. To largely remove FTLs from the fatigue package is to ignore this, and the risk and systems-based approach to safety, which all federal government agencies must adhere to.

We believe that CASA, and the consultation process, has erroneously wandered from basic fatigue management first principles in proposing this change. What's more, CASA has already provided sage advice as to where this current fatigue rules review process should now venture and return.

In 2015 CASA wrote and published this position:

*"To fully appreciate how the rule set is intended to manage fatigue, each layer of protection incorporated in the rules needs to be understood in context of the manner in which it operates as part of a "**defences-in-depth**" approach that, as a whole, achieves a safe outcome in that context."*

The FTLs provide both a specific function and they form part of an overall defences-in-depth approach of the package. This current proposal demonstrates that the Australian civil aviation regulator has unfortunately lost its way, for a period of time during this review, and the AFAP recommends that returning to some essential first principles can help restore a sound path forward from here.

CASA's Action 3-1 isn't in response to the Independent Review's Recommendations

The AFAP notes that CASA is justifying its proposed changes and removal of FTLs based upon recommendation 3 from the Independent Review. Citing that their Action 3-1 is in response to recommendation 3 and as a result of the review team's recommendations:

"We identified in our response to the independent review, that we would simplify the management of flight time by removing flight time limits from the prescriptive limit tables and establishing a single flight time for each appendix."

And then further:

"After further consideration, we have determined that flight duty period limits do not need to be supplemented by daily flight time limits"

The Independent Review did not provide any recommendation, either in recommendation 3 or otherwise, to either largely remove FTLs or to establish single flight time for each appendix instead of the approach taken in the 2013 Instrument. Recommendation 3 from that report only relates to FDPs, not FTLs. What is clear here is that a superficial comparison of this layer of protection has been made with other jurisdictions without understanding the context or the manner in which this layer of protection operates as part as a whole package.

Given that CASA has previously supported FTLs as essential, the onus is upon CASA to provide reasons for their decision to remove daily FTLs because it is not linked to the review team's recommendations.

Simplification as a reason to delete FTLs is a deficient reason

Beyond the foundation reasons (stated above) for not removing FTLs from the 2019 Instrument, the AFAP believes that citing simplification as a reason to largely remove them is quite deficient.

What part of the draft rules couldn't be deleted based upon simplification as a reason?

Simplification is stated as a reason for the current proposal of the removal of FTLs however, what is not considered is that (under the draft 2019 Instrument) there are still requirements to ensure that

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cumulative flight time is not exceeded, such as for 28 and 365 day periods. In order to ensure that this is achieved, daily flight time will still need to be considered, monitored and recorded. Thus, it is quite questionable if this proposal actually provides any reasonable measure of simplification at all. For FRMS, it may actually create a notable complication instead.

ICAO ANNEX 6 chapter 4-10 outlines that States establish FTLs for the purposes of managing its fatigue-related safety risks. In the 2019 draft Instrument, CASA only provides an FTL for 1 sector duties, other than for 28 and 365 days, However related to FTLs, the ICAO SARPS (Appendix 7 of Annex 6) provides more by stating:

"The operator shall develop and keep current FRMS documentation that describes and records…
*...**scheduled and actual flight times**, duty periods and rest periods with significant deviations and reasons for deviations."*

Of particular note here is that the SARPs are quite specific in that both scheduled and actual flight times shall be recorded for those operating to an FRMS. Thus for an FRMS, here we see that removing FTLs from the prescriptive appendices creates a problem for operators utilising an FRMS. Following the philosophy that FRMS is based upon the prescriptive limits of an appendicy, and then those limits are altered when it is safely demonstrated they can be using FRMS change procedures, we then ask this question: what FTLs would an FRMS utilise in meeting the need to document the scheduled FTLs? Thus, we can see that the removal of the FTLs from the basic limits creates extra complexity for when operators utilise an FRMS.

The onus is on CASA to provide FTL justifications
The AFAP believes that allowing an unaugmented 10.5 hour FTL is problematic for single sector night time operations. We note that it is in fact 1 hour greater than the current S.I.E. limit (9.5 hours), which is of itself inadequate to protect against fatigue risk. The FAA and Transport Canada limit flight time to 8 hours for late night operations. This approach recognises the difference in the circadian cycle where a flat limit does not. Remembering that the independent review team never provided a recommendation to change FTLs, the AFAP asks:

How has CASA arrived at a 10.5 hour limit using 'international averages'?

The current proposal to largely remove daily flight time limitations is quite inconsistent with the ICAO SARPs, is contradictory to CASA's original justifications, is in fact not based upon any recommendation from the Independent Review team. Therefore, we believe that CASA hasn't adequately or reasonably justified the proposed removal of most daily FTLs from the CAO 48.1 2019 Instrument.

Limits for Augmented Crew

Proposed Augmented Crew Limits don't recognise the circadian cycle
The AFAP believes that CASA has failed to maintain any relevance to fatigue science when it comes to their proposed FDP limits for augmented crew in the 2019 Instrument. The AFAP notes that for operations with Class 1 and 2 crew rest facilities, the new FDP limits are the same maximum regardless of the start time for the acclimatised FCM and therefore, they are without any circadian cycle recognition whatsoever. Furthermore, the new proposed limits have all been increased up to the previous maximum values. This aspect is very disturbing, we consider that if a flat limit was going to be the new proposal, then this should adopt the limits from the more limiting part of the cycle in the previous table, not the maximums. The AFAP wants to be explicit here and remind CASA that the limits referred to here from table 5.1 of appendix 2, are for acclimatised FCMs. Circadian and start of duty time aspects must be included.

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The AFAP notes that the current proposals for augmented crew FDP limits contradicts CASA's own previous positions, which were based in fatigue science. In 2012 (within NPRM 1202) CASA provided reasons for moving to the new fatigue rules (2013 Instrument) and in relation to augmented crew operations stated:

> *"One of the concerns was research that indicated flight crew were on average awake for six hours prior to commencement of augmented crew operations. This had the potential to result in extended periods since last sleep in suitable sleeping accommodation. In order to manage this factor, augmented FDP limits were specified based on start time with morning start times less likely to result in extended wakeful periods prior to commencement of the FDP."*

In 2015 CASA again provided reasons for moving to updated fatigue rules and noted that some of the key reasons included specifically, that the old rules…

> *"…did not consider or adequately take into consideration the effect on fatigue of Start time, Number of sectors, Effects of circadian rhythm & Effects of changing multiple time-zones"*

Table 5.1 of appendix 2 is for application for crew that are in a known state of acclimatisation and therefore the relevance of the circadian cycle cannot be dismissed as CASA is now proposing. The AFAP believes that with this current proposal, that is exactly what CASA is doing. This is blatantly incongruent with known fatigue science basics and the AFAP believes CASA must answer this question:

How can CASA legitimately propose to have no variations to FDPs for augmented crew operations and still consider that they are providing outcomes based fatigue regulation with any basis in known fatigue science?

These provisions must be reconsidered and altered so that they are once again based upon fatigue science with an outcomes based focus to actually provide genuine protections against fatigue.

Non-acclimatised Augmented crew FDP limits are unacceptable

The revised appendix 2 table 5.2 for crew operating in an unknown state of acclimatisation has been unacceptably altered and are contrary to fatigue science. The AFAP notes that under the draft 2019 Instrument, the acclimatised and non-acclimatised maximum FDPs for augmented crew have become exactly the same (Class 1 & 2 rest facility). What's more, these limits have all simply been increased to the maximum values found in table 5.1 (for crew in a known acclimatised state). Thus we have a number of problems with these current changes and this proposal:

- These changes have been made without any accompanying justification from CASA or specific recognition in the consultation questions and therefore, these specific proposed changes have been attempted in a clandestine manner that absconds from CASA's consultation obligations.
- The limits which these changes have been increased to are too high and if an approach to use single FDP maximum limits is pursued, the limits should be equal to the minimum limits from table 5.1 in the 2013 Instrument.
- The proposed changes to table 5.2 removes a layer of fatigue mitigation, by no longer recognising differences that an increased ODP has in restorative benefits and fatigue mitigation.

These proposed changes represent another example where CASA's proposals are considered in a superficial and isolated manner and that they have failed to be considered in a defences-in-depth approach.

What legitimate aspect of fatigue science can CASA provide for removing fatigue mitigation defences that recognise both the circadian cycle and the differences in known and unknown states of acclimatisation?

The AFAP believes that CASA must return these clauses and limits to those that are based in fatigue science.

Class 3 resting facility and philosophy are deficient

The AFAP believes that neither a seat in the flight deck nor in the cabin is suitable for achieving any assured measure of restorative rest. The flight deck is primarily a work environment and there is no way of ensuring that that primary purpose cannot interfere with a secondary and dual purpose of providing a rest facility, and nor should we want it to. The secondary purpose shouldn't undermine the primary purpose. The AFAP believes that there is no way to definitely rely upon the flight deck to facilitate and provide an environment for restorative rest. A seat in a public passenger compartment is no better and this environment is subject to the adhoc influences of the passengers and cabin crew and thus, operators have no way of ensuring that there will definitely be an adequate environment for their FCMs to be provided restorative rest here too.

The AFAP notes that such perspectives are not foreign to CASA and that in 2015 CASA provided some perspectives and basic principles for moving to the new fatigue rules. One of which was:

> *"In-flight rest can be restorative; however, this is dependent on the standard of the in-flight rest facility, whether a full sleep cycle is achieved and the individual's propensity to sleep."*

On many aircraft the noise levels in the flight deck can be upwards of 80db, there are radio calls being made and received, and the requirement for cabin crew to check on the welfare of pilots every 20 minutes can mean that there are little to nil actual opportunities to use this environment for an actual rest facility. The AFAP believes that the current proposals have not been considered for how they would actually operate in the real world environment and as part of a package of mitigations.

With consideration of the actual environment of the passenger cabin class 3 rest facilities, there is little specification regarding ergonomic considerations for the crew rest facility. The AFAP notes that there are current examples of Australian operators utilising 'premium economy' type passenger seats for the purpose of class 3 rest facilities. These seats have ergonomic limitations which provide negative restorative fatigue benefits including seat pitch limitations and insufficient room for taller occupants, foot support that is only suitable for occupants shorter than approximately 170cms, and, virtually non existent leg support, especially for occupants taller than approximately 170cms. Furthermore, the classification of a seat by an operator as 'business class' or otherwise should have no bearing on this matter because the classification is entirely arbitrary, non-scientific and at the sole determination of the operator.

The AFAP notes that the TWG were able to agree that the consensus of fatigue science, that forms the basis for allowing the use of class 3 rest (such as the TNO report and the Nicholson and Stone study), relies on a seat that is fit for purpose for obtaining sleep. There is no scientific evidence that supports the extension of basic crew FDPs utilising a rest facility that is not fit for purpose for obtaining sleep.

Yet in spite of the current problematic aspects of class 3 rest, and the environment in which these class 3 rest facilities are located, the 2019 instrument has actually introduced increases to most of the FDPs associated with Class 3 rest facilities. Furthermore, there has been a reduction n the variations in duty length associated with differing start times. Similar to maximum augmented FDPs, CASA has minimised the recognition of the effects of the FCM's circadian cycle. Thus it can be noted that all the proposed changes associated with Class 3 operations with augmented crew have actually been a deterioration and divergence from fatigue science. What's more, given that there are multiple deteriorations, these proposals are effectively proposing a divergence from a defences-in-depth approach from a systemic risk mitigation approach too.

How can CASA legitimately justify that these proposals are based in fatigue science and safety management principles when they are decreasing the relevance of the circadian cycle and obviously diverging from a defences-in-depth approach?

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How can CASA legitimately justify that these, class 3 related, proposals are consistent with an outcomes-based regulatory philosophy when they have repeatedly, and increasingly, ignoring the physical and operational realities of the real world environment in which they are meant to function?

The ability for a FCMs to nap in an environment where interruptions and other primary activities regularly take place must be re-established as the primary reality of all class 3 related clauses and considerations. The AFAP believes that neither a seat in the flight deck nor in the cabin is suitable for achieving any assured measure of restorative rest and therefore any FDP increase, over the non-augmented FCM limits, must remain very limited increase.

Definition of Ultra Long Range (ULR) Operations

The AFAP understands that ULR flight and duty periods are internationally recognised and should be considered and regulated by CASA at Appendix 7. The ULR steering committee should be CASA's first reference point for regulating and mitigating pilot fatigue on these flights. An extract from Flight Safety Digest 2005:

> *"ULR flights have planned flight-sector lengths (block times) greater than 16 hours and flight-duty periods from 18 hours to 22 hours in the scenarios considered since June 2001 by the ULR Crew Alertness Steering Committee, which conducted four workshops through co-sponsorship of Airbus, Boeing Commercial Airplanes and the Foundation. The steering committee provided a global forum to define the operational issues and the technological issues associated with ensuring pilot alertness during ULR flights, and to develop common methods to address these issues."*

The AFAP cannot understand why CASA has continued to provide some regulation within appendix 7, consistent with the FSF working group for ULR operations, and we believe that this should change.

Disruptive Schedule Management

Retain LNO Provisions - Improve the WOCL Provisions

The introduction of window of circadian low (WOCL) definition and associated protections is a necessary inclusion to FCM fatigue mitigation for the reasons provided in the consultation documents. However they remain incomplete and deficient and furthermore, the removal of the requirements associated with Late Night Operations (LNOs) are an unacceptable degradation. The two aspects of the WOCL and LNO may seem to perform a similar function in fatigue mitigation however, these two aspects aren't interchangeable as has been suggested by the removal of the applicability of LNOs in the consultation draft.

The introduction of a WOCL and associated protections enhances the opportunity for FCMs to obtain sleep during the most crucial part of the circadian cycle. This is essential for the restorative and preventative aspects of fatigue management and the sleep cycle.

The period of the WOCL is well recognised as the *most* crucial and sensitive part of the circadian cycle but it is not the only crucial and sensitive part of this cycle. Protection covered by LNOs in the 2013 Instrument remain an important set of provisions to help mitigate the fatigue effects of alternating early / late patterns and during LNO duties. The WOCL alone doesn't provide fatigue mitigation in the hours leading up to it, which are part of late FDPs and such patterns. In fact, the definition of a LNO should fully encompass the WOCL and therefore the time period included in the LNO definition should more properly be 23:00 to 06:00.

The proposed changes in the 2019 draft Instrument do not adequately protect late night operations and this is supported by CASA's own position provided in their Explanatory Statement. https://www.legislation.gov.au/Details/F2013L00628/Explanatory%20Statement/Text

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"...the current fatigue regulations are considered deficient because they do not account for a number of factors that the current scientific evidence suggests are important including;

- *circadian rhythms,*
- *the impact of crossing multiple time zones*
- *differences in the quality of rest at different locations and different times of the day*
- *number of sectors flown in a flight duty period*
- *flight duty period start times; and*
- ***late night operations"***

In the 2015 CASA document "A review of the case for change: Scientific support for CAO 48.1 Instrument 2013" there is further support to include and consider the night time period as a higher fatigue risk period:

*"Some additional elements to influence duty time considerations should also include time of day elements such as **night time hours and working through the Window of Circadian Low (WOCL)**, multiple flight segments and transient fatigue aspects such as out of sync time zones acclimatisation. This is supported by National Institute for Occupational Safety and Health (NIOSH) (FAA, 2012). The FAA has subsequently limited some night time operations to a maximum FDP of 9 hours."*

The 2019 Instrument doesn't provide such protections or restrict night time operations to a maximum of 9 hours in most instances. In fact, the night duty periods with the largest allowable flight duty hours are for duties that commence in the WOCL period of 05:00 to 0559. This fact is further exacerbated, as indicated in the 2017 UNSW Fatigue survey, that typically most pilots require a wake up time 60 to 90 minutes prior to sign on time.

The currently proposed WOCL clauses inadequately provide WOCL protection

The AFAP notes that current proposed protections and limits on the infringement of the WOCL are insufficient due to the requirement for consecutive early starts to have occurred before the very modest reductions in FDP occur. What's more, it is very obvious to the AFAP that such a trigger point (3 or more consecutive early starts) will actually create an encouragement for operators to swap FCMs from early to late duties and back again. There is no acknowledgement that infringing the WOCL on several non-consecutive days within a short period (e.g. 7 days) is fatiguing, not just consecutive infringements of the WOCL. With modern computerised rostering systems, rostering to avoid triggering the consecutive aspects of the WOCL clauses is very easy to achieve, and therefore the AFAP asks:

Has CASA realised that they are going to be responsible for adversely encouraging the increased rostering of significantly more disruptive schedules than is presently the case with the LNOs alone?

The AFAP reminds the regulator that the management of fatigue is a three way partnership and that they are a key partner in the tripartite. Furthermore, that these proposals represent a significant step backwards for the management of disruptive schedules and night time operations.

The impact of Disruptive Schedules

As an example, the following sequence of duties could be assigned under CASA's 2019 Instrument proposal but could not be under the SIEs or 2013 Instrument:

DAY 1 2200-0900
DAY 2 2200-0900
DAY 3 2200-0900
DAY 4 2200-0700
DAY 5 2359-0700

Such a sequence of assignable duties is only possible because CASA is proposing to remove protections that address if there are 3 or move LNO duties per 7 days, regardless if they occur consecutively or not. Thus these proposals are quite incongruent with easily understood fatigue

common sense however there is clear evidence that supports this common sense too. The UNSW Fatigue Survey provides this information on the contributors of fatigue:

"The contributors nominated most often were mainly the same as those experienced by most pilots. More than half of the pilots who had early starts or consecutive early then late duty periods nominated these factors as in their top three problems. Similarly, more than 40 percent of the pilots who did night flights during 10pm and 6am, long duty period of 8 hours or longer, had inconsistent roster patterns or short recovery time between duties nominated these factors as one of their top three problems."

And:

"Contributors found to increase the odds of pilots experiencing a substantial or major fatigue problem…
,,,inconsistent roster patterns increased the odds by 75 percent."

The AFAP strongly asserts that the fatigue rules TWG did not propose to replace LNOs with the WOCL, it was 'as well as', not 'instead of' CASA's assertion that this was a proposal from the TWG is incorrect. The current proposal further exacerbates the potential for circadian dysrhythmia and allows nearly any type of disruptive schedule to occur. CASA must reinstate real protections for disruptive schedules and night time operations. The proposed requirement for WOCL protections only provides protection for consecutive early starts and not late night operations or disrupted patterns.

Allowing 4 late night operations (as per the CAO 48 S.I.E.), is already problematic. Extensive research, including that used by the FAA and Transport Canada in developing their fatigue rules, has shown that fatigue related impairment becomes unacceptable after more than 3 consecutive duties that encroach the WOCL. FAA and Canadian rules allow only 3 consecutive WOCL duties, unless they are split duties which contain a sleep opportunity. CASA's proposal to limit the FDP limits on the 4th and 5th consecutive WOCL duties does not work for 'all night' type operations.

The international regulations to which CAO 48.1 is now being benchmarked limit consecutive WOCL duties to a maximum of 3 (unless they are split duties with that contain a sleep opportunity). These international limits are based on substantial scientific research analysed by the FAA in the creation of their regulations.

What scientific research has CASA obtained to contradict this, and verify that 5 consecutive WOCL duties are safe?

The AFAP Proposes to adopt the Transport Canada provisions
In addition to the late-night operation definition, the AFAP proposes the following definitions:

early start operation means an operation with a start time between the hours of 0500 and 0700 local time at the location where the FCM is acclimatised
local night means a period of 10 consecutive hours which includes the hours between 2200 and 0700 local time at the location where the FCM is acclimatised

The Transport Canada (TC) rules include the following definitions and protections. The relevant sections are reproduced below for reference. AFAP urges CASA to adopt the following TC inclusions:

1) Max 3 consecutive WOCL duties (unless spilt duties with sleep),
2) Local night 9 hours between 22:30 and 0930;
3) Early duty definition - start between 0200-0659;
4) Late duty definition- ends between midnight and 0159;
5) Night duty definition- begins between 1300-0159, ends after 0159;
6) Local night's rest required between late/night duty and following early duty, and;
7) Local night's rest required between early duty and following late/ night duty.

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Early duty means hours of work that begin between 2 a.m. and 6:59 a.m., at the location where the flight crew member is acclimatized.

Night duty means hours of work that begin between 1 p.m. and 1:59 a.m., and that end after 1:59 a.m. at a location where the flight crew member is acclimatized.

Late duty means hours of work that end between midnight and 1:59 a.m. at the location where the flight crew member is acclimatized.

Consecutive Flight Duty Periods: 700.51
(1) An air operator shall not assign to a flight crew member more than three consecutive flight duty periods if any part of those periods falls between 02:00 and 05:59, unless the air operator provides the member with one local night's rest at the end of the third flight duty period.

(2) However, an air operator may assign to a flight crew member up to five consecutive flight duty periods even if any part of those periods falls between 02:00 and 05:59 if the member is provided with

- **(a)** a rest period of three hours in suitable accommodation during each flight duty period; and
- **(b)** 56 consecutive hours free from duty at the end of the last consecutive flight duty period.

(a) Disruptive schedules
Dramatic changes in duty start times will disrupt a flight crew member's circadian cycle (i.e. disrupt sleep patterns, which results in fatigue). The amendments (section 700.41) introduce a requirement for a local night's rest to prevent or reduce fatigue associated with the circadian cycle disruption. An air operator will have to provide a flight crew member one local night's rest when transitioning from an early duty to a night duty or a late duty, or vice versa. This provides the opportunity to recover from acute fatigue associated with the transition in the schedule.

Standby Requirements

Appendix 2 & 3 operations
The AFAP largely agrees with the proposal to limit the amount of time an FCM can be held on standby and limit (or reduce where appropriate) the maximum FDP possible after a call out when there has already been a period of standby time undertaken prior to the call out. Some may disagree with this principle but with consideration for the fatigue science that cognitive abilities and alertness both diminish markedly after a time awake of 16 hours, the proposals are reasonably well considered and address this aspect. Furthermore the AFAP notes that in 2015 CASA provided a list of the underlying principles for the changes in the management of fatigue and with specific reference to standby it was stated:

"Because a period of standby requires holding oneself ready for a flight duty, it is not considered to be a period of off-duty."

For appendix 2 & 3 operations, the AFAP considers the current standby proposals sound when they are considered in an isolated manner. However, with consideration for how the standby clauses work as part of a package of mitigations, there exists examples where greater consideration must be factored into these considerations.

Include FTLs and FTL reduction clauses within standby clauses
Greater cumulative fatigue limits, inadequate disruptive schedule management with the removal of LNO, reduced workload management protections through FTLs are but some examples where the fatigue rules need to be considered as a package of mitigations. For example, if a renewed focus upon fatigue science is restored and the 2019 Instrument retains FTLs for daily limits, but these daily

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limits are only based on a single flat FTL, then how would such an FTL also be reduced when the combination of a standby and FDP after a call out are reduced in many scenarios? The AFAP reminds CASA here that they have previously maintained that time spent at the controls is the most fatiguing aspect of duty. Thus, the inclusion of recognition that the resultant FTL for a reduced FDP would also need to be calculated. Such an approach would be consistent with a defences-in-depth approach.

Appendix 4B & 5
For pilots operating under appendices 4B and 5, there is no maximum limit to standby periods. Standby clauses for these appendices simply state that a flight crew member may be placed on standby. Without an end limit to standby period, FCMs can be placed on perpetual standby arrangements that are only interrupted by mandatory ODPs and any FDP. With consideration as to how these bare and open standby clauses affect real world considerations.

FCMs can be on standby from normal waking times and remain so throughout the day. Without any duty assigned for the night time period, an FCM would not want to nap too long during the afternoon with a mindfulness as to not make sleep during the normal sleep hours difficult. Alternatively, the FCM may only have had a short nap in the afternoon when they are called in to operate an overnight operation. In this scenario it is realistic that the FCM could then finish such a duty hours beyond the end of night. Meaning that for more than a 24 hour period, the crew member has had no REM sleep or any sleep at all in some cases. Without a limit to the maximum amount of standby that an FCM can be placed on, the ability of the FCM to manage their own fatigue risk is largely beyond their control. The AFAP asks CASA to consider what is an appropriate maximum for standby for these clauses and to discuss this with the next TWG on fatigue.

Appendix 4A & 5A
The AFAP questions whether CASA has intentionally not provided any standby clauses for Appendices 4A and 5A. Does CASA intend that placing FCMs on any standby arrangement for these types of operation would be an undesirable proposition?

Appendix 4 & **6**
The AFAP notes that the appendix 4 and 6 clauses for standby have received some of the same amendments as those for appendices 2 and 3 however that the maximum combined, standby plus subsequent FDP, total of 16 hours has not been included. The AFAP believes that this maximum combination clause should be included given that there is already the decreased calculation clause, above 4 hours of standby, already included.

Reassignment of flight duty with an outcome-based approach

Reassignment clauses are based in fatigue science
The AFAP agrees with the amended reassignment clauses that outline the right to refuse the reassigned duty based upon an aim to ensure that safety outcomes are achieved (i.e. outcomes-based regulations). Whilst we note that reassignment provisions have been altered to more explicitly outline that FCMs have the right to decline a reassignment based on their own assessment to be fit for the duty (i.e. not another person or a fatigue monitoring computer program making the assessment or decision), we also believe that these clauses won't alter the safety culture aspect prevalent that currently work against the intent of these clauses and protections.

The cultural aspects of reassignment must be included in regular training
The AFAP believes that there are some significant organisational and safety culture considerations to these, and other, clauses that need to be addressed so to better enable them to function as intended. We envisage two main risks to fatigue with the reassignment clauses and that both should be addressed through regular training and adequate guidance material.

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The AFAP questions whether the reassignment provisions are strong enough alone to prevent the temptation to apply undue pressure to an operator's FCMs when they inform that they won't be accepting the reassigned duty. The firm requirements of the regulatory theory outlined in these clauses could and will be challenged in the real-world environment where there are pressures and temptations for operators to 'just get the job done'. Such pressures can come in the form of explicit communication such as: "you are the only one available, either you do it or the flight has to be cancelled". This is an example of a soft edge access point into the firm limits provided in the reassignment clauses.

Likewise, the sense of duty felt by FCMs to their job can lead to a situation where, against their initial and better judgment, an FCM feels compelled to accept a duty they otherwise would not have. This is true for reassignment duties, day off call in duties and duty extensions. Pilots are problem solvers by nature and dedicated to their profession. Such traits can work against the safety system when the pilot is fatigued or has limited time before a degraded state of alertness and mental agility arises.

For both of these reasons the AFAP believes that it is essential that the 2019 instrument includes, within appendices 2 to 7, clauses that outline the requirement for regular fatigue management training and that an essential baseline of what is trained is established and well understood. However, the safety culture challenges and the need for regular training are not limited to only matters related to reassignment.

Australian aviation industry has a significant cultural problem with fatigue management

The AFAP strongly believes that the cultural aspects of an organisation's culture are in fact the most important area to address in regular training. It is the soft edges and access points to fatigue protections that are the weak points in the system and these can be used to undermine the firm limits and requirements, which effects the viability of any outcomes-based approach to regulation. In recognising that fatigue mitigation can be undermined, it must be understood that it doesn't matter if it is either the firm requirements or the soft cultural aspects (or both) that are used to undermine fatigue management, the outcome is that the overall safety outcome is undermined. The research supports that there is a significant problem which is yet to be adequately addressed. The recent ATSB report on fatigue states that:

"The pilots who removed themselves from duty felt they left a 'slightly negative' or 'very negative impression with management."

And:

"Overall, pilots did not feel comfortable in removing themselves from duty, particularly first officers compared with captains. Of the pilots who reported removing themselves from duty, around half felt 'not comfortable' or 'rarely comfortable'."

The findings from the UNSW research on fatigue are consistent with that of the ATSB here and in relation to the cultural aspects of fatigue reporting, the UNSW report provides these findings:

"Just over half of pilots responded that they have ever reported their experience of fatigue before or during work (see Figure 14) but of these, most reported that they have done so rarely. When asked why they do not report their work-related fatigue experiences, the most common reason was that there were no benefits in reporting fatigue (Figure 15). Over one in four felt that there was likely to be an adverse response from their company if they reported fatigue."

The belief that there is no point to providing fatigue reports points to how operators actually use fatigue reports (or don't), to how many pilots are completely disengaged because of this, and points to the large mountain yet to be climbed to turn such survey results around in the future. The evidence is quite clear and consistent here, the Australian civil aviation industry has a significant safety culture problem with how it views, reacts and educates on fatigue management matters. No amount of regulation is going to fix this problem alone, however the regulation must provide clear minimum standards. /Furthermore, it is absolutely that regular fatigue training, be mandated through the 2019

Instrument, for FCMs, management of operators, and any other relevant staff. It is insufficient that training requirements are only included in the 2019 Instrument when appendix 7 is utilised.

How can CASA justify not mandating fatigue management training into the 2019 Instrument when the evidence is clear that there are significant and entrenched negative views on fatigue management which are so prevalent in the Australian aviation industry?

Night Time Considerations

Consistent with the need to retain the LNO protections, the note referring to Clause 13 and LNOs within reassignment clauses should be retained. To propose to remove LNOs and this note is an unacceptable deterioration of fatigue management and the AFAP reminds CASA to re-establish a defences-in-depth approach to managing fatigue. Furthermore, we note that with the proposed removal of the note referring to LNOs, CASA has not proposed to include a corresponding note referring to the newly proposed Clause 13, referring to the WOCL. We believe that this should be included.

Fatigue Risk Management System (FRMS) Requirements

Moving or improving some guidance material

The AFAP agrees with moving some material out of the Instrument and into the guidance material. The AFAP recognises that some of the language used within appendix 7, clauses 4 and 5 (2013 Instrument) are more akin to guidance material than regulation. Having said this, we believe that the use of, and inclusion of, notes within the Instrument does help improve the distinction between legal requirements and guidance material whilst also improving the readability and comprehension of how to comply with the Instrument.

Note one of Sub-clause 1.2 is consistent with the requirements. However another note addressing that non-significant changes still need to be notified to CASA within 7 days may provide added clarity and comprehension.

Change Management and Stakeholder Engagement

The AFAP agrees that for significant changes for an FRMS, CASA approval must be obtained first. We also agree with the utilisation of SMS functions for this purpose and therefore suggest that it must be clearly provided in the 2019 Instrument that an SMS is a mandatory requirement for the approval to use an FRMS.

The AFAP acknowledges previous adverse change proposal requirements contained in Appendix 7 para 7.6 (of the 2013 Instrument) provided a protection to ensure that operators did not adversely undermine an FRMS. This protection was provided by way of a stipulation that such changes required the prior approval of CASA. The proposal within the draft 2019 Instrument seeks to tackle this aspect in a different manner by requiring that an operator's change management procedures are used to manage FRMS changes. This is consistent with incorporating FRMS within SMS however there are some residual concerns to consider.

It is proposed that FRMS is scalable so that it is accessible for all sizes and types of operations. It should not be missed that SMS is currently not mandatory for all AOC holders but will be once Part 119 of CASR is applicable in March 2021. Appendix 7 does not require that an SMS is an essential requirement before an FRMS is approved. Therefore, it currently remains a possibility that operators without an SMS, or a fully functioning SMS, could be allowed to introduce an FRMS prior to or concurrently to the introduction and adoption of an SMS. the CAO 48.1 Instrument is likely to be applicable prior to CASR Part 119.

Does CASA intend to allow AOC holders without an SMS to use an FRMS?

Within and across various AOC holders operations, there are varying levels of maturity of SMS in existence. This has been recognised by both CASA and the Independent review team (Dedale) previously. In acknowledging these facts, we suggest that considerable caution should be applied to ensure that change management procedures are not misused so to adversely undermine an FRMS.

As a suggestion, to support the stakeholder identification and engagement aspects of change management procedures, a note within the applicable CAO 48.1 clauses should be included. The purpose of which is to outline that there is an expectation and intention that an organisation's Fatigue Safety Action Group(s) (FSAGs) be included in any change management process associated with FRMS, as a key stakeholder. To further enhance this, guidance material for FSAGs should include suggested FSAG meeting agenda items, with FRMS change proposals being one such standing item. This would further ensure that change management for FRMS is focused on producing tangible outcomes, is conducted with the best of intent and that any changes are well considered.

Realistic outcome-based FRMS - The impact of safety culture upon FRMS
FRMSs are scalable but trust and confidentiality are not.

Trust in the appropriate use of safety related information can be broken too readily and easily, which can result in mistrust remaining for an extended length of time with FCMs, either individually or collectively within an organisation. The UNSW fatigue research shows that there are significant levels of mistrust by FCMs towards their management when it comes to matters related to fatigue management. Lessons of broken trust for FCMs by operators can even be transferred with an FCM if they take up alternate employment with a different operator. Such is the degree to which trust in reporting and the appropriate use of safety related information can be considered fragile and long lasting. Therefore it is extremely important that negative learning outcomes are avoided and that trust in SMS procedures, and the use of safety related information, is never misused or carelessly erroneously undermined. This includes data and reporting utilised to amend an operator's FRMS.

Confidentiality of fatigue reports, surveys and data collection is more likely when an operator's operations are reasonably large. Below a certain size of operation, the aspect of confidentiality of fatigue related inputs from FCMs diminishes. Fatigue reports and surveys can easily be traced back to the actual source of inputs in smaller organisations. Therefore, the degree to which confidentiality can be considered realistic is unfortunately more readily scalable to the size of an operator's organisation, when below a reasonable size of the organisation it actually becomes binary. I.e. you either have it or you don't.

FRMS provisions and clauses provide no realistic means to account for this fact. FRMS is being promoted as accessible for all types and sizes of operations. However the safety culture related aspects of FRMS and SMS, and their ability to undermine the quality of the data collected, are not adequately addressed in the one size fits all appendix 7 provisions. The AFAP believes that it is essential for the appendix 7 clauses to specifically address how smaller organisations, with diminished ability to protect confidentiality of fatigue related inputs, are not provided with undue opportunities to adversely influence their own data collections.

Therefore, considering that FRMS is scalable and confidentiality is not for smaller operations, a one-size-fits-all FRMS approach is only scalable down to a certain size of operations and the current promotion to the contrary ignores the real risks. For actual scalability of an FRMS to truly function as intended in certain small sized operations, there must be an increased means of protecting what is used to inform the change management functions of an FRMS, commensurate with a reduction in size of operations. We believe that it is these realities that the Independent Review team were addressing when they proposed that there should be a two tiered approach to FRMS.

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FRMS needs greater leadership and 'buy in' from the regulator

The AFAP believes that it is necessary to remind the regulator that the dual responsibility, for both operators and FCMs is more properly actually meant to be a tripartite, which includes the regulator as a partner, not as a spectator. We don't dispute that a FCM is responsible to take all reasonable steps to manage fitness to operate, but they cannot be held responsible for patterns of flying that induce unreasonable levels of fatigue. Importantly, CASA cannot continue to turn a blind eye to organisational cultures where an operator does not fairly treat a pilot who does take their responsibility seriously and refuses to operate when fatigued. Any shared responsibility will continue to be unbalanced whilst ever we have a regulator that is incapable or unwilling to actively regulate and participate in the tripartite.

Pilot representation in FSAGs

ICAO clearly advocates that it is essential to have pilot representatives as part of the tripartite decision process in FRMS development and implementation. Rather than follow this principle, CASA has steadfastly refused to prescribe or even suggest any pilot participation in general, let alone any in decision-making bodies such as the FSAG by anyone other than management pilots. The AFAP reminds CASA that ICAO's clearly established intention was that pilot representatives meant those from pilot associations, where they exist, rather than individual or management pilots. CASA's failure to ensure that there is a seat at the FRMS decision-making table for all of the responsible parties suggests either inexplicable ignorance or a deliberate departure from the internationally developed principles of FRMS.

Who in CASA will be the approving authority for significant FRMS changes?

The AFAP notes that for significant FRMS changes, CASA approval is required. The AFAP agrees with this but questions as to how this will be facilitated. A common and consistent complaint about CASA oversight across the industry is that it is too applied inconsistently. The different CASA management teams, have in the past, interpreted regulations in different ways. With decisions and approvals related to FRMS and fatigue management issues, CASA has the opportunity to improve upon this negative trait. Ensuring that only the fatigue management department can approve such change proposal would hopefully address this issue and also prevent adverse FRMS changes from being approved.

One specific "other change" related to FRMS

The AFAP believes that the minor proposed change to remove the word "*regular*" from Appendix 7, clause 6 has significant and negative ramifications. With this change there will no longer be any requirement to provide regular training programs for management, FCMs, and all other relevant personnel to ensure competency levels commensurate with the role and responsibility of the person under the FRMS;

The AFAP refers the reader to our previous comments related to organisational safety culture contained in the response to Reassignment clauses. Effectively, we acknowledge that safety management is only effective when it is genuine and from the top down in an organisation. There are many managers of air-transport operations not understanding some important and basic safety management principles and not understanding the intent of these fatigue management rules.

We don't have to venture far to find an example of this. Contained within this current CASA consultation on fatigue rules is a ridiculous proposal put forward by one representative of an operator (one of the TWG participants) where it was complained that if a pilot worked on a day off, then other parts of the roster needed to change because of the flow on effects. They wanted to not include such duties as duty as though somehow the management of an FCMs fatigue could be paused and ignored. We believe that this is an example of an operator's management lacking basic knowledge in fatigue management and if surely must point to a need to regularly utilise training programs.

Regular training for matters related to FRMS, or indeed any fatigue management, can and should form part of the process for operators to demonstrate their commitment to the management of fatigue so that the correct outcomes occur. The AFAP believes that CASA has a responsibility, as part of

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the tripartite, to do their part in best ensuring that this occurs. The AFAP reminds CASA that the evidence from research supports that there is a significant problem in this area which will require persistent staying of the course to change long held attitudes. The recent ATSB report on fatigue states that:

> *"The pilots who removed themselves from duty felt they left a 'slightly negative' or 'very negative impression with management."*

And:

> *"Overall, pilots did not feel comfortable in removing themselves from duty, particularly first officers compared with captains. Of the pilots who reported removing themselves from duty, around half felt 'not comfortable' or 'rarely comfortable'."*

The findings from the UNSW research on fatigue are consistent with that of the ATSB here and in relation to the cultural aspects of fatigue reporting, the UNSW report provides these findings:

> *"Just over half of pilots responded that they have ever reported their experience of fatigue before or during work (see Figure 14) but of these, most reported that they have done so rarely. When asked why they do not report their work-related fatigue experiences, the most common reason was that there were no benefits in reporting fatigue (Figure 15). Over one in four felt that there was likely to be an adverse response from their company if they reported fatigue."*

Removing the regularity of training on FRMS, or fatigue management, in the 2019 Instrument will only cause such attitudes to stagnate in their current negative stances. The position of the AFAP is that there should be clauses included in the 2019 Instrument (i.e. not in the appendices) that require the regularity of fatigue management training for management, FCMs, and all other relevant personnel.

Aerial Application – Subpart Q of CASR Part 137

The exclusion of Part 137 Operations from CAO 48.1 is irrational

The AFAP believes that it is necessary to include Part 137 operations in CAO 48.1 and that rules relating to professional pilot fatigue mitigation should be contained within the one instrument. CASA's idea to only include the intent of 137.Q in the CAO instead of actually including these aspects is insufficient. Furthermore, the AFAP notes that the lobbying CASA has endured on this matter clearly has meant that they have forgotten their own positions previously recognising the importance of the scientific perspective. In 2012 CASA provided this statement outlining the difference between the science for 48.1 vs Part 137:

> *"The standards developed for CASR Part 137, in regards to flight and duty limitations and rest requirements, were not established with scientific rigour. This proposal, on the other hand, took scientific principles with regards to sleep and fatigue into account. As such it is proposed that the regulatory standards contained herein would apply to CASR Part 137 operators."*

We recognise that CASA has altered their position but disagree in principle with the basis for the new position where the acceptance of a "higher risk for aerial work operations as the crew are informed participants and can reject or cease the tasking if they assess the fatigue risk to be unacceptable", as provided in the; CASA response to the independent review recommendations (Sept, 2018).

Notwithstanding the disagreement we have with this CASA position, the AFAP further recognises that CASA is blatantly and inconsistently applying this risk principle in relation to aerial work operations. CAO 48.1 appendices 5 and 5A provide fatigue rules for aerial work operations and

training related to aerial work, and many of these existing CAO 48.1 rules are already consistent with, or quite similar to, the fatigue rules located within CASR 137. For example, the FTLs for 28 and 365 day periods contained within Subpart 137.Q are exactly the same as those in appendix 5 and 5A .

In addition to the similarities and consistencies between these fatigue mitigation instruments, the AFAP finds that CASA's reason for excluding aerial applications fatigue rules from CAO 48.1 to be a flawed reason. We note that appendix 5, 5A and Subpart 137.Q all have a consistency of application to these, i.e. they are all of the, so called, allowable higher risk - single pilot - operations. In fact, clauses within appendix 5A specifically relate to mustering operations. Thus It is as though CASA has decided that aerial work operations related to cattle are worthy of inclusion within the 2019 Instrument and aerial work related to crops must be excluded.

Is CASA now able to acknowledge that their position and proposals for aerial application operations and fatigue rules is blatantly unjustifiable and nonsensical?

The AFAP believes that it is now time for CASA to remove Clause 11 from the 2019 Instrument and that Part 137 FCMs and operations are included within appendix 5 or 5A of the instrument.

Reduced limits for Part 137, and appendix 4B, 5 and 5A
The AFAP is generally opposed to such higher limits and accumulation of fatigue for which CASA is allowing to occur for operations under Part 137, appendix 4B, 5 and 5A. The AFAP believes that these current draft rules should be reviewed more thoroughly in future consultation endeavours.

Shared responsibility

Shared responsibility clauses do align but are too limited
The AFAP considers that the shared responsibility clauses of the 2019 Instrument do align with the relevant clauses within the draft CASR Part 91. However there exists a problem due to these only reference to an operator's responsibilities for assigning FCMs to flight, not any other kind of duty or aspects of the CAO Instrument.

The AFAP understands that the basic intent of these shared responsibility clauses is to ensure that it is clearly outlined that operators do have responsibilities related to the management of their FCMs fatigue and to protect their operations from the negative effects of fatigue. However the time on duty is only one part of the whole picture.

The AFAP notes that there are no current clauses of the 2019 Instrument that outline how time utilising a flight simulator training devices are to be included. The use of such devices as a tool to better prepare FCMs for actual in flight emergencies and urgent scenarios should not be undermined by utilising FCMs in a degraded fatigue state. In order to maximise the best outcomes for the use of the simulator experiences in actual flight operations occurs when the FCM is alert and well rested for the simulator duty.

It is important that operators provide their FCMs with suitable circumstances to utilise these opportunities in a way that is free of the effects of fatigue, and that they not assign a duty as a FCM if the AOC holder reasonably believes that the FCM is unfit to perform the duty because of fatigue.

Consolidation and Transitional Clauses

The proposed two step transition and dates are fair and achievable
The AFAP agrees with the proposal to replace the existing fatigue rules (albeit with necessary amendments included), provide clarity for what rules apply and provide a staggered approach to the implementation. We consider that much of this has already been provided by CASA and that a vast resource of clarity and information has been available for many years.

We consider that a two-step staggered approach is important for two reasons. The first reason is that it must be realistic that CASA has the available resources to facilitate the transition and the provision of a two-step transition means that CASA's Fatigue Management department isn't consumed and overwhelmed with a largely whole of industry transition on a single date. The other reason is that a two-step transition is important (as opposed to many more transition dates) is for the consideration of fairness for operators which are competing in the same areas of the industry. There should not exist any real or perceived unlevel playfield for the transition period between any probable competitors.

Regarding the provision of clarity for what rules apply, the AFAP understands that there has already been extensive work and material provided by CASA to assist and guide operators and crew to how to navigate and understand the changes to the fatigue rules. Notwithstanding that the eventual CAAP or AMC document would require some amendments to align with the eventual 2019 Instrument, the AFAP notes that the resources of information for clarity and guidance available, extensive and have been so for quite some time. Such available resources includes material such as:

- Operations manual supplements
- FRMS process manual
- Guidance on how to integrate an FRMS into an SMS
- Various forms
- FRMS handbook (guide to the approval process)
- Case studies
- Resources for FCMs
- Fatigue training materials (syllabus, training manuals and more)
- Fatigue hazard identification means
- Templates for fatigue management policies

The AFAP notes that these resources, available through CASA's fatigue management resources page, have been available for more than half a decade now. Since the introduction of the 2013 Instrument the vast majority of fatigue related management remains unchanged. Yet we are anticipating that some operators will now complain that the proposed transition dates won't provide them with enough time to transition. This is most likely due to many of these operators having delayed any or all of their preparations for the eventual transition. The AFAP believes that this is not an adequate excuse and if any operators do complain about such a transition, CASA should seek clarification, as a priority, as to what aspects those operators have actually completed or made progress on since the initiation of the 2013 Instrument.

It should be recognised that there has been nil or little difference to fatigue management aspects which would be the focus of preparations such as, what fatigue is, how to recognise it, the necessary contents of a fatigue training program, the contents of fatigue related exams, which appendicy will suit particular operations, most of the aspects that will fill an operator's operations manual for fatigue, how to incorporate FRMS into an SMS, the contents of fatigue surveys, the risk assessment of fatigue, and many others. Granted that there are some important aspects to the fatigue rules still under consideration, these hard requirements and limits don't alter what fatigue is nor should they have halted all or most preparations for the transition to the new rules. The current (proposed and delayed) transition dates are therefore acceptable.

Other Changes

Other Changes - Inclusion of FTL and LNO Notes and References
Consistent with our comments and proposals throughout this submission, where there have been proposed other changes that relate to the inclusion or retention of clauses and provisions, such as FTLs and LNOs, then the retention of the 'other changes' should also be included.

Other Changes - Retain Regularity Requirement for Management Training
The AFAP believes that the minor proposed change to remove the word "regular" from Appendix 7, clause 6 has significant ramifications.

Given that this proposed change is contained within FRMS clauses, see above (FRMS other changes) for further on this matter.

Policy Questions

Days off transitioning appendices & Alternative to transitioning appendices

Retain Clause 13 & 13A unless lax requirements are amended to match normal limits
The AFAP believes that the proposed alternative approach to transitioning appendices, by providing an opportunity for a limited flight duty period regardless of prior duty, is dangerous and should not be allowed. Such a proposal would permit FCMs operating under Subpart 137.Q or appendices 4B, 5 and 5A to expose their higher permitted fatigue accumulation to passenger carrying or training flights. These proposed alternatives would actually constitute an increase in safety risk, which is inconsistent with the variation of approach contained within CASA's fatigue risk management model.

The AFAP notes that operations conducted under the above mentioned fatigue rules have much less restrictive ODP, FDP and FTL requirements applied to them based on the premise that they create a lower overall risk to the traveling public and that the high risk is contained to informed persons (such as FCMs) or those with a much higher need to travel (such as those in emergency service flights). Notwithstanding the objection the AFAP has to allowing such loose FDP, ODP and FTL restrictions under Subpart 137.Q or appendices 4B, 5 and 5A operations, we do recognise that at least the higher risk is contained to operations within these rule sets, or, there are some mitigations for when an FCM is to conduct operations under other appendices. These Clause 13 and 13A mitigations recognise this fact.

We understand that the philosophy behind the clause 13 and 13A provisions is that they recognise that when FCMs transfer from the regime of these higher fatigue risk rule sets, to those of the other appendices, the higher cumulative fatigue risk is also transferred. Fatigue has cumulative effects and these effects are known to permeate for longer than a single ODP, or similar short spans of time. In some regards, Clause 13 may in fact be an insufficient mitigation provision because it will allow an FCM that has accumulated flight hours much higher than the 100 hours in 28 days and 1000 in 365 days, which are cumulative limits for other operations. However clauses 13 and 13A are at least not completely deficient and they are very important to include as an absolute minimum approach.

The AFAP believes that a far superior method and proposal to address the possible transfer of the higher fatigue risk to other operations, and allow a more seamless transition between appendices, is to remove the higher fatigue risk altogether. I.e. design the problem out, don't just try and work around it. The current proposals and the clauses 13 and 13A are effectively only trying to work around the issue, not actually address the core of the problem. They actually regulate the inclusion of fatigue for FCMs operating to these limits. Thus, we consider that the current proposed solutions are both insufficient and a problem of CASA's own making by establishing that some operations can have significantly higher fatigue risks.

Split Duty Restrictions

Split Duty - Remaining Portion to not exceed 6 hours or use FRMS

The AFAP believes that the 6 hour duty limit for the remaining portion of an FDP, following a split-duty rest period, is not a broad issue and furthermore, it should not be increased beyond the current limit. Given that this is not a broad issue, there already exists a solution to facilitate a longer than 6 hour return portion for split duties i.e. under appendix 7/FRMS.

The intent and original purpose of a split duty period is simply to facilitate a client's activities at the removed location whilst simultaneously ensuring that any FCM is reasonably rested for the return portion of the FDP. There exists no operations where greater than 6 hours is a requirement for the purposes of providing such a return air transport service for a client, either in passenger charter or "bank run" freight type operations.

The only circumstances where a greater than 6 hour duty limit for the remaining portion would ever be desired by an operator is for when it is sought to utilise FCMs for air transport services unrelated to the initial out and back service associated with the split duty. Such extra sectors are not a necessary feature of the specific client service provision associated with a split duty. The AFAP considers any proposal to make allowance for including unrelated sectors to be quite contrary to the original intent of providing split duty arrangements, contrary to fatigue minimisation and an example where the proposer is not cognisant of both of these aspects.

The AFAP believes that this proposal is an example of an operator wanting to gain greater flexibility in operating beyond the set limits without wanting to take on an increased and proportional associated level of responsibility. This proposal is an example where the utilisation of an FRMS already provides a solution. The onus should be on the proposer and or CASA to outline how such a change cannot be facilitated through the use of an FRMS.

Can CASA explain why the use of an FRMS wouldn't already provide a solution to this problem?

CASA is promoting that FRMS is scalable and accessible by all. How does this individual operator provide that that is incorrect?

Split Duty - not to be conducted at home residence.

According to the definition of suitable sleeping accommodation provided in the draft Instrument, an FCMs home or residence is considered to meet the requirements of suitable sleeping accommodation. If this definition was limited to use by clauses referring to sleep opportunity, then there would be no issue with this definition. However, this definition is also utilised through clauses related to split duties.

When considering the original intent and purpose for allowing split duties, the acceptance of an FCM's home residence for use during split duties is quite inconsistent. What's more, there are a range of possible reasons for why an FCM's home residence would not be suitable for fatigue mitigation during a split duty arrangement whereas during a typical ODP at night, it is quite suitable. For example, an FCM may have family, or others, very active in the home residence during normal waking hours. There may not be air conditioning available (or other temperature control means) which is a requirement in the definition. Beyond these sensory type considerations, an FCM's home residence may not be within a realistic commute to and from the airport to facilitate a period of 4 consecutive hours with access to suitable sleeping accommodation

The AFAP believes that CASA has not considered all these aspects as they work as a whole and with regard to an outcomes-based philosophy. The 2013 and 2019 Instrument contrast and improve upon the old rules by recognising that time not on duty is not the same as a sleep opportunity. If an FCM's home residence is to be considered to meet the requirements for suitable sleeping accommodation, it is necessary that an actually realistic sleep opportunity is actually available in this intervening period of a split duty. In addition to the new rules introducing the concept of a sleep opportunity, there is recognition that an FCM's transit between their residence and the sign on/off location is typically greater in duration than that of which is associated with an overnight/away from home base location. This is reflected in the ODP minimum limits where there is a greater amount

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provided for home base than there is for the overnight location. E.g. 12 hours versus 10 hours. The inclusion of an FCM's home residence as a suitable split duty sleeping accommodation is entirely in contrast to this recognition provided in the ODP clauses.

Thus, the AFAP considers that an FCM's home residence should not be defined and included as a suitable sleeping accommodation for a split duty. There is not a realistic sleep opportunity available due to the transit and time constraints associated, the FCM is less likely to have as much control over the sleep opportunity even if the transit is short enough in the first instance, and this type of arrangement is contrary to the original reason for creating split duty arrangements to facilitate a client's activities at an alternate location.

It should be noted that the AFAP is not suggesting that an 8 hour sleep opportunity is a realistic split duty sleep opportunity. Rather, we make that point that at least once sleep cycle should be catered for during a split duty and that with the use of an FCMs home residence as a suitable location for the split duty down time, there is no guarantee that this can occur and nor is it consistent with the intent and purpose of split duties.

Flight crew working on 'casual day' impacts future roster

Working a day off call-in is definitely duty.
The AFAP considers this proposal as quite ridiculous an example of the degree to which some operators genuinely do not understand that the fatigue rules are for mitigating fatigue. Therefore the AFAP would like to thank CASA for including this proposal in the consultation because we believe if is an accurate representation and commentary on the maturity of some operators have in managing safety and their overall organisational safety culture.

This proposal also highlights the need to include regular fatigue management training for all operators, regardless if they are operating to an FRMS or otherwise. Organisational safety cultures affect fatigue reporting, the ability to call in fatigued, the realistic ability to refuse a reassigned duty, or a duty extension. All of these examples can occur outside of an FRMS and as is indicated by both the ATSB report and the UNSW report, there are significant cultural problems related to fatigue management throughout much of the Australian aviation industry.

The AFAP is thoroughly against this proposal.

General Response

Do the proposed rules create an undue burden – Yes but only upon safety
The AFAP understand that CASA is obligated to ask such questions as to whether the changes constitute an undue burden but also considers that answers to such questions should consider the goal of the fatigue rules in a broad sense, not a limited focus of if there will or won't be any additional costs whatsoever. In considering the broader picture the AFAP is mindful of the impetus from the changes due to the updated ICAO SARPS and similarly, that fatigue science has progressed markedly since the last real amendment to Australia's pilot fatigue rules. These reasons and advancements help to highlight why the old rules had become insufficient and in need of revision.

Another consideration for a viable update is the fact that rostering programs can "optimise' and maximise the possibility of fatigue now more than ever unlike any time in the past. Under these circumstances, the limits have become targets.

In considering what is an undue burden it is important to consider any additional costs as a 'correction to' an out of balance situation or if it is genuinely an unnecessary or excessive impost on industry. The AFAP believes that given the reasons stated above, but not limited to, the proposed changes do not represent an undue cost burden upon the industry. We do believe however, that

with so many irrational and narrowly focused considerations currently being proposed, the current version of the 2019 Instrument imposes an undue burden upon the industry as a safety risk.

It is obvious to the AFAP that industry lobbying, at the highest political levels of the industry, has occurred and has adversely influenced the fatigue rules with a singular narrow focus to avoid the cost of developing and implementing what the operators see as onerous FRMSs. By diluting the basic rules to near or below the existing CAO 48.1 and SIEs, operators can maintain the "status quo" within the prescriptive appendices. This is completely incongruent with what is now understood from advances in fatigue science and international standards (ICAO). It should be recognised by the regulator that a small number of proactive operators have already invested significant resources into the development of FRMS. The AFAP considers that, if the 2019 draft were to be implemented unamended, these proactive operators would effectively be penalised for embracing the tripartite endorsed improvements to fatigue management whilst the behaviour of the recalcitrant operators would be rewarded and further enabled by insufficient fatigue regulations.

Simulator FDP not included in the Instrument

The AFAP believes that training and checking in a flight simulator is an aspect of air transport operations that must not be excluded from fatigue mitigation considerations. We note that the 2019 Instrument specifically excludes it's appendices from anything other than operations in an aircraft and that flight training conducted in a flight simulation training device (a simulator) do not apply. Subclause 10 of the Instrument specifically notes and elaborates on this. Furthermore Appendix 6, which applies to flight training, proficiency checks and flight reviews, immediately outlines that this appendicy does not apply to flight training in a flight simulation training device.

In contrast, the SIEs not only included duty time undertaken in simulators but also had a duty factoring requirement of 1.5, when considering the cumulative aspects of simulator duties to flight duty limitation. Thus, duty that was undertaken whilst utilising a simulator was covered under the old rules but is not being covered at all under the new rules, under the current proposal. What's more, with the duty factoring requirements, the old rules acknowledged that simulator duties were in fact more fatiguing. If you were to ask any pilot who has used a simulator, they'd be able to confirm that a four hour simulator session conducting multiple failures is more stressful and creates higher fatigue than a four hour flight.

The AFAP has had a significant response from its airline pilot members that simulator duties are significantly more fatiguing than normal line flying and when mixed with line roster patterns add to cumulative fatigue. Quote from a senior Australian Airline Check and training captain:

"As a Training and Checking Captain, Simulator not being considered duty could only have been suggested by someone who's never done it. Simulator sessions can be very fatiguing and hard work. There can be a lot of preparation required as well. The system could consider me doing a BOC simulator session the same as being home in bed prior to a flying duty. Believe me it's not. Not for the instructors or the candidate."

The AFAP is unsure if CASA deliberately or unintentionally excluded flight simulator training devices from any cumulative fatigue considerations but this does not alter our recommendation that such duties must be incorporated into the 2019 Instrument. We suggest that a clause in the Instrument itself (as opposed to in appendices) is the most useful way of capturing flight simulator duty factoring.

Did CASA deliberately or unintentionally excluded flight simulator training and checking from any cumulative fatigue considerations?

CASA has failed to meet its commonwealth entity responsibilities

The AFAP believes that CASA has not maintained an adherence to its accountable obligations and that it has also failed to communicate these obligations and responsibilities to the external stakeholders it has engaged for the Independent Review and for the Fatigue Rules Technical Working Group (TWG).

Element four of the Commonwealth Risk Management (RM) Policy (2014) details that Commonwealth entities must embed systematic risk management into their processes. The RM Policy states that:

"Each entity must ensure that the systematic management of risk is embedded in key business processes"

The RM policy supports the requirements of section 16 of the Public Governance, Performance and Accountability Act (2013) which requires accountable authorities of entities to establish and maintain systems and appropriate internal controls for the oversight and management of risk. (Section 16 - Duty to establish and maintain systems relating to risk and control).

During the fatigue rules regulatory review, the AFAP believes that CASA has not ensured that their processes have embed a systematic management approach to the assessment of risk. The many repeated examples where CASA has made proposals but has only considered such proposals as isolated one on one comparisons are most definitely an example of how a systematic approach to risk management has not been embed into the process. In particular we note that the TWG has not been briefed on the obligation and goal of a systemic approach to risk assessment and therefore, CASA as a Commonwealth entity has also not met its communicative responsibilities as outlined in Section 19 of the Commonwealth RM Policy, which states:

"Each entity must implement arrangements to communicate and consult about risk in a timely and effective manner to both internal and external stakeholders."

The AFAP believes that CASA has a clear obligation to both, ensure that their processes embed and use a systematic management of risk approach, and that these obligations and processes must be communicated to both internal and external stakeholders, in a timely and effective manner. However in contrast to these clear obligations, the AFAP has observed that CASA has not communicated these obligations to the TWG and that CASA has in fact made and proposed changes themselves which clearly have not utilised a systematic and defences-in-depth approach. Unfortunately there exists a plethora of examples where superficial and isolated comparisons have been made with elements of the suite of fatigue mitigations, without consideration to how they work together as a package. I.e. a systems based approach to risk mitigation has not been used.

The fatigue rules review process has become a clear example where CASA is not following Commonwealth government policy (Commonwealth RM Policy, 2014) and the AFAP believes that this is one of the fundamental causes for so many deficient and erroneous changes and proposals which have been included or considered during this regulatory review. Including the Terms of Reference (TOR) for the Independent Review.

The AFAP notes that the TOR provided by CASA for the Independent Review did not outline any requirement for the team to consider and make their recommendations with regard to the RM Policy nor did CASA communicate any requirement that ensured that a systemic management risk was necessary. This is important to understand because the Independent Review team made many recommendations which compared aspects of the fatigue rules instrument in isolation to other jurisdictions. The most notable being those related to flight duty periods and the use of "international averages". This external process led to CASA including much of the team's recommendations back into their own processes for the continued review of the fatigue rules. Thus, CASA has been responsible for introducing non systematic risk perspectives into their own regulator reform process contrary to their commonwealth entity requirements. These flaws and mistakes have noticeably undermined and derailed much of the fatigue rules review, including during the TWG meetings.

The AFAP believes CASA must revisit all the proposed changes with a systemic approach to risk assessment, including the change proposals which are detailed in this current round of consultation. Furthermore, we believe that it is imperative that the remainder of the review must adhere to the Commonwealth RM Policy, starting with the next TWG meeting. The AFAP believes that CASA must urgently re-establish the use of this policy during this regulatory reform process so

to conform and use a systems approach to the management of risk and to ensure that it is a Commonwealth entity that maintains compliance with its Commonwealth policy obligations.

In order to promptly and effectively ensure that this lost path is regained, the AFAP requests that these requirements are the first items discussed during the next, and each remaining, TWG for this review. Furthermore, the AFAP considers that the failure to embed this policy within this consultation could be a learning opportunity for CASA and that they should urgently review and reform any other current and future consultations so to ensure that they also adhere to the Commonwealth RM Policy.

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AFAP Priorities:

Priority 1

Re-establish a systems and defences-in-depth approach to this regulatory reform process by considering and proposing any amendments to the 2019 Instrument with a whole package view. Not the current deterioration into isolated and superficial approaches.

Priority 2

Re-establish a focus on first principles of fatigue management with real fatigue science and avoid a 'contractual bargaining' type approach.

Priority 3

CASA must reinstate and regulate fatigue mitigation to address the following deficiencies in the proposed instrument:

1. **Use FRMS as intended:** FRMS is where increases to the limits away from prescriptive limits are best managed. Increased limits should not be the norm through appendices 2-6.

2. **FDP limits:** Reduce FDP limits to address the inappropriate SIE limits. Separate 3 sectors from 1 & 2 sectors as specified by the previous rules and international regulations. The prescriptive limits must reflect international fatigue science.

3. **FTL's:** Re-instate sector/daily flight times as an integral component of fatigue mitigation or management.

4. **Disruptive roster patterns:** Protect early to late and late to early assignments.

5. **Late night operations:** Define and control LNOs, include appropriate restrictions to consecutive Late-night operations. FDP for overnight operations (encompassing the WOCL) should not exceed 10 hours for unaugmented crews.

6. **Simulator operations:** Include a factored flight duty to these intense operations.

7. **Rest periods:** Appropriate rest periods, especially for un-acclimatised trans-meridian patterns. All rest periods must respect physiological needs.

8. **Augmented crew rest:** Define and regulate appropriate on-board rest facilities, especially the Class 3 "fit for purpose" inconsistency. Refrain from characterising operating seat "rest".

9. **Ultra long range:** Define and regulate ULR.

10. **FSAG composition:** Include the ICAO tripartite philosophy in the composition of an operator's fatigue safety action group, or equivalent. Appropriate pilot representation must be included, not management appointments.

11. **ASAP composition:** Include Professional Pilot representation on the CASA Aviation Safety Advisory Panel (ASAP).

Concluding Remarks

The AFAP acknowledges the difficulty in arriving at balanced outcomes of fatigue regulation but strongly believes that CASA must review the 48.1 (2019) instrument with internationally recognised fatigue science and evidence as a priority.

Whilst our objections to the CASA TOR for the independent review are on record, we believe that the outcomes and response to that review have derailed responsible regulatory drafting by deferring to commercial imperatives and flexibility over fatigue. CASA agree that there must be a commensurate increase in operator responsibility toward fatigue risk management to accompany any potential increase in flexibility. These responsibilities must be legislated by the regulator and not relied upon by guidance material alone. Several Australian operators, that have not yet embraced change, publicly and privately refuse to acknowledge that they must improve fatigue management practices and organisational culture. The only way to lead these operators is for CASA to genuinely join in the tripartite partnership and to regulate.

The ICAO fatigue guidance material has taken many years to develop with Subject Matter Experts (SMEs) from all stakeholder groups, including the tripartite drafting team from ICAO, IATA and IFALPA. It is disappointing to see this proposed instrument give lesser weight to these ICAO SARPs compared to the outcomes of other State regulators, which have their own unique struggles with implementing best practice fatigue rules. Even with reasonable comparisons to these other rule sets, we see a disappointing and repetitious tendency to only consider the comparisons in an isolated manner. We have previously given examples for Canada, NZ, UK and EASA. This proposed instrument selectively averages other States FDL's without consideration of the associated fatigue mitigations, this has resulted in a large portion of the deficiencies identified in this submission.

Yours faithfully

First officer Stewart Beveridge
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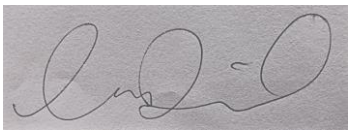

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