

18 November 2013

Dear

WHY WE NEED THE PARLIAMENT TO DISALLOW CIVIL AVIATION ORDER 48.1 INSTRUMENT 2013

The attached Briefing was prepared at the direction of the then-President of AIPA, following a meeting in Parliament House with Senators Fawcett, Rhiannon and Xenophon, the advisers to Mr Albanese and Mr Truss and representatives of CASA, AIPA and DIT. It seeks to clarify some areas that were open to misinterpretation and to provide some further information.

As the new President, I wish to reaffirm AIPA's concerns and the resolve of the AIPA Executive to do everything possible to ensure that the regulatory control of fatigue risk management is scientifically-based and appropriate for the needs of Australian aviation into the foreseeable future.

Our Concerns

Part 48 of the Civil Aviation Orders was produced in the 1950s. There have been few amendments since. The provisions are not based on science. The empirical basis of Part 48 led to some unsafe outcomes, the most obvious example of which are the provisions for augmented crews, i.e., the addition of a third pilot to allow long range international operations across many time zones. These rules will survive until December 2016.

Around 1990, an attempt was made to make CAO Part 48 more flexible to meet the demands of the operators. Standard Industry Exemptions (SIEs) were invented that, while modelled on a semi-scientific British system, ignored such science as was available and in many scenarios produced even more unsafe outcomes than did Part 48. These SIEs will also survive until December 2016.

AIPA acknowledges that the new rules, Civil Aviation Order 48.1 Instrument 2013 (the "Instrument") are, in many ways, a significant improvement on the previous rules. However, they still allow certain operations that reflect the commercial bias embedded in the SIEs rather than the science.

Fatigue risk is regulated because the world-wide experience is that the commercial interest of operators will trade off a high risk of a fatigue-related accident for a short term commercial advantage. Australia is no different and the clear evidence has been identified by the Parliament on several occasions.

AIPA is a fervent supporter of FRMS. We applaud the introduction by CASA of "operator obligations" as a means to impose some FRMS processes on those operators who choose to operate only under the prescriptive rules set out in the Instrument. But we are concerned by two aspects of the Instrument:

- The lack of transparency about what CASA will accept under an "approved FRMS"; and
- The prescriptive rules that will inevitably form the basis of the FRMS rule sets.

Transparency

The Instrument, in whole or in part, is disallowable pursuant to s42 of the *Legislative Instruments Act 2003*. The prescriptive rules and the related processes set out in the

Instrument are relatively straightforward for the Parliament to examine as to potential outcomes. However, the FRMS provisions set out in Appendix 7 of the Instrument relate only to process and the outcomes will end up as secret agreements between CASA and each operator, with no Parliamentary scrutiny to ensure that the 'playing field' remains level.

The Prescriptive Rules

The attached briefing highlights some of the more problematic areas of the prescriptive rules set out in the Instrument. Those areas are:

- rest requirements in preparation for flight:
 - the definition of end of night;
 - sleep opportunity; and
 - reduced rest;
- maximum flight duty periods;
- delayed reporting times;
- extensions;
- standby;
- augmented operations;
- fatigue safety action groups; and
- dispute mechanisms.

Our Recommendations

We have concluded that the Instrument, despite representing a significant improvement of existing practices, falls short of the necessary standard for safe operations in a number of areas.

Despite known deficiencies, similar legislation has been made and left uncorrected for decades. There is no guarantee that the Instrument will not fall into the same 'set and forget' situation. Fatigue risk management legislation cannot be left as a 'near enough is good enough' effort.

Although we have no great desire to delay improved fatigue risk management rules, the problem is that CASA currently has no incentive to improve the legislation and, once the disallowance window has closed, no compulsion to honour any undertakings given to avoid disallowance.

Our assessment is that the level of adoption of the Instrument over the next 6-12 months will be low. Operators are faced with considerable work to implement the new concepts and limits and they are most likely to try to remain with the existing rules as long as they can.

In our view, disallowance will not adversely affect most operators and the disallowance period of six months should allow resolution of the outstanding issues.

We therefore recommend that the relevant parts of Civil Aviation Order 48.1 Instrument 2013 be disallowed.

Yours sincerely,



Nathan Safe
President
Australian & International Pilots Association

PARLIAMENTARY BRIEF

17 JUNE 2013 – REVISED 30 JUNE 2013

WHY WE NEED THE PARLIAMENT TO DISALLOW CIVIL AVIATION ORDER 48.1 INSTRUMENT 2013

Introduction

Civil Aviation Order 48.1 Instrument 2013 (the "Instrument") was signed by the Director of Aviation Safety, Mr John McCormick on 28 March 2013, registered on 08 April 2013 and tabled in both houses on 14 May 2013.

The Explanatory Statement sets out the purpose of the legislation as:

Purpose

The purpose of *Civil Aviation Order 48.1 Instrument 2013* (the **CAO**) is to provide Air Operator Certificate holders (**AOC holders**) and flight crew members (**FCMs**) with a comprehensive regulatory framework for the more effective management of fatigue risk in aviation operations.

Subject to transitional arrangements, from 30 April 2013 (for new AOC holders and their FCMs), and from 30 April 2016 (for existing AOC holders and their FCMs), this new framework replaces the previous rules for flight and duty time limitations contained in CAO Part 48. The CAO also provides a process to allow existing AOC holders to voluntarily "early-opt-in" to the new management arrangements before 30 April 2016 if they so choose.

From 30 April 2013, it becomes a condition on a flight crew licence that the holder must, in effect, take account of his or her own possible and potential fatigue status before operating an aircraft (paragraph 16.1 of the CAO).

Importantly, the previous regulatory scheme will not be fully extinguished until 2016. The previous scheme is characterised by three regulatory options:

1. compliance with CAO Part 48, which was the distillation of pragmatic fatigue knowledge drawn from experience in World War II and the post-war expansion of commercial aviation – published in the early 1950s;
2. so-called Standard Industry Exemptions (SIEs) to CAO Part 48, which were the product of the era of microeconomic reform and the new management style of the Civil Aviation Authority that sought to expand the limits of CAO Part 48 to reflect the commercial interests of the aviation industry – published in the early 1990s; or

3. so-called Fatigue Management Systems, the well-intentioned but completely under-resourced response of the Civil Aviation Safety Authority (CASA) to the October 2000 "Beyond the Midnight Oil" Report of the House of Representatives Standing Committee on Communication, Transport and the Arts, the many failings of which have been demonstrated in recent Senate inquiries that have touched upon Jetstar, Pel-air and Avtex/Skymaster fatigue management processes.

Each of these previous arrangements has their pros and cons, but all of them fail to meet the latest requirements of the International Civil Aviation Organisation (ICAO) for fatigue management:

4.10.1 The State of the Operator shall establish regulations for the purpose of managing fatigue. These regulations **shall be based upon scientific principles and knowledge**, with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness...¹ [emphasis added]

The Instrument is, in many ways, a significant improvement on the previous rules. However, despite the protestations of CASA, the Instrument in part abandons science for the retention of certain commercial interests set out in the SIEs and, in certain circumstances, extends them prescriptively in such a way that even CASA acknowledges that operating to all of the prescriptive limits would not be safe. The Instrument then creates uncertainty by making it clear that operators will not be allowed to use the maximum limits collectively, but rather will have to accept some undefined reductions in those limits. In effect, these operator-specific constraints will create the potential, if not the actuality, for as many individual schemes as there are operators.

In a somewhat bizarre logic, CASA provides for operators to adopt Fatigue Risk Management Systems (FRMSs) as a means to exceed the prescribed limits in ways that are not transparent to the Parliament. The combination of the prescriptive and the FRMS arrangements have the potential to create widespread commercial advantage/disadvantage to operators depending upon the procedural controls and training of the CASA delegates who will be instrumental in cementing each operator's individual fatigue risk management processes.

In summary, the Instrument is a step in the right direction but is unfinished business. There are serious concerns about the application or otherwise of the body of fatigue science and research and the preservation or extension of existing provisions already challenged by parts of the industry as unsafe.

CASA has an abysmal record of regulatory oversight of fatigue management, even without the pressure of trying to get some serious traction on the Regulatory Reform programs that have diverted them for the last 17 or so years. Parts of the industry believe that CASA has seriously underestimated the resources required to implement these new rules and that there will be an inevitable trade-off in surveillance activities of flight operations.

If not disallowed now, this legislation will continue with no incentive for improvement unless and until the inherent risk crystallises into an undesirable outcome. That is not a possibility that this Parliament should allow to persist.

¹ ICAO Annex 6 *Operation of Aircraft* Part 1 "International Commercial Air Transport – Aeroplanes", Edn 9 Amdt 36, subsection 4.10.1

Comparisons with other Regulators

Invariably in legislative examinations such as this, the local regulator will defend its position by referring to 'world best practice' or by quoting the example of selected overseas regulators equivalent or similar legislation. Rarely do we see an honest appraisal of the extent to which commercial or political interests have driven those overseas outcomes, despite the fact that CASA's remit does not allow it to risk an unsafe outcome by pandering to either or both of those influences.

The European Aviation Safety Agency (EASA), often a useful comparison for technical standards, has been widely condemned for its recently revised fatigue rules. There have been public demonstrations by flight crew as well as criticism from scientific and public policy groups, predominantly because EASA chose to ignore its own scientific advisers and adopted prescriptive limits that often exceed what the available science suggests are sensible boundaries. Despite any social ideals, the European Union is a collective of sovereign States with a range of political and economic motivations attempting, through EASA, to meld equally disparate approaches to the safety and economic regulation of aviation. The widely held view in the pilot community is that EASA has succumbed to commercial and politico-economic pressure to adopt prescriptive rules that favour the lower common denominators rather than the higher safety outcomes typified by the approach of the UK Civil Aviation Authority (UKCAA).

The Federal Aviation Administration (FAA) also published new fatigue rules recently upsetting a long-established scheme which could, at best, be described as minimalist in terms of fatigue safety. Their new rules surprisingly excluded cargo only and air taxi operations but reluctantly included "supplemental"² operations because, by their own admission:

...The FAA has decided to impose the same FDP limits on supplemental passenger operations as other part 121 operations because it has determined that the **16-hour** unaugmented FDP and the **30-hour** augmented FDP permitted by existing supplemental flight, duty, and rest regulations **are almost always unsafe** for passenger operations...^{3 4} [emphasis added]

Further, the original FAA proposal respected the science more than the final outcome. What becomes abundantly clear from the FAA commentary in the rulemaking docket is the loosening of the original proposals under pressure from the commercial interests.

The important message from the comparison of these two rule-sets is that any conclusions drawn from the more restrictive provisions are most likely valid in terms of safety, whereas in the case of more liberal limits they are undoubtedly tainted by the pursuit of economic outcomes.

² "supplemental" operations consist of non-scheduled, all-cargo, and public-charter flights

³ US Department of Transportation, Federal Aviation Administration, Docket No.: FAA-2009-1093: *Flightcrew Member Duty and Rest Requirements*, 21 December 2011, pages 32-33

⁴ An "unaugmented" flight contains the minimum number of flightcrew members necessary to safely pilot an aircraft. An "augmented" flight contains additional flightcrew members and at least one onboard rest facility, which allows flightcrew members to work in shifts and rest/sleep during the flight.

What Does ICAO Require?

ICAO very clearly requires the primary basis of fatigue management processes to be based upon scientific principles and knowledge.

The intent of the standard quoted in the Introduction is explained in the recently published ICAO "Fatigue Risk Management Systems Manual for Regulators":

Standard 4.10.1 stipulates the State's responsibilities for establishing regulations for fatigue management. The establishment of regulations for prescriptive limitations remains mandatory, while the establishment of regulations for FRMS is optional for the State. Both types of regulations need to address the known scientific principles, including the dynamics of transient and cumulative sleep loss and recovery, the circadian biological clock, and the impact of workload on fatigue, along with knowledge gained from specific research and operational experience and requirements. Further, both types of regulations need to emphasize that within an operation, the responsibility for managing fatigue risks is shared between management and individual crewmembers...⁵

However, it is accepted that an inevitable outcome of the 'one size fits all' approach that accompanies the production of generic prescriptive regulations will be that those regulations will also, on occasion, unnecessarily constrain many operations. Indeed, the whole concept of FRMSs is to provide a mechanism that can ease the constraints on specific operations while ensuring safety is not compromised.

It is also clear that ICAO expects that the prescriptive fatigue management regulations will set the safety benchmark against which the more flexible FRMSs would be measured:

4.10.4 The State of the Operator shall approve an operator's FRMS before it may take the place of any or all of the prescriptive fatigue management regulations. An approved FRMS shall provide **a level of safety equivalent to, or better than, the prescriptive fatigue management regulations.**⁶ [emphasis added]

That particular phrase is used repetitively in the fatigue management standards. It then becomes a nonsense if the prescriptive fatigue management regulations are themselves inherently unsafe.

There are elements of The Instrument that we consider to be unsafe, a position we made very clear following the fourth and final consultation meeting in November 2012 and before the Notice of Final Rulemaking (NFRM) was published in April 2013. As a result of the Director of Aviation Safety's decision to press ahead, no one in the industry was exposed to the final changes to the draft regulations until after they were made.

Has CASA Met the Intentions of ICAO?

There is no doubt that CASA has made a concerted effort to respect the science in many areas and the policy development team are to be applauded for that. However, there continue to be areas where it appears that commercial interests overcame the science and/or too much emphasis was placed on emulating the existing SIEs, despite the lack of science behind the SIEs.

⁵ ICAO. Doc 9966 *Fatigue Risk Management Systems Manual for Regulators*, 2012 Edition, page 1-5

⁶ ICAO Annex 6, *op. cit.*, subsection 4.10.4

In Tier 2, the prescriptive rule set that applies to most of Australia's high capacity regular public transport (RPT) operations, CASA has introduced so-called "operator obligations". These obligations impose many (but not all) of the requirements of FRMSs as an adjunct to the prescriptive rules, specifically to mitigate residual risk within those prescriptive rules. This is not an ICAO requirement.

CASA officers have stated that an appropriate level of safety cannot be maintained if all of the prescriptive rules are used to their limits. In fact, this principle is enunciated in the NFRM documents:

CASA disagrees that prescriptive limitations set by CASA should be the exclusive set of limitations. It is a foundation of CASA's approach that operators be afforded flexibility and manage themselves, the risks of approaching limits. Any limits prescribed, in certain situations, may lead to unacceptable risk. Where this is the case, operators are obliged to modify any prescribed limit.⁷

CASA has not publicly identified any areas that are considered most likely to "lead to unacceptable risk", while 'the buck has been passed' to individual operators to resolve this regulatory dilemma - the Instrument requires operators to develop their own limits within the prescriptive rules to mitigate their specific risks. This appears to create a situation where operators will have to second-guess what CASA really thinks are the potential problems while satisfying their commercial imperative to maximise the limits available to them and be able to "go further with fewer"!

The end result may well be an industry full of individual operator agreements, with all the potential for commercial advantage/disadvantage and a widespread lack of regulatory transparency and consistency.

We are not arguing against the risk management obligation on operators per se – that is entirely consistent with their Safety Management System (SMS) obligation which we unequivocally support. Our argument is simply that the need to introduce these operator obligations (in addition to the SMS requirements) comes simply from setting prescriptive rules that are too generous in the first place.

In our view, it is not the place of Australia's aviation safety agency to be preserving the commercial benefits of existing unscientific and unsafe rules or, indeed, to be setting rules in the context of our international competitiveness.

A Word of Warning about "Operational Experience"

ICAO recognises the importance of "operational experience", but that is a tainted concept if it merely reflects what operators have been doing or what the regulator thinks they are doing.

In Australia, we have already seen how this concept is tainted - recent Senate inquiries that have touched upon Jetstar, Pel-air and Avtex/Skymaster fatigue management processes and largely exposed the gulf between sound fatigue risk management, what operators have really been doing and what the regulator didn't really bother to see what they were doing. The CASA Special Audit conducted after the Pel-Air ditching revealed all three of those propositions, while explaining a lack of pilot complaints:

⁷ CASA, *Consolidated Summary of Comments received, CASA's Response and Disposition Actions to NPRM 12020S*, Annex A to Notice of Final Rule Making *Fatigue Management for Flight Crew Members*, Document NFRM 12020S, April 2013, page A66

...The short planning period, lack of knowledge of possible destinations and lack of support provided by operations staff once doors closed appears to add to this fatigue. All crew interviewed stated that they felt there would be no issues in stating that they were fatigued and pulling out of duty but **also felt that they had limited opportunities to fly and had to take these opportunities when they arose...**⁸

... Most crew interviewed stated that they had been part of a duty that was greater than 15 hours in length but evidence could not be identified that showed fatigue related extension of duty processes had been followed, safety reports had been written following the duty or that management follow-up was conducted as is required in the company FRMS manual. Several interviewees believed that there is a lack of management adherence to safety management requirements and the fatigue risk mitigation strategies as laid down in the company's FRMS manual...⁹

When CASA was asked about the significance of Jetstar requiring crews on the Darwin-Singapore-Darwin night flight to extend beyond their normal flight duty period (FDP) limits on 12 of 21 flights in January 2011, they responded:

CASA does not consider that these extensions require continual monitoring.

The duty extensions recorded in January 2011 by Jetstar were a result of flight crew agreeing to operate beyond the standard 12 hour initial limits as provided for within Civil Aviation Order 48 Exemption. No breaches of the 14 hour condition were recorded.¹⁰

Undoubtedly that is how CASA will regulate operations under the SIE until they expire in 2016, despite the fact that the same flights could not even be contemplated under The Instrument! Finally, from evidence given to the UK Parliament Transport Committee Inquiry into Flight Time Limitations in February 2012 (which we believe to be replicated in parts of the Australian industry):

7.6. More importantly: fatigue is significantly under-reported by the pilots themselves. This is because pilots do not file reports on an aspect that has become a 'normal' part of their daily work. Many are afraid their fatigue reports could have negative consequences for their professional future (i.e. reprisals by management) – a phenomenon that is growing – particularly when pilots refuse to fly because they are too fatigued. Indeed UK polling results show that 33% of pilots would not feel comfortable refusing to fly if fatigued, and of those who would, three quarters would have reservations. Once a pilot has decided they have no option but to fly, a fatigue report would be tantamount to writing the evidence for their own prosecution...¹¹

This under-reporting by pilots is exacerbated by CASA being widely seen by the aviation community as having actively disengaged in any intelligent discussion about fatigue regulation for many years. It is highly unlikely that CASA has any defensible

⁸ CASA Special Audit, submitted to the Senate Rural Affairs and Transport References Committee Inquiry on Aircraft Accident Investigation 2012, page 22

⁹ *Ibid.*, page 23

¹⁰ CASA, answer to Question CASA 03 from Senate Questions on Notice, Inquiry into Pilot Training and Airline Safety 18 March 2011, 12 April 2012

¹¹ European Cockpit Association (ECA) written evidence to the UK Parliament Transport Committee Inquiry into Flight Time Limitations, February 2012, accessed at: <http://www.parliament.uk/business/committees/committees-a-z/commons-select/transport-committee/inquiries/parliament-2010/flight-time/>

'regulatory experience' other than superficial 'tick and flick' audit activities and, as such, cannot and should not rely on its perception of the current state of fatigue management to set aside the science or to replicate current rules.

AN OVERVIEW OF SOME OF THE DEFICIENCIES IN THE INSTRUMENT

This briefing is not intended to provide a complete and detailed analysis of the Instrument. The original briefing has been updated in some areas to clarify issues raised by CASA in responding to our concerns. What follows is a selection of problems that are intended to show that the opportunity cannot be allowed to pass to prevent this flawed Instrument from becoming the unquestioned future benchmark that it will otherwise become. Once allowed, the Parliament will have little recourse short of passing a specific Act to force the legislation to be amended when fatigue causes a serious incident. CASA needs to revisit the problem areas to more appropriately respect the available science and to avoid using the gaps in the science as an excuse to conduct an experiment to further explore the fatigue boundaries while leaving the operators as the patsies.

Importantly, the absence of commentary should not be construed as approval of a provision – the provision may involve complex issues beyond the intended scope of this brief or may be of lesser immediate concern. The following are the most critical areas for your immediate consideration.

Rest Requirements in Preparation for Flight

The human body recovers alertness by gaining appropriate quantities and quality of sleep. As a recent US National Research Council study on aspects of pilot fatigue (following on from the Colgan accident in Buffalo, NY) notes:

...Fatigue as a risk to individual pilot performance can result from (1) being awake continuously for more than approximately 16 hours, or (2) sleeping too little (especially less than 6 hours on the sleep opportunity prior to work), or (3) when undertaking work at a time when the body is biologically programmed to be asleep (i.e., an individual's habitual nocturnal sleep period), which for most people is between 10:00 p.m. and 7:00 a.m...¹²

A footnote to that text adds:

The period of habitual sleep time at night has also been identified as encompassing the "window of circadian low," defined as the hours between 2:00 a.m. and 6:00 a.m. for individuals adapted to a usual day-wake/night-sleep schedule. This estimate of the window of circadian low is calculated from extensive scientific data on the circadian low in performance, alertness, subjective fatigue, and body temperature...

This definition of the "window of circadian low" (WOCL) is the most widely accepted time span in the scientific literature. However, CASA defines it as spanning 2:00 a.m. to 5 a.m. and ICAO, without citing references, now refers to the period 3:00 a.m. to 5

¹² National Research Council, (2011), *The Effects of Commuting on Pilot Fatigue*, Committee on the Effects of Commuting on Pilot Fatigue, Board on Human-Systems Integration. Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press. Page 80

a.m. The importance of this concept is critical to most sleep science, since it is the period during which we gain the most recuperative sleep and, conversely, suffer the most if we are awake during that time.

The End of Night

In 1990, before the WOCL was identified by researchers, the drafter of the SIEs created a number of critical definitions tied to 5:00 a.m. as a start time for an FDP. The driver for those definitions was to facilitate the widely scheduled first flights of the day at 6:00 a.m. without operational penalties. Thus a 'local night' or a 'late night operation' could end at 5:00 a.m. (the typical sign-on time for a 6:00 a.m. departure) and a pilot could begin his or her day at that time.

There was no recognition that a start time of 5:00 a.m. would often mean the pilot would need to wake around 3:00 a.m. to get ready – in essence, losing most of the restorative sleep needed in the WOCL. There was a slight reduction in the permitted FDP to typically 12 hours, however a pilot could be rostered for five starts per week at 5:00 a.m., week in- week out.

The Instrument continues that arrangement, although there is a further reduction in the permitted FDP of up to two hours. We do not believe that the reduced FDP is sufficient to offset cumulative fatigue from multiple early starts and we believe that the artificial cut-off time for a 'local night' or a 'late night operation' should be revised to more accurately reflect the available science. Both the FAA and EASA provide for 6:00 a.m. as the earliest end of 'night' in these circumstances¹³ and EASA provides further limits for 'early starts' in the period between 5:00 and 6:00 a.m.¹⁴ The extant CAO Part 48 continues to require a weekly rest of "at least 1 continuous period embracing the hours between 10 pm and 6 am on 2 consecutive nights".¹⁵

Sleep Opportunity

We welcome the concept of 'sleep opportunity' as an attempt to ensure that restorative sleep may be obtained. It is certainly an improvement over the system where travel to and from accommodation as well as 'the reasonable requirements of bodily functioning such as eating, drinking, toileting, washing and dressing were squeezed into relatively short breaks between FDPs.

However, we caution that 'sleep opportunity' does not translate necessarily into useful sleep due to circadian, environmental and a range of psychological influences such as fear of over-sleeping, preparation anxiety, etc. This is particularly problematical for delayed start times, standby, reassigned duties and inflight rest periods as well as significant time zone shift.

Reduced Rest

We do not believe that the science supports reduced rest periods.

We believe that extending rest time after an FDP commenced after a reduced rest period is essential to combat cumulative fatigue but does little to offset fatigue during that FDP. There is abundant research to suggest that the 'sleep opportunity' required,

¹³ See 14 CFR 117 definitions at section 117.3 for *Physiological night's rest* (FAA) and the proposed ORO.FTL.105 definition for *Local night* (EASA).

¹⁴ See EASA Draft CS FTL.1.235 *Rest Periods* subsection 1, *Disruptive schedules*.

¹⁵ CAO 48.1 *Flight Time Limitations – Pilots*, Issue 9, Amendment 29, paragraph 1.12

even if achievable, is unlikely for the reasons set out above to become restorative sleep of any reasonable magnitude, particularly if the reduced rest period is followed by an early sign-on. The recent change by CASA to this provision, removing further reductions in an FDP following reduced rest and thus permitting a normal maximum FDP, flies in the face of both science and operational experience.

Neither the FAA nor EASA permit reduced rest outside FRMS controls – both set 10 hours with an eight hour sleep opportunity as the acceptable minimum requirement.

We also believe that reducing rest due to operational delays or merely to retain schedule integrity is unsustainable.

Maximum Flight Duty Periods

We believe that permitting a two-pilot crew to conduct a FDP of 14 hours duration, including 10 hours at the controls, creates an unjustified fatigue risk. Permitting further extensions is just plain dangerous.

Both EASA and the FAA originally proposed 13 hours maximum, consistent with the recommendations of the International Federation of Airline Pilot Associations (IFALPA) and the majority of fatigue scientists. In each case, the final rules reflected commercial pressure, although the FAA would not budge on its limit of nine hours at the controls – a full one hour less than CASA permits. The FAA final rule commentary is instructive:

The FAA agrees with the overwhelming number of commenters who stated that a 10-hour flight-time limit **is not justified by current scientific data**. A series of studies examining the national accident rate has shown that 10 hours spent at work pose a much greater risk of an accident than 8 or 9 hours spent at work...Because scientific data shows that the risk of an accident substantially increases when a person's time on task is 10 hours, the FAA has decided to limit flight-time that begins during 0700-1259 to 9 hours.¹⁶ [emphasis added]

The UKCAA in the same circumstances permitted a single 10 hour sector only within a FDP limited to a 12.5 hours maximum¹⁷ without augmentation or FRMS protection and Transport Canada is planning 13 hours.

The justification for both EASA and the FAA to accept 14 hours was based on research conducted for the UKCAA on carefully controlled flights with significant rest protections and was a projection from a computer model. Significantly, the UKCAA did not change its prescriptive rules to allow two pilots to fly a FDP of 14 hours in the intervening 12 years, until having to meet the harmonisation requirements of the European Union. EASA has settled on 13 hours as the normal maximum FDP, but will permit extension to no more than 14 hours.¹⁸

Canada appears to have settled on a maximum FDP of 13 hours.

Importantly, the other jurisdictions apply a number of related controls to these extreme FDPs. For example, according to Jean Marc Cluzeau, EASA Head of Flight

¹⁶ US Department of Transportation, *op. cit.*, page 140

¹⁷ UKCAA would allow a two pilot crew to accumulate 10 hours at the controls over two sectors (provided both sectors were less than seven hours in duration) but within a FDP limited to a 13.25 hours maximum.

¹⁸ See EASA Draft CS FTL.1.205 *Flight Duty Period (FDP)* subsection 2, *Extension of FDP without in-flight rest*.

Standards, there are a number of controls associated with the 14 hour FDP in the EASA scheme:

...To give you an example, through the combination of different limitations, a long haul pilot systematically having 14 hours FDPs (sic) would have an average of seven days of duty per month...¹⁹

Although such an outcome seems to us to be inefficient, it nonetheless highlights that similar controls have not been imported to the Australian rules as mitigators for the excessive permissible FDPs.

Additionally, to the best of our knowledge, there has yet to be any examination of the fatigue consequences of post-9/11 security which forces pilots in unaugmented crews to remain locked in the cockpit at all times other than for essential toilet breaks.

In essence, permitting two pilots to fly a 14 hour FDP puts them on or over the threshold of 16 hours awake at the time of landing (which could be at 1:00 a.m.) even in ideal but highly unlikely sleep/wake circumstances, without even contemplating the effects of extensions or delayed sign-ons that CASA permits. Research conducted for CASA, Qantas and AIPA²⁰ using 10,083 days of sleep/wake data indicates that over 80% of domestic pilots and almost all international pilots are awake for more than two hours before take-off. Time awake before take-off²¹ averages 4.6 hours for domestic pilots and 6.2 hours for international pilots, with 5% of those crews being awake for more than 10.8 hours and 13.4 hours respectively.

We believe that permitting FDPs of greater than 13 hours is unsafe and that both the Instrument and particularly the SIEs require immediate amendment.

Delayed Reporting Times

The Instrument now includes provisions for delayed reporting times which appear to replicate the UKCAA provisions (although not the matching FDP limits). While we support the need for clarity in such circumstances, we believe that the provisions can result in excessive times awake.

For example, a pilot could be scheduled to report at 7:00 a.m. with a wake-up time generally around 5:00 a.m., but quite likely earlier. The allowable FDP for 1-2 sectors is 13 hours. A delayed report time of just under four hours later means that the allowable FDP is still 13 hours, resulting in the likelihood of that pilot landing the aircraft, without operational extensions, some 19 hours after waking up. This situation can be exacerbated if operational extensions are required, since an additional sector can be added (which would normally result in a reduction in permissible FDP due to workload considerations) doubled up with an increase of one hour to the permissible FDP.

We believe that the delayed reporting time provisions are too generous and need to be revisited.

¹⁹ EASA, *EASA News Special*, October 2012, page 2

²⁰ Roach G *et al* 2008, *Fatigue Risk Management System Project Final Report*, Centre for Sleep Research, UniSA, Adelaide

²¹ This time awake data relates to the full range of departure times, not just those for which a 14 hour FDP is permitted.

Extensions

The Instrument has allowed certain extensions to the permissible FDPs, initiated by 'unforeseen operational circumstances'. In stark contrast to the complete abrogation of regulatory responsibility demonstrated over the Jetstar extension mentioned previously, the advisory material associated with the Instrument indicates an intention to regulate the number of extensions required in actual operations. The Instrument itself provides for extension of an additional sector, one hour of FDP and 30 minutes of time at the controls for two-pilot operations, highlighting two issues;

1. contrary to the science, adding a sector would normally require a reduction in FDP, so adding the additional hour of FDP and 30 minutes at the controls clearly is fatigue-inducing, particularly in operational circumstances that may already meet or exceed the maximum limits supported by research; and
2. the new extension provisions highlight how unsafe the existing SIEs are, considering that they already allow excessive FDPs and provide for extensions of twice the magnitude without any regulatory control.

We believe that extensions generally are incompatible with at least some of the FDPs permissible under the Instrument, a position repeatedly expressed by the world experts in fatigue. EASA extensively consulted on the issue of extensions and consequently settled on specifically limiting the maximum permissible extension of FDP.²² Further, we believe that this can be even more problematic when combined with delayed sign-ons and callouts from standby. We accept the necessity for extensions as a practical matter, so the solution lies in revisiting the FDP limits and the controls over cumulative relief provisions that can lead to excessive FDPs and time awake.

While CASA insists that a suitable control exists by providing a pilot with a power of 'veto' on the day, the pilot is always under severe commercial pressure to continue and may well be incapable of objectively assessing his/her existing level of fatigue. In many respects, this fatigue risk control is in the hands of the weakest link.

In the case of the extant SIEs, we strongly advocate restrictions on both the number and frequency of the extension provisions as an identified excessive fatigue risk.

Standby

We believe that the Instrument fails to adequately address the issues of the quantity and quality of pre-flight rest achieved on standby while awaiting callout.

CASA acknowledges that standby contributes to fatigue²³, yet the Instrument does no more than replicate the provisions from the SIEs – provisions that largely preceded any sleep research of merit. CASA speciously justifies that replication on 'regulatory experience', i.e., where the absence of knowledge is taken to confirm the absence of a problem, despite significant regulatory decision-making on standby regulation occurring at the hands of the US, UK and European agencies.

The purpose of 'standby' or 'reserve' is to have available back-up crews to provide continuity of service for unforeseen events. There are many nuances as to how these

²² EASA Draft CS FTL.1.205, *op. cit.*

²³ CASA, *Consolidated Summary of Comments received, op. cit.*, page A62

back-up crews may be provided and each regulatory scheme attempts to deal with those complexities in terms of fatigue mitigation, usually by controlling the combined period of standby and FDP. We will just consider the most common option of 'standby at suitable sleeping accommodation' (or its international equivalent) for a two pilot crew.

If a particular operation provides a likelihood of being called out during different windows during that standby, we do not believe that the standby period can be considered to be the equivalent of a normal sleep opportunity. This issue was mentioned in the CASA Special Audit in relation to the Pel-Air accident:

From the interviews conducted with crew, it appears that permanent standby has resulted in "psychological fatigue" due to the expectation to perform duty and the anticipation of callout. The short planning period, lack of knowledge of possible destinations and lack of support provided by operations staff once doors closed appears to add to this fatigue. All crew interviewed stated that they felt there would be no issues in stating that they were fatigued and pulling out of duty but also felt that they had limited opportunities to fly and had to take these opportunities when they arose. Anticipatory stress may occur from both internally activated and external, or environmental stressors but can have a cumulative effect. Thus, while each stressor taken on its own may present as being mild and relatively innocuous, the combined stressors taken over time in conditions of continual activation can result in additional psychological fatigue.²⁴

Some sleep will be obtained, but the quality may be significantly degraded. The immediate difficulty with standby is not so much that a pilot must be sufficiently rested to be able to commence a maximum FDP on callout from standby immediately that standby begins, but that somehow he/she must remain sufficiently rested to be able to commence a maximum FDP on callout at any time thereafter.

The FAA essentially gives a four hour 'credit' for standby rest provided that the combination of standby and FDP does not exceed 16 hours. Previously, the most experienced and scientific fatigue regulator, the UKCAA, gave a six hour 'credit' which could be followed by a maximum FDP of 14 hours (provided that the duty involved only a single flight of less than seven hours flight time). EASA proposes an eight hour 'credit' that could be followed by a maximum FDP of 14 hours, but without further extension.

In stark contrast, CASA proposes to grant a 12 hour 'credit', i.e., there is no reduction in the maximum FDP until 12 hours have elapsed. From the 12 hour point until the 16 hour point, the possible FDP reduces so that the finish time remains the same. This 'credit' is three times greater than the FAA, twice the UKCAA and 1.5 times what EASA provides, justified only by 'regulatory experience: i.e., 'nothing has gone wrong so far'!

In the worst case example, an Australian pilot could be on standby for 12 hours before being called out for a 14 hour duty with possible extensions. A pilot could be called out at 8:00 a.m. after 12 hours of standby (commencement time 8:00 p.m. the previous evening) for 14 hour maximum FDP with a subsequent finish time of 10:00 p.m. Of course, that duty could be extended by one hour in 'unforeseen operational circumstances', resulting in a finish time some 27 hours after the pilot initially prepared to fly! This is 11 hours more than the US FAA now permits and five hours more than EASA will permit.

²⁴ CASA Special Audit, *op. cit.*, pages 22-23

We believe that such possibilities are unsafe and better controls over the risk are required.

Augmented Operations

In 2007, the final report of the quadripartite FRMS study²⁵, believed to represent the largest such data set in the world, was presented to the stakeholders (CASA, Qantas and AIPA) by the University of South Australia. We are concerned that CASA has chosen to ignore the information in both the Final Report and within the dataset when formulating the Instrument.

AIPA members inarguably represent the largest and most experienced body of international augmented flight crew practitioners in this country. Although we now operate to an exemption that permits two pilots to be legally at the controls for up to 10.5 hours, we consider that to be a dangerous exception rather than a sensible rule for sound fatigue risk management. The resulting threshold for requiring the carriage of additional pilots is not only set too high, but creates a *de facto* legitimisation of excessive time at the controls due to the presumption that CASA has a defensible safety case for those limits.

AIPA is concerned that the extension of FDP and flight time by up to 5 hours due to the addition of a third pilot is excessive in the period between 3:00 p.m. and 5:00 a.m. It is also applied inconsistently compared to the construction of the two-pilot baseline or the relative benefit of adding a fourth pilot to constitute a full replacement crew.

One of the critical features of augmented operations is the quality of the crew rest facilities. We are concerned that the Instrument accords too much rest value to a Class 3 facility, which is essentially a reclining seat in the cabin (or the flight deck) with a footrest. There is a significant difference in the conduciveness for recuperative sleep of the flight deck compared to the passenger cabin – even EASA has seen fit to redefine Class 3 facilities by adding the requirement “and is separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is not adjacent to any seat occupied by passengers.” We strongly advocate those additional requirements. As presently defined, AIPA is of the view that Class 3 seating offers little to no chance of recuperative sleep outside those hours when the majority of passengers are sleeping and no extension to FDP or flight time can be safely planned.

We believe that the FDPs for augmented crews require further refinement in light of the recorded operational experience.

Fatigue Safety Action Groups

Fatigue Safety Action Groups (FSAGs) are an integral part of the fatigue risk identification and management processes essential to FRMSs. ICAO and CASA agree that all stakeholders must be part of those processes. However, we believe that stakeholder involvement through FSAGs is also required when operators elect to work under the prescriptive rules. CASA has chosen not to specifically legislate for stakeholder involvement across all options, but prefers to enforce the notion through certification and approval processes.

While it may be easy to infer that such involvement needs to take place, we believe that there are many operations where any requirement not enshrined in law will either

²⁵ Roach G. et al. 2008, *op. cit.*

be given lip-service or ignored. ICAO and CASA insist that fatigue management is a shared responsibility, but it becomes a nonsense if there is not a seat at the table for all of the responsible parties.

We believe that the Instrument requires the insertion of language that mandates representative stakeholder involvement at all levels of the management of fatigue risk.

Disputes

We are also concerned about formalising some means of formal dispute resolution in the event that the representative stakeholders are unable to satisfactorily resolve fatigue related issues. CASA has suggested that they would respond to any stakeholder complaint, although that would require a complete break with tradition on their part. Even if CASA were to get involved, as they most assuredly should, there is no guarantee that the necessary expertise and experience can be provided and no guarantee that appropriate fatigue science will be brought to bear.

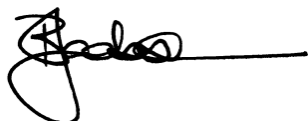
We believe that CASA should be required to formalise a fatigue dispute resolution process as well as to form a standing panel of fatigue scientists who can provide independent and respected scientific advice as part of the resolution process.

CONCLUSION AND RECOMMENDATION

We have concluded that the Instrument, despite representing a significant improvement of existing practices, falls short of the necessary standard for safe operations in a number of areas. Despite known deficiencies, similar legislation has been made and left uncorrected for decades. There is no guarantee that the Instrument will not fall into the same 'set and forget' situation. Fatigue risk management legislation cannot be left as a 'near enough is good enough' effort and the window to force the required improvements is quickly closing.

Our assessment is that the level of adoption of the Instrument over the next 6-12 months will be low. Operators are faced with considerable work to implement the new concepts and limits and they are most likely to try to remain with the existing rules as long as they can. In our view, disallowance will not adversely affect most operators and the disallowance period of six months should allow resolution of the outstanding issues.

We therefore recommend that the relevant parts of Civil Aviation Order 48.1 Instrument 2013 be disallowed.



Captain Barry Jackson
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Australian & International Pilots Association