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Executive Summary

The Civil Aviation Authority (CAA) issued a discussion document on 21 November 2016. The purpose was to gather industry views on the current state of fatigue management, and what changes could be made to the regulatory system to improve it. The submission period ended 20 February 2017.

New Zealand aviation fatigue risk management regulations have not kept pace with scientific principles, knowledge and rapidly maturing regulatory practices from around the world. There are a number of potential safety risks associated with this. The CAA wants to make sure that New Zealand has a regulatory system that is fit for purpose and enables aviation participants to effectively manage the risks associated with fatigue.

Respondents were generally in agreement with the issues identified in the discussion document and with the suggestions for how to address them. As there were some suggested options for moving forward, but no specific proposals, much of the feedback was general in nature, rather than commenting directly on the options discussed. These comments highlighted further or more targeted areas of consideration for the CAA in regards to fatigue management. Nine key themes were identified:

- Fatigue is a safety issue and needs to be taken seriously;
- It is important to further explore the interface between Fatigue Risk Management Systems, the Health and Safety at Work Act 2015, and Safety Management Systems;
- Solutions that are appropriate, proportionate, and effective for the different aviation sectors are important;
- International regulatory approaches from other jurisdictions’ and ICAO and should be taken into account;
- A strong and independent regulator is important;
- It is important that data and evidence are used to help design any potential solutions;
- There is a need to define the roles of the regulator, organisations, and individuals within fatigue management;
- Industry needs more training and education on fatigue and fatigue management; and
- The unique commercial operating environment of aviation needs to be considered.

A succinct summary of these key themes as well as some key supporting findings from the feedback can be seen in Appendix A.

The CAA continues to work with a Fatigue Risk Management Panel that includes industry representatives and fatigue specialists. This Panel and the CAA are considering policy options, possible actions, and developing additional non-legislative actions (for example amending advisory material and education campaigns).

We intend to use the feedback received to help develop policy recommendations to be provided to the CAA executive leadership later in 2017.
Introduction

The purpose of this review is to see what improvements could be made to ensure the regulatory system is fit for purpose and enables aviation participants to effectively manage the risks associated with fatigue.

Fatigue is recognised as a major hazard because it affects people’s ability to do their job safely. Modern fatigue management approaches are applied on a spectrum, from compliance-based prescriptive limits, to fully-fledged, performance-based Fatigue Risk Management Systems (FRMS). In this review, the Civil Aviation Authority (CAA) considered the full range of options, as well as non-aviation specific regulation, such as Health and Safety at Work Act 2015\(^1\) (HSWA) legislation, and non-regulatory options.

The discussion document was structured into four broad themes:

1. Regulatory design – rule structure and guidance material; processes; one size does not fit all; building trust through the regulatory approach;
2. Competence of participants and the regulator;
3. Low information environment – safety culture, hazard identification and occurrence investigation; CAA capability and identified limits; and
4. Other considerations specific to certain sectors.

Some suggested options to address the issues identified within the discussion document were presented and discussed. These included both legislative and non-legislative options.

The discussion document was posted on the CAA website and emailed to 2650 correspondents. Approximately 2000 flyers were distributed which encouraged individuals to participate in the consultation. E Tū union also sent out two versions of the feedback form to its members. One was the full form; the second was a shorter survey with questions directly relevant to cabin crew. The CAA received 656 responses. Sixteen submissions were made by organisations or unions, the remainder were from individuals. Forty-six submissions were made directly to the CAA. Of the submissions coordinated by E Tū, seventy-three used the full feedback form, and 537 were from the short survey.

The feedback received was analysed depending on the type of feedback form submitted to the CAA. Those who submitted directly to the CAA and the cabin crew who completed the full survey have been analysed together, and the cabin crew members who completed the short survey have been analysed as a group.

The analysis is presented here by question, with common themes from each question discussed, first from the full submissions, and secondly from the short survey where able.

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\(^1\) Health and Safety at Work Act 2015
QUESTION 1: Other issues or comments

Stakeholders were asked to comment on any issues regarding fatigue risk management in New Zealand’s civil aviation system not otherwise covered by the questionnaire.

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Almost all submitters raised at least some general issues or comments relating to:

- The realities of the civil aviation industry's commercial operating environment and its impact on fatigue and those working in the industry;
- Factors contributing to fatigue, and/or
- The work that the CAA is completing on fatigue risk management.

About one-quarter of the comments provided in response to Question 1 related to the introduction or update of prescriptive limits (mostly from industry or other submitter types) or fatigue monitoring and reporting (mostly from flight or cabin crew). These comments are discussed in Questions 3, 4, 6, and 11.

The realities of the civil aviation industry's commercial operating environment

Providing context for their views, about one-third of submitters described operational realities facing the civil aviation sector which may impact on effective fatigue risk management. A commonly expressed view was that industry approaches to reduce costs result in practices that submitters considered to be detrimental to good fatigue management (e.g. longer sectors, flights through multiple time zone changes, return back of the clock flights\(^2\), reduced crew numbers, higher expectations of service, more one-night instead of two-night duties, etc.). One submitter identified the impact of jetlag on fatigue and its status as the industry’s most challenging fatigue management issue (but one which is simply a reality of the business). One cabin crew submitter noted their view that operators pay only “lip service” to fatigue, because addressing it effectively costs money and resources, and the priority of airlines is profit. Fatigue and its effects on safety are not taken seriously by operators; examples were given of fatigue effects being minimised by statements such as “your adrenaline will overcome your fatigue in a major emergency”.

Pilot, air traffic controller and cabin crew submitters identified the impact of rostering decisions on fatigue as a particularly significant issue. Over half of all submitters provided advice on the impact of certain rostering practices which they consider create or increase fatigue. Examples provided by these submitters includes financial incentives to crew for working more (enabled through ‘B’ scale contracts, for example), incentivising working on rostered days off, and under-resourcing flights so that crew feel more compelled to work extra duties. Submitters also suggested possible rostering arrangements that could support a reduction in fatigue. Such options included specific advice about the number of duties

\(^2\) ‘Back of the clock’ means work schedules that involve extended periods of night-work between midnight and dawn.
to be performed over a given timeframe, improving crewing ratios, addressing the impact on on-call/standby shifts, and stating required recovery periods between duties. Specific examples are discussed in Question 3.

Other alternative practices that could reduce fatigue were proposed by submitters including:

- **Improved work terms and conditions:**
  - Prohibiting return back of the clock duties;
  - Providing more annual leave entitlements so that crew have more time over the year for recovery and can use leave for multiple days in a row off;
  - Improving rostering arrangements to provide more recovery and in-flight rest time;
  - Ensuring that administration work is not “on top” of flying duties as this extends the working day and increases fatigue; and
  - More crew required on each flight.

- **Requiring company principals to be responsible for fatigue management; and**

- **Mandating fatigue management to be “parallel to but subordinate to the part of the operation that is responsible for flight ops budgets”.**

The need to strike a fair balance between airlines' operational requirements and fatigue risk management was noted by airline and industry submitters, one of whom indicated that fatigue is an issue taken seriously by industry.

One pilot noted that there are different fatigue-related rules depending on the operator's jurisdiction. This submitter noted that there is a lesser focus on fatigue risk management in some jurisdictions, which creates a competitive advantage for those operators as their crews work longer duties or have higher fatigue diagnostic or reporting thresholds. Comparability between operators was also an issue for four cabin crew submitters, with one noting that different carriers may provide less rest (in or post-flight), which impacts on the overall competitiveness of the operator and drives the overall level of rest for New Zealand-based crews down.

A related set of comments from some cabin crew and pilots described working conditions in civil aviation and the impact of these on increasing fatigue. Examples included, shift work undertaken in a moving environment, confined spaces, operating across multiple time zones, and reduced oxygen at altitude over time. A range of other issues that can impact fatigue and which are associated with international travel were also identified, for example higher expectations of on-board service, more congested international airports, longer crew processing terms, and passenger aggression. The nature of the commercial operating environment and its impact on cabin crew reporting behaviour was raised by one cabin crew submitter, who noted that the incentives to report fatigue days are limited, for example due to not receiving pay, staff take sick leave, thus masking the overall issue of fatigue.

### Impact of fatigue on career development

The impact on career progression of refusing duties on the basis of fatigue was raised as an issue. This was raised mainly for/bys cabin crew, but two pilots also identified this as a problem. Examples of how this could happen, and the way that contracts are incentivised to increase, rather than reduce fatigue were discussed. One submitter queried if there was differentiation between schedule 200 and 100 flight
attendants\(^3\) because a schedule 200 attendant can “ignore fatigue in order to achieve a maximum end of year bonus”. It was also an issue in encouraging a culture of non-reporting (see Question11).

**Factors contributing to fatigue**

A range of examples of fatiguing experiences lived by both flight and cabin crew were presented, including describing the impact of:

- Undertaking shift work across multiple time zones and in relatively random patterns;
- Industry practices such as return back of the clock flights, long-haul duties, rostering of duties that are disruptive to sleep or which do not allow for adequate recovery time, and on-call requirements;
- No payment for fatigue days;
- Longer flights through multiple time zone changes;
- Long days, for example, the time required for travel to/from accommodation, completion of airport security procedures, short-haul rest times, or overall time awake; and
- Cumulative fatigue on work-life balance, fitness to operate aircraft and time in the industry.

A handful of crew submitters discussed other issues relating to terms of employment that could be considered when developing any regulatory changes. These comments noted that inadequate rest time (either at out-stations or in general) is a contributing factor. A small number of pilots were concerned that fatigue and stress were increasing the prevalence of adverse mental health outcomes among flight crew.

**Support for the work that the CAA is completing or comments on the consultation process**

Most comments made about the work being undertaken by the CAA to develop a fit-for-purpose regulatory framework for fatigue risk management were supportive. Approximately one-fifth of submitters who responded to Question 1 stated that fatigue management is not a new issue and that action to address fatigue is required now because of its integral impact on aviation safety, especially in an industry that has grown significantly over the past ten years. The implementation of limits was also supported by one pilot. Another cabin crew submitter noted that the problems need to be quickly acted on. A member of cabin crew who submitted directly to the CAA stated that a full-scale review is needed.

Three submitters thanked the CAA for the opportunity to present their views or made generally positive comments about the review process for example that the document was well presented. Other positive comments included one industry submitter who noted that it is important to continue to engage industry in fatigue management discussions: They considered that an “evolutionary and learning approach” was most likely to support ongoing engagement. Another industry submitter expressed

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\(^3\)Schedule 100 cabin crew were employed before 2013 and schedule 200 were employed from 2013. Terms and conditions for these contracts are the same, aside from remuneration and allowance structure.
regret that fatigue risk management is currently missing from the New Zealand rules, but stated that it was a good sign that there was discussion occurring on the subject.

More specific comments about the consultation process completed to date were also provided:

- Better research on cabin crew fatigue is needed: this research should drive system improvements (two cabin crew submitters);
- The discussion document is complex and "missing the mark" regarding comprehension and "plain English" could be used in future/other processes;
- A query about if cabin crew had been consulted during the development of the questions; and
- A comment querying whether there is genuine will at the CAA to address fatigue.

Recognition of, and alignment to overseas industry regulations

Other comments (from cabin crew, a pilot and an aircraft user) included that:

- The rules should be updated as necessary to align with industry regulations overseas, with special consideration given to the geographical nature of New Zealand; and
- All operators should comply with fatigue risk management systems and New Zealand legislation; foreign operators should have to comply with New Zealand's rules regardless of where the company is headquartered.

Cabin Crew Short Survey Results

Many of the issues raised by those who submitted straight to the CAA and the cabin crew who completed the long form questionnaire were reflected again in the responses from cabin crew in the short form survey, as can be seen in Figure 1. Some answers to this question related directly to other questions which were not asked in the short survey, these answers are analysed with their relevant question where appropriate and are thus not included in the above charts.

The biggest issue cabin crew members had was the unique operating environment of aviation, which incorporates a number of more specific issues. The operating environment drives the design of rosters to crew the flights. Many submitters felt that the design of the rosters was a major reason for them being fatigued after or during a duty, specifically back of the clock duties and back to back rosters such as a late shift followed by an early shift. Other concerns with the operating environment were that there were not enough crew on board flights anymore to sufficiently spread the workload, and specific employment relations issues such as the type of contract cabin crew are on, or sick leave entitlements.
The second biggest theme to come from the cabin crew short survey was the dangers of traveling to and from work while operating a fatiguing schedule. A number of cabin crew provided stories about how they had almost fallen asleep at the wheel, or gone on ‘autopilot’ while driving home. Others mentioned that while their shift might start when they arrive at work, they have already had a long commute time and thus their wake time should be considered with this in mind, not only while they are on ‘duty’.

Summary

Many of the comments made in relation to Question 1 described the day-to-day operating realities for flight and cabin crew and the impact working in this environment has on fatigue. Comments focused on both the commercial pressures that drive industry practices (and which could affect fatigue/management of fatigue), as well as factors inherently associated with the international aviation industry. Ensuring fatigue is addressed in an appropriate manner was a core concern for all types of submitters.
QUESTION 2: What changes, if any, do you think are necessary to the rules and the prescriptive flight and duty limitations and rest periods for flight crew?

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Fifty-seven submitters responded directly to Question 2. Of those who responded, thirty-two submitted directly to the CAA. The remaining submissions were from cabin crew who submitted through the Union.

Specific limits

Seven submitters suggested specific limits that could be applied to flight crew this included:

- Increased rest periods;
- Prescriptive rules relating to types of operation;
- Use of the CAO 48.1 model (from Australia);
- More recognition of fatiguing day and night time duties;
- Maximum of seven hours flight if signing on after 1700 local time or eight hours at any other time; and
- Less prescription around the hours of service.

Sixteen cabin crew submitters thought that there is a need for more consistency in the Civil Aviation Rules. They all responded that cabin crew should be included and that there should be more consistency between the treatment of cabin crew and flight crew. These responses are discussed in Question 3. A handful of other cabin crew submitters did not think that these rules should be the same. This is discussed further in Question 3.

Weighting developed for different areas of aviation

Submitters suggested that changes should be made which reflect differences in areas of aviation, and sector-specific operations.

Part 135

Four Part 135 submitters commented that specific provisions are needed for Part 135 operations. With respect to the helicopter industry, one submitter thought that there needs to be a movement away from counting hours of duty, in favour of assessing various kinds of duty and flight time and the fatigue effects that result. They thought that a form of weighting should be developed. Other submitters commented on the balance between prescriptive limits and the use of FRMS. One of these submitters considered that prescriptive limits should be a guide because operations and workloads vary. As such, operators should establish their own FRMS. Another thought that prescriptive limits often seem arbitrary and unnecessary because they are based on assumptions which may not be applicable to every
operation to which they are applied. Following this, the fourth submitter noted that the rules should focus on items to be considered by operators in developing a FRMS.

**Emergency and Medical Services**

Six emergency and medical industry submitters responded specifically on changes that should be made to the emergency and medical services sector. They noted this sector is expanding and that there are full-time professional operations that are solely doing emergency and medical services work for New Zealand government agencies. This means they can afford to provide safe and regular working hours for their pilots. Submitters thought that when solutions are being formulated, the impact of some organisational structures and processes, and the size of the organisations should be taken into account. This is because emergency flight operations are different to other areas of aviation in that they are typified by relatively long periods of being available for duty (on call), with low actual flight times. Therefore, a prescriptive flight and duty scheme will not work for this area of aviation.

Three submitters supported a FRMS being included as an option within any changed rules. Unless the rules make provision for this, the effect of having to comply with a rigid set of prescriptive limits, which were not developed with emergency services in mind, could and probably will require up to double the number of pilots. The more appropriate course of action for this sector is to get specialist fatigue advice and tailor a crew fatigue management structure to manage and monitor the actual levels of fatigue within acceptable parameters. One pilot strongly supported limits for helicopter paramedics, given the importance of the safety roles that the paramedics play onboard.

**Research to inform limits**

Four submitters (three cabin crew, one industry) thought that the current rules are out of date, and have been surpassed by science surrounding fatigue management. These submitters considered that there is no science behind the current limits, and that they are based on regularly-scheduled operations only. Fatigue studies should be conducted for each situation, so that specific issues of operators can be incorporated into rules. There are many new studies available on the effects of time zone changes that can be referred to. It is not clear whether these comments were specifically directed towards flight crew or all crew.

**Alignment with other jurisdictions and compliance with international obligations**

Twelve submitters (pilots, cabin crew and industry submitters) considered that New Zealand’s rules do not align with ICAO standards for flight crew, or the standards set by overseas jurisdictions. One submitter noted that New Zealand’s current rules are out of date and should be more aligned with countries such as the UK, USA, Canada and Australia. For example, the Australian CAO 48.1 model effectively addresses the issue of different sign-on times. New Zealand's approach allows for too many hours to be flown by pilots who do not want to stand down for fear of perceived as weak, under-experienced, not resilient, or unable to keep up with other pilots. Other comments included that the Civil Aviation Rules should:
Reflect the prescriptive requirements of the ICAO Standard;
Include references to flight duty periods and rest periods; and
Mandate that operators’ schemes are required to establish limits within prescriptive fatigue management regulations established by the CAA.

Legal requirements

Four submitters (two unions, pilot, cabin crew) expressed a need for fatigue management and limits to be included in enforceable instruments (that is, not simply guidelines in ACs). The individual submitters addressed this issue very briefly, while the union submitters provided more detailed responses. For example, one pilot simply stated that there must be legal requirements to avoid the rules being ignored by operators in the “search for profit” sector. One cabin crew submitter stated that there should be a stricter enforcement of layovers after crew have had a certain amount of flying.

The two union submitters were concerned that prescriptive flight and duty time scheme requirements, which they believe should be mandatory, may be included in an Advisory Circular rather than within a Rule part. They noted that guidelines contained in ACs are used by the CAA as an “acceptable means of compliance”, but do not have the force of a rule unless “specifically referenced by a Rule or incorporated into an operator’s exposition (an operating manual approved by the CAA).” This concern arose because the submitters considered that enforcement mechanisms which are available for rules will better ensure that limits are complied with. Another union submitter also sought clarification of the intention of the Rules (Part 121, 125 and 135) with respect to the 21 factors that an operator is currently required to address, where appropriate to the operator’s type of operation. The intent for each of these factors has been clarified in AC119-3 for Part 135 operations, but no similar clarity has been provided for Part 121 and 125 operations in AC119-2.

Clarification of definitions

Two submitters considered that clarification of certain definitions is needed in relation to the rules. The unidentified submitter who sought a clarification of “duty time” gave two examples to account for this:

- There are Part 135 operators in New Zealand who do not count driving between cities or repositioning aircraft as duty time, which consequently has staff operating beyond their maximums; and
- It is unclear whether “duty time” applies to all crew members, or just pilot-in-command.

The pilot who submitted that the CAA should address the definition of “flight crew” gave a similar example for this, within the emergency operator context.

No changes are needed

One submitter stated that there are no further changes needed to the rules and prescriptive flight and duty limits which focus on providing lower and upper flight hour limits for pilots. However, this
submitter noted that if changes are made to the rules, operators would like reassurance that the CAA would provide operators with a chance to work collaboratively in reviewing the changes, prior to publishing, and that the changes would not conflict with existing industrial agreements which each airline has in place. Another submitter also considered that the current status quo should remain, as the existing flight and duty provisions approved by the CAA suit their operation.

Cabin Crew Short Survey Results

98% of responses to this question on the short survey were in support of including cabin crew in the rules. Their responses have thus been analysed in conjunction with Question 3 as that question is specifically about cabin crew and not flight crew.

Summary

Few submitters considered that extensive changes to the rules for flight crew are needed with most of the commentary provided focusing on Part 135 or emergency services.

QUESTION 3: Do you support the introduction of prescriptive limits for flight, duty, and rest periods for cabin crew?

Responses from stakeholders submitting directly to the CAA and full submissions presented by ETū

Of the 100 submitters that provided views on the introduction of prescriptive limits for cabin crew, twenty-eight submitted directly to the CAA. The remaining were submissions from cabin crew submitted through the Union.

Strong support for the introduction of prescriptive limits for cabin crew

Almost all submitters supported the introduction of prescriptive limits for cabin crew. There was also a high degree of consistency in rationale for this view by category of submitter.

All cabin crew submitters using the union template supported the introduction of prescriptive limits for cabin crew. This direction of opinion was similar for those cabin crew members responding directly to the CAA. Most cabin crew submitters did not provide detailed rationale in support of their view (i.e., they recorded a “Yes” or “Absolutely” comment only).

One of the main reasons for supporting the introduction of limits was cabin crew responsibility for safety-related duties, such as disarming doors and emergency response procedures. The impact of fatigue on the effective performance of these responsibilities is an important consideration, and limits should be put in place to mitigate against mistakes. Other comments included that:
• There are unequal bargaining powers between employers and employees (meaning that cabin crew are rostered to complete fatiguing duties but do not have much influence over whether to work or not);
• There is a need for clear, sensible and inviolable limits to avoid companies giving too much weight to their own purposes and exploiting opportunities to maximise crew productivity;
• Under a “looser” scheme, crew could be pressured into operating duties that they consider unsafe; and
• Reflection of ICAO requirements is important, for example, States must establish regulations specifying time limits for cabin crew members, and there should be legislative changes to provide prescriptive flight and duty time limits and rest periods for cabin crew to comply with Annex 6.

Some cabin crew submitters were concerned that FRMS and prescriptive limits generally focus on pilots. Pilots are not the only ones who experience fatigue or have a critical safety role. Cabin crew also get fatigued and play a critical safety role on aircraft. Some submitters thought that any system that is put into place needs to include cabin crew, but there need to be different rules for people working in different roles, as applicable; however, other submitters saw more consistency in the rules between cabin and flight crew as beneficial, for example, “flight deck and cabin crew should all be under the same rules and limitations”. Specific examples of differences included that:

• Flight crew rest inflight commences shortly after reaching cruise altitude, during the cruise, flight deck crew are permitted to use “cockpit napping”. This often ceases just before descent, which gives flight crew more rest hours and means that they are more refreshed at the critical landing stage;
• Cabin crew on the other hand, are performing meal service and are not permitted to “nap”;
• Cabin crew do physically demanding work in a reduced oxygen environment (pushing, pulling, lifting and conversing), but there are separate rules for flight crew and cabin crew: it is possible that cabin crew should need even more rest than flight crew; and
• Rest periods and the same standard of hotel rest should be provided to cabin crew as flight crew as both groups do the same hours on board and are expected to perform equally to standard operating procedure.

A flexible approach to prescriptive limits

A small number of submitters generally supported the introduction of prescriptive limits for cabin crew, with caveats. For example, one industry submitter noted that flight limits should be based on the latest science, which may mean that limits must be flexible where necessary. One pilot suggested that while prescriptive limits could be built on and modified based on differing requirements for different groups in the future, the implementation of flight or duty time limits is well overdue and needs to be done immediately.

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4 NASA suggest that cockpit napping is a brief, pre-planned cockpit rest period to improve pilot alertness and performance in non-augmented long-haul flight operations.
One pilot stressed that a Collective Employment Agreement, in combination with rostering, cannot cover all individual scenarios. Individuals need to be responsible for their own fatigue management to some extent, according to their own personal needs. As such, it is hard to develop a 'one-size-fits-all' approach because individuals respond differently to fatiguing work.

One industry submitter stated that FRMS are a more appropriate approach rather than a prescriptive one; however, recognising the diversity of the industry, it was acknowledged that in some sectors something more prescriptive may be necessary.

Some pilot and cabin crew submitters argued that industrial bargaining should not be solely relied on to protect health and safety. Instead, there must be minimum prescriptive standards set by the CAA and supplemented by best practice in airlines. Flights or duties should not be part of a contract that can be negotiated, depleted or open to misinterpretation by different carriers.

Specific examples of limits which could be introduced: a focus on rostering practices

Three-quarters of cabin crew submitters and one pilot specified limits that could be used. Most of these suggestions relate to rostering practices. Suggestions related to:

- limiting duty times, examples included: maximum duty times decreasing to 10 hours; introducing four-flight limit for domestic flights per day; limiting consecutive Trans-Tasman duties; and applying limits to flight time only – not duty time;
- Ensuring adequate rest periods, examples included: crew who have completed night flights or flights longer than 10 hours do not fly the next day; and increases to minimum rest periods within rosters;
- The CAA to investigate individual circadian rhythms that can then be used to tailor rosters for crews' natural cycle;
- The CAA provide screening of roster building; and
- Process improvements like describing a means for monitoring duty times when rosters are created, or providing clarity around the processes for recording split shifts.

A final suggestion was that the maximum allowance of passengers per flight attendant decrease for all airlines in New Zealand.

Two submitters responded that Civil Aviation Rules and those building rosters should consider life outside of work and social behaviour/choices. Further, a pilot submitted that guidelines should consider the benefit of social behaviour on fatigue, as well as the negative effects associated with a lack of social contact (achieved by mandating a minimum time off at home base, with realistic start and finish times). One cabin crew submitter thought that changes should be implemented in a way which allows airlines to remain competitive without sacrificing safety. Changes should allow crew to have duties which support their lifestyles outside of work, as well as their work obligations: they should not have to use leave to catch up on sleep.

Clarification of the interface with the Health and Safety at Work Act 2015 (HSWA)

Five submitters mentioned the need for clarification of how prescriptive limits interface with HSWA. Understanding this interface was a common theme throughout the submissions. In response to
Question 3, two industry submitters and one cabin crew member wanted more discussion around the implications of HSWA with respect to cabin crew fatigue and clarification of fatigue risk management from a health and safety perspective. Other issues raised in relation to cabin crew and the introduction of prescriptive limits included the need to ensure that:

- whichever framework is implemented, it will need to work alongside the principles of HSWA, and
- some operators and one cabin crew member do not support relying on HSWA instead of prescriptive limits, with the cabin crew member stating their view that HSWA is inadequate for dealing with fatigue management as fatigue is not taken seriously enough as a risk under HSWA.

More information about submitters' views on HSWA are discussed under Questions 6 and 13.

Not in support of the introduction of prescriptive limits for cabin crew

Three submitters did not support the introduction of prescriptive scheduling limits for cabin crew.

Two industry submitters stated that a 'one-size-fits-all' approach does not necessarily lead to better safety outcomes (a point also made by a submitter who supported limits for cabin crew). The current limits cover hours of service and are only part of the answer. There are other factors that are harder to quantify that affect fatigue like age, physical well-being, stress levels and sleep deprivation. Other options for the way forward were suggested by these submitters, such as education, guidance and support by the CAA and a sufficient level of operator flexibility.

One industry submitter sought clarification as to why the CAA is considering prescriptive limits when it also stipulated that prescriptive limits do not ensure safety from a fatigue perspective. This submitter considered that further research should be completed on what other regulators are doing. It was noted that development in the science and understanding of fatigue does not suggest that the CAA should be prescribing more limits.

Cabin Crew Short Survey Results

There was almost unanimous support for the introduction of prescriptive limits for cabin crew in the short survey, with 528 submitters answering “yes” to this question and only five answering “no”. Of those five, none provided further rationale within their submission to support their answer. Reasons for this support were taken from answers to Question 1 and Question 2 where submitters were able to provide a free-form response. These reasons can be seen in Figure 2.

Of those submitters who provided further justification for their support, slightly over 40 percent cited a need for more or better rest to be provided for cabin crew. A number of these said they did not get enough time at home or between duties to adequately rest and prepare for the next duty. The second biggest reason for supporting the introduction of prescriptive limits for cabin crew was that they believe that cabin crew and flight crew should have the same flight and duty limits. A little under a quarter of supporting submitters thought this, many of them stating that they both have safety roles to play on board an aircraft and “we are all subjected to the same environmental factors of stress, fatigue, jet-lag etc etc when we are at work so all should be included”. Some cabin crew suggested that contributors to
fatigue such as circadian rhythms and time zones, and workload should be taken into account when developing prescriptive limits for cabin crew.

Figure 2: Cabin crew short survey submissions on the introduction of prescriptive limits for cabin crew.

Summary

There was strong support for the introduction of prescriptive flight/duty limits for cabin crew among flight and cabin crew submitters because of their role in supporting safety on-board flights and because other existing mechanisms (including employment contracts and HSWA) are not viewed as providing a fully satisfactory approach. Only three submitters opposed the introduction of prescriptive limits on the basis that more clarification was required from the CAA as to why prescriptive limits are being considered when the evidence indicates that a ‘one-size-fits-all’ approach may not result in improved safety outcomes.
QUESTION 4: Do you support the introduction of prescriptive scheduling limits for air traffic controllers?

Airways New Zealand is currently the sole provider of air traffic control services in New Zealand, and manages fatigue through its Service Delivery Fatigue Management Policy and collective employment agreements (negotiated with the controller's union).

Responses from stakeholders submitting directly to the CAA and full submissions presented by ETū

Of the eighty-eight submitters who provided comment on this question, twenty-five submitted directly to the CAA. The remaining were submissions from cabin crew submitted through the union (sixty-three submissions).

Strong support for the introduction of prescriptive limits for air traffic controllers

Over 80 percent of submitters support the introduction of prescriptive scheduling limits for air traffic controllers. There was also a high degree of consistency in rationale for this view by category of submitter.

Almost all cabin crew submitters supported the introduction of prescriptive limits for air traffic controllers. Only two cabin crew submitters did not indicate support; however, rather than disagree they noted that they were not aware of fatigue management requirements for air traffic controllers. Most cabin crew submitters did not provide detailed rationale in support of their view, providing a “Yes” or “Absolutely” comment only. One of the main reasons for supporting the introduction of limits provided was that air traffic controllers play a critical role in ensuring safety: they need to be well rested so that they are adequately focused and attentive and can perform effectively. Other comments included that:

- ensuring air traffic controllers are rested should be a priority consideration for this work,
- reflection of ICAO requirements is important,
- employers and regulators have a duty of care to all employees, and
- inclusion would provide air traffic controllers with greater certainty regarding fatigue protection than is provided by relying on contractual rules which can result in inconsistencies and uncertainty as these can be changed during negotiation.

Just over two-thirds of other submitters (pilots and industry bodies) supported the implementation of prescriptive scheduling limits for air traffic controllers, with approximately half providing no detailed rationale for their response (i.e., “Yes”). Where rationale is provided, it reflects that provided by cabin crew (that is, air traffic controllers play a critical safety role and fatigue’s impact on performance should be addressed and that prescriptive limits have a place in broad based prevention mechanisms).

Two unions stated that the introduction of prescriptive scheduling limits for air traffic controllers reflects ICAO requirements⁵, and would afford air traffic controllers greater certainty of fatigue protection than

⁵ ICAO Annex 11, Chapter 2; 2.28.1 and Appendix 6
reliance on an employer’s fatigue policy. Both unions considered that prescriptive limits in contracts only give fatigue protection for those in the collective, and can be changed at collective employment agreement negotiations. One union noted that the fatigue management amendments to Part 172 of the Rules and an accompanying draft AC (AC172-2) were drafted in the 1990s. They suggested that it would be appropriate for the air traffic controller workstream to review the previously drafted regulatory material to determine its suitability in meeting the ICAO requirements, in addition to the guidance provided in the 1st Edition 2016 of the ICAO Fatigue Management Guide for Air Traffic Service Providers.

One industry submitter noted general support for this option (“yes”) and then provided further detailed comment about the impact of fatigue on duties. In the context of the New Zealand environment, this submitter had no evidence or data indicating that fatigue is a systemic risk in the New Zealand environment. This submitter believes that this is because the criteria defined in the Airways fatigue management system for the construct of rosters is proven and robust. The submitter considered that there is an inference in the discussion document that credible fatigue management requirements can only be developed through scientifically-derived evidence. It acknowledged that, while this would be ideal, there is currently no such scientific evidence for air traffic services, so an alternative means would need to be agreed.

Another individual submitter suggested that the UK Scheme for the Regulation of Air Traffic Controllers’ Hours (SCRATCOH) is a better system for managing fatigue than prescriptive limits alone. SCRATCOH essentially imposes prescriptive limits, while recognising a need for “sensible but sparing modification”. This submitter also acknowledged that the potential risk of fatigue in air traffic services needs to be effectively managed between the regulator, employers and employees.

Neutral views on the introduction of prescriptive limits for air traffic controllers

Two industry submitters held neutral positions in relation to the introduction of prescriptive limits for air traffic controllers, pending further science and experience in fatigue management or better understanding of Airways Corporation’s fatigue management systems. One submitter pointed out that Airways is the only provider of air traffic control services in New Zealand, so the industry standard can only be based on international comparisons: they did not know whether this is practicable. It was submitted that any fatigue management carried out for air traffic controllers should be science-based as well as using the experience of the organisation. Another industry submitter commented that as there is insufficient information available on New Zealand fatigue management systems for air traffic controllers, it was difficult to provide feedback to the consultation, other than general comments. This submitter did note that fatigue management is required, and that the scheme(s) implemented should be science-based.

The need for a flexible approach

One pilot stated that prescriptive limits could be used as a foundation from which to build and modify based on the requirements of different groups (that is, a more flexible approach will need to be taken).
Summary
There was almost unanimous support for the introduction of prescriptive limits for air traffic controllers among flight and cabin crew submitters. No submitters directly opposed the introduction, although a small number of industry submitters held more neutral (including those involved in air traffic control), but not negative views.

QUESTION 5: What changes, if any, do you think are necessary to the schemes currently in AC119-2 to better reflect sector-specific needs?

ACs contain information about standards, practices and procedures that the Director of Civil Aviation has found to be an acceptable means for compliance with the associated rule, but are not mandatory. AC 119-2 provides methods for showing compliance with requirements relating to the development of a fatigue management system for flight crew. Cabin crew are not covered by AC119-2.

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Fifty-one submitters responded to Question 5. Twenty-six of these provided detailed responses directly to the CAA. The remaining submissions were from cabin crew who submitted through the Union.

Almost all substantive comments focused on the changes that could be made to improve the use of AC119-2. Some of the key changes suggested by submitters related to:

- Include cabin crew in AC119-2;
- Make it relevant to more types of aviation;
- Striking the correct balance between prescription and flexibility;
- Other scope limits associated with AC119-2;
- Other specific changes that could be made to AC119-2;
- The requirement for more research to be undertaken;
- Improve the clarity of ACs’ regulatory status; and
- Roles and responsibilities.

Include cabin crew in AC119-2

Cabin crew submitters strongly supported amending AC119-2 to include cabin crew. The main reason for suggesting this amendment was to reassure cabin crew that their fatigue and fatigue management are treated as seriously as that of flight crew, especially given the team environment in which cabin and flight crew operate. One cabin crew submitter stated that current New Zealand legislation does not reflect ICAO requirements with respect to cabin crew. Another cabin crew submitter endorsed the development of prescriptive limits (aligned to ICAO requirements), supported by a FRMS (with an emphasis for cabin crew). This submitter stressed that there has now become a need to not only restrict flight time, but also include duties outside of flight time. This is because airlines now often require crew
to work on their “days off” checking emails, completing training, and attending meetings. Finally, including cabin crew in AC119-2 would provide an opportunity to cover all critical roles that support safety in the aviation sector. One submitter noted that some schemes, if operated to the allowable limits specified, do not afford cabin crew members adequate protection from fatigue or provide an adequate level of safety.

Other reasons for supporting the inclusion of cabin crew in AC119-2 included that some cabin crew submitters considered that the current approach to managing cabin crew fatigue is ineffective and commercially driven for the operators’ benefit rather than for crew well-being or safety. Amending the approach would provide better support and reduce commercial pressure to complete duties while fatigued. For example, currently cabin crew can submit fatigue reports with no discernible response or effect. This results in crew deciding not to report, and changes to fatigue levels are never achieved. One cabin crew submitter expressed the view that operators believe that if they “hold out” for long enough, crew will eventually stop submitting fatigue reports. Another cabin crew submitter stated that legislative change in general, not necessarily related to AC119-2, is the only way to ensure fatigue risk management for crew and reflect the needs of the sector.

Although supportive of the inclusion of cabin crew in AC119-2, one cabin crew submitter noted that AC119-2 does not consider the "physiological effects of shift work which are typical of rostered work in the airline sector, and the sleep deficits which affect performance as a result of consecutive early starts, late finishes, and changes between early shifts to late shifts and vice versa." It is identified by crew that the combination of shifts that crew are rostered on to (too many rostered hours and not enough designated rest hours) is the underlying reason for fatigue reports.

Make it relevant to more types of aviation

Four pilots and two industry submitters considered that AC119-2 is too limited in scope. It could be made more relevant for the different types of operation which are currently supposed to be covered by AC119-2. The comments made with respect to other types of aviation operation which submitters consider should be more clearly covered in AC119-2 included:

- The current AC is written for fixed wing airline operations and unsuitable for the helicopter sector (it was not entirely clear whether this submitter considered that the helicopter sector should be covered);
- The definition of “air operations” to which AC119-2 applies needs to be widened to cite Civil Aviation Rule Part 137 (Agricultural Aircraft Operations) as well as part 135 (Helicopters and Small Aeroplanes), to cover the use of aircraft for agricultural work, for example, spraying, fertilising, fire-fighting;
- AC119-2 should be amended to “catch out” small operators that don’t want to spend money, but take a lot of risks; and
- AC119-2 should be amended to recognise the unique situation that the emergency services sector faces, that is, while the amount of standby time and duty will be high, the volume of flying is usually quite low.

An industry submitter noted that an ACs focused on emergency services could be developed between the regulator and industry, to recognise the unique situation that the emergency services sector faces.
Having an AC in place that recognised the parameters of the sector would provide a good starting point, should operators decide to further customise their own FRMS.

**Prescription versus flexibility of approach**

Striking the correct balance between flexibility and prescription within a FRMS was an issue raised by some submitters who commented on possible changes to AC119-2. Submitters' views differed on the level of prescription that is required.

**More consistency between airlines and across sectors**

A significant issue for submitters was the level of variation between the FRMS implemented by different operators, and that which is allowed for under AC119-2. Some schemes are very permissive, with duty limits that exceed the limits set by most major regulatory authorities, and a lack of clarity as to specific intent and application. For example, one industry submitter noted that the CAA has approved schemes that do not closely resemble AC119-2. Other submitters stressed the need for the limits under AC119-2 to be applied more consistently. For example, one member of cabin crew stated that the limits should be the same for all airlines that operate within New Zealand, not just New Zealand companies.

**Flexibility is needed**

Three industry submitters and two members of cabin crew (who submitted through the Union) considered that AC119-2 provides guidance that is too specific and does not provide for adequate flexibility in terms of supporting airlines' current fatigue management systems. A range of specific instances were identified, including by one industry submitter who noted that they were not aware of the background as to how the current limits were set. The 'one size fits all' approach is not appropriate for all airlines. This submitter argued that it would be more appropriate to maintain a lower and upper prescriptive flight hour limit and then provide a framework within the AC that enables airline participants to demonstrate an FRMS for endorsement or approval by the CAA.

The scope and size of airline operations also impact on the need to have flexibility. An industry submitter, pilot and cabin crew stressed a need to develop different rules for different kinds of duty and flying activities, and maintain flexibility for operators to decide what is best for their own operation. These submitters preferred a less prescriptive approach to hours of service, and more flexibility to consider and determine the appropriate limits or procedures as these relate to the operator’s work. One industry submitter noted that prescriptive rules for fatigue management need to better reflect specific types of operation, rather than dependence on aircraft size. Many smaller operations (particularly those in the weather-dependent and scenic areas) need flexibility to balance extended periods of no flying due to poor weather with busy days.

The key point of these submissions is to maintain flexibility for operators to decide what is best for their operation, and review and reflect sectors according to the patterns within them. An example which one cabin crew submitter preferred was the European Aviation Safety Agency (EASA) system, which has rules that vary duty length limits according to the time of day that crew report for duty (that is, shorter limits for night duties). Another Part 135 submitter suggested that a fatigue management system could be developed that is “appropriate to the particular operation with sensible parameters and defences to ensure that pilots are not compelled either by personal pressure or operator pressure to fly when fatigue is an issue”.

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In support of increased prescription

Conversely, some pilots considered that there should be strict limits, with no room for operators to have access to exceptions to them. That is, that prescriptive limits should be incorporated into mandatory instruments, rather than ACs. Currently, operators can choose whether to follow the guidelines for limits in ACs.

AC119-2 is too limited in scope

Almost a third of all submitters responded that AC119-2 is too limited in scope. There were several areas which submitters considered are not adequately covered:

- Instrument Flight Rules and Visual Flight Rules are difficult to interpret for some specific operations;
- AC119-2 does not adequately address augmented crew duties or acclimatisation (time zone changes);
- AC119-2 needs to take account of workload, type of operation and fatigue hazards resulting from hours of continuous wakefulness and effects on performance that results from irregular shift work; and
- Changes should reflect ultra-long-haul sectors that can turn into multi sector flights due to diversions at destinations.

Specific changes that could be made to AC119-2

Thirteen submitters identified a range of specific potential changes that could be made to improve AC119-2. Proposed specific changes to AC119-2 covered:

- The inclusion of specific limits on night operations and “back of the clock” flying;
- Amendments to increase prescriptive limits (assuming the AC is expanded to cover both flight and cabin crew);
- The provision of steady work schedules in advance, for pilots specifically, so that they can plan rest and recreation;
- Specific changes to support increased flexibility, noting that regulations should include items that should be considered by operators when developing FRMS to allow operators flexibility in situations where the assumptions underpinning the limits do not apply; and
- Better/clearer definitions for standby time, work-related tasks, daily, weekly, monthly and yearly limits, and specific terms including duty, rest, flight duty, flight time, and air operations.

More scientific research needs to be done

Some submitters considered that the current hours of flight or duty limits appear to be arbitrary or unnecessary. This may be because they are based on assumptions that are not applicable to each
operation to which they are applied. Three submitters (cabin crew, pilots) pointed out the need for further scientific review to incorporate new findings on fatigue science to address this.

It was stressed that the current rules address individual duties but give little protection around how these duties come together to form a pattern of work over a period of time (e.g. night duties followed by a rest day then several days of early starts, which is fatiguing). It was also argued that the current flight and duty times are not based on the latest scientific standards.

The need for more research to be done was recognised by an industry submitter and the submitters who relied on that response. That submission stated that AC119-2 needs to be completely rewritten, starting with a review of the underlying science. The science will provide a set of key metrics and risk factors which can then be utilised to develop guidelines for different sectors. This submitter was concerned that fatigue models used by New Zealand operators do not take account of things which other scientifically-validated models do.

A member of cabin crew who submitted through the union stated that rigorous studies are needed, along with a review and consideration of international best practice.

**Status of Advisory Circulars is unclear**

For a few submitters, it was clear that the status of ACs in general is uncertain, as is AC119-2’s role in fatigue risk management and its applicability to the range of crews onboard an aircraft. One of the biggest concerns raised was the level of permissiveness provided for within the framework, and operators/sector understanding and application of that. An industry submitter requested that the CAA confirm the status of ACs, because there is currently confusion in the aviation sector as to whether an AC demonstrates a potential means of compliance, or whether an AC is the only possible form of compliance.

**Cabin Crew Short Survey Results**

Of those who responded to this question on the short survey, 99 percent said that the change that needs to be made to AC119-2 is to include cabin crew. Only a small number provided further suggestions as to what this could be; this included more rest time, consider commute times when planning limits, or specific suggestions of how many hours a duty or rest should be. A number of these submitters also supported again the idea that cabin crew and flight crew should have the same flight and duty time limits. Two submitters suggested that no changes should be made to the current AC. A further two suggested changes that could be made to AC119-2, but did not indicate if they intended these to be for cabin crew, flight crew, or both.

**Summary**

Most submitters expressed a need for changes to be made to AC119-2, and had suggestions for how it could be amended to better reflect sector-specific needs (including addressing issues such as back-of-the-clock or night flying). Many cabin crew supported the specific inclusion of cabin crew in the AC as well as helicopter and emergency services.
QUESTION 6: What are your views on the relationship between Safety Management Systems and fatigue risk management, and how do you think they could be integrated, if at all?

A Safety Management System (SMS) is a formal risk management framework to improve aviation safety in general. Fatigue risk management is the continuous monitoring and maintaining of fatigue-related safety risks.

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Fifty-two submitters responded to Question 6. Twenty-two submitters provided detailed responses directly to the CAA. The remaining submissions were from cabin crew who submitted through the union.

Safety Management Systems and fatigue risk management should be integrated

Most submitters who commented agreed that SMS and fatigue risk management should be integrated. Other responses discussed roles and responsibilities, the relevance of HSWA, and issues with reporting but did not clearly express support (or otherwise for integration).

Integration of Safety Management Systems and fatigue risk management will improve safety

Most of the rationale provided which supported integration focused on fatigue management as a safety issue. Submitters thought that fatigue management should be at the core of any SMS, for example, a cabin crew submitter stated, “fatigue is a major safety issue and should be treated as such”. It was submitted that due to the very nature of aviation, for example, long flights, through the night, early starts and late finishes, fatigue will always be a factor for crew and thus should always be considered as a safety issue. Human error is the greatest risk to safety, therefore mitigating fatigue (which leads to error) is paramount. Submitters noted that airlines are growing more competitive and putting higher pressures on crew, so regulation to protect from fatigue is becoming increasingly important.

Submissions supporting integration noted that managing fatigue risk sits within SMS because it is reasonably foreseeable that fatigued crew will compromise safety. An industry submitter noted that SMS are about changing organisational culture to identify and manage occurrences or events that might cause harm or loss before harm or loss occurs. Therefore, a functioning SMS would ideally have fatigue risk management imbedded so that a FRMS can be put in place which is fully compatible with the overarching SMS.

Concern was expressed by an industry submitter about the CAA’s proposal to treat fatigue separately from the rest of an organisation’s SMS. This submitter suggested that this is because the CAA “does not fully understand the concept of an SMS, nor how different safety risks are accommodated within the SMS.” It was submitted that if all safety risks were separated out in this way, the result would be a “fragmented safety system with reduced effectiveness.”

In addition to these concerns, this submitter suggested an approach which could be readily adopted by the CAA to integrate SMS and fatigue risk management:
The CAA should publish a list of key safety risks that it expects each operator to address in its SMS (NB some of the published list may be rated as inconsequential for some operators but the existence of the list ensures that the risk is considered); and

Guidance material and standards used by aviation operators would include any relevant AC(s), which effectively function in the same manner as Approved Codes of Practice.

The effectiveness of this approach would be dependent on the CAA’s oversight of the SMS. It was submitted that if fatigue was to be treated separately to the SMS, the scheme would only be effective with high levels of the CAA oversight.

Thirteen cabin crew submitting through the union agreed that SMS and fatigue risk management should support one another. To have a robust SMS, acknowledgement and management strategies for fatigue is needed. These cabin crew generally stated that fatigue monitoring or acknowledgment was not “weighted” in their workplace, resulting in crew not being able to perform safety-related jobs to a high standard. One cabin crew member gave an example of how fatigue risk management and SMS go “hand in hand”, saying that almost all safety-related incidents occurring onboard during their time as a flight attendant were related to crew fatigue individually and/or collectively as a team. Another noted that during crew resource management training, staff “are always drawn back to how one of the core elements (fatigue) leads directly back to safety (along with other elements)”. They also noted that while training is good for raising awareness, there needs to be structure around fatigue training so that the business cannot “push through those limits”.

**Safety Management Systems and fatigue risk management should be integrated but with operational independence**

Submitters considered that FRMS should inform SMS and vice versa (like a flight operational quality assurance feedback system). Two industry submitters agreed that SMS and fatigue risk management should be integrated, but queried the level of integration required. These submitters considered that fatigue risk management should retain operational independence and that it needs to have its own clear purpose, scope and dedicated resources because FRMS and SMS have different functions and focus. They noted that SMS processes are the foundation for developing a fatigue management programme for both prescriptive and FRMS approaches to fatigue. FRMS are a specialised component for managing fatigue as a specific hazard within an operator’s SMS. The FRMS informs the SMS using multiple sources of data and SMS processes.

Another issue raised was alignment to ICAO requirements. One industry submitter supported retention of operational independence because it would bring New Zealand practice more in line with international standards. Annex 6 states that fatigue risk management is an integral part of an operator’s SMS and a FRMS needs to be integrated with, but operationally independent from SMS. Along these lines, a union submitted that the Rules should make specific provision for any proposed regulatory option for FRMS in a way that meets the requirements of ICAO Standards and the minimum requirements in Annex 6.

**Roles and responsibilities**

Four submitters (two pilots, an industry submitter and an aircraft user) commented on the roles involved in implementing these two systems. It was not clear from these responses whether the submitters supported the integration of SMS and fatigue risk management. Comments focused on
operators and the regulator. The comments about operators were related to the resources that operators need to apply and the flexibility that should be afforded to them:

- Operators need to devote more resources to managing SMS properly. Even larger operators are put off at the cost of these systems when they receive the large amounts of data that need to be processed in meaningful and legitimate ways. Under SMS (and HSWA), operators have an obligation to eliminate or control and manage the risk of fatigue. The operators are the best entities to do so, because they are best placed to understand the unique nature of their own businesses;

- Operators should, within reason, have flexibility to decide what is best for their business.

The comments about the regulator related to its expertise, limiting its role in regulating SMS and fatigue risk management and its responsibilities under HSWA. Some submitters had concerns that the regulator might not have the expertise necessary to make a judgment about the risks associated with fatigue hazards. They thought that the CAA’s experience is mostly gained from working in an environment with the prescriptive limits in AC119-2, and is not founded in the scientific research that has been conducted on fatigue management. A well-managed SMS can address all safety risks (fatigue is only one risk). Therefore, the submitter thought that the CAA’s role should be limited to educating, informing, and guiding the industry and monitoring effectiveness throughout. They also thought that the regulator could outline matters that operators should consider when developing FRMS. Prescription (if any) from the regulator should be limited to the very highest levels and any assumptions disclosed. The detail of a FRMS should be determined by the operator, and unnecessary prescription may hinder what may still have been a safe operation.

The two unions presented detailed comment on the role of the CAA under the HSWA. They noted that the CAA is the designated agency responsible for the implementation of HSWA, and is responsible for performing functions and exercising powers under HSWA in relation to the aviation sector. As such, these submitters thought that there is an opportunity for the CAA to implement its legislative authority in a way that is consistent with the purposes of the discussion document in addressing fatigue. It could assist employers in meeting their duty to protect workers from fatigue hazards under HSWA by explaining that this includes doing all that is reasonably practicable to ensure health and safety, considering all relevant matters.

One pilot (whose view on integration was not clear) responded that SMS is only effective if there are enough resources provided by the regulator, and the tensions between profit and safety are adequately managed. Another submitter commented that SMS and fatigue risk management are not properly integrated, and do not support each other indicating that this submitter would support integration.

Another pilot suggested that the CAA audit foreign operators’ FRMS before granting approval for them to operate in the New Zealand airspace.

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Relationship with the Health and Safety at Work Act 2015

HSWA came into force in April 2016. Its aim is to provide a "balanced framework to secure the health and safety of workers and workplaces". In aviation, this means that the health and safety of all crew and passengers are to be protected, by eliminating or minimising risks arising from work. Section 30 imposes duties on certain people to eliminate or minimise risks to health and safety "so far as is reasonably practicable." Five submitters (two unions, two industry, and one pilot) discussed the link between SMS, fatigue risk management and the HSWA.

The Health and Safety at Work Act, Civil Aviation Rules and Safety Management Systems work together

An individual’s submission stated that SMS and fatigue risk management need to take account of the changes in the legislation as these documents work together. An industry submitter suggested that the CAA’s proposed approach to modernise the Civil Aviation Rules would provide means of fatigue management that are reasonably practicable under HSWA. The submitter considered that under HSWA, the claim of “reasonably practicable” can only be made if each of the factors in Section 227 are considered. In this submitter’s view, the CAA has not presented any evidence on the likelihood of fatigue-related harm occurring, the likelihood of fatigue being present, nor the harm that may result. It may be that fatigue-related flight and duty restrictions could be substantially relaxed, but the submitter did not know whether this was the case given that no evidence was presented.

The two unions presented detailed comment on how the relationships under HSWA should play out. They noted that HSWA introduces new duties for the most senior governance (officers) of any organisation, including the CAA, as both an employer specifically, and by implication as a regulatory agency. Therefore, a passive approach to the governance of safety is no longer adequate. The new duties seem to apply to the CAA with respect to it making active enquiries into the nature of the undertaking of an operator and its duties under HSWA, to the extent that it is satisfied that these needs are being met. Under HSWA, duties are not transferable, therefore, the submitters questioned whether it would be acceptable for the designated agency (the CAA) to rely on operators to perform functions and exercise powers under HSWA without overseeing the operations. They also noted that employers (as persons conducting a business or undertaking (PCBUs)) must meet duties in Section 36 of HSWA by training workers in what is necessary to protect them from risks to their health and safety. Therefore, the suggestions in the discussion document present an opportunity to the CAA to emphasise the importance of fatigue education (to define the regulator’s role), and explain the subject of “fatigue” and “FRMS” as it relates to HSWA, and under any regulatory positions.

The unions went on to say that the CAA should explain how fatigue becomes a hazard, and the various duties and obligations. It should also provide guidance as to what “as far as is reasonably practicable” means in the context of fatigue mitigation. The information in the discussion document is insufficient in this regard, and a separate Approved Code of Practice/Guideline should be developed, as well as an enforcement policy.

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7 Health and Safety at Work Act 2015 Section 22 items:  

8 Health and Safety at Work Act Section 44 Duties of officer, workers, and other persons:  
One of the unions further submitted that consideration should be given to the state of health in terms of well-being under HSWA, particularly with respect to the way shift work is scheduled. In the union’s opinion, this requires a consideration by the CAA of circadian rhythms and the ability to sleep, as well as ensuring that rest periods between different roster shifts are sufficient to provide recovery from sleep loss.

**More information needed on the relationship between HSWA, the Rules and safety management systems**

Related to this, the pilot requested information on health and safety in the aviation industry, including advice on the obligations and penalties under HSWA. This aligns to comments made by cabin crew submitters in response to Question 3 that further understanding of the interface between HSWA and fatigue management is required.

**Safety Management System and fatigue risk management should be kept separate**

Only one submitter expressly stated that they did not support the integration of SMS and fatigue risk management, preferring that the two be kept separate to keep the focus on both.

**Cabin Crew Short Survey Results**

Whilst this question was not asked in the short survey for cabin crew, a number of their answers relate to this section. Eighteen submissions raised HSWA as a concern in their submissions. These included stating that fatigue is a health issue for them and should be considered as such by their employers, and that with the new legislation, employers should be taking it more seriously now for all employees, not only pilots. Other submitters were concerned with the safety of their commute home after a fatiguing duty and that the regulator and their employer should consider this. Some submissions raised specific safety concerns arising from fatigued cabin crew; one example was a fatigued cabin crew member not disarming their door correctly, which could have led to deaths if it was not spotted in time.

**Summary**

Submitters were broadly supportive of the integration of SMS and fatigue risk management (to some extent). Other submitters didn’t provide a clear view on integration but, given the tenor of their comments, were likely to be supportive. Many cabin crew would like to see fatigue management taken more seriously, as it is for pilots. The depth of integration was an important issue for some industry submitters, who noted that balance with operational flexibility is needed. The relationship with the HSWA and aviation regulatory tools needs careful exploration.
QUESTION 7: Do you believe that the introduction of a regulatory option for Fatigue Risk Management Systems would provide additional benefits to manage fatigue-related risks in New Zealand?

FRMS are an example of performance-based regulation. They require aviation personnel, union representatives, company management, and regulators to adopt a collaborative approach to improve trust between parties for optimal effectiveness.

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Ninety-seven submitters responded to Question 7. Thirty-five submitters provided detailed responses directly to the CAA. The remaining sixty-two submissions were from cabin crew who submitted through the union.

A regulatory option for Fatigue Risk Management Systems would provide additional benefits to manage fatigue-related risks

About two-thirds of the responders who submitted directly to the CAA, and all except four of the cabin crew who submitted through the union on Question 7, agreed that the introduction of a regulatory option would provide additional benefits to manage fatigue-related risks. Many responders had no further comment and responded “yes”.

Where a more detailed rationale was provided, submitters stated that a regulatory option would provide greater flexibility for operators (mostly industry submitters) or that it would improve confidence that fatigue is taken seriously (mostly cabin crew and pilot submitters).

Greater operational flexibility for operators

A few industry submitters stated that a regulatory option for FRMS would be beneficial to managing fatigue-related risks. It would provide for more flexibility than prescriptive limits alone. Specific considerations raised by these submitters included that a regulatory option for FRMS:

- Provides for increased operational flexibility (including within SMS);
- Enables lower costs to achieve an acceptable level of fatigue risk;
- Recognises that not all operating scenarios can be foreseen within prescriptive limits; and
- Allows for consistency within the sector while allowing operators to adapt processes for their operations, for example, recognising that one size does not fit all.

Two points regarding implementation were raised. An industry submitter noted that there should be “better guidelines and flexibility which in turn will support compliance abilities” because there is diversity among operators, which means that FRMS appropriate to individual organisations is needed. They thought that operational differences between airlines are important to note, and should be included in any regulatory framework. Another industry submitter noted that for the benefits to be realised, FRMS must be sufficiently flexible to enable operators to develop schemes which genuinely reflect their circumstances, rather than being minor modifications of the prescriptive scheme.
A solution for the current lack of faith in the system

Improving the way fatigue reporting and management currently works was cited as a key reason to move to a regulatory option for FRMS, particularly by cabin crew and pilots. The main rationale for many cabin crew and pilot submitters was that such a move would increase their belief that fatigue is taken seriously as a safety issue by operators. It would address managers’ perceived poor understanding of fatigue and increase communication (with one submitter noting that “the workings of the FRMS group are not well-known to crew and communication is rare and abstract”).

Another common theme was that operators are perceived to be focused on profit with safety being a secondary concern. This view was common among cabin crew, with comments expecting that regulation would:

- Prevent commercial needs and competition taking precedent over safety;
- Benefit employees;
- Provide safer guidelines for operators to follow without profit being the governing factor;
- Take safety issues out of contract negotiation (and address them in place where safety is the most important consideration); and
- Provide a governing body to ensure that regulations are complied with.

Improvements to rostering practices were also cited as being a benefit of a regulatory approach to FRMS. A few pilot and cabin crew submitters stated that a regulatory option for FRMS would improve their current lack of faith in the rostering system. Some submitters raised concerns about specific industry practices that may not support fatigue management. One pilot illustrated this by giving an example of their operator. This operator currently has the option of adding a component to short-haul and regional rostering systems which tests the risk of fatigue but usually chooses not to do this. Mandating testing of rosters for fatigue scores would allow measurement and optimisation for both airline and employee, and improve faith in the system.

Improved reporting and follow-on actions

Improved action following reporting was another area that could be improved by a regulatory option for FRMS. For example, one cabin crew submitter stated that one of the problems with the current voluntary reporting scheme is that crew have little to no understanding of how it works. Others noted that there are issues with action taken (or not) following a report. Other specific reporting related issues that could be addressed by a regulatory option for fatigue reporting included that:

- Fatigue reports either “go into a black hole never to be read by anyone, or that submitting a report might be seen as career limiting”, which results in fatigue being significantly under-reported;
- Duty crew often call in sick rather than give fatigue as a reason for their absence, because it is perceived that reporting fatigue brings extra scrutiny;
- There does not seem to be a threshold at which further investigation is initiated; and
- It is easy for employers to dismiss issues.

Further comments on improving reporting are also discussed in Question 11.
**Will improve safety generally but regulator needs to be strong**

Many cabin crew also commented on the regulator’s role in ensuring safety and consistency. Two submitters said that introducing measures that are monitored by a regulator requires compliance and will ensure more safety and consistency across the industry, but only if they are independently monitored and there are consequences put in place for non-compliance. Other submitters stated that their operators are not currently sufficiently addressing fatigue reports, and are not implementing necessary changes, even over a long period of time.

**Suggestions for how the regulatory option could be implemented**

Ensuring alignment with ICAO standards was an important consideration for an industry submitter and one cabin crew submitter, who noted that there must be standards that match the ICAO requirements within the framework of a ‘just’ culture. They noted that although some operators in New Zealand believe they already have a functioning FRMS, most do not meet ICAO requirements. Submitters thought that a FRMS should provide outcomes that more effectively manage fatigue risk due to the data-driven approach method that is employed. This is provided that:

- It is supported by regulations/requirements that comply with the ICAO Standards;\(^9\)
- Appropriate CAA personnel have a thorough understanding of the ICAO FRMS requirements and are properly resourced and trained to provide the oversight and audit functions that are required during implementation and approval;
- The CAA determines which sectors of the New Zealand aviation industry it would allow to have a FRMS option, considering the resources it would need to provide to fulfil its regulatory obligations regarding assessments prior to FRMS approval and on-going oversight/audit requirements;
- Operators have a thorough understanding of what FRMS entail and what resources are required;
- Operators provide adequate resources and training for all relevant managers and employees to which FRMS applies; and
- If for any reason a regulatory option for FRMS could not be provided, the CAA should consider the FAA Fatigue Risk Management Plan for Part 121 operators.

One industry submitter supported the implementation of a regulatory option for FRMS and provided advice on how such an option could be implemented. They noted that for the benefits to be realised, guidance must be sufficiently clear, so that it cannot be interpreted by CAA inspectors in ways that were not intended by the drafters.

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\(^9\) Annex 6- specified minimum requirements for Fatigue Risk Management Systems
Uncertainty about whether a regulatory option would provide additional benefits

Six submitters (three pilots, one unclassified submitter, and two cabin crew who submitted through the Union), expressed uncertainty as to whether introducing a regulatory option would provide additional benefits, and provided more general comment on what is required to effectively manage fatigue. One submitter stated that non-legislative intervention based around trust and respect is the only way to prevent potentially dangerous situations arising from fatigue; examples of this included education, monitoring and reporting, and by individual’s setting up their own “soft rules”. In an example of the form that these individual rules could take, one emergency pilot noted that emergency services pilots are "left to interpret a duty scheme and make decisions in isolation and without adequate alternatives for back-up". The pilot also noted that patient outcomes are important and that emergency services require options for exceeding any prescriptive limits if this is necessary to save lives (provided any planned rosters remain compliant with limits).

On the other hand, an unclassified submitter stated that for the safety of the public and crew, it is important that any fatigue scheme has clear, sensible and inviolable limits. They thought that under a loose regulatory scheme, there is a risk that operators will give their own purposes too much weight, which carries the risk of crews being pressured into duties that are unsafe. Operators must be in no doubt that the regulator will respond vigorously and effectively to concerns raised by crews. In addition to this, one pilot stated that the regulator must establish clear flight and duty standards, and monitor and drive compliance.

A regulatory option for Fatigue Risk Management Systems would not provide additional benefits to manage fatigue-related risks

Eight submitters (including industry, pilot and cabin crew submitters) did not think that the introduction of a regulatory option for FRMS would provide additional benefits to manage fatigue-related risks.

Three submitters stated that the introduction of a regulatory option for FRMS will not necessarily provide additional benefits. They considered that a cheaper to manage, simpler, and less onerous system, would be a well-developed prescriptive system supported by SMS, with the prescription contained in new ACs.

It was also noted that certified operators should be trusted and supported to manage their own risks. More prescription and regulation is not necessary in the context of SMS and HSWA. If the regulator is not satisfied that an operator is doing enough to manage its fatigue or other risks, the issue can be dealt with under the current regime, for example, under Aviation Related Concerns. A cabin crew submitter stated that some operators act as their own risk manager. The outcome of this is that employees may be too "scared" to declare work injuries because the trouble that it causes outweighs the support that they are given.

It was submitted by a few cabin crew that a regulatory option for FRMS would only be acceptable if it was supplementary to prescriptive regulations, but not if it were to supersede prescriptive regulations.
One industry and one unclassified submitter noted that a regulatory approach would not be suitable for agricultural aviation, with the unclassified submitter noting that there are "constant verbal discussions" that would be too complex to develop into a written document. The industry submitter noted that existing SMS and the HSWA would be suitable for agricultural aviation. Another noted that it would not support prescriptive limits for agricultural aviation because they are not realistic or effective in this context (this is discussed further in Question 13).

Summary

Submitters generally supported the implementation of a regulatory option for FRMS: about two-thirds of the stakeholders who submitted directly to the CAA and a large majority of cabin crew agreed that the introduction of a regulatory option for FRMS would provide additional benefits to manage fatigue-related risks. Based on the responses to previous questions, submitters expect that this option would be used to reinforce prescriptive limits, and would be supported by SMS processes and ACs which provide clear, sector-relevant acceptable means of compliance and guidance for implementation. The main reasons for agreement were that a regulatory option for FRMS would:

- Give greater flexibility for operators (views strongly present among industry submitters); and/or
- Be a solution for the current lack of faith in relation to flight crew and cabin crew in the system (strongly expressed by cabin crew and pilot submitters).

Some submitters who agreed with the introduction of a regulatory option provided suggestions on how such a regulatory option could be implemented for optimal effectiveness.

The remaining submitters either expressed uncertainty over whether a regulatory option would provide additional benefits, or stated that a regulatory option would not provide additional fatigue-management benefits.

QUESTION 8: What would the potential impact of the suggested changes to the regulations be on your operations?

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Eighty-six responders answered this question. Thirty-one submitters provided detailed responses directly to the CAA. The remaining fifty-five submissions were from cabin crew who submitted through the union. Cabin crew submitters were more likely to record positive views about the suggested changes. Industry submitters were more likely to provide neutral or negative views.

The suggested changes would have a positive impact on operations

About one-third of the submitters who responded directly to the CAA and all except five of the fifty-five cabin crew who responded through the union stated that the suggested changes would have a positive
impact on operations. The reasons given were strongly safety-focused. The changes would or are expected to:

- Reduce fatigue levels for flight crew and cabin crew and lead to increased safety on aircraft; and/or
- Support implementation of approaches that are underpinned by scientific evidence.

**Less fatigue leads to increased safety**

Most of the submitters who provided further comment (including 11 cabin crew, pilots and industry submitters) emphasised that a positive impact would be less fatigue and therefore increased safety in operations. Many of these submitters provided short, additional rationale as to why the changes would be positive. For example, one pilot submitted that the proposed changes would "reduce the probability of a fatigue related accident."

Submitters also identified a range of specific outcomes focused on improved personal well-being (specifically for cabin crew) as well as fatigue-reducing/safety improving outcomes. These included that:

- Cabin crew are likely to have lower levels of fatigue, feel more energetic and alert, will perform their roles more efficiently and to a higher standard, and be more aware of safety-related issues;
- The overall and long-term health, quality of life, mood and morale of cabin crew would improve;
- Fatigue reporting would increase;
- There will be an impact on fatiguing rostering practices; and
- There would be better protection for night/back of the clock operations because current flight and duty limits only reflect what was being done five or six years ago (mostly day time operations), and do not reflect the increase in night flight.

**Improvement to the scientific basis for and implementation of regulations**

Four submitters expected the suggested changes to provide more appropriate regulatory provisions to support fatigue management because regulations would be underpinned by scientific principles and knowledge. It would also positively impact the industry as provisions would better align with ICAO standards and guidance material, and ensure that New Zealand was fulfilling its international obligations.

One industry submitter considered that the suggested changes would result in procedural and management tool changes, better rostering flexibility, application of science to score fatigue levels, and better assessment of likely fatigue, rather than simply counting hours at work. These comments were expanded upon by some cabin crew submitters, who considered that it was encouraging to see that the CAA would consider extending fatigue regulations to cabin crew, as well as bringing FRMS out of a voluntary framework and into a regulatory framework.

Some cabin crew also submitted that prescriptive regulations would prevent operators trying to negotiate work conditions that are less generous to employees to create a competitive advantage. This would level the "playing field" between employers and employees. Another cabin crew submitter thought that including cabin crew in AC119-2 would result in proper studies being done on cabin crew fatigue.
Conversely, one submitter stated that in their company, advice given by fatigue specialist(s) is often not fully released to the pilots, resulting in a culture of withholding information rather than a free flow of safety-related information. The commercial realities that airline operators work under were again described and the submitter noted that the same conservative rules should be followed by all participants. It did not think that there is enough difference among New Zealand-based trans-Tasman operators to justify having different rules for each.

The suggested changes would have potentially negative implications for emergency and medical services

Most of the detailed comment about adverse impacts was presented by emergency and medical services submitters. For example, aside from the economic impact of having to hire more pilots in this sector, concern was expressed that there are some safety issues as well. Submitters noted that most emergency service bases do not turn over large numbers of flight hours per annum. If pilots fly very low hours per year, it gets difficult to hire appropriately experienced and trained personnel. One submitter noted that unless provision is made for this, the effect of having to comply with a rigid set of prescriptive requirements (developed for non-emergency operations) may require up to double the number of pilots to solve a problem that does not necessarily require a solution. A negative consequence of this will probably be reduced actual pilot and crew currency, which will add risk because of lower than optimal flying in the extremely diverse range of weather that emergency pilots are expected to operate in. As well as this, most pilots like flying, and doubling the number of pilots will make the job less appealing, which will impact on the quality and experience of the pilots that are interested in working in the sector.

Potential financial implications

Eleven cabin crew submitters, one pilot and one emergency services provider identified potential financial implications associated with the suggested changes. This included general comments (like “considerable cost”). Others identified financial implications relate to situations where operators may need to hire additional cabin crew. Some cabin crew submitters noted that the changes would result in increased operational costs for employers, which may have an effect on profits and increased competition. It was also submitted that operators may be “annoyed” by the changes but that health and safety of workers must take precedence over financial impacts to operations. One submitter expressed concern that working hours for cabin crew would be reduced, which would result in less income for cabin crew.

On a positive note, one pilot and two cabin crew submitters acknowledged that the cost to the operator would probably increase, but that the overall impact of the changes would be positive because any new limits would lead to safer operations. Submitters also noted that there would be more responsibility and pressure on operators to comply. These submitters generally thought that increased costs in the short term are an investment in people and in preventing costly impacts such as diminished health and potentially litigation. While cost is always a factor, collaborative efforts to determine mitigation could bring about effective, operationally rational policies that minimise cost in the longer term.
The suggested changes would have no impact

Three industry submitters and one cabin crew submitter considered that the suggested changes would have no impact on their operations. The reason given for this was that the operators have had fatigue management programmes in place for many years (the inference being that the regulations would not result in changes for them). These submitters stated that the prescriptive rostering criteria used for fatigue management in their operations have been in place for some years, and are tested and proven. One of these submitters also considered that although there would not be substantial changes to their operations, there may be better night rostering provisions, with flexibility for general aviation providers involved in the emergency services sector.

Uncertainty as to what impact the suggested changes would have

Five submitters (pilots and an industry submitter) were unable to predict the impact that the suggested changes would have on their operations without further detailed information. For example, one noted that any impact would depend on the detail of the changes and that insufficient detail had been provided.

While being uncertain as to what impact the suggested changes would have, one industry submitter was concerned that if prescriptive limits on flight and duty limits were too restrictive, there may be adverse impacts on their operation. This is because they already adhere to limits imposed by industrial instruments (collective employment agreements) and their own system for managing fatigue.

Summary

Most of the commentary received noted positive outcomes. About a third of the submitters who responded directly to the CAA, and all but five of the cabin crew who responded through the Union stated that the suggested changes to the regulations would have a positive impact on their operations. There were several reasons given for this, including: less fatigue/better well-being; regulation with a better scientific basis; and greater implementation of regulations. This would result in higher safety levels overall.

Other responses included:

- The view that the suggested changes would have a negative impact on operations, including potentially negative financial/economic implications for specific types of smaller aviation operations (e.g. emergency medical services);
- Uncertainty over what the impact of the suggested changes would be because of the limited detailed provided; or
- The view that the suggested changes would have no impact on operations.
QUESTION 9: Are there any matters identified that you consider are not a problem? Why not?

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Thirty-seven submitters responded to Question 9. Eighteen responders submitted directly to the CAA, and the remaining submitters responded through the union.

All the matters identified by the CAA are important problems

Over three-quarters of submitters stated that all matters identified in the discussion paper are important problems that need to be addressed. Few other comments were provided by submitters.

One pilot noted that their employer fully supports the suggestions for provision of information and guidance on fatigue management and industry education, as well as the suggestions for improving operator competency in hazard identification and management. They thought that implementation would support more robust fatigue management. Timeliness of implementation was raised by another industry submitter, who stated that it is time for a change to the fatigue risk management framework.

Other comments

Five responders submitted other answers to this question. Examples of other issues raised included that pilot attitude is an issue and that there is a tendency for senior persons in emergency services operations to not record time that they spend on non-flying work at the hangar/airport as duty time.

One industry submitter endorsed the comments on page 21 of the discussion document, referring to a company that has “expressed interest in putting in place a system that would provide flexibility across their business, establish fatigue metrics, address the differences between fatigue and tiredness, balance personnel requirements against management best practice, and meet the future needs of the organisation.” The submitter went on to say that the regulatory framework must maintain independence and provide guidance to all participants in the development of their FRMS.

Disagreement with an identified problem

One individual submitter strongly disagreed with a comment made in the CAA’s discussion document: “Most of the recorded accidents where fatigue has been inferred as a possible contributor in New Zealand are related to agricultural aviation.” They were not convinced that there was sufficient evidence to support this statement.
Summary

Most of the stakeholders who responded to this question consider that all the issues raised in the discussion document are problems. Only one submitter considered that there was an inaccuracy in the problem definition, with respect to fatigue being a contributor to accidents in the agricultural sector.

QUESTION 10: What are your views on whether the proposals would assist with improving industry and regulator competence to manage fatigue?

Research and industry experience demonstrates that effective fatigue risk management depends on the knowledge and competence of those managing risk. The CAA’s current understanding suggests that there may be insufficient knowledge among operators about managing fatigue.

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

Of the seventy-one submitters who commented on Question 10, thirty submitted directly to the CAA. The remaining were submissions from cabin crew submitted through the union.

Support for the recommendations to improve industry and regulator competence to manage fatigue

Slightly over half of all submitters responding to Question 10 commented directly on the appropriateness of the recommendations, with almost all supporting them. Different types of submitters provided different rationale for their views.

About three-quarters of all submitters who supported the recommendations provided general indications of support for both, for example: “agree”, “it should help” or “anything that sets regular rules for fatigue management will improve the industry”.

The remaining submitters provided more detailed but still generalised rationale. Reasons tended to focus on the expected specific positive impact on fatigue management in general and/or the expected positive impact for staff. Examples of positive staff impacts include improved working environment/conditions, and that implementation will support employees’ choice to work for compliant employers. Supporting shared responsibility for safety and a greater focus on education and awareness for all participants operating in a safety culture was important to two submitters.

Another key reason for supporting the recommendations was three cabin crew submitters’ views that implementation would make operators accountable (particularly in relation to the recommendation to set performance-based standards), and improve operators’ competence and willingness to address fatigue-related issues, particularly as this relates to cabin crew. One cabin crew submitter considered that the recommendations could help cabin crew fatigue to be taken more seriously.
A handful of industry submitters focused on the outcomes of the recommendations (that the initiatives should result in improved competence) as the main reason for support, as well as providing views on critical success factors that will affect the success of the recommendations on supporting fatigue risk management. For example:

- One emergency services manager noted that “provided that the proposals are fair, pragmatic and reasonable and that there are good educational and training structures integrated into them then, yes, competence of fatigue management should [improve]”; and
- An industry submission noted that improved fatigue management is likely “provided the correct application of science to the management of fatigue occurs”.

The level of prescription required to achieve successful fatigue management was also raised. Generally, submitters commenting on the level of prescription required considered that too much prescription would not be favourable. For example, one pilot stated that if the parameters are well-thought out, competence should increase; however, a high degree of prescription was unlikely to be needed for “non-regular” operators. Striking the right balance between prescription and flexibility was also raised by two other industry submitters, who supported education and information as a mechanism for improving competence, but who did not consider that prescription would be effective. However, another pilot considered that more prescription (rather than less) is needed for smaller operators.

One cabin crew submitter provided further specific reasons for supporting the implementation of performance-based standards and other non-legislative interventions. This submitter noted that this approach would result in oversight from a regulator who does not operate in a commercial environment (ergo, profit does not form the basis of the approach to fatigue risk management).

**Roles and responsibilities**

A significant proportion of submitters commented on roles and responsibilities of the regulator in relation to the implementation of performance-based standards and other non-legislative measures. Most of these did not provide an opinion of whether they supported the proposed recommendations or not.

**Role of the regulator**

The role of the regulator was viewed as being critical to the successful implementation of the recommendations. Cabin crew submissions tended to focus on the importance of the regulator in terms of supporting operator compliance. For example, they noted that the CAA should monitor and control the implementation of recommendations; however, three cabin crew and one pilot thought that the role of industry in implementation is critical.

Other specific roles suggested for the CAA included that the CAA should:

- Set the framework and then allow operators to build fatigue management systems based on a standard format;
- Approve and oversee FRMS through its annual safety assurance activity (at an organisational level, and an individual level through the annual medical process);
- Determine compliance; and
• Have more powers to ensure and effect compliance.

Some submitters were unsure about how any changes would be enforced. For example, one cabin crew submitter questioned who would enforce any new rules/regimes, based on a view that operators will only comply if there is sufficient oversight. The role of the regulator in ensuring compliance within the current arrangements was raised by one industry submitter, who noted that documents alone are not sufficient without the regulator's oversight.

An industry submitter, while supporting the introduction of an FRMS option, also requested clarity around how regulator will assess these schemes.

The CAA's competence was also raised in the context that education about fatigue risk management is needed within the regulator to support improved knowledge during audit processes. Another industry submitter identified a gap by noting that there were no proposals to improve the regulator's competence in fatigue science.

Roles of other aviation industry stakeholders

Cabin crew and industry submitters also discussed the roles and responsibilities of other aviation stakeholders, some of which was general commentary about who should be involved and how/in what. Examples include that while employees have a role to play in reporting, it is unclear who makes the decision to complete a full investigation of a fatigue report, and that middle managers need education about fatigue and duties.

One industry submitter noted that considerable training in data collection is required but they did not state which parties require further skills.

Implementation considerations

Comments were raised in relation to the implementation of the recommendations. From the available information, it was not possible to determine the direction of support (or otherwise) for the proposed recommendations themselves. Considerations included that:

• Considerable education, training and resourcing relating to data collection and analysis is needed, although there are significant benefits to be gained from non-legislative measures (also see Question 12);

• More Crew Resource Management courses could improve risk and minimise fatigue-related issues (both for individuals and others on the crew or flight with them);

• All new crew and those responsible for setting rosters will require training in fatigue management (and this should be mandated); and

• More prescription at the smaller end of the industry is needed, and the scheme needs to be monitored.

One industry submitter noted that it is important to continue to engage industry in fatigue management discussions: it considered that an "evolutionary and learning approach" was most likely to support ongoing engagement.
Preference for legislative interventions

The concept of legislative versus non-legislative interventions was raised by those who commented about the role of regulation in fatigue management more broadly. Generally, of the pilot and cabin crew submitters who made comments about the role of legislation (approximately six submitters), most did not support self-regulation or some other form of voluntary approach by operators to fatigue management because “it does not work”. These submitters tended to think that increasing regulation (or some other form of compulsion) and auditing was the best way to increase operator compliance. One of the reasons for this view was that operators are aware of how to manage fatigue but do not do so because of commercial pressures. Some cabin crew were also concerned that fatigue-based incidents should not be catalysts for action to improve fatigue management. Finally, one cabin crew submitter noted that regulation would provide stronger mechanisms for acting on fatigue reports as these would (presumably) go to both the operator and the regulator, leading to a better understanding of the incidence of fatigue.

Do not support the recommendations

In addition to the submissions which did not agree with the issues identified, (as mentioned in Question 9) a cabin crew submitter, while not directly opposing the recommendations, noted that they thought that fatigue can be adequately managed by rest alone, and that the regulator’s competence needs to reflect this.

Other comments

A small number of general comments were made in response to this question, many of which relate more generally to specific aspects of fatigue management (including issues associated with short layovers or the impact of long-haul flights on fatigue reporting). Finally, one cabin crew submitter queried whether there is genuine will to address fatigue.

Cabin Crew Short Survey Results

Whilst this question was not asked in the short survey for cabin crew, a number of their answers relate to this section. Whilst the overwhelming majority of submissions from the short survey support some form of change to the current fatigue management system, 19 submissions indicated a specific preference for legislative interventions. This included 16 submissions who specifically stated that they would prefer the CAA to have oversight of how fatigue is managed in their company and any changes. This included making sure that cabin crew fatigue was audited by the CAA as well as a separate, and independent body (it was not specified who) to collect and monitor all fatigue related data and duties. The other specific submissions relate to ensuring the CAA is competent for a monitoring and educational role on fatigue as well as independent, and also a suggestion that the CAA introduce a form of cabin crew Licence similar to that of a Pilot Licence.
Summary

The scope of comment was mixed: about half of submitters indicated support (or otherwise) for the recommendations, the other submitters provided other comments relating to the recommendations but did not specifically endorse or oppose the recommendations. A small number of implementation considerations (including those relating to the role of the regulator and other industry participants) were identified.

Question 11: What are your views on whether initiatives to improve reporting and investigation will contribute to the improved management of fatigue?

Effective management of fatigue requires access to, analysis, and dissemination of data and information to make the right safety decisions. The CAA recommends implementation and support for additional non-legislative interventions to improve the quality of incident reporting and increased operator competency in identifying and responding to information indicating the presence of fatigue-related hazards.

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

A total of eighty-six submitters provided feedback on Question 11 including cabin crew, pilots and industry submitters. Fifty-two of these submissions were received from cabin crew who submitted through the union.

Current challenges experienced by flight and cabin crew when reporting fatigue

A wide range of pilot and cabin crew submitters described issues that they experience when reporting fatigue and the impact of these issues on reporting behaviours and/or fatigue management outcomes. The main issues were that:

- Fatigue reporting does not appear to result in improved fatigue management or changed outcomes because operators do not make the required adjustments to fatiguing duties – either in a timely fashion or at all and the results of investigations can be challenged or ignored if the results do not suit business reality;
- There is a perception that careers will be adversely impacted by reporting fatigue, examples included: questioning of individuals’ job suitability or their ability to manage fatigue; risk of not getting a promotion; and that reporting will somehow be “held against” the crew member;
- There is a lack of support for reporting;
- It is difficult to complete a complex report when fatigued/too tired. This is because the reports require too much information, are hard to use, are too long and/or complicated, cannot be
completed at the crew’s convenience, and may be held on IT platforms that are not accessible; or

- Alternative mechanisms to reporting are used to manage fatigue (such as taking sick leave when fatigued which is paid; not reporting for a duty because of fatigue is not paid).

The main impact identified by submitters was that these issues lead to under-reporting and do not necessarily support a ‘just culture’.

**Support to improve fatigue reporting**

There was strong overall support for the options to improve the reporting and investigation of fatigue. Six cabin crew and three industry submitters provided general indications of support for the proposed non-regulatory approach but provided no further detailed comment, for example, “they will”, “great idea”, “can only be improved”.

Of those who provided more detail, the main reason for supporting improvements to reporting is the expected impact that it could have on the management of fatigue and safety improvements. Comments ranged from relatively general (for example, several pilots and cabin crew noted that increased awareness should result in beneficial changes: “anything that improves/increases reporting will be beneficial to fatigue management”, “create a greater awareness should lead to improved management”) to more detailed assessment of how increased knowledge will support better understanding. Longer responses focused on the importance of reporting on effective fatigue management. There was also a focus on the fact that better data collection and strong analytics contribute to better understanding of fatigue and the measures required to improve safety. One industry submission noted that “sharing learnings across organisations will definitely assist in building New Zealand aviation’s capability and knowledge of managing the risk of fatigue”.

Other specific outcomes-focused comments offered in support of the options included that:

- More fatigue reports describing certain sectors and duties will increase the chance of these being addressed or disestablished/amended;
- Better reporting will better support identification of trends and themes; and
- Improved reporting may provide factual rather than perceived image of fatigue issues.

Picking up on some of the challenges identified by submitters, one pilot noted that reporting alone cannot solve fatigue problems; however, they considered that the initiatives to collect data would provide a better foundation from which to undertake safety-focused actions.

Initiatives to improve reporting were also thought to be a good step towards creating a ‘just culture’ that supports the management of fatigue. A handful of cabin crew and pilot submitters considered that the initiatives will support culture change and the development of an environment in which crew feel confident to speak up about fatigue. They think that this will reduce risk (and address one of the main challenges identified by submitters). Cabin crew comments about culture also touched on their concerns about the perceived lack of action that currently occurs following a fatigue report. Cabin crew thought that the initiatives would make crew feel like they are listened to and that activities could then be designed to reduce risk (i.e., lead to a change in culture).
Two pilots noted support with a caveat that reporting needs to be supported by education, an open-door policy and a ‘just culture’. A culture shift was also specifically supported by some industry submitters and cabin crew, who noted that a proactive, open and safe reporting system needs to be supported by a culture of “no blame, no shame”. Further, one industry submitter noted that fatigue reporting and investigation can support the creation of a safety culture provided it is completed in a non-punitive manner.

One cabin crew submitter considered that compliance time required for any new requirements could be minimised if good guidance is provided.

Specific suggestions on how reporting and investigation could be improved

Submitters identified ways in which reporting could be generally improved, for example, reporting fatigue should be made “easier”, “less cumbersome” and “quicker to complete”, that any system must be “non-punitive”, “free from harassment” and “robust to stop abuse”. It also included comments that accessing the system be more immediate/timely, for example completed when it happens not later as crew often forget to do it). Suggestions to increase reporting behaviour or otherwise improve reporting were also raised. Again, many of these suggestions respond to the identified challenges.

Suggestions included:

- Improving access to reporting systems so that fatigue reports are more timely;
- Improving participation by developing cabin crew confidence in reporting systems;
- Increasing consistency in the reporting approaches used by different operators including through the adoption of a single fatigue report form developed by the CAA or a single database used by all; or
- Requiring operators to do more in response to fatigue reports/take action more readily.

A range of specific suggestions were identified by submitters including that suggestions to reduce fatiguing duties, for example, by requiring roster-builders to complete fatiguing duties. Other suggestions included encouraging reporting behaviour, specific models or tools used to report, self-auditing, Heinrich 300-29-1 model, SMS cards, paper copies of fatigue reports on board, and models for addressing non-compliance. Comments regarding ensuring fatigue is a component of SMS are discussed in Question 6.

Submitters also commented on the ways in which investigations following a fatigue report could be improved, some of which relate to operator practice and some of which relate to the role of the CAA. Specific examples included cabin crew noting that investigations should only be completed by cabin crew who have worked a certain duty, and experience was seen to be critical to understanding individual instances of fatigue and determining appropriate next steps. Other examples included that fatigue reports be sent to the CAA so that it can hold companies accountable for addressing issues.

While most of the commentary focused on reporting, comments about improving investigation processes were also identified. A handful of cabin crew and pilot submitters were concerned that reporting and investigation be separate from or independent to operators to minimise any potential or perceived conflicts of interest. Other suggestions included that investigations should be completed by a dedicated health and safety unit, or follow some form of prescribed checklist. One submitter noted that
there should be “an investigation framework to assess fatigue in everyday events including producing a risk matrix to assist in the management and development of appropriate controls”.

The CAA’s role in supporting improved reporting outcomes

The CAA’s role in supporting improved reporting outcomes was raised by cabin crew and pilot submitters, many of whom focused on the need to have a degree of independence in the reporting and investigation process. Many of these submitters considered that the CAA should play a stronger role in ensuring that the operator undertook appropriate follow-up action. For example, one cabin crew submitter noted that the CAA did not have strong oversight/ability to monitor fatigue meaning that risks are not detected or addressed. Another cabin crew submitter thought that having the CAA involved would support crew. Other submitters envisioned that the CAA would take specific roles in overseeing operators’ reporting practices. For example, one pilot thought it would be good for all operators to submit all fatigue reports to the CAA on a bi-monthly basis for one year, followed by six-monthly presentation after that. Another pilot and cabin crew submitter noted that fatigue reports and incident investigations should be submitted or examined by the regulator (either directly or after submission to the operator). One cabin crew submitter thought that the CAA should also have a role in setting rosters.

Industry submitters also commented on the role of the CAA but instead noted encouragement for the CAA to collect, collate and share data to build robust evidence base on fatigue management (rather than policing operator responses to fatigue reports).

Non-legislative measures are not enough

Only one cabin crew submitted that they did not think that the proposals would make a difference because cabin crew do not like to report fatigue; however, a further ten cabin crew and pilot submitters considered that non-legislative measures may not be sufficient to result in improved reporting and investigation. This opinion was mostly expressed through statements that reporting and fatigue management will not improve if the regulatory environment does not change, for example, “needs to be legislated”, or “only if there is legislation in place to force operator to comply”. One industry submitter also strongly supported the use of regulatory tools to support the development of ‘just’ culture. They noted “some priority needs to be given to primary legislative protection for reporters to help improve the low-information environment that NZCAA has identified”.

Unsure about whether the proposed initiatives would result in improved fatigue management

A handful of mostly industry submitters were uncertain (but not negative) about whether the proposed initiatives would result in improved fatigue management. For example, two industry submitters noted that they were not sure but considered the theory to be correct. Another industry submitter noted that a properly implemented SMS would achieve the anticipated outcomes. Conversely, one cabin crew submitter did not have confidence that the reporting approach would result in improved fatigue management.

Other submitters provided comments that were more difficult to interpret. For example, one cabin crew submitter noted that companies would be legally responsible for cabin crew and would therefore have to take fatigue seriously but it was not clear how this comment related to reporting.
One submitter (cabin crew) identified that cost could be an issue (particularly if it related to operators having to make expensive changes to practice), but did not provide a view on whether they supported the options or not.

Cabin Crew Short Survey Results

Whilst this question was not asked in the short survey for cabin crew, a number of their answers relate to this section. Almost a quarter of all submissions to Question 1 in the short survey suggested that reporting fatigue was an issue in their company and many of the reasons behind this were similar; “Cabin crew often do not fill out fatigue reports as there are often unofficial repercussions by doing so. Having filled out several forms myself, they are long winded, complicated and, because you are fatigued while filling it out, difficult to complete. Many cabin crew do not bother completing them as it’s too much to deal with when they are already tired.”

Almost half of the submitters who raised reporting as an issue perceived lack of just culture. The other significant reason for reporting being an issue was that cabin crew do not believe that their reports are very effective or lead to noticeable change. The third main reason given was that the forms are not easy to fill out or very accessible.

A small number of suggestions were provided for how these issues could be addressed, such as changing the format of the forms or providing training to crew on how to complete them. More transparency was requested by a number of submitters on where their reports go and how they are treated.

Summary

While there was some discussion of investigation, most of the commentary focused on reporting. Generally, submitters recognised that current reporting practices pose challenges, as well as identifying potential solutions. Retaining some level of independence was an important factor in determining which non-legislative approaches might be appropriate, as was ensuring that changes address some of the key issues raised.

QUESTION 12: What education and guidance initiatives would you suggest to increase the capability of participants to report and investigate fatigue-related contributors to safety events?

Responses from stakeholders submitting directly to the CAA and full submissions presented by E Tū

A total of forty-six submitters provided feedback on Question 12; twenty-one responded directly to the CAA. The remaining responses were submitted by cabin crew who submitted through the union (twenty-five submissions).
Training and education on fatigue, its impact and management

One of the biggest areas that submitters require more information and guidance on is the causes of or contributors to fatigue, and the impacts of fatigue and/or sleep deprivation. Approximately three-quarters of submitters who provided advice on education and training identified this as a critical area. Two submitters noted that, currently for cabin crew, there is little to no training on the management of fatigue. A few submitters went on to acknowledge that industry participants also need this information to be presented to them in a way that is relevant to the aviation area that they operate in. Specific possible fatigue topics included:

- The dynamics of aviation; as opposed to shift work in general. This could include the impact of multiple time zone changes, loss of sleep, working at altitude, rostering practices and the impact on fatigue;
- Understanding the impact of fatigue, the difference between fatigue and being tired, and the risks it poses (in general);
- Understanding fatigue management and tips for management of fatigue and how to support crew to be ready for duty;
- Controlled rest on the flight deck (to be used in cases of unexpected fatigue only); or
- Information on biomathematical models (given their role in FRMS).

Specific suggestions focused on risk management included providing further opportunities in the Heinrich model. Crew Resource Management courses, understanding the role of fatigue in specific incidents, or FRMS training in all introductory training for new employees.

Two cabin crew submitters, while not suggesting specific topics, perceived a lack of education around fatigue management in general, noting that this flows through into poor fatigue reporting. One of these submitters noted that aviation medicine training includes limited information on fatigue as did an industry submitter who commented that special information for medical professionals who support pilots would be good.

Training and education to increase capability of crew to report

Following on from commentary in Question 11, a large proportion of submitters responding to Question 12 also identified the need for specific training relating to fatigue reporting (including the two union submitters). Much of the commentary discussed the challenges associated with reporting or suggested practicalities to improve reporting (and has been included under Question 11, as noted above). About one-quarter of the remaining submitters identified specific content requirements relating to fatigue reporting training including requests for training/education on:

- Detailed guidance on fatigue reporting (including how to complete reports);
- Legal support including support for employees to understand their rights and obligations in employment contracts and under HSWA;
- The correlation between SMS and fatigue risk management;

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10 A risk analysis tool
• The rights and obligations in relation to fatigue management and reporting;
• Checklists of items to be verified as serviceable, avoided or dealt with prior to flight;
• "Changes to Part 137 to ensure that people working under this section are covered to the same extent as those working under Part 135"; and/or
• Safety investigation methodology for those in charge of incident investigation (led by the CAA).

The two union submitters considered that there should be some brief high-level statement within the Rules for fatigue education and training which could be expanded upon in an appropriate AC. EU Regulation ORO.FTL.250 was provided as an example.

One pilot noted that it would be useful to have greater publicity about the ability for pilots to report fatigue anonymously.

Just culture

One industry submitter noted that guidance on developing a ‘just culture’ should be formulated and disseminated (including information on what a ‘just culture’ looks like and its benefits). They identified a range of steps, including a role for the CAA in disseminating resources to support implementation, as well as the CAA committing to adopting ‘just culture’ processes. One pilot submitter noted that while they supported education and training, some operators do not care about fatigue risk management, for them it is a ‘tick the box’ exercise. The submitter suggested that this pointed to an underlying culture that may not support the implementation of effective fatigue management (regardless of what education may be in place). Finally, one industry submitter noted that the CAA and the Transport Accident Investigation Commission investigators have training to investigate fatigue and that this training should be completed in alignment with a ‘just culture’ philosophy.

Preferred or possible formats

Submitters identified a wide range of possible formats that education and guidance could be delivered in, with no clear preference across either topic area or by type of submitter. Some submitters only provided a very short answer, for example, “online training”). A handful of other submitters made very general comments about education and training. Two suggested that the ICAO has a range of good training, material, another suggested that the ACs could be used to disseminate training information.

A range of formats that support timely and easy reporting were suggested by three cabin crew submitters including workshops for crew describing fatigue reporting processes, information available on intranet services, or online newsletter links with visual footage. One industry submitter noted that the reporting process needs to be promoted to staff through a range of mechanisms, including on company intranets and through hard copy mechanisms like brochures and pamphlets. Further, one cabin crew submitter noted that a social media page (hosted by an independent organisation) could help crew to engage more with notifications as well as supplement other existing learning opportunities focus on fatigue management.

In terms of increasing understanding about fatigue, delivery options included workshops, the provision of literature, videos/visual footage, seminars on fatigue management, online training, and the inclusion
of fatigue discussions at all pre-flight briefings. One pilot also noted that flight time limits information should be tested in oral exam questions.

Implementation of training and education

A small number of general comments about the implementation of any training and education were identified. A few cabin crew and pilot submitters were keen to ensure that training is delivered by “unbiased” experts, for example, they are independent from operators and unions. One industry submitter suggested the use of “fatigue champions” in this role.

In terms of timing, those who commented noted that education and training in fatigue management are not one-off events, rather there should be both initial/entry training as well as in-service training on fatigue-related issues.

Finally, several submitters noted that there is a need for all staff to be involved in training (including flight and cabin crew, management and office staff, and those who are responsible for setting rosters).

Additional training and education is not required

Only one cabin crew submitter indicated that if a ‘just culture’ were in place, training would not be required.

Summary

There were two main areas in which submitters considered education and training to be needed: fatigue and its impact and management; and fatigue reporting. Submitters noted that this information is not only required by flight or cabin crew, but also by management (especially those who play a role in determining rosters/setting workloads).

QUESTION 13: What are your views on whether the safety management system requirements of Part 100 and the Health and Safety at Work Act requirements are sufficient for managing fatigue in agricultural aviation, maintenance and ground control operations?

The discussion document identified three sectors where fatigue presents safety risks, but where a direct and new legislative intervention may not constitute the most effective approach to risk management. These sectors are Part 137 agricultural aircraft operations, aircraft maintenance operators, and airline ground operations.
Of the fifty-eight submitters who commented on Question 13, twenty-three responded directly to the CAA. The remaining responses were submitted by cabin crew who submitted through the union (thirty-five submissions).

Comments on HSWA were also provided throughout submitters’ responses to other Questions. For more information about submitters’ views on HSWA, please see Questions 3 and 6.

The framework provided by Part 100 and the Health and Safety at Work Act 2015 is not sufficient

Approximately one-third of submitters responding to Question 13 expressed views that Part 100 and HSWA provide an insufficient framework through which to manage fatigue in agricultural aviation, maintenance and ground control operations. About half of these submitters (mainly cabin crew) provided either:

- No rationale for their view;
- Only general comments (such as “not strong enough to ensure compliance”);
- General statements that appear to relate to fatigue in the aviation industry more broadly (rather than as it relates to agriculture, maintenance or ground crew), for example, "don’t seem sufficient, otherwise wouldn’t have the level of work fatigue that persists", "inadequate for aviation"; or
- Comment about the impact of the commercial operating environment on health and safety management.11

Of those submitters who provided more detailed rationale for their view that the current arrangements are insufficient, several considered that the lack of a strong safety culture undermines the current arrangements. One aviation industry submitter noted that safety culture varies widely throughout the industry and stated that, while operators have written fatigue management plans that mostly “say the right things”, there is also considerable variability in the implementation of these plans. While Part 100 covers a range of safety-focused requirements, it is silent on culture which was a concern to this submitter. Another industry submitter also called for the “adoption of a set of risk principles or a recommended code of practice”. The submitter thought this approach would allow flexibility for all organisations within the aviation system, noting that “a specialised approach could provide the incentive shift to a SMS culture, but would continue to drive compliance-based behaviours”. Non-legislative measures could be effective here (also see responses to Question 12).

A small number of submitters were concerned that HSWA does not provide adequate detail to be effective in the aviation context. For example, one cabin crew submitter noted that “there is little protection for crew under the Health and Safety at Work Act” with exposure to toxic chemicals cited as an example. One pilot was concerned that because it is a relatively new piece of legislation, HSWA has not had time to be understood or effective, noting that further testing of HSWA in relation to fatigue

11 Similar comments are covered in more detail in Question 1.
management in the aviation sector is needed. The untested nature of HSWA was also cited by one industry submitter as being the reason why it was unsure whether the current arrangements are adequate.

One industry submitter considered that the three sectors identified in Question 13 play an important role in aviation safety, noting that a “properly specified fatigue risk management regime will be able to be easily adopted by all operators for all activities”. It then went on to describe an idealised regime based on quantitative data.

**Current framework is sufficient**

Less than one-quarter of submitters responding to Question 13 noted that the current regulatory framework is sufficient for agricultural aviation, ground and maintenance crews. About half of these submitters provided no rationale for their views, for example, “sufficient” or “we agree with the proposal to manage fatigue under, initially HSW and soon SMS”, or noted that the framework allows for adequate management (one industry submitter). Two industry submitters indicated support and noted that the regulator should easily be able to audit for compliance.

One unclassified submitter considered that written SMS used by airline operations would have a negative effect on agricultural aviation safety, because the operating environment in which agricultural aviation works is different to that of commercial airline operations and that “it achieves zero in enhancing flight safety”. More information about the overall view of fatigue management requirements for agricultural aviation are discussed in Questions 7 and 10.

Three submitters supported the current approach but noted additional considerations necessary to ensure it is effective:

- One industry submitter noted that while the framework is acceptable, enforcement under HSWA is retrospective and suggested that it would be more effective to publish acceptable schemes as an AC to Civil Aviation Rules 100 or 137;
- One cabin crew submitter noted that it is a good start but queried whether understanding of the issues and the global market place is sufficient; and
- One cabin crew submitter proposed that it could be made simpler to understand.

**Limited knowledge about the Health and Safety at Work Act affected depth of comments**

Around half of respondents to Question 13 stated that they felt inadequately informed about Part 100 and/or HSWA. These cabin crew, unions or pilots did not provide comment. They stated, for example, that they lacked knowledge about or awareness of HSWA, that this was outside of scope of membership coverage, or that they were unsure of HSWA in general.

A couple of cabin crew submitters also noted that, while unfamiliar with the requirements of HSWA, they considered that fatigue is an ongoing issue, and noted that the aviation industry is so different from other sectors that separate regulation is required. It is not clear whether their comments related to cabin crew or to the aviation sector workers discussed in Question 13.
Provision of practical duty times for maintenance or ground operations crew

Two submitters proposed that maintenance or ground operations should be covered by the same framework as others, in relation to practical duty times. It is not clear whether these two submitters directly supported the current arrangements or not.

Uncertainty about the overall view

Four submitters’ comments were unclear: it is not possible to determine from their response whether they support the current arrangements or not. For example, one submitter commented about the CAA’s statements in relation to agricultural aviation more generally, and another noted that the approach needs to be legally accountable (like pilots are currently). Finally, another two cabin crew submitters described their view on the pressures placed on crew to get flights out on time.

Summary

Opinion on whether the current arrangements provided through HSWA and Part 100 of the Civil Aviation Rules is divided, with a range of viewpoints presented to the CAA. Limited knowledge of HSWA affected the depth of commentary. Of those submitters who commented in more detail, opinion was divided: about one-third considered that the framework provided by Part 100 and HSWA is not sufficient. A further, smaller group of submitters considered that the current arrangements are sufficient. Two submitters considered that maintenance and ground crew should be specifically covered by arrangements. Limited commentary on agricultural aviation was provided.
Conclusion

Nine key themes were identified which came through as common themes in each of the questions or in the general comments, these are:

- **Fatigue is a safety issue and needs to be taken seriously.** Many of the submitters had genuine concerns about fatigue and think that more should be done to ensure that it is being managed properly as a risk across more sectors. Eighty-three percent of submitters believe that an FRMS is an option which would lead to safety improvements in New Zealand.

- **It is important to further explore the interface between fatigue risk management, HSWA, and SMS.** About half of the submitters were unsure how HSWA, SMS and fatigue risk management do, or could, interact, but many thought that their integration is important for safety.

- **Solutions that are appropriate, proportionate, and effective for the different aviation sectors is important; guidance and education should be tailored to specific sectors,** for example, many submitters think that Part 135 and EMS operators should be considered separately within AC 119-2 (or have their own guidance material). Additionally, there was very strong support for the introduction of prescriptive limits for both cabin crew and air traffic controllers, provided that this will improve safety and is practical to do so.

- **International regulatory approaches such as ICAO and other jurisdictions should be taken into account.** Some submitters think that it is very important that New Zealand look externally to see what other regulators are doing in this space and learn from them.

- **A strong and independent regulator is important.** A regulator who has good oversight of the management of fatigue and provides good quality guidance was important to submitters.

- **It is important that data and evidence are used to help design any potential solutions.** Without effective reporting mechanisms, it will be difficult to get the best data we can to truly know the extent of the issue of fatigue in aviation, and what will be the best methods to address it. Many of the submitters would like to see the solutions supported by science.

- **There is a need for the roles of the regulator, organisations, and individuals within fatigue management to be defined.** A large number of submitters were seeking clarity on the roles of the CAA, organisations, and the individuals in regards to fatigue management, and under HSWA.

- **Industry needs to provide more training and education on fatigue and fatigue management.** Three quarters of submissions highlighted the need for more training on what fatigue is and tools to manage it. A further one quarter suggested that training and education on reporting requirements and methods would be beneficial.

- **The unique commercial operating environment of aviation needs to be considered.** Aviation is a unique environment, not only is it 24hr shift work, but it is often travelling over many time
zones, or there are uneven workloads during a shift. Rostering practices in aviation were raised by half of the submitters as a major contributor to fatigue.

Appendix A presents a succinct summary of these key themes as well as some key supporting findings from the feedback.

Next Steps

There are a number of steps that the CAA will now take. Some of these have arisen from the feedback received to the discussion document, while others are part of the normal process of regulatory policy development.

- The CAA will assess and refine options for fatigue management based on the feedback received on the discussion document.
- The CAA will further consider the interface between HSWA, SMS, and other existing legislative options in fatigue management.
- The CAA will consider the feedback provided to the discussion document, summarised here, to help in developing appropriate, proportionate, and effective options to address the issues raised in the discussion document. If Rule changes are recommended, a second project will be undertaken to develop and propose rule changes to the Minister of Transport. In that case, there will be further opportunity for interested persons to comment on draft rules.
- The CAA is currently working with industry and fatigue specialists to develop education and guidance material for fatigue and fatigue management. It is considering this feedback during the design of this material. The CAA encourages industry to also consider this feedback as it relates to the content of their training and guidance material.
- The CAA will consider how reporting mechanisms can be improved and explore the implications of any potential changes. The CAA encourages industry to also consider this feedback as it relates to their reporting procedures.
Appendix A

Fatigue Risk Management

Fatigue is a safety issue and needs to be taken seriously

83%
of you think that an option for Fatigue Risk Management Systems will improve aviation safety in New Zealand.

70%
of you believe that the proposed changes will have a positive effect on their operations, mostly improving safety.

The interface between Fatigue Risk Management Systems, Safety Management Systems, and Health and Safety at Work is Important

1/3 of you think SMS and HSWA are not sufficient on their own.

Less than 1/4 of you believe that SMS and HSWA are enough.

About half of you are unsure how best to integrate SMS, HSWA and fatigue management.

It is important to have solutions that are proportionate and appropriate for the different aviation sectors

1/3 of you think the current Advisory Circular and guidance material is too limited in scope. It should include augmented crew, night flight, and workload considerations.

International regulatory approaches such as ICAO and other jurisdictions’ should be taken into account

“Current role set is a couple of decades old and pretty much out of date – need international alignment. The current systems don’t promote/encourage/assist with identifying, managing fatigue. They also do not take into account the latest scientific information.”

It is very important that data and evidence are used to help design any solutions

“A think the additional benefits would be more data able to be shared between the regulator and operator, and eventually the rest of the world. Which would ensure that we are all on the right path of safety.”

A strong and independent regulator is important

A few of you had questions about the role of the CAA in providing guidance and oversight of their fatigue management systems.

Many of you were concerned about just culture and how that affects the reporting of fatigue in aviation.

There is a strong need to define the roles and responsibilities of the CAA, operators, and individuals

1/4 of you said that training around reporting requirements and methods would be beneficial.

Many of you sought clarity about the responsibility of individuals, operators, and the CAA in terms of fatigue management under the Health and Safety at Work Act 2015.

More training and education on fatigue was identified as something that industry wants and needs

3/4 of you said that training in fatigue and the tools to manage it is necessary.

The unique commercial operating environment needs to be considered

Half of you highlighted that rostering practices within aviation are a major contributor to fatigue. Back of the Clock flying and travel times at the destination were mentioned as being particularly fatiguing.

For more information | www.caa.govt.nz/fatigue