TOWARDS A MODERN APPROACH TO SAFETY REGULATION

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Background

Discussion involving the Part 91 Control Board regarding a proposal to mandate certain radio calls has highlighted what appears to be a serious lack of understanding of the facts regarding modern approaches to safety regulation.

This discussion evinced an attitude from much of the industry which can be summarised in the following set of four nested, consequential statements.

'If it is important to safety outcomes then CASA must/will, mandate it'.
'If it is not mandated then it is, clearly, not important and compliance is optional.'
'Accordingly, pilots cannot be relied on to comply with a requirement that is not mandated.'
And finally, 'If pilots will not comply, the only action which can be taken is to mandate the requirement and this will be successful.'

I prepared a more strategic paper on this issue for the mid-year ASF meeting which was postponed (attached). However, this discussion on Part 91 has suggested that the lack of understanding is worse that originally thought.

This paper is an attempt to address this matter for the ASF meeting which I will miss. I apologise that this is prepared in a rush – and is longer than a refined version would be – but I am concerned about this matter and did not wish to miss this input to this meeting.

Modern Safety Regulation

In the mid to late 1990s the OH&S regulator transitioned from a dependency on a centrally imposed, mandatory rule set to a modern risk management approach which transfers the primary responsibility for good safety outcomes from the regulator to the individual operator at every level. With this transition the regulator becomes responsible to ensure appropriate operator T&E and minimum competence and to create a rule set which imposes responsibility for safety outcomes on the operator.

This change was made because it delivers better safety outcomes.

Recent discussion suggests a general lack of understanding of the essential nature of this transition and the improved safety outcomes achieved both in other industries around the world and in the aviation industry in the US by FAA.

The Essential Nature of this Change

The essential change which this transition introduces is the transfer of primary responsibility for good safety outcomes from the regulator to the individual operator at all levels.

It is commonly known that this change was triggered by the investigation of the Piper Alpha disaster involving an explosion on a North Sea gas rig. This investigation determined that a major, if not the major, contributing factor for this accident was a dependency on a centrally imposed rule set.

The operator of the rig was aware of the disastrous consequences of such an accident and was determined to make sure that it never happened. Using the safety approach of the time, this meant that

the operating company required all employees to follow the safety rules to the letter, all the time. This focused everyone on the rig on obeying the rules and nobody took responsibility to see that the operation was actually safe.

Confusion between Process and Outcome

The OH&S regulator deals mostly with organisations not individuals. Where organisations are the target of regulation, this change is implemented by requiring all organisations to set up an SMS which is satisfactory to the regulator. Accordingly, much of the rule set imposed by the regulator when dealing with organisations relates to the development of adequate SMS.

The success of SMS has been so notable that the introduction of this different approach to safety regulation has become identified with an SMS.

During recent discussion involving Part 91 it became clear that many seem to have focused on the introduction of SMS and have concluded that this change cannot be applied to rules for individuals because – 'How can you have an SMS for an individual?'.

This confuses outcome and process. Where the target of regulation is an individual – as for Part 91 – the essential outcome remains the transfer of responsibility but the process is necessarily different.

The process for implementation of the transfer of responsibility for rules for individuals is by the development of outcome or performance based regulations.

Again recent discussion suggests that this 'process' is also much misunderstood.

The primary reason for developing outcome based regulations is to make this transition. Accordingly, outcome based regulations are not made simply by rewording the same rule set. The required rule set must mandate appropriate levels of competence and T&E and then make the operator responsible for safety outcomes.

The Need for Operator (Pilot) Training and Education.

Clearly, operator (pilot) training and education is fundamental to the success of this approach. CASA plans to introduce a requirement for SMS for all organisations and has been preparing outcome or performance based rules for some time now.

Discussion of the proposal to mandate certain calls at certain locations suggests that most in the Australian industry and many within CASA may not understand the nature of these changes nor the reason for these changes or the improved safety outcomes arising from this change.

Further, while most, when pressed, agree that an approach which makes the individual responsible for good safety outcomes is the desirable 'end state', as it were, two objections are being used to delay or limit the implementation of these changes.

Firstly, the Australian industry 'is not ready yet'.

This is a damning admission and will mean that Australia will continue to deliver poorer safety outcomes which are significantly worse than international benchmark outcomes. But, more importantly, this is not a logical response. The necessary first step in making this transition, taken by all regulators which have made this transition, is for the regulator to take the lead and carry out the necessary national campaign to MAKE the industry ready. The industry will never be made ready by giving in and making some rules centrally imposed mandatory rules because they are 'too important' and the industry is not yet ready.

Secondly – ‘All regulatory systems must have some centrally imposed mandatory rules’.

Outcome or performance based regulations will contain some centrally imposed mandatory rules but these will be limited to requirements for competency and T&E as well as a few quantitative requirements such as speed limits and loading capacities etc. These rule sets will NOT contain centrally imposed mandated procedures which take back responsibility for safety outcomes into the regulator, especially if it is 'because this situation is too important'. Such exceptions support the view that, if it is really important the regulator will take responsibility and mandate the procedures and hence undermine the whole approach and produce dangerous confusion as to who is really responsible for what.

Either we make the change and do the pilot T&E; or we do not.

The outcome expected of performance based regulations seems very poorly understood and not generally accepted by the industry. This suggests that CASA has introduced outcome based regulations without the necessary national program of pilot T&E required to change pilot attitudes.

Compliance, Surveillance and Enforcement

As a result of this change, enforcement inevitably becomes more complex.

Many reject individual changes to the rules required to produce an outcome based rule set because the outcome based rule is difficult to enforce.

Further, outcome based regulations and a requirement for organisations to rely on an SMS alter the balance between compliance and enforcement.

While, clearly, enforcement remains an important part of the regulator’s job, it is also an essential part of this change that the emphasis between compliance and enforcement actions alters as the regulator and individual operators cooperate to achieve improved safety outcomes.

It is important to remember:

Compliance is the outcome,
Surveillance is how you achieve certainty that compliance levels are adequate
and **Enforcement** is what you do after it has gone wrong.

In regulatory systems dependant on centrally imposed mandatory rules where the regulator is seen as responsible for ensuring good safety outcomes, the regulator often relies on enforcement as a major or perhaps even the primary means of ensuring compliance, with little attempt at a cooperative and educative approach to good safety outcomes. ‘If pilots won’t do what is necessary, than what else can we do but mandate it’.

While the details of a SMS can be complicated the essentials of the system can be summarised as a five step procedure involving four identifiable processes.

The first step involves monitoring of the operation – this includes accident and incident monitoring and, in second generation SMS, compilation of individual operator expertise as to potential hazards etc.

The second step involves collation of this data to define trends and issues.

The third step is to define the causes involved. The raw data is the symptom. Action needs to address the cause not the symptom.

The fourth step is to decide and implement effective action required to address the concerns identified in step 3.

The fifth step is the same process as the first step – it is monitoring of the operation to assure implementation of the fix was successfully achieved.

This process depends heavily on individual operator involvement and frank and honest exchange of problems and failings in the current system which is incompatible with reliance on enforcement as a primary process of achieving compliance. The cooperation of the operators must be obtained and it must be clear that enforcement will only be used in cases of recalcitrant behaviour. It must be clear that enforcement will be used vigorously in such cases but no operator must ever be given reason to fear enforcement action where that operator is conscientiously attempting to be part of the safety system.

Does CASA Need to Make this Transition?

I believe the answer is very definitely yes.

Essentially, all other safety critical industries have made this transition with proven improved safety outcomes. Many are now progressing on to second and third generation SMS as described in the last Safe Skies Conference.

The US FAA made this transition in the mid to late 1990s. The best figures I can find show that the US FAA is the international benchmark for aviation safety outcomes. These figures show that the overall Australian accident rate is approximately twice that of the US aviation industry. Our mid-air collision accident rate is 30% higher than that in the US despite traffic densities estimated at one quarter of that in equivalent airspace in the US.

A common reaction to these statistics is to point to the differences. This is a very poor management approach. This amounts to looking for excuses as to why our outcomes do not meet international benchmarks.

The appropriate management approach is to say ‘What are we not doing which would lower or accident rate closer to benchmark values’.

Clearly one of those things we have failed to do so far is to make this transition effectively.

Finally, an SMS for Individual Operators – Part 91

While the above argues that an outcome or performance based rule set is the ‘process’ appropriate to rules for individual operators (pilots) this does not remove the need for an SMS for this rule set.

If CASA is responsible for writing and operating the rule set – CASA is dependant on operational knowledge currently available to CASA. It is an essential part of second generation SMS that there be an ongoing development of the operator (pilot) T&E and the performance based rule set. This would be achieved by implementing an SMS for this rule set. This SMS must either be within CASA or a self administrating body specifically designed to implement this SMS. (See previous paper attached.)

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SAFETY MANAGEMENT SYSTEMS and the REGULATION of AVIATION in AUSTRALIA

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BACKGROUND

During the 1990s regulation of most safety sensitive industries transitioned from a dependence on centrally imposed mandatory rules to a risk management approach which placed the primary responsibility for safe outcomes with the operator. The regulator is required to ensure the implementation of appropriate safety management systems including adequate operator training and education with compliance enforced via outcome based regulations. See for example the Australian OH&S regulations introduced in the latter half of the 1990s

This transition was imposed because it is an established fact that this risk management approach delivers better safety outcomes.

This transition needed to be imposed because it is an unfortunate fact that a centrally imposed rule set is more 'comfortable'.

Put simply – a centrally imposed mandatory rule set makes the regulator, and those in the industry responsible for safety, feel good; but a modern risk management approach, which gives the operator primary responsibility for safe outcomes, delivers better safety outcomes.

The Australian aviation industry has not yet made this transition.

The fact that little or no progress has been made by the Australian aviation industry towards this goal was confirmed by the reaction by all – from the top down – to the NAS 2c changes.

The criticisms of the NAS 2c changes were of two types.

> The first were specific criticisms of some procedures introduced by NAS 2c which were considered by some as flawed – see, for example, comments by Steve Tizzard – and are not the subject of these concerns.
>
> The second, which were the criticisms which led to a request for a partial roll-back, were a rejection of the approach which relied on pilot responsibility to apply a set of recommended procedures backed by an overall outcome based regulatory requirement.

This regulatory approach is typical of the modern risk management approach to safety regulation. The essence of the reaction to these rules was that the Australian aviation 'culture' is different and that pilots will not comply unless the requirements are mandatory.

This attitude defines the essence of the old approach to safety regulation and the broad acceptance of this 'culture' shows clearly how embedded this outdated approach remains in the Australian aviation industry.

The fact that many responsible for safety from within the Australian aviation industry do not wish to see this change introduced is the expected outcome and is not a reason not to make this transition.

The US FAA made this transition in the 90s with a national campaign to set up a 'safety contract' between the regulator and the industry.

CONSEQUENCES

This failure to make this transition has resulted in a number of adverse outcomes which prompted this paper.

1. Experience in other safety sensitive industries has, by now, shown clearly that better safety outcomes are achieved by this approach. Whatever the safety outcomes achieved in the Australian aviation industry today – these would be better under this modern approach.

   Despite the complacent views expressed by some in the NAS 2c PIR, the record shows that the US is the world benchmark for safety outcomes and that, particularly in airspace related accidents, the Australian system delivers much poorer protection than does the US system.

2. This reliance on centrally imposed mandatory rules has made CASA responsible for matters beyond its control and has lead ATSB and the Government to criticise CASA over outcomes which are not within its control.

3. Perhaps the most serious outcome is that this also means that the industry is able to avoid responsibility for safe outcomes.

   Even responsible operators are allowed, or even encouraged, to rely on these centrally imposed mandatory rules to 'ensure safe outcomes'. ("We wish to be a responsible safety conscious operator - just tell us what to do and we will make sure all our people follow the rules.") This attitude allows individual operators to abrogate their responsibility for safe outcomes and to believe that their responsibility ends with enforcement of the mandatory rules.

   While many will take their responsibility more seriously than this, a mandatory rule set inevitably encourages this attitude.

4. In the case of a struggling or less responsible operator – the reliance on centrally imposed mandatory rules allows the operator to cut corners provided the operator believes that it cannot be established that the action taken was against any specific 'rule'. This may even result in the operator believing that the actions taken can be justified by commercial realities and that, because the letter of the law has not been broken too much, the outcome will still be adequately safe.

5. Centrally imposed mandatory rules are often preferred because it makes enforcement easier.

   Firstly, despite what a lawyer might say – the purpose of a safety regulation is not to achieve a safe conviction but to produce good safety outcomes in the industry.

   Significantly, this approach has lead to enforcement based on the letter of the law – allowing unsafe approaches which are within the letter of the law to go unaddressed and actions which were either, in fact safe, or at the very least carried out in good faith, to result in a conviction.

6. Reliance on centrally imposed mandatory rules makes the regulator responsible for outcomes which are not actually within the control of the regulator. This makes the regulator, and individual officers with responsibility within the regulator, inherently defensive. The result is an aggressively defensive, paternal, master-servant approach to interaction with the industry which is further counter productive to good safety outcomes.

   The policy document regarding external CASA delegates and the requirements which must be signed are a good example of this approach. Surely if anyone is to be involved in cooperative approach to safety outcomes relying on the expertise in the industry – CASA delegates must be at the top of the list.

CONCLUSION

Over the past few years, CASA has done much to improve safety regulation and many of these changes move Aviation regulation in the right direction. Recognition that much of the expertise lies within the industry and the associated improved industry consultation and involvement EASA approach to airworthiness regulation have all been great successes.

Unfortunately, continued reliance on this outdated approach to safety regulation has, in many cases, either destroyed these essential changes at the coalface, or has at least resulted in strong resistance to these changes – which outcomes have combined to negate much of the desirable change.

CHANGES REQUIRED

Defining this problem is much easier than fixing it.

This change cannot be achieved progressively or from within CASA alone – as the essence of the change is an acceptance, by the whole of the industry and the Government, that the primary responsibility for good safety outcomes lies with the individual operator at every level and that the job of the regulator is to ensure that this responsibility is accepted and is being implemented to an acceptable degree. Compliance is dependant on operator training and education, which must be documented and enforced, and the overall outcome enforced by outcome based requirements. This transition will only be achieved by a cooperative effort involving the Regulator and the Government.

Well meaning opposition must be expected from many with current responsibility for safety within the industry.

Further, these changes go to the very fundamental basis of aviation regulation and it is not for this paper or the current author to propose such decisions.

However, it is appropriate to suggest an approach for consideration

1. The introduction of a requirement for a safety management system should be made universal and this represents an important opportunity to make this change. This change should emphasise the changed levels of responsibility between the industry and the regulator inherent in this approach.

2. This change to the level of responsibility should be extended to individual operators with a National campaign such as was run in the US implementing a ‘safety contract between the regulator and individual operators’.

3. CASA should set up a joint Industry/CASA National Safety and Training Panel with the responsibility to recommend competency standards and instructional techniques and oversee this changed level of responsibility. This panel should consist of appropriate CASA personnel, experienced currently active instructors and the field safety officers. The panel should be chaired or at least co-chaired by Industry

4. The field safety operators should be expanded with volunteer field safety officers who would assist the CASA field safety officers. These officers would become the ‘eyes and ears’ of the safety and training panel and would provide the T&E and assurance of the implementation of the changed level of responsibility.

5. These officers should, as now, not have direct enforcement responsibility but must have sufficient authority and credibility to effectively assure compliance by peer review and in the end be able to

institute compliance action by other officers. (That is, like the sport aviation organisations – 'do the right thing or we will have to call up enforcement actions').

6. The safety and training panel should accredit instructors and instructional techniques. Accreditation could be voluntary or mandated. If voluntary then accredited training operations should be encouraged to advertise this fact.

7. An advantage of mandatory accreditation would be that competency standards would not need to be legislated. These competency standards etc. could be detailed in an AC and implementation required by making compliance a condition of accreditation. Changes could be agreed by the Safety and Training Panel acting in consultation with CASA and the industry and implemented by CASA.

8. Industry involvement and ownership could be ensured by providing local forums for input and inviting submissions from any qualified instructor for consideration by the panel.

There is clearly much more to this but the purpose of this paper is to raise the principle for wide discussion.

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