Since implementation of ‘SMS’ there has been much in the way of developments made and equally many lessons learned. Much information has been made available to interested stakeholders helping form a multitude of opinions, interpretations and tools particularly around the subject of risk. Whilst the language of risk is fairly harmonised, the fact that risk principles can be applied to many functions, not just safety, in a variety of ways highlights a potential for well-meaning yet misleading interpretations that may leave an organisation exposed. This paper raises the question as to whether such interpretations may be aligned to the objectives of SMS and challenges whether we have in some cases created a false sense of confidence.

So, what are the objectives of safety management?

Interestingly the question of “what is safety” is one that needs answering and we go so far to say that ‘safety’ does not actually exist; it is a condition that is created wherein the chance of safety harm is reduced to and maintained at an acceptable level. The creation and maintenance of this condition is achieved through a number of activities and simply put, how well we do this will determine how ‘safe’ we actually are.
It is useful to look at risk in a similar manner in that the more effective our measures the less likely the chance of harm. So, the management of safety is in fact the management of risk and for clarity our primary concerns are around those issues that affect aviation safety; for an aviation service provider the objectives should be focussed around those issues that impact (directly or indirectly) the operational safety of aircraft or aviation safety related equipment, products and services. We call this safety risk management.

Therefore, safety risk management requires an organisation to establish control over safety risk; this therefore requires that all efforts are indeed aligned to that principle and the determination of ‘acceptable’.

**False Sense of confidence?**

Let us explore a familiar situation; registers full of ‘risks’ decorated in the familiar colours red, amber and green all vying for attention populate management meetings, multiple risk assessments being carried out, organisations facing an ever-deepening pool of data, and many management debates can all create the impression that ‘safety’ is indeed being managed. On face value, all appears well yet explore this situation a little deeper, when held up against the objectives of SMS, there exists the stark reality that organisations may be continuing to inadvertently operate with excessive safety risk.

Much of the talk is around hazards and risk therefore it seems natural that this attracts focus and it is generally agreed hazards are defined as those things or conditions that have the potential to cause harm. Yet for many, breaking free of the historical reactive approach still remains an ongoing challenge and failure to do so simply means you are unable to effectively manage risk, you can only react to occurrences. Reactive organisations are easily identified by the nature of their data pool; many occurrence reports and little in the way of error/violation/hazard reports, particularly where there was no associated harm.

It is evident through our experience from our client engagement programmes that the interpretation of risk management, for some, has created a mind-set to ‘risk assess’ more. This results in practice that sees all reports or issues received being allocated a ‘risk rating’ including those that are reactive; not only is this time consuming and bureaucratic but not necessarily helpful or required in respect of the reduction of risk.

This creates a situation whereby reports of system failures, occurrences or hazards are being made yet they are all being treated the same way when in fact the nature of each report should determine the action taken. Herein lies the crux of the issue in that events, occurrences etc. are not hazards; they have already happened as have audit findings. Likewise, errors and violations are symptoms of system failings and they all need to be thoroughly understood if the organisation wishes to enhance safety risk control. It is too easy to risk assess a reactive issue and give it a rating when in fact it requires investigation; without understanding the failure it is impossible for the organisation to objectively determine the level of risk going forwards. Things or conditions that offer concern are prime candidates for risk assessment to help determine if adequate control is indeed in place prior to any manifestation of harm.

In both scenarios, on paper, the issues are assessed, rated, discussed and ‘signed off and accepted’ yet in reality, treat a reactive issue in such a way and it is highly likely that it has not been understood fully, the reasons behind it remain unresolved so the organisation is bound to learn the lessons again. It is not unusual to see non-compliances with a ‘risk rating’ and a name accepting the ‘risk’ alongside so it has to be questioned what has actually been accepted in those cases. Beyond this aspect of risk management ongoing failure to verify the effectiveness of controls and/or the absence of bad things happening reinforces the impression that safety is indeed under control. This leaves the organisation exposed and should an accident, or worse occur, the organisations management system and decision making will be open to legal scrutiny.
So, what is acceptable?

“How safe is safe enough” is often a question posed (i.e. what is acceptable!). This is not something that can be simply answered as there are many considerations. Yet it must be clear that whilst many challenges may exist, they themselves should not be used as reasons to not meet ‘acceptable’.

ALARP stands for “as low as reasonably practicable”, and is a term often used in the regulation and management of safety critical activities; it recognises that safety risk cannot be eliminated to zero or would in fact be undesirable to do so. The ALARP principle arises from the fact that infinite time, effort and money could be spent in the attempt of reducing a risk to zero.

For safety risk to be ALARP, it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. The gross disproportion inclusion is significant as it means that an ALARP judgement is not a simple cost benefit analysis, but is weighted to favour carrying out the safety improvement. However, there is no broad consensus on the preciseness of gross disproportion, more a considered judgement regarding all risk reduction measures and the justification to not carry out those that add no benefit. ALARP is more about the extent of the measures taken than the risk itself.

The principle of ALARP has been well exercised in the field of Health and Safety for many years now and as such, this acts as a good ‘bearing’ for anyone involved in Aviation Safety risk. It requires judgement yet in the great majority of cases, such judgements can be assisted by referring to existing ‘good practice’.

ALARP requires the organisation to consider and determine how to best achieve the condition known as ‘safety’ and equally how to remain there. It is noteworthy that that many safety risk controls already lie within the aviation regulatory framework and the sometimes misplaced focus on risk management along with any misinterpretation has served as a distraction for many organisations. That said, it is not just about better compliance, it also takes into account:

- Interactions and dynamics that impinge upon the ALARP position (such as change, operational ‘tempo’, organisational and human factors and operational threats).
- The fact that the determination of ALARP may change over time as measures to achieve such become more affordable, reliable and useable.
- Utilisation of ‘live’ data from the operation that may suggest existing control measures are not adequate.

Of significant note is that ALARP does not take into account the financial health of an organisation. This is to ensure that all organisations are dealt with fairly based on risk and not their ability to carry out the risk reduction measures based on affordability.

ALARP must permeate into all aspects of the organisation to support SMS objectives and it is important that everyone, whatever their role, knows about it.

- Leaders, policy makers and key decision makers/duty holders need to know about ALARP to support any decision/proposal made.
- Key safety roles/specialists who will support and advise the organisation in their risk management efforts.
Personnel with oversight responsibilities will need to be aware of ALARP to facilitate the objective dialogue between themselves and those with accountabilities and responsibilities.

Organisational personnel so that they are clear on risk controls, what control outcomes are expected and how they contribute to ALARP in a broader sense.

EASA itself now refer to ALARP and use similar definitions as above and further emphasise a systematic and documented process to reduce safety risk below that controlled by regulations or standards or when the risk is otherwise considered unacceptable\(^4\). EASA also further emphasise that the risk level should be monitored, and ALARP considerations applied to any new identified risk mitigation measures to contribute to a further reduction in the risk level. An increase in the risk level at any time should be considered unacceptable even if the safety risk is below that controlled by regulations alone.

The challenge going forwards

Making informed decisions based on intelligence, which itself is derived from data is key to the management of safety risk.

The model, below, is intended to simply illustrate that the data generated by the organisation comes from multiple sources; some reactive, some proactive, some predictive. The nature of the data determines the appropriate course of action to be taken. It is of significant note that a majority of the reports received in an ever-maturing SMS will be threats\(^5\) that by their very nature are attempting to exploit any weakness in your system.
Choosing the appropriate strategy in respect of the data is key to the success of your operation and this itself helps create the ‘intelligence’ picture upon which making informed decisions at all levels requires if organisational safety risks are to be maintained ALARP.

Risk should only be accepted and signed for once it has been determined that the proposed effort is indeed reasonably practicable i.e. you have done enough to reduce risk taking into account all reasonable steps and only discarding those that are grossly disproportionate. Decisions should be documented to justify why no further risk reduction measures have been implemented, and that the risk finally retained is still acceptable. Individuals who sign for accepting risks need to be absolutely clear in their mind as to what is being signed for.

The journey to safety performance is long and one that will have many lessons on the way. Safety risk management must remain pragmatic and credible and industry must resist temptations to make it complex and unwieldy. Compliance with extant regulations must be part of the safety management strategy as they represent the baseline of hard-won safety improvements whilst equally containing established and reliable risk control measures. The reality of actually ‘doing safety’ extends beyond the matrices and risk registers and plays itself out in the decision making and behaviours of people throughout the operation on an hour by hour basis. Collectively, those tools, decisions and behaviours help us satisfy the objectives of SMS which itself must be predicated upon the firm understanding of the objectives of SMS; getting this wrong could result in implementing unnecessary control measures or failing to implement important ones.

References
1. ICAO SMM 9859 version 3, Chapter 1.12.4
2. ALARP is short for “as low as reasonably practicable”. SFAIRP is short for “so far as is reasonably practicable”. The two terms mean essentially the same thing and at their core is the concept of “reasonably practicable”
3. www.hse.gov.uk/risk/expert.htm “We decide by consensus what is good practice through a process of discussion with stakeholders, such as employers, trade associations, other Government departments, trade unions, health and safety professionals and suppliers. Good practice will itself include accepted regulations and standards.
4. EASA ALARP NPA 2015-18
5. Threats are often defined as conditions or ‘factors’ that attempt to defeat weaken barriers and require attention to ensure barrier effectiveness so that safety margins are maintained. These can often be labelled as risks which can in many cases create the wrong mindset; Threats needs a variety of strategies to ensure control effectiveness, not risk assessing through a matrix.
About the Author

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With more than 25 years’ experience in the maintenance and engineering fields of civil and military aviation, Neil provides highly specialist advisory services to senior management teams and technical experts across Operators, Maintenance organisations and Regulatory Authorities. He consults across a broad spectrum of Safety Management elements from regulatory compliance to safety risk management and helps senior management teams to develop effective interventions that deliver sustainable safety performance through improved operational and organisational efficiency.

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We are specialists in aviation regulations, compliance and safety management and partner with the world’s leading civil and defence aviation organisations to improve safety performance.

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