

24 Sep 12

To: PS/SofS thro' PS/PUS

From: DG MAA
AM T M Anderson

DG MAA DEFENCE AIR SAFETY ANNUAL REPORT 11/12

ISSUE

1. DG MAA's annual report on Defence Air Safety¹, for the period 01 Jul 11 to 30 Jun 12.

RECOMMENDATIONS

2. SofS is invited to note that:
 - a. **Implementation of the Nimrod Review Recommendations that the MAA was responsible for was completed on 15 Feb 12. This was corroborated by independent external audit during the period 23 Apr – 04 May 12. (Annex A, Para 6)**
 - b. **There is strong evidence of positive behavioural changes and an improving Air Safety culture in many significant areas of the UK Defence Air Environment (DAE). However, as highlighted by the MAA External Audit, there is further work to do to at all levels to firmly embed these improvements. (Annex A, Para 7)**
 - c. **Based on extensive evidence collated throughout this reporting period, I have greater confidence in my assessment of the effectiveness of current Air Safety controls in the DAE, which remains one of Limited Assurance². (Annex A, Para 51)**
 - d. **Whilst challenging and requiring continuing concerted effort, I believe Substantial Assurance³ is achievable in a further 12 months. (Annex A, Para 51)**

and that

- e. The MAA achieved Full Operating Capability on 20 Feb 12, having delivered the required Nimrod Review recommendations, collocated at Abbey Wood North and implemented a bespoke integrated operating model. (Annex A, Para 2)
- f. Whilst the MAA has delivered its critical regulatory outputs over the last year, the organization has operated below strength throughout the period, which has hampered to a degree the rate of progress in delivering the MAA's broad remit, as defined by the Nimrod Review recommendations. (Annex A, Para 3)
- g. A study to examine a proposal to merge the MAA with the nascent Defence Safety and Environment Authority (DSEA) was sponsored by the outgoing 2nd PUS and recommended a merger as early as next year. However, there were gaps in the arguments for doing so and PUS has directed that further work be undertaken. (Annex A, Para 5)

¹ 'the state of freedom from unacceptable risk of injury to persons, or damage, throughout the life cycle of military air systems. Its purview extends across all Defence Lines of Development and includes Airworthiness, Flight Safety, Policy, Regulation and the apportionment of Resources. It does not address survivability in a hostile environment.' MAA 02.

² System of internal control operating effectively, except for some areas where significant weaknesses have been identified. DIA Assurance Classifications (Oct 10).

³ System of internal control established and found to be working effectively with some minor weakness. DIA Assurance Classifications (Oct 10).

- h. The heavily revised suite of MAA Regulatory Publications (MRP) went live in their new format on 01 Aug 11 and have been well received. (Annex A, Para 9)
- i. The MAA continues to address shortfalls in legacy regulations, including new Air Traffic Management and Flying Regulations that will be published in the coming months. (Annex A, Para 10)
- j. New regulations pertaining to Military Type Certification have been enacted and my staffs are engaging at an increasingly early stage with projects to provide guidance and support for new aircraft and major systems certification as they enter service. (Annex A, Paras 11&12)
- k. The implementation of the Defence Aviation Error Management System (DAEMS) has been proceeding well with formal training of the first unit, RAF Leuchars, completed in Feb 12. (Annex A, Paras 13-15)
- l. Continuing Airworthiness Management Organization (CAMO) regulations were promulgated in May 12 and provide greater clarity of Front Line Command (FLC) responsibilities for in-service support of air systems. (Annex A, Paras 16&17)
- m. My training focus has been to promote the right behaviours and culture in the DAE by targeting the principal aviation Duty Holders (DH) and their key staff. Over 300 senior personnel have attended MAA-run DH Air Safety courses during the period and their feedback has been overwhelmingly positive. (Annex A, Paras 18&19)
- n. All Operational DHs (ODH), most Delivery DHs (DDH) and all DE&S PTs have now been assurance audited by the MAA. A dynamic Air Safety Risk Dashboard tool that will support the Regulator's transition to a truly risk-based assurance model is in the final stages of development. (Annex A, Para 20-22)
- o. There has been notable progress with inculcating appropriate processes and behaviours in the treatment of Air Safety measures in the annual financial planning round and encouraging examples of leadership and understanding. Notwithstanding, further improvements in timing and quality of interventions by DHs can be made. (Annex A, Paras 23, 24&26)
- p. Lessons identified from the conduct of PR12 include: the need to act with greater alacrity in delivering credible safety enhancements that are not grossly disproportionate; the need for better understanding amongst staffs of the delineation between operating and operational risk; the need for a more thorough examination of all of the relevant factors when considering extensions to air systems' service lives, including the 'health' of the supporting safety management capabilities; and the need to examine thoroughly all of the relevant factors when considering bringing UOR equipments into the core programme. (Annex A, Para 25)
- q. MAA assurance audits have confirmed that the implementation of ODH's Air Safety Management Systems (ASMS) has made good progress and they now present a baseline from which to shift beyond compliance-based to a risk-based oversight programme, although there are still some Air System Safety Cases that are at an early stage of maturity. (Annex A, Paras 27-30)
- r. Whilst DE&S PTs' support of DHs is improving at some pace, significant internal weaknesses remain in key areas, such as LOAA delegations, hazard log management, airworthiness strategies and Safety Management Systems (SMS). (Annex A, Paras 31-32)

- s. The Military Aircraft Certification Process has been implemented; four significant projects have been subjected to the process, instilling a more disciplined evidence-based approach to their release to service use. (Annex A, Paras 33&34)
- t. Whilst industry engineering oversight and approvals has continued apace, albeit still dependent on external technical support, further work is required to incentivise industry applicants to provide timely and robust expositions. (Annex A, Paras 35-38)
- u. Re-establishing an appropriate regulatory regime for contractor flying organizations is well advanced and a useful opportunity for closer alignment with developments in this area in civil aviation is being exploited. (Annex A, Paras 39&40)
- v. The Military Air Accident Investigation Branch (MilAAIB) has responded to 15 serious occurrences, for which I have convened 10 Service Inquiries (SIs). I have identified some common themes across many of the occurrences, including shortcomings in supervision, standards, training and risk management, and have engaged with Senior DHs on these issues. (Annex A, Paras 41-45)
- w. I have identified five Air Safety risks that I judge to be strategic in nature, based on their likelihood and propensity for any or all of: their impact on safety performance; multiple fatalities; operational impact; and/or societal concern. They are shortfalls in Suitably Qualified and Experienced Personnel (SQEP), mid-air collision, Rotary Wing (RW) low visibility landing, RW collision with wires and injuries to horse riders. (Annex A, Para 46)
- x. The MAA continues to benefit from and contribute to engagement with other Military and Civil Regulatory organizations, and is taking a lead internationally in pursuing harmonization of airworthiness arrangements across Europe and more widely. (Annex A, Para 48)
- y. My main priorities for the forthcoming period include: maintaining the momentum of behavioural and cultural change; evoking more efficient, timely and higher quality regulatory outcomes; establishing better understanding in DH-facing organizations of their responsibilities; achieving intelligent exploitation of available Air Safety data and information; and responding to the risks identified in the MAA External Audit. (Annex A, Para 50)
- z. In accordance with the Govt's transparency agenda and precedent, I will publish this Report, redacted as necessary to FOI standards, on 01 Nov 12.

TIMING

- 3. Routine.

BACKGROUND

- 4. This is my second formal assurance report on Defence Air Safety. This latest reporting period has been characterized by a determined drive to complete the range of workstream activity through which Mr Justice Charles Haddon-Cave's (H-C) Nimrod Review⁴ recommendations were implemented, an increasing tempo of audit and assurance activity and an adjustment of focus to measuring, evaluating and assuring the effect of recent changes.
- 5. I grouped the Nimrod Review recommendations the MAA was responsible for into 10 workstreams. I am content that the milestones that I set have been achieved and closed the workstreams at the MAA Development Board of 15 Feb 12, the final milestone being the collocation of the MAA into Juniper Building, Abbey Wood (North). As recommended in the

⁴ The Nimrod Review, 28 October 2009, The Stationery Office.

Nimrod Review, the MAA was subjected to an external audit at the two-year point⁵. The MAA External Audit Panel (MEAP), led by the Acting Director Hazardous Installations of the Health and Safety Executive (Mr David Snowball), interviewed stakeholders at all levels throughout the Dept from PUS and the Service Chiefs of Staff to soldiers, sailors and airmen at operating units in RAF Benson and RAF Coningsby. The MEAP report⁶ was broadly positive and concluded that:

“the MAA has rapidly and purposefully started to recalibrate the military air safety regime in its first 2 years of activity. There is strong evidence that the key dutyholder concept is well understood. The building blocks to address and eliminate the frailties in the system for military air safety are being progressively established. There is significant work still to do further to embed the changes but the right direction and tempo has been set”.

6. I am satisfied with the outcome of the external audit and have accepted the findings without reservation. The MEAP report recognized the commitment and leadership of many across the DAE community in embracing the Nimrod Review recommendations and the associated major change programme. It also chimed with my own perception of the status of the DAE's Air Safety culture and controls and confirmed for me that the assertive corporate approach taken by the MAA initially, to deliver the necessary speed of change, was the correct one in the circumstances. I concur the MEAP's observations that further work is required across the DAE if the full beneficial effects that H-C envisaged are to be realized, especially in respect of embedding the necessary behavioural and cultural changes and I have set work in hand to develop our understanding of how best to assess and achieve lasting change.

7. The MEAP report also reinforced my view that the DH concept and a focus on Risk-to-Life (RtL), as tenets of the new Air Safety regime, have gained traction rapidly. All of the ODHs and DDHs have now completed the MAA-delivered Duty Holder Air Safety Course, which has come in for significant praise from those attending, and I have personally briefed each of the three Service Chiefs on their roles and responsibilities as Senior Duty Holders. The revised MAA Regulatory Publications (MRP) went live in their new, streamlined format in Aug 11 and are acknowledged as being much more accessible and easier to understand. Having initially gained Cabinet Office approval to host a website outside of DII, I succeeded in enhancing accessibility further by publishing the MRP on a new standalone MAA internet website, with much improved search functionality that has been well received. Disappointingly, I have now been informed that the original waiver has been withdrawn and that the MAA website will now be required to conform to the recent .Gov initiative. I have technical compatibility concerns and also that my efforts to address one of H-C's principal criticisms relating to the complexity and accessibility of regulations may be set back. I therefore intend to engage with stakeholders on this issue as a matter of urgency in the coming weeks.

8. The independent MilAAIB has been established very successfully in Farnborough, collocated with their civilian Air Accidents Investigation Branch (AAIB) peers, and in May 12 I published my first three independent aviation Service Inquiry (SI) reports⁷. As well as demonstrably delivering the investigative independence H-C called for, these reports are noteworthy for their critical examination of organizational factors and have attempted to better identify root causes in this area. As such, when combined with other audit and regulatory activity, they provide a powerful complementary driver for change across the regulated community. That said, the advent of independent, external accident investigation has not been entirely welcomed by the single Services, who in some cases are still coming to terms with the fact that such inquiries are now being done to them, as opposed to by them. Nevertheless, I am hopeful that full recognition of the benefits of independent and objective investigation will soon be recognized as outweighing any short-term discomfort at areas for improvement being highlighted comprehensively. The cost to the Dept of air accidents over the past year is, sadly, two fatalities, 58 reportable injuries⁸ and a financial cost of in excess of £50M.

⁵ Over the period 23 Apr – 04 May 12.

⁶ Review of Progress in the Military Aviation Authority (MAA) – Report By The MAA External Audit Panel (MEAP), dated 23 May 12.

⁷ Occurrences involving Tornado ZG792 on 27 Jan 11, Chinook ZH898 on 25 Aug 11 and Tornado ZA557 on 26 Sep 11.

⁸ 16 of these were parachuting and 2 fast-roping related, [neither of which category falls within the jurisdiction of the MAA].

9. The MAA has been involved in assurance of the certification and release to service use of four major air systems⁹ during the period. We declined to endorse the initial Release to Service Recommendation of one these (Voyager KC Mk2) and subsequently the RAF Release to Service Authority approved a more limited recommendation. Whilst all four projects were in the later stages of maturity, the additional rigour provided by the MAA's assurance of the readiness of each of the Air Systems for release to service use has been broadly welcomed.

10. I have continued to maintain close surveillance, from an Air Safety perspective, of Planning Round activity throughout this period of Departmental financial constraint. The evidence collected during assurance visits to DCDS MilCap and Strat Man reinforces the importance of my team's role in engaging, informing and educating across the Dept on Air Safety, regulation and the management of operating, versus operational, air safety risk. The impact of Defence Reform and the resultant formation of the Fin Mil Cap structure within the Centre present an opportunity for the Dept to embed appropriate Air Safety culture within its wider risk considerations during the new Annual Budget Cycle (ABC). DCDS MilCap has made a start with this work and I will support him fully through this new and potentially challenging process.

11. One risk with the introduction of a novel regulatory framework and the associated extensive start-up assurance activity is that the regulated community over-compensate and become risk-averse, instead of risk-aware. I acknowledged this risk at the outset and sought to mitigate it by, *inter alia*, signalling early on the Regulator's desire to avoid this by articulating a Mission Statement for the new regulatory authority that placed the delivery of operational capability to the fore¹⁰. Moreover, Regulatory Article (RA) 1020 provides clear guidance on the boundary between managing operating risk and operational risk. More recently, I wrote¹¹ to stakeholders to emphasize the necessary delineation between managing RtL in the 'Raise, Train, Sustain' operating environment and operational risk and I also engage routinely with senior operational commanders to attempt to broaden understanding in this critically important area. Nevertheless, during the reporting period there has been occasional circumstantial evidence of risk-averse behaviour. However, my perception is that this is more often a reflection of inadequate understanding of the relevant regulations and, more importantly, a lack of appreciation that the Regulator's expectation is that risk-owners will employ the risk management tools that have been made available to them to enable them to make informed judgements on the levels of risk they can hold. I will continue to offer guidance in this area to highlight that there should be no basis for claims that a proper and effective regulatory environment presents a conflict with the delivery of operational capability.

12. From the evidence collected this year across the regulated community, my assessment of the effectiveness of Air Safety controls across the DAE remains one of **Limited Assurance**. I also retain my view that **Substantial Assurance** is a valid target for 12 months from now, but the challenge in achieving this must not be underestimated and continuing, concerted effort, underpinned by unequivocal senior leadership, will be essential as the risks inherent in the scale of the challenge of embedding the necessary cultural changes in some areas of Defence become more visible, not least through the prism of contemporary aviation SI reports. Moreover, major elements of the Defence Transformation agenda, such as the rustication of acquisition, programming and supporting functions to the single Services and prospective changes to the DE&S operating model offer both opportunities and threats. Nonetheless, what is clear is that very significant improvements in the Dept's understanding, management and mitigation of Air Safety RtL have already been achieved across its operating processes and activities, with much credit due to the many across the DAE who have engaged constructively and enthusiastically thus far in the process.

⁹ Voyager KC Mk2, Avenger T Mk1, Wildcat AH Mk1 and Chinook Mk4.

¹⁰ Enhancing the delivery of operational capability through continual improvement in military Air Safety, appropriate culture, regulation and practice.

¹¹ MAA DG/01/ABC dated 06 Jun 12.

Annex:

A. DG MAA Defence Air Safety Annual Report – 01 Jul 11 - 30 Jun 12 Supporting Detail

Copy to:

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**DG MAA DEFENCE AIR SAFETY ANNUAL REPORT – 01 JUL 11 - 30 JUN 12
SUPPORTING DETAIL**

“In flying I have learned that carelessness and overconfidence are usually far more dangerous than deliberately accepted risks.”¹²

Regulating the UK Defence Air Environment

The Military Aviation Authority

1. **Context.** Regulation of the UK Defence Air Environment (DAE) touches a population of >100,000 people and has been transformed in the wake of Mr Justice Haddon-Cave's (H-C) Nimrod Review. Implementation of the Review's recommendations have been largely accepted by the regulated community and their objectives are being realized in routine operating and supporting activities; the core role of managing and tolerating Risk-to-Life (RtL) is owned unequivocally by clearly identified, trained and supported Aviation Duty Holders (DH); and the MAA's audit and assurance activities are an intrinsic part of the Dept's approach to military aviation. The MAA External Audit Panel (MEAP)¹³ reflected as such in their recent report, noting that the completion of the workstreams to implement the Nimrod Review recommendations was only the start, but provided a firm base on which to build. Their view was that the speed and 'shock' of change has affected behaviours throughout the DAE but, understandably, a period of 'bedding in' and consolidation will be required to develop further the relationships between the Regulator and regulated community and achieve the necessary cultural shift.

2. **MAA Operating Model and Collocation.** The final part of fully establishing the MAA was achieved on 20 Feb 12¹⁴ with collocation of the MAA from 7 dispersed sites into Juniper Building, Abbey Wood (North) and transition to a bespoke integrated operating model. The MAA Operating Model now comprises:

- a. A Strategy and Policy Group that conducts MAA strategic planning out to a 5 year horizon; provides leadership in Air Safety thinking; develops and sets MAA policy; and coordinates the delivery of assurance to SofS.
- b. An Analysis and Planning Group that is designing and leveraging Knowledge Exploitation processes to assist in developing and resourcing a risk-based, operational-level regulatory services delivery plan. This is informed by Air Domain performance measurement, including audit and inspection activity, and a unified Air Safety risk assessment facilitated by a novel, dynamic and comprehensive Air Safety Dashboard (ASD) tool.
- c. Regulatory Services Delivery Groups responsible for delivering end-to-end Regulations, Certification, Oversight and Approvals across the DAE.
- d. Enabling Services, comprising: Business Plans & Finance; Secretariat and Communications; Legal Services; and Skills, Training and Talent Sustainment which, *inter alia*, provides oversight of Defence Air Safety training and assures the adequacy of regulatory Aviation training through this oversight.

¹² Wilbur Wright in a letter to his father, September 1900.

¹³ Review of Progress in the Military Aviation Authority (MAA) – Report By The MAA External Audit Panel (MEAP) dated 23 May 12.

¹⁴ 2012DIN05-008 - Military Aviation Authority – Operating Model.

3. **Resources.** The original estimate of the required level of resources for the MAA has now been validated as broadly adequate. Notwithstanding, a degree of risk to the MAA's outputs, and therefore to Defence Air Safety assurance, exists and this will need to be monitored closely as our understanding of the challenge facing the Dept in driving and institutionalizing the required changes across the DAE matures, but I believe it is manageable. Pressures on manpower headcount remain and it has proved challenging to recruit Suitably Qualified and Experienced Personnel (SQEP). PR11 manpower profiling and centrally imposed recruitment controls also combined to retard progress with filling our steady state manpower liability, with manpower strength peaking during the period at 75% of establishment¹⁵. Unsurprisingly, this has affected the MAA's outputs to a degree and slowed the rate of progress with implementation of some new regulatory and oversight services. Nonetheless, I have attempted to mitigate this and the impact of the post-SDSR civilian VERS scheme and military redundancies through internal resource balancing and task prioritization.

4. **MAA Governance.** The MAA Regulatory Governance model has been refined with the inclusion of the Joint Air Safety Committee (JASC), which facilitates consultation with the aerospace industry, and the removal of the 2nd PUS post under Defence Transformation.

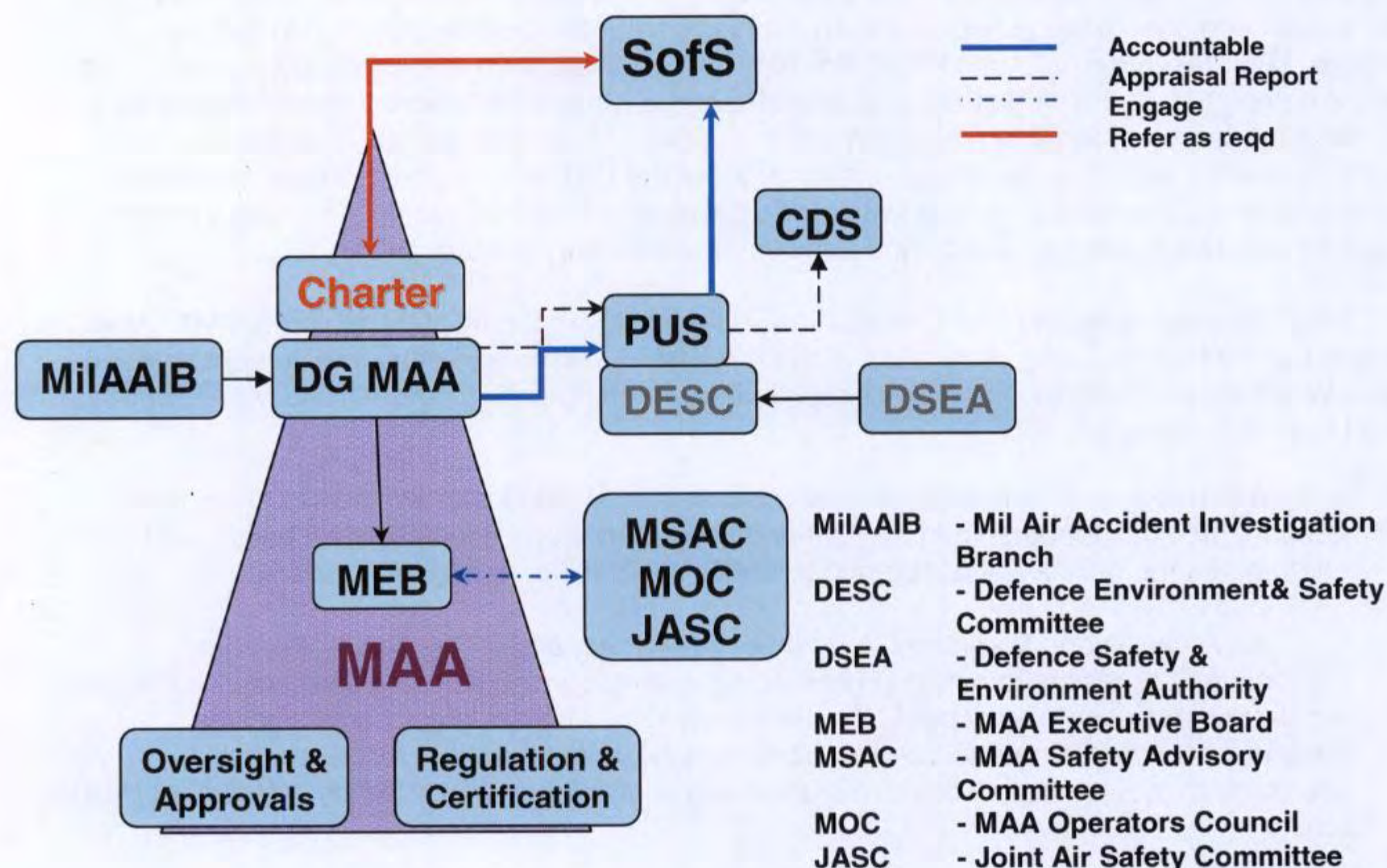


Figure 1 – MAA Regulatory Governance Relationships

5. **Proposal to Merge the MAA with the Defence Safety and Environment Authority (DSEA).** Shortly before his departure earlier in the year, 2nd PUS commissioned the Future of Defence Regulation of Safety and Environment Study (FDRSE) into the prospects for merging the MAA and the recently formed Defence Safety and Environment Authority (DSEA). The primary role of the DSEA is to extend across the Maritime and Land environments the regulatory principles

¹⁵ Expected to be 90% staffed by 01 Oct 12.

and processes for management of RtL articulated in the Nimrod Review. Previously, in his recommendations for Defence Transformation, Lord Levene opined that it appeared “logical in due course that the DSA (*sic*) and Military Aviation Authority (which covers airworthiness (*sic*)) should be merged.”¹⁶ However, the rationale for doing so, in contravention of the Nimrod Review’s strong counter-recommendation that the uniqueness and complexity of the air environment warranted a discrete regulatory authority, was not exposed and nor was any attempt made to define a timescale. Notwithstanding, the FDRSE report¹⁷ recommended the merger of the MAA and the DSEA “on a cost-neutral basis, making best possible use of the funding currently available”¹⁸, with 01 Apr 13 recommended as the date for declaration of the new organization’s Initial Operating Capability. In my response to the Study report¹⁹, I highlighted that: notwithstanding Lord Levene’s observation, a compelling case for merger of the two organizations has not been made; that there is risk that the momentum established thus far in driving in the necessary Air Safety behavioural and cultural change would be de-railed if organizational changes were attempted prematurely; and that there exists potentially high reputational risk for the Dept in appearing to be diluting, or walking back from, the independent Air Safety regulatory construct that the Dept has established recently in response to the clear recommendations of the Nimrod Review. PUS has since directed that further work is undertaken to determine what options there are for early and agreed refinement of the Dept’s Safety and Environment regulatory capability.

Implementing the Nimrod Review Recommendations

MAA External Audit

6. Work to implement those Nimrod Review recommendations that I was responsible for was conducted within 10 workstreams. I declared these workstreams complete formally at the MAA Development Board of 15 Feb 12. As recommended by H-C, the MAA was then subjected to an External Audit to evaluate progress with implementation. This was conducted over the period 23 Apr – 04 May 12 by senior representatives of the Health and Safety Executive, the Civil Aviation Authority, the Netherlands Military Aviation Authority and the US Navy. The MAA External Audit Panel (MEAP) was led by Mr David Snowball of the HSE and conducted interviews and visits across the full spectrum of the DAE including: PUS and the 3 Single Service Chiefs/Senior DHs; ODHs; senior leaders and PT executives in DE&S; operational units at RAF Benson and Coningsby; and a wide range of MAA personnel. Their report²⁰ confirmed that the MAA had driven forward an effective change programme and laid firm foundations upon which to further develop the Air Safety model envisioned by H-C.

7. The MEAP also highlighted a number of downstream risks to achieving the cultural change that H-C identified as necessary:

- a. The Dept stops short of full implementation of the Nimrod Review recommendations.
- b. The MAA does not make best use of available data.
- c. The regulated community falls back into old habits, unless the regulatory pressure for behavioural change persists.
- d. The cultural changes recommended by H-C do not materialize.
- e. The MAA does not address or measure the right things to gauge wider improvements in Air Safety.

¹⁶ Defence Reform, Jun 11, The Stationary Office, Para 12.12.

¹⁷ DG SES-Secretariat e-mail: 04/05/2102 16:18.

¹⁸ The DSEA is not currently fully resourced.

¹⁹ MAA DG/Reg/Def dated 28 May 12.

²⁰ Review of Progress in the Military Aviation Authority (MAA) – Report By The MAA External Audit Panel (MEAP), dated 23 May 12.

8. I intend to capture and address these observations by incorporating them as themes in the MAA future strategy.

Military Regulatory Publications (MRP)

9. **General.** The revised MRP went live on 01 Aug 11 and was generally well received. The MRP is available online on the Defence Intranet, on the external MAA website on the Internet and as a CD image for those of the regulated community without full access to DII. To improve accessibility further, the MAA Internet website has been redesigned to provide a much clearer, user-friendly and intuitive interface, which benefits from an embedded search capability. However, initial approval from the Cabinet Office to host the MAA internet site outside of DII has been withdrawn recently and I am in the process of ascertaining the potential consequences of this for continued visibility and accessibility of MAA regulatory publications and advice across the DAE. Continued liaison with the CAA has been key to ensuring that new and current regulations are not only consistent, but that unique Defence requirements are also recognized. For example, work on Secondary Surveillance Radar-Alone regulation and runway Continuous Friction Monitoring Equipment has benefited from liaison with the CAA, both in terms of National consistency and assurance.

10. **Regulation Improvements.** Specific areas in progress include:

- a. **Air Traffic Management (ATM) Equipment Regulations.** Def Stan 00-972²¹ has been introduced to cover all the functional areas of ATM including software, communications, surveillance, navigation, satellites, meteorological systems, flight data information management, airfield lighting systems, systems assurance and recording and replay systems. The development of this Def Stan is particularly timely as Defence engages with industry through the MARSHALL project to replace aging ATM surveillance and support equipment and the clarity provided has been warmly welcomed by both the PT and the bidding consortia. In parallel with this important work, my staffs are also drafting ATM Equipment Regulations covering ATM Organization Approval, Safety Case, Release into Service Process, End-to-End Assurance and Safety Management. These all constitute new regulations that will fill a recognized and unacceptable gap in our end-to-end assurance framework and my intent is that they are promulgated later this year.
- b. **Aerodrome Operation (AO).** AO regulation and the Defence Airfield Assurance Framework are also being developed currently. The intent is to identify clear responsibilities and accountabilities for aerodrome operators to drive consistency and effective assurance of Defence aerodromes, be they Helicopter Landing Sites or Main Operating Bases.
- c. **Flying Regulation.** Regulations should be reviewed regularly for utility, suitability, clarity and effectiveness and amended where necessary. I have therefore instigated a review of Flying Regulations, with specific emphasis on Contractor Flying and Display Flying.

Military Type Certification

11. The process for Type Certification of Military aircraft was implemented in the MRP by the issue of RI 7/11 on 31 Aug 11. Four significant projects²² have now been subject to the RI, under the tailored arrangements for systems that had passed their Main Gate submission prior to 01 Sep 11. The four projects tested the application of the RI across three DE&S Operating Centres, each of the single Service Release to Service Authorities (RTSAs), and against a variety of procurement routes. The Military Air Systems Certification Process (MACP), derived from CAA and EASA

²¹ Military Air Traffic Services Equipment Safety and Performance Standards.

²² Voyager KC Mk2, Avenger T Mk1, Wildcat AH Mk1 and Chinook Mk4.

procedures, proved to be a robust test of each of the Air Systems' preparedness for release into service use and for compliance with relevant regulation.

12. As all four of the projects were in the later stages of demonstrating compliance with regulation when the RI was published, there was a need for a significant amount of effort reviewing technical detail and reports between the MAA and PTs. The format and content of these reports and exchanges is now well established, albeit they will continue to evolve and improve as subsequent projects are subjected to the process and PTs engage the MAA earlier in the project lifecycle. Apart from the significant contribution to assurance, there is already strong evidence that MAA oversight activity is an important complementary validation of PTs' Release to Service Recommendations to the RTSAs for new and significantly modified air systems. Nevertheless, the boundaries between the two disciplines will bear refining, not least to avoid duplication and I will take this forward in the period ahead.

Pan Defence Aviation Error Management System (DAEMS)

13. The DAEMS Project will generate the specialist expertise needed to implement effective error management systems for all DDHs. It includes training for personnel in all '4 worlds'²³ of Defence aviation, to enable them to understand the concepts involved and to play their part in reporting and managing errors, hazards and near misses. The Project also has embedded Human Factors (HF) and error management training in specialist training courses.

14. Lessons drawn from the earlier Field Development Phase (FDP) of the DAEMS Project, which I outlined in last year's report, have enabled us to design a flexible model for implementation and training at units, supported by tailored training material that will maximize skills transfer. Following senior level engagement with Air Command, the first unit in the DAEMS Project implementation programme was RAF Leuchars, which completed its training courses in Feb 12, and implemented its error management system at the end of Feb 12. The benefits were quickly apparent, with a number of potential hazards and error-provoking conditions highlighted and addressed in the first few weeks. Furthermore, there is evidence of the less tangible cultural benefits taking effect:

*'I firmly believe that there is now a genuine acceptance of EMS [Error Management System] as a Service-wide vehicle to make things better and because it is across the whole station, my guys are more willing to use it. This may well be an intangible aspect of what has been sought to achieve, but it is a far better indication of the effectiveness of the system than just the number of reports raised.'*²⁴

15. So far, the DAEMS Project has provided HF and error management training to the staff of all five ODHs, and implemented error management systems for the DDHs' organizations at six units, with a further three in progress. The implementation programme will continue throughout 2012/13 and into 2014 for the remaining 19 DDH units. The DE&S PTs are being included in the DAEMS Project coincident with the aircraft types that they support.

Continuing Airworthiness Management Organization (CAMO)

16. The lack of clarity with respect to CAMOs' responsibilities²⁵ I raised in last year's assurance report has now been rectified by the publication of the CAMO regulations²⁶ at the end of May 12. This versatile regulation provides scope for ODHs and Chief Air Engineers (CAE) to tailor DDH-

²³ The 4 worlds of Defence Aviation are the aircrew, engineers, air traffic management personnel, and other support elements such as logistics, movements and ground-handling staff.

²⁴ RAF Warrant Officer – RAF Leuchars Mar 12.

²⁵ Type Airworthiness Authorities (TAAs) have a focus on the airworthiness of the design; CAMOs are responsible for managing airworthiness of individual airframes.

²⁶ RA 4900 series.

focussed CAMO arrangements to suit their needs, whilst driving out the benefit of improved continuing airworthiness management. In addition, the CAMO approvals team has also developed the relevant application procedures, forms and guidance documents for DH use. These will be promulgated on the MAA website and in MAA03. The RA 4900 series itself (also referred to as 'MAA Part M' regulation) will be refined further in the future, along with the development of the Airworthiness Review Certificate (ARC).

17. A CAMO Implementation Focus Group, chaired by the FLCs, has also been created to ensure coherency across the Commands and to formulate and promote CAMO good practice in implementing the CAMO regulations. As the CAMOs become established, there will also be a need to underscore the role of the MOD Continuing Airworthiness Manager (CAM) within each CAMO in assuring continuing airworthiness for 'civil oversight' and Military Registered Civil Owned Aircraft. CAMs will need to establish the correct level of control, which may require adjustments to some current thinking, and the MAA will therefore keep that aspect of the new arrangements under review. The MAA CAMO approval team expect there to be up to 40 individual CAMO approvals. Organizations are to have applied for approval by 31 Dec 12, and these will be addressed on a prioritised basis over the following 12-18 months.

Air Safety Training

18. **Defence Air Safety Training.** One Nimrod Review recommendation called for the MAA to be the Authority and sponsor for Air Safety training across Defence. Following a review of training in the last nine months, over 40 courses have been identified that have a bearing on Air Safety. The MAA has developed and overhauled three key courses: the DH Air Safety Course (DHASC), the DH Air Safety Managers Course (DHASMC) and the Flight Safety Officers Course. MAA staffs located in the Defence Academy deliver the DHASC and the DHASMC. This training overhead requires the MAA to retain competent instructors who are SQEP for the task, in order to ensure consistent, current, credible and authoritative training. Whilst it may be considered more normal for there to be separation between Regulator and training deliverer, I am content to continue to support the delivery of these particularly courses, as I believe they are a critical lever by which to effect the required cultural and behavioural change. The majority of the other Air Safety training, largely of a technical nature, will be sponsored by the MAA and will be delivered by Cranfield University at the Defence Academy.

19. **Risk Workshops.** The management of risk is a key element of Air Safety, yet it is influenced by individuals' cultural beliefs and behaviour. My staffs have facilitated a number of Risk Management workshops with the regulated community to satisfy a growing demand for a better understanding of the underlying principles and to help develop a consistent and rational approach. There is an obvious appetite for more workshops and greater understanding in how to implement Risk Management. In order to provide further clarity my staffs have reviewed the Regulatory Articles and are developing a Risk Management booklet in order to provide appropriate guidance to desk officers.

Oversight of Air Safety

Air Safety Assurance Programme

20. Throughout the period, the Oversight programme of audits and assurance visits has continued at pace. All ODHs and the majority of DDHs have now been audited, twice in the cases of No 22 (Trg) Gp and JHC, with specific focus on RtL, ASMSs and Duty Holder responsibilities²⁷. Nineteen of the 28 DE&S PTs were audited against the MRP. In addition, my staff conducted

²⁷ RA 1200, RA 1210 and RA 1020.

high-level assurance visits to the senior executive level of the DE&S, and the DCDS MilCap and Strat Man organizations in MOD Centre.

21. In my inaugural assurance report last year, I highlighted that the MAA was developing a proprietary tool to support our risk-based approach to oversight and that it would be a key part of the centralized risk-based planning and prioritization function in the new organizational model. This tool, the Air Safety Dashboard (ASD), has been developed following consideration of other regulatory and safety industry practices. A pilot version of the ASD was populated manually for the first time in Feb 12, to display nominal assessments of DH, DE&S PTs and industry flying, maintenance and design organizations. Notwithstanding, the assessments drew on audit evidence and were used to identify strengths and weaknesses for prioritized regulatory action.

22. The ASD requires refinement, but its utility has already been proven by the rolled up assessments identifying a Defence aviation company (design, maintenance and flying activities) worthy of closer scrutiny by the Regulator, prompting a suite of regulatory actions to resolve the issues identified. The ASD has also been useful in enabling a wider consolidated view of the status of multiple component organizations against specific areas of regulation. For example, overall, the PTs in the Helicopter Operating Centre in DE&S are highlighted collectively as progressing well in developing their Safety Management Systems (SMS), and in development of a strong and healthy safety culture. Such assessments will be valuable in informing our risk-based approach to oversight and prioritization and will inevitably also assist the Regulator in forming views on how best to tailor responses to requests for assistance and/or interpretation of regulations. I intend to continue to invest in the development of the ASD to improve the fidelity of analysis and the robustness of assessments, as well as the span of the Air Safety community it covers. Additionally, I am liaising with the CAA and other regulators to share our experience with initiatives like the ASD and to help in identifying good practice.

Oversight of Departmental Policy and Resource Allocation

23. As part of the MAA's strategic assurance role, my staffs were able, for the first time, to observe the full spectrum of PR (12) activity and the additional elements included within the 'Three Month Exercise'. We were also able to assist in the drafting of formal safety guidance in the PR12 Stage 3 instructions, which was a notable and very welcome change of approach by stakeholders. In addition, I wrote to DCDS MilCap²⁸, Defence Board (DB) members' offices²⁹ and other stakeholders during the planning round to offer guidance on their respective roles and responsibilities, particularly with respect to the need for credible *prima facie* cases for Air Safety enhancements to be accompanied by a ROM cost benefit analysis, conducted by the DHs. From an Air Safety perspective, I am encouraged both by the substantive progress made in PR12 in maturing the thinking and processes related to the treatment of Air Safety-related financial measures and also in the way in which the requirement to factor their appropriate treatment into the future ABC process is being considered. Overarching all of this is a welcome acknowledgement of the increased engagement by, and of, the Aviation DHs during PR12 and a growing understanding in both the DHs themselves and the DH-facing community of their respective responsibilities, including to each other.

24. Notwithstanding, and although PR12 was the second planning round in which DHs were encouraged to proactively raise significant Air Safety risks requiring policy and/or resource treatment, in some key areas their engagement remained relatively weak in the identification, timing and quality of intervention. Whilst undoubtedly this can be explained in part by unfamiliarity with the revised processes, and perhaps limited resources, earlier, more process and context-aware engagement will be required by the DHs in future if substantive Air Safety risks are to be highlighted credibly and attract appropriate attention. Nonetheless, my staff were able to assist in

²⁸ MAA/Comms/Armed Forces/PR12 dated 07 Dec 11.

²⁹ MAA/DG/02/03/MOD dated 23 Jan 12.

regulating the process, by ensuring appropriate focus on germane issues, whilst at the same time, importantly, acting to highlight speculative bids that lacked solid Air Safety provenance. Our effectiveness in this strategic oversight role will be much enhanced in the future by a richer risk-aware approach as our internal Knowledge Exploitation initiative matures.

25. My personal engagement in the planning process was both informal and formal, via decision making fora such as the Military Capabilities Board, Armed Forces Committee and DB and, allied to our parallel oversight activities, provided me with a useful barometer of the relative strengths and weaknesses of the developing post-H-C, post-Levene system. I offer the following substantive observations, drawn from my note to stakeholders following the conclusion of PR12³⁰:

a. The primary Air Safety issue that required my engagement in PR12 was that of RW Safety Enhancements³¹. The related requirements were highlighted formally to the Centre by the DH chain late in the PR, presenting a not insubstantial programming challenge to DCDS MilCap's area. Moreover, whilst each of the enhancements had a very strong subjective Air Safety baseline, the case for them presented to the Centre lacked sufficient rigour and the funding bid appeared inflated when set against the unvarnished Air Safety requirement(s). The result was that DCDS MilCap, who was at the time faced with an overbearing financial challenge across the programme, elected³² to initially limit the funding available for the subject measures to further Concept and Assessment, accompanied by his encouragement to proceed to implementation of any suitable solutions without delay. Conceptually, there is little to argue against such an approach, especially in a difficult resource environment. However, the risk with it is that, in practice, it could fall back into funding a continuation of process, rather than definitive action to reduce the relevant risks and there were some early signs that this risk might materialize. If Defence is to be able to demonstrate that we are managing our risks to a Tolerable and As Low As Reasonably Practicable (ALARP) position, I would expect that where credible solutions with a clear safety benefit are available now to reduce Air Safety risks³³, these should be taken forward (subject of course to a gross disproportionality assessment) without undue delay. The fact that available 'solutions' do not address all aspects of a capability requirement is not of itself a suitable excuse for delaying doing something that promises a substantive reduction in RtL, even if the reduction is confined to only a portion of the operating spectrum. Clearly, with early 2012 examples of wire strike (Apache), serious airprox (Chinook/Apache) and 'brownout' (Chinook) in mind, it is evident that such associated risks cannot be ignored and prompt action is required. Latterly, though, I have been encouraged by what I perceive is a growing recognition of the need to act more quickly when potential solutions present themselves and to step away from the sclerotic funding and acquisition processes that have prevented timely action in the past. I am engaged, and will remain so, with DCDS MilCap, Comd JHC, D Hls and HoC ALM on the attendant RW issues.

b. There was evidence during PR12 that desk officers, across a wide variety of capability and finance related posts, were not always clear about the important delineation between operating (Air Safety) and operational risk³⁴. In some areas, operational risk was categorized as Air Safety risk and attracted inappropriate 'Air Safety' markers, notable examples being the options for RW fuel system survivability measures³⁵ and the C130J observation cupola³⁶. These measures were aimed at mitigating military operational rather than Air Safety risk, and my team were proactive in emphasizing that they fell outside the MAA's regulatory scope. Undoubtedly, operational risk needs to be either tolerated or treated in its own right, quite

³⁰ MAA DG/01/ABC dated 06 Jun 12 – Future Financial Planning – Air Safety Perspective.

³¹ E12AL305E (Low Visibility Landing), E12AL307E (Aircraft Collision Avoidance System), E12AL308E (Wirestrike Prevention).

³² DCDS (MilCap)/12/04 – Rotary Wing Safety Options in PR12 dated 30 Apr 12.

³³ Such as mid-air collision and wire strike.

³⁴ RA 1020.

³⁵ E12AL254E, E12AL255E, E12AL256E.

³⁶ E12EL023S.

possibly with different interpretations of 'Tolerable and ALARP' depending on context, but that is a role for the operational command chain and is separate to managing (Raise, Train, Sustain) Air Safety risk. The understanding and application of the delineation between operating and operational risk is important, if the MOD is to ensure that limited resources are utilized to best effect.

c. A generic issue that emerged during the planning process was that of extending fleet Out of Service Dates (OSD), primarily in response to delays in the acceptance of new aircraft or the effects of previous planning blight. I am not confident that the full implications of such extensions are visible to decision makers, or even understood. The safe delivery of an air capability depends on a range of inter-related factors across the Defence Lines of Development (DLoD) including, *inter alia*, logistic support, training, manning and the performance of various constituent elements, such as the associated Air Safety Management System. I see little evidence to suggest that a satisfactory end-to-end view of the implications of extending a fleet's OSD has been a feature of such proposals hitherto. Indeed, in some cases, such as VC-10³⁷, the poor performance of PTs at audit and the apparently superficial consideration of other DLoDs sits uncomfortably with proposals to extend the operating life of aged aircraft. The Dept's planning process must be adjusted to facilitate a more thorough and informed examination of such proposals than the evidence suggests is currently the case.

d. As the planning for the completion of operations in Afghanistan gathers pace, the increasing focus on bringing UOR projects into core was certainly evident in PR12. Whilst such capabilities have been previously fielded and operated successfully in very short timeframes, the pan-DLoD complexities of moving these into core as long-term capabilities should not be underestimated.

26. There is no doubt that we have come a long way in addressing Air Safety issues as part of the Dept's core Capability planning process and this is in large part a result of collegiate and constructive endeavour across a broad spectrum of stakeholders. Nevertheless, further refinement of our processes and of the roles and responsibilities of the major actors is required, not least in the context of the current and future challenges posed by implementation of PR12 and conduct of ABC13. My staff and I are established firmly on a vector towards less intrusive involvement in the process where possible, but our ability to do so is consequent on DHs and those supporting them continuing their efforts to understand their risks, potential mitigations and the means by which they could, or should, be secured.

Front Line Command Oversight

27. The key objective of the rolling audit programme during the period was the examination of the implementation of the DHs' ASMSs, including RtL management and the development of DH internal assurance programmes and practices. Interweaving audits of subordinate units with the main HQs, along with other methods of engagement, enabled us to gauge progress and, without exception, this has been positive. ASMSs have gained in maturity and a modern approach to Air Safety has begun to penetrate the culture. This constitutes an encouraging baseline and will allow us over the forthcoming year to broaden our focus beyond compliance alone, to better assess the effectiveness of DHs' ASMSs as part of a more sophisticated risk-based audit and oversight programme.

28. Regulations for Air System Safety Cases (SC) have been in place for a considerable period of time, but their implementation hitherto has been weak generally. This has resulted in a considerable challenge for DHs, who now have unequivocal ownership of their SCs, to resurrect,

³⁷ 20120905-MAA Audit of VC10 Project in STAAR PT-Final Report-U.

reconstitute and reinvigorate them and, in the modern form, has demanded a pan-DLOD approach to the management of RtL throughout the life of a platform. There is still some work to be done to achieve greater maturity in the management of SCs in these terms, but I now require the ODHs to provide explicit and auditable Safety Statements that declare that RtL are at least Tolerable and ALARP for each system that they operate and this initiative is helping drive behaviours in a positive direction.

29. There is evidence of some weakness in end-to-end engineering assurance in some contractor-supported areas where there is geographic separation, small fleets and/or bespoke support solutions, and these will remain under review to ensure that momentum in improvement in these areas is maintained. I expect the new CAMO regulations to elicit greater consistency and discipline in this area towards the end of the year.

30. MAA auditing activity has been broadened to include evidence based risk assessments of a range of Air Traffic Management (ATM) organizations. ATM is DH-facing in nature and significant progress has been achieved through support and mentoring of ODHs to assist them in identifying their subordinate DH-facing organizations and to facilitate a greater understanding of collective responsibilities. Future engagement is planned with PJHQ and JFC to identify the span of oversight and assurance activity required to support Theatre and Joint Operating Base airfields. MAA oversight was also put in place to support Op OLYMPIC activity through 3rd party oversight and assurance of the Olympics ATM service (controllers and ATM equipment).

DE&S Oversight

31. At the end of Jun 12, the initial 18-month cycle of audits of DE&S PTs was completed. Therefore, since my last report a further 19 PTs have been audited. In view of the continuing challenges faced by DE&S during the period, including financial and programme pressures and restrictions on recruiting, it is perhaps no surprise to find that many of the observations made in my last report continue to feature in more recent audits. Among the common themes arising from this first cycle of audits are:

- a. **The extended period of time that Type Airworthiness Authorities (TAAs) have been in post without being issued a Letter of Airworthiness Authority (LOAA) as a result of shortfalls in their qualifications and/or experience.** Other than by exception, TAAs should be SQEP on appointment rather than them 'growing' the necessary competence once in post. A related issue is the poor management of safety and airworthiness delegations within PTs. Progress here is inconsistent, although examples of good practice have been noted, such as a formalized process used by the Lightning II PT to link their SQEP needs to project milestones and progress.
- b. **Weaknesses in managing hazard logs and their effective integration with ODHs' Air Safety Risk Registers.** In many cases, the evidence from in-service occurrences and failure data is not being used to inform and update hazard logs and hazards are also simply being transferred into Risk Registers without any accompanying analysis to ensure that they have been treated consistently with other risks. However, from recent oversight of relationships between ODHs and their supporting PTs, there is evidence to suggest that this situation is improving with a greater understanding of risk management.
- c. **The absence of detailed Airworthiness Strategies that have been endorsed by Operating Centre Directors.** These strategies are a regulatory requirement and are needed to identify and develop project-specific airworthiness and safety-related procedures, training and assurance. Drawing on the four pillars of airworthiness³⁸, they should direct:

³⁸ The four pillars are the use of: competent people, recognised standards, independent assessment and effective safety management systems.

how PTs ensure that the capital and resource needs are sufficient to produce an airworthy design; how to carry out necessary safety management activities; and how to assure the effectiveness of the PT's SMS by means of internal and external audits and closure of corrective actions. Their absence casts doubt on the PT's ability to manage airworthiness effectively. The MAA is working with those PTs that lack adequate airworthiness strategies to ensure that this deficiency is corrected quickly.

d. **Concerns over the robustness of PTs' SMS and their compliance with them, including weaknesses in the effectiveness of internal audit activities, which are often constrained by the availability of resources.** We are encouraging PTs to make best use of the capabilities available to them, including the expertise of their Independent Safety Auditors, and making better and more innovative use of random auditing and sampling techniques to provide themselves with assurance of their safety management activities.

e. **Poor maintenance and safeguarding of electronic safety records.** Now that electronic records provide the primary, and in many cases only, audit trail of safety and airworthiness management activity, it is important that they are properly managed and cannot be deleted or amended, or accessed inadvertently, or by unauthorized staff.

32. A more disappointing common factor highlighted during this audit cycle is the slow progress that some PTs are making with addressing the findings of MAA audits, and in some cases with outstanding corrective actions from previous audits. In many cases this can be linked with resource constraints, but it is unsatisfactory nevertheless. My staffs are monitoring closely the PTs concerned and taking regular action to hasten compliance and encourage PTs to agree realistic recovery plans. Notwithstanding, there is a sanctions process in place that I may be forced to resort to if satisfactory progress is not obtained. I have written recently to CoM(Air)³⁹ highlighting my concerns in these areas and seeking his support in addressing them via the DE&S Airworthiness Team's (DAT) activities.

New Platform Certification

33. Following the issue of the Certification RI⁴⁰, my staffs have provided significant support to DE&S in interpreting the regulations. Since Jan 12, activity has moved to the assessment of DE&S compliance evidence and the issue of MAA Type Certification Reports (TCR) and Release to Service Recommendations (RTSR) assurance reports. A summary of the four certification projects subjected to this process in the reporting period is as follows:

a. **Voyager KC Mk2.** It is fair to say that this was the most challenging of the four certification projects undertaken during the period. My staff had engaged in significant dialogue over the preceding 18 months with the PT, and other DE&S staffs, to help ensure the basic premise of the Military Air Systems Certification Process (MACP) was well understood. Notwithstanding, it became evident during the process that the PT were facing challenges in interpreting the requirements being placed on them and their Type Certification Exposition (TCE) demonstrated some significant gaps in the airworthiness evidence base. These included design and/or maintenance organizations' approvals that were unclear or missing, lack of clarity and traceability to the Type Certification Basis' (TCB) underpinning standards and gaps in the demonstration of equivalence to UK military design standards. Furthermore, the initial RTSR submission did not reflect the actual aircraft configuration to be flown and significant issues with the Equipment Safety Case regarding both its content and the arrangements for independent assessment were also apparent⁴¹. Rectifying this position took considerable effort from all parties involved before the RTSR was sufficiently mature to

³⁹ 20120711-CoM(Air) FFP of PTs-DG MAA-U dated 01 Aug 12.

⁴⁰ MAA/RI/07/11 DG dated 31 Aug 11.

⁴¹ TCR 20120216-VOYAGER_RTSR-DTECH-U dated 16 Feb 12.

allow ACAS to release the aircraft into the Air Transport and Aeromed 3 roles. There remains a considerable amount of work to be done by the PT to address further, albeit less pressing, observations made during the MAA assurance activity, in order to give this key project a stable airworthiness baseline for the long-term, but renewed internal oversight and the appointment of a more senior TAA for the project are positive recent developments and many valuable lessons were identified during this first application of the MACP.

b. **Avenger T Mk1.** The Avenger project has been subject to significant change since its conception, and in particular a fundamental change in procurement strategy that has led to the aircraft being owned by the MOD rather than industry. There had been a previous abortive attempt to achieve RTS in 2011, prior to the introduction of specific certification regulation, as a result of which the PT had done much to put Avenger T Mk1 onto a firm foundation for entry into service. The aircraft is based on an extant civil design with additional equipment that had also been civil certified, fitted for its military training role. Therefore, articulating the TCB should have been a straightforward task, but in reality it took considerable forensic effort from my staff to gain a clear understanding. The Independent Technical Evaluator engaged by the PT also highlighted areas of non-compliance with UK military design standards in some areas, with which my staff concurred. The PT provided a comprehensive RTSR submission together with an adequate Equipment Safety Case, but the RTSR audit activity occasioned a large number of observations on the RTS document, including aircraft manoeuvre limits and cleared life which did not align with the underpinning evidence. Nevertheless, the Royal Navy RTSA elected to release the aircraft to limited service before my staff's RTSR audit activity was completed. Whilst not explicitly proscribed in regulation currently, this was a highly unusual decision, albeit the very limited release mitigated most of the safety-related issues raised in the RTSR audit report subsequently. Nonetheless, I would caution against such a precipitous approach in future.

c. **Wildcat AH Mk1.** This project proved to be relatively straightforward from a certification perspective. It was clear that the PT had assimilated rapidly some key lessons from the certification of earlier projects under the MACP. The principal observation from the MAA's TCR was that the PT had failed to articulate a clear TCB, a shortcoming that was subsequently corrected. Moreover, the relevant DE&S Operating Centre Director (OCD) (D Hels) had previously put in place a rigorous review of the compliance of the design against UK Defence Standards, an example of best practice that should be adopted more widely across DE&S. The initial RTSR submission was also for a conservative release, largely confined to allowing the initial operational capability required at this stage of the programme. It was accompanied by a well constructed Equipment Safety Case, and the quality of the submission allowed my staff to give a prompt and positive audit report to the Army RTSA.

d. **Chinook Mk4.** Of note, this project delivered a major upgrade to an existing system, rather than a new aircraft type. This proved to be a valuable test of the utility of the MACP for projects of this nature and will allow my staff to provide appropriate guidance to PTs managing future aircraft upgrade projects. Again, articulating the TCB proved to be more of a challenge for the PT than we had expected. However, as with Wildcat, the OCD had carried out a very comprehensive benchmarking exercise of the project against UK Defence Standards for aircraft design. The PT provided a comprehensive RTSR submission, which allowed the MAA audit activity to be conducted promptly and, significantly, reduced the need to seek further information and clarification from the PT.

34. The MAA Certification Division is now fully engaged with DE&S on all of the key air system projects that will enter service in the next few years. These include: Watchkeeper, Airseeker, BAe 146QC, Merlin Mk2, Wildcat HMA variant, Puma Mk2, Lightning II, A400M, Merlin Mk4 and Chinook Mk6. Whilst certification of this suite of projects will inevitably present some challenges, I consider that Airseeker – as a result of the archaic heritage of the basic design; Lightning II – as a

result of its complex design and (S26) ; A400M – as a result of a complex TCB and ongoing late design changes; and Watchkeeper - both because it is a Remotely Piloted Air System (RPAS) and because it is being procured from a non-traditional air vehicle prime contractor, have the potential to be particularly challenging. However, I am encouraged that staffs in the MAA, DE&S and the RTSAs are learning rapidly from the experience of the 'pathfinder' projects above and optimistic that we are converging on a slicker MACP as familiarity with the process increases. Finally, it is worthy of note that my staff are already engaged with the Medium Altitude Long Endurance (MALE) RPAS project, which may well be the first where the new MACP in its entirety is applied from the start of a project.

Industry Engineering Oversight

35. The approval of Maintenance Approved Organization Scheme (MAOS) and Design Approved Organization Scheme (DAOS) organizations is a core output of the MAA. During the reporting period a significant number of audits were completed on Defence industry engineering organizations involved in the design, maintenance and support to the operation of military air systems.

36. There are currently 33 MAOS approved organizations with a further five undergoing initial approval. The MAA, supported by Aviation Compliance Limited (ACL), undertook 51 MAOS audits⁴² over the period. The surveillance programme identified four general non-compliance themes: tool control procedures; personnel competencies; the control and use of approved data; and internal audit processes. These have been communicated across the MAOS community and the scope of MAA audits has been adjusted to prioritize these key areas. In the coming year, as well as regular and ongoing oversight activity, my staff will also be expanding the MAOS regulation to cover the maintenance of critical components and contractor forward maintenance activities.

37. There are currently 66 DAOS approved organizations with a further 26 in the process of undergoing approval, 32 organizations are awaiting initial approval, and 12 design organizations are yet to contact the MAA for initial assessment. Assisted by CAA International under contract, 57 DAOS audits were completed⁴³. Common themes of non-compliances during the auditing activities included: poor records management; failure to adhere to internal procedures and high level policy; lack of justification statements against approval criteria; and slow response in actioning hazard log issues.

38. There also appears to be reluctance for DAOS applicants to provide timely and robust expositions to the MAA, which is not helped by the fact that, contrary to regulations, DE&S PTs have placed contracts with industry prior to the granting of DAOS approval. The MAOS and DAOS organizations are DH-facing and their fundamental roles in the effective management of RtL should not be underestimated. The frequent deficiencies highlighted during audits remain a concern, and I intend to work with DE&S to apply appropriate leverage on industry to address and improve.

Oversight of Contractor Flying Organizations

39. A wide range of contractor organizations operate aircraft registered on the UK Military Register for the purposes of trials and experimentation, design, development and production of air systems, training provision, and also to enable the development and production of air systems destined for international customers and the training of foreign crews. Clearly, there is a requirement for effective regulation and oversight of such activities, not least to ensure that unbounded Air Safety risks are not communicated to SofS and that his responsibility for ensuring the safety of the UK public is not undermined. Under the new MAA Regulatory construct, the MAA

⁴² 44 continuation surveillance audits, 2 initial surveillance audits and 5 were required due to variation in the contractors' circumstances.

⁴³ 44 surveillance audits were completed by CAAi, 13 were undertaken by the MAA (8 initial and 5 surveillance).

is now responsible for the auditing of contractor flying, a role hitherto conducted by a small lodger directorate in DE&S. The necessary transfer of regulatory authority and alignment of contractor flying regulations with the mainstream MRP has not been without its challenges, largely because of the need to excise anomalies that were allowed to build up over a prolonged period of time through unnecessary and unhelpful divergences in multiple sets of regulations and a lack of effective oversight.

40. As part of the necessary 're-baselining' activity in this area during the period, it has been made clear to contractors that the Regulator will not be responsible for providing 2rd party ensurance supervision of their flying activities and the so-called 'HQ' delivery function that the Dept had found itself undertaking. Contractors will now be required to develop their own ASMSs, as required by the MRP, with clear accountability for Air Safety management resting at the appropriately empowered Accountable Manager level within their companies, backed up by suitable internal assurance processes.⁴⁴ Coincidentally, the CAA is also introducing a requirement for use of a defined ASMS for civil aircraft operators. This provides a valuable alignment opportunity, as a significant number of the companies the MAA regulates also operate civil registered aircraft under CAA provision. The MAA has therefore encouraged contractors to focus, where possible, on identifying military ASMS deltas to their civil versions, to avoid duplication of effort. The transition to the new regulations will undoubtedly pose some challenges for contractors, particularly for smaller companies who will require time and guidance to comply fully. Notwithstanding, the response from the main industry players has been very positive thus far and I have directed my staff to work with the regulated entities to assist in the transition and, where appropriate, to offer templates and tailored assistance. All new contracts are now required to reference the MRP rather than the legacy regulation⁴⁵ and their related flying activities will be audited accordingly.

Aviation Service Inquiries

41. The MilAAIB is now fully established and collocated alongside the Department for Transport Accidents Investigation Branch in Farnborough. During the reporting period, personnel from the MilAAIB deployed to 15 serious occurrences; in 10 of these instances, I elected to convene statutory SIs. Non-Statutory Inquiries were conducted for the remaining five occurrences, convened at either ODH or DDH level, but supported by the MilAAIB.

42. Three SIs concluded during the period and have been published:

- a. **Tornado GR Mk4 - 27 Jan 11.** This SI report⁴⁶ was published in May 12. The SI Panel found that the cause of the accident was a mechanical failure in the right engine, caused by either Foreign Object Damage (FOD) or fatigue, leading to an uncontrollable fire, which ultimately resulted in the loss of aircraft control and ejection by the crew. Recommendations to prevent recurrence and improve Air Safety cover many areas, including: additional fire protection for critical components; investigation of further engine modifications to mitigate the risk of fire breakout; and survivability requirements of the type's flexible hydraulic hoses. Additionally, I have endorsed recommendations that cover an investigation into improved fire detection and suppression and reviews of teaching and training of aircrew emergency drills.

⁴⁴ To be enacted in new regulation in Oct 12, consistent with civil regulation in this area.

⁴⁵ AvP67 – MOD Flying Orders to Contractors.

⁴⁶ <http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/BoardsOfInquiry/ServiceInquiryInvestigatingTheAccidentToTornadoGr4Zg792On27Jan11.htm>

b. **Horse Rider Accidents.** In the latter half of 2011, I convened two separate SIs to investigate the circumstances surrounding serious injuries suffered by horse riders who were thrown from their horses after being startled by military aircraft.

(1) On 25 Aug 11, while on a planned low level sortie as part of operational flying training, a crew member in the lead aircraft of a Chinook HC Mk2 formation observed a rider being thrown from a horse. The aircraft climbed to height and returned to the scene to coordinate assistance before returning to base. The crew were found to be acting within their authorized sortie profile and, although authorized to 50ft during the relevant portion of their route, the aircraft was found to have over flown at a height of 120ft two riders obscured by hedgerows on a country lane. **(S40)**

(2) On 26 Sep 11, while receiving instruction at a riding centre near Peebles in the Scottish Borders, a rider was thrown from her horse when it was startled by a Tornado GR Mk4. Analysis of onboard data recorders showed the aircraft to have been at 900ft above and 0.8 nm laterally displaced from the riding school, which had no specific avoidance criteria. The crew, who were found to have been operating within their authorized sortie profile, landed unaware of the incident. **(S40)**

Both incidents illustrated the chance nature of such occurrences during low flying training in the UK. The significant recommendations arising from these SIs⁴⁷ target: improved engagement with the equestrian community; a review of avoidance criteria within the low flying system; a review of the amount of low flying training required in the UK; and determining the acceptable level of risk associated with that training. ACAS, as the airspace policy lead for the Dept, has initiated action to implement these recommendations. Nevertheless, not least given the prevalence of equestrian activity across the UK, the risk of incidents arising from the proximity of low flying aircraft and horse riders is likely to remain.

43. The remainder of the SIs I have convened thus far are yet to be published, either because enquiries are continuing, or because Coronial proceedings are yet to take place. In the latter case, the relevant SI Reports are made available to HM Coroners, but withheld from publication until their Inquests have concluded. Sadly, two of the SIs convened by me during the reporting period were related to fatal air accidents. These involved RAFAT Hawk T Mk1s on 20 Aug 11 and 08 Nov 11, in which Flt Lts Egging (XX179) and Cunningham (XX177), respectively, were killed. The XX179 SI concluded within 6 months and, as the primary aim of an SI is to prevent recurrence, in advance of the Inquest and in agreement with HM Coroner, I disseminated an abbreviated report and the recommendations internally, on a restricted basis, to the DH chain and to the Next of Kin. The full SI report has been made available to the Coroner for Bournemouth, Poole & East Dorset, and will be published on completion of his Inquest. Primacy for the investigation into the XX177 occurrence remains with the Lincolnshire Constabulary, but an excellent working relationship has enabled the SI Panel to undertake their enquiries largely unhindered, with a number of safety recommendations already having been disseminated internally. The Coroner's Inquest into the accident involving Chinook HC Mk2 ZA708 in Aug 10, which I reported on last year, is yet to conclude.

44. The other 6 SIs cover a range of single aircraft occurrences: Puma HC Mk1 on 05 Jul 11; Hermes 450 on 02 Oct 11; Lynx AH Mk7 on 01 Dec 11; Chinook HC Mk2 on 07 Apr 12; and Squirrel HT Mk1 on 20 Apr 12. The final SI I convened during this reporting period investigated the

⁴⁷<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/BoardsOfInquiry/ServiceInquiryReportIntoIncidentInvolvingChinookZh898On25Aug11.htm> & <http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/BoardsOfInquiry/ServiceInquiryReportIntoIncidentInvolvingTornadoZa557On26Sep11.htm>

contamination of aircraft fuel in the Falkland Islands during the period Jun-Aug 11. This latter SI is a good example of the MAA extending its purview across DH-facing functions, to good effect, with a series of significant findings and recommendations emerging relating to the integrity of the Dept's supply chain for air commodities. Publication of the Puma HC Mk1, Hermes 450 and fuel contamination SI Reports is imminent and all of the reports for the above SIs will be published externally in due course.

45. One of the clear advantages of a sole, independent Convening Authority for all Defence aviation SIs is the ability, for the first time, to take a coherent view across fleets, roles and Services and to identify pan-environment themes that may otherwise have been undetected when the process was more fragmented. On the evidence of the SI reports generated thus far from Inquiries I have convened, I have written to Senior Duty Holders to draw their attention to some important themes that have become apparent, as follows:

- a. **Supervision.** Repeatedly, shortcomings in individuals' performances have been exposed when they have been permitted, or in some cases directed, to engage in activities for which they are unqualified, not current or inadequately prepared. Often, this is accompanied by apparent laxity in local supervisory arrangements and, in some cases, has even included supervisors/authorisers who themselves are not qualified or current for the roles they are undertaking. Currencies, or the lack thereof, have featured surprisingly frequently and although some anomalies can be explained by hitherto unknown flaws in electronic and automated databases, they nevertheless all point at some middle and senior supervisors failing to meet their formal responsibilities in assuring the accuracy of training records and logs. At best, this is lax 'book-keeping', but a more insidious risk is that judgements may be made on the competency of personnel for tasks based on incomplete or inaccurate evidence.
- b. **Standards.** In multiple cases, the execution of supposedly standardized actions or manoeuvres has diverged from the norm. Operational pressures or 'lapses' cannot explain all such divergences, as some have been unnecessary and intentional, albeit without the expectation of causing harm. The absence of relevant SOPs, or a failure to adhere to established SOPs, is also noteworthy. Which is not to seek to encourage a slavish adherence to procedures or techniques that are no longer appropriate for the contemporary operating environment, but divergences should be subject to sensible evaluation and governance.
- c. **Training.** Closely linked with both of the foregoing categories, the quality, frequency and relevance of training, of both air and ground personnel, is a common theme. There have been instances of qualifications and authorizations being granted on the basis of somewhat less than robust training and, also, evidence of core skills not being as proficient as might be expected, or assumed.
- d. **Risk Management.** Of the four categories I will highlight, risk management is perhaps the one where expectations can more legitimately be limited, at this stage. The application of formal risk management processes by DHs across their aviation activity spectra is a relatively recent innovation. There is very strong evidence of the relevant processes now being established and employed, particularly at the more senior supervisory levels, but obvious areas of weakness are the depth of analysis underpinning risk categorizations, the breadth of view across the relevant risk landscape and the rigour with which proposed mitigations are evaluated to ensure that a realistic assessment of any residual risk is achieved. These latter activities tend to be undertaken at lower staff levels and it is apparent that there is some way to go before reliable and consistent analysis at this level can be assumed. ODHs and DDHs therefore have a critical role to play here in actively assuring

their own staffs' work, to ensure that their risk registers offer a sound basis for sensible risk judgements.

It is important to state at this stage that I do not believe that the above trends I have perceived in the operating domain are the result of corporate negligence, systemically inadequate leadership, or a wilful lack of professionalism amongst individuals. I am sure that our operators and maintainers are just as good and as capable as they have ever been, and probably more so. However, I sense that a very prolonged period operating in the mutually reinforcing testing environments of enduring current operations and the resource pressures of recent years has necessitated prioritization and the acceptance of risk and that, inevitably, there is a bill attached to such an approach. I suggest that the problem before us is to determine what the real impact, or legacy, of that prioritization is, or will be and, where necessary and possible, to begin to rebalance. My staff and I will work closely with the DHs to facilitate this as expeditiously as practical.

Strategic Air Safety Risks

46. **Strategic Air Safety Risks.** Air Safety Risk Management Regulation has continued to be reinforced across the DH community through MAA-led training and audit activity. In general, Corrective Action Requirements (CARs) identified over the last year in DH audits have moved from issues of non-compliance within ASMS regulations to Risk Management processes that are not yet fully implemented and/or immature. In addition, ongoing assurance activity and surveillance of the MOD's planning and programming processes has exposed and reinforced a number of specific strategic Air Safety operating risks, some of which were identified in last year's assurance report and remain of concern. On the evidence available, I judge the most significant strategic Air Safety risks currently to be:

a. **SQEP Shortfalls.** It is apparent that the Dept has only recently started to come to grips with understanding its SQEP requirement, particularly in the airworthiness technical domain, an issue that I understand will be examined shortly by the DB. Whilst the issue extends across the DAE, it is most visible in the DE&S, a fact recognised clearly by CDM. I have now written twice to CoM(Air) to highlight the prevalence and recurrence of Major Non-Compliances identified during MAA assurance audits of PTs, whose root causes can be safely considered to include SQEP shortfalls, exacerbated by the PTs not being able to articulate what their SQEP requirements are. Moreover, the internal DAT has taken some time to come up to strength and, accordingly, the breadth and depth of their internal assurance activities is yet to mature. In response to the MAA's high-level audit⁴⁸ of the DE&S during the period, CDM initiated a prompt and comprehensive programme of improvements, which included a critical review of the requirement for Safety Critical and Safety Enabling posts across the DE&S. Subsequently, CDM has directed that recruitment controls are lifted and the external recruitment of 60 SQEP to fill identified critical gaps within the Air Domain has been approved⁴⁹. Moreover, all but three of the 20 posts within the DAT are now filled and recruitment for the remainder is underway. Taken together, this is very positive news, although I suggest that the evidence from audits points to there being some way to go before there can be confidence that PT safety and airworthiness activity is where we would wish it to be. Moreover, inevitably, the associated challenge includes a component that is the legacy of the period during which the SQEP shortfalls have endured. All the more reason, therefore, to ensure that the DAT's effectiveness is prioritized and that its internal assurance activities are focussed appropriately.

b. **Mid-Air Collision (MAC).** By the very nature of operating in the air environment, the risk of MAC and the reputational and societal implications following any accident will remain a key concern. Since 05 Apr 12, the MAA has assumed joint ownership of the UK Air

⁴⁸ 20120213-MAA High-Level Audit DE&S Exec Summary-RM dated 13 Feb 12.

⁴⁹ CDM/12-04-02 dated 07 Aug 12.

Proximity Hazards (Airprox) Board (UKAB) with the CAA, which will assist in more streamlined communication between the UKAB and the Dept's five ODHs. The most recent UKAB data indicates an increase in the number of Airprox reports against five-year averages⁵⁰, although no specific trends have been identified. MAC risk is reflected in all ODH Risk Registers and mitigations are in place. Notwithstanding, there are likely to be technical enhancements, such as CWS, that will assist in reducing this risk further. An analysis of Airprox reports involving Grob Tutor air experience operations shows a significant improvement linked to the introduction of a CWS as part of a wider mitigation strategy in the wake of two fatal accidents in recent years. A further area of concern is the rate of reported near-misses in Op HERRICK. ASIMS⁵¹ data shows that of the 62 occurrences reported theatre wide during the period, 50 were classified as Airprox and 13 of those related to RPAS. Nevertheless, it may be expected that in these cases the boundary between Air Safety operating risk and mission operational risk is likely to be straddled. The MAA's forthcoming formal assurance visit to PJHQ will offer the opportunity to explore how that boundary is defined and what procedures are being employed by the operational command chain to manage risks around and across it.

c. **Low Visibility Landing (LVL).** In my last report, I highlighted 'brownout' as a Strategic Air Safety Risk, but would now broaden this into the wider classification of LVL. The findings of the Chinook HC Mk2 ZA708 (Aug 10) SI, the ongoing SI into the Chinook accident in Yuma, Az on 07 Apr 12, during which the crew were practising brownout landing techniques, and the continuing landing damage occurrences in Op HERRICK provide ample reminders of the challenging nature of this type of activity. Moreover, the risk is not confined to the current Afghan theatre. As UK forces transition from current operations to training for and deploying on contingency operations, LVL is likely to remain a significant Air Safety risk, including that associated with whiteout during Arctic training with aircrew now unfamiliar and inexperienced in that environment. As part of the PR12 RW safety enhancement funding referred to above, further concept and assessment of potential LVL aids are to be undertaken. Here, the potential solutions themselves and the problem space they occupy are more complex. However, the principle still applies that suitable emphasis should be placed on delivering benefits as early as practical, even if more comprehensive solutions may be available downstream. For example, currently, passive 3D conformal symbology technology is relatively mature and appears to offer clear benefits⁵², as do some advanced digital flight control systems. Whilst the integration of active sensors in an obstacle avoidance system would provide an even more robust mitigation to multiple risks, the opportunity to take advantage of nearer-term improvements must not be overlooked, unless there is a demonstrably overwhelming case against in terms of time, cost or trouble, if ALARP claims for LVL-related Air Safety risks are to be maintained.

d. **Operations in the Low Level Environment.** Military flying operations, including training, necessarily continue to involve significant time in the low level environment, which generically increases risk. Obstacles pose an obvious threat with regard to RtL and there is some concern over a perceived increasing prevalence of unmarked vertical obstructions in training areas, such as whip aerials, which I intend to scrutinize with the appropriate authorities in the coming period. Moreover, the proximity of such operations to other users and the general public also has the potential to attract societal concern and reputational risk. Two particular risks associated with such activity merit highlighting:

- (1) **Collision with Wires.** Helicopter collision with wires remains an enduring risk. An Apache wirestrike on 21 Feb 12 demonstrated the value of wirecutters in

⁵⁰ UKAB Report Jul 10 – Dec 10. Trend analysis is complicated by variations in UK activity levels and the need to include Airprox data from the operational Theatres.

⁵¹ Air Safety Information Management System.

⁵² DSTL/CR54797 V1.1 dated 18 April 2011.

ameliorating such a risk (having cut through a 3/8 inch wire), whilst the potential consequences of not having such safety features was highlighted by the recently published Board of Inquiry report and Coroner's Inquest into the Army Squirrel helicopter fatal accident of 2008. More recently, Eurocopter's chief test pilot and five others were killed in a wirestrike accident during a test flight in France. As alluded to above, obstacle/wire detection systems are not yet a viable solution, but commercially available wirecutter solutions that cover almost the entire MOD helicopter inventory continue to offer the Dept realistic potential options for reducing RtL. Therefore, in the absence of a defined acquisition and embodiment programme, or an unequivocal case against fitment in terms of time, cost or trouble, it is difficult to see how a continuing claim of ALARP for RW operations could be sustained. At the moment, the ODHs are carrying this risk, temporally bounded by the acknowledgement of the requirement in PR12 and its inclusion in DCDS MilCap's RW safety enhancements portfolio approach discussed above. However, unless substantive progress towards fleets' fitment, or compelling cases against, is demonstrated soon, I believe this position will rapidly become untenable.

(2) **Horse Rider Occurrences.** In the timeframe of this Report there have been a total of eleven reported incidents involving low flying military aircraft and horse riders. As a result of the Chinook and Tornado SI Reports discussed above, aircraft operating authorities have already put in place measures that can be claimed to reduce the associated risks to ALARP, with further measures being evaluated by ACAS. However, the extant requirement for military low flying training and the prevalence of horses and riders inevitably means that the two will come into, sometimes close, proximity. The British Horse Society reports that 3.5 million people (6% of the GB population) have ridden a horse at least once in the past 12 months, with an estimated GB horse population, including both private and professional ownership, of a little less than one million horses⁵³. Therefore, whilst awareness by both aircrew and riders, conspicuity measures, aircrew and rider training, and sensible planning will continue to help mitigate the associated risks, they cannot remove them completely, not least when the behaviour of animals cannot be predicted.

Other MAA Outputs

47. **Air Safety Information Management System.** ASIMS is a web-based application used by the Defence Aviation community to collate occurrence data relating to Air Safety. ASIMS v2.0 was released in Sep last year and provides a platform to enable pan-Defence communication and visibility of occurrence issues, the ability to record and track safety recommendations to completion and to use data within the system for trend analysis. The ASIMS training audience numbers some 8000 personnel and there are currently 153,000 reports stored in the database, with numbers increasing daily. Reporting traffic has increased from an average of 380 reports per month in 2009 to 876 per month in 2012. This is likely to be due to a concerted effort to raise the profile of the system during Flight Safety courses and the improved functionality provided by ASIMS v2.0. Analysis of ASIMS data is increasingly providing better indicators and warnings to help focus and prioritize MAA assurance activities and regulatory improvements. ASIMS has also been optimized to allow full integration with DAEMS. This is intended to support a more structured approach to reporting human factor issues, which is a key activity I intend to promote in the year ahead as DAEMS becomes established.

48. **International Harmonization.** Under the auspices of the European Defence Agency and on behalf of the UK, the MAA is continuing to lead on the harmonization of airworthiness arrangements across Europe. Twenty participating Member States have already agreed to the

⁵³ http://www.bhs.org.uk/About_Us/Equestrian_Statistics.aspx.

principles by signing the Basic Framework Document. This enshrines the intent to harmonize airworthiness arrangements in order to achieve mutual recognition between national military airworthiness authorities. The first deliverable is European Military Airworthiness Requirement (EMAR) 145, which has now been agreed across the participating Member States. The UK is already compliant with this requirement for contractor maintenance organizations through the RA 4800 series in the MRP. This is now being used as the basis to achieve mutual recognition with the French in-service airworthiness authority, the Direction de la Sécurité Aéronautique d'Etat, to provide joined up and efficient regulation for the in-service support arrangements for A400M. Likewise, NATO and the 5-Eyes community have similar aspirations to achieve mutual recognition across airworthiness authorities and seek to leverage the work already coming together in the European arena. I have also recently held a successful initial quadrilateral meeting with three other European Military Aviation Authorities⁵⁴ to promote and share good practice. This proved to be a fruitful exchange, with a strong commitment from all present to continue to identify opportunities for cooperation for mutual benefit.

Assurance Statement

49. A year further on, the extensive body of evidence collated over the period provides a much firmer basis on which to offer SofS my evaluation of the effectiveness of the internal control of Air Safety across the DAE. My assessment remains one of **Limited Assurance**⁵⁵, with significant weaknesses identified in the following areas:

- a. SQEP shortfalls, particularly in the DE&S.
- b. Lack of maturity of some ASMSs.
- c. Fragility of Risk Management activity and competency.
- d. Organizational and process risk during Defence Transformation.
- e. Residual Air Safety cultural immaturity.

Given the good progress achieved to date across a broad spectrum of Air Safety activities and with a continuing concerted effort, I believe that my original estimate of the time to achieve **Substantial Assurance** is still achievable, ie, in a further 12 months from now. However, achieving this objective is critically dependent on addressing the final areas of current weakness highlighted above, not least via unequivocal senior leadership that demonstrably places the effective management of RtL in its rightful place alongside the Dept's other high priority outputs.

Way Ahead

50. My main priorities for the forthcoming period are:

- a. Maintaining the momentum of behavioural and cultural change stimulated across the DAE by implementation of the Nimrod Review recommendations.
- b. Developing and refining the Defence regulatory framework and Regulator oversight, in order to evoke more efficient, timely and higher quality outcomes.

⁵⁴ France, Netherlands and Sweden.

⁵⁵ System of internal control operating effectively, except for some areas where significant weaknesses have been identified – DIA Assurance Classifications (Oct 10).

- c. Establishing better understanding in DH-facing organizations of their Air Safety responsibilities and how best to discharge them.
- d. Establishing more robust Air Safety governance structures and clear accountabilities in contractor flying organizations subject to the MRP.
- e. Achieving intelligent exploitation of available data and information to develop knowledge and enable full transition to a risk-based approach and 'beyond compliance' Air Safety assurance model.
- f. Consolidating the improvements and mitigating the risks identified in the 2012 MAA External Audit.
- g. Deepening MAA engagement and thought leadership in the fields of international airworthiness authorities' harmonization and collaboration.

DG MAA