



AIR FORCE EXPERIMENT HEADWAY – SOME INSIGHTS

The first formal Air Force experiment, Headway 03/1, took place over the period May–July 2003.

The experiment was designed as a preliminary investigation into the characteristics required of a future Australian Defence Force strike capability, with particular emphasis on assessing whether the planned Air Force of 2020 is likely to possess the necessary attributes to mount an effective strike campaign.

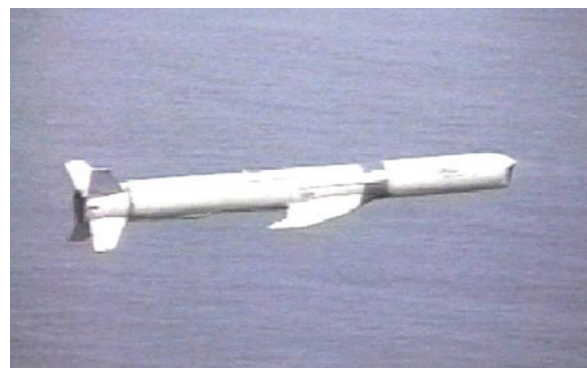
The experiment comprised a series of workshops aimed at identifying the more important characteristics for an ADF strike capability. These were then tested in a seminar war game to determine the characteristics with the greatest utility.

The nature and objective of strike operations are changing. Even though a ‘deep strike’ capability to attack targets of strategic importance will be needed well into the future, the most likely form of ADF strike campaign will be a ‘shaping’ operation to set the pre-conditions in the battlespace for follow-on action by surface forces. Future strike operations will not only have to contend with high-end active defence systems but also counter the greater emphasis placed on passive defences. In the future, adversary forces will use techniques such as dispersion, mobility and signature management to operate close to or below our battlespace awareness threshold, making it more difficult for air and space assets in particular to detect, identify, track and target the adversary. Furthermore, the adoption of an effects-based approach to operations will require us to expand our understanding of the range of possible strike targets and the spectrum of effects we may wish to create.

These developments have a direct impact on the characteristics required of an effective strike capability.

In the future, good **reach** will continue to be an essential characteristic of an ADF strike capability. Our geography demands it. However, there is a change in the conduct of strike operations. Until now the strike platform was required to penetrate to the target, deliver its weapons and vacate the battlespace as quickly as possible. In the future, it will more commonly be necessary for at least some elements of the strike system to **persist** in the battlespace for extended periods since the adversary will provide only fleeting opportunities for detection and engagement. Both battlespace awareness and engagement assets will have to be on-call in the target area to ensure optimum **response** to these opportunities. This requirement also implies that all platforms operating in this hostile environment must have adequate **survivability**.

The range of potential strike targets, coupled with the spectrum of effects that may need to be generated, will require battlespace awareness and engagement systems to be highly **flexible**, and will place a high demand on the **capacity** of the force to generate and sustain the required rate of effort.



Finally, generating the desired effects against an adversary intent on blending into complex physical and human environments will increase the need for **precision** in terms of target discrimination and avoidance of collateral damage.

Despite their changing nature, strike operations still lend themselves well to the application of air power. Air Force is therefore likely to remain the main provider of both the battlespace awareness and engagement elements of the strike capability. Naval forces could provide a useful adjunct to Air Force's engagement capabilities by providing increased capacity and creating additional effects. The ability of adversaries to hide from air and space based sensors also indicates the increasing importance of human intelligence to provide targeting information. This issue is further compounded by the vulnerability of many battlespace awareness assets to ground fire.



The experiment found that the F-35 Joint Strike Fighter should be able to provide the ADF with a highly capable strike platform, which will possess most of the required characteristics. However, its flexibility and precision may be impaired by limitations in available weapon options. The effects generated through the application of 'soft kill' options are difficult to assess and led to this option not being considered to be sufficiently effective. The availability of alternate platforms for strike operations, such as the multi-mission maritime aircraft, was largely limited due to concurrent tasking requirements.

Long-range stand-off weapons have excellent utility against large fixed targets but lack the flexibility for use against a wide range of targets and their time-of-flight limits their effectiveness against fleeting targets of opportunity presented by a highly mobile, dispersed adversary. Their prime purpose is as a 'first strike'

weapon that will make the battlespace more accessible to other platforms and weapons.

General purpose, direct attack munitions such as the small diameter bomb are likely to find the greatest utility in future strike campaigns, particularly in urban environments. Indeed, an even smaller weapon that would enable greater numbers to be carried by the JSF may have even further utility.

The air force strike capability of the future will have greater reach and persistence, particularly in the realm of battlespace awareness, with the advent of long-endurance unmanned aerial vehicles. However, the ability of the engagement elements to meet the persistence and reach criteria will often be contingent on the Air Force's ability to mount high intensity combat operations from an off-shore forward operating base—even with support from air-to-air refuelling. This type of operation will have implications for combat support, logistics and force protection that need careful examination.

Lack of adequate capacity was seen as the greatest weakness of the future ADF strike force. The adversary could employ strategies that attempt to extend the duration of the operation, to test the ADF's sustainability. Of course, this implies that the adversary would have the capacity to sustain operations for the period required.

In conclusion, although some weaknesses were highlighted throughout the experiment, it was found that with sufficient effort in realignment of capacities and strategies, Air Force of 2020 will be able to deliver the necessary strike capability.

A fundamental purpose of military experimentation is the acquisition of knowledge to guide decisions about an uncertain future.

- R.W. Orley



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