COMBAT ASSESSMENT – Completing the Cycle

By Wing Commander "Moose" Poole

The Targeting Cycle (Figure 1, shown on page 18) has been around for some time, is well known by all practitioners and is employed effectively during contemporary operations – or is it? Consisting of 6 closely related and interdependent strands, the targeting cycle, if used as a template, goes a long way towards pegging out the rational processes required for any offensive air to ground operation. A key component of the cycle and one that unfortunately has played second fiddle to the other, more tangible elements, is Combat Assessment.[1]

You wouldn't go to the movies and walk out before the plot revealed 'who dunnit'; you wouldn't put £100 to win on 'Captain Biggles' in the 3 o'clock at Epsom and not check the result, nor would you blow your inheritance on lottery tickets and not look to see if you'd won. Why is it then, that it is so difficult to convince folk of the need to plan for and conduct Battle Damage Assessment and Weapons Effects Analysis, the core components of Combat Assessment?

To be fair, since the Falklands and the Gulf conflicts, the first element, BDA, has at least been recognised as being broken and work is in hand to rectify the shortfall. However, that requirement is easier to identify than to meet. Even in today's connected world, it is still a challenge passing

Figure 1. The Targeting Cycle

imagery and assessments in a timely fashion. WEA still suffers from a lack of recognition and unless it is embraced, we will lose a great opportunity, one that would be of great importance as warfare becomes more and more limited, complicated and tangled in 'legalities'.

To scope this piece, I will take a look back in time to signpost a step change in our attitude towards Combat Assessment and then expand on the component parts of the discipline. Finally, I'll advocate the role new weapons must be made to play and put this into context within the popular euphemism of the Revolution in Military Affairs.

"The objective must be destroyed completely in one attack, making further attack on the same target unnecessary."

Giulio Douhet

It was clear to a visionary like Douhet that efficiency was an important element of aerial bombardment, an aspiration that we still strive for all these years hence only nowadays it's for 2 reasons: political sustainability and military effectiveness. In WWII, Portal and Churchill were content that the bomber offensive was going well. The crews came back with positive debriefs and their claims were occasionally backed up by travellers' tales as the braver and more mobile individuals reported clear Allied successes on their return home. What little photo reconnaissance there was, was often ignored or more likely poorly interpreted. It wasn't until Lord Cherwell, Scientific Advisor to Churchill, ordered a chap, aptly named Butt, to assess the bomber offensive that the true picture emerged.

Assessing 650 photos taken by day and night photo reconnaissance assets over nearly 2 months of operations, Butt came to some shocking conclusions. Of the aircraft attacking targets across Germany, only 33% got their weapons within 5 miles of the desired aimpoint. Over the Ruhr, where haze and heavy AAA exacerbated operations, this figure dropped to a paltry 7% within 5 miles. Of all aircraft dispatched, an additional 33% failed to make it to the target area, due either to navigation errors or to attrition. Not surprisingly, it took some time to convince Portal and the Prime Minister that such shocking analysis was right. After some 12 to 18 months, it was acted upon and the likes of GEE, H2S and the Pathfinders arrived on the scene.[2]

Battle Damage Assessment was born but what about Combat Assessment? What is it and why is it so important?

Napoleon once said: 'I have always liked analysis....Why? and How? Are questions so useful that they cannot be too often asked'.

Major General J F C Fuller

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Combat Assessment consists of 3 component parts: Battle Damage Assessment (BDA), Weapons Effects Analysis (WEA) and Reattack Recommendations (RR). BDA is further divided into 3 phases. Phase 1, Physical Damage Assessment is the initial 'hole count' undertaken as soon as possible after receipt of the traditional photograph or image. This action would be taken as far forward as possible, potentially on the unit that carried out the action. Time is of the essence and this assessment tries to determine the need for reattack. As I shall explain, this isn't such an easy task. Phase 2, Functional Damage Assessment takes the analysis a stage further by determining the continued utility of the target (to the adversary). Just because the Phase 1 assessment indicates a hit on the aimpoint, it

doesn't mean that the facility has stopped functioning. As the Gulf War proved, a HAS with a coalition sunroof was as likely to be swept out and used as was one which had not been hit. This level of analysis requires less readily available sources of intelligence and is thus performed further back, taking days, perhaps weeks to conduct. Finally, Phase 3, Target System Analysis (TSA) looks at the impact of the denial of a target to the whole adversary system. Once again, simply 'destroying' a target may have simple implications to the target itself but far greater impact on the remaining system that must now attempt to operate without that particular element. A communications network is a particularly good example of how denial of a node or nodes can lead to unexpected results. It is for this reason that the initial targeting should be system based, a change in emphasis that has been successfully introduced over recent years and discussed elsewhere in articles and journals. TSA can take months to produce results if supporting intelligence sources are scarce.

The Somme in 1916 and the South Atlantic in 1982, are 2 examples of the need to know what has happened to one's weapon. In the Great War, 'The Big Push' was fatally launched on the basis of a 'successful' 6-day artillery bombardment, yet 1/3 of all rounds fired failed to explode. The Argentinians faced a similar situation during the Falklands War when iron bombs dropped on RN warships failed to explode because of incorrect fuze arming times. The Argentineans were luckier than the British were 66 years earlier, as the guileless UK press gave much needed intelligence from which future ship attacks could be more successfully prosecuted.

Weapons Effects Analysis (WEA) aims to answer 3 questions: Did the weapon work? If so, how effective was the fuzing? With the answers to these first 2 questions, the third asks 'was the correct weapon used in the first place?' Now these questions, particularly the first, may seem obvious yet during high tempo operations like the Gulf War, they were often left unanswered. LGB deliveries are normally witnessed on video but even with such low fidelity recording systems, it is possible to detect malfunctions in one or more of the weapons, particularly those within a stick that are not the first to impact. Key to this aspect of Combat Assessment is tempo. With continual and repeated air operations it is imperative that, at all levels, commanders know how the campaign is progressing. Sub-optimal detonations can occur when weapons are employed at the edges of the envelope; unnecessary, perhaps, with perfect procurement. A low order detonation, for whatever reason, will result in less than the required explosive force being delivered to the aimpoint. Because of the immediate uncertainty over the success or otherwise of a single weapon delivery, 2 or more weapons are often used to raise the probability of kill to a more comfortable figure. Shoot-shoot-look is a wasteful but necessary methodology, given our current capabilities for Combat Assessment. Moreover, if a weapon doesn't work, it helps to know why so that subsequent attacks are not doomed to failure. The same goes for fuze settings – we should accept minimal 'trial and error' during operations.

When J2 (intelligence staff) bring their BDA assessments and combine them with the J3 (operations staff) function of WEA, a composite Reattack Recommendation can be made. Clearly, time is of the essence, as the decision to reattack must be made as soon as possible if the targeting cycle is to make maximum progress towards achieving the commander's objectives. If the military need alone is not enough to justify the requirement for Combat Assessment, then consider the political angle.

Three factors have emerged over recent years, a period many call a Revolution of Military Affairs, that have put new demands on those conducting military operations – Legality, Proportionality and Discrimination or Collateral Damage. Now, more than ever, military offensive action must stand up to global scrutiny and thus must comply with what is allowed under the Law of Armed Conflict. Associated with this requirement is a more demanding need to attack only those targets that are distinctly military in nature, often easier to say than do, given, for example, the dependence of military networks on the civilian communications infrastructure. In all cases, military action must be proportional to the misdemeanour that was committed in the first place – clear linkage must be apparent between the offence and the punishment. If Iraqi tanks were to once more cross the border into Kuwait then they or something closely associated with them must be the subject of a coalition response – not an unrelated infrastructure target in the centre of Baghdad. Finally, it is equally important to be as precise as possible and discriminate the target from its surrounds. Stray

weapons causing civilian casualties can do more to reverse public opinion than almost any other factor. Similarly, collateral damage of religious artefacts such as mosques create an additional concern that taxes the strategic targeteer. With all these factors, the overriding influence on the use or potential use of air power is the ubiquitous media. Never more so than now can a 30-second, isolated media 'bite' influence the strategic outcome of international affairs. The power of the media can lead statesmen to decisions that they shouldn't or wouldn't normally be making. Never before have the traditional boundaries of Strategic, Operational and Tactical been so blurred.

Remains of HMS Antelope during the Falklands Campaign struck by iron bombs that did not explode until attempts were made to defuse them

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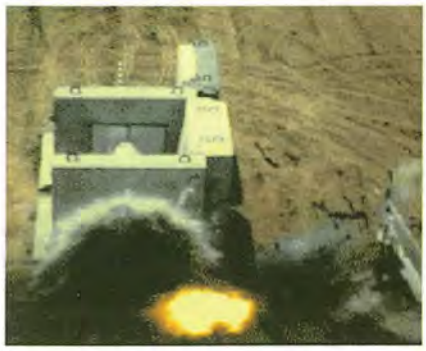

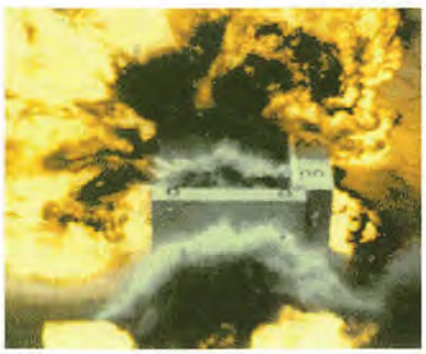

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Moving on to the role we must demand from future weapons, the hard, deep (ie buried) target provides the ideal example of the potential for greater weapon involvement in the targeting cycle and Combat Assessment. The hardest nut to crack, the underground facility offers many challenges to the targeteer, not least of which is getting the weapon into the heart of the target. In order to do this, the weapon must be itself very hard to survive the impact and penetration whilst the fuze must be able to count hard layers – the surface, the burster slab, the roof of the underground facility and then the floors and voids.

Such fuze technology exists in the Hard Target Smart Fuze, under development with Wright Labs in the US. This has proved during sled tests that it has the ability to insert a weapon into a void several hard layers down and still be fit to detonate it. So that's one part of the problem potentially solved but how do we know if the attack worked? Traditional sources of BDA would show a hole in the surface of the target – we would have to wait for the longer-term assessment using SIGINT or HUMINT to determine whether the facility was denied as intended. Trials are ongoing in the US with a role-enhanced fuze that deploys a sensor from the back of the weapon as it enters the target.[3] Just before detonation, the fuze relays data back to the sensor for transmission, including the status of the weapon, its position in the target array, its computed impact point and conditions (impact angle, velocity). This data is collected by the launch aircraft or any other available platform such as satellite, UAV or surveillance assets such as AWACS and ASTOR and, once relayed to a ground station, is available for analysis in a much-reduced time-scale. 'Shoot-look-shoot' thus becomes a

possibility. Future weapons could play a greater part in the measurement of mission success; even if they end up costing up to twice as much, it will still be cheaper than automatically firing 2 weapons. During the Gulf War, most Thermal Power Plants were struck between 2 and 5 times each because imagery, the traditional source of BDA, could not confirm the requisite levels of damage.

With increased stand-off the holy grail of weapons procurers, the input from the crew or aircraft based sensors will be much reduced. On the one hand, stand-off gives us the much needed ability to avoid local defences yet this is often at odds with the political requirements, expressed in Rules of Engagement. Even more reason, therefore, for the weapon to 'report back' and contribute to the final analysis. By doing so we can also move away from the wasteful 'shoot-shoot-look' *modus operandi* as we would have an early indication that, in most cases, a second weapon will not be required. In an age of increased accountability, the assessment of weapon strikes is paramount to improved efficiency. The financial considerations, fewer required weapons, should please the accountants. The operational enhancement of making every weapon count, 'one target, one weapon', will please the military. The improved overall situation and effective rebuttal capability, should please the politicians. Combat Assessment, the hitherto 'ugly sister' of offensive air operations, has the potential to 'multiply the force' as much as air-to-air refuelling has done over the last 20 years.[4] Only when Combat Assessment is studied as a whole can the targeting cycle be free to roll. If it is neglected, progress towards the commander's objectives and, ultimately, a successful campaign result, will be particularly hard to achieve.

NOTES

1 Much of the content of this extract has been derived from US Joint Pub 2-01.1, "Joint Doctrine, Tactics, Techniques and Procedures for Intelligence Support to Targeting" and "Is Conventional Strategic Attack Still A Viable Option For The UK?" Brooke-Popham Essay, Sqn Ldr R M Poole, Bracknell, 1996.

2 "*The Right of the Line*", John Terraine.

3 Barbara Starr, "USA Studies Weapons in Battle Against Bunkers", Jane's Defence Weekly, 25 November 1995, p. 6.

4 For an excellent short study on both targeting and battle damage assessment, see Colonel Phillip S. Meilinger, *10 Propositions Regarding Air Power*, (Air Force History and Museums Program, 1995), pp. 20-27.