PATHFINDER
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CRUISE MISSILES – A DOUBLE-EDGED SWORD

In the past few years, air forces around the world have expressed increasing interest in the potential of cruise missiles. In the past, cruise missiles were almost exclusively the prerogative of 'super powers'. This was not so much a reflection of the complexity of the technology involved in the weapon itself but the limited availability of adequate navigational and targeting data. The reason for the increased interest is the availability of commercial imagery with sufficient accuracy at affordable prices to make the employment of cruise missiles a distinct possibility for a larger number of countries.

'Cruise missile' is a generic term for self-propelled guided weapons that fly like normal aircraft for much of their flight. In military terms, they are comparatively cheap, simple to build and can be launched in large numbers from sea, land and air. Cruise missiles are designed for use against high-value, hardened targets that are located in well-defended areas, where the risk to aircrew would be untenable. They have been used in a number of operations in the recent past with great success, being extremely accurate and effective. In the 2003 Iraq conflict some targets of high importance were attacked by two missiles from different directions consecutively with devastating effect.

Conventionally, cruise missiles are carried on board fighter/bomber aircraft and are used as stand-off weapons, but initiatives are being taken by a number of air forces to integrate them with non-penetrating platforms like the Multi-mission Maritime Aircraft (MMA) and even standard airlifters. This will greatly increase the utility of the missiles while giving an added operational envelope to these aircraft. The versatility of these missiles in their capability to do both land attack and anti-ship missions makes them an attractive option to military planners.

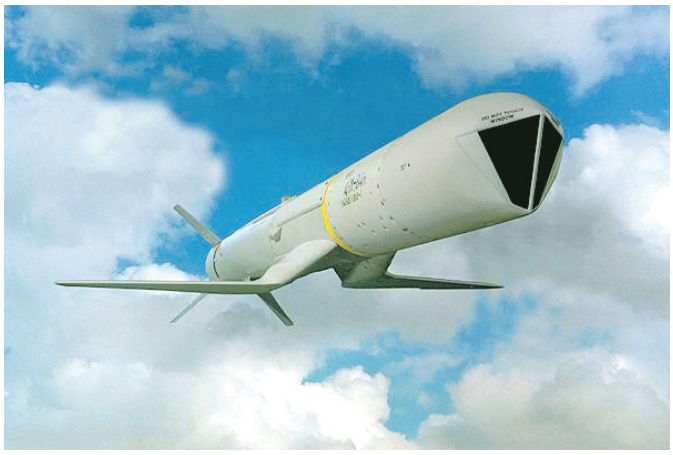
The latest cruise missile program in the United States is the Lockheed Martin AGM-158 JASSM (Joint Air-to-Surface Stand-off Missile). This has a 450-kilogram warhead and uses imaging Infra Red (IR) guidance. The missile has a range of over 460 kilometres even in its low-cost version and is expected to be compatible with all US fighters and bombers except the F/A-22. The JASSM also has the capability for retargeting and impact assessment through dedicated datalink. Improvements being made in the engine and fuel carrying capacity are likely to give the JASSM-Extended Range (ER) missile a range in excess of 1100 kilometres.

Lockheed Martin's AGM 158 Joint Air-to-Surface Stand-off Missile (JASSM)

Currently the only combat-proven new generation cruise missile is MBDA's long-range cruise missile produced as Storm Shadow for the UK, Italy and Greece; SCALP-EG for France; and Black Shaheen for the United Arab Emirates. The importance attached to the possession of proven cruise missiles has been a crucial factor in the selection of aircraft such as the Mirage-2000 by some of the air forces since the US was unwilling to integrate Storm Shadow with the F-16. The Storm Shadow has a range in excess of 250 kilometres at low levels and is all weather capable. The weapon is basically stealthy and is designed to be operational for 25 years.

The RAAF is expected to select a new cruise missile, the follow-on stand-off weapon (FOSOW), under the Air 5418 project by the end of 2005.

The three short-listed contenders are the Boeing AGM-84K SLAM-ER (Stand-off Land Attack Missile Extended Range), EADS/Saab Bofors Taurus and the AGM-158 JASSM.



Boeing's Stand-off Land Attack Missile (SLAM-ER)

While legitimate forces around the world are in the process of acquiring these sophisticated weapon systems, there is also a looming security problem associated with these missiles. The low cost cruise missile, which can be assembled with minimum technology and which would provide a fair modicum of accuracy, would have to be viewed as a potential terrorist weapon. Even if the range were only 100–150 kilometres, the missile would be extremely difficult to detect and destroy. The implications are very clear.

The term 'cruise missile' conjures up images of high-tech, expensive Tomahawk type missiles graphically shown on television sets across the globe during *Desert Storm*, and several times thereafter. However, the essential fact is that it is nothing but an uninhabited aircraft that carries out a one-way mission. In fact it can be low, slow flying, simple, effective and affordable. Therein lies the worry for military tacticians and strategists. The open availability of GPS has dramatically simplified the major problem that restricted the proliferation of these missiles so far.

However, the proliferation and use of cruise missiles has to be taken for granted. The inherent casualty aversion of political decision makers ensures that cruise missiles will always be looked at as a preferred first option in any kind of conflict. The assured accuracy of the missile also makes it an option to be used in deterrent action as a warning of further intent.

From an air force perspective, cruise missiles have the potential to disrupt their activities by targeting air bases and making them unavailable for crucial periods of time. The difficulties in neutralising these missiles give them a disproportionately high capability in this role. Even if they do not achieve actual destruction of air assets, their nuisance value would more than adequately create the desired effect of disruption and could deter forward deployment.

What planners must now contend with is the certainty that any air power deployment would have to cater for unforeseen cruise missile attacks on bases and other infrastructure from undetectable positions. The current passive and few active defence measures that are being practiced will not provide the necessary assuredness of protection. This will add to the already complex scenario and give the adversary an extra option in terms of asymmetry. The time has perhaps come to look at cruise missiles as a system entity rather than yet another weapon in order to develop a cohesive and practical concept of operations as well as an effective defence.

> *In the 21st century, technology plays no favourites—it is the slave of anyone who chooses to master it*
>
> Bruce Simpson,
> *A Low Cost Cruise Missile* – May 2002

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