

Inquiry into Australia's
Defence Relations
with the United States:
Interoperability, Force Structure
and Missile Defence Issues

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1 Introduction

Australia's alliance with the United States has been of much value since the 1940s, especially during WWII and the Cold War era. Australia continues to benefit in important areas such as access to high technology military equipment and systems, unavailable elsewhere, intelligence sharing, and logistical support in coalition operations.

For an alliance to remain viable it must continue to present significant value to both participants. Unless both sides can realise actual and visible benefits from an alliance, it will be weakened and decay over time.

In recent years Australia's principal contributions to the alliance with the United States have been political. The modest size of ADF coalition force contributions yielded political as well as military effect in important niche areas.

The disparity in size, military capabilities and high technology industrial base capabilities between Australia and the United States raises important issues over the longer term. Australia must find a position which can balance national interests in developing capabilities for the defence of the continent and Australian interests within the region, with capabilities which can valuably contribute to coalition operations with the United States.

An often heard view is that Australia should be adapting the ADF primarily to support coalition operations with the United States, at the expense of defending the continent and Australia's regional interests. This view is naive and neglects the deeper reality that top tier military capabilities required to defend the continent and Australia's regional interests are no less valuable in coalition operations. Views of this ilk are as foolish as views asserting that Australia should force structure around UN peacekeeping operations.

The coming decades will be a strategically challenging period for Australia, as both China and India achieve regional superpower status, a result of the cumulative effects of industrialisation, increasing national wealth, increasing demand for resources, and increasing interest in markets for products and services. Both of these nations are now developing military capabilities without precedent, in a large part driven by the influx of top tier Russian high technology weapons, widely available since the end of the Cold War.

Over the coming decade both India and China will field large fleets of long range Russian Sukhoi Su-27/30 fighter jets, the cumulative total rivalling in size the currently fielded United States inventory of the equivalent F-15 fighter. These are aircraft with strategic reach, in regional terms. Both China and India have ordered Airborne Early Warning & Control Aircraft, China the Russian Beriev A-50E, India the same but fitted with an Israeli mission package (previously bid to Australia). India is now taking delivery of the Il-78MKI aerial refuelling aircraft and recently concluded a deal for an aircraft carrier and air wing of MiG-29 fighter jets, the latter comparable to Australia's F/A-18s. Both China and India have ordered a range of high technology Russian smart weapons, including supersonic and subsonic cruise missiles. India will be manufacturing a domestically built derivative of the Russian Yakhont supersonic cruise missile, the PJ-10 Brahmos.



Figure 1: *Regional Sukhoi Su-30MK Variants.*

Given the decade long history of ‘tit-for-tat’ buys of high technology Russian weapons, there is now a well established history of competitive force structure growth by both India and China.

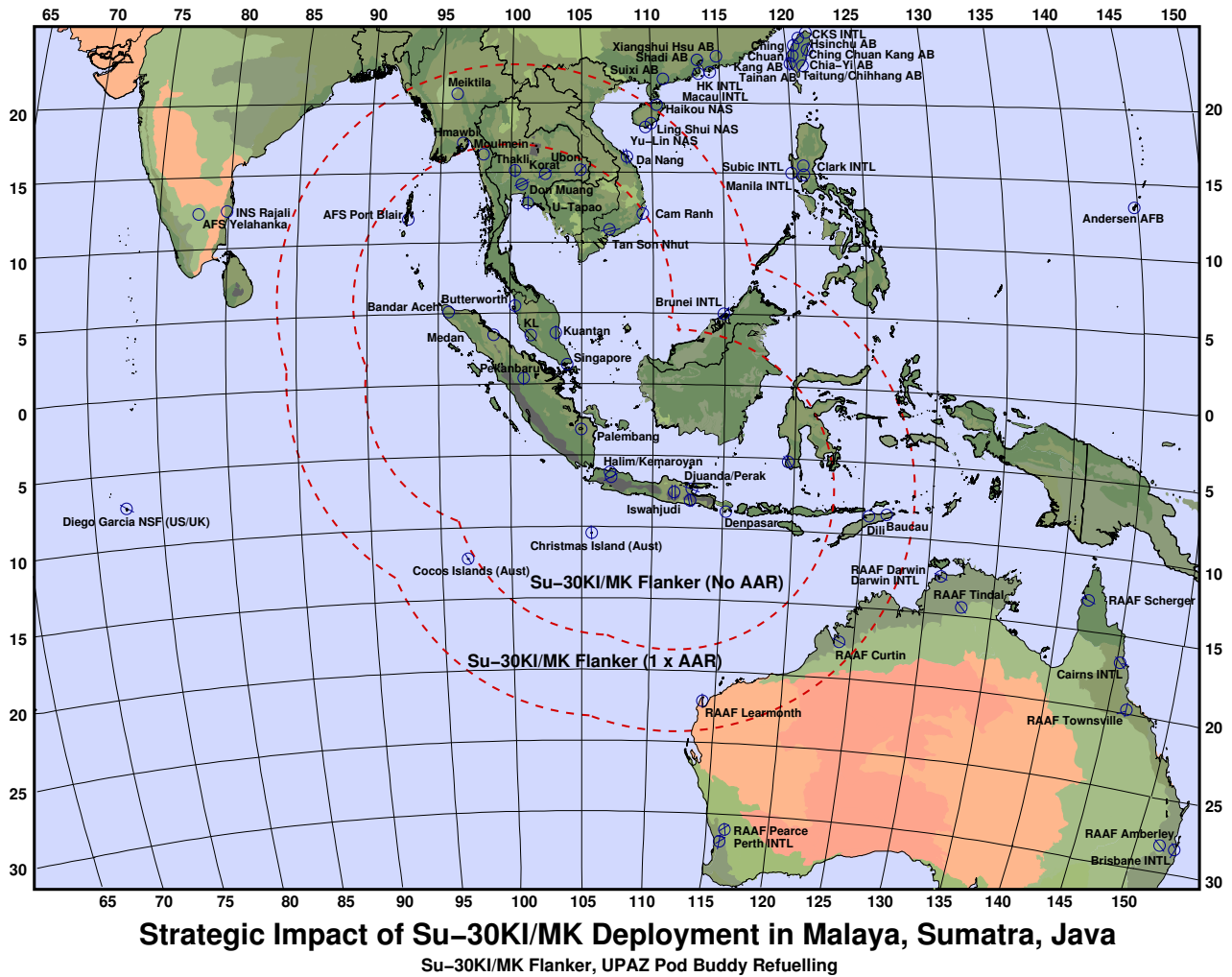


Figure 2: Strategic Impact of Sukhoi Su-30 Fighter Proliferation in Near Region.

This presents long term issues for both Australia and the United States in this region. For Australia the central issue will be in retaining its strategic position within South East Asia, especially as China’s ability to project air and missile power into this region grows over time. For the United States the big issue will be in retaining the hitherto favourable balance of forces within the region, between United States aligned nations and China. While the United States will continue to maintain an advantage in key military capabilities over China, China’s growing strength will increase pressures on a United States military which is already suffering from ‘global overstretch’ and ageing force structure inventories. With global commitments the United States will be hard pressed to maintain significant reserves to cover any Pacific Rim contingency on this scale. Any future regional contingency involving China could present the United States with genuine problems in rapidly deploying enough assets to produce a credible strategic military effect.

The sometimes heard view that ‘India and China are problems for the United States to solve, it is too

big an issue for Australia' neglects the reality that the types of long range weapons being acquired by both nations will provide over time the capability to project power from the Asian mainland directly into Australia's sea-air gap, and its traditional sphere of influence. While Australia will never have the strength to challenge either nation in a full scale conflict, Australia has the potential to frustrate military operations by either within the region. Blind reliance upon the United States force structure's capability to rapidly cope is a strategy which could prove highly dangerous given current trends.

While Australia enjoys at this time cordial and productive relationships with both India and China, we cannot accurately predict the pressures which may arise within the broader region over a period of three decades or more.

Other developments flow from the influx of Russian high technology weapons into India and China. The most important of these are 'copycat' buys of identical Russian weapon systems by Malaysia and Indonesia. Malaysia recently ordered 18 Russian Su-30MKM fighters, Indonesia has taken delivery of four Su-27/30 fighters with a stated intention to field around 50.

These developments collectively present a strategically more complex environment for both Australia and the United States within the Pacific Rim region. This complexity arises in issues of political and military alignment of regional nations, and in the capabilities required for both nations to maintain the historically established balance of power. Strategic competition between China and India, evidenced not only by weapon purchases but also by China's involvement in Myanmar and India's development of facilities in the Andamans, will continue over time. Lesser regional nations could be drawn into this vortex if Australia and the United States are perceived to have inadequate military capabilities to rapidly intervene within the region.

In the short term the focus of the United States will remain upon the War on Terror within the Islamic world. It is important that this near term focus in United States military thinking and effort not obscure the longer term realities of a rapidly evolving Pacific Rim region. The War on Terror will not last forever, and once Islamist movements are significantly degraded or destroyed, many current strategic alignments with the United States will disintegrate. Alliances of convenience are not durable alliances.

Neither Australia nor the United States should develop unrealistic expectations of what the alliance can provide. Australia does not have the population base to support the scale of operations delivered by other United States allies such as the United Kingdom. The United States has global commitments on a scale which could preclude the United States from rapidly plugging holes in ADF force structure capabilities in the event of a regional crisis threatening Australia. Unrealistic expectations by either side can only damage the alliance over the longer term.

In summary, neither Australia nor the United States can afford to ignore the advent of India and China as regional superpowers. Long term force structuring priorities should not be driven by near term needs in the War on Terror. Both Australia and the United States must maintain and increase investment levels in top tier military capabilities, especially long range air power, to balance the long term regional effect of growth in Chinese and Indian strategic military capabilities. Both Australia and the United States must have realistic expectations of what the alliance can provide in terms of deliverable military capabilities.

2 ADF Interoperability with US Capabilities

Near term coalition operations conducted as part of the War on Terror, and longer term coalition operations within the Pacific Rim present the likelihood that the ADF will most frequently be engaged with the United States when conducting military operations.

Interoperability between the ADF and United States forces presents two key issues. The first is that operational technique and supporting training be close enough to permit a good mutual understanding of how respective force elements function, and what capabilities they offer. Historically this has been an area of some weakness in both nations. The ADF often misunderstands the roles and capabilities of many United States force elements, and vice versa. It is incumbent upon the ADF that it maintains an ongoing program aimed at understanding existing and planned United States force structure capabilities, especially in terms of their impact in regional operations. It is also incumbent upon the ADF that it actively promote and advertise its capabilities within the United States, to preclude the development of unrealistically high or low expectations of deliverable ADF capabilities.

The second key interoperability issue is that of 'technological interoperability'. It is no less important, as demonstrated by the difficulties observed in coalition operations by the United States and its NATO allies in Yugoslavia during the 1999 conflict. Very broadly these fall into communications and logistical support of capabilities.

Technological interoperability issues can be summarised thus:

1. Voice communications interoperability. The ADF must use radio equipment compatible with United States signal modulation and encryption formats. While this has been addressed on many platforms by the use of Have Quick II equipment, future acquisitions need to be assessed and chosen on the basis of compatibility.
2. Digital communications interoperability. The ADF must use digital datalink equipment compatible with United States signal modulation and encryption formats. The JTIDS/Link-16 system should be mandatory for all applicable ADF platforms. Other datalink formats such as TCDL/CDL and IDM should be used in preference to proprietary or otherwise unique formats.
3. Electronic warfare equipment interoperability. Electronic equipment used to jam hostile radar and communications often emits waveforms similar to the hostile systems it aims to jam. Surveillance and threat warning systems must have the capability to distinguish these waveforms where possible from hostile systems. Characteristics of unique ADF systems need to be known for the configuration of United States surveillance and threat warning systems, and vice versa.
4. Weapons interface interoperability. Most modern guided weapons use the United States Mil-Std-1760 digital interface, and supporting software within the platform. The rapid introduction of new weapons of United States (and EU) origin requires the capability to integrate these weapons within Australia - in a conflict Australia cannot afford to have interfaces incompatible with the then current United States warstocks of a given weapon. This capability exists at this

time only at RAAF Amberley, for the F-111 platform, and the early retirement plan will see this capability vanish over the decade. Australia needs the capability to integrate Mil-Std-1760 weapons across all key ADF platforms.

5. Embedded software used in weapon systems. Superficially 'identical' platforms often differ in the revision level and thus capabilities of the embedded software running in the platform's weapon system. This can impact weapon type compatibilities, but also mutual compatibility of data fusion, communications and networking equipment. Australia needs the capability to keep embedded software loads on ADF platforms synchronised, where relevant, to United States platforms it must interoperate with. This capability exists at this time only at RAAF Amberley, for the F-111 platform, and is not planned to be extended into the future.

The commonly heard view that 'Australia must operate identical platforms to the United States to provide compatibility for coalition warfare operations' is naive. The key interoperability issues are all centred in the domain of electronic/digital systems and munitions compatibility, which are largely platform independent. Any platform can be retrofitted with Have Quick II, JTIDS, IDM, Mil-Std-1760 interfaces and suitable embedded software, regardless of the origin of the platform. There are distinct benefits arising from the capability to perform such integration within Australia as in a crisis United States vendors may be hard pressed to address ADF needs whilst trying to concurrently address United States needs.

This raises the related issue of Australian access to the software source codes for United States made platforms and subsystems. Australia should not only aim to gain access to such code for its most critical platforms, but it should also extend such a policy to cover digital communications and software systems for Network Centric Warfare, in line with the historical policy for electronic warfare equipment. The key areas detailed above must be priorities in access to software source code, but also in domestic investment in supporting development systems and expert personnel. There is little point in Australia having software source code and related development systems for a digital platform or vehicle control system or platform maintenance diagnostic system, but the opposite will be true of communications, datalinking, electronic warfare, data fusion and network protocol software in a platform or system.

Australia must ensure that it maintains compatibility with the United States in the key areas of voice and digital communications, electronic warfare, guided munitions digital interfaces and embedded software. As compatibility in these areas is driven by platform embedded systems, this does not implicitly dictate that Australia should always operate identical platforms and systems to the United States. Australia should aim to provide domestic software development and integration capabilities in these key areas to ensure that in a crisis ADF platforms can be brought up to suitable compatibility levels quickly, despite whatever pressures overseas vendors might be subjected to.

3 ADF Force Structure vs Coalition Operations

Australia's force structuring has historically been dominated by the idea of defending the Australian continent and the geographical approaches from Asia. Growing regional capabilities indicate that this priority should be increased over time, as Australia will need to dominate the air and sea to the north against increasingly technologically sophisticated capabilities.

This places a premium on air control, strike and Intelligence Surveillance Reconnaissance (ISR) capabilities over all other ADF capabilities. If Australia cannot control the air, it cannot guarantee the survival of any other ADF air, sea and land forces in that area. The one essential reality in Australia maintaining its independence as a sovereign nation and not becoming a vassal state is Australia's air power - the ability to achieve air dominance and strike at will within the wider region.

Australia cannot afford to push this force structuring burden on to the United States for a number of good reasons. As noted previously, the United States may not be in the position to provide the required capabilities at very short notice, assuming that the Washington administration of the day is committed to doing so.

A no less important consideration is that the United States has a very reasonable expectation that its allies will make proper investment in their own defence. Much of the acrimony between the United States and some of its European allies, observed over the last two years, began during the conflict in Yugoslavia, when the United States had to provide most key air power assets for the campaign, as key EU allies like Germany and France through under-investment did not have the required capabilities within their force structures.

Operations in Yugoslavia, the United States (Noble Eagle), Afghanistan and Iraq over recent years presented genuine difficulties for the United States, as its force structure was badly stretched to provide adequate numbers of key assets such as air superiority fighters, long range strike fighters, aerial refuelling tankers, Airborne Warning and Control (AWACS) aircraft and strategic airlifters.

There are several reasons why this situation has developed. The first is that the current United States force structure, largely inherited from the last decades of the Cold War, suffered significant downsizing in the 1990s which combined with an increased operational tempo since 1998 has resulted in many force structure components being burned out of usable service life faster than planned for. The second reason is that under-investment during the 1990s in life extension programs on existing platforms has driven up operational support costs of many United States force structure elements - especially fighter aircraft and aerial refuelling aircraft. The third reason is that delays in the acquisition and deployment of many new replacement capabilities have forced the life extension of many platforms, also driving up operational support costs. The fourth reason is that shifting patterns in warfighting technique, especially the advent of network centric 'persistent strike' techniques against highly mobile targets, have dramatically increased the demand in combat for long range / long endurance strike platforms and aerial refuelling assets.

Under-investment by Australia in the key areas of air superiority fighters, long range strike fighters, aerial refuelling aircraft and Airborne Warning and Control aircraft not only creates a fundamental

force structure weakness in terms of Australia's ability to act unilaterally, but it also increases pressure on the United States to provide more of these badly overstretched top tier capabilities to cover Australia's weakness.

Conversely, were Australia to invest properly in these areas over coming years, it not only provides a robust basis for the ADF to operate independently within the region, but it also provides Australia with top tier niche capabilities to supplement United States capabilities in coalition operations, thus reducing significant extant and future pressures on the United States force structure.

Recent decisions by Defence in key force structure areas illustrate that current thinking in Defence is not prioritising capabilities in a fashion which is either useful to Australia's long term regional strategic position, or conducive to maintaining a harmonious long term relationship with the United States.

Pertinent examples are thus:

1. Downsizing of the RAAF's strike capability through early retirement of the F-111 fleet without a viable replacement. As the F-111 provides around 50% of the RAAF's combat punch, this results in a serious capability gap and directly pushes a force structure burden on to the United States Pacific Air Force force structure which will have to bolster F-15E numbers assigned to the region.
2. A preference for the second tier lightweight Joint Strike Fighter over the alternative first tier F/A-22A multirole fighter. As the Joint Strike Fighter is more the specialised battlefield strike aircraft than the multirole F/A-22A, which is intended to provide air superiority and deep strike capabilities, Australia will be forcing the United States to provide the force structure investment in F/A-22A numbers to balance regional fighter capabilities.
3. A long standing insistence that the AIR 5402 aerial refuelling tanker program be implemented by purchasing no more than 5 new build aircraft, rather than a much larger number of cheaper former airline transports converted to tankers, and an insistence that this number of tanker aircraft can offset the loss of the F-111 fleet. Yet again this pushes a force structure burden on the United States which would have to provide tanker aircraft to support the RAAF in any regional crisis.
4. A reluctance to invest in more than four Wedgetail Airborne Early Warning and Control (AEW&C) aircraft, despite the modest incremental cost in acquiring six or eight systems for the RAAF. As with aerial refuelling tankers, this pushes a burden on to the United States force structure in any serious regional contingency.

Increased investment in tier one ADF surface warfighting capabilities, such as Navy Air Warfare Destroyers and Army tanks cannot qualitatively or quantitatively offset the relative strategic decline in Australian air power. Australia needs to fundamentally rethink its balance of investment between surface warfighting capabilities and air power. The Australian public will continue to prefer seeing investments made in the Defence of Australia model over coalition warfighting, and it will continue to



Figure 3: Australia's preference for the much smaller and less capable Joint Strike Fighter (upper) over the larger, faster and stealthier F/A-22A (lower) will result in a lesser capability by Australia to control regional airspace and strike with impunity against key military targets. In any escalated regional contingency Australia could find itself in the position where it must request United States Air Force F/A-22A deployments to directly support ADF combat operations (US Air Force).

support frequent coalition participation only if the latter is largely free of combat casualties. Coalition contributions which comprise top tier air power assets rather than large numbers of surface warships and ground troops are the least likely to result in large numbers of combat casualties. The loss of a single surface warship in combat could produce a hundred or more casualties in a single day of combat operations.



Figure 4: *The F-111 accounts for around 50% of the RAAF's combat firepower and is the RAAF's only 'tier one' combat asset. Early retirement of this potent aircraft without suitable replacement pushes a force structure burden on to the US Air Force in the Asia Pacific region (RAAF).*

ADF force structure investment must prioritise air superiority aircraft, long range strike aircraft, aerial refuelling tankers, AEW&C aircraft and supporting capabilities over surface warfighting capabilities. Otherwise Australia's relative strength against the region will continue its current decline, and this force structure burden will be directly pushed on to the United States. There is a significant risk that the existing force structuring strategy defined in the current Defence Capability Plan will lead to an eventual souring of the relationship with the United States, as the United States strategy community and leadership appreciate the extent to which Australia's under-investment in key capabilities impacts United States deployment patterns in the Pacific Rim. Conversely, robust long term investments in these key capability areas, such as retention of the F-111 post 2020, acquisition of the F/A-22A rather than Joint Strike Fighter as an F/A-18A replacement, a restructuring of the AIR 5402 tanker program to acquire larger numbers of larger tanker aircraft, and the acquisition of seven to eight AEW&C aircraft rather than four would reduce United States force structure burdens in the region, enhance the value of ADF coalition contributions, and reduce the potential for ADF combat casualties in coalition campaigns.

4 The Missile Defence Problem

The issue of Australia's participation in United States led missile defence programs has elicited much public argument, most of which appears to be centred in political issues rather than the technical and military-strategic issues of concern.

The United States currently divides its missile defence activities into three broad areas, covering defence against strategic Inter-Continental Ballistic Missiles (ICBM), theatre or tactical ballistic missiles (TBM) and air/sea/sub/ground launched cruise missiles. The area of TBM oriented missile defence is best developed, while the ICBM oriented 'National Missile Defence' (NMD) program has attracted most public scrutiny.

In terms of developing regional capabilities, the area of cruise missile defence must be prioritised over ballistic missile defence. This is for the simple reason that Russian supersonic and subsonic cruise missiles, capable of launch from aircraft, surface warships, submarines and ground vehicles have been proliferating in Asia at a much faster rate than ballistic missile technology has.

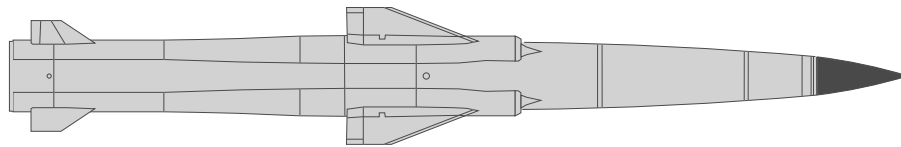
The central question for Australia, and to a no lesser extent the United States in the Asia-Pacific, is whether regional inventories of hundreds to thousands of Russian cruise missiles are more important strategically than much smaller numbers of tactical ballistic missiles, given that the latter often carry much smaller warhead payloads.

There is no doubt that ICBM and WMD technology in the hands of rogue states like North Korea, or other nations like Iran opting to purchase this technology from North Korea, present a genuine long term strategic risk. However, a Russian built supersonic cruise missile, retrofitted with a WMD warhead and fired from an aircraft, warship or even a modified tramp freighter ship, could produce an equally devastating effect. The effort required to integrate a WMD warhead in a cruise missile is much lesser than the effort required to integrate the same in a TBM or ICBM.

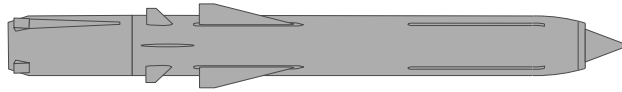
Large numbers of Russian designed and Russian or regionally manufactured cruise missiles represent a much more immediate, and over the coming decade, a much more numerically important risk to both ADF and United States forces operating in this region. Cruise missiles are no less difficult to defend against than ballistic missiles. While cruise missiles are much slower than ballistic missiles, they are significantly harder to detect and track, and relatively easy to apply stealth techniques to. While a long range ballistic missile may leave a large radar opaque ionisation trail as it enters the atmosphere, a ground or sea hugging cruise missile with stealth materials and shaping techniques applied may be extremely difficult to detect at long range.

Australia's much publicised engagement with the United States in the area of naval anti-ballistic missile defence represents a clear case of a misdirected investment.

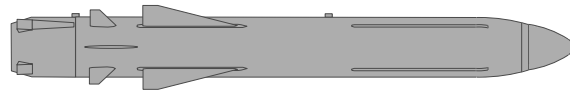
Australia should be engaged with the United States primarily in the area of cruise missile defence, an area less developed in United States planning and technology and thus presenting greater opportunities for Australian R&D participation, as well as more relevant returns on taxpayer's investment longer term. While cruise missile defence may not yield the attractive media publicity associated



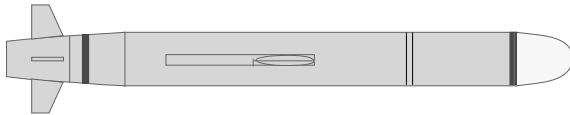
Kh-41 Moskit (SS-N-22 Sunburn) Mach 2.2 Anti-Ship Cruise Missile (Range ~ 135 NMI)



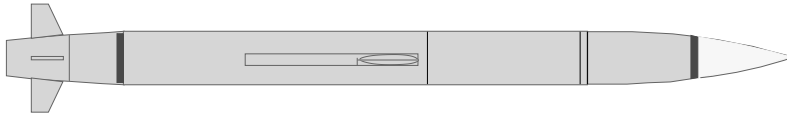
3M-55 Yakhont/PJ-10 Brahmos S (SS-N-26) Mach 2.5 Anti-Shipping Cruise Missile (Range ~160 NMI)



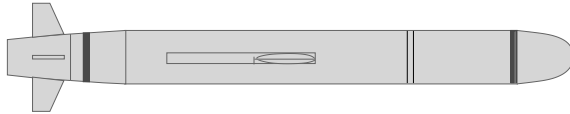
Kh-61 Yakhont/PJ-10 Brahmos A (SS-N-26) Mach 2.5 Anti-Shipping Cruise Missile (Range ~160 NMI)



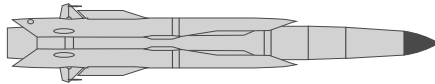
3M-54E1 Alfa (SS-N-27) Anti-Ship Cruise Missile (Range ~160 NMI)



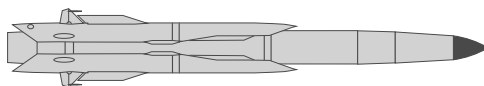
3M-54E Alfa (SS-N-27) Mach 2.9 Anti-Ship Cruise Missile (Range ~120 NMI)



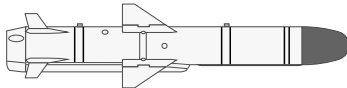
3M-14E Alfa (SS-N-27) Land Attack Cruise Missile (Range ~160 NMI)



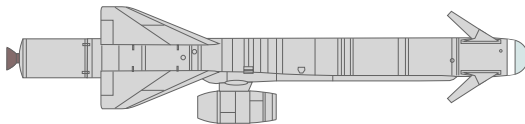
Kh-31A/R Mod.1 (AS-17 Krypton) Anti-Radiation / Anti-Shipping Missile (Range ~60 NMI)



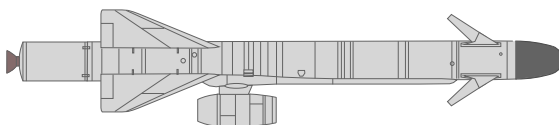
Kh-31MA/MR Mod.2 (AS-17 Krypton) Anti-Radiation / Anti-Shipping Missile (Range ~110 NMI)



Kh-35U Uran/Kharpunski (AS-20 Kayak) Anti-Shipping Missile (Range ~70 NMI)



Kh-59M/D (AS-18 Kazoo) EO/DL Stand Off Missile (Range ~54 NMI)



Kh-59MK (AS-18 Kazoo) Anti-Shipping Missile (Range ~54 NMI)

Figure 5: *Regional proliferation of advanced Russian guided missiles (C. Kopp).*

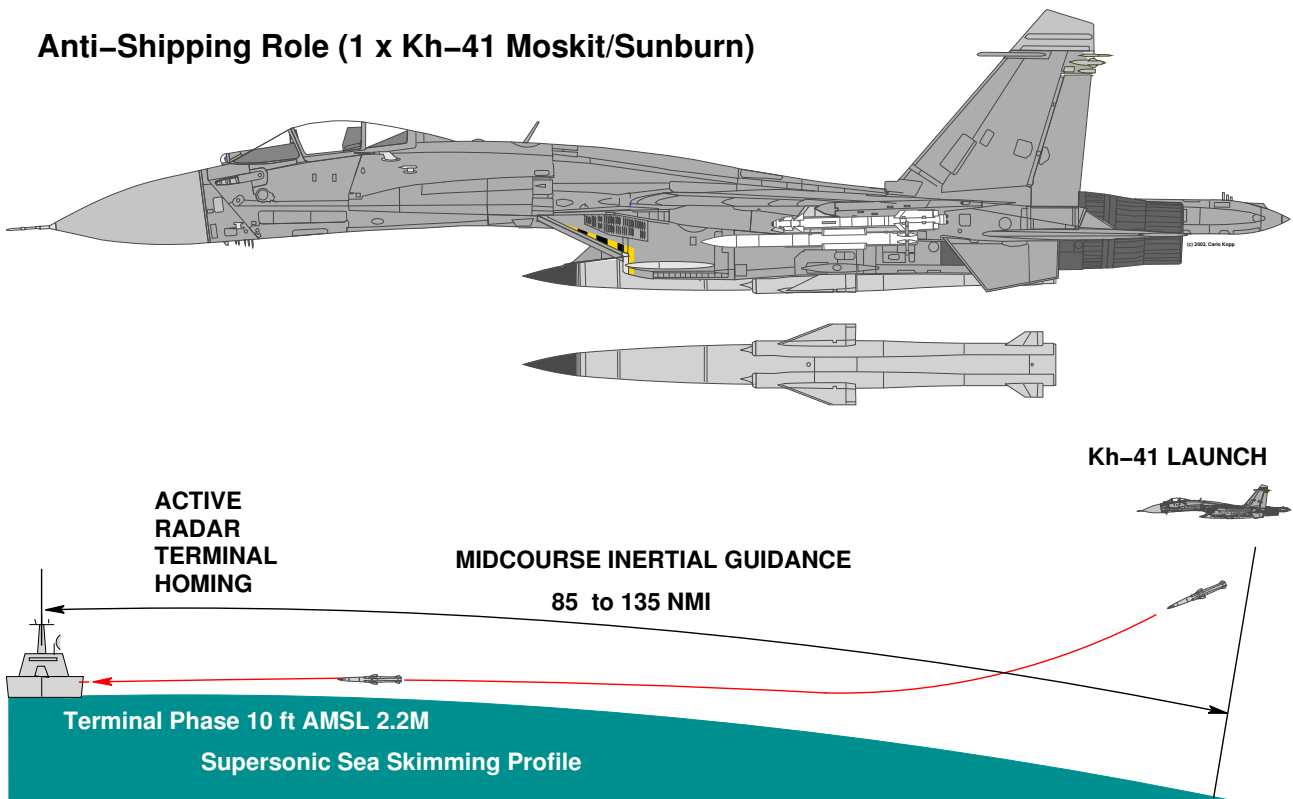


Figure 6: *The regional proliferation of advanced Russian supersonic sea-skimming cruise missiles presents genuine challenges for surface warships. Such missiles cannot be detected by the warship until they pop up over the radar horizon which might be as little as 15 to 25 nautical miles away. The launching aircraft can be more than 100 nautical miles distant under the horizon and also not detectable by shipboard radar. The high speed of such missiles makes them extremely difficult to intercept, especially if several have been launched concurrently to saturate the warship's defences. In practical terms such missile technology defeats long range shipboard radars (C. Kopp).*

with ballistic missile defence, it is much more relevant to Australia in strategic terms, and no less important to United States force operations in this theatre.

The misdirection of missile defence investment into ballistic missile defence rather than cruise missile defence is also reflected in the high priority being given to the Navy Air Warfare Destroyer project over the Wedgetail AEW&C project. A surface warship, with a typical radar horizon of 15 to 25 nautical miles cannot compete in effectiveness against a package of AEW&C aircraft, fighter aircraft and tanker aircraft as a cruise missile defence asset. Moreover, ballistic missile defence oriented radar and missile system optimisations in a surface warship yield a system which is ill adapted to cruise missile defence.

Australia should shift its engagement with the United States on missile defence issues from the current focus on ballistic missile defence to cruise missile defence, as the latter represents a more significant risk within this region longer term. Concurrently, Australia should shift investment from the surface bound Air Warfare Destroyer project into the more relevant areas of AEW&C aircraft, fighter aircraft and tanker aircraft, as these are much better suited to cruise missile defence tasks.

End of Submission