



GOING BALLISTIC

Timothy Compston focuses on the soaring global security challenge posed by ballistic missiles.

The recent series of missile launches by the North Korean regime of Kim Jong-un has certainly brought into sharp relief the issue of ballistic missiles and how to deal with them. Not only has a succession of North Korean tests upped the ante on the Korean peninsula, but with the sight of missiles flying over the Japanese island of Hokkaido, before landing far off in the Pacific Ocean, the Japanese – and those living further afield – face the prospect of finding themselves in the firing line should any future conflict break out. Sadly, the increasingly bellicose pronouncements by the North – including referencing the US territory of Guam – and

hard-line tweets and comments by American President Trump, and other US officials, would seem to suggest that it is going to be difficult for both sides to pull back from the brink.

From the perspective of the US and its allies in the region, the reach of North Korea's missiles is a clear and present danger that is increasing at a worrying rate: 1,678 miles (2,700km) on 29 August to 2,299 miles (3,700km) on 15 September, just a fortnight apart, and hot on the heels of a nuclear bomb test. There is, of course, the added concern that the North Koreans may use their ever more capable rockets as delivery vehicles for miniaturised nuclear warheads. The jury is still out as to whether they have reached the point of successfully marrying these two technologies or

whether we are five or even 10 years from that point. To put the potential destructive power of a nuclear-equipped missile into perspective, as reported in *The Japan Times*, the Japanese Government estimates that the last nuclear test by North Korea had a yield of around 160 kilotons – more than 10 times the size of the Hiroshima bomb.

INSURANCE AGAINST THE WEST

In North Korea's eyes the parallel development of ballistic missiles and nuclear weapons is a logical path to take, being seen very much as an insurance policy against the West – and the US in particular – seeking some sort of regime change. The very fact that the technology is drawing closer and closer to threatening the Continental United States may, paradoxically, make a military clash more, rather than less, likely. As tensions mount we also saw, with the last North Korean launch, that the South Koreans responded in kind, within minutes, by firing their own, albeit short-range Hyunmoo-2 ballistic missiles into the sea.

Taking a broader view beyond North Korea, other countries are also pressing on with their own ballistic missile developments, which are ringing alarm bells, especially in the West. A case in point is Iran, which in September announced the successful launch of a

THE JAPANESE FACE THE PROSPECT OF BEING IN THE FIRING LINE SHOULD ANY CONFLICT BREAK OUT

ballistic missile – the Khorramshahr – which state-run Press TV reports said had a range of 2,000km (1,243 miles), can carry multiple warheads and will be operational in the “near future”. Concerns over Iran's intentions were expressed in a recent Pentagon report by the National Air and Space Intelligence Centre and the Defence Intelligence Ballistic Missile Analysis Committee: “Teheran's desire to have a strategic counter to the United States could drive it to field an ICBM [Inter-Continental Ballistic Missile].” There are also, not surprisingly, real worries that as Iran ramps up its own efforts other countries with rival ambitions in the region may look to intensify their plans in this regard.

For its part, Saudi Arabia, which sees Shia-dominated Iran very much as the enemy, has turned to China to obtain a ballistic missile force. First came the intermediate-range DF-3 in a deal stretching back to the late eighties. Further evidence of this came from satellite images analysed by experts from IHS Jane's Intelligence Review back in 2013 – and flagged up in a *Daily Telegraph* piece of the same year – of a surface-to-surface missile base deep in the Saudi desert, with launch sites for the DF-3 mobile launchers that, it was suspected, were being aimed at Iran and Israel, more specifically the cities of Tehran and Tel Aviv. In addition, according to a *Newsweek* story the following year, the Saudis had in fact purchased more accurate medium-range DF-21 missiles from China in 2007, missiles that subsequently have been displayed in public.

On the Indian sub-continent, the face-off between the two nuclear-equipped rivals Pakistan and India now has a ballistic missile. Of the major powers, US and

Russian launcher numbers are well down on their Cold War heights – thanks to treaties like START I and New START – however, both are committing billions of dollars and roubles towards the renewal of their capabilities with next-generation systems. The recent ballistic missile report by the National Air and Space Intelligence Centre and the Defence Intelligence Ballistic Missile Analysis Committee singles out the growing threat from China saying that it has “the most active and diverse ballistic missile development programme in the world”.

Historically, after World War II – and the German V2 – the first conflict to see ballistic missiles used in anger was the Iran-Iraq war (1980-1988) where it is thought that 135 of an Iraqi version of the Scud – the 'Al Hussein' – were fired at Iran. A few years later, the Gulf War underlined the psychological and propaganda impact that even smaller tactical ballistic missiles can have, even when the actual damage caused is limited. In fact, it proved to be one of the few ways that the Iraqis could hit back at the Allies, specifically at targets Israel and Saudi Arabia, during conflict where it was largely overmatched.

So, what can be done to intercept ballistic missiles once they have been launched? Rewinding the clock to the eighties, one ambitious vision of how to accomplish this was the Strategic Defence Initiative (SDI) – based on ground-based and orbital platforms – which the media at the time dubbed 'Star Wars' and was a landmark policy of the Reagan Presidency. In the end, the scale of SDI was bigger than the technology or funds at the time could support.

Aside from a race to roll-out defensive technology solutions, historically there was agreement between the US and the USSR – as it was then – to limit the use of systems that could take out strategic ballistic missiles. At the time the ABM (Anti-Ballistic Missile) treaty, signed in 1972, was considered a good move as it was reckoned that, left unchecked, such solutions might upset the strategic balance leading to an intensified arms race and with the advent of Multiple Independent Re-entry Vehicles (MIRVs). The consensus did not last and, ultimately, 30 years on the American side felt that the limits imposed by the ABM treaty restricted their room for manoeuvre.

In terms of the state of play of Ballistic Missile Defence (BMD) solutions today, crucially there are three areas of a missile's flight that may be targeted, these are specifically: the boost phase, the mid-course phase when the missile and/or re-entry vehicle is in space and the terminal phase.

DEFENCE SOLUTIONS

Without doubt, it is the US that has the most comprehensive array of solutions. Looking in more detail at US systems, these include the Ground-based Midcourse Defence (GMD), which can engage and destroy limited ballistic missile threats in space to protect the US. This is serviced by 36 ground-based interceptors, designed to deliver exo-atmospheric kill vehicles based in Alaska and Vandenberg Air Force Base in California. Another solution that is primarily deployed at sea is the Aegis BMD (Ballistic Missile Defence) that relies on Standard missiles and is carried by some of the US Navy's Arleigh Burke destroyers and Ticonderoga cruisers plus ships from

close allies like Japan and South Korea. In addition, some units are now being positioned on land in the form of 'Aegis Ashore' with an installation in Romania being a case in point. This is with a view to dealing with threats from states like Iran, but thanks to its location is giving the Russians cause for concern.

Moving on to the US Army's land-based only Terminal High Altitude Area Defence (THAAD), this is a portable solution that can intercept missiles either inside or outside of the atmosphere during the terminal phase of their flight. THAAD has hit the headlines recently, thanks to its forward deployment in South Korea – as tensions mount with the North – and is also tasked with protecting Guam and Hawaii.

THE LAST NUCLEAR TEST BY NORTH KOREA HAD A YIELD MORE THAN 10 TIMES HIROSHIMA

Beyond this, there is the PATRIOT Advanced Capability-3. In terms of shorter-range ballistic missiles, an earlier iteration of PATRIOT was fired in anger as far back as the Gulf War to deal with the threat from Iraqi Scuds to Israel and Saudi Arabia. This is reckoned to have been the first time that attempts were made to deploy ABM defences in a war-type situation.

So how effective are the latest systems likely to be should the worst happen? Based on intercept flight test records from the US Missile Defence Agency as of May 30 this year, across all programmes 76 of 93 hit-to-kill attempts have been successful since an integrated system began development in 2001. In

addition, 51 of 64 hit-to-kill intercept attempts have been achieved for THAAD, Aegis BMD, and GMD test programmes over the same period. The upshot of this is, of course, that as of today there is nothing that can guarantee 100 percent security against ballistic missiles.

Elsewhere, Russia is looking to roll-out its own ballistic missile defence capability in the shape of the S-500 Prometheus system – that some commentators have compared with the USTHAAD – which is designed to intercept long-range ballistic and hypersonic missiles. Israel – which saw its cities on the frontline in the Gulf War – has ramped up its ballistic missile defence efforts ever since with the new Arrow 3 exo-atmospheric ABM system, that is jointly funded and developed with the US, becoming operational at the start of this year.

EUROPEAN DEFENCE

Here in the UK and Europe, attention is turning to the roll-out of an indigenous BMD capability based on extending the range of Aster missiles, which are carried by ships like the Royal Navy's Type 45 destroyers as well as French and Italian vessels. Back in July, Mark Lancaster, Minister of State for the Armed Services, said that: "Since the Strategic Defence and Security Review 2015 the UK has continued to explore the potential for the Type 45 Destroyers to operate in a ballistic missile defence role, including through active engagement with NATO partners".

The reality today is that we are in the throes of a twin-track arms race that has no end in sight, with on the one hand a growing number of states – including some such as North Korea that are labelled as 'rogue' in the West – seeking to expand their ballistic missile capabilities, while at the same time many of the existing ballistic missile and nuclear-armed states are accelerating the roll-out of ABM defences as insurance against a limited missile strike ●

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A Terminal High Altitude Area Defense (THAAD) interceptor is launched from the Pacific Spaceport Complex Alaska in Kodiak

