

AS THE PROSPECTS of Iran developing a nuclear weapon capability become more conceivable, Bush administration military and intelligence planners are reported to be examining various military options to deal with this eventuality. A ground war is probably the least attractive of these, and not just because US troops are so thinly stretched by commitments in Iraq and Afghanistan: more importantly, such an option seems fundamentally inconsistent with US Secretary of Defense Donald Rumsfeld's preference for swift, pre-emptive action using long-range strikes, enabled by pre-emplaced special forces targeteers. This is the so-called 'Afghan model', employed for the first time during *Operation Enduring Freedom* against al-Qaeda and Taliban forces after 9/11. But Iran is not Afghanistan. Nor is the target set in Iran anything like the single nuclear reactor Israel pre-emptively attacked at Osirak, Iraq, in 1981. Iran has already taken measures to conceal and harden an extensive array of nuclear-related facilities, with the result that some targets could conceivably escape attack altogether owing to inadequate intelligence (as did Iraq's nuclear programme during the 1991 Gulf War), while others may simply not be susceptible to damage from existing American conventional weapons. This, in turn, has stimulated discussion about the possibility that the US might be willing to use nuclear weapons to eliminate Iran's nuclear programme, a notion that, according at least to *New Yorker* reporter Seymour Hersh, is under serious scrutiny by Pentagon planners.

No matter whether the Pentagon's examination of nuclear options is a bluff or serious, the challenges US planners face today underscore how enormously difficult it is to deny emerging nuclear states – particularly those that take measures to protect and obscure their nuclear capabilities – the achievement of their military designs. And yet, just such an objective is central to America's military strategy, first articulated in the January 2002 Nuclear Posture Review (NPR).

Denial strategy

The 2002 NPR posited a fundamental shift from an historic emphasis on deterrence and its corresponding reliance on offensive nuclear forces to a strategy that reassures friends and allies, dissuades potential adversaries from threatening US interests, deters adversary use of weapons of mass destruction (WMD), and – should deterrence fail –



A B-2 Spirit bomber Photo © AP

defeats those adversaries decisively. To accomplish these objectives, the NPR introduced a new strategic triad that meshed missile defences, nuclear weapons and non-nuclear strike forces. Media and expert attention promptly fixed exclusively on the document's call for the potential development of a nuclear earth penetrator (NEP) designed to destroy hardened and deeply buried targets (HDBTs). Lost in the ensuing debate was the true transformation of strategic deterrence away from nuclear dependence and increasingly toward a combination of conventional offensive and defensive capabilities. Iran's alleged nuclear weapons ambitions stand as a critical test for the NPR's strategy of developing credible war-fighting options meant to deny potential adversaries the capacity to harm America and its allies and friends, most notably with nuclear weapons.

The chief demands of a denial targeting strategy were first made clear in 1993, when then-US defense secretary Les Aspin stipulated three priorities essential to the Clinton administration's counter-proliferation strategy. They included improvements in locating, identifying and attacking HDBTs, WMD-armed mobile missiles, and shooting down enemy missiles that survive such counterforce attacks. These three areas still dominate, if only because countries like Iran continue to protect their critical military and leadership facilities by increasing their number and hardening them against attack. The NPR's authors argued that no existing nuclear weapon in the US stockpile could suitably threaten certain strategically important HDBTs, which justified their call for studying a new NEP weapon and research into other new types of nuclear weapons. While Congress has so far balked at approving money to commence advanced concept studies, it has allocated funding for a Reliable Replacement Warhead programme that is supposed to improve the reliability of existing nuclear weapons.

The NPR's authors undoubtedly remain convinced that having a small number of low-yield nuclear weapons in the New Triad's mix of otherwise conventional offensive and defensive

capabilities would make US declaratory policy – especially against non-nuclear states brandishing biological threats – more credible. It would also hedge against the possibility that key elements of the conventional leg of the New Triad may not emerge as quickly as desired.

The New Triad's components

On the defensive side, even though President George W. Bush has conflated national and theatre missile defences into a multi-layered global system protecting the homeland and forward-based troops, allies and friends, little real progress has been demonstrated to date. By the end of 2006, the administration hopes to have 16 silo-based interceptors in place in Alaska and California, together with three *Aegis* destroyers equipped with *Standard Missile-3* interceptors. While the latter ship-based interceptors seem needed to deal with North Korean and Iranian short-to-intermediate-range ballistic missile threats, the silo-based interceptors still await the emergence of a genuine intercontinental ballistic missile threat. For reasons of security, the US Missile Defense Agency intends to become even more opaque about its deployment plans in Alaska and California than it has been in the past.

The New Triad's offensive leg, called global strike, is even more shrouded in secrecy. Consistent with his September 2002 National Security Strategy, which made pre-emption a key Pentagon planning mandate, and the NPR's call for integrating conventional and nuclear strike planning, Bush issued a classified directive in January 2003 that charged US Strategic Command (STRATCOM) – formerly responsible for delivering nuclear attacks – to develop the capacity to deliver long-range 'kinetic' (that is, nuclear and conventional) and 'non-kinetic' (information operation) strikes in support of national requirements. Reportedly, Concept Plan (CONPLAN) 8022-02 has been developed to deal primarily with WMD threats like those posed by Iran and North Korea. Unlike traditional Pentagon war plans that react to enemy invasions with large-scale multi-service protracted campaigns,

CONPLAN 8022 posits swift and decisive precision attacks (conventional and cyber) complemented by Special Forces on the ground to locate targets and secure them, if needed. The non-kinetic cyber attack would shut off electricity, jam and spoof communications and disable or destroy computer networks and command facilities. Given STRATCOM's mission to integrate possible conventional and nuclear strike options, CONPLAN 8022 includes an option to employ a NEP to deal with HDBTs. STRATCOM formally announced its new global strike mission in November 2005 when it launched a new Joint Functional Component Command for Space and Global Strike.

The US Air Force's contribution to STRATCOM's new global strike mission includes B-2, B-52, and perhaps some B-1 bombers – all on high alert – complemented by the US Navy's converted *Trident* submarines, four (of a total of 18) of which will eventually carry 154 conventionally armed *Tomahawk* cruise missiles (plus Special Forces' mini-subs). At least one converted *Trident* boat has already joined the fleet, with three others to follow. The Pentagon has also proposed a new \$2.5bn programme to outfit a small number of *Trident* nuclear missiles on its remaining 14 *Trident* boats with conventional warheads. The choices could include either a submunitions package of 12 small-diameter smart bombs (250 pounds each) or a large bunker-buster warhead. In the future, an ever more robust global strike force could emerge if breakthroughs occur in ramjet engines and hypersonic air vehicles. However robust conventional strike capabilities become, a lingering question still remains: namely, how essential nuclear weapons are to America's denial strategy.

Nuclear relevance?

Nuclear weapons are irrelevant to improving overall counterforce performance against WMD-armed mobile missiles – this is a longstanding shortcoming in US attack capabilities. Solutions lie largely in the domain of greatly improved and persistent aerial surveillance, and in compressing the time required to identify the target, decide on attacking it, and rapidly executing the attack. Curiously, while Bush administration officials have sought funding for new NEP weapons, they have not publicly acknowledged interest in compensating for existing missile defence weaknesses by pursuing a nuclear solution. Missile defense opponents and some supporters in the scientific community believe that hit-kill

(HTK) interceptors, which rely on force of impact instead of a warhead to destroy a target, are susceptible to simple countermeasures. Harsher critics would scrap missile defences altogether, while a distinct minority of supporters have quietly called for mating a very small yield nuclear device to an imperfect HTK interceptor. The interceptor would no longer need to hit the target perfectly but just come close enough to vaporise its WMD payload hidden in a cloud of countermeasures. The challenge would be to design a warhead that would destroy the target without causing electromagnetic pulse damage to nearby commercial and military space systems. For the moment, the political feasibility of such a proposition seems no more likely than studying new NEP designs, which Congress has thus far prevented.

Where nuclear weapons have ostensible relevance is in attacking HDBTs. US intelligence has identified 10,000 HDBTs in countries of proliferation concern, 2,000 of which are believed to be strategically important. Many strategic HDBTs are between 100 and 400 meters deep, but the majority are less than 250 metres deep, and a few are located between 500 and 700 metres buried in hard rock. According to recent study by the US National Academy of Sciences (NAS), many of the more important HDBTs are beyond the potential reach of existing US conventional earth-penetrating weapons. Many, but not all, of these strategic targets are susceptible to destruction by one or more nuclear earth-penetrating weapons. However, NAS reports that over one-half of these strategic HDBTs are located near or in urban areas, meaning that a nuclear attack could produce significant civilian casualties. A NEP attack near or in such an urban area could cause, depending on weapon yield, between thousands and more than a million casualties. In more remote areas, casualties could range between a few hundred to hundreds of thousands, depending on yield and wind direction. The NAS study indicates that a few hundred of the strategic HDBTs could become candidates for targeting should the US pursue a new and more robust NEP. Some uncertain number of HDBTs would presumably remain beyond reach.

Not beyond reach, however, are Iran's allegedly most strategic nuclear targets, and it is not at all clear that a nuclear weapon would be needed to destroy or severely degrade them. Most attention has focused on Natanz, Iran's pilot uranium-enrichment facility located about 200 miles south of Tehran. Publicly available reports differ on how deep the Natanz facility is buried – some

suggest 23 metres deep, while others report around 9 metres. But US intelligence satellites closely monitored the construction at Natanz, which disclosed the precise location of the facility's rooms and the specific construction technique employed – a 'cut and cover' method in which a hole is dug, the facility is built and then covered with repeated layers of concrete, rock and soil. Specialists argue that such construction methods produce an overburden at Natanz that is susceptible to existing conventional penetrators. Indeed, penetrators may not even be essential. In 2003, Admiral James O. Ellis, Jr., then head of STRATCOM, supported the idea that precision conventional munitions could do just as good a job as any nuclear penetrator by sealing off underground facilities through repeated attacks.

Future improvements in conventional earth-penetrators also hold promise for a much more robust, if not perfect, non-nuclear solution for attacking HDBTs. Essentially, the concept entails attacking a single entry point repeatedly, thus drilling down the same precise entry point (hole) until the weapon achieves the required depth. High accuracy is obviously needed – perhaps an order of magnitude improvement over today's weapons. This will occur naturally as Global Positioning System upgrades are made, but it could possibly occur sooner with adjustments to existing space-borne systems.

Intelligence premium

High quality intelligence may be just as important as any new weapon development in making a conventional-only denial strategy conceivable. Rumsfeld's preface to the 2002 NPR referred to the need for 'exquisite' intelligence, which is surely the case with respect to HDBTs. Because of more expeditious excavation techniques, US intelligence does not discover many of these facilities until after they are completed, if at all. This makes their characterisation for targeting purposes dubious at best, even for nuclear weapons when they are required – for example, to destroy biological agents located in a specific HDBT chamber. In the last resort, Admiral Ellis may have offered the only reasonable military solution, if all else fails: the repeated application of precision conventional weapons to disrupt the target's proper functioning. But that might require troops or Special Forces on the ground to secure or destroy the target. There appear to be no 'silver bullets' on the horizon for America's newfound denial strategy. ⓘ IISS