ASTROS

PROCAD DEFESA

BOLETIM ASTROS

CAPES

MINISTÉRIO DA DEFESA

BOLETIM ASTROS

A Newsletter da Equipe Procad ASTROS

O Boletim Astros é uma publicação mensal que reúne informações sobre Segurança Internacional, Defesa Nacional & Forças Armadas, Tecnologia, Mísseis & Sistemas de Defesa e ASTROS & Indústria de Defesa. Elaborado pela equipe de pesquisadores do Projeto Procad Defesa ASTROS, o boletim oferece um panorama geral de notícias e artigos publicados em portais especializados, revistas, jornais, magazines, periódicos, sites institucionais e *think tanks* com foco nas temáticas mencionadas.

Equipe editorial

SEGURANÇA INTERNACIONAL

TECNOLOGIA, MÍSSEIS & SISTEMAS DE DEFESA

DEFESA NACIONAL E FORÇAS ARMADAS

ASTROS & INDÚSTRIA DE DEFESA

1. Fuerza Armada Nacional Boliviana pone en marcha el ejercicio Escudo Boliviano I-2021

05.03.2021

Defesa.com

https://www.defensa.com/venezuela/fuerza-armada-nacional-bolivariana-pone-marcha-ejercicio-escudo

Desde el viernes 5 y hasta el domingo 7 de marzo, la Fuerza Armada Nacional Bolivariana ejecutará en todo el territorio de la República de Venezuela, el ejercicio de acción conjunta e integrar Escudo Bolivariano "Comandante Supremo Hugo Rafael Chávez Frías 2021". Tal como publicó defensa.com, el almirante en jefe Remigio Ceballos Ichaso, Comandante Estratégico Operacional de la FANB, acompañado de su Estado Mayor Conjunto, sostuvo el pasado mes de febrero una vídeo conferencia con los Comandantes de las ocho Regiones de Defensa Integral, para dar inicio a la fase de preparación que busca de esta forma, incrementar el apresto operacional del Sistema Defensivo Territorial.

"…Venezuela es un solo ejército…debemos seguir avanzando en la calidad de nuestro adiestramiento…la gran fortaleza que tenemos nosotros como fuerza armada es que tenemos dignidad y no aceptamos injerencias de nadie, no la aceptaremos nunca…agradezco a todos nuestros aliados y estaremos siempre al frente de la batalla…somos una FANB altamente profesional..." expresó el AJ Ceballos Ichaso.

Y agrego que en la ejecución de los ejercicios se contará con el máximo empleo de la Milicia Bolivariana, el Comando de Defensa Aeroespacial Integral (CODAI), Fuerzas de Acciones Especiales, FANB y la Policía Nacional Bolivariana, ejecutando acciones multiespectrales para combatir todo tipo de amenazas.

Es importante señalar que hasta ahora, y en preparación del ejercicio militar, el Ceofanb desplego hacía la base aérea Mayor Buenaventura Vivas Guerrero, en Santo Domingo, estado Táchira, aviones Hongdu K-8W pertenecientes al Grupo Aéreo de Casa N° 12, e igualmente a esta misma base aérea, arribaron el día 3 de marzo a bordo de un Shaanxi Y-8F200W del Grupo de Transporte Aéreo N° 6 de la Aviación Militar Bolivariana, elementos de la 42 Brigada de Infantería

Paracaidista. Por otro lado, los medios de comunicación del Estado venezolano han mostrado imágenes de unidades adscritas a la Región de Defensa Integral Los Andes, específicamente del Ejército, las Milicias y la Guardia Nacional Bolivariana, realizando patrullajes a lo largo de la frontera con Colombia, empleando vehículos blindados BTR-80 del 253 Batallón de Infantería Mecanizado Genaro Vásquez, y Norinco VN4 del Comando de Zona Nº 21, además de una batería de obuses Leonardo M-56 de 150 mm del 255 Grupo de Artillería de Campaña Cnel Francisco José Torres.

2. The Integrated Review: A Technological Revolucion at the Heart of UK Defense and National Security

12.03.2021

Defesanet

https://rusi.org/commentary/integrated-review-technological-revolution-heart-uk-defence-and-national-security

In a world where technology is fundamental to both threats and opportunities ahead, it must be at the core of UK security and defence capabilities.

The Integrated Review, expected imminently, will be delivered into a threat landscape for UK national security that continues to evolve at pace. The coronavirus pandemic has been used as an opportunity by threat actors, including states. Recent attacks highlight states' determination and sophistication in targeting government and critical institutions. Civilians, too, have been unknowingly plunged into the grey zone of state or state-sponsored attacks on democracies, whether by receiving a vaccine scam email or health misinformation that undermines national resilience. The Chief of Defence Staff General Sir Nick Carter has warned there is a real risk that covert cyber warfare could escalate into an 'uncontrollable state of all-out war'.

The future of national security and defence will increasingly be focused on the information domain. The armed forces will, for example, increasingly train in synthetic environments and defence and security personnel will continue to need ever more sophisticated methods, and ever more computing power, to make sense of the vast amounts of data that are features of the world they operate in. Ideally, they will want to exploit data in ways that get ahead of adversaries and create operational advantages. But this is a competitive landscape. Most prominently, analysts note the trajectory towards Chinese supremacy in key technologies, and the Chinese government has also published an ambitious plan for defence technology over the next five years.

Getting UK defence and national security fit for this challenge will require nothing short of a revolution. To be clear, this is not an argument that the conventional domains of warfare have gone away, or that old capabilities will no longer be required. But the tired false dichotomy of aircraft carriers or data centres risks creating a diversion, while technology and data continue to transform every aspect of our lives, and therefore the context for defence and national security. Aircraft carriers themselves operate in the world of information advantage.

The UK government's announcement of a £16.5-billion uplift of Ministry of Defence (MoD) funding should be seen in this context. On an increasingly tumultuous international stage, the UK must be prepared to

develop the technological capabilities needed in modern battlespaces. As new technologies are adopted by hostile actors across the world, it is imperative that the UK leads – with allies and partners – in a new approach to how technologies are understood and used in defence and national security. Failing to do so will leave the UK playing catch up, and managing the risks will become an exercise in high-stakes whack-a-mole, as the latest technology-enabled threat comes into view.

These aspirations will not be straightforward, and funding is only the start. The UK has many of the ingredients to be world leading – a thriving tech sector, world-class academia, and heritage in national security and defence technologies. There have been brilliant applications of technology in government national security and defence for over a century (see, for example, the Government Code and Cypher School, formed in 1919). Yet, in some basic ways, the technology revolution we require is only in its infancy. Evolving the government's approach to technology is critical.

TECHNOLOGY AND INNOVATION NEED TO BE AT THE CORE, NOT ON THE PERIPHERY

For several years, there has been a growing voice and momentum within national security and defence for recognition of the need to embrace technologies. In defence, initiatives such as the Defence and Security Accelerator, NavyX and jHub are examples. But such initiatives were symptomatic of a problem, since the core of government business remained largely unchanged. Debates around how to bring the great ideas developed in these initiatives into mainstream use have been going on for years, and still have not been satisfactorily solved.

Much is said about the success of the US Department of Defense's Defense Advanced Research Projects Agency and the intelligence community's In-Q-Tel. However, their successes are not only in the technologies they create, but the model for how these can be transitioned into mainstream use. To achieve this, ministers, officials and senior military personnel will need to undertake a revolution in organisation, culture, rules and governance around the development and acquisition of defence and national security technologies. This must begin at the core, not the margins, using impetus from the Integrated Review as a starting point.

A NEW APPROACH TO STRATEGY IS REQUIRED (OR, STOP BUYING WATER AND LEARN TO SURF)

Despite important strategies like the 2015 Strategic Defence and Security Review, the technology programmes they spawned have too often created compartmentalised outputs, rather than a holistic vision. Building on work such as the MoD's Global Strategic Trends, future defence programmes will need to provide a much more radical strategic vision for the rapidly evolving technological landscape. Decisions must look insightful in 10–20 years' time. This requires no longer thinking in terms of a prioritised list of outputs and capabilities.

In the past, a national defence sought to own, exploit and deploy as much capability as possible within budget. Today, the technology landscape is simply too big (consider the total UK defence budget of around £45 billion in the context of global technology) and complex for this model to make any sense. Instead, national defence will need to learn how to: co-exist in a world of technology and connectivity; virtualise capabilities; and keep small, move fast and allow for fast failure.

As a former colleague put it rather eloquently, 'we need to stop buying water and learn to surf'. Technology platforms, computation, what you do with it and the experience layer create a backbone for this. These approaches are standard in the tech sector. They must become the new standard in defence, and quickly.

OFFICIALS MUST BE EMPOWERED AND TASKED WITH CHALLENGING THE STATUS QUO…

Not only is the old approach to delivering outputs strategically problematic, officials also have to circumnavigate cumbersome procurement processes that were simply not built for today's strategic landscape. Officials need to be able to challenge the status quo and learn from the private sector, where the competitive landscape requires pace and constant renewal, and does not allow for the inertia that is tolerated as part of the process in government.

The recent 'Transforming Public Procurement' green paper appears to be a recognition of the challenge – but its focus on process neglects the human dimension. Change must prioritise people, culture and organisation over process.

… AND SUPPORTED AND INCENTIVISED

Critically, this is about leadership – officials will only be able to think radically if they are supported and incentivised to do so. Basic areas of the national security and defence landscape are out of date and risk going backwards in terms of the curve of technological advancements. There is a cognitive dissonance between officials who live in a world of cloud, AI, biometrics, data analytics and augmented reality, yet return to their Whitehall desk to deliver programmes that are not able to fully embrace the latest technologies. This is beginning to change, but not nearly fast enough, and the reason for this frequently lies with incentives.

Officials are tasked with delivering a specific policy or operational objective and, crucially, managing risk while doing so. This too often leads to a focus on assuring seniors that they are operating within a tolerable level of risk, rather than suggesting a rebuild of the old, but well-oiled, machine.

More people are challenging this, but they need leadership to know that their innovative approaches will be supported and rewarded.

GOVERNMENT NEEDS TO BETTER UNDERSTAND THE LINK BETWEEN DEFENCE TECHNOLOGY AND THE WIDER ECONOMY AND SOCIETY

The predominant image of the defence sector's impact on the economy is of aircraft carriers and jet fighters. As important as these industries are, in a world in which capabilities are moving to the cloud and software and data can be as 'real' as any physical assets for a modern military, this image is increasingly dated.

As the government considers how best to use defence spending to help the economy recover from the impact of the coronavirus pandemic, it is important to focus on the digital sector, which is growing 2.6 times faster than the wider economy. The Integrated Review provides the government with an opportunity to support thousands of new jobs in the defence technology sector.

The military will increasingly need to work with, and help foster the creation of, companies like Improbable, originally a gaming company that now creates synthetic environments for a range of defence applications. The company was started at the home of its founder in 2012 and is now valued at over $2 billion. The market for military AI is projected to grow from £3.8 billion in 2016 to £6.6 billion in 2022. The new jobs created from investment in making the UK a leader in these emerging defence technologies can also drive a wave of upskilling.

In a world where technology is so fundamental, it must be at the core of our security and defence capabilities. Through transformative technological advancement, the UK government will not only enhance national security, but it will also be investing in companies as yet unborn, employing people using new skills and working on technologies that have not yet been dreamt of. Achieving this will require a technological revolution in our defence and national security apparatus that is just beginning.

3. CSBA 2020 Annual Report

16.03.2021

https://csbaonline.org/research/publications/csba-2020-annual-report

The Center for Strategic and Budgetary Assessments (CSBA) is an independent, non-partisan, non-profit public policy research institute established to promote innovative thinking and debate about national security strategy, defense planning, and military investment options for the 21st century.

CSBA's mission is to develop innovative, resource-informed defense concepts, promote public debate, and spur action to advance U.S. and allied interests. Our vision is to set the terms of debate for the future of national defense and drive change in concept development, force structure, and resources to prepare the United States and its allies to compete and win in an era characterized by great power competition and conflict.

For more than a quarter-century, the Center for Strategic and Budgetary Assessments has provided consistent, high-quality, and innovative research on defense strategy, budgets, and the security environment. With notable alumni, CSBA experts have worked to analyze U.S. defense strategy, force structure, and planning, and defense budgets in the effort to reconcile these interrelated subjects, contributing extensively to the Revolution in Military Affairs debate, linkages between contemporary strategy and innovation, discussions on the strategic choices necessary for the transformation and modernization of the U.S. military in the face of limited resources, and the defense strategy and operational concepts needed for an era marked by great power competition and the possibility of great power war.

Under the leadership of Dr. Thomas G. Mahnken since 2016, CSBA remains instrumental in guiding the nation's most critical defense policy debates as a small but powerful group comprising experts with extensive experience in the field of national security— many of them military veterans and former senior-level policymakers from the Department of Defense, State Department, and the National Security Council— supported by a dedicated staff of accomplished executives and scholars.

4. United States, a dangerous ally

03/03/2021

El País

https://english.elpais.com/americas/2021-03-03/the-united-states-a-dangerous-ally.html

"America is back," declared an excited Joe Biden. He was speaking to a group of mostly European political leaders, via video link, at the Munich Security Conference. The new president emphasized that "the transatlantic alliance is back." Naturally, the message was well received. Angela Merkel, Emmanuel Macron and Boris Johnson all applauded America's new stance. In his remarks, Biden also renewed America's commitment to NATO's Article V, which obliges the military alliance's member nations to respond collectively to an attack against any one of its members. During Donald Trump's presidency, he repeatedly refrained from publicly acknowledging that, as a member of NATO, his country would accept that obligation. Naturally, Trump's reluctance produced a great deal of anxiety in the capitals of Europe... and glee from the Kremlin.

That changed when Biden entered the White House. The US president used his speech at the Munich conference to leave no doubt about his administration's position on Article V. "An attack on one is an attack on all," Biden said, and promised that his country would honor its commitment.

As president, Donald Trump disdained multilateralism, alliance-building and diplomacy, which he considered a waste of time. Instead, he prioritized the development of personal relationships with the leaders of countries such as China, Russia, Saudi Arabia and North Korea. He didn't accomplish much and, in general, US relations with many of the countries he sought to seduce deteriorated.

It is fascinating to see high-level diplomats emulating the strategies of many multinational executives

’’ For their part, both Biden and his officials repeat, whenever possible, alliances will be the central pillar of the administration’s foreign policy. They see diplomacy as the main instrument to further US national interests. According to them, successfully attacking the pandemic, climate change and the economic crisis, and preventing Iran from having nuclear weapons, would all be impossible without coordination with allies. From the perspective of Biden and his administration, Trump’s slogan “America First” ended up meaning “America Alone.” According to them, Trump’s position only served to isolate the country, including unilaterally ceding geopolitical spaces that were quickly filled by China and Russia. It also proved that while America’s military and economic power is important, it is not enough to accomplish the nation’s international objectives.

Potential allies are keen to work with the United States in pursuit of their common interests. There is no doubt that repowering these alliances is necessary. Global problems that cannot be solved with local responses are proliferating and with them, the need for countries to act in a coordinated manner.

Unfortunately, Washington’s attempts to build a much-needed network of international alliances will have one major obstacle: the volatility of US politics.

As president, Donald Trump disdained multilateralism, alliance-building and diplomacy, which he considered a waste of time’’

Why? Consider what would happen to a country that enthusiastically embraces Biden and dives into an alliance with the United States only to find four years later that the US elections have ushered in a new president who has no interest in upholding Biden’s agreements. That issue is very much on the minds of foreign policy leaders of the very countries that Washington needs as allies. In the virtual corridors of the Munich conference, the most pressing question was not whether the United States was back. The burning question was – and still is – how long it will stay “back.” They realize that the United States is not a politically stable country.

It is fascinating to see high-level diplomats emulating the strategies of many multinational executives. Since the late 1990s, business leaders have built complex and highly efficient supply chains that start in China and flow to markets around the world. These supply chains allowed companies to drastically reduce their inventories. Just-in-Time (JIT) logistics practices became universal in inventory management. In order to minimize costs, supplies arrive with speed and precision at their destination, just when they are needed for the manufacture of the final product

The trade war that Trump set off with China created all kinds of headaches in global supply chains. Thus, companies that depended on JIT logistics discovered that it was dangerous to put all their eggs in one basket. To mitigate the risk, executives were forced to balance the principle of "Just-in-Time" with that of "Just-in-Case." Many were forced to invest in finding new suppliers, at considerable cost, just in case.

Business leaders understood that as much as they want the United States to create stability and limit imbalances, this will not always be the case. Political leaders will likely emulate them. The politics of alliances promoted by Joe Biden will be shaped by the diplomacy of "Just-in-Case''.

5. EU Strategic Autonomy trap

08/03/2021

Carnegie Europe

https://carnegieeurope.eu/2021/03/08/eu-s-strategic-autonomy-trap-pub-83955

The EU has placed strategic autonomy at the heart of its foreign policy. This has engendered much debate about what the concept means and how it is likely to affect the EU's external action. Strategic autonomy goes hand in hand with other increasingly prominent notions like geopolitical power and European sovereignty that seem set to push the union is a similar direction. While a strong consensus appears to have taken shape in support of these concepts, more critical thinking is needed to understand the trade-offs they entail.

Those uneasy at the idea of strategic autonomy mostly weigh in with a familiar concern over its potential impact on NATO and U.S. security engagement with and in Europe. The EU's foreign policy chief has lamented that this is a misdirected criticism. And indeed, the concept's main problems are deeper: they revolve around the particular understandings of power on which the EU's putative autonomy is based.

European policymakers' statements define strategic autonomy as the capacity to act. In doing so, they mix two separate strands of policy. In the defense and political spheres, they use the concept to refer to a buildup of capabilities. In the economic and other spheres, they use it to denote a quest for lower levels of reliance on others. Both are intuitively reasonable, but neither gets to the core of why EU external action has struggled in recent years—in particular in relation to supporting liberal and democratic norms.

CAPABILITIES VERSUS CHOICES

If one axis of autonomy amounts to a search for more EU defense and technological capabilities, it is not a new or controversial aim. But neither does this amount to a comprehensive vision for strategic leverage. Effective influence concerns the ways in which capacities to act are deployed—through what means, within what kinds of global relations, and to what ends.

In most instances, it is not an absence of capabilities that has held the EU back from acting autonomously in recent years. Rather, it is political choice—strategic judgments, whether good or bad, more than insuperable capacity constraints. Simply adding a modest layer of capabilities through more joint European projects will not, in itself, change that underlying reality.

It is unlikely that such additions would have led the EU to prevent Russia from annexing part of Ukraine in 2014 or engage successfully to defeat the regime of Syrian President Bashar al-Assad. It was not for want of a capacity to act that in the last decade the EU declined to fully support the Arab Spring uprisings, equivocated on Palestinian self-determination, twisted border control into its leading security doctrine, stepped back from further EU enlargement, narrowed the scope of its climate-security policies, and hitched its fortunes to discredited elites across the developing world.

In this sense, the plea for strategic autonomy rests on a faulty core diagnosis. Most frequently, the geostrategic concern arises not from the EU lacking the capacity to act but from the way that the union chooses to use the capacities it does possess.

Listing a standard menu of policy areas and saying the EU needs more capacity in each of them does not provide a geopolitical vision that corrects this shortcoming. Such an approach understands power in a narrow, mechanical fashion, in terms of hardware-type quantitative indicators. This overlooks the kinds of interwoven global relationships and substantive identities that are needed to give these capabilities effective leverage.

In this focus, it often appears as if the EU seeks to give itself state-like capacities to affirm its own evolving status, rather than assessing what kinds of influence really work. This echoes a long-noted distortion that EU policies are more about the union's institutional status than about the de facto means to attain external results.

AUTONOMY IS NOT A ONE-WAY STREET

While one axis of strategic autonomy is about bolstering the means of power, the other is about lessening external dependence. In defending this goal, the EU's foreign policy chief has listed areas where the union is developing its own production and resources so as not to need those of others, linking this approach to his view that global interdependence is now a source of conflict, not harmony.

This element of autonomy entails a particular kind of power. It is power understood as insulation from exogenous impacts—that is, decreasing Europe's vulnerability to the power and decisions of others. The catch here is that the EU's autonomy from others will, almost by definition, give others more autonomy from the EU. The flip side of the EU's multiple moves toward autonomy is that other powers will have less need to cooperate with the union in their own political-strategic actions.

In this way, the EU's quest for strategic autonomy could risk undercutting, not driving, the projection of geopolitical power as well as its support for liberal-democratic values. The push for economic autonomy may add to security in the sense of insulating European states from other powers; but this is a stark contrast to the idea of the EU influencing others and shaping international actions in a more enduring fashion.

Herein lies the risk of an autonomy trap. The EU has felt increasingly vulnerable, so it strikes out for autonomy; this dilutes the union's leverage over others; as a result, the EU feels even weaker, so it seeks even more autonomy; this further weakens its leverage over others; and so on. The more the EU turns to building its self-sufficiency, the more it chokes off the external pathways that allow its capabilities to effect change from others.

The EU's line is that autonomy does not entail outright isolation or protectionism. Undoubtedly, this is true. But simply stating this rather low-threshold fact does not solve the tensions and trade-offs that the concept almost certainly involves. The EU remains an open trader and insists it seeks deeper international partnerships, firmer and wider multilateral commitments, and more security engagement; but then it also declares an aim to achieve autonomy from such external factors. The strategy is tantamount to seeking external ties that give the EU more influence over others while diluting those ties that give others influence over the EU.

Logically, this must be a circle that is almost impossible to square. At the very least, it must be extremely difficult to paint the external other as something from which the EU needs autonomy and separation and then appeal to that same other for deeper cooperation in the name of shared objectives. Like many EU concepts of recent years, strategic autonomy has a certain flavor of having one's cake and eating it too.

The EU's riposte seems to be that it can have the best of both worlds, combining a degree of independence with degrees of interdependence. Such an insistence is embodied in the union's emergent use of the rather challenging term "open strategic autonomy." This may indeed be possible in some areas of the EU's trade or digital technology policies. Still, it feels like the union is setting out to play a single game of sport with two different sets of rules, flitting between the two as the game ebbs and flows.

European leaders routinely frame the EU's choice as autonomy versus dependence. But much of global affairs runs on a dynamic of mutual interdependence that fits neither of these extremes. Think of climate policy, for instance, where the concept of autonomous EU sovereignty is questionable when capacities to act need to be interconnected at the global level to have any impact.

Curiously, this is exactly the argument that EU politicians and analysts rightly make against myopic Brexiteers: autonomy and formal sovereignty do not buy the external leverage to get things done. Yet, the EU then appears to adopt this same logic as its own guiding foreign policy principle. Of course, the union's line is that sovereignty and independence at the European level are superior. But simply scaling up old concepts from the national level is unlikely to rectify the reasons why those concepts have failed for many decades.

Prioritizing protective autonomy gives the impression that the EU's main challenge is to preserve the status quo rather than drive global change. Indeed, the EU concepts promoted in recent years—sovereignty, geopolitical power, resilience—have strikingly conservative overtones. Resilience can be defined as a

country's or system's ability to return to its initial state; why that above all other possible concepts should be deemed in the EU's interest is not clear. Autonomy is about guarding against externally driven change, not about making the international system more adaptable, more democratic, or forward looking.

ACKNOWLEDGING THE TRADE-OFFS

Autonomy might be what governments and populations legitimately decide they prefer. But EU leaders need to acknowledge the trade-offs it involves. Pursued as the dominant organizing principle for EU external action, strategic autonomy will likely attenuate the union's leverage over political instability, democratic transitions, climate policies, violence, and terrorism in other states. Such an approach will give other powers more scope to resist EU pressure and engagement.

Contrary to official arguments, the union's stance is redolent of lower, not heightened, foreign policy ambition. There may be well-reasoned grounds for such a turn, but policymakers need to recognize the trade-offs and embed them in a coherent vision that does not promise every strategic tenet and its exact opposite simultaneously.

In a new book, I chart how this debate about autonomy sits atop a decade-long trend in EU external action toward what can be termed protective security: a shift away from the union's erstwhile transformative power toward defensive self-protection. Developing an outside-in framework for EU foreign policy, this book explains how the origins of today's strategic narratives can be traced to agendas that go well beyond the policy positions of the current EU leadership. The prominent discourse about autonomy and sovereignty is one expression of a wider recalibration in EU external action toward narrowed forms of security. This aim is perhaps more achievable and more necessary in some senses, but it also lessens what the EU can hope to achieve in the world.

The EU needs a far clearer assessment of whether this is really the optimal way to undergird European sovereignty—if this is understood as the union's practical ability to achieve ambitious policy goals. A recurring and upbeat claim from European ministers and leaders is that the EU has lost its naivete in its search for self-regarding self-reliance. Yet, the union risks slipping back into an earlier naivete of expecting too much from some very old realpolitik concepts.

Many think tanks and analysts have acted as cheerleaders for the EU's turn to the realpolitik concepts of geopolitical power, autonomy, sovereignty, and the like. This reflects a curiously conservative outlook at the analytical level. For years, much analysis has taken the EU to task for failing to live up to its pretensions to be a different, postmodern, and less traditional power. Yet, now that the EU seems to have set its course even more explicitly and firmly in that very direction, many seek to help it along its retrofitted way.

The EU has developed a habit of generating ostensibly guiding concepts without defining what these mean or offering indicators to measure their effectiveness. While the consensus behind the need for strategic autonomy is strong and undoubtedly set to influence policy developments, there needs to be more critical input on the concept's internal inconsistencies and possible drawbacks.

6. New space race risks conflict between China and the West

09/03/2021

Lau China Institute

https://www.kcl.ac.uk/news/new-space-race-risks-conflict-between-china-and-the-west

New space race risks conflict between China and the West

Miscommunication and miscalculations between the US and China in the 'Space Race' could have grave consequences for the world, a new policy paper from the Lau China Institute at King's College London outlines warns.

'China's space programme: A rising star, a rising challenge' charts China's growth as a global leader in space and calls for a greater understanding of China and its ambitions in space to avoid conflict.

Unlike other conflict areas, the world has failed to sign agreements on safe space management. As the US and UK are currently dependent on space infrastructure, hostile powers would gain from pre-emptive strikes on their satellites and space infrastructure. This short to medium term 'vulnerability gap' may lead to a miscalculation during heightened tensions over, for example, Taiwan.

Report researcher Dr Mark Hilborne, Lecturer, Defence Studies Department and in War Studies Online at King's, warns this failure to develop rules for space has led to an increased risk of miscalculation or miscommunication.

"The UK must work with other countries to build consensus as to the safe management of space," Dr Hilborne said.

'' The UK is now a leading nation in the space economy and space technology. If the UK wishes to maintain this success, it must develop an understanding and an international agreement on making space free from conflict. This includes the development of clear lines of communications and understanding between the West and China.''– Dr Mark Hilborne

The report also states how China's space programme has seen the merging of civil and state capacity; and this has led to a lack of clarity as to the objectives of China's civilian programme.

The paper written by Dr Hilborne forms part of the Lau Policy Series 2020/21.

7. Redefine readiness or lose

15/03/2021

War on the rocks

https://warontherocks.com/2021/03/redefine-readiness-or-lose/

In the halls of the Pentagon and on Capitol Hill, military, civilian, and congressional leaders regularly discuss the "readiness" of our armed forces. Department of Defense leadership, including service secretaries and service chiefs, testify annually to Congress about the readiness of their forces. We commit resources to building it, develop metrics to measure it, and strive to create and maintain more of it — but what exactly is readiness? As the chiefs of services increasingly pulled in multiple directions in both time and space, we have had an increasing number of both formal and informal discussions on what readiness really means, and what it should mean. This article is a continuation of those discussions and, while there are only two service chiefs on the byline, we have had likeminded conversations with our fellow service chiefs — the chief of staff of the Army, chief of naval operations, and chief of space operations.

Our argument is simple: The joint force requires a holistic, rigorous, and analytical framework to assess readiness properly. Over past decades, readiness has become synonymous with "availability" — largely a measure of military units available for immediate deployment and ready to "fight tonight" — while "capability" took on a lesser role in the calculation. Perhaps appropriate for an earlier era, this framework for readiness is poorly suited to an environment characterized by great-power competition. It largely ignores the capabilities of these "ready" forces and begs the question, ready for what? As the recently released, bipartisan *Future of Defense Task Force Report 2020* states, "The national security challenges the United States faces today are existential, and they cannot be met by simply *doubling down on old models of policy and investment*" [emphasis added]. Our current readiness model strongly biases spending on legacy capabilities for yesterday's missions, at the expense of building readiness in the arena of great-power competition and investing in modern capabilities for the missions of both today and tomorrow.

We propose a broader framework for readiness to better integrate elements of current availability, effects across combatant commands, future availability and readiness, and modernization efforts. There is a natural tension between combatant commander and service chief requirements. To most effectively address this

tension, we, as members of the Joint Chiefs of Staff, should embrace a framework for readiness that manages the relationship between today's combatant command requirements with the modernization imperatives required to enable tomorrow's combatant commanders. Without a fundamental reexamination of the concept of readiness, we will continue to spend limited resources on maintaining legacy capabilities, at the expense of investing in the modern capabilities the United States needs to compete with the People's Republic of China and Russia. Finally, part of this discussion ought to include a more precise understanding of risk — to what, for how long, and probability. Used in many different ways today, accurate risk statements must always account for these factors. If not, the risk assessment is incomplete. While not the subject of the article, much has been written on risk from the business and financial sectors that should inform our thinking on the topic.

The Current Force May Be Available, but It's Not Ready

While some readers may have reservations, understand the conclusions articulated above are not new. Consider just two examples, former Secretary of Defense James Mattis and former Chairman of the Joint Chiefs Joe Dunford. In the 2018 *National Defense Strategy*, the former secretary notes, "we are emerging from a period of strategic atrophy, aware that our competitive military advantage has been eroding." He continued by identifying the absence of combat credibility and combat-credible forces as one of the main shortfalls, and closed by noting, "a more lethal, resilient, and rapidly innovating Joint Force, combined with a robust constellation of allies and partners" is our objective. Despite the presence and availability of our current capabilities and forces, the former secretary rightly concluded the U.S. military was failing to deter adversary hybrid activities, losing the gray zone competition, and losing its warfighting advantage. If the U.S. advantage is eroding as articulated in the last *National Defense Strategy*, it seriously begs the question of whether our current readiness approach and force structure can reverse the trend.

In May 2019, then-Chairman Joseph Dunford discussed the readiness of the force in relation to Chinese threats during a discussion hosted by the Brookings Institution. There, Gen. Dunford noted the continued militarization of the South China Sea, including "10,000-foot runways, ammunition storage facilities, [and] routine deployments of missile defense capabilities." He went on to comment, "if the militarization of the islands has plateaued, it's because the islands have now been developed to the point that they provide the military capability China required." Accepting Gen. Dunford's assessment, we are left with a question: How did, and does, U.S. joint force readiness contribute to competing and deterring China from achieving their operational and strategic objectives in the South China Sea? Based on what occurred, one could submit our joint force readiness — whether in availability or capability — clearly fell short.

How did a ready, combat-credible force built to compete, deter, and win fail to prevent China from achieving their operational and strategic objectives to-date in the South China Sea? The answer is obvious. The

capability of the forces present were not ready — despite their availability — to compete, deter, and win against peer adversaries like China.

For those who still disagree and conclude the U.S. joint force possesses the lethality and combat credibility required for great-power competition, please consider the following examples: Between 2004 and 2007, more than a dozen advanced attack helicopters were shot down in Iraq, not by advanced air defense systems, but by ground fire from insurgent groups in Iraq. While the services continue to procure the latest version of those *exact same platforms*, they remain just as vulnerable today and consume billions of dollars in limited resources. In 2010, a North Korean submarine sunk an advanced South Korean warship. If a similar attack were launched today on a large U.S. surface combatant, would the outcome be any different? In 2018, a Syrian S-200 air defense system dating back to the 1960s shot down an Israeli 4th generation F-16 operating at high altitude. In 2019, swarming drones and cruise missiles were employed by Iran to attack Saudi Aramco facilities. During the most recent conflict in Nagorno-Karabakh, Armenian ground forces that we would have labeled "ready" based on their availability, were easily targeted and destroyed by Azerbaijani forces employing a mature precision strike regime to include swarms of loitering munitions and lethal unmanned systems. In just 20 days, hundreds of tanks, infantry fighting vehicles, and other pieces of traditional ground combat equipment that were ready, were also destroyed by a more sophisticated modern adversary employing capabilities that were both available *and* providing advantage. While we could provide dozens of recent examples to further reinforce the point that a force with substantial and obvious capability deficits cannot be a ready force, it is unnecessary. We have either reached, or are fast approaching, a point whereby many of our legacy systems can *never* be made ready — available and capable — for a great-power adversary.

What Is a Ready Force From 2021 to 2035?

In his 1995 book *Military Readiness: Concepts, Choices, Consequences*, Richard Betts articulates a framework for thinking about readiness that remains highly applicable today. Betts argues that decision-makers need to ask three key questions about readiness: Ready for what? Ready for when? And what needs to be ready? The first question is straightforward: What missions or operations do you expect the force to perform? Betts' second question is temporal, highlighting the complex tradeoffs between short- and longer-term elements of structural readiness, such as modernization. The answer to the first two questions largely shapes the last. Based on the missions and timelines prioritized, it suggests some capabilities must be prepared for immediate employment, while others can be mobilized more gradually. Viewed through this framework, it is clear our approach to readiness today inappropriately weights near-term availability far greater than any other aforementioned elements of readiness.

Ready for What?

Strategic guidance documents help us answer Betts' first question: America needs a joint force for great-power competition, with emphasis on China and Russia. The Defense Department and joint force have undoubtedly shifted toward a focus on all-domain conflict with a peer adversary over the previous four years. Unfortunately, the release of these documents as well as new operating concepts did not properly recalibrate the discussion on readiness. Readiness remains inappropriately weighted in favor of what is available to fight a narrow range of scenarios today with what we currently have on hand. As a result, over time we have generated significant inertia pursuing capabilities and platforms based on previous commitmetonts and requirements — many of which existed over a decade ago and well prior to the release of existing strategic guidance. While we understand we cannot simply hit reset and make a clean break from today's force to our future force design, we ought to work to "break the chain" of program inertia and reevaluate our readiness efforts based on the current strategic context. The Department of Defense currently has no mechanism to assess current combatant command requirements, risk over time, and progress toward readiness for a "pacing threat" conflict in 2030 or 2035.

Based on assessments conducted by senior military and civilian leaders over the past several years, to include multiple wargaming iterations, the prevailing wisdom is that the readiness and modernization trend lines indicate the joint force is not ready to satisfy the demands of great-power competition in the Indo-Pacific. Rather, we have directed significant resources to ensure they are ready for dozens of other lesser requirements predicated upon an ability to project power across strategic distances in permissive environments. Both of our services have been pulled in directions far from our roots and respective core missions — air superiority and naval expeditionary operations.

Ready for When?

The "fight tonight" perspective is a handcuff the joint force needs to break. Our most stressing contingency plans require months of force deployment, so costly efforts to keep our forces prepared to meet them "tonight" risks future readiness and modernization imperatives necessary for a high-end fight. This points again to the tension between service and combatant command requirements. Who owns the risk and when should they own it? Betts' work is again a useful guide. He distinguishes between operational readiness — the efficiency and combat effectiveness of individual elements of the force — and structural readiness, essentially the capacity or "mass" of the force, but considered relative to what is required to achieve victory against a given real-world adversary. In Betts' terms, our present approach to readiness places far too much weight upon near-term operational and structural readiness.

What Needs to Be Ready?

We cannot reasonably answer this question until we answer the first two. Under the current readiness paradigm, our answer to "what needs to be ready?" is "the stuff we have today." However, as we observed

earlier, the Defense Department in general has not followed a path to make itself *truly* ready for the tomorrow's priority challenges (e.g., ready for what?). Were we to do so, we would find that our understanding of both operational and structural readiness ought to place far more weight on factors related to service modernization. The availability of obsolescent or otherwise unsuitable equipment (for example, old, increasingly expensive-to-operate, vulnerable aircraft unsuited for a high-end fight) is of marginal relevance at best to a strategy that prioritizes readiness for conflict with revisionist great powers. We would also find ourselves confronting the relationships among the different types of readiness and the time horizons ("ready for when") during which we want to maximize readiness. "Immediately" is certainly an answer to "ready for when," but it is a myopic answer with harsh tradeoffs. All else being equal — notably budget top lines — maximizing our readiness to fight now with the equipment and personnel we currently have necessarily forecloses opportunities to invest in the equipment and personnel we need in the future.

What Should We Do?

Prescribing exact answers to the balance of investments we would need to make in consideration of these complex tradeoffs is not the purpose of this article — arguing we should have a common framework for honestly surfacing and making decisions on these issues most certainly is. Leaders in the Defense Department, to include ourselves, need to put our heads together and provide the structure, discipline, and analytical rigor to properly consider these tradeoffs and balance risk. As a starting point, we recommend a readiness framework that integrates four primary elements to help us answer all three of Betts' questions: First, how proposed allocation changes to support combatant command requirements directly affect that command and associated risk levels. Second, the direct, secondary, and tertiary effects on other combatant commands and their associated risk. We cannot properly measure the impact of readiness decisions in a strategic vacuum. It requires a global, integrated view over both space and time. Third, the effect on future force readiness and offerings — how deploying additional resources now will sacrifice both their combat readiness and availability, limiting options to address future crises and requirements. Finally, and perhaps most challenging, the impact on our ability to effectively modernize for a high-end fight. Using big-data, machine learning, and AI, we should be able to build a model that accurately reflects these elements. For instance, if a command requests an additional unit or capability now, we should immediately know exactly how it affects that command; how it would affect all other combatant commands; how it will affect future near-term readiness; and finally, what it will cost us in trying to modernize our capabilities for 2035.

Building a rigorous, analytical readiness framework incorporating these elements will help us better balance the risks and tradeoffs between immediate requirements and availability, future availability and readiness, and modernization. Freeing ourselves from the tyranny of short-term operational readiness concepts may also help us envision alternative strategies. Serious consideration of Betts' question "ready for/with what" may remind us that the present force structure we work so hard to keep available is not the only potential set of military tools that could be applied to our current and future problems. Different answers to "ready

with what" are conceivable even once we have agreed on "ready for what." To take a perhaps extreme example, the John F. Kennedy administration's "Flexible Response" doctrine offered a very different approach to the Cold War Soviet threat from that of the Dwight D. Eisenhower administration's "New Look" strategy. These radically different concepts generated equally radical differences in measuring tradeoffs and balance among the various elements of readiness.

The Consequences of Failure — and Success — Are Profound

If we maintain our target fixation on current force availability and fail to adapt and modernize fast enough, wargaming suggests mission failure as the likely outcome. Unless we accelerate the changes we need, through modernization of capabilities relevant to overcoming those of our adversaries, the Air Force, the Marine Corps, and the joint force will be ill-prepared to compete, deter, and win. Urgent actions are required now within the entire defense community — our services, industry, the Defense Department, and Congress — to facilitate the necessary changes. Those actions must provide the departments and the individual military services the authorities they need to shift funding from accounts related to sustainment of legacy programs and those programs that do not create or sustain an enduring warfighting advantage over our peer competitors, and reallocate that capital to truly transformative modernization. As the *Future of Defense Task Force Report* noted, we "must identify, replace and retire costly and ineffective legacy platforms."

To be clear, this is a two-step process. We cannot simply cut resources for near-term readiness or legacy capacity in the name of *savings*. Rather, we must put those savings into transformative modernization as part of our larger future force design model. Likewise, the Defense Department and the services should make a compelling case, and be empowered, to reduce existing programs of record in accordance with other systemic changes across the services. Demonstrating to our primary competitors that we have the strength, adaptability, innovativeness, will, and resilience to meet current and future challenges is an essential element of competition. It is vitally necessary if we are to deter unimaginably destructive future armed conflict and establish a steady-state of vigorous but largely non-violent great-power competition. Should deterrence fail, we must be prepared to fight in defense of America's interests — and win. Our nation has rightly come to expect much from its Air Force and Marine Corps, and we cannot disappoint.

We have done this before, and together we can do it again while avoiding perceptions of creating winners and losers. Today's Air Force and Marine Corps, and our assumed dominance of the air and littorals, were shaped by innovative and courageous individuals throughout our storied histories. Seeing the need for change when others did not, our forebears overcame the traditionalist opposition of their day, forged new technologically advanced capabilities, and developed novel operational concepts that paved the way for the many successes to which our shared history bears witness. We can do it again. If we are bold enough and committed to providing the military advice needed to overcome our present orientation, we can shape our

future proactively. The alternative, as various military institutions have discovered to their sorrow in the past, is being forced to re-shape ourselves reactively, after experiencing catastrophic loss and potential defeat. To do this, we cannot let our focus on near-term availability consume the resources necessary to generate truly relevant future readiness through adaptive modernization. We have a unique, but limited, window of opportunity. The time to act is now.

Gen. Charles Q. Brown, Jr. is the chief of staff of the Air Force.

Gen. David H. Berger is the commandant of the U.S. Marine Corps.

8. Warfighting in the cyberspace

17/03/2021

War on the rocks

https://warontherocks.com/2021/03/warfighting-in-cyberspace/

Since the Gulf War, the U.S. military has followed an operational script that exploits technological advantages to fight and win quickly. It starts with blinding strikes against intelligence and command and control systems. Such attacks leave the enemy unable to organize a coherent defense, giving U.S. forces time to mobilize overwhelming forces and control the scope and pace of fighting. Confusing the enemy is a prerequisite to defeating it on the battlefield. Information attacks leave U.S. enemies bewildered and ineffective. Rapid low-cost victories follow. For better or worse, this is the modern American way of war.

Cyberspace operations are naturally suited to such an approach, given the fact that adversary military forces are growing dependent on the domain. There is nothing extraordinary about using cyber attacks against adversary communications. This is just the evolution of a familiar operational script using a new instrument. That said, the technological peculiarities of cyberspace make it especially attractive: the large number of attack surfaces, the ability to preposition malware long in advance, and the possibility of sabotaging weapons systems that rely on elaborate software and increasingly complex supply chains. Should great-power competition become a great-power conflict, no one will be shocked if the United States opens the fighting in cyberspace.

Foreign militaries have watched the United States with great interest over the last thirty years, and, in some ways, they have mimicked the U.S. approach. This is not surprising, given U.S. conventional successes. Their

efforts now include dedicated efforts to use cyberspace for military purposes. As a recent chairman of the Joint Chiefs of Staff pointed out, more than twenty foreign states have created organizations specifically to integrate cyber operations into conventional planning. Why wouldn't they? It is natural that they should seek to exploit cyberspace to gain battlefield advantage over rivals, especially given the shrinking boundary between the digital and kinetic worlds. For military planners, the cyber temptation may prove irresistible.

Yet, the nature of the domain cuts in both directions. The peculiar attributes of cyberspace create opportunities for attackers, to be sure, but they also include a number of technical, organizational, and political constraints. Moreover, the operational possibilities of cyberspace also create a number of strategic dilemmas. Even perfectly executed cyber campaigns may produce unexpected and unwanted strategic results, and these problems go beyond the familiar fears about wartime escalation.

The Allure of Cyberspace

It isn't hard to understand why leaders expect cyberspace to play a central role in future conflict, or why they are enthusiastic about going on the offensive. U.S. rivals are keen to find ways of overcoming their relative material weakness. They might believe that cyberspace operations will reduce U.S. advantages, especially if they can disrupt the elaborate communications infrastructure the United States needs to project power over vast distances. Aggressive operations at the outset of a conflict would put U.S. forces on the back foot and policymakers into a hard choice about whether to rebuild and advance against committed defenders. The logic here is akin to Japan's strategic calculus before Pearl Harbor, but with the benefit of seizing the initiative without having to do something so provocative.

Chinese military doctrine emphasizes the importance of controlling information in the early stages of any conflict and focuses on what it takes to win under "informatized conditions." The 2001 edition of the *Science of Military Strategy*, a highly influential statement published by the People's Liberation Army, states that precision strikes at the outset of war could "paralyze the enemy in one stroke." A recent update to the strategy focuses on the "effective suppression and destruction" of enemy's information systems alongside an "information protection capability." China seems to believe that it cannot win if it does not "seize and control the battlefield initiative, paralyze and destroy the enemy's operational system of systems, and shock the enemy's will for war." Russia has also moved toward integrating cyberspace operations into conventional offensives, albeit with mixed results in Georgia and Ukraine. For Russian strategists, cyberspace operations disorient and demoralize adversaries before conflict begins and help to neutralize enemy command and control systems afterward.

U.S. allies are developing their own ideas about how to combine cyberspace operations with traditional warfighting, viewing the domain as both a threat and an opportunity. British Army doctrine, for instance, notes that threats are increasing "as we and other actors become more and more reliant on sophisticated

information services." At the same time, efforts to merge cyber and kinetic operations create new opportunities to debilitate adversary systems, achieve tactical surprise, and control the scope and pace of conflict.

American defense officials also assume that cyberspace operations will play a central role in future conflicts, especially in the early days of war. Their public statements indicate that a process to merge cyber and conventional missions is already underway. Although U.S. Cyber Command has spent a great deal of time developing an approach to competition below the line of armed conflict, it also emphasizes "fully integrating cyberspace operations into combatant commander plans as well as existing boards, bureaus, cells, and workgroups used to plan and execute warfare." Meanwhile, the regional combatant commands "must identify their requirements for cyberspace operations both as supported and supporting commands in support of this campaign planning effort."

All of this represents a growing recognition of the link between cyberspace and the physical world. It makes no sense to segregate planning for cyberspace from air, land, and naval operations because the latter cannot operate without the former. Further, cyberspace operations work through physical assets — cables, power stations, server farms, and so on. Discussions of virtual space and cloud computing obscure the fact that digital information moves through a physical infrastructure. Success requires more than clever code. It means making sure that the code can reliably travel to its destination. Joint publications note that cyberspace operations can extend operational reach, but, without careful planning in advance, cyber and kinetic attacks may work at cross-purposes.

However, the enthusiasm for cyber operations goes beyond the practical need to secure infrastructure. For policymakers and planners, cyberspace operations suggest a low-cost route to quick and decisive victories. Instead of relying on overwhelming force, cyber attacks undermine an enemy's ability to mount a coherent defense. Modern militaries are efficient because they coordinate their activities in cyberspace, but this also makes them vulnerable. In theory, well-designed information attacks will cripple their intelligence and communications before serious combat begins, turning an otherwise bloody battle into a lopsided rout.

These visions of victory, however, might prove to be elusive. Because cyber weapons must be tailored to the configuration of specific networks and machines, very detailed intelligence is required for effective operations. Conventional munitions can be fired anywhere, but digital payloads are only effective against specific targets. This intelligence is hard to obtain and easy to lose. Reasonably capable defenders implement routine updates and change configuration settings in ways that frustrate attackers. Firewall modifications, computer resets, and equipment transfers have similar effects. There are many other ways to lose access, some of which are beyond anyone's control. A flood at a target state's server facility, for instance, may require a temporary shutdown and replacement of hardware.

It is safe to assume that these problems will increase in war, when defenders will have obvious reasons to harden their information systems. Fear of cyber attacks will put a premium on vigilance, making offensive operations that much harder. Defenders will also have reason to implement redundant communications, so they can keep fighting even after being targeted.

Easy Targets

Given the technical obstacles to disrupting military information systems, states might be tempted to target more vulnerable alternatives. Civilian infrastructure relies on extensive industrial control systems, some of which are outmoded. Concerned engineers point out that many were not designed with cyber security in mind. They emphasize efficient and reliable distribution, not safeguards against cyber saboteurs. Moreover, it is not an easy task to harden infrastructure control systems, given their scale and the need to keep them working at all times. States who seek to compel wartime enemies using cyberspace operations may look at infrastructure as an attractive target for practical reasons. It's a lot easier to hit city power and water systems than military command and control.

The strategic rationale behind such attacks is crude countervalue logic: Disrupting civilian life will cause panic and urgent calls for peace. Modern societies will break down if the electronic infrastructure of daily life fails. The problem goes beyond water and power, given the ubiquity of cyberspace in society and the vanishing boundary separating the digital and physical worlds. The danger is not just a temporary power outage, but a deeply unsettling loss of social order. If cyber operations disrupt basic infrastructure, even temporarily, they might also cause the population to fear that the worst is to come. And, in that case, they will call on their leaders to seek a settlement.

This strategic approach is somewhat similar to the "city bombing" logic of some interwar airpower theorists. Giulio Douhet famously argued that strategic bombing would make wars shorter by making them awful. Bombing campaigns would not just destroy buildings, but they would undermine basic city services. Douhet envisioned a grisly three-stage approach: The first wave of bombers would drop explosives to demolish structures and create kindling, the second wave would drop incendiaries to light them on fire, and the third wave would drop chemical weapons to gas the fire crews. The terrible realization that the government was incapable of responding effectively would compound the shock of destruction. Surrender would be the only option.

Douhet's grim vision would probably strike most contemporary readers as repulsive, given the evolution of norms against large-scale bombing of densely populated urban centers. The notion of deliberately causing mass destruction is grotesque, and wartime policymakers may reject this option as immoral, even if they seek to manipulate foreign public opinion against an enemy regime. This was certainly the case in the nuclear

age, where such objectives animated arms control even during particularly intense years of superpower competition.

But what if they had an alternative? Suppose they could create the same kind of popular distress that would lead to calls for peace, but without the carnage of city bombing? Cyberspace operations against infrastructure might strike them as ideal.

There are problems with this option, however. To say that information control systems are vulnerable is not to say that it is easy to cause large and lasting damage to civilian infrastructure. Modest operations may cause temporary disruptions, but presumably a great deal of coordination and resource would be required for larger campaigns. And because we have not lived through a great-power war among states with sophisticated cyberspace capabilities, we have little empirical basis for predicting their effectiveness.

Beyond these technical questions is the larger issue of how civilians will respond. Douhet's expectations did not come to pass in World War II: Civilians were resilient and adaptable even in the face of enormous psychological pressure of bombing raids. Why they would be less resilient in the face of cyberspace operations is not clear, especially given the notion that they would be largely spared from violence. It is possible that their reactions will be peculiar, given our growing dependence on cyberspace. But they might also feel a sense of outrage, especially if the buildup to war featured a long period of nationalism and demonization of the enemy. Under these conditions, the coercive value of infrastructure attacks will be very small.

Four Tradeoffs

The tactical limits of cyberspace operations should give pause to states that are developing war plans based on the assumption of rapid and highly effective information attacks. A dose of caution would help to avoid bad choices fueled by technical naivety. The strategic limits of infrastructure attacks ought to encourage the same kind of careful introspection. Unfortunately, leaders have a long history of pre-war wishful thinking, and they might fall victim to dreams that cyber operations will deliver bloodless victory. If so, they are likely to face a set of even trickier strategic dilemmas.

Escalation and Protraction

The first has to do with intra-war escalation. Despite the limits of cyberspace operations against hardened military targets, political leaders may overreact to news that their information systems are under assault. Nightmares of rapidly losing command and control, and of losing the war itself, might encourage risky decisions. Rather than testing the resiliency of information systems against a technologically savvy enemy, they might preemptively escalate the war.

The simplest way to avoid escalation is to fight conservatively. This means eschewing cyberspace operations against critical targets and generally erring on the side of caution rather than taking the risk that the target regime would fear its rapid demise. Doing so, however, would increase the likelihood of protracted war.

Disruption and Negotiation

Disrupting enemy communications makes good tactical sense. Units who are unable to communicate will find it difficult to coordinate their efforts. Unreliable command and control undermines battlefield effectiveness, leaving deployed forces vulnerable to defeat in detail. New technologies offer the possibility of using cyber attacks and electronic warfare to induce this kind of operational sclerosis.

Tactical success might interfere with strategy, however, if the goal is to force the enemy to negotiate favorable terms. Ideally, using cyber capabilities to divide the enemy's hierarchy would make it easier to insulate willing peacemakers while focusing military pressure on die-hards. Dividing the enemy, however, risks making it hard to locate a reliable negotiating partner with the authority to speak for the nation and the ability to compel the armed forces to stand down. Multiple and rival power centers may emerge from atomized national institutions. Peace deals with any of them may prove temporary at best and geographically limited to the areas in which specific commanders hold sway.

Costs and Assurances

Emerging technologies are alluring because they promise rapid victories, either by themselves or as force multipliers. The ability to win at low cost suggests the ability to secure important national interests with minimal risk. Offensive cyber operations, coupled with kinetic blinding strikes, are meant to stun the target in the opening stage of conflict, allowing the attacker to deploy reinforcements safely. The attacker controls the tempo of the war and can set the terms for ending it. The target, on the other hand, will struggle to muster any meaningful response and may face the terrible choice of accepting bad terms or fighting on at a severe disadvantage.

But, in this scenario, the victor may find it impossible to provide credible assurances that it will not cheat on the terms of the peace settlement and go for a more comprehensive victory later. Why should it settle for a limited victory when it appears to face little risk in seeking more ambitious goals? It will be particularly hard to assuage the loser under these conditions. Recent scholarship suggests this is an important reason why great powers have so much trouble coercing smaller rivals in peacetime. This problem also works against war-termination efforts.

Strategy and Grand Strategy

Strategy is a theory of victory. It describes how military violence helps the state achieve its political goals, and how to use violence to compel enemies to back down. Cyber operations might be used for strategic purposes if they enable physical violence, reducing the cost to the attacker and coercing the target to settle. Grand strategy, in contrast, is a theory of security. It describes how various foreign policy instruments help the state achieve durable national security. Grand strategy deals with questions about the nature of world politics, the underlying sources of national power, and the utility of both military and non-military tools.

Victory in war is not the same as security in peacetime. In some cases, necessary wartime decisions actually undermine long-term grand strategy. Draining the state coffers in pursuit of victory may leave the victor in a precarious position, especially if the war inspires other states to balance against it. The introduction of new technology might also have unexpected effects on the balance of power and the postwar international economy. Suppose that a great power uses cyberspace operations energetically in a future conflict, employing new and powerful tools against especially hard targets. Malware targeting enemy forces may infect civilian computers far beyond the battlefield. This, in turn, may reduce postwar confidence in the regional and international economic order. Firms and consumers may retreat from online commerce and communication, with effects that are hard to predict.

I have previously argued that fears about political economic consequences of cyber operations are overstated, based partly on an analysis of the reaction to the Stuxnet attack on Iran's nuclear complex. Users, firms, and states were mostly untroubled by that attack, despite significant malware contagion. But the Stuxnet virus contained attributes that limited its ability to cause unintended harm: target-identification checks, limits on the numbers of computers it could affect, and automatic shutdown protocols. Tools used in a war against a serious rival, where the stakes would be much higher, might not be so constrained. As a result, they might perform as expected against military targets, but also cause significant third-party damage. The same is true for potential attacks on critical infrastructure. In these cases much would depend on the intensity of the attack and the time and effort needed to rebuild. Broad wartime campaigns against infrastructure may have lasting economic consequences in peacetime. Offensive cyber operations and other novel attacks might contribute to strategic success in the war, but they risk undermining grand strategy after the shooting stops.

Joshua Rovner is associate professor in the School of International Service at American University. He served as scholar-in-residence at the National Security Agency and U.S. Cyber Command in 2018 and 2019. The views here are the author's alone.

9. Join force operating scenarios: improving analysis and oversight of force development

19/03/2021

War on the rocks

https://warontherocks.com/2021/03/joint-force-operating-scenarios-improving-analysis-and-oversight-of-force-development/

The U.S. Department of Defense is undergoing historic change. It's responding to a rising China, adopting new warfighting concepts, and reassessing the civilian-military relationship. The scale of this change raises the question — does the department have a formal process to provide and evaluate data related to these initiatives and reinforce historic norms related to civilian control?

Unfortunately, while that was true once, it is no longer the case. In 2002, the Department of Defense established a scenario-based analytical process to support deliberations by the department's senior leadership on strategy and budget matters. Officials intended for it to provide a starting point to evaluate options for future force development by the military services through a joint framework. However, this analytic approach was essentially defunct by 2017, encouraging the oft-cited criticism that the Defense Department has no comprehensive method for examining innovative ideas for future force capabilities on a threat-informed basis.

Without an effective analytical process, the services will likely revert to generating questionable warfighting scenarios to justify parochial programming priorities. This would undermine the joint force's overall effectiveness through misapplication of limited resources and energy. Perhaps more concerning to the Joe Biden administration and to Secretary of Defense Lloyd Austin, the services would then be empowered to operate outside the bounds of detailed civilian oversight. Encouragingly, since 2019, the six military services and U.S. Special Operations Command have developed an initiative — the Joint Force Operating Scenario — to evaluate and refine capability development, force sizing, emerging warfighting concepts, and innovative approaches through wargaming, modeling, and simulation. This article will briefly outline the purpose and demise of the Defense Department's original evaluation process, summarize the joint force operating scenario governance and its accomplishments to date, and propose a way ahead to codify this essential force development process under the oversight of the new administration.

The Process: Overview and Obituary

The Defense Department established the Analytic Agenda process in 2002 (subsequently renamed Support for Strategic Analysis and codified in department instruction and directive) "to provide analytic support to [Department of Defense] senior leaders as they deliberate strategy and budget matters and to support evaluations of force structure needs across the joint force." It was led by the "tri-chairs": representatives from the undersecretary of defense for policy, the Joint Staff J-8 (Force Structure, Resource, and Assessment), and Cost Assessment and Program Evaluation. Under tri-chair leadership, the services, functional combatant commands, agencies, and — often — geographic combatant commands developed plans to solve the military problem presented by the undersecretary of defense for policy. These joint plans — called concepts of operations or CONOPS — typically took 12–18 months to develop. Upon completion, modeling and simulation analysts built databases, conducted quantitative analysis on the campaign, and evaluated force structures, programs, and emerging warfighting concepts.

This process continued until 2017, with the joint team conducting planning and developing analytical products to inform and enable the evaluation of budget requests. Products included a number of written documents with embedded briefing slides and spreadsheets that outlined key aspects of the proposed operation, including: the road to war, the adversary's approach and the capabilities of its forces, the joint mission and commander's intent, key friendly tasks by domain (maritime, land, air, etc.), each service's contribution, etc. The analysis included briefings on friendly and enemy casualty rates for specific units/platforms, munition expenditures, and other campaign insights generated from modeling and simulation. One final plan, which was produced in 2017, was not approved for use. Over the next two years, Support for Strategic Analysis — which briefly became the informal Defense Planning Analytic Community — never developed another product for evaluation.

The Support for Strategic Analysis process was torpedoed because of disagreements over products and budget implications. First, the tri-chairs believed that the resulting deliverables were cumbersome, inflexible, pursued only "single point solutions" that did not sufficiently explore a range of options, and did not provide senior leaders direct answers to their questions. From the service perspective, the plans were undeniably detailed, but detail is a necessary requirement for modeling and simulation, which require specific geographic coordinates and performance characteristics to adjudicate combat outcomes. Further, these capabilities needed to be coordinated within the context of a joint campaign, especially since integrated systems are an attribute of warfare in the information age. Admittedly, the cumbersome and prolonged nature of the initial planning process proved incompatible with the timely production of excursions — deliberate departures from the original plan for the purpose of sensitivity analysis — and collaboration. The results were point solutions — narrow approaches that would not adapt well to changed circumstances — whose insights were not integrated back into the department in order to develop the future force as quickly as possible.

Second, some of the tri-chairs believed that the services did not pursue innovative solutions and ground-breaking technologies, but instead remained fixed on their programmed force structures and overseas basing arrangements. As with the first issue, this is factually correct but doesn't tell the entire story. The services wanted to "play what is programmed" to establish an analytical starting point, which supports follow-on sensitivity analysis to determine how changes in capabilities and/or circumstances affect outcomes. The problem was that the services did not explore alternate force structures, overseas basing locations, and emerging capabilities to appreciate what changes could have outsized effects. Unfortunately, this problem was due to collective mistrust (on the part of the military services) regarding how the sensitivity analysis would have been used to impact present-day budget requests.

In short, the old process was not creating final analytical products that satisfied all needs for all stakeholders. While the services leveraged the analysis to support nearer-term programming and budgetary decisions, longer-term issues faced by policymakers and program evaluators did not enjoy an equivalent level of satisfaction. Its approach caused friction within the analytic community, precluded cooperation to generate new concepts of operations, and ultimately stopped the process from providing the necessary support to senior defense leaders. Eventually, the tri-chairs agreed to dissolve the process and annul the directive establishing it.

Joint Force Operating Scenario: Emergence, Governance, and Results to Date

In late 2018, responding to pressure by then-Secretary of Defense James Mattis for analytics to support the *National Defense Strategy*, the services needed a new approach with the demise of Support for Strategic Analysis and the gridlock of the Defense Planning Analytic Community. They realized that the creation of separate force designs in isolation would likely lead to marked differences in the appreciation of the challenges of great-power competition. This would have resulted in an overestimation of individual service contributions to the joint force.

Experienced stakeholders in the Defense Department understood that there needed to be a way to fuse the appreciation of the problem, the design of the force, and service warfighting concepts into a model of how conflict may be waged in the future that could be measured qualitatively and quantitatively. Therefore, planners and analysts from the Army, Navy, Air Force, Marine Corps, Coast Guard, and U.S. Special Operations Command recommended a governance vehicle to develop a Support for Strategic Analysis-like product. Ultimately, nine three-star-equivalent and senior executive service personnel signed a memorandum of agreement to develop a concept of operations based on a defense planning scenario approved by the undersecretary of defense for policy. The tri-chairs, as well as representatives from the Joint Staff J-7 (Joint Force Development), Joint Staff J-4 (Logistics), and National Guard Bureau were invited and participated as non-voting members of the three bodies.

From January 2019 to June 2019, service and Special Operations Command planners conducted an academic symposium on the military challenge facing the United States, followed the joint planning process based on a select defense planning scenario prioritized previously by the Defense Planning Analytic Community, and published a comprehensive product that addressed competition and conflict in accordance with the 2018 *National Defense Strategy*'s guidance. All analytical products were uploaded to the Joint Data Support archive — an information storage provider within Cost Assessment and Program Evaluation — for use across the department. A separate effort led by service and Special Operations Command analysts who embedded within the joint working group converted the product into a joint database, which published initial results in February 2020 and then uploaded the datasets to the Joint Data Support site.

We want to emphasize two points. First, the novel process was thorough and quick. It holistically addressed a new scenario with limited resources in six months, which nearly matched the lower time bound of an older process that included many more personnel. Second and more importantly, the product published in June 2019 evolved with the database effort, whose goals were to be "data ready" for analysis on a common model and to have total visibility and transparency under plausible limitations of the defense planning scenario. Specifically, the Marine Corps structure and capabilities changed dramatically after the Commandant of the Marine Corps, Gen. David H. Berger, published his planning guidance in July 2019. Nevertheless, the changes to forces and concepts were seamlessly adapted. This is because the approach allowed participants to establish relationships between planners and analysts. In addition, it developed a "problem to be solved, not a solved problem," wherein capability, capacity, policy, and strategy gaps were highlighted and potential (but not authoritative) solutions identified for further examination. Within this framework, the services can apply the capabilities, force structure, and approach they deem best to help solve the military problem from their perspective. Thus, when they change forces or capabilities, it does not alter the overall objectives or joint campaign so they can build on innovative ideas. The products remain dynamic as new institutional learning takes place in wargames, modeling, and/or simulation, as new capabilities become feasible (based on agreed business rules), and as the Biden administration implements its strategy and policy. This is the essence of innovation within a joint approach and demonstrates that a detailed product is not inherently cumbersome and/or inflexible.

As the analysts built the Joint Force Operating Scenario campaign model database over the second half of 2019, the services leveraged the resultant products to support numerous wargames. The Marine Corps alone conducted five games based on the first product to support its Force Design 2030 initiative and wrote excursions to explore alternate force structures and capabilities. As the Joint Staff participated in the process, the J-7 — the directorate responsible for joint force development — used the product as the "seed corn" for the chairman of the Joint Chiefs of Staff's Globally Integrated Wargame 20. Further, the Navy and Marine Corps used a Joint Force Operating Scenario excursion at the recent Naval Service Game 20. At the time, this

concept of operations was the only 2018 *National Defense Strategy*-compliant product in the Department of Defense's library.

Based on this first success, a second Joint Force Operating Scenario was recently produced with all six military services as voting members and chaired by the Navy. To incorporate even more transparency, the group of non-voting participants expanded to include the undersecretary of defense for policy, Special Operations Command, Strategic Command, Cyber Command, Transportation Command, and Northern Command. Planning began in April 2020 and concluded in December 2020 — extended to nine months due to COVID-19 — and should result in a completed database in May 2021. The quick pace of the project is due to proactive, concurrent planning and the modification of models built for the first iteration. From the Marine Corps' perspective, this product will serve as the primary service wargaming scenario for 2021 and early 2022, allowing the service to examine different approaches, new units, and disruptive technologies and to understand how they affect the maritime and joint campaign's success and service investments.

Codifying a Proven, Services-Driven Process

The Joint Force Operating Scenario process has improved service capability development and has provided joint campaign analysis through wargaming, modeling, and simulation. This approach integrated civilian strategic guidance and warfighting capability — within the framework of defense planning scenarios — to address the most pressing operational challenges facing the United States and its military. It has been prototyped and twice delivered results through an integrated joint approach. Codifying this process as a regular approach rather than as discrete, independently organized efforts is the best path forward.

We recommend that all six service chiefs and the commander of Special Operations Command sign a memorandum of agreement to formalize the Joint Force Operating Scenario approach to force development and design. Regarding full membership, this should be limited to service chiefs and Special Operations Command because of the direct reporting relationship to the secretary of defense (matching the other service secretaries). The Office of the Undersecretary of Defense for Policy, Cost Assessment and Program Evaluation, Joint Staff, and functional component commands (Strategic, Cyber, and Transportation Commands) should continue to be included as participating but non-voting members. This would ensure critical stakeholders the opportunity to provide their input and assist in the development of analytical products to support their requirements, as practicable. This memorandum should specifically not include geographic component commands — responsible for employing current forces to deter or defeat aggression today — to avoid "fight tonight" plans that can inhibit the development future forces based around innovative approaches and revolutionary technologies.

This agreement should commit its signatories to generate one new concept of operations per year, and one or two updates to previously generated products based on guidance provided by the secretary of defense and undersecretary of defense for policy. This will provide a robust database to defense analysts in the Defense Department, force developers and programmers, policymakers and strategists, and civilian leadership. It can also serve as a collective scenario pool for wargames and studies that will allow holistic analysis on a commonly understood problem set, wherein representatives from other services can immediately contribute and apply operational concepts since they are familiar with the underlying assumptions and joint approach. It balances the need for the services to generate an analytic starting point derived from programmed force structures and posture within initial products and the need to explore alternate approaches through both coordinated, joint efforts and independent, service-specific initiatives based in an agreed-upon joint campaign. This tempo also addresses concerns of cumbersome and inflexible products. Unlike the deliverables associated with the defunct Support for Strategic Analysis process, these products, accompanying data sets, and wargaming, modeling, and simulation reports would be maintained by Joint Data Support for use across the Department of Defense.

Most importantly, this production schedule would complement — not replace — Joint Staff-led efforts such as the joint warfighting concept that pursues new doctrine and aligns capability development through a joint lens. A major critique of Support for Strategic Analysis was that it pursued "single point solutions." The Department of Defense can employ two processes — one led by the services and Special Operations Command and one led by the Joint Staff — to address more possibilities and develop better warfighting, policy, and strategy approaches. Additionally, the Joint Force Operating Scenario's Agile-like approach and narrower scope provide insights quickly to inform near-term budgets (that cannot wait years for a more comprehensive grand design) as well as longer-term approaches to force design, such as the joint warfighting concept. By operating within the production loop of the joint warfighting concept, the process we propose offers a fast and relatively low-cost option to prototype force development ideas that can "fail fast" rather than "must succeed."

Conclusion

The Defense Department needs a disciplined, transparent, and timely process to develop warfighting capabilities, concepts of operation, and accompanying data sets for analysis while simultaneously strengthening civilian oversight. Senior military officials, planners, and analysts participating in the Joint Force Operating Scenario process in 2019 and 2020 addressed the shortfalls of the previous defunct approach, created a template for the future, and demonstrated a consistent, open, and testable standard going forward. This process enables the services to conduct cutting-edge force development and design. It also includes appropriate integration and oversight from the civilian leadership and the Joint Staff. The six service chiefs and head of Special Operations Command should codify this proven approach for Secretary

Austin's team to ensure a sound foundation — through data, analysis, and oversight — for emerging warfighting concepts and capability development.

Maj. Leo Spaeder is a Marine air-ground task force planner currently serving at the Marine Corps Warfighting Laboratory/Futures Directorate, Combat Development & Integration, Headquarters U.S. Marine Corps.

John K. Adams is a retired marine currently serving as the director of the Plans Branch, Concepts and Plans Division, Marine Corps Warfighting Laboratory/Futures Directorate.

C. Travis Reese is a retired marine and graduate of the U.S. Marine Corps School of Advanced Warfighting. He is currently a defense strategy and policy consultant in Washington, D.C.

John T. Quinn II is a retired marine and graduate of the U.S. Marine Corps School of Advanced Warfighting. He has worked in a variety of military strategy and plans billets since 2001 and is currently with Concepts and Plans Division, Marine Corps Warfighting Laboratory/Futures Directorate.

10. SOUTHCOM - Líderes de defesa dos EUA e da OTAN discutem o futuro da segurança do hemisfério ocidental

12/03/2021

Defesanet

https://www.defesanet.com.br/us/noticia/39995/SOUTHCOM---Lideres-de-defesa-dos-EUA-e-da-OTAN-discutem-o-futuro-da-seguranca-do-hemisferio-ocidental/

MIAMI (11 de março de 2021) - Líderes militares do Departamento de Defesa, Canadá, França, Holanda e Reino Unido mantiveram discussões de nível estratégico para explorar o futuro da segurança do Hemisfério Ocidental através de uma lente transatlântica.

O Comando Sul dos EUA sediou a Conferência dos Aliados 2021 - Otimizando para a Incerteza, uma sessão de meio dia, presencial e virtual, que reuniu líderes dos EUA e da OTAN e funcionários importantes que representam os quartéis-generais estratégicos das nações aliadas participantes.

A conferência concentrou-se em destacar a importância da Aliança e das parcerias, alinhando pontos de vista e compreensão do ambiente de segurança no Hemisfério Ocidental e desenvolvendo abordagens para responder às ameaças emergentes. Os líderes discutiram as ameaças globais ao hemisfério, lidando com as consequências da pandemia COVID-19, a ameaça de organizações criminosas transnacionais e competindo com a China e outros estados autoritários (leia-se Rússia) disputando influência na região.

"A pandemia acelerou cada pedacinho de instabilidade [na América Latina e no Caribe]. A maioria dos países desta região tem PIB negativo e, simultaneamente, vemos essas rivalidades geoestratégicas acontecendo principalmente com relação à China", disse o almirante Craig Faller, comandante do SOUTHCOM. "Neste hemisfério, vemos sua ascensão insidiosa, assim como os vemos em todo o mundo, e eles estão procurando garantir o domínio econômico da China por todos os meios possíveis."

Os principais líderes de defesa dos EUA participantes incluíram:

- Almirante Craig Faller, Comandante US SOUTHCOM;
- General Tod Wolters, Comandate do US European Command;
- General Glen VanHerck, Comandante US NORTHCOM (Comando Militar do Norte);
- General Richard Clarke, comandante US SOCOM (Comando de Operações Especiais)

Os líderes aliados incluíam:

- Vice-chefe do Estado-Maior de Defesa do Reino Unido, almirante Sir Tim Fraser;
- Comandante do Comando de Operações Conjuntas do Canadá, Tenente-General Christopher Coates;
- Comandante das Forças Armadas francesas no Caribe, vice-almirante Jean Hausermann, e o,
- Vice-chefe de defesa da Holanda, vice-almirante Bud Boots.

A conferência incluiu três sessões que enfocaram os pontos de vista dos aliados e a compreensão do ambiente de segurança emergente, o diálogo para aumentar a compreensão das abordagens de defesa e segurança de nações aliadas para o Hemisfério Ocidental até 2025 e a identificação de maneiras de trazer coerência aos esforços futuros da aliança.

"[Nossa] orientação provisória - Orientação de Segurança Nacional - e a carta de nosso Secretário de Defesa realmente afirmam a necessidade de nos reunirmos e ter a soma do que fazemos para tornar [as coisas] maiores para o bem do hemisfério, e realmente, o globo", disse Faller.

"Ao longo dos últimos dois anos, como viajei pela região ... [eu vi] a necessidade de trabalharmos juntos e

alavancar nossos laços históricos."

França, Reino Unido e Holanda, membros da OTAN, têm interesses nacionais que vão além da Europa Ocidental em função de seus territórios ultramarinos soberanos, incluindo aqueles encontrados na América Latina e no Caribe.

11. China's new Five-Year Plan and 2021 budget: what do they mean for defence?

08/03/2021

IISS

https://www.iiss.org/blogs/analysis/2021/03/chinas-new-five-year-plan-and-2021-budget

PLA and China defence watchers eagerly awaited this year's 'Two Sessions' meeting of China's National People's Congress and Chinese People's Political Consultative Conference for announcements relating to the country's 2021 defence budget, and other defence-related policy announcements. Though there were few real surprises, the statements at the meeting and details in the accompanying Five-Year Plan documents confirm the current understanding of China's priorities for the next five years in security, defence and technological innovation.

Slight uptick in China's 2021 defence budget

The 2021 Chinese defence budget of CNY1.355 trillion (US$202 billion) represents a 6.8% nominal increase over the core 2020 budget of CNY1.268 trillion (US$188bn). In 2020, the government sought to shield the PLA and the defence economy from wider pandemic-driven economic concerns by only marginally slowing the rate of defence budget growth to 6.7%. The slightly stronger nominal growth for 2021 is, therefore, indicative of the sturdier footing that China's economy is on compared to this time last year. While the rates of growth for 2020 and 2021 are considerably lower than the 12.8% notched up between 2014 and 2019, they are only slightly below the 8.1% average annual growth seen between 2015 and 2019.

In real terms, 2021 defence budget growth is actually slightly lower than in 2020 owing to the 3% annual inflation rate in China. But in value terms, the increase amounts to US$13bn, a figure comparable with the entire Taiwanese defence budget. Similarly in 2020, despite slower real growth in China's defence budget, the nominal US$12bn increase was greater than the combined defence budget increases of all other Asian

states. The 2020 defence budget, including funding for local militias, came to US$193bn, although total expenditure is estimated to be much higher if foreign weapons purchases, military R&D funding, and the People's Armed Police central budget are included.

To give a sense of where China's defence spending fits within a regional context, Asian defence spending accounted for 25.0% of the global total in 2020, up from 17.8% in 2010, despite a recent slowdown in defence budget growth. The increase in Asian spending has been largely driven by China, but supported by growth in other key markets including Australia, India and the Republic of Korea. Notwithstanding the significant planned increases in European defence budgets in 2021, with the approved FY21 US Department of Defense budget nominally flat against FY20 levels, the Asian share of global spending will likely grow modestly again in 2021 as most regional defence budgets are expected to increase in 2021.

Boost to technological innovation

Aside from announcing the defence budget for this year, the Two Sessions also provided insight into other defence-related policy measures. Related to defence-industry developments and the role of emerging technologies in the People's Liberation Army's (PLA) ambitious modernisation drive, Beijing announced that it would increase expenditure on basic research by 10.6% in 2021 and increase its annual R&D spending by more than 7% every year over the next five years.

Indeed, the 14th Five-Year Plan (FYP, 2021–25) highlighted that China will focus on improving its technological strengths in key areas such as next-generation artificial intelligence, quantum information, semiconductors, deep space, deep sea and polar exploration. To boost innovation, Beijing also aims to establish more national laboratories with a specific focus on AI and quantum information research. China is already conducting defence-related research on the applications of technologies such as quantum information and AI, and the 14th FYP indicates that this remains a core ambition for at least the near term.

PLA to enter second phase of reform

Draft versions of the 14th FYP published by Xinhua also provide insight into the focus areas for the PLA's next phase of modernisation. The Chinese government had previously intended for the PLA to achieve basic mechanisation and make progress towards informatisation by 2020, but recent statements indicate that this goal has not been fully realised. Achieving full mechanisation and informatisation is thus likely to continue to be an ambition for the next few years.

Nevertheless, 2021 marks a new phase of PLA reform towards the final goal of building a world-class military by mid-century. As the draft FYP states, the PLA's next goals are centred on army building –strengthening the army through politics, reform, science and technology, talent and rule of law – by 2027 (the centenary of the

PLA's founding), and speeding up and improving efficiency in terms of military modernisation, which it aims to achieve by 2035.

Here, the FYP provides insights into where budget spending might be allocated in the next five years. The document emphasises the modernisation of weapons and equipment, independent and original innovation in national defence science and technology, the development of strategic frontier and disruptive technologies, and accelerating upgrades of and development in intelligent weapons and equipment. But equal attention is given to the modernisation of military theory, personnel and organisation, the creation of new combat forces in new domains, and joint training. Military-civil fusion is again promoted as a way of achieving the PLA's ambitious reform goals.

Softer language on Taiwan, with the usual caveat

The annual Two Sessions meeting also highlights developments in areas of concern for Beijing, with the possible reunification with Taiwan being a topic of discussion at past meetings. The failure to mention 'peaceful' reunification with Taiwan at the 2020 Two Sessions meeting was interpreted as an intentional warning signal to the island's pro-independence supporters, with some analysts suggesting that it was a further sign that military conflict across the Taiwan Strait was imminent. However, the Chinese government later clarified that omitting the word 'peaceful' had been an error.

It avoided the same mistake this year, and both the discussion at the Two Sessions meeting and the text of the 14th FYP referred to 'peaceful reunification' with Taiwan. The language on Taiwan is surprisingly soft, focusing less on the threat of force, and instead promoting people-to-people ties, and cross-Strait cooperation and development, and providing benefits to Taiwanese citizens on the mainland.

However, such measures have proved unsuccessful since Taiwan President Tsai Ing-wen's election in 2016, and are unlikely to result in greater support across the Strait for a 'One Country, Two Systems' formula. The plan, therefore, includes China's usual disclaimer that it will be 'highly vigilant and resolutely curb separatist activities in "Taiwan Independence"'.

12. Breaking: Army leader, warns about Potencial Land war with China

17/03/2021

National Defense

https://www.nationaldefensemagazine.org/articles/2021/3/17/army-leader-warns-about-potential-land-war-with-china

A future military conflict between the United States and China has traditionally been viewed as primarily an air and naval fight that would most likely occur in the Asia-Pacific. But the Army leader in charge of modernization said his service needs next-generation combat vehicles and other technologies to deter and, if necessary, win a potential ground war with Chinese forces.

The Pentagon views China as the “pacing threat,” Gen. John “Mike” Murray, head of Army Futures Command, said March 17 during remarks at the Association of the United States Army’s virtual Global Force Next conference.

“They're aggressively expanding their influence,” he said. “They have publicly been very clear about not only their modernization objectives, but also their regional and technological dominance objectives.”

Years ago during the Obama administration — which tried to “pivot” the U.S. national security community’s focus to the Asia-Pacific — the Air Force and Navy came up with an Air-Sea Battle concept to overcome enemy anti-access/area denial capabilities such as the arsenal of advanced air defenses and anti-ship missiles possessed by Beijing. Since then, a major role has been envisioned for the Army in a potential U.S.-China war in the region.

The service’s Multi-Domain Operations concept includes using new long-range capabilities such as land-based hypersonic missiles and anti-ship weapons to destroy enemy air defenses and other anti-access systems to enable air and maritime maneuver for U.S. naval and air forces. Although the Multi-Domain Operations concept could be applied to other regions, it is often discussed in the context of a potential shootout in the Asia-Pacific.

Long-range precision fires are the Army’s top modernization priority, and the service hopes to begin fielding new hypersonic weapons by fiscal year 2023.

However, the No. 2 priority is next-generation combat vehicles. The service is pursuing a new Optionally Manned Fighting Vehicle, a family of robotic combat vehicles, and a new light tank known as Mobile Protected Firepower.

During the Global Force Next conference, Murray was asked what role such systems could play in a potential conflict with China in the Indo-Pacific region, where a land war between great power competitors is not viewed by most Pentagon planners as one of the more likely scenarios.

“If competition, which we're in today, ever went to conflict … I think we look at that fight very, very narrowly,” he said. “We always talk about Taiwan and we always talk about the South China Sea” as geopolitical hotspots where events could lead to a U.S.-China clash.

However, Beijing has a large army, he noted.“I look at the ability for that conflict, if it ever happened, to become more global and less regional,” he said. “I also believe that the Chinese would use every asset they have in their arsenal, which includes a very large mechanized force. And so I look at, you know, the [U.S. military’s] ability to deter. I look at the assets that China has in place currently [and] their modernization path. I look at ... less of a regional fight and more of a global fight if it came to that. And I just think that we fool ourselves if we look at this too narrowly.”

Murray did not identify the other regions of the world where he could envision a land war breaking out between U.S. and Chinese ground forces.

TECNOLOGIA, MÍSSEIS & SISTEMAS DE DEFESA

Destaques sobre emprego de tecnologias, mísseis e sistemas de defesa pelo mundo

13. Joint World Warms Up To Army Long-Range Missiles

12/03/2021

Breaking Defense

https://breakingdefense.com/2021/03/joint-world-warms-up-to-army-long-range-missiles/

The head of INDOPACOM, Adm. Davidson, and the vice chairman of the Joint Chiefs, Air Force Gen. Hyten, seem receptive to a new Army role in long-range strike.

WASHINGTON: The Army says its new long-range, land-based missiles will help Air Force and Navy strike planes, not compete with them — and despite traditional rivalries, some crucial Air Force and Navy leaders are listening.

By building new Multi-Domain Task Force units armed with long-range missiles, "what we want to do as a service is provide the combatant commander…multiple options," the Army Chief of Staff, Gen. James McConville, told the Defense Writers Group on Thursday.

And arguably the most important combatant commander out there, Navy Adm. Philip Davidson of Indo-Pacific Command, welcomed those new options in recent testimony to the Senate Armed Services Committee.

"A wider base of long-range precision fires… enabled by all our terrestrial forces — not just sea and air but by land forces as well — is critically important to stabilizing what is becoming a more unstable environment in the western Pacific," Davidson told Sen. Tom Cotton. "Long-range precision fires delivered by the ground force, I think, are critically important."

Even Davidson's terminology is telling: "Long-Range Precision Fires" is the *Army's* official term for the family of long-range weapons it's developing. What are they? "They can range anywhere from hypersonic missiles to Mid-Range Capability to Precision Strike Missiles," McConville said Thursday, "and these systems have the ability to penetrate anti-access/area denial [defenses and] in the future, to sink ships."

It's worth noting that "Mid-Range" in this context is at least a thousand miles; hypersonics would fly much farther. Even the shortest-range item on McConville's menu, the Precision Strike Missile (PRSM), has a range of over 300 miles, which is greater than the *longest-range* missile in the Army's inventory today, the Cold War ATACMS.

But wait a minute – isn't it the job of tactical fighters and, especially, Air Force bombers to penetrate enemy air defenses and strike deep into hostile territory? Key Air Force leaders have pushed back, albeit obliquely, defending their service's primacy in long-range strike and hinting a ground-based capability would be both redundant and inferior.

No less a figure than the Air Force Chief of Staff, Gen. Charles Brown – a former commander in the Pacific himself – said last month he'd talked with McConville about long-range fires. "We both provide that

capability, as well as the other services," Brown said, "[so as] we look at gaps and seams and overlaps in capability, this is what the discussion has to occur on with [respect to] roles and missions."

Air Force Gen. John Hyten, vice chairman of the Joint Chiefs of Staff, also used to want a review of the services roles & missions laid down by the Key West Agreement of 1948 – *used to*. But last month, he said he now considers it premature to try to lock down service roles when we're still figuring out how they'll work together in future Joint All Domain Operations.

"Four years ago … I advocated for a roles and missions discussion on those issues," Hyten said when CSIS scholar Tom Karako asked him about long-range land-based fires. "As I came in and started working deep into the Joint Warfighting Concept, I realized that, number one, we actually don't have to do that, and you don't have to do that because of the way the nature of war is changing."

"In the Joint Warfighting Concept, the critical structure is basically expanded maneuver – maneuver in every domain, every structure, every command," Hyten told the CSIS webcast in February. "[Even] our ground forces have to move faster than the adversary, and they have to be able to defend themselves wherever they go and attack effectively."

"As you walk through that expanded-maneuver concept… son of a gun, all the lines on the battlefield disappear," Hyten exclaimed. While he didn't explicitly mention it, many officers have said that includes the traditional boundaries – like the Fire Support Coordination Line – that leave targets on the far side for airpower and on the near side for artillery.

Among "my brothers and sisters in the Air Force," Hyten said, "there's a couple that are arguing pretty aggressively for a kind of a roles and missions look. But that's looking at the world from 1948. We've got to look at the world from 2021."

That's as close to a rebuke for his own service as Hyten can publicly come. Karako, the general's interlocutor at CSIS, put it more bluntly in an email to *Breaking Defense*:

"Given that the new Joint Warfighting Concept has yet to emerge, it seems premature to toss objections about roles and missions dating back seven decades," Karako told me. "In this new missile age, this new era of standoff, multiple services may well need to field long-range hypersonic, supersonic, or subsonic strike. Admiral Davidson reaffirmed such a vision… by endorsing the utility of ground-based long-range fires operated by the Army and the Marines."

"This might not fit the traditional roles and missions division of labor, but it probably shouldn't," Karako said. "As General Hyten put it, cautioning his own Air Force colleagues, it's not 1948 anymore."

Now, there's absolutely a debate to be had about the advantages and disadvantages of airstrikes versus land-based missiles. A bomber is absolutely the most flexible efficient way of delivering munitions to multiple targets: Instead of building a one-use rocket that can fly hundreds or thousands of miles, you have a reusable aircraft that can fly overhead and fire large numbers of smaller, cheaper short-range missiles, or just drop precision-guided bombs that need no propellant besides gravity.

But that's assuming the bomber can get through. China and Russia have invested massively in anti-aircraft defenses in recent decades. They've also invested in long-range anti-ship missiles as well to hold off American aircraft carriers and Tomahawk-missile-launching surface warships. (Submarines are a harder target). Land-based launchers, by contrast, can hide in jungles or tunnels on Pacific islands that – as McConville noted – no enemy can sink.

So, McConville and his camp argue, there will be times when Army weapons can open the way. If your long-range missile is intercepted and shot down, well, at least you didn't lose the lives of expensively trained aircrew. If it gets through, it can blow up anti-aircraft defenses to open a path for airpower.

"We're going to need in the future the ability to maybe suppress air defense, and we're going to do it maybe from a strategic range," McConville said – that is, with long-range, land-based weapons. The Army (and Marines) are also working to sink enemy ships with land-based missiles, he said. So, he summed up, "what we're doing is providing an option that may in the future enable both air and maritime maneuver."

But the Air Force, for its part, has very pointedly been prioritizing its modernization efforts aimed at overcoming higher-threat air environments. This includes the Next Generation Air Dominance (NGAD) program, which is considering development of not just a sixth-generation fighter, but also lower-cost aircraft (known as "attritable" in Air Force jargon) to take on the suppression of enemy air defense (SEAD) mission perhaps using AI pilots..

The related Skyborg program has been looking at the concept of teaming piloted aircraft with drones for various missions; and on March 5 the service issued a request for information (RFI) on a potential new family of Next-Generation Multi-Role Unmanned Aerial System Family of Systems (UAS FoS) that could include "expendable" drones. Among the mission sets foreseen, are "a new use for UAS FoS in anti-access and area denial environments while offering efficiencies in meeting capacity needs of combatant commanders."

All this costs money, and there's less to go around among the services. So the big question is going to be, can the Pentagon afford multiple long range options? "The cost is fairly reasonable for the capability that's going to be brought," McConville said.

It's worth noting that the Army isn't reinventing the wheel here. Its longest-range weapon, the hypersonic missile, shares both warhead (aka "glide body") and booster rocket with the Navy version: They're just

packaged differently to launch from trucks instead of ships. And the modestly named Mid-Range Capability, with its thousand-mile range, will use a mix of existing Navy missiles, the subsonic Tomahawk and the supersonic SM-6, to handle different targets.

Davidson referenced this repurposing in his endorsement of the Army plan. "I've been encouraged by the enthusiasm by the Army and the Marine Corps to embrace some of the capabilities that the Navy and Air Force have already developed," he said. "I think that is a low cost way to quick capability that can be fielded potentially in the region, and I think we ought to stay after it."

14. Going Ballistic:The UK's Proposed Nuclear Build - up

16/03/2021

RUSI

https://rusi.org/commentary/going-ballistic-uk-proposed-nuclear-build

The UK today announced the most significant change to its nuclear weapons posture in at least two decades. The Integrated Review, a much anticipated reassessment of strategic policy that reaches far beyond nuclear issues, states that the UK is raising a self-imposed limit on its overall nuclear warhead stockpile, abandoning a previous cap of 225 warheads as well as the current reduction target of 180 by the mid-2020s, and replacing it with a new cap of 260 warheads. Just as importantly, the UK will no longer place a public limit on the proportion of that stockpile that is operational at any given time (which had previously been set at 120 warheads), nor will it give any public information on the number of warheads and missiles deployed on its ballistic missile submarines (which had previously been set at no more than 40 and 8 respectively).

This reverses the UK's course of consistent post-Cold War nuclear reductions and runs counter to previous assurances that the programme to replace the UK's existing nuclear deterrent would not add to the number of nuclear warheads in service. It is also in apparent contrast to the review's emphasis on UK support for multilateral diplomacy, and will do much to negate a self-crafted diplomatic image of the UK as the most progressive of the world's nuclear-armed powers.

These changes are presented as a reaction to a changed international security environment, and the government paints a picture of a world with growing international competition and increasing threats from Russia, China, North Korea and Iran. In its judgment, UK adversaries are increasing the variety and quantities

of their nuclear capabilities, and see nuclear weapons as a means of coercion, deterrence and even warfighting. There is no formal move away from the central UK concept of a minimum, credible, assured nuclear deterrent, but the government's decision indicates a belief that this minimum deterrent can grow as well as shrink, if that is what is required for it to remain credible. It also indicates that credible nuclear deterrence is more important to this government than its disarmament commitments.

Analysts have in recent days proposed reasons other than national security for this policy shift, but none of these explanations alone explains the scale and detail of the change. Some observers have suggested that overlaps between the UK's current and replacement warheads might have necessitated lifting the cap, but the UK could have indicated this was a temporary measure if it had wanted to, and in any case it would not be required for some time. The same is true for any mismatch between production and dismantlement rates that could theoretically bring the UK over this cap. It is fair to say that a larger stockpile could ease the logistics burden and allow more warheads to be held at a high state of readiness if desired.

Factors relating to the practical delivery and maintenance of the current and future UK nuclear stockpile may well have had a significant bearing, though it is difficult to say how significant these factors might be – the government does not mention any issues in the review and clearly wants to keep the focus on the threat picture as the only driver. Key among these programmatic matters is the state of the UK's nuclear infrastructure and the status of the US W93 warhead programme. In the case of infrastructure, if the cap increase is to be meaningful, one must assume that the government considers it feasible to bring the stockpile to between 225 and 260 warheads and maintain it at that level – despite well-documented difficulties with the UK's warhead assembly and disassembly infrastructure.

In the case of the W93, Secretary of State for Defence Ben Wallace's lobbying of US Congressional committee members over approvals for the first stages of the W93 warhead gives a clear indication of the degree of UK dependence on that programme. There has been some media speculation that the stockpile increase is a US-focused statement of intent, to add greater weight to arguments that the UK is serious about its replacement warhead programme. This would not, however, change the fundamental question for US lawmakers of whether the US needs the W93 as much or as quickly as the UK needs a replacement for its own weapons. This leaves open the question of whether the UK might need to make some tangible concession that encourages Washington to act as London would like it to, much as it did to facilitate the sale of Trident D5 missiles to the UK in the 1980s.

DETERRENCE REQUIREMENTS

More warheads does not automatically mean more deterrence, though it may increase the number of targets that a single deployed submarine can hold at risk, or increase the likelihood that a credible two-boat patrol at a time of crisis could be achieved. This means that the number of operational missiles and deployed

warheads that the UK might deploy at any one time has increased, perhaps quite substantially: both the *Vanguard*-class and *Dreadnought*-class submarine can carry vastly in excess of the 40 warhead limit that the review has dispensed with.

Although the UK has ceased to publicly discuss a 'sub-strategic' role for its nuclear arsenal, this increased stockpile and greater flexibility could provide greater room for the use of low-yield variants of its nuclear warhead to be threatened in a conflict. Given the emphasis that the review places on adversary states' aggressive doctrines, it is certainly possible – and equally troubling – that this consideration has come into play for the UK.

In terms of strategic deterrence, the principal UK criterion for judging effectiveness in the past has been its own ability to inflict unacceptable damage on an adversary – historically, Russia, and particularly Moscow – rather than the number or type of nuclear forces possessed by that adversary. The UK has for several years mentioned countries other than Russia as potential nuclear deterrence counterparts; the review seems to imply that these threats are significant enough to warrant a larger deployed arsenal to credibly hold all of the targets that it needs to at risk. Similarly, the potential for future ballistic missile defences to become more effective, or for nuclear deterrent effectiveness to be degraded in some other way, has clearly been a source of concern for the government, which this policy shift might aim to address.

The final piece of the puzzle is the UK's credibility and resolve from a potential adversary's perspective. This uplift in arsenal is intended to signal that resolve to adversaries and allies alike, and it may have some effect in that regard. However, it will also be set against more tangible measures of the UK's commitment to defence in general – such as its procurement and use of conventional military capabilities, its actions in the cyber and space domains, and its resolve and activism on diplomatic issues in general. Here the proof will be in the UK's actions, but an increase in the UK's nuclear deterrent capabilities alongside a reduction elsewhere would be a mixed signal.

ARMS CONTROL AND DISARMAMENT

Since the UK's first Strategic Defence Review in 1998, successive governments have made much of the UK's post-Cold War nuclear reductions, both at home and in international diplomatic forums, especially relating to the Nuclear Non-Proliferation Treaty. The UK has also, since the mid-2000s, positioned itself as a leader in research on verification of nuclear disarmament, and has worked with non-nuclear-weapon states such as Norway to lay the technological groundwork for future arms control agreements. The review asserts the UK's commitment to nuclear disarmament but offers no new steps to offset the impact of its stockpile increase and sets out no vision for future arms control negotiations in which the UK might be a player.

A move to a cap of 260 warheads winds the clock back to the 1990s, in that it reverses the UK's course of progressively lower targets for reductions and greater transparency around operational deployments. In

terms of international disarmament diplomacy, the decision is unequivocally damaging to the UK's reputation. It will incur strong criticism at the upcoming Nuclear Non-Proliferation Treaty review conference. It risks making the UK's arms control verification research and its partnerships with non-nuclear-weapons states look like a fig leaf, a theoretical exploration of a future scenario towards which the UK has no intention of seriously working. It could make it more difficult for the UK government to generate international condemnation of China's nuclear build-up and China's lack of nuclear transparency. And it will make life harder for UK partners that have been trying to persuade other non-nuclear states to keep the faith in a gradual, step-by-step approach to nuclear disarmament, in the face of the new Treaty on the Prohibition of Nuclear Weapons, which seeks to delegitimise nuclear weapons and ultimately make their possession illegal under international law. These costs stand in stark contrast to the emphasis placed elsewhere in the review on the importance of multilateralism and of the UK's international partnerships and alliances.

NEED FOR SCRUTINY

The Integrated Review arrives at a moment of considerable change and disruption in the UK's nuclear warhead programme. The last year has seen the announcement of a decision to build a new warhead, revelations about the UK's nuclear dependence on the US, and the renationalisation of the Atomic Weapons Establishment. These developments, set against the background of the coronavirus pandemic and Brexit negotiations, have passed with little parliamentary comment. MPs, whether they support or oppose nuclear deterrence, should take today's developments as their cue to get serious about scrutinising the UK's nuclear warhead programme, as a matter of sound policy and expenditure if nothing else. A failure to do so would send a clear signal to the government that it can roll back existing levels of transparency and reporting around the nuclear programme without political costs.

The views expressed in this Commentary are the authors', and do not represent those of RUSI or any other institution.

15. Industry perspective: 5G Can Drive the Automation of military Networks

22/03/2021

National Defense

https://www.nationaldefensemagazine.org/articles/2021/3/22/5g-can-drive-the-automation-of-military-networks

5G technology holds great promise for future defense networks. Along with AI, cloud and cybersecurity, advancing the capabilities of command, control and communications systems is one of the four pillars of the Defense Department's 2019 Digital Modernization Strategy.

With its support for both wireless and wired access, 5G has the potential to provide a ubiquitous access layer for defense operations. Its dynamic network slicing capabilities will play a key role in increasing the efficiency and security of the future defense network architecture.

To achieve end-to-end slicing will require the modernization of the Defense Department transport network, with automation playing a crucial role in supporting key features of 5G.

One of the most important aspects of 5G is its ability to provide "slices" for specific users and their applications, which have specific network requirements. For instance, video surveillance cameras need guaranteed high bandwidth, while drone control needs very short response times.

Each slice can be built to deliver the specific network performance required by each application. Typically, a defense network has many different classification levels, and slices can provide virtual network partitions that completely secure services with different classifications, even though all share the same physical infrastructure.

Slicing can be done with 4.9G/LTE networking, but not dynamically. With release 17 of the 5G standard — due to be completed mid-2022 — it will be possible to create end-to-end slices as missions are launched and delete them when completed, thus optimizing the use of resources such as spectrum, bandwidth and latency, as opposed to tying them up with services that are not being used.

Each slice can be quickly configured to support operational requirements.

There are a wide variety of use cases. On naval bases, 5G can provide video and haptic feedback to remote operators of cranes and gantries loading and unloading ships. It can give the precise location of vehicles and assets and track logistics operations. Ships can begin downloading data before they have docked using 5G for ship-to-shore data connectivity.

The improved bandwidth performance and extremely low response time of 5G enables the broader deployment of virtual and augmented reality indoors and outdoors, around facilities and in the field. This can enable multiple use cases, including training of personnel and real-time information sharing for improved situational awareness. It can also support high resolution (8K) video for tele-remote operation of vehicles

and drones, and low-powered sensors for broad monitoring of environment, equipment and data for personnel in the field.

Ensuring the performance parameters of a specific end-to-end network slice isn't simply a function of the 5G radio network, however. A slice is a virtual network that interconnects applications that run in the cloud with devices and users. Slice management must be able to interface with the radio, transport and core segments to provide the required level of performance across the whole network. Particularly, the underlying transport network must also ensure that the bandwidth and latency performance on the end-to-end link matches what the radio network demands.

With today's transport architectures, this on-demand deployment of network resources across the IP, microwave, satellite and terrestrial and submarine optical networks isn't possible because of the level of hands-on configuration that would have to occur. For instance, an end-to-end slice with today's virtual private network technology would take hours or even days to configure.

Additionally, as the defense transport network grows, operational management issues grow too. Digital services that will run on a distributed cloud infrastructure will multiply, generating a huge amount of traffic and requiring the number and capacity of network nodes to also grow significantly. This will increase network complexity, creating operational challenges to guarantee the performance and reliability required by all these applications, and make manual configuration even more difficult.

In short, setting up an end-to-end slice across the various transport layers must be done in an automated way to communicate the performance requirements for a given slice to all the different nodes at each network layer and ensure the initial intent is realized end to end.

Once the slice is created and all the underlying network resources are aligned, there also needs to be constant measurement using telemetry data to ensure that each network layer is continuing to perform. If the performance falls below the service requirements, the network must be able to access new resources such as redundant circuits or new virtual processing resources to ensure that the mission can be executed.

Automating the network not only enables the support of on-demand services and slices, it drives degrees of efficiency for skill development as well, lowering the requirement for info-tech personnel to engage in complex network engineering.

It also lowers the total cost of operating, delivering, optimizing and assuring services.

As the digital defense architecture grows in complexity, defense organizations are beginning to recognize that the time has come to better understand and automate their transport network for 5G and the cloud era.

Jeff Verrant is director of defense and national security at Nokia North America.

16. Ansarullah's missile and munitions launches flex Saudi responses

19.03.20201

IISS

https://www.iiss.org/blogs/military-balance/2021/03/ansarullah-missile-and-munitions-saudi-arabia

Recent attacks on oil facilities in Saudi Arabia are a stark reminder of the challenge posed to air defences by a mix of ballistic and cruise missiles and UAV-based munitions, whether fielded by state or non-state actors, write Douglas Barrie and Timothy Wright.

In a series of strikes and attempted strikes in the first two weeks of March 2021, ballistic and cruise missiles and direct-attack uninhabited aerial vehicles (UAVs) were repeatedly fired at multiple targets in Saudi Arabia. The physical damage appears to have been negligible, and the Saudi Ministry of Defence said it had intercepted several direct-attack UAVs. Even so, the spot oil price spiked following the attacks: this was likely part of the impact the attackers from Yemen's Houthi movement (Ansarullah) were seeking. Oil prices briefly increased to more than US$70 a barrel for the first time since January 2020, amid fears of potential disruption.

Threat mix

The attacks are a stark reminder, if required, of the challenge posed to air defences by a mix of ballistic and cruise missiles and UAV-based munitions, whether fielded by state or non-state actors. Their use continues to point to Iran as a proliferator of such systems; in the case of UAV-based munitions Iran also appears to be a provider of the technical manufacturing know-how. In the case of cruise and ballistic missiles, the provision is limited to final assembly from large subsystems.

Iran has adapted a series of relatively simple UAV designs to provide a low-cost and comparatively long-range ground-attack weapon in the direct-attack UAV. For those used by Ansarullah, guidance may be limited to inertial- and satellite-navigation coordinates. While still loosely defined, direct-attack UAVs differ from loitering munitions in that the former, although often based on UAV designs, do not have the capacity to enter a holding pattern until a target is identified, instead engaging directly a pre-determined target.

On 4 March 2021, Ansarullah reported that it had struck a Saudi Aramco oil-storage facility in Jeddah, western Saudi Arabia, with the *Quds*-2, most probably an increased-range variant of the *Quds*-1 land-attack cruise missile (LACM). The *Quds*-1 LACM is an Iranian design, also known as the 351, and has been supplied to Ansarullah by Tehran. Unlike the 14 September 2019 attack on the Aramco facility at Khurais, when at least seven cruise missiles were launched, only a single LACM appears to have been fired. It is unclear whether this is a result of the supply of missiles being constrained by the US and its allies' interdiction efforts in support of the United Nations arms embargo against armed groups in Yemen. The first imagery of a *Quds*-2 (screen-grab from video below) was shown by Ansarullah on 11 March, and while the imagery is inconclusive, the engine casing appears to differ slightly from the *Quds*-1. How any range extension between the *Quds*-1 and *Quds*-2 has been achieved, and just how much further the *Quds*-2 is capable of flying, is not known.

Iran is also working on a larger, longer-range LACM – the *Meshkat*/*Soumar*/*Hoveizeh* family. The status of this family of LACMs remains unclear, although the unclassified US intelligence report '2020 Ballistic and Cruise Missile Threat' categorised it as 'operational'. The equivalent report from 2017 had been more circumspect, noting only that the service status was 'undetermined'.

Hit or miss

Following this supposed attack on 4 March that Ansarullah said had been successful, available satellite imagery of the Jeddah facility does not show any apparent damage to the stated target beyond already visible scorch marks from an earlier attack. As of 12 March, the Saudi government has not acknowledged that the supposed attack took place.

On 7 March, the Aramco oil facility at Ras Tanura on the east coast of Saudi Arabia was targeted. The *Samad*-3 direct-attack UAV was used, while there were also close-range ballistic-missile attacks on Asir and Jazan in southwest Saudi Arabia. Ansarullah stated that the *Zulfiqar* ballistic missile was used in the attack on Ras Tanura. If correct, this would support indications that the missile is likely an extended-range version of the Iranian *Qiam* family. The range required to reach the Ras Tanura facility from Ansarullah-held territory in Yemen is more than 1,200 kilometres.

Along with the *Samad*-3, the *Qasef*-2K direct-attack UAV was also apparently used by Ansarullah in the attempted attacks. The *Qasef*-2 family appears to be a local copy of Tehran's *Ababil* 2. Footage released by the Saudi defence ministry shows both types of munition being engaged by combat aircraft using short-range air-to-air missiles. From the imagery released, the UAV-based munitions seem to have followed a low-altitude flight path.

In the case of the Ras Tanura attack, some Saudi reports suggested that the UAV flight path was over part of the Persian Gulf. It is possible that the *Samad*-3 munitions were launched from a small vessel amid what is a busy shipping channel.

Ansarullah characterised the latest round of attacks as 'deterrence operations': in propaganda terms, intended to show that it was capable of responding 'in kind' to Saudi Arabia's use of its air power in the Yemeni civil war.

The regional issue of ballistic-missile proliferation has been well known for decades, while the regional challenge posed by LACMs is more recent. Now added to this set of problems from a defender's point of view is the threat posed by UAV munitions. From an adopter's perspective, whether state or non-state, these weapons provide utility as both a military and a propaganda tool.

17. US Navy set receive latest version of the Tomahawk missile

18.03.2021

Defense News

https://www.defensenews.com/naval/2021/03/17/us-navy-set-to-take-delivery-of-the-latest-version-of-its-tomahawk-missile/

WASHINGTON — Raytheon plans to deliver next week the first of the U.S. Navy's new Block V Tomahawk, an upgraded version of the service's venerable land-attack missile that will ultimately include the ability to target ships at sea at extended ranges.

The new Block V, when fully realized in its Block Va and Block Vb varieties, will be expected to hit surface ships at Tomahawk ranges — in excess of 1,000 miles — with the integration of a new seeker. It also will integrate a new warhead with a broader range of capabilities, including greater penetrating power.

Tomahawk's range is especially important in the Asia-Pacific region, where China's rocket force has extraordinary reach with its DF-26 and DF-21 missiles, with ranges of 2,490 and 1,335 miles respectively, according to the Center for Strategic and International Studies.

The U.S. Navy's news missiles are destined not just for the vertical launching systems on surface ships but also on attack submarines that can more easily operate inside the range of China's rocket force.

The Navy is expected to make a decision on the future of the Tomahawk weapon in 2021, but the signs seem to point to its continuation. The service has had a long-running search for a next-generation land-attack missile, but a recent analysis of alternatives led to the Navy restarting the Tomahawk line and upgrading its current inventory.

In the Navy's 2021 budget documents submitted last year, the service said it had yet to determine the future of the missile. But in testimony before the House Armed Services Committee, the head of U.S. Indo-Pacific Command, Adm. Phil Davidson, specifically cited the anti-ship Maritime Strike Tomahawk specifically and the surface-strike variant of the SM-6 as capabilities needed by the Marine Corps in its quest to hold Chinese ships at risk from shore-based missiles.

"What the Marine Corps has asked for have already been developed in the [Navy] and is employed on Navy ships, things like Maritime Strike Tomahawk, SM-6. These are immediate capabilities that I think should be made available to the Marine Corps," Davidson said.

Advances in missile technology might actually be helping the Tomahawk's cause to stay in the Navy's vertical launching system missile tubes longer, according to Bryan Clark, a retired submarine officer and senior fellow at the Hudson Institute.

The combination of the SM-6, the new 100-plus-mile ranged anti-ship Naval Strike Missile bound for the littoral combat ships and next-generation frigate, and the Block V upgrades on Tomahawk will give the Navy's weapons a place in the service's vertical launching system cells for some time to come, Clark said in a December interview.

"Between Tomahawk Block V, the SM-6 and the NSM, the Navy has a collection of attack weapons that they are happy with," he said, adding that a long-running effort to develop a next-generation land-attack weapon has lost some of its urgency."

That means as hypersonic cruise missiles make developmental progress, the Navy will likely make do with its current generation of weapons instead of embarking on an expensive next-generation land-attack weapons program.

“What’s happening in parallel is in the development of hypersonic missile that are a smaller form factor than the boost-glide weapons that are coming to maturity now,” Clark said. “And if they can get it down to being able to fit in [the Mark 41], then that could provide the Navy a next-generation capability that is more survivable and has a shorter time of flight.

“So I think this combination of missiles the Navy has now, combined with the fact that the hypersonic weapons are coming along a little further out, means the Navy is going to stick with what it has potentially even longer than it had originally anticipated.”

18. Two down, more to go? With hypersonic weapons already in the field, Russia looks to improve features

15.03.2021

Defense News

https://www.defensenews.com/global/europe/2021/03/15/two-down-more-to-go-with-hypersonic-weapons-already-in-the-field-russia-looks-to-improve-features/

MOSCOW — Hypersonic weapons are a top priority for the Russian government, a defense analyst with the state-run think tank IMEMO has told Defense News, and with two now fielded, the country is looking into further improving the technology.

“The so-called hypersonic technology is essentially an evolutionary development. However, it provides new, combined abilities for missile weapons: increased speed and maneuverability, and improved accuracy,” Dmitry Stefanovich said. “I can’t imagine a person who is responsible for the decision-making in the country and who wouldn’t be interested in improving all those features.”

By creating hypersonic technology that can overcome missile defense systems, Russia maintains “strategic stability and strategic balance,” President Vladimir Putin once told Russian news agency Tass in March 2020.

For Russia, hypersonic technology is also a way to avoid a quantitative arms race like the Soviet Union went through during the Cold War, said Viktor Litovkin, a retired colonel and military analyst with Tass. “We have no money to get involved in a quantitative arms race. You need to have a little, but the highest quality, which will restrain the adversary,” he said.

There are currently two hypersonic missiles with the Russian military: the Avangard and the Kinzhal. The former is a nuclear-capable missile reportedly able to fly faster than 20 times the speed of sound. The first Avangard infrastructure was set up in December 2019.

The Kinzhal (or “Dagger” in English) is a nuclear-capable air-launched ballistic missile fielded in December 2017. Before entering the military’s inventory, it was tested with the MiG-31 fighter jet. Putin has said the weapon can exceed 10 times the speed of sound, but some missile experts have cast doubt on that capability.

Russian media previously reported the Kinzhal physically resembles the 9M723 ballistic missile developed for the Iskander tactical missile system. “If it looks like a duck, swims like a duck and quacks like a duck, then it probably is a duck,” Stefanovich said of the similarity.

Russia is also testing its 3M22 Zircon anti-ship hypersonic cruise missile, expected to be installed on the modernized submarine-killing ship Marshal Shaposhnikov. The vessel is undergoing its owns tests. The head of Tactical Missiles Corporation JSC, Boris Obnosov, told Tass last month that the Zircon’s testing is going according to schedule.

The first launch of Zircon from the nuclear-powered submarine Severodvinsk will take place in June, industry officials said, according to reports from Tass this month. If testing goes well, the Zircon will be delivered to the military in the first half of 2022.

Obnosov has said hypersonic projects are among the top priorities for his company, adding that there are “several dozen” hypersonic efforts ongoing in partnership with the country’s several research and development institutes. He said a center dedicated to hypersonic technology efforts could be established to oversee the projects, without providing further information.

Tactical Missiles Corporation is Russia’s leading developer of hypersonic technology, so it might also be behind a recently tested prototype of an air-to-surface hypersonic missile meant for the Su-57 fifth-generation fighter jet. However, the company did not respond to questions from Defense News regarding its hypersonic projects.

19. HALCON Unveils First Anti-Ship Cruise Missile ate IDEX 2021

22.02.2020

Associated Press

https://apnews.com/press-release/business-wire/technology-business-corporate-news-weapons-manufacturing-products-and-services-88d88fb4113f43bca4b689e3db7027f3

ABU DHABI, United Arab Emirates--(BUSINESS WIRE)-- HALCON, a regional leader in the production and supply of precision-guided weapons, today unveils its HALCON AntiShip-250 (HAS-250) cruise missile at the International Defence and Exhibition Conference (IDEX) 2021, taking place in the UAE capital, Abu Dhabi between 21-25 February.

The HAS-250 is a UAE-designed and developed surface-to-surface missile capable of travelling at speeds of up to 0.8 Mach, with a range of over 250Km. During its terminal phase, it can fly towards its target at a sea-skimming altitude of below 5m.

Engineered to provide the highest performance, the HAS-250 utilises Global Navigation Satellite and Inertial Navigation Systems (GNSS + INS) and for high accuracy targeting it is equipped with an active/passive terminal seeker and radio altimeter.

Saeed Al Mansoori, CEO of HALCON said: “Our focus on smart capabilities continue to deepen as we produce world-class products locally. The HAS-250 is a significant advancement in our quest to equip naval forces with the highest performing cruise missile system. Designed and developed by HALCON in the UAE, this weapon will assist in the active defence of the UAE’s water ways, and build on EDGE’s expanding reputation for being bold, agile, and disruptive.”

HALCON is part of the Missiles & Weapons cluster within EDGE, an advanced technology group for defence that ranks among the top 25 military suppliers in the world.

About HALCON

HALCON is a regional leader in the end-to-end manufacturing of precision-guided systems. Established in 2017, the company innovates and develops high-performance and cost-effective products. HALCON relies on a strong in-house research and development process, supported by one of the region's most advanced testing facilities delivering high-tolerance, high-precision components, and sub-systems, finished through the company's full assembly line services. Part of the Missiles and Weapons cluster of EDGE, the company also provide special manufacturing solutions, and automation and robotics consulting, and advisory services that help customers achieve their operational and tactical goals.

For more information, please visit https://halcon.ae/

About EDGE

EDGE is an advanced technology group established to develop agile, bold and disruptive solutions for defence and beyond. Enabling a secure future, it is dedicated to bringing innovative technologies and services to market with greater speed and efficiency. Consolidating over 25 entities and employing more than 13,000 brilliant minds, it offers expertise across five core clusters: Platforms & Systems, Missiles & Weapons, Cyber Defence, Electronic Warfare & Intelligence and Mission Support. Headquartered in Abu Dhabi, United Arab Emirates, EDGE is a catalyst for change – set to revolutionise the industry and change its fundamentals.

20. Up to $1B + for Hellfire II Missiles

22.03.2021

Defense Industry Daily

https://www.defenseindustrydaily.com/3567m-for-hellfire-ii-missiles-05043/

March 22/21: Korea The Republic of Korea **has decided** to buy a batch of US-made AGM-114R multi-purpose **Hellfire II missiles**. The US military's Defense Security Cooperation Agency issued a press release on March 19, 2021, that announced that the State Department has made a determination approving a possible Foreign Military Sale to the Republic of Korea of AGM-114R Hellfire missiles and related equipment for an estimated cost of $36 million. The potential sales, announced on the website of the DSCA, involve hundred eighty-eight AGM-114R Hellfire missiles. Also included are AGM-114R spare parts; US Government and contractor engineering, technical, and logistics support services; repair and return; storage; and other related elements of logistical and program support.

Hellfire I/II missiles are the USA's preferred aerial anti-armor missile, and are widely deployed with America's allies. All use semi-active laser guidance as their base mode. They equip its helicopter fleets (AH-64, AH-1, OH-58D, **MH-60S/R**), AH-64 and S-70 helicopters flown by its allies, and even Australia and France's Eurocopter Tiger attack helicopters. Range is officially listed as 9,000 meters, or about 5.6 miles.

While Hellfires lack the fast-jet launch capabilities – and correspondingly extended maximum range – of the UK's **MBDA Brimstone** missiles, Lockheed Martin's missile has carved out unique niches as tripod-launched coastal defense assets in Norway and Sweden, and as the guided missile integrated into American UAVs like the MQ-1 Predator family. This article covers the current set of contracts, which began in 2008:

Lockheed Martin's Hellfires

Hellfire II missiles come in several variants. The AGM-114K is the basic Hellfire II missile; it uses a shaped-charge HEAT (High Explosive Anti-Tank) warhead that can destroy armored vehicles, or punch into buildings.

The recently-introduced AGM-114K-A variant adds a blast fragmentation sleeve to the HEAT warhead's anti-tank capability, giving it added versatility against unarmored targets in the open.

The AM-114M version was originally developed for the Navy; its warhead is solely blast fragmentation, which is effective against boats, lightly armored vehicles, etc.

The AGM-114N variant uses a **thermobaric** ("metal augmented charge") warhead that can suck the air out of a cave, collapse a building, or produce an astoundingly large blast radius out in the open.

A new AGM-114R "multi-purpose" Hellfire II is headed into production/ conversion. It adds some guidance and navigation improvements, and goes one step further than the K-A variant: it's intended to work well against all 3 target types: armored vehicles, fortified positions, or soft/open targets. The "Romeo" will become the mainstay of the future Hellfire fleet, used from helicopters and UAVs, until and unless Hellfire itself is supplanted by the **JAGM program**. Hellfire systems product manager US Army Lt. Col. Mike Brown:

"One of the most noticeable operational enhancements in the AGM-114R missile is that the pilot can now select the [blast type] while on the move and without having to have a pre-set mission load prior to departure… This is a big deal in insurgency warfare, as witnessed in Afghanistan where the Taliban are

fighting in the open and simultaneously planning their next attacks in amongst the local populace using fixed structure facilities to screen their presence."

Two more Hellfire variants feature key changes that aren't related to their warheads.

The AGM-114L "Longbow Hellfire" adds a millimeter-wave radar seeker, which makes it a "fire-and-forget" missile. It's integrated with the mast-mounted radar on AH-64D Apache helicopters, and AH-1 Cobra family attack helicopters have been tested with different add-ons that would give them similar capabilities.

The AGM-114P variant is modified for use from UAVs flying at altitude. That requires greater environmental tolerances, as the difference between temperature at launch altitude and near the target can be well over 100 degrees Fahrenheit. The AGM-114P's 3-axis inertial measuring unit (IMU) gives it a 360-degree targeting capability, making it easier to fire from UAVs that lack a helicopter's swivel and point maneuverability. Its unique features will also be present in the new AGM-114R, which will succeed it.

Contracts and Key Events

The common denominator in this article is the contract: W31P4Q-08-C-0361.

Hellfire Systems LLC in Orlando, FL is a Lockheed Martin/ Boeing joint venture, and is the only source of Hellfire missiles. The US Army Aviation & Missile Command in Redstone Arsenal, AL manages these contracts, unless otherwise noted.

March 22/21: Korea The Republic of Korea **has decided** to buy a batch of US-made AGM-114R multi-purpose **Hellfire II missiles**. The US military's Defense Security Cooperation Agency issued a press release on March 19, 2021, that announced that the State Department has made a determination approving a possible Foreign Military Sale to the Republic of Korea of AGM-114R Hellfire missiles and related equipment for an estimated cost of $36 million. The potential sales, announced on the website of the DSCA, involve hundred eighty-eight AGM-114R Hellfire missiles. Also included are AGM-114R spare parts; US Government and contractor engineering, technical, and logistics support services; repair and return; storage; and other related elements of logistical and program support.

August 28/20: UK The US State Department has **authorized** a British purchase of three hundred and ninety-five AGM-114R2 **Hellfire missiles** for an estimated cost of $46 million. The required certification notifying Congress about this possible sale was delivered by the Defense Security Cooperation Agency. The UK Government had put a request for the acquisition of the 395 missiles and this request also included technical assistance, publications, integration support, and other related aspects regarding logistics and program support. The proposed sale will not only support the foreign policy but also the national security objectives of the US Government by bolstering the security of a Nato ally. Furthermore, the acquisition of these missiles

is expected to help the UK to replace expiring and unserviceable missiles and bolstering its capability to meet current and future threats. The missiles are also expected to help maintain its ability to carry out missions across a wide range of military operations. These missiles will also be easily inducted by the UK into its armed forces.

December 18/19: MD 530G Block II MD Helicopters intends to **upgrade** its MD 530G Block II scout attack helicopter with an integrated weapons system made by Elbit Systems that would make the aircraft capable of carrying and firing **Hellfire** missiles. The addition of the AGM-114 Hellfire semi-active laser-guided missile would give the MD 530G an anti-tank and anti-armor capability it does not currently have. The Elbit Systems upgrade package for the MD 530G is to include a helmet display and tracking system, weapons management system and mission management system, says MD Helicopters. The MD 530G's current standard configuration includes unguided rocket pods and mini-guns.

April 29/19: New Procurement Lockheed Martin won a $723.5 million **contract** modification to procure a variety of Hellfire II missiles for the US Army as well as three allies. The air-to-surface missiles will be produced for Lebanon, the Netherlands and France as part of Foreign Military Sales. All **Hellfire II** variants have been used successfully in Operation Iraqi Freedom, with more than 1,000 missiles fired to date. With more than 22,000 rounds delivered since production began in 1994, Hellfire II has been successfully integrated with a wide array of platforms, including the US Army's Apache and Kiowa Warrior helicopters, the US Marine Corps' Cobra, the US Navy's Seahawk helicopter, the UK's Apache attack helicopter, the Eurocopter Tiger and the US Air Force's Predator and Reaper unmanned aerial vehicles. Lockheed Martin will perform work in Florida, with an estimated completion date of September 30, 2022.

April 9/12: An $8.75 million firm-fixed-price contract to buy long lead parts for the Hellfire II Romeo RX. Work will be performed in Orlando, FL, with an estimated completion date of March 31/14. The bid was solicited through the Internet, with 1 bid received by U.S. Army Contracting Command in Redstone Arsenal, AL (W31P4Q-08-C-0361).

Aug 1/11: A $159 million firm-fixed-price, unfinalized contract begins the 2011-2014 buy of up to 24,000 AGM-114N/P/Q/R Hellfire II missiles (W31P4Q-11-C-0242). Read "**US Hellfire Missile Orders, FY 2011-2014**" for full coverage.

March 28/11: Lockheed Martin announces the 6th and final proof-of-principle test for the new AGM 114R HELLFIRE II successfully concludes at Eglin AFB, FL, using ground launch in lock-on after launch mode from 2.5 km away. The missile penetrated the brick-over-block target, and successfully detonated with the specified fuze delay. U.S. Army Lt. Col. Mike Brown, HELLFIRE Systems product manager at the Army's Joint Attack Munition Systems project office:

"The AGM-114R baseline design is now defined and allows us to go into system qualification… The R model remains on cost and on schedule, and meets all performance objectives."

March 14: A $38.6 million firm-fixed-price contract covers an in-line production configuration change of 2,600 Hellfire II AGM-114P2 missiles, for use from UAVs. Work will be performed in Orlando, FL, until the end of FY 2013: Sept 30/13. One sole-source bid was solicited with one bid received (W31P4Q-08-C-0361).

Sept 10/10: A $20.1 million firm-fixed-price contract to transition the new air-to-ground AGM-114R Hellfire II Romeo missile into the current Hellfire II missile production line.

Work will performed in Orlando, FL with an estimated completion date of Sept 30/13. One sole-source bid was solicited and 1 bid was received (W31P4Q-08-C-0361).
Aug 30/10: An AGM-114R hits and "destroys" a stationary M-60 tank target 6.4 km down range, in the missile's 3rd proof-of-principle flight test. The missile was ground launched, with a flight profile designed to simulate airborne launch from a UAV. The missile was launched in lock-on-after-launch mode, with a high trajectory. It used its inertial guidance to fly to the approximate location of the target before beginning its search, and struck the target within inches of the laser aimpoint. **Lockheed Martin** .

Aug 26/10: A 3-year, $14.4 million firm-fixed-price, indefinite-delivery/ indefinite-quantity contract for Romeo Phase 3 engineering, which will re-configure existing Army AGM-114K2 and AGM-114N missiles to the AGM-114R configuration.

Work is to be performed in Columbia, SC with an estimated completion date of Sept 30/13. One bid was solicited with one received (W31P4Q-08-C-0361; Serial No. 1765).

July 26/10: The Longbow, LLC joint venture in Orlando, FL received a $39.5 million cost-plus-fixed-fee contract for engineering services supporting the Hellfire and Hellfire Longbow missiles. Work is to be performed in Orlando, FL (50%); Baltimore, MD (25%); United Arab Emirates (10%); and Taiwan (15%), and will run to Sept 30/12. One bid was solicited with one bid received by the U.S. Army Aviation and Missile Command, AMSAM-AC-TM-H in Redstone Arsenal, AL (W31P4Q-10-C-0256).

This contract is not in the same series as the other entries; it is offered as a one-time reminder that all equipment buys come with associated engineering service support contracts, as part of their operations and maintenance costs. Taiwan and the UAE are already Hellfire customers; the UAE uses them on its AH-64 attack helicopters, while Taiwan **became a customer in 2005** .

June 23/10: A $22 million firm-fixed-price contract, exercising a FY 2010 option for 331 Hellfire II missiles. Work is to be performed in Orlando, FL, with an estimated completion date of Sept 30/13. One bid was solicited with one bid received (W31P4Q-08-C-0361).

May 10/10: An $84.5 million firm-fixed-price contract, exercising a FY 2010 option for 1,253 Hellfire II missiles. See also March 26/10 entry. Work is to be performed in Orlando, FL, with an estimated completion date of Sept 30/13. One bid was solicited with one bid received (W31P4Q-08-C-0361).

May 6/10: A $15.8 million firm-fixed-price contract to add the new AGM-114R Hellfire II Romeo missile into the current missile production line. As noted above, this variant is designed to offer a "tri-mode" warhead that can be effective against armored vehicles, fortifications, and targets in the open.

Work is to be performed in Orlando, FL, with an estimated completion date of Sept 30/13. There's only one maker of Hellfire missiles; 1 bid was solicited by the U.S. Army's AMCOM Contracting Center at Redstone Arsenal, AL, with 1 bid received (W31P4Q-08-C-0361).

April 29/10: Alliant Techsystems **announces** $32 million in follow-on production sub-contracts from Lockheed Martin for about 7,100 Hellfire II missile rocket motors, and 2,200 AGM-114N metal augmented charge (thermobaric) warheads. The motors and warheads will be built at its manufacturing facility in Rocket Center, WVA.

ATK was awarded the HELLFIRE II baseline sub-contract in November 2008 to produce and deliver rocket motors and warheads. This represents the first option, with deliveries scheduled to run from April 2011 – July 2012. A second option could be awarded in late 2010. Dating back to HELLFIRE I in the 1980s, ATK has produced nearly 80,000 HELLFIRE rocket motors and over 6,400 MAC warheads. In addition, ATK manufactures the copper liner for the AGM-114K's main shaped-charge high-explosive anti-tank (HEAT) warhead.

April 8/10: Lockheed Martin **announces** success in its 1st live warhead proof-of-principle (POP) flight test, conducted at Eglin Air Force Base, FL. The test featured a lock-on-after-launch engagement of a stationary target board at 1.6 miles/ 2.5 km, launched with a low trajectory suitable for a military operation in urban terrain. The multi-purpose, multi-stage warhead was set with a delayed fuze that allows the missile to penetrate the target before detonating.

The AGM-114R's multi-purpose warhead and electronic safe, arm and fire, or (ESAF) module were the critical technologies being tested.

March 26/10: Hellfire Systems in Orlando, FL received a $268.75 million firm-fixed-price contract modification, exercising FY 2010 options for 3,955 Hellfire II missiles. Work is to be performed in Orlando, FL, with an estimated completion date of Sept 30/13. US Army Contracting Command, AMCOM Contracting Center, Redstone Arsenal, AL manages the contract (W31P4Q-08-C-0361).

Feb 18/10: The US Army **announces** that its MQ-1C ER/MP UAV has successfully completed a series of tests with a HELLFIRE II UAS missile variant, whose 360-degree targeting ability allows UAVs that lack a helicopter's instant maneuverability to put missiles on target faster. Testing began on Nov 22/09, and took place at Naval Air Weapons Station, China Lake, CA, following cooperation from General Atomics-Aeronautical Systems, Inc.'s Software Integration Laboratory, the company's El Mirage Flight Test Facility in El Mirage, CA, and Edwards Air Force Base, CA.

The tests began with dry runs and an inert test missile, followed by a successful "cold" pass using a live missile to verify lock-on, followed by "hot pass" firing. November and December involved testing in various conditions, from varying altitudes, against stationary or moving targets. Tests recorded 9 successful shots, which helped pave the way for the MQ-1C UAV's February 2010 Milestone C production approval.

Aug 18/08: Hellfire Systems in Orlando, FL received a $356.7 million firm-fixed price contract for Hellfire II High-Energy Anti-Tank missiles. Work will be performed in Orlando, FL, and is expected to be complete by Oct 31/11. Contract funds will not expire at the end of the current fiscal year. The US Army Aviation & Missile Command, Redstone Arsenal, AL manages the contract (W31P4Q-08-C-0361)

The DefenseLINK release is almost certainly referring to the AGM-114K Hellfire II missile, but Lockheed Martin spokespeople add that the contract also includes options for up to 200 training missiles, for additional orders in FY 2009 and 2010, for Foreign Military Sales buyers, and for up to 1,200 variant conversions. If exercised, those options could increase the contract's value to over $1 billion, and secure Hellfire missile production until 2013.

To date, American forces have fired more than 6,800 Hellfires in Iraq and Afghanistan, and Lockheed Martin has delivered more than 22,000 rounds since Hellfire II production began in 1994. **Lockheed Martin release.**

Appendix A: A Sticky Situation: Lockheed's 2008 (I)TAR Baby

The Hellfire missile also made the news in a different capacity. Lockheed Martin discovered that efforts to sell 460 more Hellfire missiles to the UAE in 2003-2004 had crossed the line, by failing to get proper ITAR approvals beforehand for certain discussions, and by divulging classified missile-related information to a UAE Air Force officer in response to questions.

The UAE was already a Hellfire customer at that time for **its AH-64A Apache** helicopters, but that does not remove the procedural requirements, and weapon export requirements are taken very seriously by all concerned.

Lockheed Martin discovered the mistakes itself, and informed the US Department of State, which manages ITAR. The final settlement involves a $4 million fine, with $1 million of that suspended if Lockheed Martin

meets certain criteria for improved internal compliance measures. **Reuters** | **NY Times' International Herald-Tribune**

Appendix B: Additional Readings

- Lockheed Martin – **Hellfire II Missile**
- Boeing – **History: Rockwell International AGM-114 Hellfire**
- Global Security – **AGM-114 Hellfire Modular Missile System (HMMS)**
- Designation Systems – **Boeing/Lockheed Martin AGM-114 Hellfire**
- DID – **JAGM: Joint Common Missile Program Fired – But Not Forgotten**. JAGM will replace AGM-114 Hellfire, *GM-71 TOW, and AGM-65 Maverick missile variants on Army and Navy helicopters, UAVs, and fighter aircraft.

21. The Artificial Intelligence Battlespace

09/03/2021

RUSI

https://rusi.org/commentary/artificial-intelligence-battlespace

AI technology is suddenly important to military forces. Not yet an arms race, today's competition is more an experimentation race with a plethora of AI systems being tested and research centres established. The country that first understands AI adequately enough to change its existing human-centred force structures and embrace AI warfighting may gain a considerable advantage.

In a new paper for the Australian government, I explore sea, land and air operational concepts appropriate to fighting near-to-medium term future AI-enabled wars. This temporal proximity makes this less of a speculative exercise than might be assumed. In addition, the nature of contemporary 'narrow' AI means its initial employment will be within existing operational level constructs, not wholly new ones.

AI allows machines to accomplish their tasks through reasoning, not set mechanical responses. In the nearer term, AI's principal attraction will be its ability to quickly identify patterns and detect items hidden within very large data troves. While also giving mobile systems a new autonomy, the principal significance of this characteristic is that AI will make it much easier to sense, localise and identity objects across the battlespace.

Hiding will become increasingly difficult. However, AI is not perfect. It has well known problems in being brittle, able to be fooled, unable to transfer knowledge gained in one task to another and data dependence.

AI's main warfighting utility consequently appears to be 'find and fool'. AI is excellent at finding items concealed within a high clutter background. In this role, AI is better than humans and much faster. On the other hand, AI can be comprehensively fooled through various means. AI's great 'find' capabilities lack robustness. The future AI-enabled battlespace might be more evolutionary than revolutionary.

A future battlespace might feature hundreds, possibly thousands, of small-to-medium stationary and mobile AI-enabled surveillance and reconnaissance systems operating across all domains. Simultaneously, there may be an equivalent number of jamming and deception systems acting in concert to create a false and deliberately misleading impression of the battlefield. Both sides might find it difficult to accurately attack when there are thousands of seemingly valid targets, only a small number of which are actually real.

On such a battlefield, the balance of power might be replaced by a balance of confusion. AI may offer the promise of high-speed hyperwars but that assumes a perfection in targeting that AI might also negate. It will take time to ascertain where the friendly and adversary forces intermingled across the battlespace really are. Engagements might be spasm-like, with nothing happening for an extended period as the tactical picture is developed, then a short sharp exchange of fire, with a new situation then created.

Accordingly, AI-enabled autonomous weapon systems (AWS) might be less important than some fear. Narrow AI technology already has technical shortcomings that constrain its utility. Significantly worsening these problems by saturating the battlespace with AI systems designed to fool AWS-like machines would mean they will require continual human checking to ensure they are operating correctly. Thus, in terms of utility, more may be gained by using unarmed AI-enabled systems. These could operate autonomously, undertake a range of functions as they roam across the battlespace, and be unconstrained by law of armed conflict lethal force concerns or worries over connectivity with distant human operators.

These worries over AI's inherent unreliability highlight that for practical purposes AI should be teamed with humans. Poorly performing AI-enabled systems will bring limited military usefulness irrespective of law of war and ethical issues. The upside to this is that the strengths of AI then counterbalance the weakness in human cognition and vice versa. World chess champion Garry Kasparov observed of chess playing human–machine teams: 'Teams of human plus machine dominated even the strongest computers. Human strategic guidance combined with the tactical acuity of a computer was overwhelming. We could concentrate on strategic planning instead of spending so much time on calculations. Human creativity was even more paramount under these conditions'.

This observation suggests the Observe–Orient–Decide–Act model of decision-making may need changes. Under this model an observation cannot be made until after the event has occurred; the model inherently

looks backwards in time. AI could bring a subtle shift. Given suitable digital models and adequate 'find' data, AI could predict the range of future actions an adversary could conceivably take and, from this, the actions the friendly force might take to counter these.

An AI-enabled decision-making model might be 'sense–predict–agree–act': AI senses the environment to find adversary and friendly forces; predicts what adversary forces might do and advises on the friendly force response; the human part of the human–machine team agrees; and AI acts by sending machine-to-machine instructions to the diverse array of AI-enabled systems deployed en masse across the battlefield.

AI appears likely to be the modern 'ghost in the machine' infusing many, perhaps most, military machines. Such diffusion means the impact of AI in warfighting cannot be judged through assessing individual machines but rather in how large numbers of heterogenous AI-enabled systems might simultaneously interact. This could make the broad shape and pace of future warfighting more like today's than is presently anticipated, even if some unexpected wrinkles emerge as reasoning machines proliferate across the battlefield.

The views expressed in this Commentary are the author's, and do not represent those of RUSI or any other institution.

22. Analysts Call for Adjusting Missile Defense Funding

12/03/2021

Nacional Defense

https://www.nationaldefensemagazine.org/articles/2021/3/12/analysts-call-for-adjusting-missile-defense-funding

The Biden administration should rethink the nation's investments in missile defense, according to analysts. The Congressional Budget Office in a new report, "Costs of Implementing Recommendations of the 2019 Missile Defense Review," estimates that the 10-year price tag of the Pentagon's missile defense plans for the 2020s would be about $176 billion, based on the Trump administration's 2020 budget request.

Of the $176 billion total, "about 35 percent of the total is for systems that are primarily for homeland ballistic missile defense, … about 40 percent is for systems that are primarily for regional ballistic missile defense, and the remaining 25 percent is for cruise missile defense," according to the study.

However, the new administration is expected to conduct a new missile defense review which could result in a significant shift in priorities.

“I think that the Biden administration really wants to be thoughtful and not chase every threat” with expensive defensive systems, said Laura Grego, senior scientist with the Union of Concerned Scientists’ Global Security Program. “It wants to do really hard-nose cost-benefit analyses.”

The United States needs to avoid getting into a “tail chase” trying to keep up with growth in adversaries’ intercontinental missile arsenals, she said during a recent panel. To that end, she suggested “slimming down” the mandate for the Ground-based Midcourse Defense, or GMD, system with the goal of protecting the homeland against limited strikes. Greater focus should be on investing in systems that are dedicated to regional missile defense, she added.

Other ideas that have been bandied about, such as building systems that could have a global reach like space-based interceptors, would be “wildly expensive” and should be discarded, Grego said.

Tom Karako, director of the Missile Defense Project at the Center for Strategic and International Studies, said topline funding levels for missile defense should be maintained, but some of that money should be shifted toward programs focused on defeating non-ballistic missile threats such as cruise missiles, drones and hypersonics.

“We could be doing something significantly different than what we’re doing now while staying within basically the same budget profile,” he said. “We’re going to need to stay within that budget profile” due to budget constraints.

“This is an opportunity to really double down on regional and theater air-and-missile defense … for all the other aspects of forward [deployed] forces in particular, so that we can support our broad deterrence and defense goals,” he added.

23. Iron Dome Sees Israel Ramp up, Raytheon Partnership for US Market

18/03/2021

Defense Industry Daily

https://www.defenseindustrydaily.com/iron-dome-deployment-exports-07039/?utm_medium=textlink&utm_term=continuereading

March 18/21: Upgrades Rafael Advanced Defense Systems and the Israel Missile Defense Organization in the Israeli Ministry of Defense **have successfully completed** the third series of tests of the Iron Dome system over the last few months, demonstrating a significant upgrade of the system's technological capabilities. During the tests, the **Iron Dome** operated successfully in a range of complex scenarios and intercepted and destroyed targets that simulated existing and emerging threats, including the simultaneous interception of multiple UAVs, as well as a salvo of rockets and missiles.

On August 16, 2011, Rafael and Raytheon **announced a partnership** to market the **Iron Dome** system in the United States. This rocket interception system developed by Rafael Advanced Defense Systems has an all-weather range of up to 70 km (43.5 miles). To make the system mobile, the detection/tracking radar and battle management/control parts of the system are carried on trucks, while the missile firing unit is mounted on a trailer.

Then in November 2011 the Jerusalem Post **reported** that the US Army had expressed interest to protest its bases in Iraq and Afghanistan. South Korea is also reportedly interested. While exports remain tentative as of the end of 2011, several systems have been fielded in Israel in recent years.

Israeli Deployment

Iron Dome was selected by Israel's government as its short range defensive solution back in 2007. At the time other options were also on the table such as the THEL/Skyguard laser-based system. In February 2010 IAI announced a **$50 million export contract** for the radar component of the Iron Dome system. After the US Congress approved $205M in military aid to procure 9 Iron Dome batteries, Israel **said** that it would start deploying the systems by the end of that year **to protect civilians** from rockets, mortar and artillery fired by Hamas.

The IDF **announced** in April 2011 that the Iron Dome battery deployed in Be'er Sheba intercepted two rockets fired from the Gaza Strip at night. However, beyond the initial investment, at issue is the cost asymmetry between improvised rockets at maybe $500 a pop vs. intercepts estimated to cost $50K+ each. More broadly, which approach to take for missile defense has been a subject of **intense debate** in Israel for years. This cost vs. benefit public discussion is still very much alive.

On August 7, 2011, Israel's High Court of Justice answered a petition from a group of towns in the Gaza area **by ruling in favor of the Defense Ministry** which refuses to fund Iron Dome systems in all towns more than 4.5 kilometers (2.8 miles) from the Gaza Strip. Still, on August 31 planned deployments were continuing with **the 3rd battery** being stationed outside the city of Ashdod.

For larger, longer-range threats, IAI has developed the **Arrow theater missile defense system** with Boeing.

Updates

March 18/21: Upgrades Rafael Advanced Defense Systems and the Israel Missile Defense Organization in the Israeli Ministry of Defense have successfully completed the third series of tests of the Iron Dome system over the last few months, demonstrating a significant upgrade of the system's technological capabilities. During the tests, the Iron Dome operated successfully in a range of complex scenarios and intercepted and destroyed targets that simulated existing and emerging threats, including the simultaneous interception of multiple UAVs, as well as a salvo of rockets and missiles.

January 26/21: Gulf According to local news , Israel is giving the US the green light to place Iron Dome batteries in the gulf region. Israel is not revealing the countries in which the batteries will be deployed. Following the signing of the Abraham Accords, the US is expected to place Iron Dome air defense batteries in the Persian Gulf area soon, in a move coordinated with and approved by senior Israeli officials, the Haaretz newspaper's Yaniv Kubovich reported, quoting defense officials. The reporter pointed out that Israel is not revealing the countries in which the batteries will be deployed, and the defense establishment claims that the deployment is not part of the normalization agreements.

January 5/21: USA Over the weekend, Israel's Defense Ministry completed the delivery of Iron Dome air defense systems to the US Army under an agreement between the two countries, providing the second of two batteries. The systems will be employed in the defense of US troops against a variety of ballistic and aerial threats. The United States and Israel signed the agreement in August 2019 for the provision of two Iron Dome batteries. The first was delivered in September and is already being prepared for operational use. The second was also delivered in accordance with the project schedule. The delivery was made by the Israel Missile Defense Organization (IMDO), part of the Defense Ministry's Directorate of Defense Research and Development.

December 11/19: Czech Republic Israel and the Czech Republic have signed a $125 million **government-to-government contract** for advanced radar systems from Israel Aerospace Industries subsidiary Elta Systems. The deal provides for the acquisition of eight ELM-2084 **Iron Dome** Multi-Mission Radars (MMR). The radars, which have air surveillance and air defense capabilities, will be delivered to the Czech defense establishment over a period spanning the years 2021-2023 and will be interoperable with Czech and NATO command and control systems. The government-to-government agreement enables the transfer of cutting-edge technology and know-how from Israel to Czech partners, whose capabilities will be greatly enhanced. Furthermore, the agreement stipulates the involvement of and collaboration with Czech defense industries at 30% of the procurement, indicating that significant parts of the systems will be produced locally

August 14/19: Army Inks Contract The US Army has signed a contract to buy two sets of Iron Dome missile intercepting units. **Defense News** reports that the deal for the **Iron Dome** systems, which will be part of the US Army's interim cruise missile defense capability, is set in stone. The service had an urgent capability gap for cruise missile defense on an interim basis. The Army will now figure out delivery schedules and details in terms of taking receipt of the systems. The Iron Dome is the world's most-used system, intercepting more than 1,900 incoming targets with a success rate exceeding 90 percent since being fielded in 2011. Iron Dome detects, assesses and intercepts a variety of shorter-range targets such as rockets, artillery and mortars. It is effective day or night and in all weather conditions including low clouds, rain, dust storms and fog. It features a first-of-its-kind multi-mission launcher designed to fire a variety of interceptor missiles.

May 10/19: Iron Dome for Marine Corps? According to reports, the US Marine Corps is seeking **new air defense systems** as it faces advancing military capabilities from Russia and China and contends with the proliferation of drone technology among small terror groups. The Corps is eyeing Israel's **Iron Dome** or SkyHunter. According to a Senate briefing, the Marine Corps sought limited funding in fiscal year 2019 to begin testing and integration of the SkyHunter system with the Corps' Ground/Air Task-Oriented Radar, or **G/ATOR**. The Iron Dome is designed to intercept and destroy short-range rockets and artillery shells fired from distances of 4 kilometers away. It is effective day or night and in all weather conditions including low clouds, rain, dust storms and fog. It features a first-of-its-kind multi-mission launcher designed to fire a variety of interceptor missiles. The Marine Corps has reportedly considered mounting the launchers and Iron Dome's Tamir interceptors on the Joint Light Tactical Vehicle, or JLTV, and Oshkosh's Medium Tactical Vehicle Replacement truck, or MTVR.

April 22/19: Exercise According to **local reports** , the Israeli Defense Forces conducted a training exercise that involved the **Patriot** and the **Iron Dome** missile defense systems. Israel Air Force aerial defense personnel conducted interceptions of targets at various heights and distances. The drill was carried out at a base in central Israel and included a range of scenarios in order to test the capabilities of the Israel Air Force's air defense fighters and technicians and their missile systems. Several missiles were launched against a combination of drones and unmanned aerial vehicles. Military delegations from the US and Greece attended and observed the trial and were able to draw conclusions from its results.

February 8/19: US buys The US Army wants to **purchase** the Israeli made and battle-tested Iron Dome missile defense system. This decision was made between the Israeli Ministry of Defense and the US Department of Defense in order of fulfilling America's short-term needs for an Indirect Fire Protection Capability. Rafael Advanced Defense Systems and Israel Aerospace Industries designed the mobile all-weather air defense system **Iron Dome** to destroy and intercept short-range rockets and artillery shells fired from distances of four to 70 kilometers away. After the system successfully intercepted a BM-21 Grad launched from Gaza, it was declared operational. Israel hopes to increase the range of the missile's interceptions and Iron Dome

batteries will in the future be deployed at sea, where they are supposed to protect off-shore gas platforms in conjunction with Israel's **Barak 8** missile system.

November 21/18: This is not a drill ! Israeli military officials are satisfied with the performance of the country's Iron Dome air-defense system. **Iron Dome** is an effective, truck-towed mobile air defense system developed to counter very short range rockets and artillery shell (155mm) threats with ranges of up to 70km. During a recent escalation several militant organisations in the Gaza Strip launched a barrage of missile and mortar fire into Israel. From the 12th to the 13th of November about 460 107mm and 122mm short-range rockets and mortars were launched towards southern Israel. An IDF source told **Jane's** that the Iron Dome batteries "performed in an excellent manner" by intercepting more than 100 projectiles heading towards civilian built-up areas in Israel.

January 11/18: Potential Exports With Houthi missile attacks from Yemen—believed to originate from Iran—now becoming a more regular nuisance for the Kingdom of Saudi Arabia, Riyadh is **reportedly looking to acquire** the Israeli-made **Iron Dome** air defense system to help counter these growing missile threats. The news came though the Swiss newspaper Basler Zeitung, who reported that a "European weapons dealer"—Israel and Saudi don't have official relations due to the decades of Arab-Israeli strife—was "in the Saudi capital of Riyadh" and said the Saudis are looking into the purchase of Israeli military hardware, such as the Israeli Trophy Active Protection System (APS), which intercepts and destroys incoming missiles and rockets with a burst of metal pellets and can be mounted to tanks and APCs. The report added that Saudi military officials had viewed Israeli platforms during a recent defense expo in Abu Dhabi, UAE. In the last round of fighting between the Israeli Defense Forces (IDF) and Palestinian groups from the Gaza Strip during the 2014 Israeli Operation Protective Edge, Iron Dome had an alleged 90 percent interception rate of rockets and mortars that threatened Israeli populated areas.

November 29/17: Milestone A naval version of Rafael's **Iron Dome** air defense system **has been declared operational** by the Israeli military, bringing to an end an extensive 18-month development and testing program. Integrated with the Elta Systems **ELM-2248** Adir surveillance, track and guidance radar onboard the INS Lahav, a **Sa'ar-5** corvette-class surface ship, the system had undergone extensive live-fire testing on November 27, where it successfully intercepted and destroyed multiple incoming targets at sea. The variant will be marketed for export as the C-Dome.

September 21/17: The Israeli Air Force (IAF) has established a second **Iron Dome** battalion as it looks to prepare itself for aerial threats along its northern border. A **service press release** quoted Brig. Gen. Zvika Haimovich, Commander of the Aerial Defense Division, as saying "Israel's northern theatre has always been the most threatened area," adding that the new 'Iron Dome' battalion was born out of this reality, and will provide an active defense response in the northern theatre. It will also defend Israel's maritime space

together with the navy. The IAF said the Iron Dome system has thousands of available missiles for an effective response to a wide array of threats, a lack of which temporarily silenced the Iron Dome **during a truce** in the 2012 Pillar of Defense operation into the Gaza Strip.

September 12/17: Israel's **Iron Dome** is being prepared for its first intercept test in the US, as the platform is being considered **as an interim solution** for a medium- and short-range air defense system (SHORAD) for the US Army. The service started a demonstration series on September 4 at the White Sands Missile Range, New Mexico, with the aim of allowing industry to test solutions that could fulfil the gap in SORAD capabilities found in the European theater. Iron Dome, developed by Rafael with assistance from Raytheon and heavily funded by the US, will face off against competing solutions, including **a team involving Boeing and General Dynamics Land Systems** that is offering its Maneuver SHORAD Launcher **Stryker** made up of a modernized **Avenger air defense system** on the back of the vehicle reconfigured to accommodate the system on a turret.

November 14/16: Israeli media **have reported that Azerbaijan is interested** in the Iron Dome missile interceptor system. If true, it will mark the first sale of the system to a foreign customer. The news comes as Prime Minister Benjamin Netanyahu plans to visit Azerbaijan in the coming months amid growing ties with the region. Such a sale could, however, increase tensions between Azerbaijan and neighbor Armenia, who has been in conflict over the disputed Nagorno-Karabakh region.

August 10/16: Raytheon and Rafale are to partner **on marketing the Iron Dome** for the US Army's Indirect Fire Protection Capability Increment 2 — Intercept (IFPC Inc 2-I) program. Dubbed Sky Hunter, both companies will utilize Rafael's Tamir interceptor for the developmental Multi-Missile Launcher (MML). The MML successfully launched a Tamir missile back in April as part of tests on several different types of munitions.

June 16/16: Despite much global interest, **Israel has not received any export orders** for its Iron Dome short-range missile defense system. Developed by the state-owned Rafael Advanced Defense Systems, Iron Dome has gained notable world recognition since its first successful intercept in 2011 of a Hamas launched rocket from Gaza. Despite a 90% interception rate, Rafael execs have been working to entice customers with an expanded mission set including sea-based defense, drone killing missions, and the ability to intercept anything from mortars to precision-guided munitions.

24. IDF reveals new laser-guided mortar system to 'revolutionize' the battlefield

14/03/2021

I24.news (jornal israelense)

https://www.i24news.tv/en/news/israel/diplomacy-defense/1615732435-idf-reveals-new-laser-guided-mortar-system-to-revolutionize-the-battlefield

Gantz praises new weapon that contends 'with enemies hidden within civilian, urban environments'

Israel's R&D branch in the **Ministry of Defense and Elbit Systems** revealed Sunday the Israel Defense Forces' (IDF) new Iron Sting -- a network of precise fire systems set to "revolutionize ground warfare."

The Iron Sting is a 120 mm mortar munition that employs laser and GPS to engage targets accurately and prevent collateral damage, the Defense Ministry said in a statement.

It can be mounted on Humvees or armored personnel carriers for both open terrains and urban environments.

According to the ministry, the system's precision will reduce the possibility of collateral damage and prevent injury to non-combatants -- equipping "battalions with organic, accurate and effective firepower."

Israeli Defense Minister and Alternate Prime Minister Benny Gantz hailed the new system, stipulating it "fulfills the IDF's needs, adapting combat capabilities to contend with enemies hidden within civilian, urban environments, while meeting the legal and moral standards set by the State of Israel."

After successfully completing a series of trials in a testing site in southern Israel, the country will commence production and supply the IDF with the Iron Sting system, the ministry added.

25. Brasil assume presidência da XV Conferência dos Ministros da Defesa das Américas

05.03.2021

Ministério da Defesa

https://www.gov.br/defesa/pt-br/centrais-de-conteudo/noticias/brasil-assume-presidencia-da-xv-conferencia-dos-ministros-da-defesa-das-americas

Brasília (DF), 05/03/2021 - O Brasil assumiu a presidência da XV Conferência dos Ministros da Defesa das Américas na quarta-feira (3). A cerimônia de assunção da Secretaria Pro Tempore para o biênio 2021-2022 ocorreu por videoconferência. Assim, o Brasil fica encarregado pelo alinhamento das tratativas no setor de defesa e segurança entre os 34 países-membros.

O Chile foi responsável pelo biênio anterior. O Secretário Geral da XIV CMDA, Vice-Almirante (Reserva) Cristián de la Maza Riquelme, e o Secretário Executivo, Capitão de Navio (Reserva) George Brown Mc Lean, passaram a Secretaria Pro Tempore para o Chefe de Assuntos Estratégicos do Ministério da Defesa, General de Exército César Augusto Nardi de Souza, que assumiu a função de Secretário Geral da XV CMDA, e para o Subchefe de Organismos Internacionais (SCOI), Contra-Almirante Carlos Augusto Chaves Leal Silva, designado para a função de Secretário Executivo da XV CMDA

O General Nardi parabenizou os representantes chilenos pelo trabalho desenvolvido e lembrou que a

presença brasileira na conferência é efetiva desde sua criação. “Já é a segunda vez que assumimos a Secretaria Pro Tempore. O país nessa situação tem por missão coordenar os grupos de trabalho da CMDA para que, no final dos dois anos, sejam apresentados, não só os resultados, bem como novas propostas de assuntos para prosseguimento das ações de melhoria aos projetos em andamento”, explicou.

A cerimônia foi concluída com a assinatura do termo de assunção. O Brasil dará prosseguimento às tratativas para implantação do Protocolo de Ação de Assistência Humanitária e Socorro em casos de desastres naturais (MECODE), por meio de um grupo de trabalho sob relatoria dos Estados Unidos. Além disso, coordenará as atividades referentes aos grupos de trabalho com o tema “Mulher, Paz e Segurança” e “Ciberdefesa e Ciberespaço”, cujos países relatores são Argentina e Colômbia, respectivamente.

CMDA
A Conferência de Ministros da Defesa das Américas (CMDA) é um fórum internacional para compartilhamento de ideias e de experiências na área de defesa e segurança. Os ciclos da CMDA, iniciados em 1995, ocorrem a cada dois anos, período em que um país membro assume a presidência. Fazem parte os Ministérios da Defesa de 34 países do Continente Americano.

26. La Fuerza Aérea Brasileña adquire radares Thales- Omnisys

04.03.2021

Defesa.com

https://www.defensa.com/brasil/fuerza-aerea-brasilena-adquiere-radares-thales-omnisys

La filial brasileña de Thales, Omnisys, junto a la constructora Clemar Engenharia, firmó un contrato con la Comisión de Implementación del Sistema de Control del Espacio Aéreo (CISCEA) para el suministro de radares de vigilancia secundaria para la optimización del control del espacio aéreo en Petrolina (Pernambuco) y Bom Jesus da Lapa (Bahia).

Fabricados en Brasil, en la unidad de Omnisys en São Bernardo do Campo. Los radares RSM970S cuentan con soporte local y certificación de productos de defensa estratégica del Ministerio de Defensa de Brasil. El contrato también incluye una garantía de dos años, suministro de repuestos y servicios de mantenimiento. Después del período de garantía, los radares también serán respaldados por Omnisys a través de un contrato de mantenimiento de base instalada existente, celebrado con la Fuerza Aérea Brasileña.

Con más de 200 unidades en operación en 53 países y 68 de estas unidades operando solo en Brasil, el radar secundario RSM 970S utiliza tecnologías innovadoras y de vanguardia, asegurando una integración completa y disponibilidad de datos de vigilancia y comunicación, así como una alta confiabilidad y cumplimiento de las recomendaciones y normas internacionales de control del tráfico aéreo. Omnisys es un fabricante global de radares del grupo Thales, con su producción orientada no solo a Brasil, sino también a la exportación a América Latina, Asia y Europa.

La Fuerza Aérea Brasileña inauguró la primera de cuatro estaciones con radares de vigilancia primarios y secundarios producidos por Omnisys, en agosto de 2020, para ayudar a combatir el tráfico ilegal de carga aérea en las fronteras con Bolivia y Paraguay, en la región de Corumbá (Mato Grosso do Sul). Clemar es una empresa de ingeniería civil certificada por Thales como Key Industrial Partner (KIP) y socio de Omnisys en este proyecto, siendo responsable de proporcionar la infraestructura civil para la instalación de los radares. Omnisys y Clemar mantienen una asociación exitosa desde hace mucho tiempo y han trabajado juntos para implementar varias ubicaciones de radares en Brasil.

"La fabricación nacional es logística y económicamente eficiente, manteniendo un alto nivel de disponibilidad de equipos para la empleabilidad en el Sistema Brasileño de Control del Espacio Aéreo (SISCEAB)", dijo el Brigadier del Aire Sérgio Rodrigues Pereira Bastos Junior, Presidente de CISCEA, acerca del presente contrato.

27. Ministério da Economia veta a compra de dois Airbus A330 para a FAB

08.03.2021

Defesa.com

https://www.defensa.com/brasil/ministro-economia-brasileno-veta-compra-dos-airbus-a330-para

El Ministerio de Economía de Brasil ha negado fondos para la compra de dos Airbus A330 cuya adquisición había sido anunciada recientemente por el presidente Jair Bolsonaro y cuyo destino era la Fuerza Aérea (FAB). La intención era utilizar en la operación poco más de 90 millones de dólares, obtenidos de multas a los procesados por corrupción en el caso Lava Jato. El motivo de la denegación sería el alto costo operativo del A330 para el actual presupuesto de la Fuerza Aérea brasileña, aun cuando los fondos para la adquisición de las aeronaves provendrían de dinero repatriado por desviaciones de corrupción.

A pesar del uso del KC-390 y de los C-130 para llevar a cabo el apoyo logístico durante la pandemia, la llegada de dos A330 supondrían un buen refuerzo para la capacidad de la FAB. La Fuerza está utilizando actualmente su flota de transporte especial y aviones de misiones múltiples para transportar suministros a pacientes críticamente enfermos, además de las rutinarias.

El Ministerio de Economía, encabezado por Paulo Guedes, ha denegado la solicitud de crédito complementario por considerar que no cumple "los preceptos de urgencia, imprevisibilidad y pertinencia previstos en la Constitución para dictar la Medida Provisional que liberaría recursos extraordinarios (…) La ocurrencia de nuevos colapsos logísticos en el sistema de salud en regiones y ciudades de difícil acceso por tierra se presenta como posible, aunque de dimensiones impredecibles, y exigirá respuestas inmediatas del Estado brasileño. Además, no hay forma de proyectar o predecir la evolución del número de casos y las dificultades que surgirán en el futuro cercano debido a la "tercera y cuarta oleada" de infección pandémica, así como la reinfección de brasileños por la propagación de variantes del coronavirus. Por lo tanto, todo este escenario requiere una acción efectiva y urgente por parte del Estado"- expresa la nota técnica del Ministerio de Economía.

28. Novos Catamarãs do Exército para Amazônia

11.03.2021

Tecnodefesa

https://tecnodefesa.com.br/novos-catamaras-do-exercito-para-a-amazonia/

Na primeira semana de março, o Comando Militar da Amazônia (CMA) recebeu a quarta embarcação de transporte de pessoal (ETP), tipo Catamarã, da classe *Jacaretinga,* adquirida para o Exército Brasileiro com os recursos do Sistema Integrado de Monitoramento de Fronteiras (SISFRON).

A embarcação, que tem capacidade para 20 (vinte) militares, foi projetada para atender os requisitos operacionais da Força e atuar nos rios da bacia amazônica.

O CMA foi contemplado com quatro embarcações deste modelo, sendo duas destinadas à 2ª Brigada de Infantaria de Selva (2ª Bda Inf Sl), "Brigada Rio Negro", e duas para a 16ª Bda Inf Sl, "Brigada das Missões". Essa aquisição integra os produtos viabilizados pelo SISFRON, que agregam novas tecnologias e capacidades para defesa territorial e combate aos crimes transfronteiriços, possibilitando, ainda, o apoio aos indígenas e comunidades ribeirinhas.

A primeira delas, a *Jacaretinga*, foi entregue em 06 de outubro de 2020 ao 3° Batalhão de Infantaria de Selva (3°BIS), integrante da 2ª Bda Inf Sl, para ser utilizada na região conhecida como da "Cabeça do Cachorro".

Equipamentos dessa natureza são fundamentais para o transporte de pequenas frações nos meios aquáticos, propiciando à tropa pronta resposta nas operações e fortificando os meios logísticos, colaborando para o aumento do poder de combate da Força Terrestre em ambiente de selva.

29. Batalhão realiza adestramento de força de prontidão da brigada móvel

16.03.2021

Exército Brasileiro

https://www.eb.mil.br/web/noticias/noticiario-do-exercito/-/asset_publisher/MjaG93KcunQI/content/id/12955127

Caçapava (SP) – Entre os dias 8 e 11 de março, o 6º Batalhão de Infantaria Leve (6° BIL) do Exército realizou a Operação Poço Preto com o emprego da Aviação do Exército. O objetivo da atividade foi realizar o adestramento da Força de Prontidão da Brigada Aeromóvel (Força-Tarefa Ipiranga), em técnicas aeromóveis, ações de combate noturno, de reconhecimento e medidas de ocupação de base patrulha em área inimiga. A ação visa manter o preparo da Força de Prontidão para as operações de defesa externa.

Durante a atividade, a tropa aprofundou os conhecimentos sobre os tipos e principais características das aeronaves existentes na Aviação do Exército, assim como realizou técnicas aeromóveis como embarque e desembarque e helocasting, que consiste em uma técnica de inserção de tropas por helicóptero.

30. Exercício para certificação de forças de prontidão do exército passa por jogo de guerra e entra na fase de simulação virtual

16.03.2021

Exército Brasileiro

https://www.eb.mil.br/web/noticias/noticiario-do-exercito/-/asset_publisher/MjaG93KcunQI/content/id/12960631

Rio de Janeiro (RJ) – Foi iniciada a terceira fase do Exercício de Certificação do Estado-Maior da Brigada de Infantaria Pára-quedista (Bda Inf Pqdt) como Força de Prontidão da Força Terrestre (FORPRON) e do 1º Batalhão de Defesa Química, Biológica, Radiológica e Nuclear (1º Btl DQBRN) como módulo especializado da FORPRON. A realização é do Comando de Operações Terrestres do Exército por meio do Comando Militar do Leste. Iniciado no dia 1º de março, o exercício se estenderá até o dia 26.

A primeira fase da certificação consistiu na preparação para o exercício. Já a segunda fase, do dia 8 a 12 de março, compreendeu o Exercício de Simulação Construtiva (Jogo de Guerra) nas instalações do Simulador de Adestramento de Comando e Estado-Maior do Centro de Adestramento Leste.

Próximas fases

Ao logo desta semana, ocorre 3ª fase, nas dependências do Simulador Virtual de Adestramento Tático, no Centro de Adestramento Leste, com o Exercício de Simulação Virtual, onde os comandantes de fração do 27° Batalhão de Infantaria Pára-quedista (27º BI Pqdt) e do 1° Btl DQBRN realizam o combate virtual no terreno por meio do software Virtual Battlespace 3 (VBS 3).

A última fase da certificação, que inicia no dia 22, ocorrerá com a execução do Exercício de Campanha com os dispositivos de simulação de engajamento tático (DSET), onde o Centro de Adestramento Leste, com a finalidade de trazer mais realismo aos diversos problemas militares simulados e outros eventos, empregará os DSET, a equipe de observadores e controladores do adestramento e militares da Força Oponente.

Acompanhando parte da segunda fase, estiveram presentes no local do exercício, no dia 10 de março, o Comandante Militar do Leste, General de Exército **José Eduardo Pereira**; o Comandante da 1ª Divisão de Exército e Guarnição da Vila Militar/RJ, General de Divisão **Kleber Nunes de Vasconcellos**; o Chefe do Preparo da Força Terrestre, General de Divisão **Marcos de Sá Affonso da Costa**; o Comandante da Brigada de Infantaria Pára-quedista, General de Brigada **Helder de Freitas Braga**; o Comandante da Base de Apoio Logístico do Exército, General de Brigada **Alan Denilson Lima Costa**; e o Chefe do Estado-Maior do Comando Militar do Leste, General de Brigada **Eduardo Tavares Martins**.

31. Grupo de Artilharia de campanha de selva recebe novos obuseiros

17.03.2021

Exército Brasileiro

https://www.eb.mil.br/web/noticias/noticiario-do-exercito/-/asset_publisher/MjaG93KcunQI/content/id/12977891

Boa Vista (RR) – No dia 10 de março de 2021, o 10º Grupo de Artilharia de Campanha de Selva, "Grupo General Manoel Theophilo Neto", recebeu quatro obuseiros 105mm L118 AR Light Gun, de fabricação inglesa, dos seis previstos. O novo material tem o alcance máximo de 20.200 m com munição assistida e possui um setor de tiro de 6400"' (360º).

As novas peças de artilharia aumentam consideravelmente o poder de fogo da 1ª Brigada de Infantaria de Selva e do Comando Militar da Amazônia, responsáveis pela segurança de parcela importante e significativa do Território Nacional, a Região Amazônica

32. Comando logístico realiza treinamento do sistema gerenciador de transporte do exército brasileiro

17.03.2021

Exército Brasileiro

https://www.eb.mil.br/web/noticias/noticiario-do-exercito/-/asset_publisher/MjaG93KcunQI/content/id/12959782

Rio de Janeiro (RJ) – Nos dias 02, 03 e 04 de março, a comitiva do Comando Logístico (COLOG), chefiada pelo Chefe do Centro de Coordenação de Operações Logísitcas, General de Brigada **Himário Brandão Trinas**,

realizou o treinamento do Sistema Gerenciador de Transporte do Exército Brasileiro (SGTEB) e do Sistema de Controle de Acesso (SCA).

O SGTEB está inserido no Sistema Integrado de Gestão de Logística (SIGELOG) e permitirá uma efetiva gestão logística, por intermédio de utilização de Tecnologia de Informação e Comunicações.

Foram realizadas demonstrações pela comitiva do COLOG de viaturas que se deslocam por diversos destinos com a carga em trânsito, sendo possível seu monitoramento pelo rastreador com a utilização de tablets, tecnologia "Global System for Mobile" (GSM) – Chip GSM e um código "Quick Response" (QR) CODE, o qual fica atrelado à carga em todo o período de transporte, desde o carregamento até o descarregamento.

33. Forças Armadas na Operação Covid-19, um ano salvando vidas

20.03.2021

Estadão

https://opiniao.estadao.com.br/noticias/espaco-aberto,forcas-armadas-na-operacao-covid-19-um-ano-salvando-vidas,70003653662

No fim de semana passado as Forças Armadas transferiram de Manaus para Porto Alegre um hospital militar de campanha, para atender a população. Viajando, literalmente, do norte ao sul do País, foram percorridos mais de 3 mil km, distância 30% maior que a de Paris a Moscou, para se ter uma ideia dos desafios impostos pelas dimensões continentais do nosso imenso Brasil. Simultaneamente, navios de assistência hospitalar da Marinha levavam vacina às comunidades ribeirinhas da bacia do Amazonas, militares do Exército apoiavam a vacinação de indígenas em locais de difícil acesso e aviões da Força Aérea estavam novamente a transportar o tão vital oxigênio, desta vez para o Acre, onde os casos da doença se intensificaram. São pequenos exemplos do trabalho diário, constante e silencioso das Forças Armadas na Operação Covid-19.

A Operação Covid-19 completa um ano no sábado. Ela foi ativada pelo Ministério da Defesa, conforme diretriz do presidente Jair Bolsonaro, em 20 de março de 2020, para coordenar as ações das Forças Armadas, no combate à pandemia. As enormes dimensões do território nacional, onde cabem praticamente todos os países da Europa, a carência de recursos e as dificuldades de acesso em muitas regiões impuseram o engajamento decisivo dos nossos militares.

Na realidade, as primeiras atividades começaram ainda em fevereiro, quando aeronaves da FAB foram resgatar brasileiros em Wuhan, na China. De lá para cá o trabalho e a luta contra o inimigo invisível cresceram.

O planejamento foi de uma operação militar de guerra. Foram acionados, no Ministério da Defesa, o Centro de Operações Conjuntas e o Centro de Coordenação de Logística e Mobilização, funcionando ininterruptamente, acompanhando o emprego das Forças em todo País. Para assegurar maior proximidade com a população criamos dez comandos conjuntos – integrados por Marinha, Exército e Força Aérea –, cobrindo todo o território nacional, mantendo contato direto com Estados e municípios, permitindo a pronta identificação das necessidades locais. Tal decisão se mostrou valiosa, uma vez que, como ficou evidenciado ao longo desse intenso ano de trabalho, cada região, Estado, cidade ou mesmo localidade vive um diferente momento da pandemia, tendo necessidades específicas. Além disso, um Comando de Operações Aeroespaciais, permanentemente ativado, assegura o transporte aéreo em todo o País. Até o momento, os aviões da FAB já voaram o equivalente a 55 voltas ao mundo transportando oxigênio, respiradores, medicamentos, vacinas, equipes de saúde e pacientes. Só durante a recente crise em Manaus foram realizados mais de 280 voos, transportando milhares de cilindros e reservatórios de oxigênio líquido e evacuando mais de 750 pacientes.

Os números da Operação Covid-19 mostram o tamanho do esforço. São empregados, diariamente, cerca de 34 mil militares, efetivo maior que o da participação brasileira na 2.ª Guerra Mundial. Nossos militares já descontaminaram mais de 8.300 locais e capacitaram em torno de 36 mil profissionais em ações de desinfecção e no atendimento de pacientes infectados pelo novo coronavírus. Famílias carentes, em todo o Brasil, receberam mais 1 milhão de cestas básicas. Foram realizadas aproximadamente 38 mil ações nas fronteiras e nos rios. Atendimento médico foi levado às comunidades aldeadas, atendendo centenas de milhares de indígenas. Na vacinação contra a covid-19 o apoio das Forças Armadas já permitiu, até o momento, imunizar 157 mil indígenas.

A base industrial de defesa, atendendo prontamente ao chamado, colabora no combate à pandemia desde o início. Empresas responsáveis por mais de 1 milhão de empregos diretos adaptaram suas linhas de produção. Equipamentos bélicos deram lugar a equipamentos de proteção individual e outros itens essenciais. A parceria entre a defesa, a indústria e a academia permitiu a produção de novos respiradores, além do reparo de milhares de outros.

Enquanto transcorre a Operação Covid-19, as Forças Armadas desenvolvem outras ações, como a operação de garantia da lei e da ordem ambiental na Amazônia – um trabalho conjunto com órgãos ambientais e de segurança com resultados expressivos na redução do desmatamento, conforme divulgado recentemente. Tudo isso sem descuidar um minuto de sua missão principal de defesa da Pátria e de garantia da soberania nas fronteiras terrestres, nas águas jurisdicionais (Amazônia Azul) e no espaço aéreo.

Mesmo em tempos de pandemia, nenhuma das operações e atividades foi interrompida. A formação de pessoal foi mantida, assegurando a necessária continuidade. Afinal, os militares têm de estar sempre prontos e preparados para atender à Nação.

Costumo dizer que no Brasil pouco se pensa ou fala em defesa. Para muitos se trata de um tema distante, uma espécie de seguro não usado. Engana-se quem pensa assim. Proteger a população brasileira é dever das Forças Armadas. Para isso elas têm de estar treinadas e bem equipadas, com capacidade de responder rapidamente às demandas inesperadas.

Há um ano, Marinha, Exército e Força Aérea correm contra o tempo e lutam, no limite das suas capacidades, para salvar e preservar vidas. E assim será enquanto se fizer necessário.

MINISTRO DE ESTADO DA DEFESA

34. CPRJ realiza ''Operação Ágata'' no litoral do Rio de Janeiro

19.03.2021

Defesanet

https://www.defesanet.com.br/fronteiras/noticia/40086/CPRJ-realiza-Operacao-%E2%80%9CAgata%E2%80%9D-no-litoral-do-Rio-de-Janeiro/

A Capitania dos Portos do Rio de Janeiro (CPRJ) conduziu a "Operação Ágata", em coordenação com a Polícia Federal (PF), Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio) e Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Ibama), no dia 12 de março, entre as Ilhas Cagarras e a praia de Grumari, no litoral do Rio de Janeiro (RJ).

A operação foi apoiada pelo Navio-Patrulha "Gurupá" e pelo Aviso de Patrulha "Albacora", ambos subordinados ao Comando do Grupamento de Patrulha Naval do Sudeste, com o objetivo de fiscalizar as atividades pesqueiras no Monumento Natural das Ilhas Cagarras, o descarte de lixo e esgoto no mar, as embarcações que trafegam na região e os seus documentos.

Também foram conduzidas ações de orientação sobre uso de equipamentos de segurança e normas de comportamento nas embarcações, de modo a incrementar a mentalidade marítima dos navegantes que estavam na área, além de contribuir para a salvaguarda da vida humana no mar, a segurança da navegação, coibição de atos ilícitos e a prevenção à poluição hídrica proveniente de embarcações.

As ações foram conduzidas em estrita observância dos protocolos sanitários vigentes sobre o enfrentamento à Covid-19.

35. Exército apoia a desativação de garimpos ilegais em Roraima

17.03.2021

Defesanet

https://www.defesanet.com.br/vb/noticia/40050/Exercito-apoia-desativacao-de-garimpos-ilegais-em-Roraima-/

Nos dias 10 e 11 de março, a 1ª Brigada de Infantaria de Selva (1ª Bda Inf Sl) do Exército Brasileiro, no contexto da Operação Verde Brasil 2, participou de uma operação conjunta e interagências de combate ao garimpo ilegal na região de Surucucu (RR). A ação concentrou-se nas áreas do Garimpo do Espadim, Garimpo Mucuim, Garimpo Pau Grosso, Garimpo do Capixaba, Garimpo Hélio e Garimpo do Rangel.

A operação resultou em apreensões de materiais utilizados na prática ilegal do garimpo, como munições, carregadores de pistola, garrafas de mercúrio, 0,5 g de ouro, equipamentos eletrônicos (celulares e GPS) e uma aeronave PT-JSS destruída em razão de uma colisão com as árvores durante tentativa de fuga.

Durante a ação foi realizada ainda a destruição de uma pista de pouso no Garimpo do Capixaba e destruídos, pela Polícia Federal, três motores de garimpo e seis geradores.

A ação contou com apoio da tropa do 4º Pelotão Especial de Fronteira do Comando Fronteira Roraima / 7º Batalhão de Infantaria de Selva (C Fron RR / 7º BIS), Força Aérea Brasileira (FAB), Polícia Federal, Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais e Renováveis (IBAMA) e Instituto Chico Mendes de Conservação da Biodiversidade (ICMBIO). A Operação Verde Brasil 2 cumpre o dever legal previsto na Constituição Federal e está amparada nas Leis Complementares 97/1999, 117/2004 e 136/2010.

36. Estratégia Nacional de Segurança de Infraestruturas críticas

02.03.2021

Defesanet

https://www.defesanet.com.br/intel/noticia/39854/Estrategia-Nacional-de-Seguranca-de-Infraestruturas-Criticas/

O texto do decreto pode ser acessado na íntegra no link acima.

37. Apoiando o REMAX

12.03.2021

Tecnodefesa

https://tecnodefesa.com.br/apoiando-o-remax/

A ARES Aeroespacial e Defesa inaugurou mais uma base de apoio logístico para atender as unidades do Exército Brasileiro (EB) equipadas com o sistema de armas remotamente controlado (SARC) REMAX. Localizada na cidade de Uruguaiana (RS), esta é a segunda unidade fora do Rio de Janeiro (RJ). Já em 2019 foi estabelecida a primeira no 15º Batalhão Logístico (15º B Log), em Cascavel (PR).

Em Uruguaiana serão atendidos o 8º Regimento de Cavalaria Mecanizado (8° RC Mec) e outras organizações militares em mais sete cidades da região: Quaraí, Santana do Livramento, Bagé, Jaguarão, Santa Rosa, São Borja e Itaqui.

De acordo com Frederico Medella, diretor de Marketing da ARES, essas bases têm como objetivo fortalecer a parceira com o EB. “Estamos incrementando o atendimento de suporte logístico para os sistemas distribuídos pelo Brasil”.

A nova base contará com uma equipe que supervisionará as manutenções de primeiro escalão, realizadas pelo EB, e fará as de segundo. “Nosso contrato prevê a execução e supervisão das manutenções de 1° e 2° escalão e a transferência de capacidade para organizações militares”.

O SARC REMAX é uma estação de armas remotamente controlada, giro-estabilizada, para metralhadoras 12,7mm e 7,62mm, resultado de um projeto ambicioso, iniciado em 2006, com objetivo de desenvolver a primeira estação de armas 100% nacional. É dotação de diversas unidades da VBTP-MSR 6X6 Guarani e irá equipar as futuras VBMT-LSR 4X4 Iveco LMV, na versão de reconhecimento.

Com a distribuição dos próximos lotes do REMAX, que em 2021 comemora 15 anos, a empresa prevê instalar mais bases de apoio pelo Brasil. “Fora o Paraná e agora o Rio Grande do Sul, os atendimentos do REMAX distribuídos nos Estados do Rio de Janeiro e Minas Gerais são suportados pela nossa sede. Mas, verificando a necessidade do Exército, podemos sim inaugurar outras bases”, declarou Medella.

38. Revitalização da Artilharia

22.03.2021

Tecnodefesa

https://tecnodefesa.com.br/revitalizacao-da-artilharia/

O Exército Brasileiro (EB) prossegue na estratégia de ampliar a capacidade operacional, reestruturando a Artilharia de Campanha com equipamento moderno.

Após dois anos de intensos trabalhos, o Parque Regional de Manutenção da 5ª Região Militar (Pq R Mnt/5), de Curitiba (PR), finalizou a revitalização de 20 viaturas blindadas de combate obuseiro autopropulsado (VBCOAP) M109A5 e 19 remuniciadores (VBTE Remun) M992A2, da segunda fase do projeto de revitalização desse tipo de blindado.

O Pq R Mnt/3, de Santa Maria (RS), que recebeu suprimentos e apoio em capacitação técnica do Pq R Mnt/5, está participando com o trabalho de recuperação de 18 M109A5 e 9 M992A2.

Essas viaturas foram destinadas ao 5º Grupo de Artilharia de Campanha Autopropulsado (5º GAC AP), de Curitiba (PR), 3º GAC AP e Centro de Instrução de Blindados (CIBld), ambos de Santa Maria (RS) e Academia Militar das Agulhas Negras (AMAN), em Resende (RJ). Ainda serão contemplados o 29° GAC AP, de Cruz Alta (RS) e outras organizações militares a serem definidas pelo Estado-Maior do Exército.

A primeira fase deste projeto se encerrou em dezembro de 2019, com a entrega de 32 VBCOAP M109 A5+BR modernizadas nos Estados Unidos, pela BAE Systems, com a capacitação de engenheiros e sargentos mecânicos do Pq R Mnt/5.

A equipe já contabilizava grande experiência, devido ao programa de modernização da VBTP M113BR, também realizada no Pq R Mnt/5 pela BAE Systems, e a participação nos M109A5+BR, permitiu a recuperação dos blindados no Brasil, uma transferência de tecnologia que gera independência.

39. À frente, num campo de alta sensibilidade

19.03.2021

Tecnodefesa

https://tecnodefesa.com.br/a-frente-num-campo-de-alta-sensibilidade/

A Kryptus Segurança da Informação, empresa multinacional brasileira especializada em criptografia e segurança cibernética com sede em Campinas (SP), foi vencedora do processo licitatório de aquisição da nova rede operacional de defesa (ROD).

Espinha dorsal do sistema militar de comando e controle (SISMC2), a ROD tem como propósito prover serviços de voz, dados e apoio à decisão de forma integrada e segura aos diversos níveis decisórios da estrutura militar de defesa. É uma reestruturação e modernização da atual, mantida sob a Chefia de Operações Conjuntas (CHOC) do Estado-Maior Conjunto das Forças Armadas (EMCFA/MD).

“Com a mudança dos paradigmas de mobilização e combate para a ‘Guerra Centrada em Redes’ e no médio prazo para a ‘Guerra em Mosaico’ (*) é importante que os elementos de comando e controle sejam cada vez mais soberanos e interoperáveis”, aponta Roberto Gallo, fundador e diretor geral da Kryptus.

Além das tecnologias de segurança criptográfica, a empresa, que recentemente obteve a renovação da certificação de Empresa Estratégica de Defesa (EED), também será responsável pela readequação dos ativos de tecnologia de informação e comunicação (TIC) e expansão física e lógica da ROD, bem como pelo monitoramento e suporte técnico operacional.

O processo de aquisição da ROD foi o primeiro realizado pelo Ministério da Defesa utilizando o instrumento de Termo de Licitação Especial, amparado por decisão do Conselho de Defesa Nacional, em que o fornecimento de soluções para a proteção de informações classificadas em qualquer grau de sigilo deve ser feito exclusivamente por companhias brasileiras classificadas como EED e o desenvolvimento do produto ter

sido feito no País, o que torna proibido o uso tecnologias estrangeiras. A maior parte do trabalho e entrega deverá acontecer ainda em 2021.

(*) Notas:

Guerra Centrada em Redes (GCR) é uma doutrina de estruturação do comando e controle que prevê a garantia da superioridade no campo das informações, aprimorando o poder de combate, a prontidão, aumentando a velocidade de comando, pela redução do atraso no trâmite de informações e ordens.

Guerra em Mosaico é uma estratégia de combate baseada na integração de inúmeros sistemas de tecnologia menores que se encaixam (como blocos de um Lego) formando uma estrutura capaz de atingir com sucesso o sistema adversário.

40. ABIMDE estará presente na Milipol Qatar 2021

11.03.2021

Tecnodefesa

https://tecnodefesa.com.br/abimde-estara-presente-na-milipol-qatar-2021/

A ABIMDE (Associação Brasileira das Indústrias de Materiais de Defesa e Segurança), e mais 10 empresas associadas, estarão presentes na 13ª edição da Milipol Qatar, que acontece no Doha Exhibition and Convention Center (DECC), em Doha, entre os dias 15 e 17 de março.

A Milipol Qatar será a segunda feira internacional de defesa a ser realizada desde o início da pandemia. A primeira foi a International Defence Exhibition And Conference (IDEX), que aconteceu em Abu Dhabi, em fevereiro.

Entre as empresas que vão mostrar seus produtos, serviços e inovações estão a Akaer, Atech, Avibras, CBC, Condor, Embraer, Kryptus, M&K, Siatt e Taurus. O objetivo da ABIMDE é o de apoiar as empresas da BIDS

(Base Industrial de Defesa e Segurança) a expandirem seus negócios no mercado internacional, a exemplo do que aconteceu na IDEX.

"Tivemos uma boa participação na IDEX, com a BIDS atraindo a atenção de potenciais parceiros, como governos e empresas. No Catar, as empresas terão mais uma oportunidade para expandir os seus negócios no mercado internacional", frisa o diretor de Projetos e Relações Institucionais da ABIMDE, Paulo Albuquerque.

A participação na Milipol é promovida pela ABIMDE e pela Apex-Brasil (Agência Brasileira de Promoção de Exportações e Investimentos) com o apoio dos ministérios da Defesa e das Relações Exteriores.

41. DESAER – Anuncia acordo para Futura Planta Industrial

10.03.2021

Defesanet

https://www.defesanet.com.br/bid/noticia/39945/DESAER-%E2%80%93-Anuncia-acordo-para-Futura-Planta-Industrial-/

A **DESAER Desenvolvimento Aeronáutico**, é uma empresa 100% brasileira e formada por pessoas com forte passado no ramo de desenvolvimento aeronáutico.

Localizada na Incubaero – Departamento da Fundação Casimiro Montenegro Filho no ITA, um dos institutos de tecnologia e desenvolvimento dentro das instalações do DCTA em São José dos Campos (SP).

A DESAER desenvolve o projeto da aeronave de transporte ATL-100 para uso civil e militar

Com muita satisfação, **anuncia o acordo de sua futura Planta industrial**, que será localizada na **Unidade Araxá da DESAER**, a 366 km de Belo Horizonte.

"O Plano Diretor de Araxá, é uma parceria entre a Prefeitura de Araxá com o apoio do Governo de Minas Gerais, através do **CODEMGE**, **CEFET-MG** (Centro Federal de Educação Tecnológica de Minas Gerais), e a **DESAER**, que possibilitou a ida para a cidade", declara, Evandro **Fileno** - Diretor Presidente da DESAER.

Segundo o secretário de Desenvolvimento Econômico, Inovação e Turismo da cidade, **Juliano Cesar da Silva**, viabilizar a entrada da DESAER na cidade favorece não apenas a economia local, como também o

desenvolvimento tecnológico. “Agradecemos a escolha da cidade para receber tamanho investimento. É um marco para o município ter um grande investidor, sobretudo, na área de inovação, que é uma das apostas da atual administração como forma de atrair novas empresas e estimular a qualificação da mão de obra local”, destaca o secretário.

A pacata e simpática, Araxá preserva fragmentos de sua história em alguns casarões do centro da cidade. Araxá também é procurada para a prática de atividades de aventura. A cidade é uma das portas de entrada para o Parque Nacional da Serra da Canastra, repleto de cachoeiras, paredões de pedra e trilhas pela mata. **E agora irá sediar uma nova indústria aeronáutica que nasce no país. “Perseguir o desenvolvimento significa, escolher, priorizar, encadear ações que levem a um determinado cenário de melhoria”. Paulo dos Santos** - Diretor Técnico da DESAER.

Um dos conceitos que serviram de base para a criação da Unidade Araxá, da DESAER foi o de atrair parceiros da empresa para o Brasil, contribuindo para a geração de novos empregos no país e na região. A construção das futuras instalações industriais da DESAER é uma confirmação da aplicação prática deste princípio. “Estamos orgulhosos em construir nossa Unidade Araxá da DESAER, que vem agregar força à indústria aeronáutica brasileira, realizando investimentos, desenvolvimento tecnológico e inovação, gerando novos empregos e, desta forma, contribuindo para o desenvolvimento do Estado de Minas Gerais”, afirmou **Evandro Fileno,** Diretor-Presidente da DESAER.

As obras da futura instalação, destinada a sediar as atividades da parte administrativa e de engenharia da família ATL das aeronaves regionais da DESAER, estão previstas para o início no primeiro semestre de 2021. A área industrial, na Unidade Araxá, da DESAER tem a previsão de início das obras para o segundo semestre de 2021, sediará as atividades industriais de produção e montagem das aeronaves para os Mercados de Defesa e de Aviação Comercial, além dos Ensaios em Voo. A cadência de produção inicial será de 4 aeronaves por mês, com a previsão de 1250 empregados diretos e indiretos.

O empreendimento da fábrica terá 96.570 m2 de área construída, representando um investimento inicial de U$ 80 milhões – com previsão de se atingir o patamar de U$120 milhões em 2023.

O Terreno tem uma área total de aproximadamente 277.870,00 m2l. A área da Unidade Araxá da DESAER está inserida na área operacional, do Aeroporto Romeu Zema (também conhecido como Aeroporto de Araxá)

.Está localizado a 4 km a oeste da cidade e está homologado para receber aeronaves de até 70 lugares.

A versatilidade do projeto prevê o uso tanto civil e militar, exigindo o mínimo de apoio terrestre no manuseio de containers de carga. Arte - DESAER

Associação com a pesquisa– A DESAER necessita para o desenvolvimento do projeto um Centro de Pesquisa ao seu lado para juntos desenvolverem novas tecnologias, materiais e processos.
Para tanto foram celebradas parcerias com algumas universidades e centros de pesquisas, como o CEFET, e iniciativas como esta são de fundamental importância para desenvolver pesquisas acadêmicas e fomentar a inovação tecnológica.

A DESAER e o CEFET/MG - Centro Federal de Educação Tecnológica de Minas Gerais, unidade de Araxá, por meio da Nascente Incubadora de Empresas de Base Tecnológica do CEFET-MG, assinaram nesta semana, um contrato de incubação onde a instituição de ensino fornecerá apoio técnico do seu corpo docente nas áreas de mecânica, edificações, eletrônica e automação industrial, já existentes na unidade de Araxá. Futuramente poderão ser criados cursos técnicos na área de aviônica, célula e motopropulsor para atender à demanda do futuro polo tecnológico desenvolvido com a instalação da fábrica. Essa iniciativa promoverá sobre maneira, o fomento da tríade ensino, pesquisa e extensão para o setor acadêmico de Araxá, melhorando a empregabilidade de qualidade para o setor industrial e tecnológico

.

42. Embraer anuncia a venda de mais de 19 aeronaves Ipanema

04.03.2021

Defesanet

https://www.defesanet.com.br/embraer/noticia/39878/Embraer-anuncia-a-venda-de-mais-19-aeronaves-Ipanema/

A Embraer anunciou hoje que a sua divisão de aviação agrícola registrou a venda de mais 19 aeronaves EMB-203 Ipanema, no mês de fevereiro, totalizando 27 aeronaves comercializadas no ano. Este volume de vendas no primeiro bimestre já é 8% maior do que foi negociado durante todo o ano de 2020. O segundo mês consecutivo de alta nas vendas reflete o desempenho favorável do agronegócio brasileiro e as inovações tecnológicas incorporadas na nova versão da aeronave.

O destaque no período ficou para as empresas aeroagrícolas que prestam serviços especializados de pulverização aérea. Embora a demanda pelo Ipanema permaneça tendo maior intensidade no Centro-Oeste, o principal polo agrícola do Brasil, o ritmo de vendas deste ano também tem sido crescente em outras regiões.

Com quase 1.500 unidades entregues, o Ipanema ocupa a liderança do segmento agrícola com 60% de participação no mercado nacional. Seu protagonismo na agricultura de precisão combina alta tecnologia e tradição de um produto que evolui continuamente para atender aos requisitos de alta produtividade e baixo custo operacional.

O Ipanema 203, o modelo mais atual da série, conta com aprimoramentos como substituição de peças da asa por outras com nova geometria e material em aço inox mais resistente. Essa solução posterga ainda mais eventuais desgastes gerados pela condição severa natural da operação no campo e despesas com manutenção ao longo dos anos.

O novo pulverizador aéreo também tem um novo design no capô do motor, com novas grades de saída de ar, garantindo maior refrigeração.

Sobre o Ipanema

A história do Ipanema começa no fim dos anos 1960, quando o Ministério da Agricultura do Brasil firmou contrato com a Embraer para fabricação em série no país de uma aeronave agrícola, com o objetivo de modernizar o setor ao disponibilizar novas técnicas de produção. A aeronave surge inicialmente como um projeto de engenheiros do Instituto Tecnológico de Aeronáutica (ITA), em São José dos Campos - SP e é testado pela primeira vez na Fazenda Ipanema, no município de Sorocaba – SP

.Em julho de 1970 o Ipanema fez seu primeiro voo e em 1972 começou a ser produzido comercialmente. A versão mais atual, o Ipanema 203, é movida a energia renovável (etanol) e foi certificada em 2015. Este modelo garante mais agilidade, eficiência, produtividade, além do menor custo operacional da categoria

.Com sua envergadura aumentada para 13,3 m e perfil da asa aprimorado, possibilita uma maior faixa de deposição de defensivos agrícolas, chegando a 24 metros de faixa com altíssima qualidade comprovada cientificamente e no campo

Utilizado principalmente na pulverização de fertilizantes e defensivos agrícolas, o Ipanema tem evitado, ao longo de todas essas décadas, perdas por amassamento na cultura e flexibilizado as operações em regiões com terrenos irregulares. A aeronave também tem aplicação em atividades de semeadura, controle de vetores e larvas, e povoação de rios.

43. Gripen inicia ensaios em voo supersônico no Brasil

04.03.2021

Defesanet

https://www.defesanet.com.br/f39/noticia/39877/Gripen-inicia-ensaios-em-voo-supersonico-no-Brasil/

O novo caça da Força Aérea Brasileira, F-39 E Gripen, iniciou a fase de ensaios em voo supersônico no Brasil. A aeronave, que está no Centro de Ensaios em Voo do Gripen (GFTC, da sigla em inglês) nas instalações da Embraer, em Gavião Peixoto (SP), tem realizado essas atividades nas áreas de teste designadas a noroeste da base.

Todos os voos seguem procedimentos definidos pelas autoridades e são realizados em grandes altitudes, acima de 5 mil metros. Esses voos, realizados pela Saab, são essenciais para testar o desempenho e as funções da nova aeronave, para dar continuidade aos procedimentos de certificação e aceitação da aeronave, que chegou ao Brasil em setembro de 2020.

“O Gripen realizará voos supersônicos durante os próximos meses. Voar mais rápido do que a velocidade do som cria uma onda sonora diferente, um estrondo sônico, que pode parecer mais um trovão do que uma aeronave passando. É possível que os moradores da região ouçam esse barulho durante os testes com o novo caça brasileiro. Temos o cuidado de garantir que esses voos supersônicos sejam realizados em áreas de teste designadas, em coordenação com as autoridades aeronáuticas conforme os procedimentos da Força Aérea Brasileira”, explica Sven Larsson, head do Centro de Ensaios em Voo do Gripen, da Saab.

As atividades no Brasil incluem testes de sistemas de controle de voo e sistemas climáticos. Também tem como objetivo testar a aeronave no clima tropical. Características únicas das aeronaves brasileiras, como integração de armamentos e sistema de comunicação Link BR2 - que fornece dados criptografados e comunicação de voz entre as aeronaves - também serão testadas no Brasil.

O Programa Gripen

A parceria com o Brasil começou em 2014, com um contrato para o desenvolvimento e produção de 36 aeronaves Gripen E/F para a Força Aérea Brasileira, incluindo sistemas, suporte e equipamentos. Um amplo programa de transferência de tecnologia, que está sendo executado em um período de dez anos, está impulsionando o desenvolvimento da indústria aeronáutica local por meio das empresas parceiras que participam do programa Gripen Brasileiro.

No decorrer desse período, mais de 350 técnicos e engenheiros brasileiros estão participando de treinamentos teóricos e práticos, na Suécia, para adquirirem o conhecimento necessário para a execução das mesmas tarefas no Brasil.

Até o momento, mais de 230 profissionais já concluíram os cursos e a maior parte deles está de volta ao País trabalhando no Centro de Projetos e Desenvolvimento do Gripen (GDDN, do inglês Gripen Design and Development Network).

O GFTC e o GDDN fazem parte da transferência de tecnologia do Programa Gripen, e são essenciais nas atividades conjuntas da Saab e da Embraer que visam construir os procedimentos e a capacidade de desenvolver e testar novos recursos durante o ciclo de vida do Gripen na FAB.

44. Helibras fecha parceria com Helisul Aviação e reforça presença regional de suporte e serviços no Brasil

02.03.2021

Defesanet

https://www.defesanet.com.br/helibras/noticia/39860/Helibras-fecha-parceria-com-Helisul-Aviacao-e-reforca-presenca-regional-de-suporte-e-servicos-no-Brasil/

São Paulo, 2 de março de 2021 – A Helibras anuncia a parceria na prestação de serviços de manutenção com a Helisul Aviação, a maior operadora de helicópteros civis do Brasil, especializada em manutenção e fretamento de helicópteros, serviço aéreo especializado e transporte aeromédico.
Com foco na proximidade, qualidade, segurança e satisfação do cliente, a parceria com a Helisul tem como objetivo expandir a rede de atendimento através de centros de serviços autorizados, ampliando a presença regional da companhia e mantendo os altos padrões de qualidade, capacitação técnica e transparência. É a primeira parceria dessa dimensão no Brasil.

No primeiro momento, serão cinco novas localizações no Brasil onde o cliente poderá contar com os serviços: Rio de Janeiro (RJ), Curitiba (PR), Foz do Iguaçu (PR), Florianópolis (SC) e Brasília (DF).

“Queremos nos aproximar ainda mais de nossos clientes e operadores e, em um país de dimensões continentais como é o Brasil, a presença local se faz importante. O acordo com a Helisul, empresa parceira a qual temos plena confiança, nos possibilitará uma melhor interação com nossos operadores, que poderão contar com a praticidade e facilidade em ter uma estrutura ampla e de qualidade regionalizada de atendimento em MRO”, afirma Alessandro Branco, Diretor de Programas, Suporte e Serviços da Helibras.

Com quase 50 anos atuando no mercado, a Helisul é o maior cliente civil da Helibras, com 30 aeronaves da companhia em operação no país atualmente. Atuando desde 1972 e com uma estrutura completa de hangares, centros administrativos, equipes de manutenção e pilotos altamente capacitados, a Helisul oferece ainda seus serviços aéreos especializados, manutenção e gerenciamento de aeronaves para todos os seus clientes.

"Para a Helisul essa parceria é motivo de orgulho, pois confirma o trabalho sério e de alta qualificação técnica que temos feito. Com a certificação, somada a nossa ampla presença no Brasil, nos unimos à Airbus para atendermos ao mercado com excelência e equipamentos de ponta, sempre visando qualidade e segurança operacional. Nosso compromisso de apoiar a frota brasileira deste grande parceiro se ampliará em breve com a oferta de simuladores de voo e acréscimo dos serviços de manutenção de motores”. Humberto Biesuz, Superintendente Executivo da Helisul Aviação.

Foco na expansão de Suporte e Serviços

A Helibras tem investido na área de Suporte & Serviços ao longo de 2020, apesar da situação econômica gerada pela pandemia da Covid-19.

Em complemento aos estoques de peças e capacidades atuais de MRO, as quais tem servido com sucesso aos clientes e a frota atual composta, em sua maioria, pelos modelos H125 e H130, a companhia continua ampliando seus estoques de peças e ferramentais para a crescente frota de biturbinas leves como o H135 e H145 (incluindo o mais novo modelo 5 pás). Além disso, a Helibras vem preparando sua estrutura de suporte e serviços com foco nos modelos H160 e H175, equipados com o novo sistema Helionix e uma série de inovações em ferramentas, estruturas e aerodinâmica.

Nos anos anteriores, a companhia investiu na ampliação de capacidades locais, principalmente, em sua reconhecida oficina de conjuntos dinâmicos e caixas de transmissão.

A partir dessas ações estratégicas, a Helibras reitera sua forte presença no Brasil e reforça seu compromisso com os clientes civis, para-públicos e militares, que operam aeronaves diariamente para as mais diversas missões, com confiança e segurança, pelo Brasil afora.

Saiba mais sobre a Helisul

Fundada em 1972, a empresa começou operando voos panorâmicos em Foz do Iguaçu, administrada por empreendedores da então Companhia Tropical de Hotéis, pertencente à Varig. Depois surgiu a Tropical Táxi Aéreo, mais tarde transformada em Helisul. Mas foi nos anos 1990 que a empresa expandiu os serviços e as bases por todo o Brasil, sob o comando dos comandantes Eloy e Celso Biesuz. Hoje conta com uma estrutura completa de hangares, equipe administrativa, de manutenção aeronáutica e pilotos altamente capacitados. Está presente em diversas regiões do Brasil (Curitiba, Foz do Iguaçu, São José dos Pinhais, Brasília, Florianópolis, Rio de Janeiro, São José e São Paulo), prestando serviços aéreos especializado (SAE), serviços de fixed base operator (FBO), manutenção, gerenciamento e fretamento de aeronaves, transporte aeromédico e voos panorâmicos. A frota atual da Helisul é composta por mais de 50 aeronaves, entre helicópteros e aviões. Mais informações em www.helisul.com

Sobre a Helibras

A Helibras é a única fabricante brasileira de helicópteros, subsidiária da Airbus, líder mundial nos segmentos aeroespacial e de serviços relacionadas à defesa. Em seus 42 anos de atividades, a Helibras já entregou cerca de 800 helicópteros no país. É líder do mercado brasileiro, com participação de 50% na frota de helicópteros à turbina, e mantém instalações em Minas Gerais, São Paulo, Rio de Janeiro, Atibaia e Brasília. Sua fábrica, que emprega cerca de 500 profissionais, produz as aeronaves H125 - Esquilo e H225/H225M, além de executar modernizações de aeronaves. A empresa também customiza diversos modelos que atendem os segmentos civil e militar. Em 2020, a Helibras registrou faturamento total de R$ 927 milhões.

ASTROS

PROCAD DEFESA