



LAND POWER



AN ANNUAL PUBLICATION OF ALLIED LAND COMMAND



MAGAZINE
2022



EXCLUSIVE

+ **Partnership Builds**
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ELECTRONIC WARFARE

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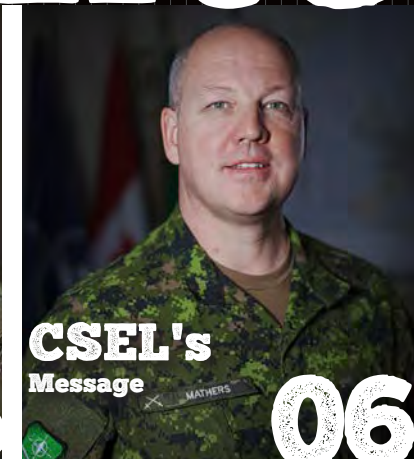
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in the
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LANDCOM twitter

"Thank you for being here!"

andrew_public

"Looks like NATO.. HAS IT ALL.... Everything! Yeah"

RuizzColleen

"Cheers to @BG_LTU_eFP, 9th Rotation. Great Picture, Great Team. #WeAreNATO #TogetherStrong"

HoffBenedikt

LANDCOM facebook

"God bless NATO"

Carles Asensi Torres

"My bravery blessings be with you all "

Karren Kilpatrick

"Everything we see in the world is the creative work of women." Mustafa Kemal Atatürk

Orhan Kilic

LANDCOM instagram

🔥🔥 These are some great shots!

jamesgmedia

One of the best NCOs at LANDCOM! Congrats OR-7 Lopez!

oileduptravelingyogi

Gimme more tanks! 🌟🌟🌟

king_italy

Keep in touch.



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WELCOME



Front Cover:

Credit: Armins Janiks - Latvian Ministry of Defence.

During the "Winter Shield" exercise, Latvian and allied engineers build a pontoon bridge. During the military exercise "Winter Shield 2021", engineers of the Mechanized Infantry Brigade and Allied forces deployed a pontoon bridge during a water crossing exercise.

Rear Cover:

Credit: U.S. Army photo by Spc. Dedrick Johnson

The LANDPOWER magazine is an annual publication produced by Allied Land Command (LANDCOM) dedicated to the promotion of actions and ideas, contributing to the improvement of the NATO Force Structure (NFS) efficiency and effectiveness. The views expressed in this publication do not necessarily reflect those of the LANDCOM Commander, SACEUR, NATO or its member nations and cannot be quoted as an official statement of those entities. An electronic version that includes additional links to in-depth articles, supplementary articles and an ability to provide online comments is available from the LANDCOM website (www.lc.nato.int).

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from the

COMMANDER



"At our level, we can't win the fight, but we can lose the fight, and our soldiers in the field will bear the consequences of our actions and inactions"

When I took command of this great organization, the strategic landscape was very different from what we are experiencing today. COVID-19 was affecting aspects of military training and limiting face-to-face interactions in professional as well as personal life. Now, we see the legitimacy and integrity of NATO's eastern flank being challenged due to Russia's invasion of Ukraine. It has been a dynamic and unpredictable two years, but LANDCOM has been able to accomplish so much, respond to emerging challenges, and pack a bigger punch in support of Alliance security.

One of the most consistent capabilities LANDCOM provides to NATO Land Forces is the Combat Readiness Evaluation (CREVAL). As the land domain advocate for SACEUR, LANDCOM is tasked to certify the readiness of NATO's land forces. I have had the privilege of seeing this process grow stronger and more valuable to NATO's warfighting corps. Some improvements include increasing the evaluation timeline from four days to nine days in the final phase, adding a mid-point tactical pause to conduct a "hot wash", and streamlining the evaluation criteria to allow for more teaching, coaching and mentoring. These steps help make CREVAL more collaborative and constructive for not only the evaluated headquarters, but for LANDCOM's team of experts as well.

Another major effort has been building teams at the strategic level across NATO's land domain. With 30 nations' militaries joined together in collective defense of their people, there are a lot of national capabilities to be identified and leveraged. In the spring of 2021, I visited NATO, host nation, and U.S. military leaders in the Baltics and Poland to not only gain a better understanding of the security challenges in the region, but to see how these challenges can be tackled by bringing together the right leaders and soldiers for the task. These efforts were compounded with a tour of NATO's eastern and southern flank in Slovakia, Hungary, Bulgaria, and Romania this spring. Our efforts to engage and incorporate national forces into NATO planning and training has already proven worthwhile in the face of recent Russia aggression.

And lastly, after years of planning and preparation, LANDCOM has become an operational command; acting as the Land Component Command (LCC). As the LCC, we coordinate with other domain commands; facilitating the tactical/operational bridge for Corps; letting

them maximize their combat power and maintain initiative where it counts most: on the battlefield. It also leverages our role as the Land Domain Advisor to SACEUR to generate capabilities and create options for the Joint Force Commander. Looking ahead, this command is poised for further opportunities to enhance the speed, strength, and awareness of warfighters as they defend the Alliance.

Capping off my 35 year military career at NATO Allied Land Command has been a great honor for me. My fondest memories of my time as LANDCOM's commander will be my numerous encounters with NATO soldiers, old and young, who swore an oath to their nation to defend its people from any threat. Each interaction was a firm reminder of the solemn duty leaders must uphold to make sure their troops have the training, equipment, and discipline needed to fight, win, and return home to their families.

LANDCOM is a headquarters of staff officers, senior non-commissioned officers, and generals. At our level, we can't win the fight, but we can lose the fight, and our soldiers in the field will bear the consequences of our actions and inactions. I am proud of the achievements this team has accomplished. I know it will rise to any challenge in service of the Alliance. **LC**

For The Soldier!

ROGER L. CLOUTIER JR.
LANDCOM Commander

from the

CSEL



IN June 2019, my predecessor, CWO Steve Rice, asked me to “leave it better than I found it”. This was a monumental task since I received a team poised for greatness and hungry for the challenge that lay ahead almost three years ago. Looking back to those early days at LANDCOM, It’s hard to imagine we were just beginning to navigate NATO Command Structure Adaptation (NCSA), the duties and responsibilities of Multi Corps Land Component Command, and experimentation and evaluation of the first War Fighting Corps in decades was yet to take place. Now, three years later in 2022, and despite COVID complications, LANDCOM persevered; surpassing previous years of training and exercise tempo by conducting (for the first time) three simultaneous Combat Readiness Evaluations (CREVALs) including our 2nd WAR Fighting Corps evaluation for NRDC Spain.

CREVALs have evolved due to the professionalism of LANDCOM. In the pursuit of excellence and relevance, it continues to adapt. One of the most promising developments is the current evolution of inclusive joint service and gender-diverse NCO and

officer evaluation teams. These teams are now performing this crucial piece of readiness verification; modelling the expectations for the future of NATO Land Forces collaboration. This deliberate and common-sense “coach, mentor, train and assist” methodology has, in my opinion, put us on the glide path to dominance in the Corps Warfighting business; strengthening the alliance’s unity.

Winning teams should lean in to their next challenge vice happily standing at a podium revelling and resting in their past successes.

The thing that ensures winning teams keep winning, is constantly moving the bar higher, and never feeling satisfied with past achievements.

Historically, the best teams are those composed of members that support each other, train as hard as they fight, and then go back to mentor the organization to win again.

Complacency has no place in competition. This team, this Alliance, is the strongest fighting force on the planet, and we are dedicated to ensuring the protection of our nations’ sacred rights and freedoms. Our goal therefore needs to be building and maintaining a cohesive and collaborative offence, defence, and special teams that wakes up every day ready to defend those freedoms.

In my final message for NATO Land Power, I want to say thank you. Thank you for the incredible adventure and extraordinary professionalism I have witnessed in the last three years. I very much appreciate the extreme privilege of being the Command Senior Enlisted Leader for NATO’s Land Forces. An opportunity that has been one of

the most humbling and gratifying responsibilities in my career thus far.

To all the soldiers in the NATO Force Structure (NFS) that I represent: I trust you will continue to pave the way for change and continued greatness.

We NCO’s of NATO benefit from the historical greatness of warriors which, as a result of their reputation, have facilitated our progress in employment and opportunity. For the Allied Land forces, I feel Sergeants Major, Senior NCO’s and enlisted teammates allocate more time to work on necessary change, and less time on working groups to study how to implement those changes. It is my belief that NATO’s Land Forces are stronger, faster and more agile today thanks to the LANDCOM teams of past and present. With our incredible young professionals, the plethora of references that describe the strategic guidelines for education, employment and competencies required for NATO NCO engagement, I feel we are well postured to forge continued success in support of our respective Commanders. **LC**

For the Soldier!

KEVIN J. MATHERS
LANDCOM Command Senior Enlisted Leader



from the

SLOVENIAN ARMED FORCES CSEL



TEAMWORK, STRENGTH & DETERRENCE

"Cohesion & Unity Enables NATO NCOs To Lead"

Teamwork is one of the key competencies of the 21st century in both civilian and military worlds. The basis for teamwork is cohesion among members, and the leader is responsible for establishing this among the members of the organization. The leader is the one who must demonstrate loyalty to the organization, and follow its goals with moral courage, trust, and respect. In a world of asociality as a consequence of technological development, how do we achieve this?

It is important to establish effective communication between team members. It is crucial to dominate the

cognitive domain, which we achieve precisely through constructive and collaborative teamwork. Namely, the cognitive domain is most exposed by potential adversaries. We need to be aware that in cognitive thinking, the individual and then the whole group (we would say teams, squads, platoons, companies etc.) refer to the relationships and explanations they gain in terms of what they observe and perceive in relation to objects or experience, and the result is their response.

It is therefore imperative that troops need to speak a common language and have a common understanding. Therein lies the power of troops. It is wrong to think that today we achieve this only through personal contact and personal discourse.

Today, the key to success is the use of social media as a tool for disseminating information. While this means is important at the operational and strategic level as a comprehensive tool, it is by far the most important in personal communication with members of the team. Therefore, it is crucial that, unlike in the past, where we only reacted to a certain interaction, today it is crucial that we not only react but we are proactive and preparing team members all the time, and consequently unknowingly become dominant over their cognitive domain. In this way, we constantly prepare members for unpredictable rapid changes that take place in the operational environment.

The fact is that today the line of peace and war is practically invisible. If the leader is to lead the team

successfully in the future, they will have to acquire new skills, talents, experiences, will have to know a wider range of leadership styles, will have good technical knowledge and, above all, will have to know how to combine technical knowledge and warfighting skills of the team. In terms of human capital, the quality of people and the cognitive domain will need to be the Center of Gravity. Command Senior Enlisted Leaders will act as a bridge of a strategic direction with force adaptation. With all this he/she will face and need to be able to tackle, many challenges such as resistance to change, acceptance of technology, confidence in new technologies, no fear of failure and many more. The team will need an adaptable leader. **LC**

For the Soldier!

DANIJEL KOVAČ

Command Sergeant Major (OR-9)
Slovenian Armed Forces
Command Senior Enlisted Leader



NON-COMMISSIONED OFFICER PROFESSIONAL DEVELOPMENT

AND NATO SCHOOL OBERAMMERGAU

BY MARC CORRIVEAU, CAN AIR FORCE CWO, NSO CSEL

As one of NATO's premier education and individual training facilities, NATO School Oberammergau (NSO) conducts hundreds of multinational programmes annually in support of current and developing operations, strategy, policy, doctrine and procedures. Located in picturesque Southern Bavaria, Germany, the NSO offers the student population a conducive learning environment designed to create a shared understanding and interoperability that is at the core of successful multinational operations. The NSO's diverse portfolio of over 115 course offerings is continually updated to meet the Alliance's current and future requirements. Since its inception, the NSO has graduated over 200,000 military and civilian students representing NATO nations, partner nations and international organizations.

As highlighted in the recent 17th annual iteration of the International Command Senior Enlisted Leader Conference, the Non-Commissioned Officer (NCO) Corps makes up 75-80% of NATO's military force and is the backbone of many nations' Armed Forces. Human capital is arguably one of the most important assets of any organisation and given the increasingly complex and ever-evolving global military landscape, it is imperative, now more than ever, that the NCO Corps continues to adapt itself to meet future challenges. The significance of education and training cannot be overemphasized as both are vital components of a ready and responsive force; one that is capable of demonstrating teamwork, strength and deterrence.

While many of the NSO's courses are available to Non-Commissioned Officers from OR-4 to OR-9, one department in particular is focused predominantly on NCO professional development. The Non-Commissioned Officer Programmes Department (NCOPD) is designed and entrusted with providing

an education and training solution to enhance interoperability, prepare NCOs for employment in international/multinational settings, and to support nations with their NCO development efforts in accordance with the NATO NCO Bi-Strategic Command Strategy and NCO Guidelines. NCOPD's offerings include Orientation, Intermediate and Advanced Leadership, Academic Instruction and Command Senior Enlisted Leader Courses.

Three of NCOPD's principal offerings are the Intermediate, Advanced and Command Senior Enlisted Leader courses. These courses have a multinational environment focus and include a selection of topics such as NATO Overview, Ethical Behaviour, Personality Profiles, Counselling, Advising the Commander, Command Team, Media Awareness, Conflict Management and many more. The two-week leadership courses are highly interactive and delivered using an assortment of instructional methods designed to enhance the learning experience. Depending on the course, discussions range from the Tactical to Strategic level.

NCOPD's ability to achieve success in the transfer of knowledge, education and skill is due in large part to the teamwork and collaborative efforts between the NSO and organisations such as NATO's Allied Command Operations, Allied Command Transformation, Allied Air Command, Allied Land Command and Allied Maritime Command to name a few.

I am confident that the partnerships, friendships and networking opportunities forged while attending NSO courses will benefit graduates for years to come. We look forward to welcoming you to the NATO School Oberammergau. **LC**

VISION

The NATO School Oberammergau (NSO) will remain flexible and ready to rapidly respond to the challenges of the future security environment by supporting the educational and individual training requirements of NATO. We will establish strong and collaborative relationships with NATO's Centres of Excellence, NATO's Partnership Training and Education Centres and other leading academic institutions to collectively provide the most efficient and effective training capability for the Alliance and its partners. Our classrooms, whether physical or virtual, will reflect the diversity and reality of coalition operations, learning together, in support of NATO's comprehensive approach.

" Knowledge Enables Capability "



IDENTITY

We strive for excellence and seek continuous improvement in all that we do.

We invest in our staff, helping each member grow professionally while showing value to our sponsoring nations.

Diversity is our core strength, both in our staff and in our classrooms, as this is where shared understanding and interoperability begin.

We aim to produce quality training and education that is relevant to the needs of the Alliance now and in the future.

" No one person, no one alliance, no one nation, no one of us is as smart as all of us thinking together. "

RUSSIA'S CLIMATE CHANGE CONUNDRUM



BY DR. SIJBREN DE JONG & MR. CAN GÜTCÜ, NATO SHAPE ANALYSTS

Dr. Sijbren de Jong is a strategic Eastern Europe analyst at NATO's Supreme Headquarters Allied Powers Europe (SHAPE). Previously he worked as an analyst on Eurasian security and geo-economics for The Hague Centre for Strategic Studies, Leiden University, the Leuven Centre for Global Governance Studies, EU Observer and others.

Mr. Can Gütcü is the lead analyst for energy security at NATO SHAPE. Previously he worked for the International Energy Charter Secretariat in Brussels on energy investment climate reviews and for Rothschild & Co. in Paris on project financing for energy infrastructure in CEE and CIS countries.

NATO ENERGY AND SECURITY CENTER OF EXCELLENCE

Created on July 10 and accredited on October 12, 2012, the NATO Energy Security Centre of Excellence (ENSEC COE) currently operates as a widely recognized international military organization with the aim of providing qualified and appropriate expert advice on questions related to operational energy security.

The mission of the NATO ENSEC COE is to assist Strategic Commands, other NATO bodies, nations, partners, and other civil and military entities by supporting NATO's capability development process, mission effectiveness, and interoperability in the near, mid and long terms by providing comprehensive and timely subject matter expertise on all aspects of energy security. The mission includes cost effective solutions to support military requirements, energy efficiency in the operational field, and interaction with academia and industry.



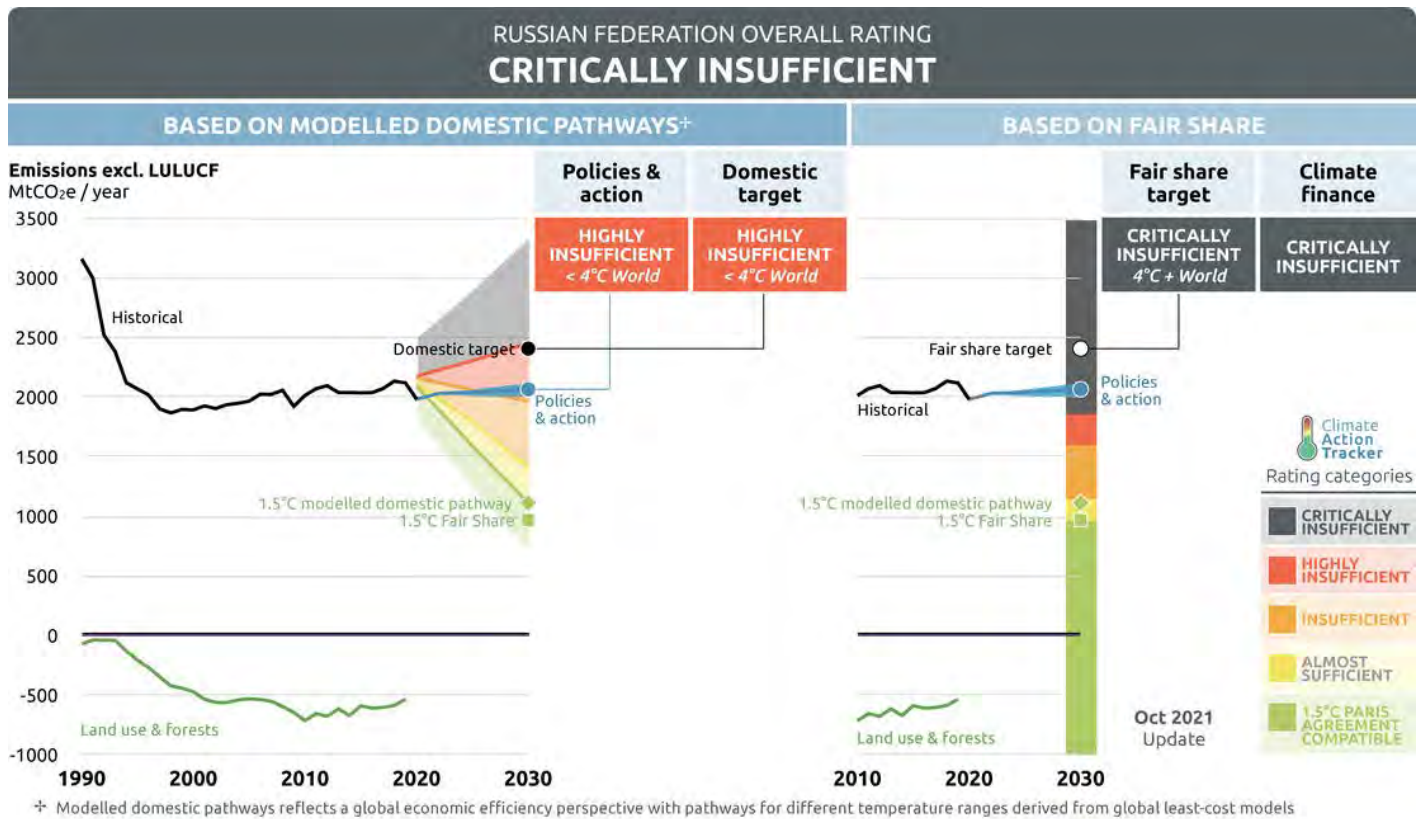
Introduction

Climate change represents a multifaceted challenge for Russia. From an economic standpoint, reduced government revenues from energy exports, as experienced during the COVID-19 pandemic due to a gradual phasing out of fossil fuels, led to budgetary constraints. Then there is the risk of stranded infrastructural assets: vulnerable energy infrastructure in Russian Arctic region risks being severely damaged and rendered economically useless due to melting permafrost. Politically, climate change risks reducing its capacity to exert influence abroad as Moscow's status of a global "energy powerhouse" may fade. The erosion of this status means that Russia risks losing political leverage over major oil and gas consuming nations.

Russia's approach to climate change

Russia is the fourth largest emitter of greenhouse gas emissions worldwide¹. In terms of industrial greenhouse

to commit to reducing greenhouse gas levels, knowing that these are a mere fraction of what they were in 1990 for the Soviet Union as a whole. According to Carbon Tracker, an international environmental non-governmental organisation, under Russia's current policies, and after the effects of the COVID-19-related economic slowdown are considered, Russia's emissions are projected to decline between 32 and 37% by 2030¹¹. If various carbon sinks (anything that absorbs more carbon from the atmosphere than it releases, such as plants, the ocean, etc. are considered, Russia's emissions are expected to decline between 38 to 43% relative to 1990 levels⁴. In other words, under its existing pledges, Russia can expect to see its greenhouse gas emissions stay below what it emitted in 1990. It should not come as a surprise therefore that the Kremlin views this as a kind of free pass to pollute at will and clinch onto its status of a major hydrocarbon producer.



gas emissions, the Russian Federation is also home to one of the world's most polluting companies: state-owned gas company Gazprom². Russia has been a party to the Kyoto Protocol and ratified the Paris Climate Agreement³. In its National Determined Contribution, Moscow pledged a reduction in emissions of 70% below 1990s levels, taking in account the maximum possible absorptive capacity of forests and other ecosystems, and subject to sustainable and balanced social economic development of Russia⁴. Although sounding ambitious, the target has actually been widely criticised as it takes the final years of the Soviet Union as its baseline. In 1990, Soviet heavy industry was still producing at full speed. Following the USSR's collapse into individual countries, and with it the demise of large parts of Soviet-era heavy industry, it is comparatively easy for Russia today

Prioritisation of hydrocarbons

In its new Energy Strategy to 2035, Russia speaks of vastly expanding its domestic production and consumption of fossil fuels, strongly emphasising growth in natural gas exports through liquefied natural gas (LNG). Sustaining export revenues, whilst maintaining social stability through reigning in domestic prices are among the government's top priorities. The climate agenda is the last point that received attention and is the lowest in order of the Strategy's priorities, as Russia can easily meet its Paris Climate Agreement targets without resorting to major investments⁵. Despite its own marginal contribution, Russia routinely criticises other – chiefly Western – nations for their historic responsibility in the fight against climate change. The United States' (US) pullback from the Paris Agreement in November 2020 was a welcome opportunity in this regard and

Moscow happily jumped at the occasion⁶. Although the US has since re-joined the Paris Agreement, Russia continues – by referencing its own pledges, however negligible these may be – to turn the climate agenda into another avenue through which it may be able to pressure the West.

approximately \$73 billion worth of oil in 2020, compared to \$160 billion a year earlier¹¹. Russia's largest oil company, state-owned Rosneft, experienced a 79% decline in profits in 2020¹². This financially challenging new environment may be temporary due to the ongoing COVID-19 pandemic. However, global efforts to drastically reduce carbon emissions by phasing out fossil

fuels remain a long term threat to the Kremlin's powerbase. Reduced economic revenue may potentially affect Russia's ability to offer cheap utilities to its citizens and thus erode Russia's domestic political stability.

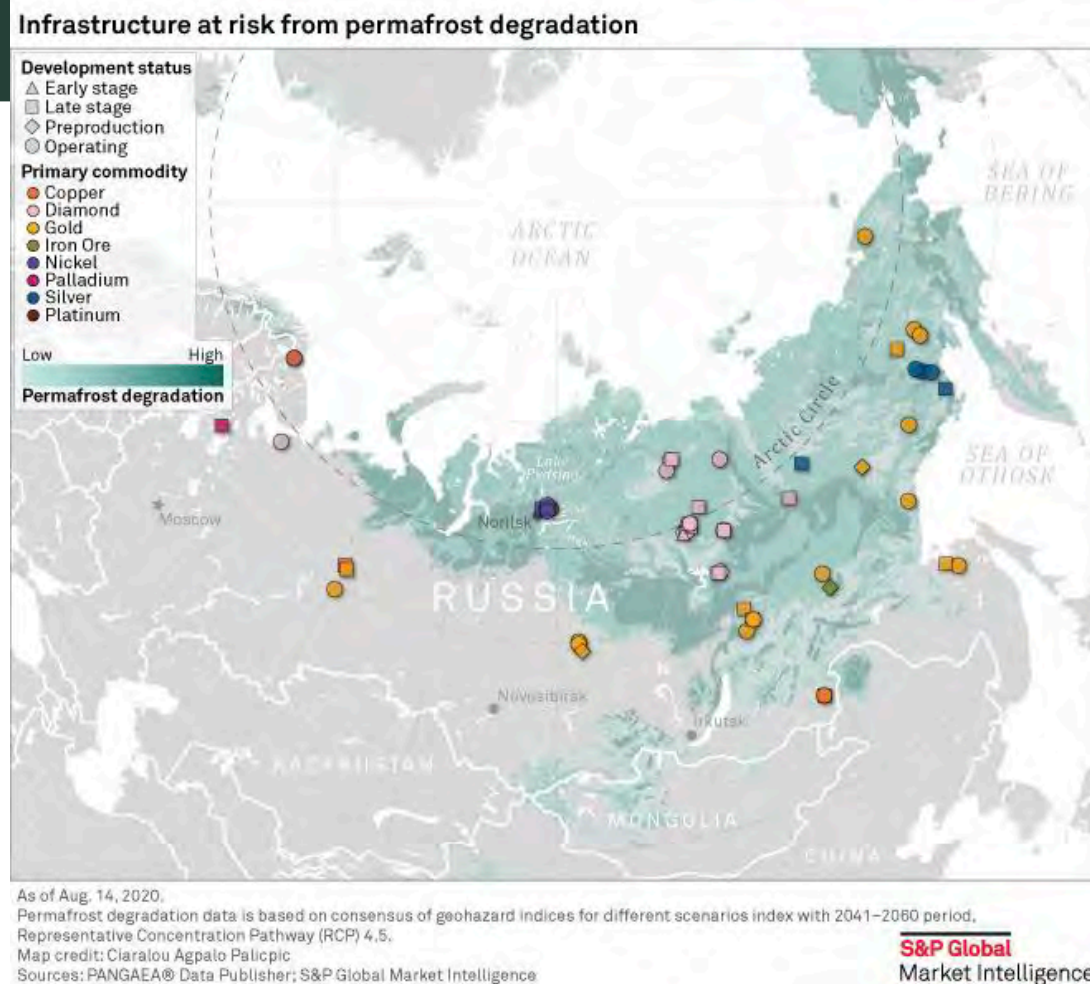
In December 2020, the EU unveiled its European Green Deal plan to decarbonise its economy by 2050¹⁴. Throughout 2020, China, Japan and South Korea announced similar pledges. Climate change mitigation may alter the EU's and China's relations with carbon intensive exporters such as Russia. For Russia, an EU carbon border tax could be established in 2025. It is estimated that such a tax could cost Russian exporters over \$38 billion in tariffs between 2025-2030¹³. This may further complicate Russia's trade relations with the EU.

Russia's push towards greater use of hydrocarbons may lead to further political isolation as the US, EU, China, Japan and South Korea move ahead towards carbon neutrality in the next decades.

Recent environmental disasters also show that climate change could have implications that stretch well beyond financial and environmental impacts on Russia and its long term energy policies. According to scientists, the Arctic region is warming twice as fast compared to the rest of the world and the melting permafrost could cost Russia \$84 billion in infrastructural damage by 2050¹⁴. In 2017, the Arctic Council already highlighted that the region "will face greater difficulty in the long term in sustaining the infrastructure it holds since the 1980s¹⁵". This phenomenon puts Russia's oil and gas infrastructure and industry at risk as demonstrated by the oil spill in Norilsk in May 2020¹⁶.

The need to overcome lower prices and reduced demand for fossil fuels due to climate change mitigation and the

Figure 1: Russian infrastructure at risk from permafrost degradation. (Credit: S&P Global)



The economic and political cost of climate change for Russia

Russia is the leading oil and gas supplier to the European Union (EU) and the largest oil exporter to China⁷. Russia has shown scepticism to climate change mitigation efforts as its economic and political power hinges on remaining a 'global fossil fuel powerhouse'⁸. On the other hand, the EU and China - Russia's two largest energy customers - have committed to achieving carbon neutrality by 2050 and 2060 respectively¹¹. This commitment to a distancing from fossil fuels (i.e. oil and gas) represents a major economic and geopolitical risk to Russia in the long term. Oil and gas exports make up 60% of Russia's total exports, and revenues from fossil fuels account for 30% of its GDP⁹.

The COVID-19 pandemic has given the world a prelude of the potential economic repercussions when global oil demand and oil prices collapsed during confinement measures and global lockdowns. Russia's oil export revenues contracted by 41% between January and November 2020¹⁰. Russia exported

III.- The European Green Deal provides an action plan to boost the efficient use of resources by moving to a clean, circular economy and cut pollution. The plan outlines investments needed and financing tools available. The EU aims to be climate neutral in 2050. Meanwhile, Chinese President Xi Jinping announced in September 2020 China's objective to have a carbon neutral economy by 2060.

IV.- The European Green Deal is a set of EU policy initiatives introduced in December 2019 for achieving climate neutrality by 2050.

V.- Japan and South Korea announced in November 2020 its objectives to achieve a carbon neutral economy by 2050.

COVID 19 pandemic helped forge new political alliances in energy cooperation in a changing geopolitical landscape. Russia continues to cooperate with rival exporters of the Organization of the Petroleum Exporting Countries (OPEC) in the OPEC+ format to maintain stability in oil markets^{VI}. Meanwhile, Russia also has attempted to diversify its energy customer base by expanding into China through the Power of Siberia 1 gas pipeline and double down on its existing market share in Europe by constructing Nord Stream 2 and TurkStream natural gas pipelines^{VII}.

Opportunities for Russia stemming from climate change

Melting permafrost in the Arctic is as much an opportunity for Moscow as it is a potential catastrophe. Climate change opens up new shipping routes and enables access to Arctic oil and gas resources. The Russian government acknowledges the need to “move fast to get most of these reserves in the Arctic” as large hydrocarbon consumers (EU, China, Japan) are aligning themselves on carbon neutrality goals¹⁶. However, instead of diversifying its economy, Russia is keen on monetising the vast – but costly – resources in the Arctic before it is too late¹⁷.

The opening of the Northern Sea Route (NSR) from Asia to Europe offers a greater potential for maritime trade and for accessing vast reserves of oil, gas and minerals. Russia hopes to increase shipping via Arctic waters from 32 million metric tons (MMT) in 2020 to 80 MMT of cargo by 2024¹⁸. The Kremlin hopes that the NSR allows it to shift traffic away from the Malacca Strait and Suez Canal in Egypt, and turn Russia's Arctic into a major global trade hub. Either way, the NSR is not estimated to be open year-round before 2050. Russia's upcoming chairmanship of the Arctic Council from May 2021 to 2023 may be consequential in shaping the navigational opportunities that climate change brings by way of the NSR.

Russia is committed to preserving its energy “supremacy”

Russia's role as a major energy supplier and owner of critical energy infrastructure has served as a shield against any external political and economic pressure¹⁹. Looking ahead, Russia is expected to try to preserve its energy “supremacy” and “lock in” customers before climate change mitigation puts its economic and political interests at risk. This means that Russia needs to capitalise on large-scale energy projects sooner rather than later in both Europe and Asia. This explains Moscow's emphasis on completing projects such as Nord Stream 2, Turk Stream 2 and the Power of Siberia 2, as these all provide long term economic and political security to Russia's hydrocarbon-dominated economy.

By contrast, growing energy independence from Russian energy sources among key-consumer nations and the gradual phasing out of hydrocarbons in general will intrinsically enable greater economic, political and environmental resilience. Specifically, Russia's attempts at further developing its Arctic natural resources risk upsetting the environmental balance in this pristine area with global repercussions, harming efforts to achieve carbon neutrality by 2050. **LC**

VI. The oil spill in Norilsk is the largest ever recorded in the polar Arctic. On 29 May 2020, 20,000 tons of diesel leaked into the water and soil from a storage tank owned by Norilsk Nickel near Norilsk, turning the Ambarnaya River red. The company was fined \$2.1bn in damages.

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- 15.- Toby Woodhall, “Rising temperatures leave Russia's Arctic ambitions on thin ice”, S&P Global, 7 September 2020, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/rising-temperatures-leave-russia-s-arctic-ambitions-on-thin-ice-59646990>.
- 16.- Oksana Kobzeva, “Russian LNG, natural gas shouldn't compete in export markets, Gazprom says”, Reuters, 25 February 2021, <https://www.reuters.com/article/russia-gas-lng-idINL8N2KV4SP>.
- 17.- Arctic oil production requires a breakeven oil price of \$100- \$110 per barrel. See: Viktor Katona, “Russia's Relentless Quest For Arctic Oil”, OilPrice, November 2020, <https://oilprice.com/Energy/General/Russias-Relentless-Quest-For-Arctic-Oil.html>.
- 18.- Robyn Dixon, “While the world tore its hair out over the Suez, Russia saw an opportunity”, Washington Post, 29 March 2021, https://www.washingtonpost.com/world/russia-suez-touts-arctic-sea-route/2021/03/29/576f6794-9097-11eb-aadc-af78701a30ca_story.html; “Russia: Council renews economic sanctions over Ukrainian crisis for six more months”, Council of the European Union, 29 June 2020, <https://www.consilium.europa.eu/en/press/press-releases/2020/06/29/russia-council-renews-economic-sanctions-over-ukrainian-crisis-for-six-more-months/>.
- 19.- For example, until today the EU has avoided to directly sanction Russia's oil and gas sector, instead denying access to financing and technologies that can be used in the Russian energy sector. See: Henry Meyer, Andrey Biryukov, “Russia Warns EU It's Ready to Break Off Ties Over Sanctions”, Bloomberg, 12 February 2021, <https://www.bloomberg.com/news/articles/2021-02-12/russia-warns-eu-it-s-ready-to-break-off-relations-over-sanctions>; “Russia: Council renews economic sanctions over Ukrainian crisis for six more months”, Council of the European Union, 29 June 2020, <https://www.consilium.europa.eu/en/press/press-releases/2020/06/29/russia-council-renews-economic-sanctions-over-ukrainian-crisis-for-six-more-months/>.

VII.- The OPEC+ format gathers 24 oil-producing economies, 14 members of OPEC and 10 other non-OPEC countries, including Russia. It aims, since 2017, to coordinate oil production in a bid to stabilise prices in a low priced challenging environment.



RUSSIAN ARMED FORCES ELECTRONIC WARFARE CAPABILITIES

BY LANDCOM GZ

“All warfare is based on deception. Hence, when we are able to attack, we must seem unable; when using our forces, we must appear inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near.”¹

Although electronic warfare (EW) originated from a much earlier era, with different ways of conducting warfare, EW has long been an integral part of warfare activities of the Russian Federation. Students of Russian strategy and doctrine must understand the centrality of EW into Russian planning efforts, and the capability Russia employs within the electromagnetic spectrum on the modern battlefield.

The history of EW is almost as old as Marconi's² invention of wireless radio communications in 1896, whilst the idea of creating interference and disrupting the operation of radio communication lines with electromagnetic waves was first expressed by the inventor of the radio, Alexander Popov³. Since the beginning of the 20th century, EW has been developed in all armies since the beginning of the 20th century, including the armed forces of the Soviet Union and Russia, and it is constituted as one of the key pillars of their military strength.

The earliest known use of electromagnetic energy as a kind of "weapon" to conduct electronic suppression, took place in the Russo-Japanese War (8 February 1904 – 5 September 1905). The Japanese armed merchant cruiser (AMC), "SHINANO MARU" was communicating its location (by wireless radio) in the Tsushima Strait, to the Imperial Japanese Fleet HQ at Mesampo Bay, Korea, when it was located by the Russian Fleet. The commander of the Russian warship "URAL", having discovered the Japanese radio transmissions, requested to the squadron commander permission

to disrupt the Japanese communications link by attempting to transmit a stronger Radio Frequency (RF) signal over the "SHINANO MURA" signal, hoping to distort the Japanese's signal at the receiving end, Admiral Togo's⁴ Fleet HQ. Russian Admiral Rozhdestvensky⁵ refused the Electronic Warfare advice and denied the URAL permission to electronically jam the enemy, which in those circumstances might have proved invaluable. Nevertheless, the commanders of the cruiser "IZUMRUD" and the destroyer "GROMKY", on their own initiative, used the ship's radio stations to suppress the radio communications of Japanese warships. Thus, measures to suppress enemy radio communication systems were first carried out by Russian military specialists.

Modern EW developed rapidly from this point. Now all operations of any military consider how best to utilize EW, and Russia's Armed Forces are no exemption.

The exponential development of EW capabilities over the past dozen years has been a critical element in the reform and modernisation of the Russian Armed Forces. Prior to the major reforms initiated in the fall of 2008, the military's existing EW capabilities were disparate, rudimentary and lacking investment. But as a result of the continued efforts to modernise the Armed Forces, EW became an organic high-technology-based feature of Russian military approaches to modern warfare. This capability is now being further employed in conflicts and exercises, with refinements benefiting from experimentation to further EW capability. These capabilities are regularly tested alongside other elements of the Armed Forces during combat training, with increased experimentation using Artificial Intelligence and automation⁶.

EW has become a common buzzword in the defense community, though it is not always well understood. Its purpose is to deny an adversary from gaining control of, and having advantage in, the electromagnetic (EM) spectrum, while still ensuring friendly and unimpeded access for oneself and one's allies. It is employed to support military operations in three ways: electronic attack, electronic protection, and electronic support.

Jamming is a key tool in electronic attack, and one that is commonly referenced in EW literature. The main method is to emit "noise" in a powerful signal strong enough to overload the adversary's receivers. The result is a jamming of the signal that the receiving system is trying to detect, interrupting communications altogether.

Electronic protection involves guarding one's own systems from these very attacks by hardening electronic sensors and by conducting electronic emission control so it is more difficult for an adversary to locate a target. Finally, electronic support are actions that search for, intercept, identify, and locate sources of EM emissions for the purpose of enabling the previous two functions. This can also be thought of as the reconnaissance element of EW.

Next we delve into the world of Russian Electronic Warfare

BORISOGLEBSK 2



Systems. While there are numerous systems dedicated to EW at the disposal of the Russian Armed Forces, several systems are notable compared to the rest.

BORISOGLEBSK 2

Borisoglebsk 2 is a Russian, MT-LBu⁷ ground vehicle mounted, multi-functional EW mobile weapon system. The Borisoglebsk-2 merges four types of jamming stations into a single system with a single control console which requires the operator to take decisions within seconds⁸. The Borisoglebsk-2 system is intended to suppress and disrupt mobile satellite communications and satellite-based navigation signals (e.g. GPS), basically jamming of HF/UHF (both terrestrial and aircraft) radio channels. Borisoglebsk 2 achieved initial operating capability in 2010, but was not ordered and delivered to Russian military until February 2015. This system was reportedly seized by Ukraine's 10th Mountain Assault Brigade in March 2022 during the Russian invasion of Ukraine.

MURMANSK-BN

The Murmansk-BN is a long-range communications jamming system specially designed to target the West's High Frequency Global Communications System (HFGCS), military satellite communications, and also for electronic reconnaissance and suppression of enemy signals. This system was developed as part of a Russian strategic electronic warfare system and operates as a network-centric capability. The system is capable of intercepting communications between warships, aircraft and satellites. Furthermore, in both directions, blocking the flow of information from satellites to specific combat units.

The stated range depends on the source, but it is estimated at between 3000 km and 5000 km. The Murmansk-BN is mounted on seven heavy trucks, four of them carry the massive 32 meters / 102 feet telescopic masts. It takes several days to erect the masts and calibrate the system.

It was unveiled in November 2016 as the system prototype was achieving some test successes and the system was fully tested in October 2020. The system has been deployed in Crimea,

MURMANSK-BN



to eavesdrop over the Black Sea and Ukraine, and the Russian Ministry of Defence reported the deployment of the system during the Russian invasion on April 15, 2022.

R-330ZH "ZHITEL"

The R-330Zh also named "Zhitel" is a jamming communication station designed and manufactured by the Russian Company Protek. The whole system includes one URAL-43203 / KAMAZ-43114 truck as the control center for the operators and one shelter with four telescopic active phased array transmitter antennas mounted on a four-wheel trailer.

The R-330Zh is designed for detection, analysis, direction-finding, and jamming of satellite and cellular phone communication systems operating in the frequency band from 100 MHz to 2,000 MHz (detection, direction finding, and jamming of wearable mobile stations of mobile satellite communications such as Inmarsat and Iridium; detection, direction finding, and jamming base stations of cellular communication, standard GSM frequencies, consumer navigation equipment; and jamming of satellite communications systems NAVSTAR). In addition to the tasks mentioned previously, it can be used for jamming an aircraft's communication and satellite navigation (GPS, Galileo, BeiDou, etc.).⁹

The station can operate in stand-alone mode as well as in pairs, both master and slave under the control of the primary R-330Zh. Because the system in the trailer is fragile, it will likely be found close to a road; it is unlikely that the system will be taken cross-country. The "Zhitel" system attracted an extraordinary amount of attention in 2015 when it was reported by the Organisation for Security and Co-operation in Europe (OSCE) to have been used in eastern Ukraine (15.08.2015), supposedly

to impede the use of drones by suppressing GPS signals¹⁰. Command of the Ukraine Assault Troops reduced drone footage showing an artillery strike destroying a R-330ZH system near Kharkiv on 19 May, 2022.

KRASUKHA-2 (1L269)¹¹

The 1L269 Krasukha-2 is a ground-based EW system intended to neutralise Airborne Warning and Control Systems (AWACS) by jamming its radar at ranges of up to 250 kilometers. Besides, the Krasukha-2 can provide protection to ground forces on the march by jamming any airborne radar, radar-guided weapon system or radar-guided missile. The missiles jammed by the 1L269 are unable to reach their intended target because they are provided with a false target away from the real one. The false target is finally hit by the jammed missile or weapon system. The Russian Armed Forces use the 1L269 Krasukha-2 to protect the "ISKANDER" tactical ballistic missile units. The Russian KRET Corporation produces this

EW system integrated onto a tactical truck system (BAZ-6909 Special Wheeled Chassis).

KRASUKHA-4 (1RL257)¹²

The Krasukha-4 is basically the "big brother" of the Krasukha-2, a broadband multifunctional jamming system designed to neutralise Low Earth Orbit (LEO) spy satellites such as the US Lacrosse / Onyx series, satellites, ground-based radars, airborne surveillance radars, and radar-guided ordinance at ranges 150 to 300 km, and may also cause damage to enemy radar electronic warfare and communications systems. The complex functioning is based on creating powerful jamming at the fundamental radar frequencies and other radio-emitting sources. For jamming of airborne radars to protect the land assets against airborne threats by observing them using radar the ground jamming unit performs the following tasks: Detection, processing, analysis and recognition of signals

R-330ZH "ZHITEL"



embedded in the operating range of frequencies, and suppression of the main and side-lobe antenna signals of ground based radars for protection against airborne threats such as anti-radiation missiles (ARMs).

The Krasuha-4 EW equipment is mounted on two KAMAZ-6350 vehicles. The complex 1RL257 includes two trailers with special equipment. Both trailers are equipped with complex electronic equipment and antennas of various designs. One trailer has an antenna unit on a sliding bar, apparently intended for communication. On the roof of the second trailer a set of antennas is mounted in a distinctive configuration. The three parabolic antennas can be rotated in any direction and at a desired elevation. Thus, the complex EW "Krasuha-4" is able to transmit radio signals without restrictions in azimuth and elevation. Both machines use complex digital equipment with high performance characteristics.

Several reports are indicating that Krasukha-4 complex was successfully used in defending the Russian "HMEYMIM" air base in Syria that was attacked by armed, if not primitive, swarming drones¹³. More recently, the control unit of the Krasukha-4 was seized by the Ukrainian Army near the capital Kyiv on 23 March, 2022.

Conclusions

Analyzing recent conflicts has shown that the use of EW and a variety of electronic systems - not only military, but also civilian (dual use) - are essential to achieving mission objectives and include a vast range of mediums such as mass media, satellite, cellular, trunk communication networks, various social networks, departmental and amateur radio stations.

Russian EW development continues to utilize lessons learned

KRASUKHA-2 (1L269)



from previous conflicts to focus field testing of critical systems. Employment of these systems to ground forces, in turn, enables realistic capability assessment and contributes to Russia's short-to-medium-term EW strategy, which has been shaped by the experience its Armed Forces gained in various recent regional conflicts — namely, Syria, Libya, Karabakh and most recently, Ukraine.

In this context, it is worth citing Lieutenant General Yuri LASTOCHKIN, Chief of the Electronic Warfare Troops of the Armed Forces of the Russian Federation, who, when referring to a nexus between experience and EW capabilities, stated that, "over the coming years Russia must embark, among other activities, on the development of robotic means of radio-electronic suppression as well as disorganization of enemy radio connections and data transfer; but it must specifically prioritize the advancement of anti-drone warfare capabilities"¹⁴.

KRASUKHA-4 (1RL257)



Understanding the importance of EW can be challenging when compared to more tangible weapons such as stealth fighters or tanks. But today's "network-centric warfare" is less about hitting the enemy harder than it can hit you, and more about locating the enemy first while making it hard for it to do the same"¹⁵. That's why troops in the field need to be trained and equipped for the war of the electromagnetic spectrum, a battlefield that should be recognised as key to victory in any future conflict.

Given the evolution of modern warfare and increasing reliance on new means of combat, involving various types of drones, EW will remain of the strategic importance in Russia's military thinking for the foreseeable future. NATO's ground forces must recognize this importance, and consider Russian EW capability in future planning and operations activities. **LC**

THE STATE OF ENERGY SECURITY:

MOVEMENT FORWARD IN THE LAND DOMAIN

By Alexander LANDRY, CAN Army CAP, LANDCOM GENG, & Liam PATRICK, Political Sciences student at the University of Manitoba

NATO leaders agree on the Climate and Security Action Plan at the 2021 Brussels Summit.

INTRODUCTION

As the hundredth day of the war in Ukraine has now come and gone, the original tensions that had been latent since 2014 with the occupation of various Ukrainian territories by Russian-backed separatist groups have now heightened. The Russian Federation's outright invasion of another sovereign nation has plunged Europe back into a state of war on a scale arguably not seen since the Second World War. Moreover, this has brought certain geopolitical issues to the forefront, beyond the issues of tensions between NATO and the Russian Federation itself.

With the world slowly emerging from the now endemic effects of COVID-19, NATO nations and partner nations have all dealt with a variety of internal and external challenges, including but not limited to items such as rising inflation rates, food shortages, and specifically energy security issues. To this effect, these challenges have only been exacerbated by such tensions, growing steadily as the war in Ukraine continues. As such, it is unquestionable that, although the current geopolitical situation may resemble many decades ago, the Alliance certainly faces issues that vary greatly from yesteryear.

Amongst these challenges, one specific topic lies at the crux of the issue for the EU, NATO, and many other stakeholders at the political level moving forward. This is also one topic deeply entangled in the issues surrounding current NATO-Russia tensions as a result of the February invasion. To the point, this is that topic of energy security. As open conflict now rages in Eastern Europe, energy supply issues already identified only gain importance concerning the Alliance's own energy capabilities and member nations' reliance on natural gas.

Accordingly, as the Alliance is broad in its approach to the overall topic of energy security, underlining goals for the enterprise, specific tasks for its command structure, and mechanisms to be developed to monitor overall progress, this paper will analyze the specific issues of the underlying energy security crisis. Both within the scope of ramifications within the EU and the crisis's effects on the current developing situation in Eastern Europe, an outline of the state of energy security will be presented, with subsequent strategies moving forward within the Land Domain that NATO can adopt in moving towards energy sustainability and consequential dominance of its adversaries.

1.- North Atlantic Treaty Organization (NATO), "NATO Climate Change and Security Action Plan", 14 June 2021, accessed 25 January 2022, https://www.nato.int/cps/en/natohq/official_texts_185174.htm.

2.- EuroStat, "Where does our energy come from", 2019, accessed 01 February 2022, [https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html#:~:text=ln%202019%2C%20the%20energy%20mix,fossil%20fuels%20\(both%2013%20%25\)](https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html#:~:text=ln%202019%2C%20the%20energy%20mix,fossil%20fuels%20(both%2013%20%25)).

3.- A. Jaffe, "Can the US find enough natural gas sources to neutralize Russia's energy leverage over Europe?",

The Conversation, 31 January 2022, accessed 02 February 2022, <https://theconversation.com/can-the-us-find-enough-natural-gas-sources-to-neutralize-russias-energy-leverage-over-europe-175824>.

4.- EuroStat, "Where does our energy come from", 2019, accessed 01 February 2022, [https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html#:~:text=ln%202019%2C%20the%20energy%20mix,fossil%20fuels%20\(both%2013%20%25\)](https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html#:~:text=ln%202019%2C%20the%20energy%20mix,fossil%20fuels%20(both%2013%20%25)).

5.- Ibid.

ENERGY RELIANCE IN EUROPE

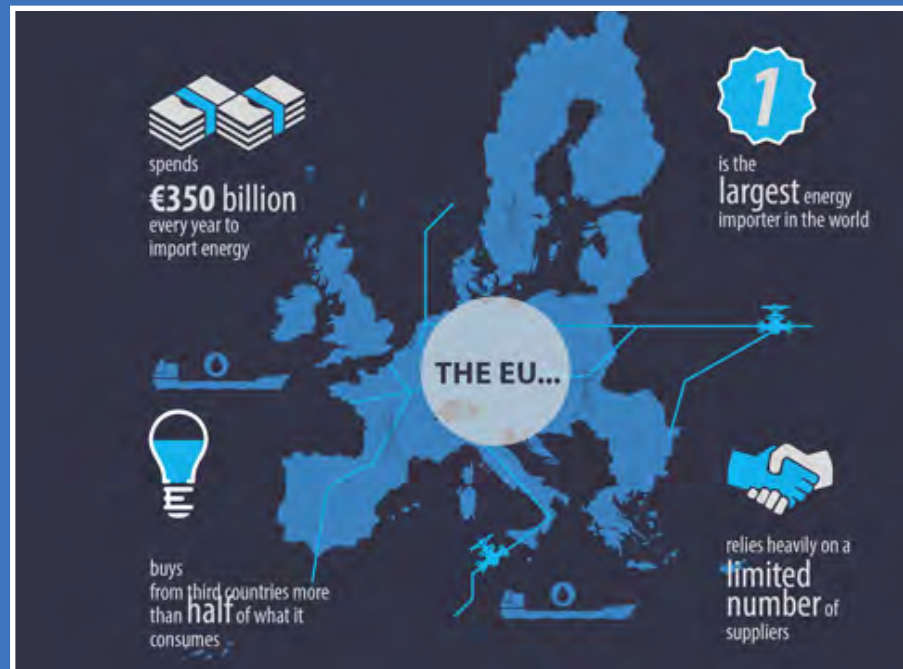
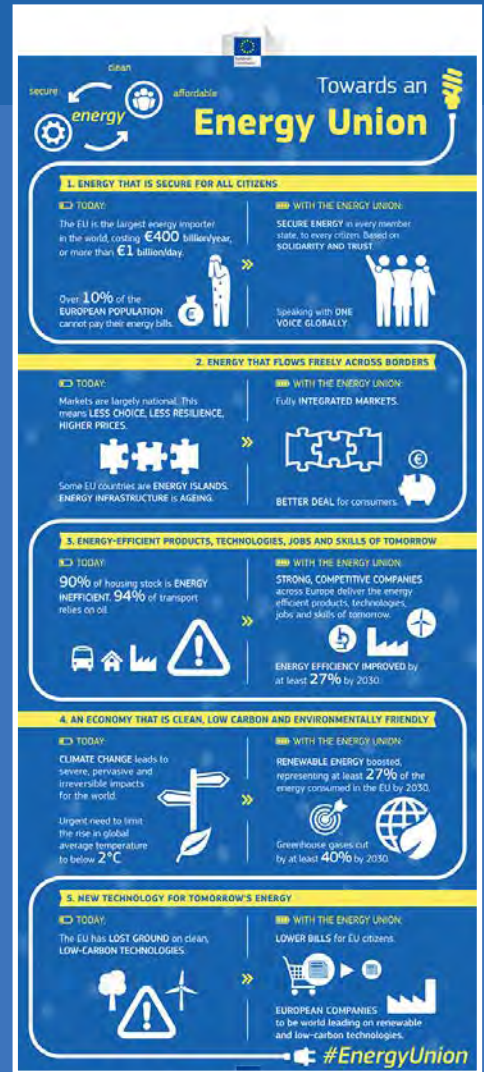
To begin illustrating the impact of energy security within SACEUR's AOR, it is of critical importance to frame the current state of energy reliance for the European Union (EU), the organization that constitutes the majority makeup of NATO framework nations. In 2019, research indicated that only 39% of the European Union's energy was produced within the borders of the EU, while the remaining 61% was produced and imported from other nations. These nations are primarily those within the vicinity of the EU, including Russia, Norway, Algeria, Libya, and Azerbaijan. The energy products imported to the EU are split into six different categories: solid fossil fuels, petroleum, natural gas, nuclear energy and renewable energy. The most consumed energy source within the EU is petroleum, making up 40.8% of the total products, with natural gas being the second most used, at 20.8%. Electricity rounds out the major energy consumption sources, being the third most consumed at 20.7%, however, 39% of the electricity produced is generated from burning fossil fuels and natural gas.

As most Europeans continue to rely on fossil fuels and sources of energy from outside of the EU, the emergence of such a reliance has put a strain on the ability to integrate more renewable sources of energy within the EU and, with it, NATO as well. To this effect, only 10.1% of all consumed energy within the EU are renewable and internal to the EU. Thus, when relying on 61% of your energy to be supplied by others, specifically in terms of fossil fuels and natural gas, one can only assume the consequences of one entity's refusal to deliver this energy source and turn off the many Trans-European pipelines. In fact, one only needs turn their history page to the 1973 OPEC-induced energy crisis to truly understand the realities of such a potential turn of events.

NATO'S POSITION ON ENERGY SECURITY

Figure 2 – Current Energy Sources of the European Union

As an organization, NATO does not have a singular part to play in energy security, mostly based on the fact that it stands as an Alliance of nations with different points of view on the matter. Moreover, as certain nations hold different positions on the international stage, some as users



6- M. McCall, "Canada & US at Risk of Energy Crisis: OPEC and energy security", BOE Report, 12 July 2021, accessed 01 January 2022, <https://boereport.com/2021/07/12/canada-the-u-s-at-risk-of-an-energy-crisis-opec-energy-security/#:~:text=The%201973%20energy%20crisis%20occurred,%2C%20Japan%2C%20and%20the%20Netherlands.&text=The%20embargo%20was%20a%20shift,oil%20supplies%20and%20causing%20shortages.>

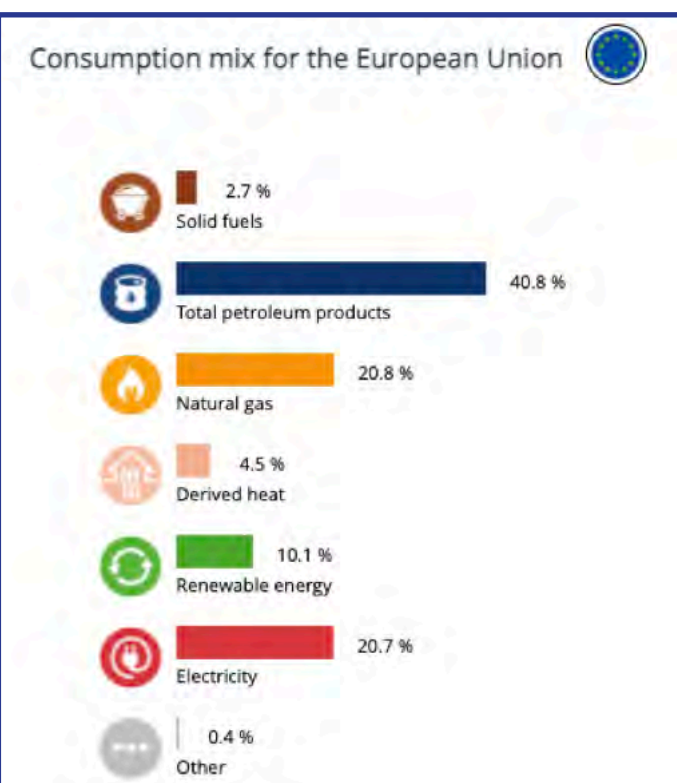
7- Ibid.

8- E The Economist, "Europe's energy crisis will trigger its worst neuroses", 15 January 2022, accessed 25 January 2022, <https://www.economist.com/europe/2022/01/15/europes-energy-crisis-will-trigger-its-worst-neuroses>.

9- E. Wald, "The EU contributed to its own energy crisis, but diversification can solve it", 24 November 2021, accessed 20 January 2022, <https://www.atlanticcouncil.org/blogs/energysource/the-eu-contributed-to-its-own-energy-crisis-but-diversification-can-solve-it/>.

regarding energy supply, both as a result of issues with supply lines from Russia as well as based on rise of inflation & cost of living. As an illustration on the individual level, consider that, in 2022, the average European household paid 1850 euros for gas & electricity compared to 1200 euros in 2020. This constitutes a worrisome jump in prices of more than 54% in two years along, greatly outpacing cost of living adjustments across the continent.

As such, with the Alliance at the political level, energy security is overseen by entities such as the Military Committee, the Petroleum Committee, and the Resilience Committee (formerly the Civil Emergency Planning Committee), setting objectives and courses of action enacted by various organizations such as the Energy Security Centre of Excellence. Energy security efforts within NATO mostly relate to three tenets:



1. Enhancing energy efficiency while maintaining operational effectiveness;
2. Seeking to reinforce resilience & self-sufficiency of NATO entities regarding energy provision; and
3. Continued promotion and awareness of the topic as a key issue for the Alliance moving forward.

Although the first and third points mostly deal with issues and efforts currently tackled by entities such as the Energy Security Centre of Excellence, the Environmental Protection Working Group, and the upcoming Climate Change and Security Centre of Excellence, the point on self-sufficiency and protection of assets is actually directly implicated in the current crisis

framework. It is therefore of specific importance to NATO in the Land Domain, and the item dealt with in this article.

RUSSIA'S ROLE TO PLAY

Pivoting to the crisis at hand, it is the Russian Federation, the largest manufacturer and supplier of natural gas within Eurasia and the world, which takes centre stage. To this effect, Russia is noticeably one of the largest energy exporters to the EU, providing an advantage of power to the nation in both economic and political terms. To see evidence of this lever of power in use, one only needs to look at how the country has sought to leverage payment in rubles from EU nations over the past few months to prop-up its struggling economy, burdened by sanctions. Moreover, it was just recently due to Finland and Sweden's formal applications to join NATO that the Russian Federation cut off provision of supplies to Finland.

Understanding that the means of distributing natural gas through the continent is through vast lengths of pipelines, although the flow of gas is generally through friendly Alliance-member nations, they do originate in Russia, providing the tap for control to an adversarial entity. These pipelines, such as the Druzhba or Nord Stream, are utilized and monitored by both the EU and Russia, however, Russia has sole control on the amount of natural gas that passes through these lines.

Recently, gas shipments to the EU through these pipelines have been significantly decreased, hence the reason for the large increases in energy costs. Prior to the invasion of Ukraine, Russia maintained that this decrease was mainly due to seasonal challenges and changed demand, including shifted focus towards Asia. However, post-February 24th, it is now evident that this is much more than an economic interest for Russia; this is the provision of a hegemonic grasp on Europe. Many European nations have outright ceased their import of Russian supplies, which originally destabilized the Russian economy in conjunction with various sanctions imposed by nations of the Western World. However, as the Kremlin undoubtedly recognized the reliance Europe has on its natural gas, it consequently placed the Russian state in a position to exploit said reliance in favour of their own political means and deterrence of the Alliance that ultimately



12.- M. Chance & L. Smith-Spark, "Tensions are high on Ukraine's border with Russia", CNN, 28 January 2022, accessed 04 February 2022, <https://www.cnn.com/2022/01/20/europe/ukraine-russia-tensions-explainer-cmd-intl/index.html>.

10- Ibid.

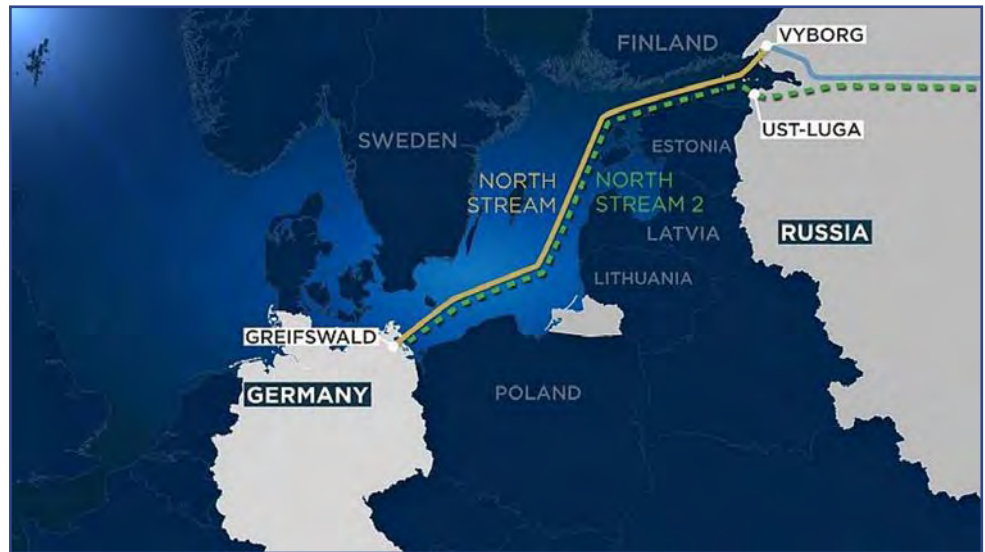
11.-NATO, "Relations with Ukraine", 11 January 2022, accessed 30 January 2022, https://www.nato.int/cps/en/natohq/topics_37750.htm.

must operate on consensus. For example, as of submission of this article to editing, Hungary continues to block an outright oil embargo on the Russian Federation within the EU, which is only one symptom of a larger discord among nations reliant on the resource.

ENERGY SECURITY AND UKRAINIAN SOVEREIGNTY

Accordingly, this is where NATO finds itself today - with an ongoing conflict between the parties of Russia and the NATO partner of Ukraine. Throughout the winter of 2022, over 100,000 Russian troops positioned themselves upon the Ukrainian border, subsequently invading the nation as part of a self-proclaimed "special military operation" on February 24th. Ukraine, a non-NATO member but partner state, has been seeking ascension to the Alliance for more than a decade, participating in various programs such as the Operational Capability Concept (OCC) Evaluation and Feedback program at the operational level, while also holding recurring staff talks with different component commands at the strategic level. While this is within their right as a sovereign nation to do, it evidently only aggravated Russia further, leading to their outright invasion as a sequel to the original 2014 occupation of various territories including Crimea. Overall, this action finds itself less than a decade removed from the initial incursion by Russia, and it has heavy implications on both the security and economic pictures in Europe.

It is important to note that, since the 2014 conflict, Ukrainian



sovereignty has remained a priority for NATO's military cooperation sections, seeing an enhanced partnership with the nation acted upon. These have included deepened relationships specifically in the land domain such as through the OCC program that Allied Land Command has previously illustrated in this publication. Moreover, condemnation of Russian actions has been consistent by almost all member states within NATO in parallel with the enhanced cooperation activities that have thus taken place.

PHYSICAL FRAMEWORK

The Nord Stream 2 is a proposed pipeline stretching across the Baltic Sea, from Russia to Germany, planned to be constructed in parallel to the original Nord Stream pipeline. According to Gazprom, the Russian state-sponsored company overseeing the project, the second pipeline was designed to "ensure a highly reliable supply of Russian gas to Europe" and that the pipeline will ultimately become "important when Europe sees a decline in domestic gas production and an increasing demand for imported gas". Behind these stated intentions from such a company is elicited the likely truth in the matter - that creating a Europe reliant on Russian gas is inherently in the interest of overall deterrence and the advancement of the Kremlin's objectives. Overall, since the invasion, Europe has mostly turned away from the proposed pipeline, but arguably at great cost as worldwide fuel prices have skyrocketed, leaving NATO nations scrambling to find alternative sources of fuel in wake of imposed sanctions on Russia.

Regardless of the stated objectives of the pipelines, one nation remains mired in the ordeal of energy security, this being Ukraine. The invasion has evidently created disturbances in gas flows, partly playing into the destabilization of the Russian economy itself that was so reliant on gas exports. Conversely, the Kremlin seems apathetic to the overall provision of Europe with its natural gas in a sense, creating an image of indifference to imposed sanctions. Its economy has since seemingly



13.- Gazprom, "Nord Stream 2", accessed 31 January 2022, <https://www.gazprom.com/projects/nord-stream2/>.

14.- Ibid

15.- S. Zimmermann, "What is Nord Stream 2 and how does it link to the Russia-Ukraine crisis?", EuroNews, 25 January 2022, accessed 26 January 2022, <https://www.euronews.com/2022/01/24/what-is-nord-stream-2-and-how-does-it-link-to-the-russia-ukraine-crisis>.

recovered from its initial shock, but questions remain on how long such an isolation from world markets can last. Accordingly, what Russia really seeks likely remains a stable economy and overall deterrence of the EU and NATO in pressing further East towards its borders. In short, although Nord Stream 2 and other pipeline projects with Europe are currently on hold with the invasion of Ukraine at hand, this conflict will not likely deter all future agreements pending the resolution of the crisis. To this effect, this has been indicated by comments made at the EU parliament in May 2022 regarding future normalization of the relationship with Russia post-Ukraine.

THE LAND DOMAIN'S WAY FORWARD

With the state of energy security now defined, the question therefore arises – what can NATO do about it? Specifically, how can we as advocates and operators within the Land Domain address the situation towards fostering energy security and cooperative security? The answer to be presented here, from a general perspective in preparation for such an energy-based conflict, is three-fold: via implication of energy security into our training structures, through participation in specific critical energy & infrastructure-based exercises, and through enhanced military cooperation with partners already affected by the consequences of the heightened energy situation.

1. Energy Security Training Integration

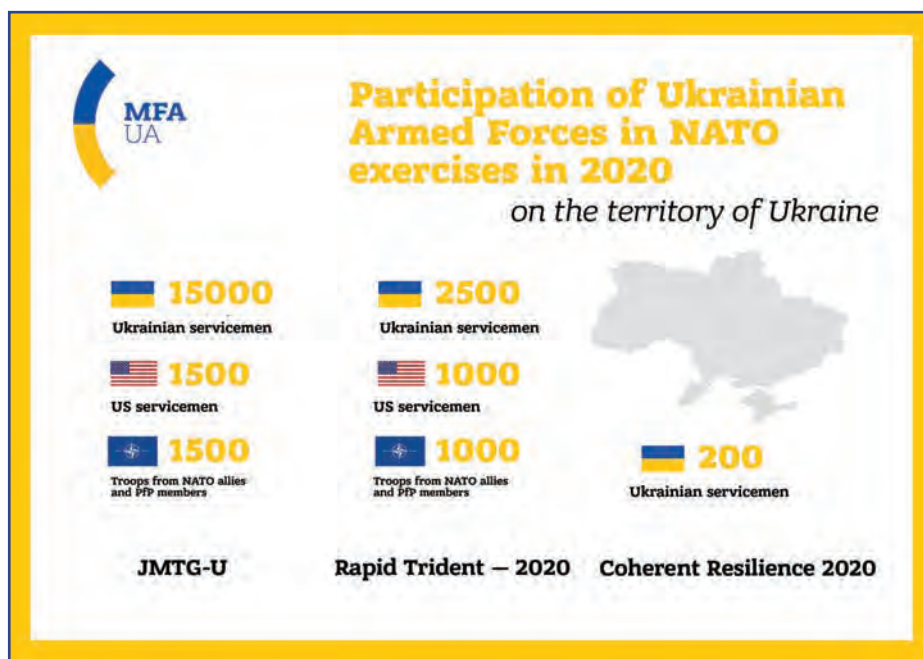
As a Multi-Corps Land Component Command (MCLCC) for NATO operations, much of our ability to oversee operations depends on our training basis, thus fostering capabilities through massively structured exercises relevant to the current operating environment in the land domain today. As such, with incorporation of potential scenarios based on energy security as well as other climate change-based consequences, we can enable our operational understanding of potential future problems, and this from a realistic standpoint.

For example, inclusion of energy security injects into upcoming exercises such as Exercises Steadfast Jupiter and Loyal Leda would not only enhance our understanding in the research for their scripting within the Master Event List, but further deepen our proposed reactions in developing courses of action for these posed problems, including their secondary and tertiary effects. Thus, through deriving these injects, implementing them as part of our training, and allowing Divisions to develop their reaction plans throughout battle rhythm events, we ultimately foster the capability at the tactical and even operational levels throughout the land domain.

As the Officer Directing the Exercise (ODE) of Exercise Steadfast Jupiter 2022, Major General Malinowsky outlines: “we are faced with ambitious exercise design, and we want training audiences to achieve as many training objectives as possible. This is best done by setting clear expectations, agreeing to the levels of ambition, and committing to the scripting process.” It is thus only natural to include such current issues as energy security as part of these training objectives, understanding the nature of the reality they impose. Moreover, with the invasion now having taken place and the situation becoming the new reality for the energy security posture, it only makes sense to begin training to face the new reality collectively within the Alliance moving forward.

2. Critical Energy Security Exercise Participation

Within the framework of training integration, pan-NATO exercises specifically geared towards energy security & cooperation already exist. Colloquially termed the CORE



exercises, Exercise Coherent Resilience has been the flagship tabletop exercises (TTX) of the Energy Security Centre of Excellence in Vilnius, Lithuania for the past few years. As described by the Centre of Excellence, “the focus of these exercises is on the resilience of energy infrastructure and energy supply in a range of regions and countries”. Accordingly, previous iterations have included studies on the Baltic states, the state of Georgia, the Caucasus region, and Ukraine.

The CORE series of exercises are ultimately meant to strengthen relations between NATO and EU entities regarding energy security and resilience. Additionally, the TTX is foreseen as an opportunity to enhance co-operation specifically relevant to the studied areas, including development of a common understanding of the possible threats that stem from energy security. In short, the exercise allows for specific identification

16. A. Sabadus, “EU, Russia, and Ukraine’s gas transit negotiations”, Independent Commodity Intelligence Services, 23 September 2019, accessed 04 February 2022, <https://www.icis.com/explore/resources/news/2019/09/23/10421334/ics-explains-eu-russia-and-ukraine-s-gas-transit-negotiations/>.

17. Joint Warfare Centre, “The Joint Warfare Centre hosts Steadfast Jupiter 2022 MEL/MIL Strategy Workshop”, NATO, 18 November 2021, access 15 January 2022, [https://jwc.nato.int/articles/joint-warfare-centre-hosts-steadfast-jupiter-2022-strategy-workshop#:~:text=STEADFAST%20JUPITER%202022%20is%20a,Support%20Forces%20NATO%20\(STRIKFORNATO\)](https://jwc.nato.int/articles/joint-warfare-centre-hosts-steadfast-jupiter-2022-strategy-workshop#:~:text=STEADFAST%20JUPITER%202022%20is%20a,Support%20Forces%20NATO%20(STRIKFORNATO).).

of weaknesses in existing energy security procedures, thus spurring further planning and research into these areas in anticipation of future NATO crisis situations.

With upcoming editions of CORE exercise series concerning the Central European Pipeline System, benefits exist for Allied Land Command to produce a Ground Liaison Element for such an exercise, allowing for further understanding of the energy security situation, and potential impacts any such NATO crisis regarding energy might have on the overall land domain.

3. Enhanced Military Co-operation Regarding Energy Security

Stemming from the mentioned CORE exercises above, recognition of Ukraine's pivotal role to play in the energy security domain is apparent, as two separate iterations of the CORE exercises have revolved around Ukraine specifically in 2017 and 2020. The most recent iteration, Exercise Coherent Resilience 2020, was held in Odessa in October 2020, using algorithms of critical situations concerning energy security in the Black Sea region. Overall, more than 200 experts took part in the exercise, including representatives from more than 20 agencies from the host nation, and various Alliance entities such as the ENSECOCOE, the Cyber Security COE, the Maritime Security COE, and the NATO delegation in Ukraine.

Understanding that the Black Sea region and the Baltic States are those most vulnerable at this time to energy security issues within NATO, it becomes of primordial importance that enhanced military cooperation take place with these partners, already embodied by Allied Land Command through various staff talks in partner states such as Ukraine and Georgia. Through the joint ventures of addressing these critical issues together, entities within the NATO Command Structure gain experience from partner nations that have already faced such crises. This information osmosis can even transpire through already established partnerships such as the Partnership for Peace initiative as well as the already LANDCOM popular Operational Capabilities and Concepts program that sees evaluation of partner nation units.

Moving forward, further outreach to these partners and refinement of operational capabilities through the leveraging of such organizations and nations will only bolster Allied Land Command's ability to work as an LCC facing hybrid threats. This includes through continued staff talks with various partner nations, continued support through programs such as the OCC. Moreover, ongoing information exchanges and TTXs with entities such as the Energy Security Centre of Excellence will only bolster the headquarters' capabilities in the domain, while also enhancing the

partnership among entities both within the NATO Command and NATO Force Structures.

CONCLUSION

In the 2020 Heritage Foundation report entitled NATO in the 21st Century: Preparing for the Challenges of Today and Tomorrow, Coffey and Kochis underlined that "since its inception, NATO has done more than any other multilateral organization to promote democracy, peace, and security in Europe and the broader transatlantic community with benefits that have rippled through the broader global community". Accordingly, it is unquestionable that NATO has time and again recognized the nature of the issues before the Alliance, oriented itself into a position to address them, and acted in ways that have benefited Europe towards achieving collective defence and cooperative security.

Ironically, although Coffey and Kochis underlined NATO's successes, they also emphasize in their report that "ensuring NATO can face the challenges of the 21st century while safeguarding and vitalizing collective defense – the heart of the Alliance – is the charge of the upcoming reflection period." This undoubtedly relates to energy security as the EU stares down a significant rise in energy costs related to a reliance on outside energy sources. In anticipation of future potential conflicts related to energy, and potentially aggravated by climate change, it is clear that NATO must continue to enhance its energy security posture & understanding. Accordingly, the Alliance will remain ready for energy security challenges within an increasingly complex environment adversely affected by outside actors and climate change alike. **LC**



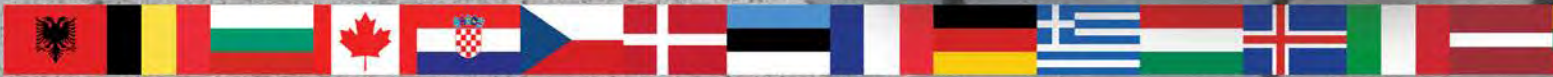
18.- Energy Security Centre of Excellence, "TTX Coherent Resilience 2021", accessed 15 January 2022, <https://enseccoe.org/en/events-and-projects/268/table-top-exercise-coherent-resilience-2021-33/details>.

19.- Luke Coffey & Daniel Kochis, "NATO in the 21st Century: Preparing the Alliance for Challenges of Today and Tomorrow", The Heritage Foundation. 10 August 2020, accessed 31 January 2022, <https://www.heritage.org/defense/report/nato-the-21st-century-preparing-the-alliance-the-challenges-today-and-tomorrow>

20.- Ibid



NATO ALLIED



LANDCOM MISSION

On order, LANDCOM serves as LCC in support of JFCs and as a CFLCC to provide theater-wide domain expertise to SACEUR. As SACEUR's principal land advisor, LANDCOM coordinates AOR-wide activities to effectively deter Russia and Terror Groups and ensure a trained, ready, and lethal land force for NATO.



XX



MND-N

ADAZI, LVA
MARCH - 2019



MGEN FLEMMING MATHIASSEN



XX



MND-NE

ELBLAG, POL
OCTOBER - 2021



BGEN ZENON BRZUSZKO



XXX



MNC-NE

SZCZECIN, POL
NOVEMBER - 2021



LGEN JÜRGEN-JOACHIM VON SANDRART



XXX



ARRC

INNSWORTH, GBR
DECEMBER - 2021



LGEN NICHOLAS BORTON



XXX



1 GNC

MÜNSTER, DEU
MARCH - 2022



LGEN NICO TAK



XXX



RRC-FR

LILLE, FRA
AUGUST - 2019



LGEN PIERRE GILLET



XXX



EUROCORPS

STRASBOURG, FRA
SEPTEMBER - 2021



LGEN PETER DEVOGELAERE



XXX



NRDC-ITA

SOLBIATE, ITA
MAY - 2022



LGEN LORENZO D'ADDARIO



XXX



NRDC-SP

VALENCIA, ESP
JANUARY - 2020



LGEN FERNANDO GARCÍA-VAQUERO



LAND COMMAND



STRATEGIC, JOINT & SINGLE SERVICE COMMANDS



SHAPE

GEN WOLTERS
MAY - 2019



JFCBS

GEN MIGLIETTA
JUN - 2022



JFCNP

ADM BURKE
JUL - 2020



JFCNF

VADM DWYER
AUG - 2021



LANDCOM

LGEN CLOUTIER
AUG - 2020



AIRCOM

GEN HARRIGIAN
MAY - 2019



MARCOM

VADM BLOUNT
MAY - 2019



NSHQ

BGEN STEPHENSON
JAN - 2021



XXX



MNC-SE

SIBIU, ROU
MARCH - 2022



MGEN DRAGOȘ-DUMITRU IACOB

NATO Force Integration Units



XX



MND-SE

BUCHAREST, ROU
JUNE - 2022



BGEN DORIN TOMA



XXX



NRDC-TUR

ISTANBUL, TUR
SEPTEMBER - 2021



LGEN LEVENT ERGÜN



XXX



NRDC-GR

THESSALONIKI, GRE
MARCH - 2022



LGEN SOTIRIOS KOSTAKOGLU



XXX



LANDCOM

IZMIR, TUR
AUGUST - 2020



LGEN ROGER L. CLOUTIER JR.

GEORGIA'S CONTINUED CONTRIBUTION TOWARDS NATO & REGIONAL SECURITY

By Georgian Ministry of Defence Office

For over two decades, Georgia has been actively engaged in contributing to strengthening the Euro-Atlantic and regional security. This was confirmed multiple times by Georgia's unwavering commitment and important role in the international missions. Georgia, as a future member of NATO, is ready to further contribute towards achieving common security goals and strengthening global peace and security.

Relations between NATO and Georgia began in 1992 when Georgia joined the North-Atlantic Cooperation Council (NACC) and galvanized in 2002 NATO Prague Summit when the country officially declared its aspiration to NATO membership. Since then Georgia's key foreign and security policy priority direction of NATO membership remains unchanged.

The first presence of Georgian Defence Forces (GDF) at the NATO-led international peacekeeping mission started in 1999 with platoon-sized unit deployment. Since then, 23 years later, Georgian soldiers have been serving shoulder-to-shoulder with the allied forces and was one of the largest contributing nations to NATO missions; deploying the second battalion to Afghanistan in 2012, participating in NATO's Operation Sea Guardian, and also in the NATO Response Force (NRF) with one light infantry company, as well as in the European Union Training Missions in Africa.

The high level of combat readiness, interoperability, professionalism, dignity and dedication of Georgian soldiers has been acknowledged many times by its international partners at the highest political levels.

Logistics capabilities of the GDF were vital to the collective effort of some NATO Allies and Partners during the evacuation process from Afghanistan. Georgia's NATO-standard infrastructure and streamlined logistic capabilities and procedures, including Host Nation Support (HNS) and Reception, Staging and Onward Movement (RSOM) capacity, ensured smooth evacuation and transit from Afghanistan. The GDF will continue cooperation with international partners in all existing formats for strengthening national and international security.

One of the best examples of NATO-Georgia cooperation is NATO-Georgia exercise series. In March 2022, Joint Training and Evaluation Centre hosted third iteration of the exercise. NATO Land Command serves as a mentor to GDF General Staff, while the NATO-Georgia Joint Training and Evaluation Centre (JTEC) will have the role of Officer Directing the Exercise (ODE), along with the Georgian Defence Forces acting as the Officer Conducting the Exercise (OCE).

With strengthened defence capabilities, level of interoperability, training opportunities and modernized infrastructure the country is ready to continue supporting peace and stability and actively considers modalities of potential engagement in the Allied efforts to ensure peace and security in the Euro-Atlantic area and beyond.

Georgia's active participation in international peacekeeping missions and operations once again demonstrates that Georgia is a reliable and responsible partner and valuable security provider nation. **LC**



WELCOME TO LANDCOM

LCOL KARTSIVADZE

By Brian ANDRIES, US Army MAJ, LANDCOM PAO



There are moments in life when things are not going as we hoped they would. However, with hard work, sacrifice and bit of luck, I truly believe that everything can be changed in a positive direction.

1. First off, how does it feel to be the first Georgian Officer to be stationed at NATO Allied Land Command?

Firstly, it is a great honor to be the first Georgian officer representing my country in LANDCOM, and I would like to express my gratitude to the Georgian Ministry of Defence and Defence Forces, as well as LANDCOM for this great opportunity. Secondly, it is a great responsibility as well. I will have to represent my country and LANDCOM in a very professional way, including building good relations with counterparts from NATO and partner nations. I am very motivated to have a successful mission here and to support my country and other partner countries in order to enhance their interoperability with NATO.

2. What do your friends and family think about your assignment?

Of course my family, colleagues and friends are happy and proud that I was selected for this assignment, especially as the first Georgian officer in the LANDCOM. They are sure and aware that, I will do my utmost to be a good representative of my nation in the NATO Command Structure.

3. What made you want to serve as an officer in the Georgian Defence Forces?

It is about patriotism. It is my personal opinion that, as a soldier, you have an opportunity and are able to give your country more than any others can. In addition to this, you can set a good example for others with your lifestyle and professionalism. After graduating from high school, I had a desire to serve in the army, even as a conscript. However, there was a possibility for me to enter in the military academy and become an Officer. I took the chance and as you see right now I am a Lieutenant Colonel serving my country for almost 23 years.

4. What is your greatest memory during your time as a Soldier?

Frankly, there are several greatest memories, however, if I could select one, that is, when I graduated from military academy there was a moment which I will remember forever - During the graduation ceremony I was given the diploma and the rank of Lieutenant. Thus I and my family were so proud with this success and achievement.

5. What are your hopes and plans for you and your family in the future?

The hope is that, my family stays healthy. Since we are going to spend some time in Izmir, and Türkiye is a very interesting country with its cultural landmarks and cuisine, there are so many interesting things to do and see. So I hope we will have a chance to get to know the culture better. I have been to Türkiye before in my work capacity, however, I am glad that this time around with my family I will have more opportunities to get to know both the country and the people better.

6. If you could give anyone some life advice, what would that advice be?

There are moments in life when things are not going as we hoped they would. However, with hard work, sacrifice and bit of luck, I truly believe that everything can be changed in a positive direction. I would advise everyone that we must never let pessimism take over our lives. A positive approach towards life and optimism will lead us in the direction of a desired outcome. **LC**

2021: THE YEAR OF THE CREVAL

By LANDCOM G7 Evaluation Team

AS

2020 came to a close, the LANDCOM G7 Evaluation team sat around a conference table in their basement offices. The coffee was brewed with care by the Italian Staff Officer, yet the atmosphere was one of relief mixed with anxiety. The 2020 season had been a successful year, but all eyes turned to the coming year, and the challenges felt daunting. The pandemic had made the operational environment even more complex and uncertain. Now the team had to plan and resource three Corps-level Combat Readiness Evaluations (CREVALs) while ramping up the education program that was decimated by course cancellations in 2020. The foundation for the 2020 evaluation methodology laid out in Allied Command



Operations (ACO) Forces Standards Volume VII – Combat Readiness Evaluations for Land HQs and Units (AFS vol. VII) had not been adequately spread through the NATO Land Domain. More importantly, the team had just received a



crash course on LANDCOM Commander's vision of Land Evaluation on improptu the fly in Istanbul with NRDC-TÜR and RAF Fairford in UK with the ARRC. The task all seemed overwhelming for seven officers and one NCO in

the depths of the LANDCOM Headquarters.

2021 would be a watershed year for the program, and as we arrive near the one-year anniversary of the team receiving that mandate, let's take stock in the accomplishments of the program.

With the task of CREVALing three Corps on the horizon, you would imagine educating the force would become a lesser priority. On the contrary, the accepted all CREVAL course requests for the year and even added an additional one for good measure. By the conclusion of 2021, LANDCOM's

Evaluations Section had resourced five MTT Courses, three LANDCOM-led ACO courses, and educated more than 454 professionals across the land domain. In the summer ACO

course, the team accepted and trained 151 students in one shot. The Romanian education OPR bent over backward to educate the field, and building relationships with other G7's teams would pay off in the near future.

Now, how do you evaluate three Corps at the same time? First, you build the infrastructure that starts with the LANDCOM OPR Teams. Five individuals were selected, two of which would only be able to begin the process before they rotated out of the HQ. Generally, the accepted procedure is to appoint both a primary and deputy OPR to provide depth and flexibility. But with a section of seven that would shrink to five after the summer, the decision was made to assign only one OPR per CREVAL. The three teams were composed primarily of LANDCOM personnel using a systematic approach that heavily relied on their divisional partners in the HQ. Starting first with the nominations of Evaluation Team Leaders and Area Leaders, then recruiting Subject Matter Experts, and finally filling holes with partners from the GRF(L)s and the rest of the community of interest. The team wasn't perfect or 100% resourced, but more than enough to deliver quality assessments on behalf of COM LANDCOM and SACEUR. In the end, the teams fielded over 150 evaluators to support the CREVAL of NRDC-ESP as the Warfighting Corp HQ, RRC-FR as the NRF LCC, and MNC-NE as a Regional LCC. Each OPR perfectly orchestrated over 40 days of TDY for each team.

During the Corps CREVALs led by the LANDCOM Commander, the team experimented with an approach that evolved the way evaluations in the NATO Land Domain were conducted. The 2020 version of AFS Vol. VII opened the door by moving away from a "check the block" system to an assessment-based system. In 2021, LANDCOM moved the ball even further afield by tying procedural performance to tactical outcomes; ensuring the standards in AFS vol. VII not only guaranteed readiness and interoperability, but also manifested success in the exercise. As LGEN Cloutier often expressed to his evaluations teams "Winning Matters." Secondly, LANDCOM expanded the Field Evaluation phases from 96 hours to nine days, and added a Mid-Field Evaluation Review. The cumulative effect of these two procedures was the ability to draw more foundational/systematic conclusions about the Corps HQs while also allowing them to grow and learn in the process. Finally, the teams fully embraced the concept of Teaching, Coaching and Mentoring by climbing into the foxhole with the evaluated HQs and sharing best practices. The evaluation teams made themselves available and provided additional resources to help the evaluated organizations throughout the year.

Last but not least, the CREVAL monitoring program landed heavily on partners throughout the NATO land domain. In 2021, CREVAL monitoring activities increased by almost 40%. Never to shy away from a complex or difficult problem, the U.S. Marines Corps OPR developed a regional

resourcing strategy to mitigate potential COVID-related disruptions. He and ACOS G7 coordinated and facilitated folks to support the CREVAL program, but in the end, all monitoring activities were adequately resourced and all National CREVALs were validated.

In 2022, the team at LANDCOM is once again committed to moving to the goalpost and setting new higher standard goals for the CREVAL program. The team in partnership with their G/J7 colleagues from throughout the NATO land community, Centers of Excellence, Training Centers and representatives from National Evaluation Teams is set to reshape the foundation of the program in 2022, principally through the revision of the AFS Vol VII. The intent is to create a standalone document that better integrates the new land forces requirements, OCC E&F program as well as the lessons learned. Since the release of the 2020 version of AFS vol. VII, LANDCOM has invited experts in evaluations to attend two to three workshops to help craft the new evaluation guide for NATO Land Forces. The Corps CREVALs in 2022 will also look a little different due to more than 55% of each evaluation team being made up of augmenties external to LANDCOM. This goes far beyond the 30% mutual support mandate laid out in AFS vol. VII. The purpose of this is twofold:

- 1) Build the competencies learned in the Corps CREVALs throughout the Land Domain.
- 2) Bring in more diverse voices, experiences, and expertise to the highest level of NATO evaluations.

For the education program, the team is committed not only to continue executing as many courses as possible but also to enhance the quality of the course. Adding new resources, new lectures and better collaborative syndicate work to help increase the quality of potential evaluators. For the second year in a row, the monitoring program will rely mostly on the GRF(L)s and the target once again has increased. Lastly, 2022 will be the year of evaluation partnership. The goal is enhancing partnership with organizations operating in the NATO land domain, but also reaching out to other partners to see if there are more resources available to enhance how NATO evaluates land forces. Some partnerships the sections hope to build on in 2022 are with the training centers throughout NATO and beyond, interactions with national assets, and U.S. Army Europe and Africa.

If you are interested in being an evaluator, monitoring a NATO evaluation, or taking part in the revision of the AFS vol. VII, please contact the LANDCOM G7 Evaluation Section. **LC**



DYNAMIC FRONT 21

By Daniela VESTAL, 7ATC PAO

Dynamic Front 21 came to close Sept. 20, 2021, as the last of the Soldiers from the Illinois Army National Guard began packing their gear and getting ready for the trip back to the U.S. from the Polatli Training Area in Türkiye that served as their home for the last month.

"I am extremely proud of the Soldiers in our battalion for everything they accomplished throughout this exercise and all the hard work that went into the preparation for it," said Lt. Col. Justin Kramer, battalion commander, 2nd Battalion, 122nd Field Artillery Regiment, 33rd Infantry Brigade Combat Team, Illinois National Guard. "We accomplished the goals of this exercise and met our training objectives. This primarily included interoperability and communication between fire support platforms with our allies. The phenomenal cooperation enacted by our allies enabled sharing of information and best practices throughout the exercise. It was an honor to be the first National Guard unit hosted by Türkiye for a NATO exercise and their hospitality went above and beyond."

The Soldiers are part of a second phase of Dynamic Front 21, which was added this year to allow the exercise to expand for the first time into Türkiye. The move to add a training location in Türkiye was doubly significant as Dynamic Front 21 brought the NATO Allied Land Command's commander to serve as the exercise's senior trainer.

"This exercise is critical to building the readiness and interoperability amongst NATO allied and partner land forces, and executing a second iteration allows us to expand our scope of training," said Lt. Gen. Rodger L. Cloutier, commander of NATO's Allied Land Command in a press release about the exercise. "I'm excited to have these forces shooting, moving, and communicating together in Türkiye, the host nation of NATO Allied Land Command, for the first time in Dynamic Front history."

Dynamic Front first began as a small artillery-fires exercise at Grafenwoehr Training Area, Germany, in 2016. The next year saw the exercise expand dramatically with participation from nine allied nations and focus a portion of the training on the integration of the Artillery Systems Cooperation Activities – a series of protocols that digitally link the artillery systems of ASCA-member nations for seamless execution of fires missions.

In the six years and five iterations since its start, Dynamic Front 20 having been cancelled due to COVID-19 global pandemic, the exercise has grown to see more than 30 nations participate in locations that now span five locations in four countries across Europe – Grafenwoehr Training Area and Weisbaden, Germany; Torun Training Area, Poland; Adazi Training Area, Poland and Polatli Training Area, Türkiye.





"Dynamic Front has progressed every single year," said Col. Peter Sittenauer, exercise director for Dynamic Front 21 and chief of fires for U.S. Army Europe and Africa. "As we continue to work on interoperability, we learn more and we have a firmer idea of where we want get the next round."

This year's Dynamic Front focused on U.S., allied and partner nations training together to build capacity along the three tenets of interoperability – human, procedural and technical – while developing solutions to gaps and limitations in the theater fires complex, multi-echelon fires and improving interoperability at the tactical level.

"Every time we do this, it reassures us - going back to our exercise objectives - how important Dynamic Front is," said Sittenauer. "There is no other exercise we do within U.S. Army Europe and Africa, amongst the alliance, that is so focused on ensuring that we are continuing to develop a theater-wide enterprise amongst the alliance. As we do this Dynamic Front, we are identifying things we need to do next year and we create more challenging exercises to make us more ready, more resilient and more interoperable."

Teams from LANDCOM Staff participated in TAC 1 and TAC 2 with a total of eight personnel to support the LANDCOM Commander as the Senior Trainer. During TAC 1, a team from LANDCOM integrated with USAREUR-AF Exercise Control in Grafenwöhr, Germany. The focus for the LANDCOM team was to contribute to LC and USAREUR-AF partnership and focus on interoperability issues. LTC Munoz Joint Fires and Effects Branch Head was the LC lead, and together with LTC Jens Hermann (G2), LTC Max Sanchez (G4), and LTC Claudia Bredow (G3), the

LC team worked as part of the EXCON: focussing on identifying interoperability issues between the Partners and Allies.

During TAC 2, LTC Bredow as the lead Observer Coach Trainer (OC/T) and SGM Fragozo serving as the OC/T for the Spanish NATO rResponse Force Battery, integrated with the TUR EXCON and USAREUR-AF Higher Control. LTC Sanchez (G4) and Maj. Crawley (G6) focused on logistics and CIS issues and documented lessons identified to ensure a positive development towards the next iterations.

LC



1GNC'S ALLIGATOR SWORD 2021

Preparing for 21st century battles

1GNC's Public Affairs Office

In November 2021, 1 (German/Netherlands) Corps (1GNC) led a Command Post Exercise in conjunction with the German Army Warfighting Simulation Centre in Wildflecken, DEU. Exercise Alligator Sword 2021 integrated several units under the umbrella of 1GNC's command and control. 1GNC served as a Professional Training Platform to facilitate the national certification of the 10th (German) Armoured Division, while additionally providing the Norwegian Brigade North and the Multinational Division Centre (MND-C) with the opportunity to train against a peer enemy within a multi-domain environment. The participants faced two opponents. Firstly, the peer enemy created within the simulation. Secondly, the COVID-19 virus. At the start of the exercise, Commander 1GNC Lieutenant-General Andreas Marlow, stated: "The pandemic is serious, but if anything it offers us an opportunity to demonstrate our resilience."

NATO has placed a renewed focus on the ability to conduct warfighting in response to the increasing instability on the boundaries of Alliance territory. The Alliance aims to deter any potential enemy by demonstrating its ability to be decisive in armed conflict and harnessing the continued support of all member states for Article 5. Exercises like Alligator Sword 2021 prepare the military for future battles that will be very different

from the battles of previous conflicts.

The Land Battle

Alligator Sword 2021 portrayed an operating environment that forced the training audience to act in the physical, virtual and cognitive dimensions. The ability to simultaneously manoeuvre across all three dimensions is crucial in a hybrid and highly informational environment. In the physical sense, the Corps applied a proven tactical framework: fight the deep battle, synchronise the close battle and secure the rear area. The Corps was able to rapidly converge capabilities from multiple domains to achieve a marked advantage over the

"The pandemic is serious, but if anything it offers us an opportunity to demonstrate our resilience."

enemy. Ground formations operated dispersedly with the ability to concentrate combat power rapidly at decisive points to reduce the enemy's options, and ultimately disintegrate the enemy force.

In a cognitive sense, warfighting brings renewed appreciation for deception operations. Within Alligator Sword 2021 deception was built into all tactical plans, designed to mask own actions and create ambiguity with regard to NATO's intentions towards the enemy. In return, the enemy applied deception by reinforcing its conventional military efforts with hybrid actions. Commanders were challenged to develop a comprehensive understanding of the operating environment and be sensitive to forms of hybrid action that they had not encountered before. They found that applying a comprehensive approach is highly instrumental to effectively assess and respond to complex hybrid threats, which in most cases cannot be dealt with by military means alone.

The comprehensive approach within Alligator Sword 2021 was built on integrated structures at various levels of command. These structures supported the Host Nation's resilience, facilitated the population's access to basic needs and were instrumental in mitigating harm to the population. Commanders, through strategic communication and the way operations were conducted, aimed to create confidence within the population they wanted to protect. Force was applied with precision at all times in order to avoid harmful effects on the population as much as possible.

"This exercise was valuable for the Corps Headquarters as much as for the training audience. Routine under stress can only be achieved through intensive training. Although 1GNC functioned as EXCON/HICON during Alligator Sword 2021, the demands that the training audience put on us in terms of command and control were invaluable to perfecting our operational concepts and Standing Operating Procedures", said LGEN Andreas Marlow, Commander 1GNC, in his speech

at the end of the exercise. "During two weeks of exercise, we made great progress in conducting a high-intensity battle against a peer enemy attacking NATO. We demonstrated that our doctrine works."

Valuable Lessons

After multiple deployments to Afghanistan and NATO Response force commitments, 1GNC is now firmly on the path to improve its warfighting capabilities. Taking note of the deteriorating security situation in Europe, the preparations for the upcoming NRF2023 are clearly shaped in the context of allied defence. Exercises like Alligator Sword 2021 provide valuable lessons that help to develop the parameters paramount to winning a 21st century conflict.

Synchronisation of fires - In the Alligator Sword 2021 scenario, the enemy fielded considerable forces to attack and occupy the contested battlespace. The NRF, as the initial response force, could do little more than contain the enemy. Only after significant reinforcements arrived in theatre could NATO go on the counter offensive. Even then, own ground forces numbers more or less equalled the enemy. Since there was no clear case of escalation dominance, the exercise demonstrated that the key to winning the tactical fight is having the flexibility to direct combat power to key targets at our moment of choice. This applies especially to the deep battle.

During the planning phase of the operation and shortly prior to the start of the exercise, the Corps conducted rehearsals aimed specifically at the deep battle. Covering the initial stages of the operation, all subordinate commands contributed to the synchronisation of (joint) fires and ground manoeuvre. In line with 1GNC's 'Corps Warfighting Concept', subordinate formations were reinforced with ground-based Fire Support Units, consisting of a mix of howitzer and rocket artillery battalions. The training audiences integrated these capabilities into their organic fire support systems to build

a reinforced sensor-to-shooter system, delivering precision-guided munitions to targets across the battlespace. The Corps' target set was engaged with great flexibility

"During rehearsals the Corps experimented with a Digital Map Table. Wearing Virtual Reality goggles, users were able to manoeuvre through the battlespace, providing them with a much better understanding of the terrain and battlespace dimensions than any two-dimensional geographic data would have provided. The Digital Map Table proved an extremely useful asset in the process of defining the key decisions that had to be taken during the operation."



and caused the disruption of the enemy's decision cycle.

Rehearsals - Rehearsals demonstrated their usefulness on multiple occasions during the exercise. While 10 (German) Armoured Division conducted a Forward Passage of Lines with Multinational Division Centre as ordered, it was unexpectedly tasked to turn west and seize an alternative objective. This objective was initially assigned to Norwegian Brigade North. As the brigade was fixed in engagements with the enemy the tactical situation provided an opportunity for 10th Armoured Division to exploit success. To facilitate coordination on the battlefield, the division was also tasked to temporarily assume tactical control of the brigade. Such a complex manoeuvre would not have been possible in the given timeframe if both commanders had not been aware of each other's operations in detail. And still friction could not be avoided. The complex manoeuvre reduced situational awareness at the lower tactical levels, regrettably resulting in a number of 'friendly fire' incidents. Although these incidents were unfortunate, they proved to be a valuable learning experience.

Rear Area Command - The dimensions of the battlespace at Corps level reintroduced the requirement for a Rear Area Command (RAC). In order to secure the rear area, manage the battlespace and interact with relevant logistic facilitators, a tailor-made subordinate command must be made available to the Corps. The responsibilities of an RAC far exceed those of a Joint Logistic Support Group (JLSG). The RAC would, for instance, be in a command relationship with Corps Troops and any other formation assigned to the rear area. The RAC would possibly also be responsible for a large part of the force's support to Host Nation resilience, strengthening civil preparedness and ensuring continuity of government. During Alligator Sword 2021, in the context of an experiment, the German Division Schnelle Kraefte (DSK) performed the role of an RAC. Their lessons identified provided an important stepping stone for 1GNC to further develop the structure and capabilities needed to deploy an RAC.

Corps Troops - On the issue of Corps Troops, 1GNC refers to SACEUR's Corps Troop Concept. In discussions with the Framework and Partner Nations, 1GNC pursues fixed affiliation with specific units and formations to ensure continuity in exercises and improved force integration. This affiliation is not limited to traditional warfighting capabilities such as army aviation, air defence, long-range fires and sustainment forces. As the Corps is expected to combine kinetic and non-kinetic effects in the continuum of operations, there is a growing demand for Information Operation capabilities at Corps level.

Information Assessment and Engagement - Especially important in this context is the ability to conduct Information Assessment and Engagement. The Information Environment (IE) is increasingly used by states, non-state actors and organisations to pursue their objectives. Military planning and operations must be predicated on an appropriate

analytical appreciation of the IE. A clear understanding of key audiences and their information activities are a prerequisite for successful 21st century operations. During Alligator Sword 2021, the IE was portrayed via a scenario-based script as well as through simulated press and social



media. The training audience fielded a variety of Information Operations staff and capabilities, to an extent relying on reach-back with national centres to deliver the required assessment and production. There were some outstanding examples of information products delivered to the exercise. In general terms, Information Assessment and Engagement remains an area in need of investment. NATO's adversaries have invested heavily in the capability to influence the operating environment through (social) media. Failing to catch up will lead to NATO operations being outmanoeuvred in the IE. 1GNC is very conscious of the matter and is making a targeted investment through experimentation (Experiment Hashtag), in conjunction with the NATO Command Structure and Framework Nations.

Conducting an Exercise in the Middle of a Pandemic

Alligator Sword 2021, with over 1200 exercise participants from a total of 14 nations, demonstrated that an exercise with international participation can be carried out safely during pandemic circumstances. Covid-19 numbers in Germany were significantly higher during the exercise period compared to the previous months. In addition, soldiers from other nations and thus possibly from high-risk areas were involved in the exercise. From the onset it was clear that the exercise had to be carried out in strict compliance with the 2G-Plus rule. This meant that only healthy and fully vaccinated or recovered people could take part in the exercise, who in addition had to undergo daily rapid testing. The few Covid-19 cases that did occur originated outside of the exercise. Those cases were quickly detected and quarantined and after recovery returned to their home bases. Tightly controlled infection protection measures ensured that no transmission occurred between exercise participants.

Conclusion

The primary objective of Alligator Sword 2021 – to facilitate national certification of 10 (German) Armoured Division – was met; the division passed with honours. In parallel, the Norwegian Brigade North and the Multinational Division Centre gained valuable training as they operated in a multi-domain environment, meeting a peer enemy in combat and indirectly supporting the division's training objectives. The collaboration between 1GNC and these formations is well established and is worth to continue through future training. 1GNC is well accustomed to the role of a Professional Training Platform, building exercises that allow level 6 and level 7 formations from the Framework Nations and partners to train in a multi-domain and comprehensive environment. The Corps capitalises on exercises like Alligator Sword 2021 to correct experimentation in pursuit of its primary operational focus: to demonstrate its warfighting



"Success is not final, failure is not fatal, it is the courage to continue that counts."

Winston Churchill

LOGISTICS OPERATION PLANNING MTT PROMOTE GOOD RELATIONS & UNDERSTANDING AMONG UKRAINE, ALGERIA & NATO

BY WOLFRAM HENKIES, GER ARMY LTC, & ANDREAS KERSTJENS, NLD ARMY LTC, LANDCOM G4

Practical cooperation is a two-way street with both sides benefitting from the experience and expertise of the other. With that in mind, LANDCOM's G4 Division has conducted two, one-week courses to Ukraine and Algeria about operational planning in the logistic domain.

Having the same understanding is key - We as Logistic planners have to comprehend and fully integrate in NATO's Operational Planning Process. Logistic input for a Joint Operational Planning Process. Doing this right will significantly contribute to success of deploying and sustaining an Allied Joint Force. That is the aim of this training.

LTC Dré Kerstjens (NLD A) led the LOPP MTT in Ukraine and LTC Torsten Süss (GER A) was in lead of the course in Algeria. Both of them were accompanied and supported by members of the G4 Division as subject matter experts.

To reach the aim of the course, the training audience was introduced the operational planning process at all pertinent levels, focusing on the operational but highlighting the links and the required interaction between the strategic/political level to the operational level and then down to the tactical Components Command level. The training audience learnt the different steps of the planning phases (mainly phase 1 till phase 3b), and were also able set them into the context of operational level logistic

requirements and planning. The participants received specific logistic planning tasks dedicated to the different phases. The students presented their work of each session in order to review the whole planning construct, recognize the importance of logistic subject matter expertise, and promote the inclusion of logistical input into the planning process.



ALGERIA

Furthermore, during this training the team provided an overview about NATO Basics in terms of principles, mission, tasks and historic background, as well as touched activities such as the development of capabilities and highlighting the importance of the ongoing work strands with partners within the different forums and formats. Algeria, as one of the important partners within the Mediterranean Dialogue, was highly appreciated with their high number of attendees (30 participants), coming from all services and territorial forces including the Gendarmerie.

Additionally, lectures about NATO logistics, processes and principles were also provided to the students in order to show them the different roles, responsibilities and authorities within NATO logistics (e.g. Nations and NATO entities such as JSEC or SJLSG) and how the span between the ultimate responsibility of a nation and the collective responsibility of NATO can be bridged.

The LANDCOM Team experimented with a new curriculum for the training, to make it more attractive, understandable and easier to follow, given the limited amount of time.

“It was good that we had such a mixed and experienced team. Everybody was very cooperative and supporting each other,” concluded LTC Torsten Süss, after seeing the outcome of both weeks.

In the beginning there are always some challenges; overcoming language barriers, understand each other’s culture and all different personalities in the group.

According to SSG Nicholas Vochatzer (USA-A), the LANDCOM team was pleased by the Host Nation Support and hospitality the team received. Interactive tasks and discussions brought the whole team further. And it is not only the participants learning, we were also learning from these well experienced Officers.

LTC Olena Kolosova (UKR-Army), Head of the International Cooperation Group of the Logistics Forces Command of the Armed Forces of Ukraine, thanked the NATO officers for their work and noted that these are not the last courses and further such events will only promote close cooperation between Ukrainian and NATO partners.

In the end, it is not all about NATO logistics; it is about multinational understanding, respect and building relationships for the future in combination of delivering quality. With a team of NATO staff members, coming from different nations, it showed that we were supporting the exact same goal, we are all NATO. And with the very positive feedback of the participants, it were two very rewarding MTT’s. **LC**

UKRAINE





LANDCOM's first CMIC/ CMI Mobile Training Team to Colombia

By Swen DORNIG, A-4 DEU, LANDCOM G9 Stability and Outreach Branch

Colombia is NATO's first partner in Latin America, and NATO has been working together with Colombia since 2013. Following the successful implementation of the Individual Partnership and Cooperation Programme in 2017, a second Individual Partnership and Cooperation Programme was signed in May 2019. This Programme formalized the recognition of Colombia as a NATO partner, and opened access to the full range of cooperative activities that NATO offers, setting the stage for MILCOOP activities with LANDCOM.

From 6-10 December 2021, LANDCOM conducted its first Mobile Training Team (MTT) in Colombia. In an effort to increase the interoperability and deepen the partnership between NATO and the Colombian Armed Forces, the training modules addressed both CIMIC/CMI and Human Security related considerations.

The MTT emphasized the need for a comprehensive approach in CIMIC/CMI and provided an overview of CIMIC requirements during operations planning and execution. Specifically, the MTT explained the importance of CIMIC as a joint function and its applicability to all types of operations. With a view to enhance the protection of the civilian population from the adverse impacts of armed conflicts, the curriculum also included the following training modules: Women, Peace and Security (WPS), Children in

Armed Conflict (CAAC), the Protection of Civilians (PoC) and Cultural Property Protection (CPP).

Since the partnership between NATO and the Colombian Armed Forces should be mutually beneficial, members of the MTT were eager to hear about Colombians own CIMIC



capabilities. Colombia has adopted the US Civil Affairs (CA) doctrine in accordance with their own needs and has a robust CIMIC/ CMI structure in all services of the military; conducting domestic CIMIC successfully in assistance of its own population. The training was completed by lessons learned and identified from the previous NATO-led operations and exercises.

The MTT concluded with a ceremony hosted by COL Alvaro Cruz, Director Military Diplomacy, and Mr. Swen Dornig, LANDCOM's Section Head Human Security and MTT team leader. As a sign of partnership and appreciation, Mr. Dornig also had the honour to present, on behalf of LANDCOM's Commander LGEN Roger L. Cloutier, a crest to COL Alvaro Cruz.

Our engagement with the Colombian Armed Forces clearly demonstrated their very high level of military capability. The Colombian Armed Forces are not only very experienced, but they also possess a very strong ethos and corp d'esprit.

The LANDCOM team was hosted very well throughout the MTT. There was excellent rapport amongst all participants. Senior Colombian military leaders hosted the LANDCOM team to a dinner after an enjoyable cultural trip to Salt Cathedral of Zipaquirá one of Colombia's historical treasures.

While LANDCOM conducted the MTT in Colombia, the Colombian Deputy Minister of Defence, Mr. Diego Andrés Molano, signed a new individual tailored partnership program between Colombia and NATO in Brussels. **LC**



In 2017, Colombia became one of NATO's global partners, and the Alliance's first Latin American partner. Today, NATO and Colombia continue to strengthen dialogue and cooperation to address a number of global security challenges, including cyber security, terrorism, the fight against corruption and maritime security. Colombia provides demining training to NATO Allies and partner countries, while NATO is also supporting Colombia in its continuing efforts to develop its armed forces.

- NATO and Colombia have been engaging in dialogue and cooperation since 2013.

- A second Individual Partnership and Cooperation Programme, signed in May 2019, formalised the recognition of Colombia as a NATO partner and opened access to the full range of cooperative activities that NATO offers to partners. The programme sets out priority areas for dialogue and cooperation between NATO and Colombia.

- NATO and Colombia focus on developing common approaches to global security challenges such as cyber security, maritime security, and terrorism and its links to organised crime as well as supporting peace and security efforts, including human security.

- Colombia provides demining training to NATO Allies and partners through Colombia's International Demining Centre (CIDES) participation in the network of NATO Partnership Training and Education Centres (PTEC). NATO also supports Colombia in its efforts to build the capacities and capabilities of the Colombian armed forces.

- In 2018, Secretary General Jens Stoltenberg welcomed then Colombian President Juan Manuel Santos as well as current President Iván Duque for the first time to NATO. During high-level talks at NATO Headquarters on 22 January 2021, Colombian Vice Foreign Minister for Multilateral Affairs Adriana Mejía, Vice Defence Minister for Strategy and Planning Jairo García and NATO representatives decided to extend the bilateral cooperation on issues such as interoperability. An agreement on cooperation and the security of information also entered into force in January 2021.

- NATO also engages more broadly on security challenges facing Latin America. In December 2020, NATO's Deputy Secretary General Mircea Geoană attended the Concordia Americas Summit, where political leaders, business innovators and non-governmental representatives discussed how to tackle, together, the challenges facing the Western Hemisphere. In this context, the Deputy Secretary General stressed the value of global partnerships, such as the one NATO shares with Colombia, to manage these issues.

NATO DATA EXPLOITATION

By LANDCOM G6

Artificial Intelligence (AI) and Machine Learning (ML) models are changing the way we interact with the world in every domain. Yet even with an increased focus on these new technologies, Forbes estimates that 60-73% of global enterprise data goes unused. NATO leadership recognizes this internal struggle and is placing increased emphasis on the Alliance's ability to leverage its unused data.

The NATO Warfighting Capstone Concept (NWCC) is a strategic document detailing how NATO Allies must develop their militaries to maintain advantage over the next 20 years. One area of focus within the NWCC is data exploitation which covers the entire data lifecycle from collection and storage to analysis and interpretation. One of the latest examples of these efforts was a Data Collaboration Hackathon hosted by the NATO Communication and Information Agency (NCIA) in November 2021.

The 22 attendees at the event represented four NATO commands and agencies (to include LANDCOM, MARCOM, and AIRCOM), four academic institutions, and four NATO Nations. The participants worked in multi-disciplinary teams, using a common AI "sandbox" which provided tools for data exploration and software to perform data analysis and machine learning on the classified network. The teams spent four days exploring data from NATO exercise Trident Juncture 2018, diving deeply into NATO common datasets such as chat, e-mail, intelligence, and logistics. NCIA ran the hackathon over two weeks to maximise access to IT resources and to follow COVID protocols.

The problem was purpose fully open-ended-leveraging extant exercise data to gain data-driven insights for commander decision making. This allowed teams to explore



NWCC

NATO
WARFIGHTING
CAPSTONE
CONCEPT

The NATO Warfighting Capstone Concept, or NWCC, is an ambitious “North Star” vision detailing how NATO Allies must develop their militaries to maintain advantage for the next twenty years.

The concept outlines a threat informed vision of the challenges NATO faces today and tomorrow, the military instrument Allies need for success, and a realistic path to get there by pulling forward and continuously refining the most important warfare development work towards 5 essential Warfare Development Imperatives.

The NWCC aims to address a simple, but important concern: if NATO does not think, organise and act differently than it does today, the Military Instrument of Power will face an eroding advantage. In other words, the future success of the Alliance depends on Allied ability to continually transform to meet tomorrow’s challenges. This transformation goes beyond linear questions about the type or quantity of equipment NATO Allies should procure, or which specific capabilities must be developed. While these are important questions, the NWCC posits that in a world where military victory does not equate to strategic victory, the Alliance must be more proactive and anticipatory in the way it prepares for tomorrow in order to maintain its military advantage.

the data in whatever way best suited their interests and expertise. Through Natural Language Processing (NLP) on JChat and JOC Watch data, one team was able to identify language trends for the duration of the exercise. Another team used network science principals to determine which injects were best disseminated through the chain of command. While four days was not enough time to fully develop ideas, the hackathon did provide some proofs of concept and, perhaps most importantly, revealed blind spots in the current structure of exercise data that should be remedied to make future data exploitation efforts more fruitful.

One such blind spot was that commercial NLP software suites performed poorly on NATO-derived text which is inherently acronym-heavy and specifically structured. In

response, the NATO Science and Technology Organization (STO) recently assembled a multi-national, multi-disciplinary team from academia and across NATO that will improve the search capabilities of our NATO lessons learned, systems, and documents.

These instances may seem like small steps forward -perhaps they are. But these are the steps it takes to one day have the AI implementations portrayed in film: predictive algorithms that provide land commanders with accurate real-time predictions of enemy actions and battle assessments based on the innumerable data streams in combat. It will not be immediate, but NATO’s continued data innovation and promotion of data-driven decisions will be combat multipliers for the future NATO land force.

LC

WARGAMING CYBER

By Tim SCHLEIMER, DEU Air Force MAJ, LANDCOM G6



NATO nations, along with their allies and partners condemn Russia's destructive cyber activities against Ukraine. Ukraine experienced a series of disruptive cyber operations, including website defacements, distributed denial-of-service (DDoS) attacks, and cyber-attacks to delete data from computers belonging to government and private entities. These disruptive cyber operations began in January 2022, prior to Russia's invasion of Ukraine and have continued throughout the war. This underlines the importance of NATO partners being up to speed when it comes to educating the future Cyber Defenders.

Wargaming has long been a method of role-playing to prepare, understand, anticipate, and even plan for war. Wargaming has grown from the early use of games such as chess, and Wei-Chi, more commonly known as Go, which have been used as abstract versions of war. The use of maps and models advanced the use of wargaming as early practitioners used these early methods to gain insights and understanding of their plans prior to execution, allowing players to forward think about the impacts of their decisions.

Education and training wargames focus on training personnel, using safe-to-fail environments to allow participants to practise, experiment and innovate. They also reduce students'

tension by providing a less intimidating environment in which to learn new concepts – such as cybersecurity – while working toward specific educational objectives. Wargames are well suited for this because they create experiential learning opportunities, helping to develop a shared narrative about situations and tasks that personnel might face. Gamification has also been used in the training of a number of different types of cybersecurity. The success of these programs contributes to factors common to gamification such as interactivity, learning-by-doing, customized games that foster fun and competitive interaction between players.

This provides enough reason for LANDCOM Mobile Training Teams to use wargames to take education to the next level with its own product: Cyber Kriegspiel. The CIS/Cyber MTT's LANDCOM offers are well sought after. However the training given was highly theoretical and not very engaging. The idea was to change the concept and provide a wargame to underline the theoretical concepts taught during the training.

The major goal throughout the development of LANDCOM's own Cyber Wargame, was to make an interactive wargame that balances seriousness, engagement and entertainment. It is intended to be used as a tool to support education and training process of an MTT. What distinguishes this wargame from

A NEW APPROACH FOR CYBER EDUCATION



others is its reinforcement of key learning objectives, concepts, and vocabulary addressed in prior training. To maintain player engagement and motivation however, this game needed to have real multiplayer interaction. By introducing a live player element in this wargame, the players now have the ability to learn from their mistakes as well as each other, through the means of unique player-on-player interactions.

Cyber Kriegspiel is a cyber-themed two-dimensional, top-down, turn-based strategy wargame simulation in which a maximum of six teams will be forced to scan the cyberspace domain, hold key locations on a flat hexagonal map, defend their network from adversaries, and attack other players to gain access to their domain by using action and research points. The game implements a level of chance via a randomized dice roll in which the odds are calculated by the attacking and the defending server nodes' security level.

During the initial field test in the course of the MTT in Rabat, Morocco, Cyber Kriegspiel was played using a table-top version with laminated sheets of paper. Each team would note their next moves on paper and hand them in to the facilitators, who in turn would determine the results and hand them back to the players. Both the players and facilitators needed to keep track of the game status using the laminated boards and erasable markers.

The game was very engaging for the students and it was something that they did not encounter before. During the introduction the students were asked to assess their own knowledge and experience in wargaming. Some misunderstood this to be a videogame about war and considered themselves experts. It was a surprise when the instructors revealed wargaming to be something different than they expected. Nonetheless it was a very enjoyable experience for the entire group. During the final feedback many considered the wargame to have been the best part of the MTT and encouraged the team to continue in this way.

Which is exactly what the team did. All of the 2021 CIS/Cyber MTT's saw the wargame being deployed. While always receiving good feedback from the students, the pen-and-paper approach did have its flaws. One of the major issues was the amount of time needed to play each round. The constant back and forth with players' orders and their results took a lot of time. This severely limited the number of rounds that could be played during the time allocated to it in an MTT. This led to the students asking for a digital version of the wargame during feedback rounds. And this is again what the team did.

The digital adaptation of Cyber Kriegspiel was finished just before the first CIS/Cyber MTT in 2022. Now players analyse, decide, and execute their orders independently by submitting their choices to the server that is hosting game to the players. When every player has submitted their orders, the server sorts all the player inputs, calculates each of their actions, collects the results of those actions, and then broadcasts them back to the players within a few seconds. This allows the game flow to move as fast as the slowest player. This implementation greatly improves the gameplay speed, replay value, and player engagement with the wargame.

Coincidentally, the first CIS/Cyber MTT of 2022 was held in the exact location of the last CIS/Cyber MTT in 2021, Amman, Jordan. The staff there was able to witness first-hand the implemented changes. This was a big step forward and the feedback was outstanding, but there are still things to improve. The students, as well as the instructors, still need to track the game status with the laminated boards. The next big step will be to implement a graphical visualization of the game board. This will even more so endorse the image of NATO providing a modern and engaging training experience to its partners and thus preparing them for any disruptive cyber operations coming their way. **LC**

NATO AIR POLICING



BY AIRCOM PUBLIC AFFAIRS OFFICE

The airspace over Europe sees an average of about 35,000 air movements per day, making it one of the busiest airspaces in the world. Any aircraft flying inside or approaching European NATO airspace that are unidentified, either through loss or intentional omission of communication with Air Traffic Control creates an unsafe environment, which could lead to an air incident.

NATO ensures the integrity, safety and security of its airspace by maintaining a 24/7/365 Air Policing mission, overseen by Allied Air Command.

NATO Air Policing is a peacetime collective defence mission involving the use of the air surveillance and control system, air command and control and appropriate air defence assets, including interceptors, for preserving the integrity of the NATO airspace part of Alliance airspace.

A specific regional case of NATO's Air Policing mission exists in the Baltic States. Referred to as Baltic Air Policing or BAP, this mission demonstrates the ability of the Alliance to share and pool existing capabilities. BAP is a regional form of NATO's Air Policing and has been executed continuously since April 2004; so far, 17 NATO nations have participated in this mission. Like Air Policing in the rest of European NATO skies, BAP is conducted to protect the integrity of Allies' airspace.

In response to Russian illegal acts in Ukraine and Crimea in 2014, the Alliance decided to conduct enhanced Air Policing or eAP in the north and in the south as part of NATO's Assurance Measures (AM). At the time, the Alliance started implementing these AM with the goal to demonstrate the collective resolve of Allies, demonstrate the defensive nature of NATO and deter Russia from aggression or the threat of aggression against NATO Allies.

To enhance Air Policing, NATO authorized Allies to provide assets to the Alliance supplementing existing Baltic Air Policing capabilities in the north (i.e. Estonia, Latvia, Lithuania and Poland) and, in parallel, augmenting National Air Policing capabilities in the south (i.e. Bulgaria and Romania).

Since April 2014, Allied fighter jet detachments have continuously augmented the BAP mission under the eAP concept in the north. The lead nation is always at Šiauliai, while augmenting nations fly out of Ämari, Estonia and Malbork, Poland. Of note the detachment in Poland can be replaced by an additional detachment in Lithuania. In that case two detachments operate from Šiauliai, one for BAP and one for eAP.

In the south, Allies have deployed their fighters to Bulgaria and Romania flying NATO Air Policing missions alongside Bulgarian and Romanian fighters since 2014.

In response to Russia's invasion of Ukraine in February 2022, NATO has substantially increased the number of fighter jets on alert across eastern Europe. Their presence helps to shield NATO against any possible aggression. Several dozen fighter jets are on alert at all time to response to possible airspace violations and to deter aggression.

Allied fighters take off from their home bases, forward deployment bases – including in the Baltic countries – and aircraft carriers flying Air Patrol missions along the Alliance's eastern flank. Allied Air Command integrates the Allied air forces' fighters, air-to-air refuelling and transport aircraft as well as Allied and NATO Airborne Warning and Control System (AWACS) platforms into the standing arrangements to safeguard the skies above the Allies. These assets enable NATO to patrol the Allied airspace and have 24/7 situational awareness above NATO and adjacent territory. **LC**





The Face of Resilience: LTC VASYL PICHNENKO

Originally published in the Spring
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**By Mr. Justin Parker (USA),
LANDCOM**

*The following article is based on an
interview with LTC Vasylych Pichnenko,
the first*

Ukrainian SNR at LANDCOM.

It is Winter 1979, on the streets
of Dnipropetrovsk, an industrial
city located centrally in the Soviet
Ukrainian Republic.

Along these cool, brisk streets and
alleyways walks four-year-old Vasylych
Pichnenko. He walks alone, not
knowing where he will sleep tonight
or when his next meal will be. As
a child, young Vasylych is learning the
realities of hardship far sooner than
most. But he is resilient.

Resilience - it is an ability to
persevere in the face of adversity.
This concept is enshrined in Article
III of the North Atlantic Treaty,
which charges each nation with
preparing soldiers and civilians to
endure and overcome hardship.
This preparation, however, does
not begin with the nation or even
with the military headquarters, but
instead with the individual. Building
resilience, as LTC Vasylych Pichnenko
will show, is an intimate trial that
many face within themselves.

Vasylych was born and raised in the
final years of the Soviet Union -
an era characterized by palpable
uncertainty and adversity for many
Ukrainians. He never knew his father
and his mother struggled to care
for him. This meant that Vasylych
was on the streets fending for himself
from as early as he can remember.
Although he could always manage to
find food and shelter, he could not
find substitute for the attention that
children so vitally require.

In these years, Vasylych exhibited
the rare trait of positive jealousy.
Instead of harboring envy and hate
for the children of wholesome
families, he felt relief to see that
others did not share his plight. This
perspective marked Vasylych's first
significant step towards resilience.
"You can be upset and be angry at
the world, and behave according to
this anger" Vasylych said. It is natural
and normal to let such hardship
ignite anger and then express those
feelings through violence. However,
Vasylych did not allow his jealousy to
foment anger, but instead recognize
and appreciate fortune for others.
To be strong and resilient, he did
not blame his circumstance on those
around him.

Throughout his childhood and in
the midst of his hardship, Vasylych
occasionally crossed paths with
individuals of incredible generosity.
These people inadvertently taught
him the lesson of, as Vasylych put
it, "building his treasure." Vasylych's
treasure is a collection of memories
of the deeds and charity he has
experienced. This treasure makes
him believe in people and in himself.
Having a treasure helps people to
see what they have and ignore what
they do not have, which makes for a
far more resilient mental state.

Vasylych's first treasure? A glass of milk.
During his childhood, a glass of milk
was not only a treasure for a young
growing boy, but was worth its
weight in gold in Soviet Ukraine. As
Vasylych explained it, if you had

two tables, one completely covered
in food like meat and bread, and the
other with only a glass of milk on it,
that glass of milk would still be one-
hundred times more valuable than
the other table. One cool Winter
when Vasylych had no where to
sleep, an elderly lady had taken him
in for a short period.

Every morning when he woke up, the old lady would leave a glass of milk on the kitchen table for him. Vasyl understood that milk was scarce and thus it was treasure, but he had discovered an even greater meaning. The old lady showed Vasyl kindness. From then on, whenever in the midst of adversity, Vasyl would draw on this kindness to give him hope and persevere through thick and thin.

Vasyl continued to collect these treasures in his formative years. At the age of seven, when all the other children were preparing for primary school, all he had was a pencil. Days before school started, an elderly man offered to buy Vasyl some ice cream and food. The man was surprised to find that Vasyl was not prepared for class - no books, no bag, no pencils. In his sympathy and generosity, the old man bought Vasyl a school uniform and everything else he needed to start his education. As Vasyl put it, "sometimes milk happens in your life."

A bit older and in school, Vasyl faced new threats from the streets - fights. With no proper family to keep Vasyl in the classroom, he spent much of his time roaming the unkind roads of Dnipropetrovsk. In this lifestyle it is difficult to avoid trouble and defend yourself. He was badly beaten many times. "If you stay with the gangsters, you'll either end up dead or in prison." Naturally, he did not like this and decided to change. Here marked his third resilience building tendency - setting goals. Vasyl decided that the days of being beaten in the streets were over. He joined the sports club section of his school and began training. Boxing, track, cross country, kayaking, karate - he did them all. But Vasyl did these sports with the purpose of building himself physically. He set goals in each and consistently achieved personal records that proved to himself that he could grow and become stronger. To manage his mind, he created aims, order, and a schedule to ignore the unimportant things and persevere.



Sports kept Vasyl off the streets while in grade school, however, they played an even more important role in his soldier life. Vasyl wanted to continue his education past high school to keep him focused on goals, but the costs were too high. So to ensure he stayed on the straight and narrow, he joined the Ukrainian Army and began his two-year conscription requirement. Towards the end of his obligatory service, his best friend encouraged him to go to officer school training. Vasyl initially resisted his friend's suggestion, concerned that his lack of education would ensure outright rejection. Ironically, Vasyl was accepted to the officer's school and his friend was not. The reason - sports. The officer school board was so impressed by Vasyl's physical performance that they accepted him as a cadet on the condition that he works hard on his education. Sports made Vasyl resilient on the streets and significantly propelled his career forward. He graduated with excellence.

Vasyl's military career is sprinkled with success and advancement. From Lieutenant he gained a platoon, then became a Company Commander, and then moved from his Mechanized Infantry Unit to the Airborne Paratroopers - an elite and prestigious crew. Once he became a Battalion

Executive Officer, he started English courses. His first international experience was a rural deployment to the Sudan under United Nation auspices, or as his Commander put it, "the middle of nowhere."

After surviving two bouts of malaria and a year of peacekeeping, he returned to Ukraine to become a Battalion Commander in the Airborne Brigade. Vasyl maintained his focus, never forgetting his treasures, and persisted through the ranks. In 2010, he was selected to attend the Command General

Staff College in Fort Leavenworth, Texas (only one of five nominees gets selected for this program in all of Ukraine). After returning from the United States in 2011, Vasyl was appointed to the East Operations Command of Ukraine.

Upon his return, Vasyl decided to pay it forward. Taking all he had learned about resilience, focus, sports, and character, he opened a small "fight club" for children who share a similar situation to his childhood. The free club was not just a physical one, but for education as well. The sort of education that these children would not get at school or on the streets.

Vasyl sought to fill their minds with good lessons and proper behavior. He saved them from experiences he once endured.

Ultimately, Vasyl was teaching these children lessons of resilience. His consistent message to his students was that they need to be able to fight - not just others, but most importantly themselves. Vasyl was an expert at facing challenges alone and was acutely aware that most often, one's own mind serves as the greatest threat to success. Understanding this, Vasyl taught his students to fight their laziness, anger, and indiscipline. Once they can conquer these internal enemies, they are sure to overcome the external ones. Four of his fifteen students went on to be sports champions. Vasyl continued to impart his intimate knowledge of resilience to disadvantaged children for three years - and then war came to Ukraine.

As Vasyl describes it, Russia's incursion into the Crimea was a well-executed, well-planned operation that took Ukraine off guard. The Ukrainians were undersupplied, poorly trained, logistically paralyzed, and ultimately unable to mount a defense against Russia's. Not only was there an imbalance between Ukrainian and Russian forces, but Moscow had deeply penetrated the Ukrainian MoD, which had been intentionally crippling the Ukrainian armed forces ahead of the invasion.

The war had sent Vasyl to the front line of the conflict in the east region - the infamous Donetsk. As an advisor to a mechanized battalion, Vasyl immediately recognized the training and equipment challenges. His commander led 700 untrained soldiers to recapture the sovereign territory of Ukraine. These soldiers could not advance the front line and the war effort began to languish. Vasyl's resilient character proved a fitting solution.

Vasyl volunteered to create a highly mobile team whose goal was to advance the front line. This team of fifty-five brave soldiers was designed to move from checkpoint to checkpoint along the eastern front line to help static positions advance. But first Vasyl had to train them. Here is where he continued to pass on his knowledge of hardship and how to overcome it.

Confidence is the first gift Vasyl tried to give to each of his soldiers. When Vasyl went to recruit a tank crew, he found that no soldiers had ever had practical experience with tanks. Theoretically they understood how to aim and fire, but only in theory. So Vasyl took his crew to a small village and created a shooting range for them to understand the sound, the motion, the vibration, and the energy of firing a tank.

He strived to give all members of his team a sense of confidence in themselves to help overcome the self-doubt that would inevitably fill the mind of an untrained soldier heading to war. Training and focus builds skills, which in turn foster confidence. Using this formula, Vasyl quickly created one of Ukraine's most resilient teams of the war.

With one unarmored truck, four BMPs (infantry fighting vehicles), and one tank, Vasyl and 55 soldiers set out to liberate Ukraine's own territory. Vasyl always led from the front. Vasyl always sat at the front of his convoy in an unarmored truck. He assumed greater risk, but the reward was the confidence and respect between him and his soldiers. Their first firefight occurred only two days after their training. Because of their training, they won the battle. Vasyl recalls the amazement of his soldiers when their theories worked in practice, "Commander, we won, it works!" they told him.

Their training had bred confidence, which resulted in successive victories that made the soldiers more resilient to the increasing intensity of the war. Soon volunteers sprang forward from around the Ukrainian military to join Vasyl's team, as they too wanted to share in the honor of fighting for their country and for the soldiers at their sides. Before long, there was a bounty for Vasyl's head.

The mobile team was suddenly struck by an ambush. The onset of an ambush is incredibly disorienting. For the first 20 seconds, not even Vasyl understood where the bullets were coming from. Several of his fellows soldiers took hits. The team split up and searched for the source of the fire.

Enemy snipers had lined the hill adjacent to the village. Vasyl moved quickly to route the enemies and discovered that there was a hostile base nearby. The team mounted up for an assault and Vasyl, always in the unarmored truck at the lead, took a hollow point round that first pierced his rifle and destroyed much of his forearm. The bullet exploded and shattered the bones, tissues, and muscles inside his arm. Despite the blood loss, Vasyl continued to lead that battle and successfully captured the base. His men were inspired by his resolve and continued to fight on "like beasts."

Vasyl had to turn away from teaching resilience to others and revisit that difficult road himself. The military doctors in Ukraine wanted to amputate Vasyl's arm. But Vasyl's fellow soldiers did not allow this. They found a doctor willing to undertake the impossible task of reconstructing a destroyed arm. Ten surgeries and one year in the hospital saved Vasyl's arm and hand. The road to recovery was not an easy one. The pain in his arm and hand was nearly unbearable. In the beginning, doing a single pushup would nearly make Vasyl pass out. But Vasyl was resilient. He regained nearly full functionality in his arm and returned to sports. After coming so far from hardship, just to revisit it once again, he did not let it destroy him. Vasyl recently qualified as a finalist for the Invictus Games for wounded soldiers. In his lifetime, all his treasures, his confidence, and his honor still guide him to make the right decisions in the face of adversity.

LTC Pichnenko has just begun his 3-year assignment at LANDCOM as the first Ukrainian SNR. At LANDCOM he is continuing his tradition of teaching resilience by teaching a Jiu-Jitsu class for the base. LTC Pichnenko is a recipient of the Khmelnytsky Medal of Honor in Ukraine, but cares little for it, as there are many other soldiers who he believes equally deserve this honor but are unrecognized for their bravery. Although he would not profess to

it, Vasyl is the face of resilience. **LC**



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