Capable Logistician CL19 – NATO SMART ENERGY UNIT

The Capable Logistician 2019 (CL19) is a multinational exercise that takes place from 03-13 June 2019 at the Drawsko Pomorskie Training Area (DPTA) in Poland.

The aim of CL19 is to practice and improve the planning and execution of theatre level multinational logistics in support of forces within a cooperative defence scenario. The focus is on interoperability and NATO standards.

CL19 is the third of its kind, following CL13 (Slovakia) and CL15 (Hungary). In all three CL exercises, NATO Headquarters established a Smart Energy (SE) unit with equipment and personnel from NATO member states. The overarching aim of SE in CL exercises is to:

1. Demonstrate the potential of innovative technologies for reducing fuel wastage in deployable camps
2. Explain the benefits of SE capabilities in increasing operational effectiveness
3. Test interoperability and assess NATO standards in this respect.

While diesel generators will continue to be the main power source of field camps in NATO’s exercises and missions for the next decades, several nations could demonstrate in small experiments that just by better planning and having better knowledge of the power production and energy flows in deployable camps, the fuel wastage can be reduced by 5-20%, with no extra costs and no new equipment. With a moderate investment, it is estimated that fuel consumption could be reduced by up to 80% without decreasing the comfort for soldiers. The use of modern equipment does not only save fuel but also improves the camps’ operational effectiveness.

The history of SE in CL exercises:

- **CL13**: Seven engineers from German, Dutch and British army research institutes installed an insulated tent with LED lights, a hydrogen fuel cell and photovoltaic panels to produce energy without using a drop of diesel.

- **CL15**: Over 90 civil and military Smart Energy experts from 14 private companies, the German Bundeswehr and the U.S. Army deployed more than 50 pieces of equipment to provide SE electricity to other logistic units and to respond to scenarios, such as power cuts, diesel contamination and infrastructure destruction due to flooding. During CL15, the main focus was on facilitating a dialogue among industry, the military and other decision makers. In addition to a significant reduction of fuel consumption through the deployment of SE microgrids, hybrid power generators and renewable technologies, other significant findings/gaps identified included the lack of comparable energy data and the incompatibility of equipment to improve the capability and reliability of a closed microgrid. CL15 was also a motivation to mainstream SE aspects into NATO documents.

- **CL19**: About 40 civil and military experts from Canadian, French, Lithuanian, Italian and US ministries deploy and run a SE unit with more than 30 pieces of equipment. At CL19,
the SE focus is on filling the gaps identified at CL15: Harmonized energy data, a universal energy camp planning tool, and interoperable microgrids.

**Smart Energy in Capable Logistician 2019**

In CL19, the SE unit brings together innovative equipment for smarter power generation, energy storage, distribution, and consumption. This is one milestone of the NATO Smart Defence concept “Smart Energy Training and Assessment Camp (SETAC)” that was launched in April 2017. Under SETAC, NATO is bringing together experts to facilitate information exchange, empower SE experts and encourage nations to agree on common standards for SE capabilities.¹

At CL19, the SE unit is one of the 12 Multinational Integrated Logistic Units (MILUs) interacting with each other. The focus of SE is on improving the interoperability of innovative camp equipment and demonstrating the benefits of such equipment for reducing the fuel consumption.

The SE unit aims to reduce the fuel consumption and to improve the functionality of deployed field camps first by metering to gain an understanding of key energy flows and then optimising the power generation and improving the energy storage, distribution and consumption. Through this effort, it will be demonstrated that the fuel consumption of a field camp (run independently from the main power grid) can be reduced by 80%.

Canada, France, Italy, Lithuania and the US contribute about 40 personnel and 30 pieces of innovative equipment to the SE unit, including modern diesel generators, hybrid power generation units, photovoltaic panels, microgrid controlling software, insulated tents, energy-efficiency air-conditioning, LED lights, atmospheric water production and purification units, sun shades, non-intrusive energy metering kits and a universal deployed camp energy simulation tool.

During the exercise, SE interacts with the MILUs Modular Combined Petroleum, Movement & Control, Maintenance & Recovery, and Water by responding to scenarios, such as main power cuts, diesel and water contamination, flooding and destruction of infrastructure.

The energy flows of selected MILUs will be metered by mobile energy monitoring kits produced by the CanmetENERGY Research Centre (Natural Resources Canada). The data collection follows a standard protocol agreed by SE experts and is harmonised to ensure the results are comparable among nations. Furthermore, the data is fed into a universal camp planning & simulation software that serves as a decision-making tool for implementing measures to reduce the fossil fuel wastage in Deployed Force Infrastructure (DFI).

The observations during CL19 will be the basis on which SE will recommend improvements to NATO policies and standards.

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¹ SE capability is *not* an agreed NATO term. However, a working definition explains the ambition: **Smart Energy - The capability resulting from the optimized planning, management and use of technologies for power generation, distribution and consumption to improve the resilience, autonomy and mobility of friendly forces.**