
ARCTIC EXPERIENCE: IN ARCTIC ZONE

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The winter can be cruel when creating a harsh environment. For soldiers is exposure to extreme weather not the easy path to walk but sometimes your profession leads you to encounter this. However when your mission could put you in icy conditions you better be prepared. Where else in Europe could this be more experienced than in Northern Norway? Some NATO allies therefore are training regularly in these northern regions with their air force, and also in joint operations. They bring back their experiences but whoever could be more informative about operations in these conditions than the Norwegians itself?

BARDUFLOSS EXPERIENCE

A major air base of the Norwegian air force can be found in Bardufoss with helicopter elements of both air force (LUFTFORSVARET) and coast guard (KYSVAKT). The latter is flying the naval Lynx mk.86 helicopter mainly for control of the seaways and inspection of fishery activities and vessels. The AB-412SP unit of the air force is cooperating with ground forces in transport duties but also keeps an eye on what is going on in the extensive Norwegian land and sea areas. The Lynx helicopters can embark vessels on extended patrol missions. Some six helicopters were originally acquired but only four remains in service today while the rate of serving hours is approaching the critical end of life trajectory. The Lynx helicopters will be replaced in future by the NH-90 helicopter bringing a quite new way of flying. On this far north airfield can also be found a flying school with bright yellow Saab Safari primary training aircraft and foreign aircraft like the helicopter contingent of the Royal Navy in the Clockwork program. Sometimes foreign transport aircraft and crews are on temporary detachment learning how to handle in arctic conditions. This year for the first time a C-27J Spartan of the Aeronautica Militare found its way to Bardufoss.

INTRODUCTION OF THE NH-90

Deputy commander Erik Mikkelsen present to us the Operation Test and Evaluation (OT&E) squadron comprising at the moment one NH-90 in the initial operational capability (ioc). The OT&E squadron finds out how to apply this platform and will determine its action capability and operational effectiveness. Norway did not acquire the NH-90 within NATO's NAHIMA acquisition project but acts as an independent customer. A total of 14 were ordered for the 139 Air Wing including 8 for the 337 Squadron coast guard, mainly for activities on the surface of the sea. The other 6 helicopters will serve in the navy 334 Squadron in the ASW role.

They will embark on five newly built F-310 Nansen class frigates but can also be deployed from older 300 Svalbard class or W320 Nordkapp class ships while coast guard examples will only be able to operate from the two latter ships. The helicopter consists substantially of composite material and so reducing weight and gaining high performance on speed. The NH-90 is the only helicopter using fly-by-wire and possesses a fully integrated computer on all sensors. Dealing with the local

circumstances, the sophisticated electrical de-icing system is very satisfactory. The increased payload comparing with the Lynx is warmly welcomed. The cabin in the two versions is different but can be configured in short notice. The glass cockpit gives a high level of awareness and automated cockpit information management enables all information available at all times making the challenge to the pilots to filter away the information you don't need rather than to obtain information. Streams of information can be optimized at your requirement.

In the very first beginning at August 2010 initial training of aircrews, technicians and engineers was done by the manufacturer NHI-Agusta-Westland but now the OT&E squadron took over and pilots out of all different helicopter branches merge their experience of all types to find out where the NH-90 is. After the job is completed the OT&E squadron will transfer into the coast guard force. The first NH-90 arrived in December 2011 at Bardufoss and the OT&E squadron had 56 flying hours on the record in the second half of February 2012 and no serviceability problems were noted. Know how of maintenance was also obtained from Finland flying the NH-90 TTH version since 2008.

OPERATIONS PICTURE

Besides progress in operational test and evaluation the Forsvaret luftoperativt inspektorat or inpectorate of air operations (IAO) expects with about a year to receive a total of six NH-90's which will be delivered in initial operations capability (ioc). Operational experience in flying capabilities will be supported by the Dutch/Italian simulator initiative from the Rotorsim company. Developing training programmes for crew members of the 334 & 337 Squadron and establishing the basis for further development is one thing but the unit is also tasked with development of tactical procedures. The Kongsberg Advanced Mission Planning (KAMP) system will be available for flight, sensor and tactical mission planning and a C3 network will be applied with plug-in capability.

The ioc helicopters will be able to conduct limited operations from the frigates, concerning standard coast guard ops however ASW capability will only be able with the full operational capability (foc). When training procedures are completed the ioc examples will go back to the manufacturer and will be converted in foc examples and then Norway expect a gap in operational capability after the Lynx will be at end of life. A time frame is not defined yet. The shape of the tasks for the foc examples will be developed on performing of the ioc examples.

CLOCKWORK

At Bardufoss is a permanent English detachment since 1969. To establish a well trained force which can be deployed in arctic conditions the United Kingdom trains both aircrews and land forces on a special site of the airfield with permanent facilities such as three Rubb hangars and complexes for staff and recruits. The number of personnel at the facility is mostly 210, but can be up to max. 250. Originally it was a Royal Navy initiative but later on a joint operation under Joint Helicopter Command (JHC). The helicopters involved in Clockwork include four Sea King Mk.4 and three Lynx Mk.7 helicopters of the Royal Navy, but last January they were accompanied by

two RAF Chinooks. Commanding Officer Major Dave West explains the benefits of Clockwork. The airspace density is low and the land is not so populated while the possibilities to meet extreme cold weather environment (C2) are numerous. It is a challenge to go out, even for an instructor. Flying two hours in the cold is quite emotional and you can feel exhausted afterwards. Clockwork provides survival and operational training and support facilities to enable aviation capable units and support arms to survive, operate and fight in extreme arctic conditions. Units come and go in a strict timeframe. Enablers must take care that everything runs for the pilots, so they only have to concern on flying and plug and play in. Ground training includes a cold weather survival course (CWSC) with environmental qualification (EQ) and military training (MT). Dave West explains that it is not only a matter of operating here, but also to fight here, to know how to operate when it is minus 29 degrees. When not good prepared and accustomed to the harsh conditions one could lose his life easily. The picture how to operate in the frozen snow world is called 'white shod'. Core training on the ground is a ten day's period including a survival night and tactical operations.

Using snow shoes the training is both above and below tree line. One of the most intensive aspects is to go (secured) into the water after ice breaking. Some people do have struggle but a buddy-buddy system is very functional when a strong person put the other through. The maintenance on the helicopters is different and the TEM-78 engineering course instructs how to handle this. Below minus 26 degrees the aircraft is going out, while oil becomes very thick and the electrical system can be mal functioned. It is a challenge to keep them flying and to prevent a 'cold soak' in the field a parachute is going over the helicopter and a heater under it. All obtained skills will be practised in the annual exercise 'cold response' afterwards. In 2011 some 700 people including new instructors were accommodated and trained at the Clockwork facilities. Major Dave West was for more than 20 winters at Bardufoss and has great respect for the arctic. Remember he said, when you can live and fight in the arctic, you can fight everywhere!

SAAB SAFARI 1 - (A SEPERATE ARTICLE ABOUT THE SAFARI WILL FOLLOW)

Who would expect a flying school in this area? For Norwegians this is not a question, they understand that arctic environment is representative for Norway, so why not a flying school ? The Luftforsvarets Flygeskole focus on the capabilities of new students and the selection of pilots. With a requirement of 25 new aspirant pilots going in to further course the initial 50 students accepted from the Royal Norwegian Air Force Training Centre at Kjevik will be cut in half and only the best of the best survive. Major Erling Flobak is eager to point at the fair chance for everyone. All instructors are working standardized, so the student knows what to expect.

After selection the students continuing course at the royal Norwegian Air Force Academy in Trondheim for 6 months and then going to Sheppard Air Force Base in the U.S. to graduate for primary pilot license (PPL) on the T6A Texan. From here they choose for fighter course (T-38 Talon, Sheppard and F-16 at the Norwegian detachment at Tucson) or helicopter course (Blackhawk, Fort Rucker). Basically Major Flobak and his instructors observe the students ability to learn a lot within short time and to make it practical effective. The first four weeks are theoretical matters

such as technical knowledge of the aircraft systems, aerodynamics, meteorological issues, navigational principles and flying instruments. From week five they will start flying in the morning with theoretical matters in the afternoon. Some are really good in theoretical but not good in how to fly. Others can act naturally with the aircraft. Close observation at the pressure level is an important issue. How much can they handle at the same time?

The selection involves 17 separate sorties all written and described in the handbook. A grading sheet for each sortie say's what is expected. When you fail twice a sortie you will be put on the board. They decide if you will be put back on the selection or going in the navigation course or that you are being 'scrapped'. The latter means you failed as a military pilot, but you could be an excellent civilian pilot.

SAAB SAFARI 2

The flying school is operating the Saab Safari, a prop-powered basic trainer aircraft with a shoulder wing providing improved all-round visibility for the pilots. The aircraft was developed by Malmö Flygindustri as the MFI-15 and as military version called MFI-17 and later the Saab Supporter when the project was taken over by Saab. The Norwegian Air force sticks by the name Safari. The aircraft is relatively easy to fly and the construction can handle a 'beating' which makes it ideal for the job Major Flobak has to do. Sixteen aircraft are in service since 1982 with most of the aircraft between 2000-3000 hours and some of them close to 4000 hours. One of the limitations was the single radio and 3-4 years ago a request for one more radio resulted in the decision to install a complete new glass cockpit as a cheaper alternative, which work will start early next year.

However all the flying with the students is on visual reference the selection varies from time to time and instrument flying once was part in the course. On the other hand the Safari is also used by established pilots to keep up flying hours when their jobs keep them on the ground. The Safari can act in a total other way of flying such as acrobatics and allows 6 positive Gs and 3 negative Gs. Normally five instructors are serving the flying school but instructors from other bases can be attached temporarily. Major Flobak notes on the main goal of the flying school that he is quite sure that they pick up the right person with selection. 'You see, the record shows we did'.

LIFELINE TO BARDUFLOSS (HERCULESS)

To connect other airfields of Norway with Bardufloss the base has a civil terminal in use with Air Norwegian. Many soldiers are travelling by this civilian carrier. For cargo and logistic reasons the Royal Norwegian Air Force operates four Lockheed C-130J Super Hercules transport planes. These aircraft are highly sophisticated, reliable and serve in multipurpose function. Thanks to state-of-the-art technology a lower operating and support cost has been achieved with reduced manpower requirements. The cockpit is equipped with digital lay out including low-power color radar, moving map, dual inertial navigation and GPS and fully integrated defensive systems. A new feature is the Head-Up Display, which is very satisfying. When flying in mountainous area it is important to keep eye on the horizon and not to have to look down. On the wings the C-130J is equipped with a bleed air de-icing system where

Today the Norwegian Air Force deploys the Norwegian Aero medical Detachment (NAD) at Mernan in Northern Afghanistan since 2008. Of the two Bell-412SP on alert one helicopter is in medevac configuration and the other acting as a gunship equipped with 2 x Gatling guns. Crews are both from Bardufoss 339Sq. and Rygge 720 Sq. and medics are military or civilian. The Norwegians are respected by the population since they make no difference in rescuing NATO-soldiers, civilians or Taliban. The Norwegian air force and later together with the Norwegian army started the missions on Mernan solely but were later accompanied by U.S.Army Blackhawks.

In about two years the mission will be ended and both Norwegian Air Force and Army units will be withdrawn. Lt. Col. Stangnes notes that the medevac flight in Norway was planned to be retrieved after completion of the mission in Afghanistan, but in the meanwhile already has started again. Other changes on the base will be adjustment of the amount of pilots on future ops. A new hangar will arise for the new NH-90's. Crews are available in near future to operate the new NH-90. Since the delay of the introduction of the JSF there is a surplus of fighter pilots and some will be retrained to helicopter pilots while others still in the course will be advised to choose for the helicopter. The profession of helicopter pilot amongst cadets used to have a lower prestige in relation to fighter pilot but nowadays the capabilities of the helicopters, the complexity of the systems combined with the difficult weather circumstances and large operation areas offers them quite enough challenge.

139 Luftving (Air Wing)

334 sq NH-90

337 sq. Lynx/NH-90 coast guard

339 sq Bell 412SP Transport

718 sq UAV/UACV

Royal Norwegian Air Force Flight Training School, Saab Safari

[Kees Otten & Wim Das](#)
