# Air Policing in Arctic Norway

## By Lieutenant Ove Ronny Haraldsen, Royal Norwegian Air Force, Public Information Officer

When other nations normally would leave their aircraft on the ground, Norwegian F-16s are operating throughout the freezing winter conditions. What is it that makes the Norwegians capable of conducting F-16 operations north of the Arctic Circle?

Lieutenant Colonel Bård Solheim, commanding officer of 331 Squadron at Main Air Station (MAS) Bodø, is one of Norway's most experienced F-16 pilots and regularly flies NATO Quick Reaction Alert (QRA) missions out of Bodø. He explains the challenges Norwegian pilots and ground crews face during winter operations.

In winter the temperature at Bodø is around zero degrees centigrade, but may sometimes drop down to minus 10 – 15 °C. Occasionally, Norwegian F-16s will deploy further north in Norway where temperatures may get down to minus 30 °C. Winter is also the time for limited hours of daylight in northern Norway, since the sun remains below the horizon the entire day.

"The major challenges during winter are icy runways, limited daylight, heavy snowfall and strong winds," Bård Solheim explains.

For icy and slippery runways the Norwegian F-16s are equipped with a drag chute that effectively reduces speed and braking distance after landing. Furthermore, it is important to have good braking action on runways and taxiways, and if necessary have the surfaces sanded.

*Norwegian F-16 taking off in a snow desert*
*Photo by Trond Høyvik, MAS Bodø*

"Sometimes taxiing to and from the runway is the most difficult manoeuvre," says Solheim, "we are equipped with slick summer tyres, so even if you stand on the brakes, the idle engine thrust forces you forward on the slippery surface."

*Norwegian F-16 twoship flying at Stetind national mountain*
*Photo by Nick Sidle, MAS Bodø*

*Two Norwegian F-16 in arctic conditions*
*Photo by Trond Høyvik, MAS Bodø*

### Snow and Ice

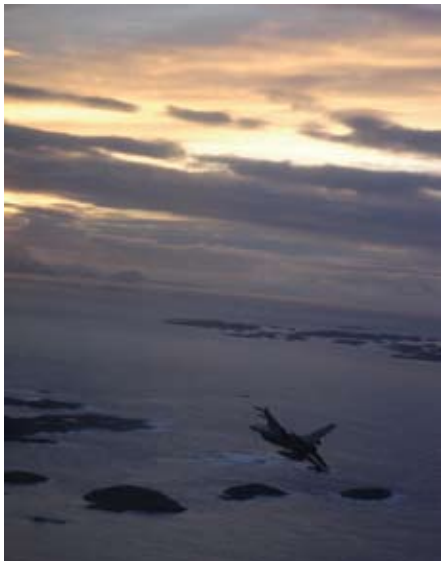
At MAS Bodø the aircraft are always parked in hardened aircraft shelters (HAS) that protect them against snow and frost. This enables crews to meet the required quick reaction time of 15 minutes.

"We normally operate out of Bodø where HAS are available," Solheim says, "occasionally, we deploy to Air Station Banak in Finnmark, in the north east in Norway, where there are no HAS. Here, snow and ice can indeed be a challenge. One solution could be to brush the snow off the jets, but this takes time and may also damage the airframe if not done cautiously. Another alternative would be de-icing, but still we would not meet the required 15-minute reaction time under special conditions."

Dry snow in combination with strong wind may lead to white-out conditions especially around shelters and on taxiways. In these conditions the visibility is like zero and all the pilots can do is to stop and wait for improvements in the visibility. Pilots need to bear in mind that the runway may close on short notice due to heavy snowfall and that ground staff will have to clear the snow. They always have to plan for sufficient fuel to get them to an alternate air base should the runway be closed.

"When you are airborne, the conditions are generally the same sum-

*Fighter raring to go* *Photo by RNoAF, MAS Bodø*



*Daylight in winter*
*Photo by Nenning Rørvik, 332 Sqn, MAS Bodø*

mer like winter," Solheim describes, "high up in the air the temperature is almost minus 60 °C all year long. However, during winter there will be more icing on the aircraft."

## Survival

Norwegian pilots must be able to survive on their own in case of a bail out over the mountains or at sea. From early childhood on, Norwegians have been well accustomed to snow and frost. Through regular winter survival training Norway's pilots learn to become experts in surviving under arctic conditions.

"We regularly exercise the pick up drill out at sea," says Solheim, "the water temperature in winter is only a couple of degrees centigrade, therefore we are always wearing plenty of insulating clothes during winter operations".

A professional search and rescue (SAR) service is essential for the safety of Norwegian pilots. The Royal Norwegian Air Force (RNoAF) SAR service is always ready on alert, both summer and winter. Like Norway's F-16s they fly during extreme winter conditions.

## Meteorology

The meteorology unit at MAS Bodø provides daily weather updates in the northern areas, which is an important input to planning and execution of winter operations as weather can rapidly deteriorate.

Every NATO country has their own specific restrictions that dictate if aircraft can fly or not. Norwegian restrictions are geared to conditions in Norway based on the RNoAF experience with domestic weather conditions, and they outline e. g. maximum allowable wind speed.

## Baltic Air Policing

The experiences with winter operations proved important when RNoAF F-16 fighters conducted Baltic Air Policing (BAP) from December 07 to March 08 and LtCol Bård Solheim and LtCol Peer Christian Høvik were the detachment commanders of Norway's NATO force (NORDET BAP).

"At Siauliai Air Base in Lithuania we encountered similar conditions to what we see at Bodø," Solheim explains, "but in addition we had low ceilings which lead to new challenges."

"In the end nature will always decide whether we can get airborne or not," Solheim concludes, "if the weather conditions are too bad, it will not be possible to fly, no matter how well you are trained."

*Drag chute landing* *Photo by RNoAF, MAS Bodø*