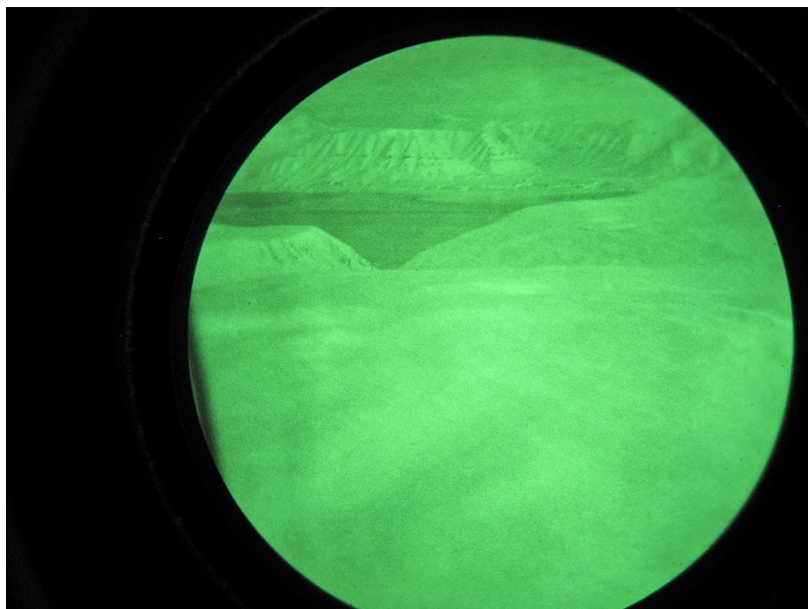


Flying with night vision goggles In the Arctic



Above: Approaching a small vessel in the Dauphine helicopter for an emergency rescue



Above: Flying at night in the arctic is made easier using night vision goggles

Airlift helicopters have a permanent base, further north than any other search and rescue heavy lift helicopter operator in the world and are fully certified for polar night operations under IFR and icing conditions. The Arctic base is at a small outpost called Longyearbyen, where the Dauphin is used for light support work backing up their AS332 L1 AWSAR Super Puma. Flying, or for that matter thinking about flying, in these harsh conditions requires seriously equipped aircraft, extremely well trained crews and thorough planning. During the month of January, the sun stays more than 6 degrees below the horizon and darkness prevails around the clock. Yet, when the weather is good, the ever-present moon is full, distant snowy mountains glow, the skies are starry with the Northern lights dancing, one experiences the characteristic blue light of a polar night. Dressing up, flight preparation, pre-flighting and briefing for our one and a half hour flight, searching for Polar bears along the frozen shoreline of Isfjorden towards the glaciers was a thorough and exacting

experience. The Dauphin helicopter, equipped with the night sun, infrared imaging and night vision goggles, we were not going to miss anything.

Svalbard archipelago is one of the world's largest areas of untouched nature, a paradise of dramatic glaciers, majestic mountain formations and endless arctic tundra. Beautiful colors and contrasts enclosed by an unparalleled silence, the Northern lights casting multi layered, dancing sprinkles of waving green and red light across snow covered, pointed mountain peaks in an infinite landscape. The blue light caught between darkness and light turns reality into a pure fairytale. The surroundings become ever-changing works of art. The islands are made up of approximately 60% glaciers, only 6 to 7% of the land area is covered by any kind of vegetation with permafrost covering the entire land mass. Svalbard lies 6 degrees south of the northern polar ice cap and 2000 kilometers north of the European continent, surrounded by the nurturing Barents Sea. Despite being so close to the North Pole, the archipelago has a relatively mild climate with temperatures ranging from -46c up to +6c in summer, thanks to the warming effect of the Gulf Stream, shallow shelf and intense sun radiation during the 24hour daylight summer season. This is one of the Earth's last wilderness areas, but, the environment is pressured by a changing climate, pollution and toxins, transported to these pure areas from far away cities.

Dressing with special clothing for flying is a 45 minute affair, full body wool undies, fur lined boots, windproof thermal suits for inland ops, or thick neoprene dry suit, survival suits, for offshore ops. Helmets when flying, and always carry a bag with woolen hat and gloves for ground stops, even in the "summer". Then the fun starts with familiarization in night vision operations and flight. The NVG are a head mounted, binocular, light intensification appliance that enhance the ability to maintain visual surface reference at night. After being issued with a suitably fitting helmet I proceed to navigate my way around the knobs and buttons, the pre mount inspection, lens caps ON, dual power pack OFF, break away feature TEST, lock release button, vertical, fore and aft, eye span and tilt adjustments CHECK and SET. Then I enter into a dark little room to make final adjustments for light, objective sensitivity, focus and depth perception by looking into a "Hoffman box", an instrument that allows you to see images, numbers and various patterns for fine tuning your individual eye focus. This may all sound a little over the top, however when you are clumsily clad in thick gloves and eskimo outfits, strapped into a helicopter maneuvering between ice flows in the dark, you really want to make sure everything is done right. It takes me a little time to understand what I am looking at, with the extra weight of the NVG I soon felt the effects of fatigue and subsequent reduced concentration, vertigo and disorientation, factors easily leading to airsickness. Lighting is confusing at first, the differing effects from lunar, natural, solar, starlight, northern lights, artificial, infra red and instrument lights. The goggles are so sensitive they are able to detect a 0.45-watt light bulb from 14 kilometers away from 1000 ft AGL, or more importantly, a fishing vessel from 50 nm with no target acquired on the radar. The aircraft is equipped with NVG compatible lighting and instrument panel flood lighting as well as mandatory Radar altimeter and low height warning system giving a visual and aural warning during heads up NVIS flight. My initial feeling,

viewing the planet through NVG was scary! Lets just say that its OK if you are standing dead still and merely looking at an object with feet firmly on the ground, but all this changes at 140 knots in a three dimensional world. The 2 dimensional nature of the NVG image necessitates frequent reference to the flight instruments for spatial and situational awareness information. You have a reduction in your peripheral vision and an increased reliance on focal vision, with no depth perception and visual illusions from the effects of lighting. It took me an hour or so to become comfortable using the NVG, but only in a situation of zero responsibility. The green light and binocular tunnel vision takes special training to overcome, especially when suddenly flying into a snow storm, its like a million sparkles of light flashing in all directions making you feel like a star wars fighter at warp speed and completely detached from reality. Piloting procedures cater for all eventualities between the flying and non-flying pilot and communication between flight with NVG on or off, for example the approach to landing can be made with use of the NVG but transition to hover and the landing most certainly not.

Lifting off into the unknown world of hostile ice is a little disconcerting, even with the best trained and equipped pilots, but soon the SA365N2 Dauphin settles down smoothly at a steady cruise of 135 knots until we reach destination. Autopilot is engaged at lift off, the stability belies the gusting 50-knot winds. To port, a massive wall of jagged ice looms up through the green tinted binocular light, a glacier front 200 meters high falls straight down into the turbulent, broken ice slabs in the partially frozen sea below, we reduce our ground speed to 70 knots, setting up a search pattern following the frozen edges of the Fjord. The night sun brings reality back as it dances over forbidden ground, revealing the true hostility and fearsome nature of the dark icy water below. The rich organic output from these warm and cold waters supports a huge shrimp and fishing industry, as well as millions of migratory nesting birds in summer, reindeer, Arctic foxes, various seal species, walrus, whales and polar bears. Svalbard also supports multiple settlements, with no road access between them, of Norwegian, Russian and Polish citizens, a rich coal mining industry, an international research center and the Doomsday vault. The vault is a long tunnel with safe rooms buried into the permafrost, it's a collection of all the Worlds important biological material, seeds etc. the last, safe source of what mankind will need to re start life after a global catastrophe. There are also remote trappers huts in very far corners of the islands. The cliff faces support millions of roosting and nesting birds, a serious flight hazard one would think, however it appears that the unwritten "rule of the thumb" / ops procedure flying close to bird sanctuaries, Quote from Trond Berg, the captain and Chief pilot: Windshield heat ON (makes the windshield softer and safer in case of a head on bird strike)

Landing light ON (we know the birds react to this)

IAS max 60 kts (it sounds amazing, but it's true. Flying at 60 kts or less makes it possible for the birds to navigate and avoid the helicopter! I've personally done this several times, passing virtually through formations of hundreds of little auks without hitting a single bird. You actually see them almost pass through the blades as they shoot past the helicopter). Flying into worsening weather from an Arctic Low pressure system, forced us to abort, deviating from our planned track and returning to base. With a fuel burn of 270

kilograms/hour we had 4 hours endurance, giving a range of 540 nm, more than enough, even with diversions.

Our search for polar bears continued, an elusive predator, free to roam vast areas where no other creatures dare. January is the coldest time of year, with temperatures far below freezing, the merciless pounding wind, ever drifting snow, breaking and forming, an infinite desert of ice as far as the eye can see and beyond, a lone bear roams, the only sound is the whistling wind.