



FINNISH ARMY AVIATION



A FINNISH PERSPECTIVE: MODERN HELICOPTER OPERATIONS IN HIGH NORTH ENVIRONMENT

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HOW HIGH NORTH AND ARCTIC OPERATIONS CHALLENGE MODERN HELICOPTERS



CONSIDERATIONS FOR MAINTENANCE AND OPERATIONS



PRESENTATION BASED ON:
FIN PRACTICAL KNOWLEDGE / FIN OPERATIONAL PLANNING /
FIN TTP'S



AGENDA



1. ORGANISATION AND MISSION SET
2. FIN OPERATIONAL ENVIRONMENT
3. FLIGHT OPERATIONS
4. MAINTENANCE
5. FLIGHT CREW GEAR
6. KEY TAKEAWAYS



24/7 SAR

BASIC +
ADVANCED
TRG TO MIL
HELO'S

SOF AVIATION

HELO
SUPPORT TO
ARMY, NAVY,
AIRFORCE

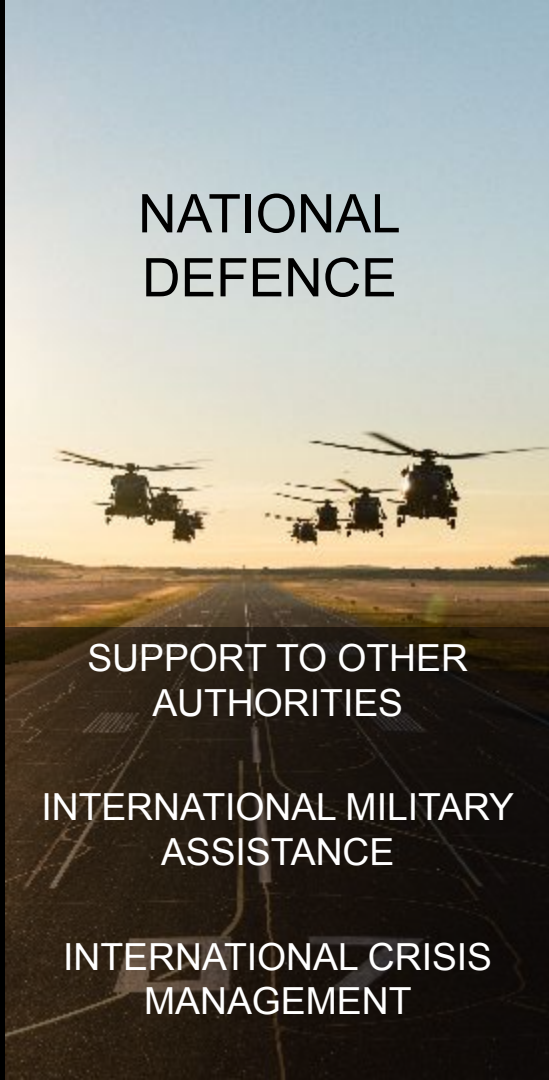
OT&E + T&E
DEVELOPMENT

MAINTENANCE
& LINE

MATERIEL

AIR SPACE
MANAGEMENT

NATIONAL
DEFENCE



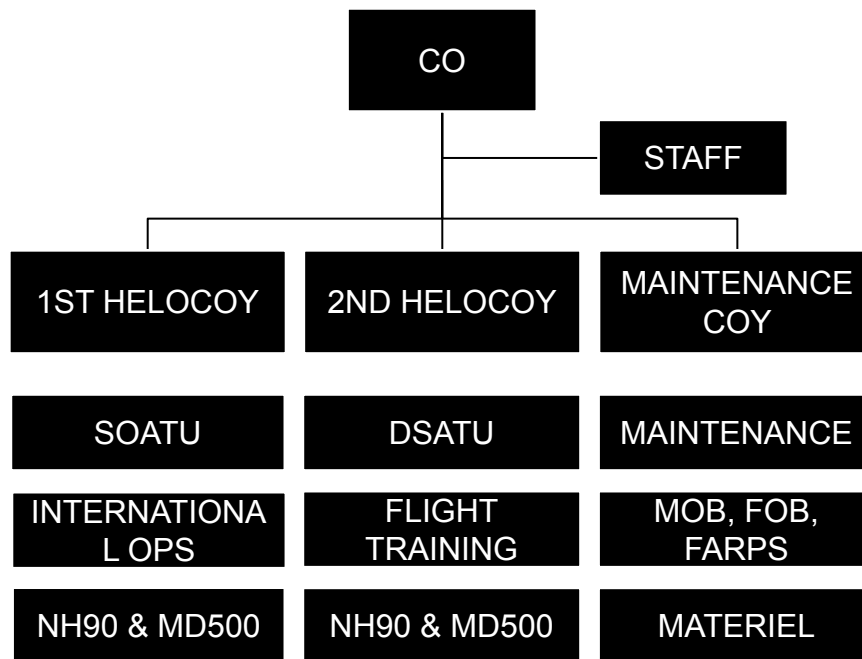
SUPPORT TO OTHER
AUTHORITIES

INTERNATIONAL MILITARY
ASSISTANCE

INTERNATIONAL CRISIS
MANAGEMENT



HELICOPTER BATTALION





N NH90 MISSIONS



24/7
SAR
CSAR



SOF
AVIATION



HELO
SUPPORT
FIRE
FIGHTING



TROOP &
MATERIEL



SEA
MINING



MEDEVAC





ARCTIC – HIGH NORTH



FINLAND CONSIDERS ITSELF AS ARCTIC

REAL “ARCTIC” IS NORTHERN MOST PARTS OF FINLAND

IMPORTANCE:

- 1. GEOPOLITICAL SIGNIFICANCE**
- 2. MILITARY PRESENCE**
- 3. ENVIRONMENTAL CHALLENGES**
- 4. ENERGY SECURITY AND RESOURCES**



CLIMATE FROM OPS PERSPECTIVE



CHANGE OF SEASONS:

- RELATIVELY WARM SUMMER: 20-30 DEG CELSIUS, 20-24 H OF DAYLIGHT.
- COLD/EXTREMELY COLD WINTER -10 - -30 DEG CELSIUS, 0-4 H OF DAYLIGHT. SNOW COVERAGE 0-130 CM
- ESPECIALLY AUTUMN BUT ALSO SPRING: UNPREDICTABLE WEATHER ☐ RAIN, FOG, HIGH WINDS, TEMPERATURES VARYING BOTH SIDES OF 0 DEG CELSIUS
- 1-3 MONTHS OF DAYLIGHT 24/7
MIDSUMMER = NO NVG





ENVIRONMENT FROM OPS PERSPECTIVE



POPULATION:

- CONCENTRATED IN THE BIGGEST CITIES IN SOUTH. LARGE RURAL AREAS IN THE NORTH. □ ROAD NETWORK DECREASES LEAVING LARGER AREAS UNCOVERED.

FINNISH LANDSCAPE:

- DENSE FORESTS WITH ROCKY HILLS CLIMBING HIGHER IN THE NORTH SCATTERED WITH LAKES AND LARGE SWAMP/MARSH AREAS IN BETWEEN □ VARIANCE IN ELEVATION INCREASES TOWARDS NORTH AND EAST WITH THE DENSITY OF POPULATION DECREASING SIMULTANEOUSLY.
- COASTAL AREAS SCATTERED WITH ISLANDS PROVIDING COVER



OPERATIONAL CONSIDERATIONS



**ENEMY'S AVENUES OF APPROACH ARE LIMITED,
NARROWING THE MOVEMENT OF MECHANIZED
TROOPS DOWN TO JUST FEW POSSIBLE ROUTES**

**EMPTY SPACE BETWEEN INHABITED OR ACCESSIBLE
AREAS WITH COVER OF THE TERRAIN ALLOWS
CONCEALED OPERATIONS**

EN COA:

- **GROUND MOVEMENTS FOLLOW THE FEW MAIN
ROUTES AND ACCESSIBLE AREAS. TROOPS ARE
MORE LIKELY SPREAD IN DEPTH LEAVING EMPTY
SPACES BETWEEN**
- **VEHICLE BASED SURVEILLANCE AND ANTI-AIR
SYSTEMS FOLLOW THE SAME RULE □
PREDICTABLE AREAS OF DEPLOYMENT**
- **LOGISTICS WILL MOST LIKELY TO BE STRUGGLING
TO MAINTAIN ADVANCE**

**TACTICS: *STAY LOW, FLY FAST, KEEP QUIET,*
AVOID ACCESSIBLE AREAS**





NH90 IN COLD ENVIROMENT

"LESSONS LEARNED FROM OPS"



HELICOPTERS ARE OUTSIDE IN THE COLD THROUGHOUT THE EXERCISES,

GENERALLY NH90 WORKS WELL IN COLD ENVIRONMENT

- **ANTI/DE-ICING EVEN IN SEVERE ICING**
- **DVE: GOOD HANDLING, USE OF AUTOPILOT, NAV AID**
- **GOOD IFR CAPABILITY**

FLYING CONSIDERATIONS:

- **COMMON ISSUES AND HOW TO SOLVE THEM**
- **RAPID WEATHER CHANGES**
- **SNOW/DEEP SNOW**
- **NVG AND DVE CONDITIONS TRAINING**

*"LEARN TO
OPERATE"*





NH90 IN COLD ENVIROMENT

“TECHICAL LESSONS LEARNED”



**SURVIVABILITY AND RELIABILITY IN HARSH CONDITIONS,
BOTH CREWS AND HARDWARE
PERSONS HAVE TO GET USED TO COLD CONDITIONS “LEARN
BY DOING”**

**PROPER PREPARATIONS CRUCIAL AFTER COLD SOAK TO
ENSURE OPERABILITY
MODERN HELICOPTERS NEED HEATERS, AND LONGER
PERIOD TO WARM UP**

LAYERED FUNCTIONAL WARM CLOTHES ARE ESSENTIAL

LOW COST SOLUTIONS:

- **HEAT BLOWERS**
- **TEMPORARY SHELTERS**
- **BLANKETS AND COVERS**
- **PATIENCE**





FLIGHT GEAR

“CHANGE THE MINDSET”

CONSTANT TEST & DEVELOPMENT

AIR FORCE FLIGHT SUIT FOR JETS VS MILITARY GEAR

BASED ON SPECIAL FORCES OPERATOR SET

**SEVERAL LAYERS CONSISTING ALL OR SOME OF THESE:
MERINO WOOL UNDERWEAR ON TWO DIFFERENT THICKNESS**

TWO PIECE COMBAT UNIFORM

LIGHT INSULATED PANTS AND JACKET

GORETEX COMBAT UNIFORM (WINTER CAMOUFLAGE)

HEAVY WINTER BOOTS

**LIGHT GLOVES FOR PILOTING, HEAVY INSULATED GLOVE
FOR USE OUTSIDE OF THE HELO**

HEAVY INSULATED JACKET TO USE OUTSIDE OF THE HELO





KEY NOTES FROM FIN PERSPECTIVE



1. **SAFETY IN FOCUS (ALWAYS BALANCING WITH PERFORMANCE)**
2. **FLIGHT TRAINING MUST FOCUS ON OPERATIONAL NEEDS FROM THE BEGINNING**
3. **PRIORITY FOR NVG AND DVE CONDITIONS TRAINING**
4. **HIGH LEVEL OF PROFESSIONALISM & CONTINUOUS LEARNING**
5. **COMMON SENSE VS HIGH TECH**



Q/
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