



FORSVARSDEPARTEMENTET

*Norwegian Ministry of Defence*

# Norwegian Ministry of Defence

Noise calculation program and Norwegian – Latvian  
cooperation project at Ādaži Training Field

Cdr SG Jon Ole Siggerud



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- Background
  - Government's Environmental Protection Policy
  - MILSTØY – Norwegian Defence Noise Calculation Program
  - Ådaži Training Field

## Background

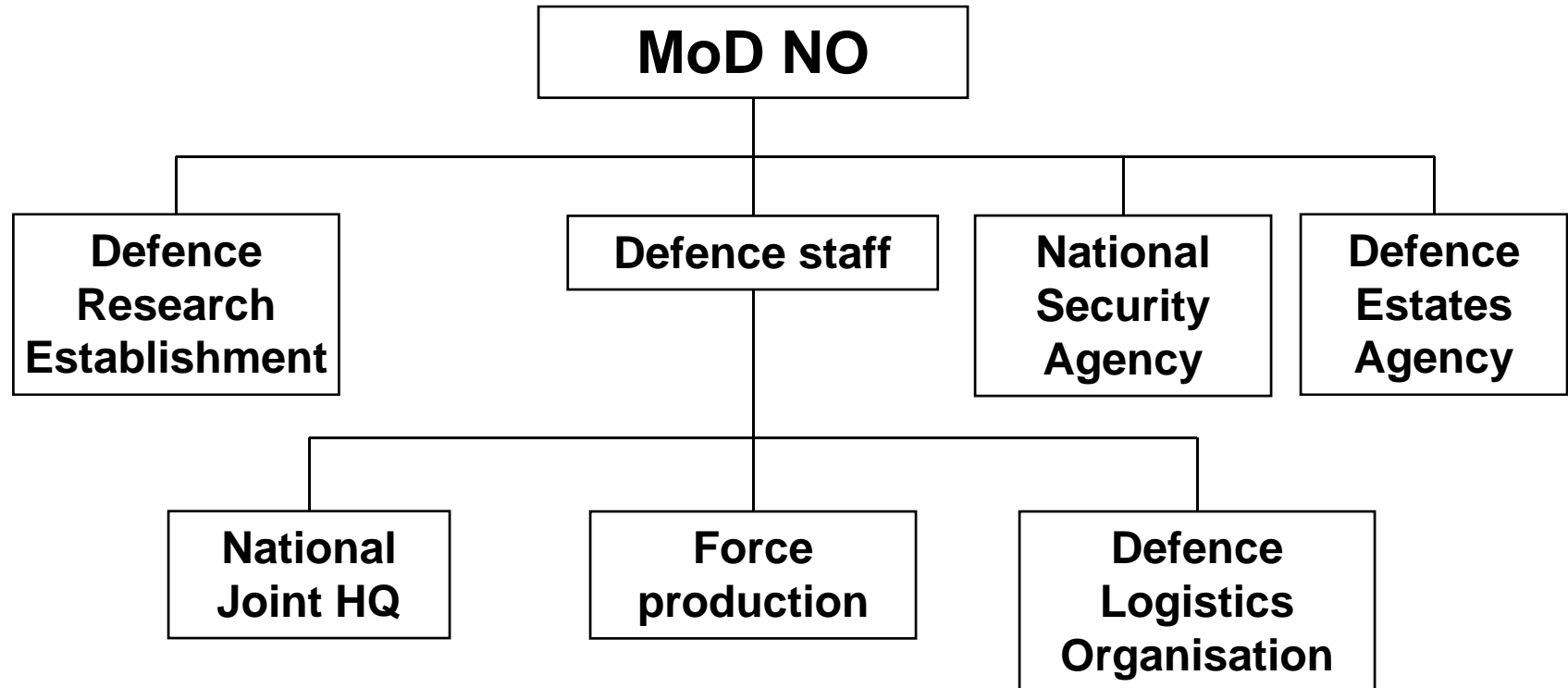
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- Environmental awareness focused in the Defence Sector during late 1980's
- Report no 21(1992-93) to the Storting
  - First environmental action plan for the Defence
- Defence sector environmental action plan in 1998
- Action plan revised in 2002
- Environmental Management System implemented in the sector by the end of 2005



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## Government's Environmental Protection Policy

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- Conservation and sustainable use of biological diversity
- Outdoor recreation
- The cultural heritage
- Eutrophication and oil pollution
- Hazardous substances
- Waste and recycling
- Climate change, air pollution and noise
- International cooperation on environmental issues and environmental protection in the polar areas



**New Norwegian Exercise Field – Regionfelt Østlandet**



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## Climate change, air pollution and noise

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- Climate
- Depletion of the ozone layer
- Long-range air pollution
- Local air quality
- Noise
  - *Noise emission from the Defence's activities are to be prevented and reduced to take account of the requirements of human health and welfare*

## MILSTØY – Norwegian Defence Noise Calculation Program

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- Developed by SINTEF for Defence Estates Agency
- Enable the user to define a number of scenarios to be calculated
- May consist of any number of noise activities
- Simulations makes it easy to change conditions and scenarios
- Requirements: Source data
- Define:
  - Noise source(s)
  - Source position (on a map)
  - Quantity
  - Time distribution
  - Weather condition
- Presented as noise levels or noise contours/colour plots on map



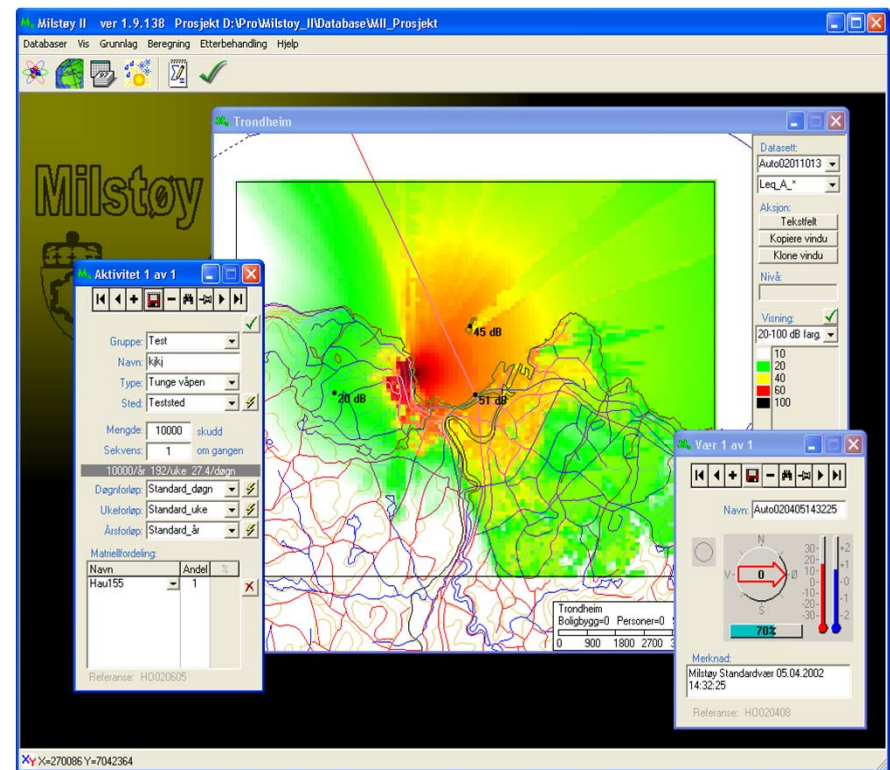


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## MILSTØY

- Includes all noise sources
- Planning new shooting and exercise fields
- Planning noisy activities at existing fields
- Combined with other equipments; surveying noise emission
- Developed for areaplanning



# MILSTØY

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## Input:

- Source data
- Description of the activity
  - quantity
  - situation
  - time
- Digital maps



## Results:

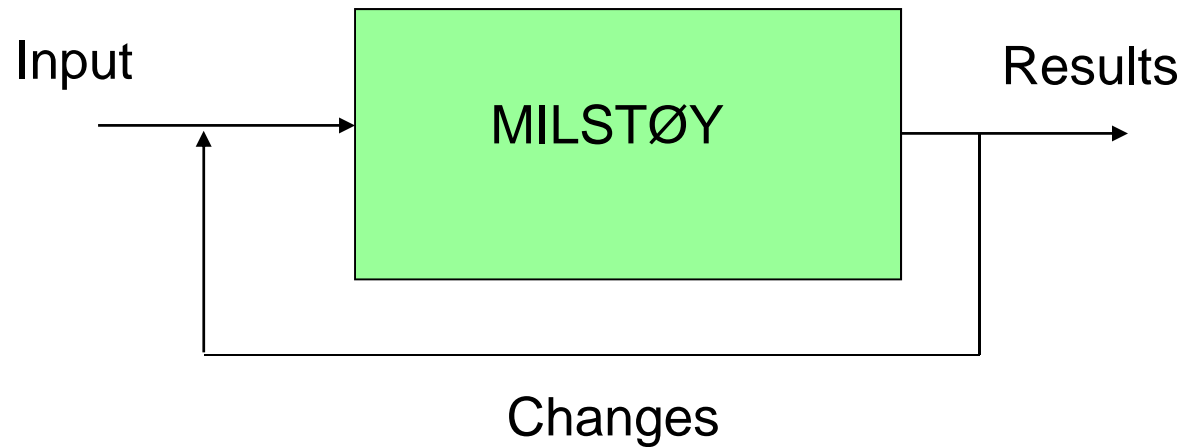
- Noise zones
- Disturbance



## MILSTØY

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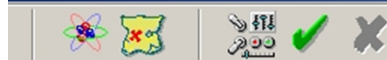
- Consequences from different alternatives
- Calculates most accurate
- Increases the potential for actions/improvements



## Âdaži Training Field

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- Norwegian – Latvian cooperation
- Participation in developing Âdaži Training Field
- Developing included disposition of space/area
- Support in construction and implementation of sub-projects, including noise calculation
- Aim: Avoid new housing areas to be established within noise zones close to the training field
- Norwegian military noise competence:  
Norwegian Defence Estate Agency – Environmental and Cultural Heritage Department



### Activity 2 of 62

Navigation: [Back] [Forward] [Home] [Refresh] [Print] [Zoom In] [Zoom Out] [Reset]

Name: AG3 ✓  
Group: Live\_ammunition  
Type: Lette våpen  
Place: Stand\_B1\_1 ✓  
Action:   
Parameters: RETNI ✓  
Quantity: 1 shots  
Sequence: 1 at a time

1/year 0.0192/week 0.00274/24 hours  
24 hours: Standard  
Week: Standard  
Year: Standard

Material distribution:

Name	Share	%
AG3M75s	1	100.0

Reference: hca040620

### Weather 1 of 1

Name: Standard

Remark: Standard\_weather

Reference: hca040620

### Map

Load topograp

Area Result

Data set: AG3\_B1-B5  
Limp\_A\_\*

List of building  
Sum buildings:  
Level:  
Layout: ✓  
Colour scale 1

latvia

X= 28979 Y= 39065

Stand\_B1\_1

Scale 1:131000

## Ådaži Training Field

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- All results show calculation of maximum noise levels
- Calculation done with indicators:
  - Heavy weapons
  - Blast
  - Hand weapons
- Maps show noise levels in 5 dB steps
- Method of calculation: Nordic Industrial Method
  - Wind 3 m/s
  - Temperature gradient  $+0.65^{\circ}\text{C}/100\text{ m}$
  - Relative humidity 70 %
  - Temperature  $+15^{\circ}\text{C}$
- Non topographic included

## Ådaži Training Field

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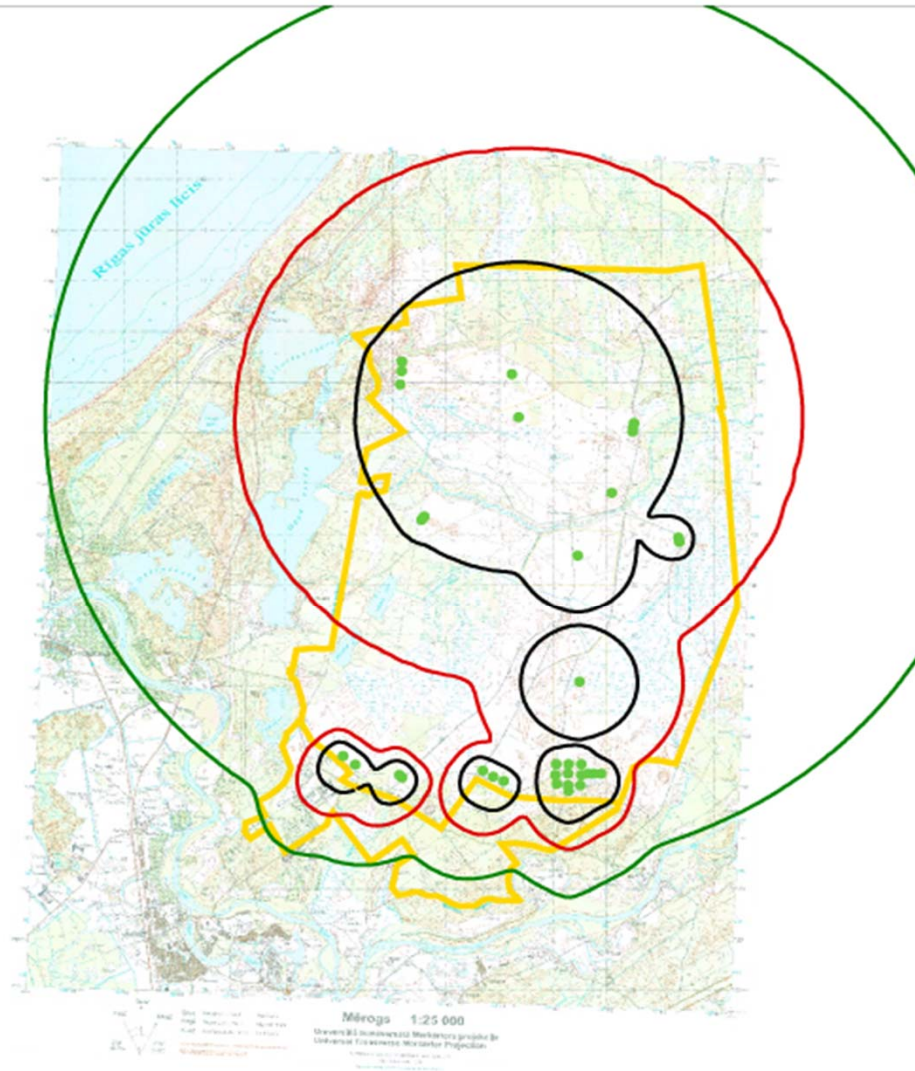
### Results

- Calculation done for
  - Each weapon on every shooting range
  - All hand weapons (cal. <20mm)
  - Blasts

# NOISE CALCULATION - ADAZI TRAINING FIELD

Maximum noise level LC, 1sec. all heavy weapons and blasting

All heavy weapons and blasting



noise level, dBC 1sec  
95  
100  
105

stand  
field boundary  
Target field UXO

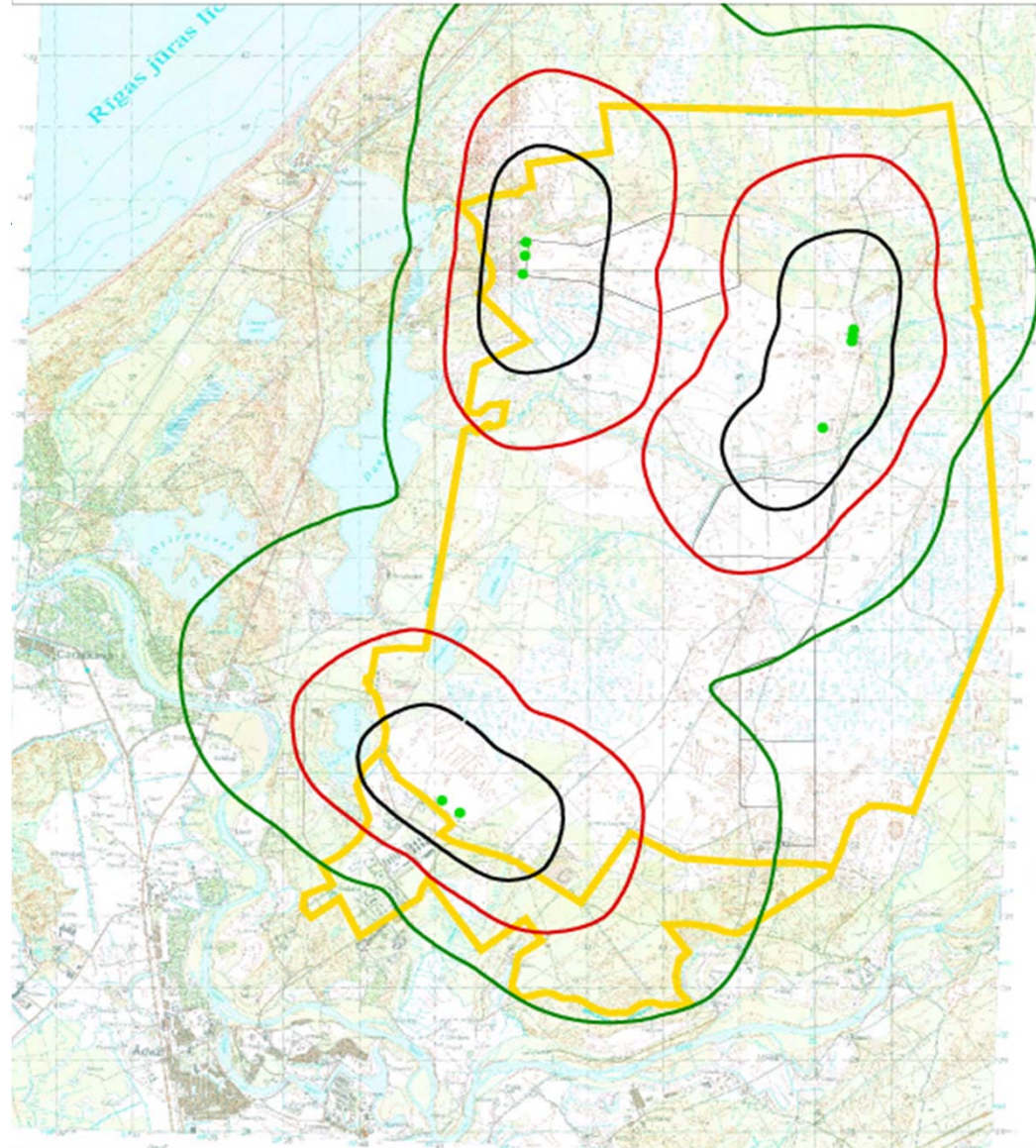
 **Forsvarsbygg**  
Eiendomsforvaltning  
0 3000 6000 meters



# NOISE CALCULATION - ADAZI TRAINING FIELD

Maximum noise level LC, 1sec. 155 mm artillery at shooting range A1

155mm  
artillery



noise level, dBC 1sec  
95  
100  
105

stand  
field boundary  
Target field UXO

**Forsvarsbygg**  
Eiendomsforvaltning  
0 2000 4000 Meters

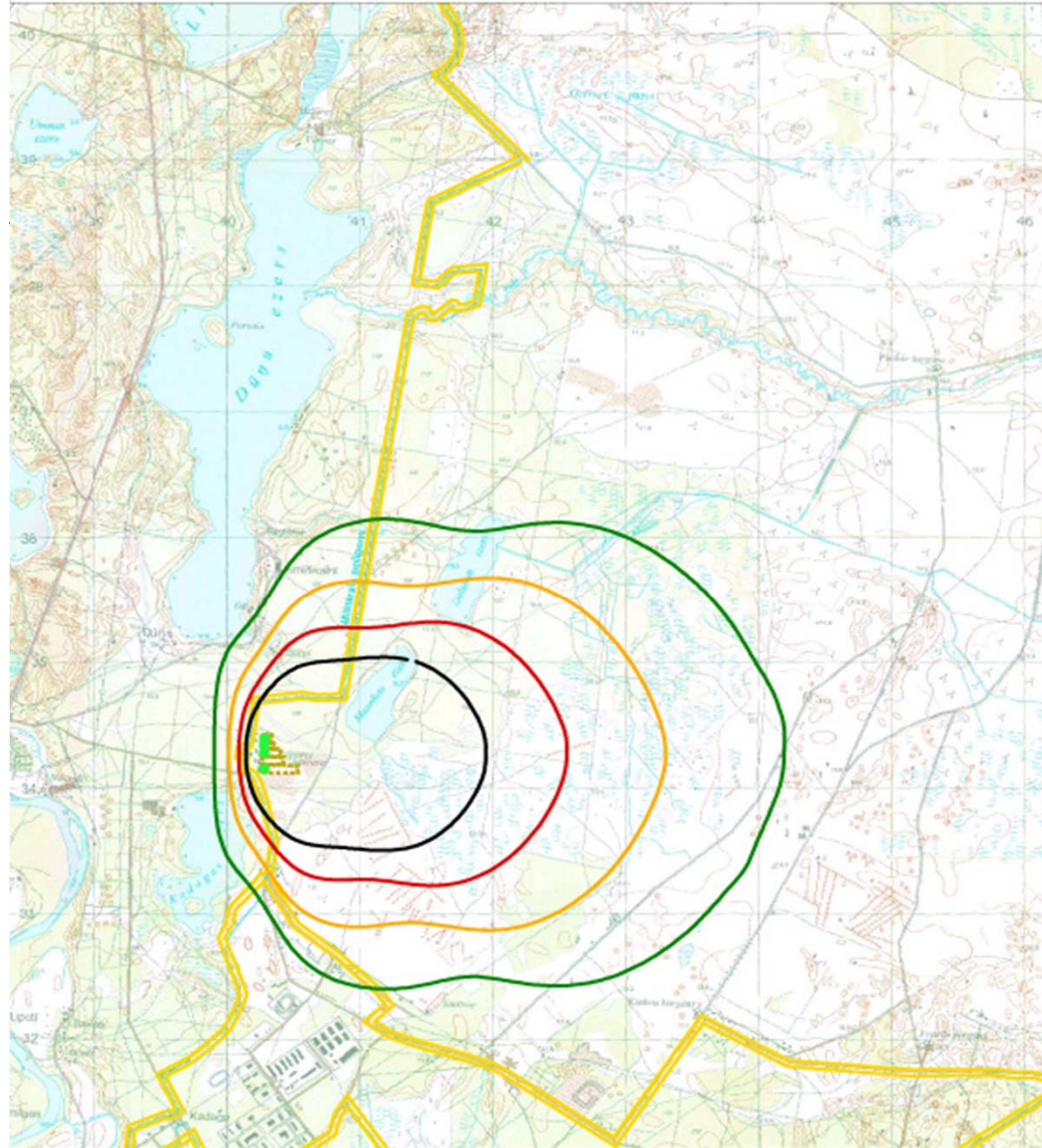


**Shooting House with noise reduction material (Norway)**

# NOISE CALCULATION - ADAZI TRAINING FIELD

Maximum noise level LAI. 7,62mm at shooting range B1-5 with shooting house

7,62mm in shooting house



noise level, dBAI  
55  
60  
65  
70

Shooting range: B1-5  
field boundary



**Forsvarsbygg**  
Eiendomsforvaltning

0 500 1000 1500 Meters



**Leopard at Hjerkins High Mountain Firing Range  
(Norway)**