Honkanen

Occurence type: occurrence

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	NA	NA	NA	NA
copper	3	NA	NA	NA	NA

Easting EUREF: 435753,251
Northing EUREF: 7229163,964
Easting YKJ: 3435900
Northing YKJ: 7232190

Discovery year: 1997
Discovered by: Geological Survey of Finland
Province: Haukipudas (Zn, Cu)
References: 1, 2, 3, 4

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
Comments: Structurally controlled flow of auriferous fluid; precipitation of gold and sulphides in structurally favoured locations. The gold mineralisation overprints a syngenetic Cu(±Zn±Pb) mineralisation.
References: 4

Dimension

Expression: concealed
Form: NA
Shape: NA
Length (m): NA
Width (m): NA
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: NA
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA

Holder history

Previous holders:

Company	Years	Holding type	Comments
Geological Survey of Finland	NA	NA	NA
Norrbotten Exploration AB	2019	Reservation	NA

EXPLORATION ACTIVITY

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1997-1998	core drilling	Esko Korkiakoski	mineralized zone identified	4
	Diamond drilling into combine aero- and ground-geophysical and till geochemical anomaly; Nine diamond-drill holes, total 906 m.			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	0,5m		
	gold	1,54ppm		
	copper	0,65%		
	HoleID	NA		
	From-To	NA		
	Length	1,2m		
	gold	1,47ppm		
	copper	0,74%		

1985-2000	detailed geophysics	Mikko Honkamo, Esko Korkiakoski	geophysical anomaly	4
	ground magnetic, gravimetry, SP, slingram, and VLF-R survey.			

1985-2000	detailed geology	Esko Korkiakoski	key geological features	1, 2, 4
	In co-operation with University of Oulu.			

1985-2000	regional geochemistry	Mikko Honkamo, Esko Korkiakoski	geochemical anomaly	1, 2, 4
	In co-operation with University of Oulu.			

1985-2000	detailed geochemistry	Mikko Honkamo, Esko Korkiakoski	geochemical anomaly	1, 2, 4
	In co-operation with University of Oulu.			

1984-1984	regional geochemistry	NA	geochemical anomaly	
	Country-wide till-geochemical survey			

1976-1976	regional geophysics	NA	geophysical anomaly	1, 2, 4
	Low-altitude airborne magnetic, electric and radiometric survey. Strong magnetic and electric anomalies produced by graphite- and sulphide-bearing schists of the Haukipudas Formation.			

GEOLOGY

Host rock: Greywacke, Mafic volcanic rock, Quartz vein
Wall rock: Black schist

Greywacke (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 1, 4
Comments: The host rocks are part of the Haukipudas Formation, allocthonous, 2093-1873 Ma, Kiiminki (or Northern Ostrobothnia) Schist Belt, deposited in an cratonic or epicratonic rift.The volcanic rocks in the region are MORB-type tholeiite. Deformation: D1: NW-trending thrusting, D2: NE-trending stress field (sigma1 as NE-SW), D3: NW-trending stress field, D4: N-S trending stress field. Mineralisation is supposed to be syn-D3 stage, deformation, possibly at ca. 1.83 Ga

Structures
Fractured

Textures
Granoblastic

Metamorphic description:

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	amphibolite metamorphic facies	medium metamorphic grade	NA		
Comments: Regional metamorphism is related to the Svecokarelian orogeny. Garnet-staurolite-anadalusite grade metamorphism					

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Paleoproterozoic (2500-1600 Ma)	1873-2093		N
Comments: During a late Svecofennian, syn-D3 stage, deformation, possibly at ca. 1.83 Ga.			

Mafic volcanic rock (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA
Color: NA
References: 4

Comments: Deposited in an cratonic or epicratonic rift. The volcanic rocks in the region are MORB-type tholeiite.

Metamorphic description:

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	amphibolite metamorphic facies	medium metamorphic grade	NA		
Comments: Regional metamorphism is related to the Svecokarelian orogeny. Garnet-staurolite-anadalusite grade metamorphism					

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Paleoproterozoic (2500-1600 Ma)	1873-2093		N

Quartz vein (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA
Color: NA
References: 4
Comments: Quartz ± carbonate veins, auriferous(?)

Other minerals:

Mineral	Proportion	Mineral texture
Calcite	minor	
Quartz	major	

Black schist (Wall rock)

Rock type: Wall rock
Proportion: minor
References: 1

Metamorphic description:

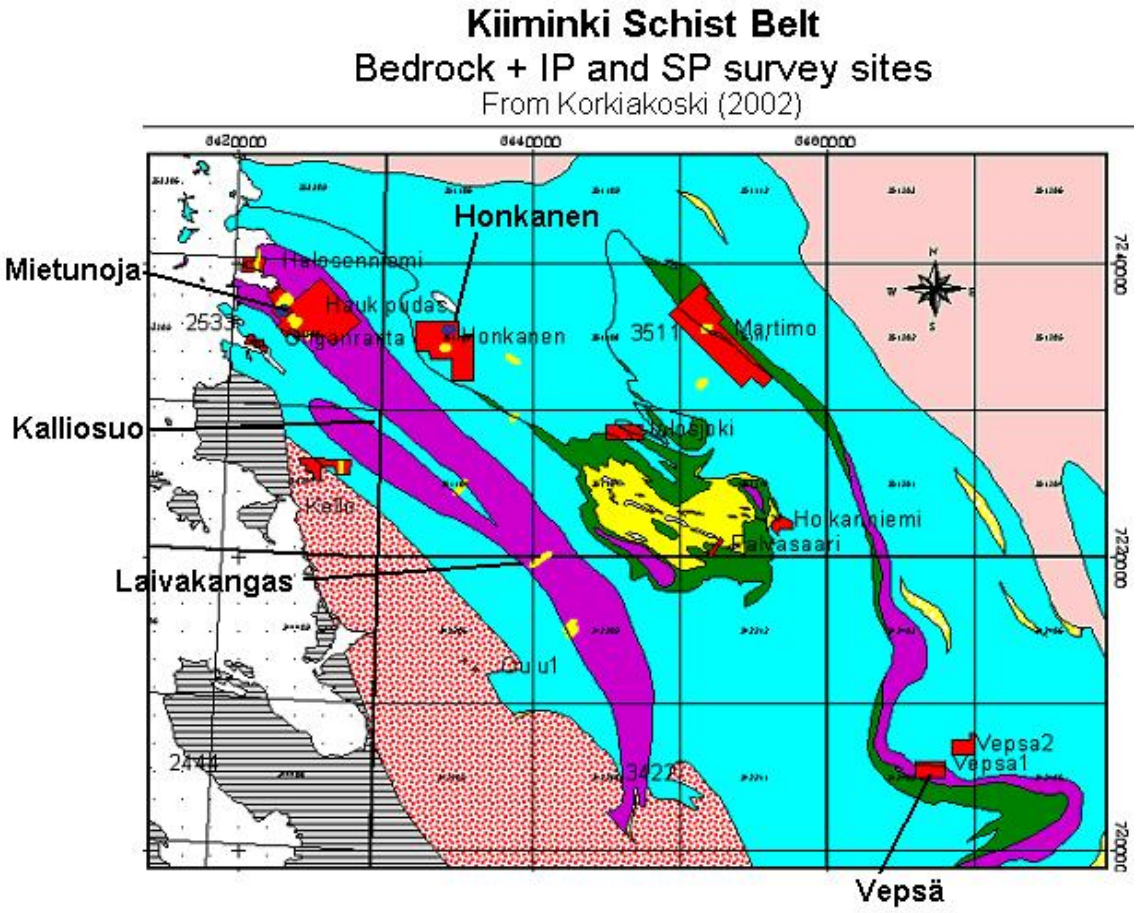
Other minerals:

Mineral	Proportion	Mineral texture
Biotite	major	
Graphite	minor	
Pyrrhotite	minor	
Quartz	major	

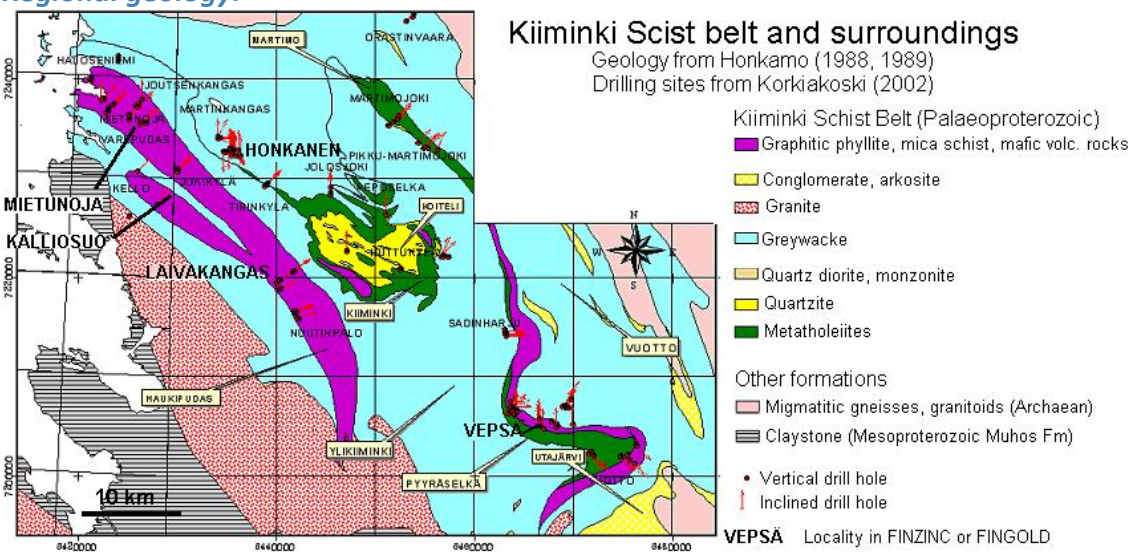
Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	amphibolite metamorphic facies	medium metamorphic grade			

Figures

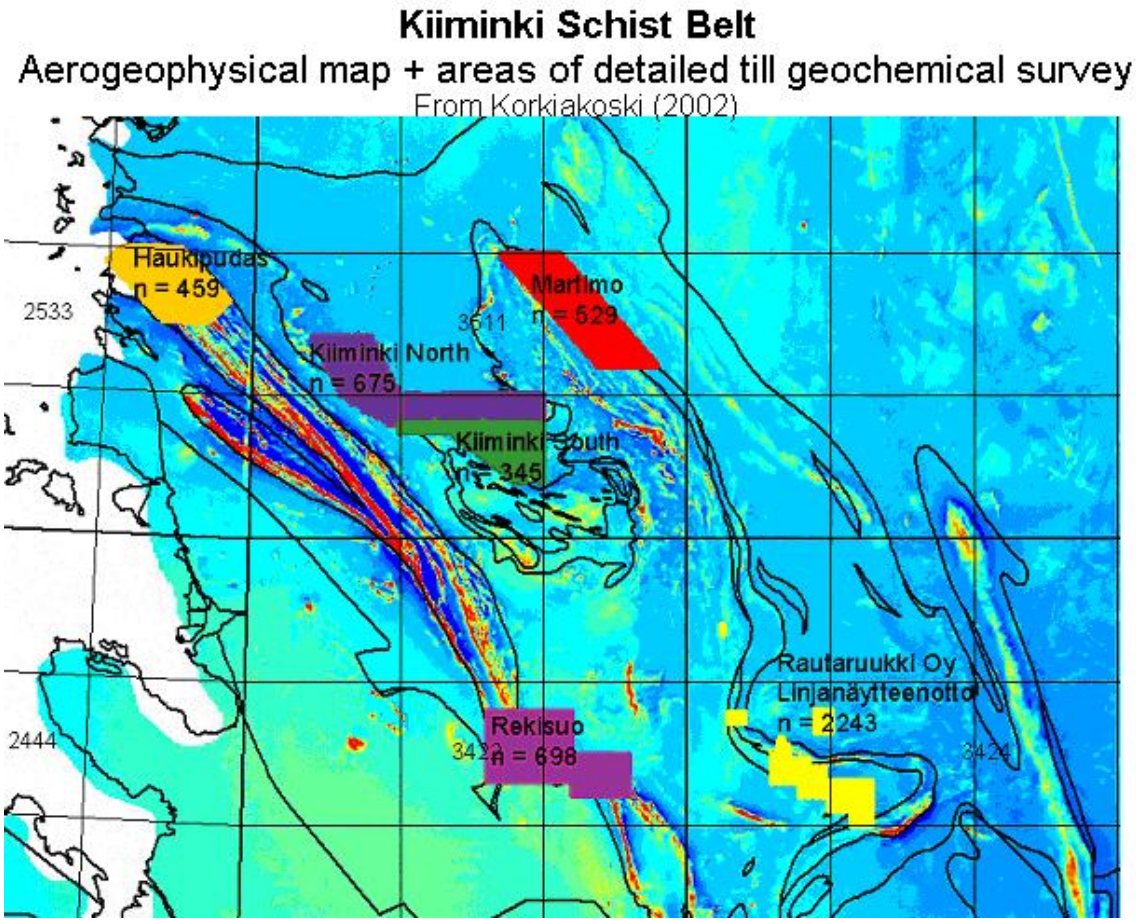
Regional geology:



Regional geology:



Primary anomaly:

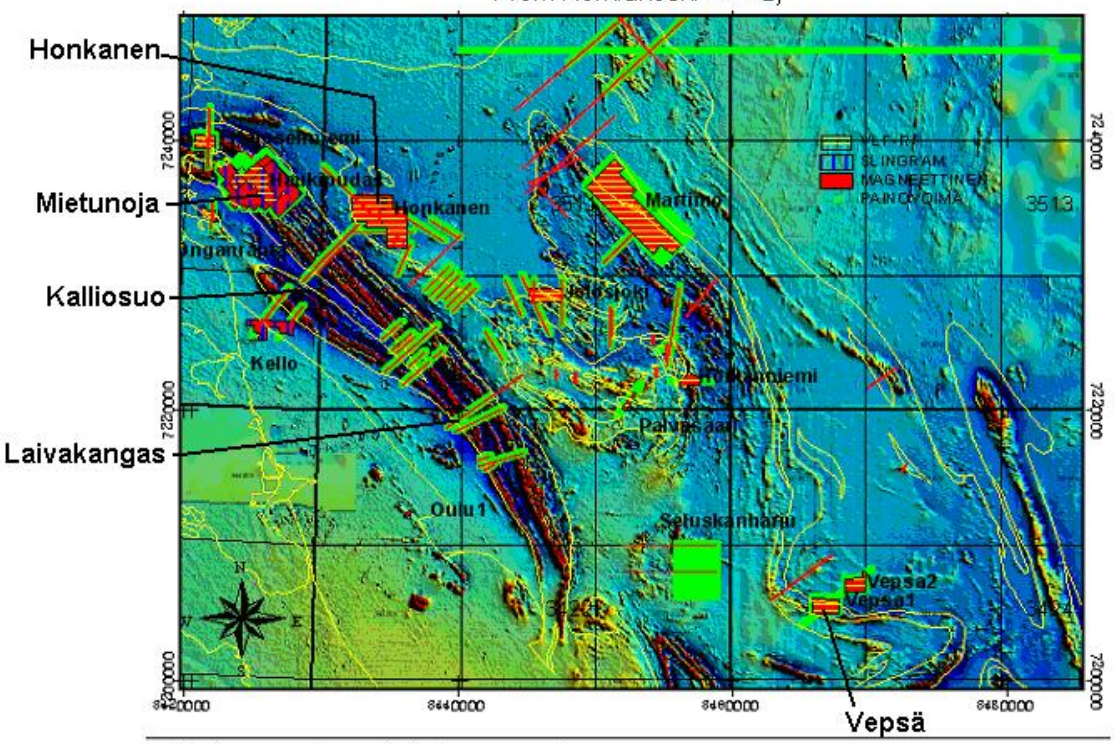


Primary anomaly:

Kiiminki Schist Belt

Aerogeophysical map + areas of ground-geophysical survey

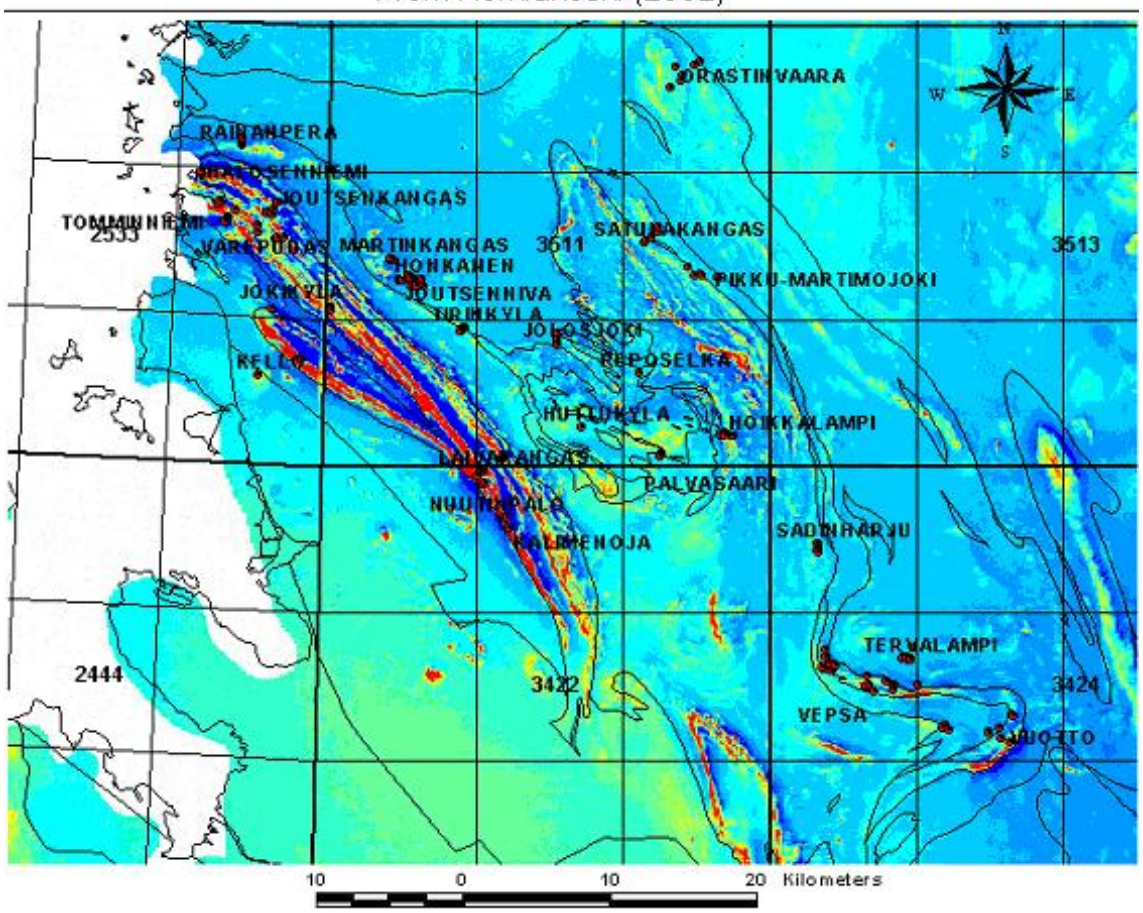
From Korkiakoski (2002)



Red: magnetic and electromagnetic survey
Green: gravity survey

Primary anomaly:

Kiiminki Schist Belt
Aerogeophysical map + drilling locations
From Korkiakoski (2002)



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1. Ahtonen, N. 1996. Pohjois-Pohjanmaan liuskejakson mustaliuskeiden geokemia, mineralogia ja petrofysiikka malminetsinnän kannalta. MSc thesis. University of Oulu. Department of Geosciences and Astronomy. 78 p. (in Finnish)

2. Alapieti, T., Gehör, S., Heikura, P., Kärki, A. & Peuraniemi, V. 2000. Pohjois-Pohjanmaan malmiprojekti 1996-2000: loppuraportti. University of Oulu. Department of Geosciences. Report. 103 p. + CD-ROM (in Finnish)

3. Honkamo, M. 1989. Volcanic rocks in northern Ostrobothnia. Geological Survey of Finland, Report of Investigation 89. 46 p.*http://tupa.gtk.fi/julkaisu/tutkimusraportti/tr_089.pdf*

4. Korkiakoski, E. 2002. Pohjois-Pohjanmaan liuskealueen sinkki-kupari-lyijy-hopea- ja kultamalmitutkimukset vuosina 1990-1999. Summary: Exploration of zinc, copper, lead, silver and gold deposits in the Northern Ostrobothnian schist belt in 1990-1999. Geological Survey of Finland, Report M 19/2533/2534/3511/3422/3524/2002/1/10. 71 p, appended data CD. *http://tupa.gtk.fi/raportti/arkisto/m19_2533_2534_3511_3422_3424_02_1_10.pdf*