Pohjasvaara

Alternative Names: K3
Occurence type: deposit

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	0,99 t	NA	0,99 t	Occurrence
cobalt	2	284,8 t	NA	284,8 t	Small deposit
copper	3	NA	NA	NA	NA
silver	4	NA	NA	NA	NA

Easting EUREF: 599508,37
Northing EUREF: 7352676,523
Easting YKJ: 3599721
Northing YKJ: 7355752

Discovery year: 1985
Discovered by: Geological Survey of Finland
Province: Kuusamo-Kuolajärvi (Co, Au)
District: Kuusamo (Co, Au)
Comments: Discovery by GTK, as a result of low-altitude aeromagnetic and electromagnetic survey
References: 2, 11, 17, 20

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
Sub type 1: Au-Co-Cu
Comments: The auriferous fluids were transported along deep, rift-tectonic faults up to the greenschist-metamorphic environment, concentrated on the antiform; the metals precipitated in structurally controlled sites close to impermeable dolerites and metavolcanic units or, rather, in the more competent sericite quartzite units between the more plastic mafic units.
References: 8, 12, 14, 16, 17, 19, 21, 22

Dimension

Expression: exposed
Form: discordant
Shape: irregular
Length (m): NA
Width (m): 60
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: NA
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA
Dimension comments: Two lodes 10-50 m apart: the eastern is 175 m long and 10-60 m wide, and the western 100 m long and 10-40 m wide. the lodes are controlled by WNW-trending faults crossing the NE-trending Käylä-Konttiaho Anticline.

Holder history

Current holder: Latitude 66 Cobalt Oy
Years: 2018

Holding type: Mining concession (old law)

Previous holders:

Company	Years	Holding type	Comments
Kuusamo Gold Oy	2015-2018	Mining concession (old law)	NA
Dragon Mining Oy	2010-2015	Mining concession (old law)	NA
Polar Mining Oy	2003-2009	Mining concession (old law)	NA
Outokumpu Oy	1993-2003	Mining concession (old law)	NA
Outokumpu Oy	1986-1992	Claim (old law)	NA

EXPLORATION ACTIVITY

Dragon Mining Oy

Years	Activity type	Geologist	Exploration result	Ref
2011-2013	ore deposit evaluation	NA	NA	18
	Environmental assessment			

Outokumpu Oy

Years	Activity type	Geologist	Exploration result	Ref
1994-1994	detailed geophysics	NA	NA	
	magnetic and VLF-R surveys			

1994-1994	core drilling systematic	NA	NA	7
	13 diamond drill cores, in total 884 m			
	Intersections			
	HoleID	POV-3		
	From-To	52,1-57,1		
	Length	5m		
	gold	8,06ppm		
	cobalt	0,13%		
	copper	0,19%		
	HoleID	POV-7		
	From-To	18,5-28,4		
	Length	9,9m		
	gold	10,3ppm		
	cobalt	0,03%		
	copper	0,31%		

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1991-1991	excavation	Heikki Pankka	mineral occurrences	1, 8, 12, 14, 15, 16, 17
	15 trenches, in total 1340 m			

1989-1989	regional geochemistry	NA	geochemical anomaly	
	Country-wide till-geochemical survey			

1985-1992	detailed geophysics	Heikki Pankka.	geophysical anomaly	17
	Ground magnetic, electric, slingram, gravimetry, VLF-R, IP and radiometric survey. Mineralised zone gives response on magnetic methods, slingram, VLF and VLF-R.			

1985-1992	core drilling	Heikki Pankka	key geological features	8, 15, 20

	Core drilling (reconnaissance drilling): 19 diamond-drill holes, total 2022 m.	
	Intersections	
	HoleID	NA
	From-To	NA
	Length	11m
	gold	6,5ppm
	Comments	*Elements enriched in the ore: Ag, As, Au, B, Co, Cu, Fe, Hg, K, Mo, S, Se, Te, U*
	HoleID	NA
	From-To	NA
	Length	6m
	gold	8,9ppm
	HoleID	NA
	From-To	NA
	Length	11m
	gold	5,1ppm
	silver	1,6ppm
	cobalt	880ppm
	copper	1960ppm
	HoleID	NA
	From-To	NA
	Length	1m
	gold	24,7ppm
	HoleID	NA
	From-To	NA
	Length	1m
	gold	15,4ppm
	HoleID	NA
	From-To	NA
	Length	4m
	gold	15,2ppm

1985-1992	detailed geology	Heikki Pankka	key geological features	1, 8, 12, 14, 15, 16, 17

1985-1992	detailed geochemistry	Heikki Pankka.	geochemical anomaly	1, 8, 12, 14, 15, 16, 17
	till stratigraphy and geochemistry surveys; Au, Co, Mo and Te anomaly in till. Primary dispersion; Au, Co and Te anomalies envelop the deposit			

1984-1984	regional geophysics	Heikki Pankka	key geological features	1, 8, 12, 14, 15, 16, 17
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

RESOURCES AND RESERVES

Most recent

Type:	Company:	Year:	Date:	Calc Method:	Reference:
Resource	Latitude 66 Cobalt Oy	2020	1.9.2020	JORC code	9, 10
	Comments: In GTK´s Mineral deposite database K1, K2 and K3 are three separate minerale deposits. K1 = Juomasuo. K2 = Hangaslampi. K3 = Pohjasvaara. 200 ppm Co cut-off has been used for K1 and 0.5 ppm Au cut-off has been used for K2 and K3. This results in total amount of 20.6 t of Au and 16 500 t of Co in 25.71 Mt of ore in K1, K2 and K3.				
	Category:	**Indicated mineral resource**			
	Tonnage:	**0,34 Mt**			
	gold	2,2 ppm			
	cobalt	640 ppm			
	Cutoff:	**gold 0,5 ppm**			
	Category:	**Inferred mineral resource**			
	Tonnage:	**0,12 Mt**			
	gold	2 ppm			
	cobalt	560 ppm			
	Cutoff:	**gold 0,5 ppm**			
	Category:	**Indicated and inferred mineral resource**			
	Tonnage:	**0,46 Mt**			
	gold	2,148 ppm			
	cobalt	619,13 ppm			
	Cutoff:	**gold 0,5 ppm**			

Previous calculations

Type:	Company:	Year:	Date:	Calc Method:	Reference:
Resource	Dragon Mining Oy	2013	NA	JORC code	4, 18
	Comments: Pohjasvaara comprises two lodes controlled by WNW-trending faults crossing the NE-trending Käylä-Konttiaho Anticline. Mainly free native gold chiefly associated with silicates, some gold associated with sulphides. According to EIA report, the U content is 2.5 ppm and Th content 3.2 ppm Mineral resources remain unchanged 1.9.2015.				
	Category:	**Indicated mineral resource**			
	Tonnage:	**82000 t**			
	gold	3,2 ppm			
	cobalt	0,08 %			
	Cutoff:	**gold 1 ppm**			
	Category:	**Inferred mineral resource**			
	Tonnage:	**51000 t**			
	gold	4,7 ppm			
	cobalt	0,1 %			
	Cutoff:	**gold 1 ppm**			
	Category:	**Indicated and inferred mineral resource**			
	Tonnage:	**133000 t**			
	gold	3,77 ppm			
	cobalt	0,088 %			

	Cutoff:	**gold 1 ppm**			

Type:	**Company:**	**Year:**	**Date:**	**Calc Method:**	**Reference:**
Resource	Polar Mining Oy	2011	NA	JORC code	3
	Category:	**NA**			
	Tonnage:	**95000 t**			
	gold	4,9 ppm			
	cobalt	0,09 %			
	copper	0,3 %			
	Cutoff:	**NA**			

Type:	**Company:**	**Year:**	**Date:**	**Calc Method:**	**Reference:**
Resource	Polar Mining Oy	2004	NA	NA	5
	Category:	**NA**			
	Tonnage:	**0,082 Mt**			
	gold	3,2 ppm			
	copper	0,3 %			
	cobalt	0,1 %			
	Cutoff:	**NA**			

Type:	**Company:**	**Year:**	**Date:**	**Calc Method:**	**Reference:**
Resource	Geological Survey of Finland	1993	NA	Non-compliant resource estimate	13
	Category:	**Poorly estimated mineral resource, poorly documented**			
	Tonnage:	**0,06 Mt**			
	gold	5,5 ppm			
	Cutoff:	**NA**			

GEOLOGY

Host rock: Mafic volcanic rock, Sericite Schist

Mafic volcanic rock (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 8, 12

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	Syn		
Comments: Peak regional metamorphism at lower-amphibolite facies: staurolite porphyroblasts in Al-rich rocks, during D1?. This was followed by retrograde greenschist-facies metamorphism: sericitisation of staurolite, during D2?, related to NW-trending shear zones and gold mineralisation?					

Geological age:

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

Sericite Schist (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 8, 12, 14, 15, 16, 17, 21
Comments: Two lodes 10-50 m apart: the eastern is 175 m long and 10-60 m wide, and the western 100 m long and 10-40 m wide.

Ore minerals:

Mineral	Proportion	Mineral texture
Chalcopyrite	major	
Cobaltite	minor	
Cobaltpentlandite	minor	
Gold	minor	
	Mainly free native gold chiefly associated with silicates, some gold associated with sulphides.	
Molybdenite	minor	
Pyrite	major	
Pyrrhotite	major	
Selenide	minor	
Telluride	minor	

Uraninite	minor

Other minerals:

Mineral	Proportion	Mineral texture
Actinolite	present	Alteration product
Albite	present	Alteration product
Allanite	present	Alteration product
Amphibole	present	Alteration product
Biotite	present	Alteration product
Calcite	present	
Chlorite	present	Alteration product
Chloritoid	present	Alteration product
Epidote	present	
K-Feldspar	present	Alteration product
Magnetite	present	Alteration product
Quartz	present	
Rutile	present	Alteration product
Sericite	present	
Talc	present	Alteration product
Tourmaline	present	Alteration product
Tremolite	present	Alteration product

Structures
Folded
Comments: At least two major folding stages. D1 is characterised by a major N-S trending antiform whose northern end is bended to the east due to D2; D2 is also presented by S2 foliation and a conjugate set of NW- and NE-trending, chiefly sinistral shear and fault zones. No deformation before 2000 Ma

Alteration:	Distribution:	Degree:	Relation to mineralization:
silicification	NA	NA	Post
albitic alteration	NA	Strong	Pre
Comments: Locally intense Albitization of clastic sediments and spilitisation of volcanic units when the 2.206 Ga mafic sills and dykes heated the evaporite-bearing sequence and put hot brines into circulation.			
chloritic alteration	NA	NA	Syn
sulphidation	NA	NA	Syn
carbonate alteration	NA	NA	Syn
sericitic alteration	NA	NA	Syn
biotite alteration	NA	NA	Syn

Metamorphic description:

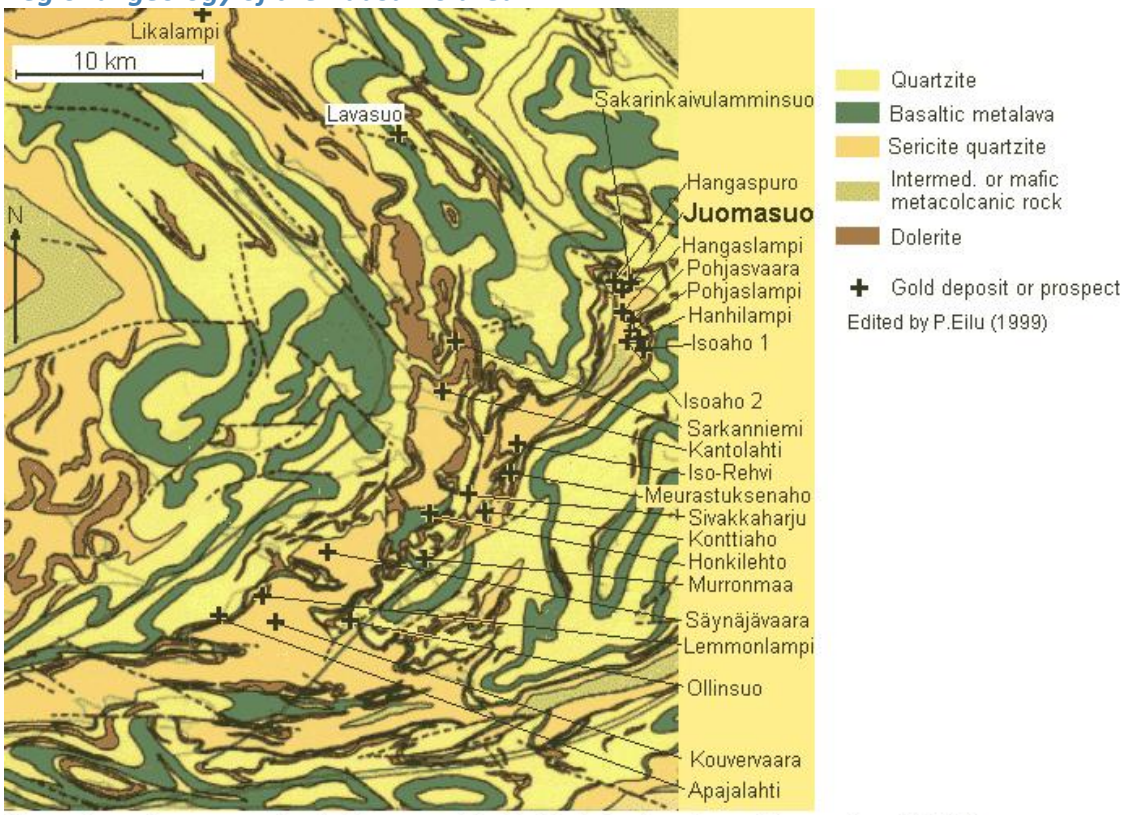
Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	amphibolite metamorphic facies	medium metamorphic grade	Syn		
Comments: Peak regional metamorphism at lower-amphibolite facies: staurolite porphyroblasts in Al-rich rocks, during D1?. This was followed by retrograde greenschist-facies metamorphism: sericitisation of staurolite, during D2?, related to NW-trending shear zones and gold mineralisation? Metamorphic mineral assemblage in metasedimentary rocks; Quartz-albite-sericite-biotite ± chlorite.					

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Paleoproterozoic (2500-1600 Ma)	1800-2050		Y
Comments: Mineralisation between 2.05-1.8 Ga.			

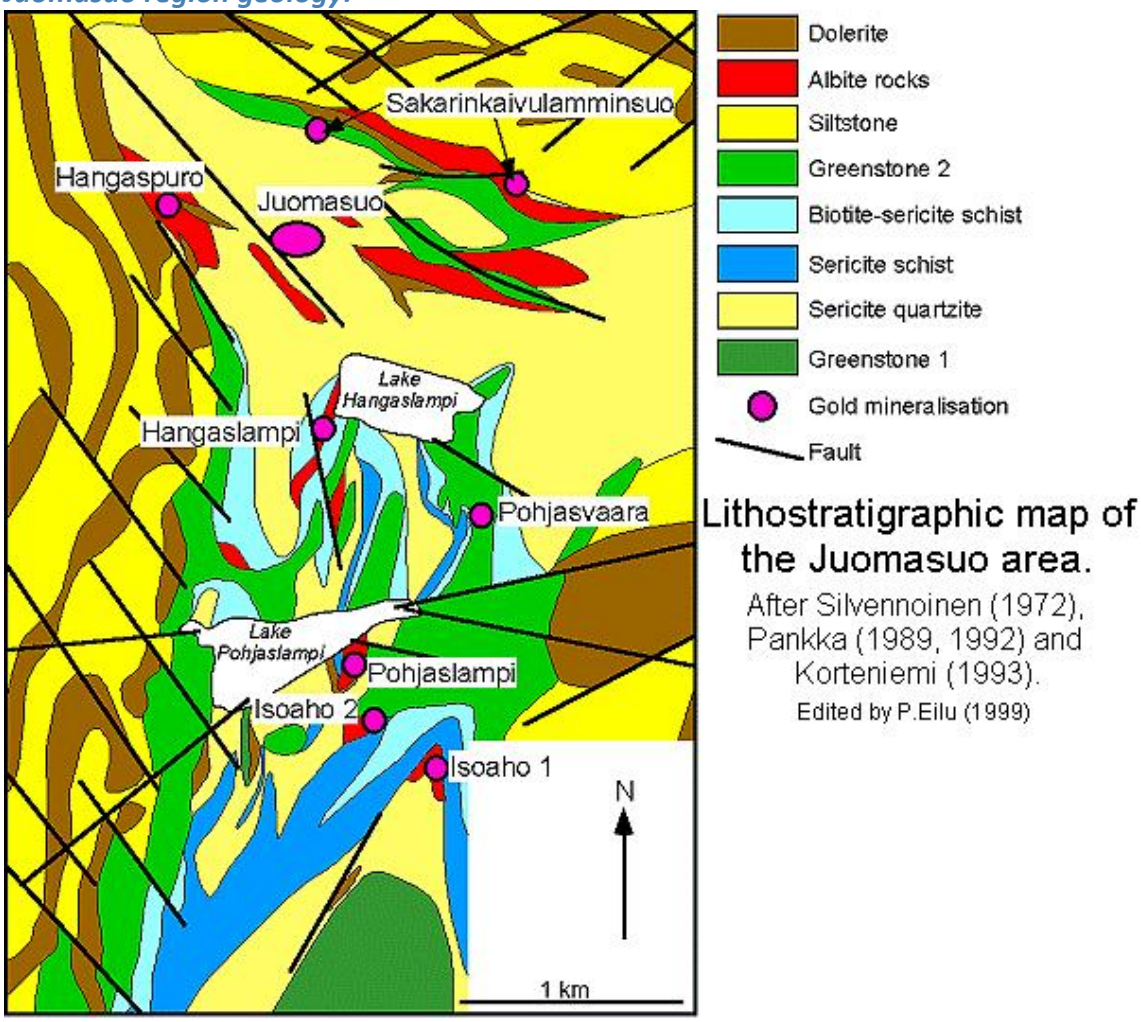
Figures

Regional geology of the Kuusamo area:

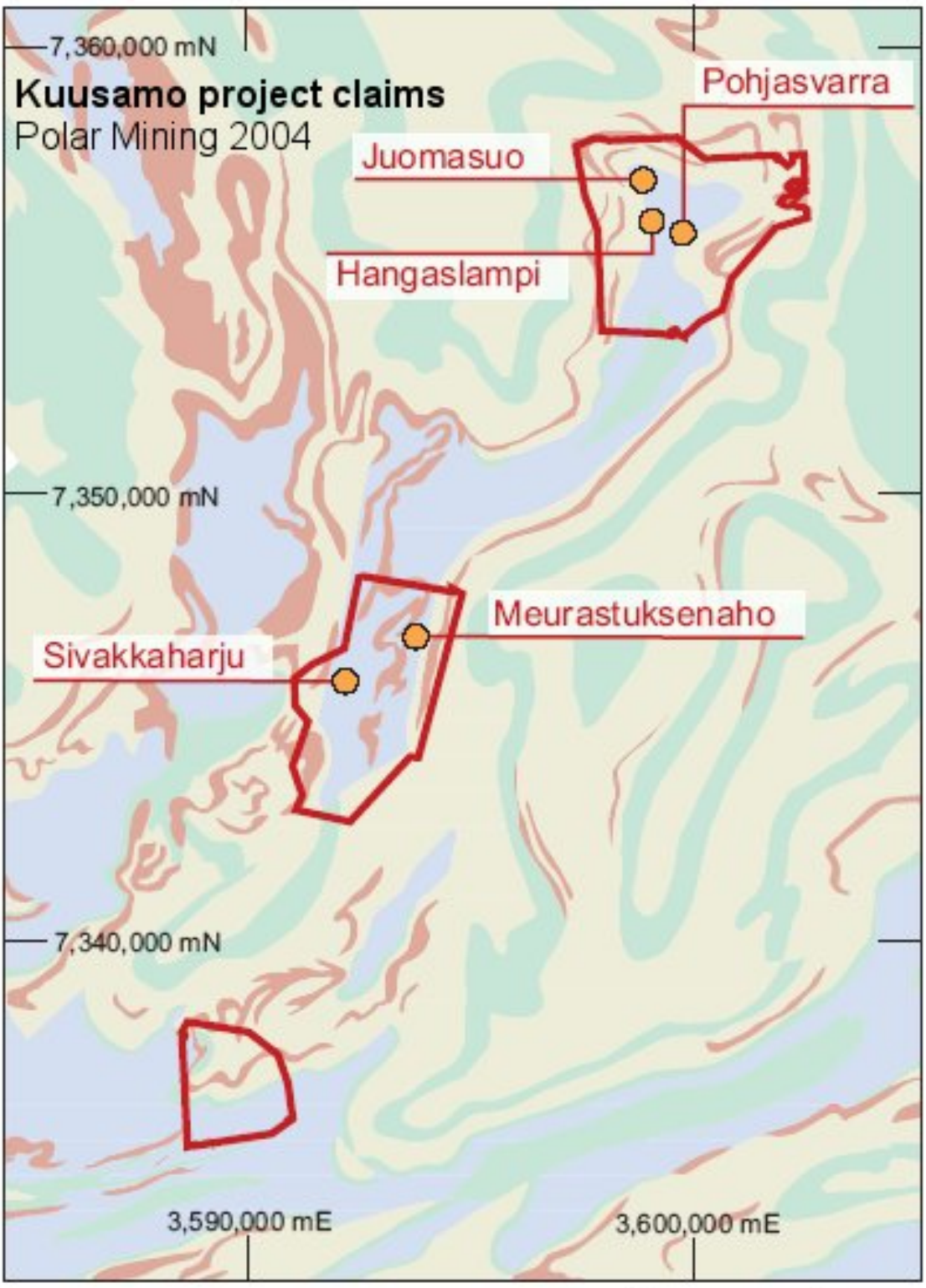


Deposits and prospects in the Kuusamo Schist Belt. Geology from Silvennoinen (1992).
Solid and dashed, curved lines indicate boundaries between lithological units, faults and shear zones

Juomasuo region geology:



Regional geology of the Kuusamo area:



Source:www.dragon-mining.com.au/pdf/Annual2004.pdf

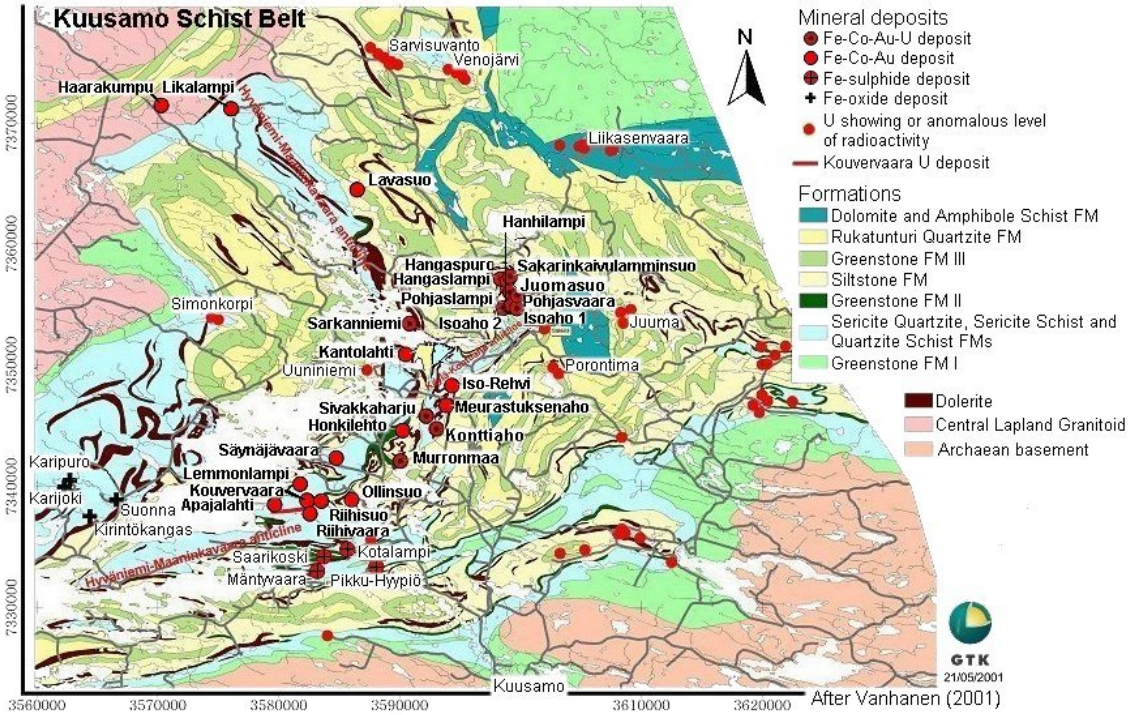
Quartzite, sericite quartzite

Orthoquartzite, phyllite, dolomite, arkose

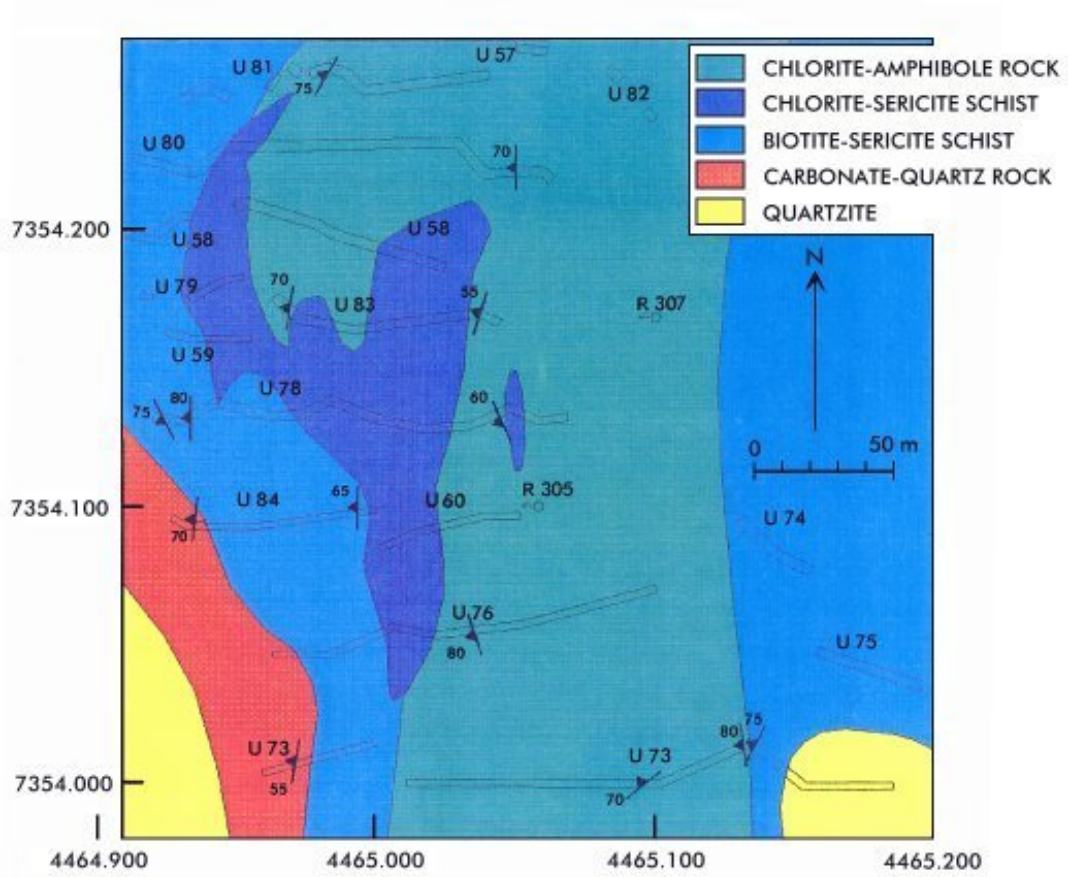
Mafic volcanics and tuff, basic and intermediate lava

Hornblendite, albite dolerite

Mineral deposits of the Kuusamo area on the geological map:

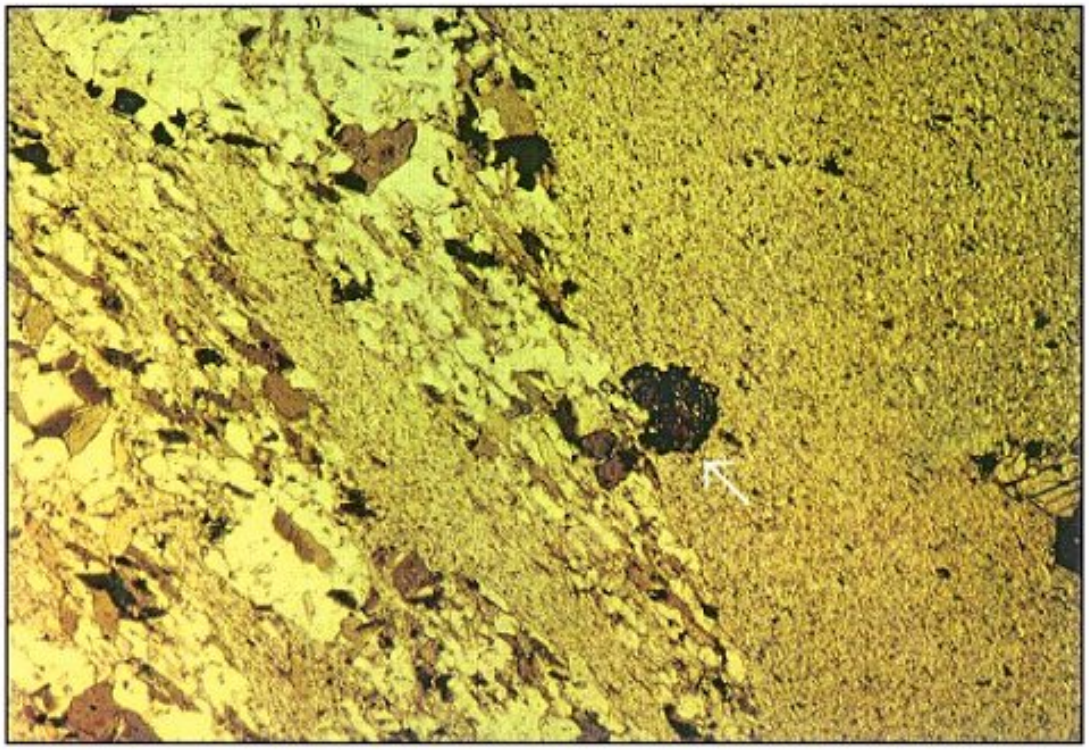


Local geology of the Pohjasvaara deposit:



Geology of the Pohjasvaara area (Korteniemi 1993).

Strongly sericitised host rock(?):



Strongly sericitised rock from Pohjasvaara. Biotite has remained unchanged only in the most quartz-rich parts. Borders of a biotite porphyroblast (arrow) are strongly altered. Width of the photo is ca. 2.5 cm.

(from Korteniemi 1993)

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