Säynäjävaara

Occurence type: deposit

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	0,4 t	NA	0,4 t	Occurrence
cobalt	2	240 t	NA	240 t	Small deposit
copper	3	80 t	NA	80 t	Occurrence

Easting EUREF: 584539,382
Northing EUREF: 7339247,954
Easting YKJ: 3584746
Northing YKJ: 7342318

Discovery year: 1983
Discovered by: Geological Survey of Finland
Province: Kuusamo-Kuolajärvi (Co, Au)
District: Kuusamo (Co, Au)
Comments: Discovery: an anomaly defined by low-altitude airborne electric and magnetic methods in a geologically "right" area
References: 2, 4, 8, 9, 15, 16, 18

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: 11, 12, 14, 15, 17, 19, 20

Dimension

Expression: exposed
Form: discordant
Shape: irregular
Length (m): 150
Width (m): 30
Thickness (m): NA
Depth (m): 100
Area (ha): NA
Dip azim: 135
Dip: 70
Plunge azim: NA
Plunge dip: NA
Orientation method: NA
Dimension comments: Säynäjävaara comprises two lodes in, or close to, intersection of a NW-trending fault and the Hyväniemi-Maaninkavaara Anticline. The deposit is open along strike and at depth

Holder history

Current holder: Latitude 66 Cobalt Oy
Years: 2019

Holding type: Application for exploration permit

Previous holders:

Company	Years	Holding type	Comments
Finkallio Oy	2016	Application for exploration permit	NA
Belvedere Resources Ltd	2004-2011	Claim (old law)	NA
Belvedere Resources Ltd	2002	NA	NA
Geological Survey of Finland	1995-1998	Claim (old law)	no exploration work
Geological Survey of Finland	1984-1985	Claim (old law)	NA

EXPLORATION ACTIVITY

Latitude 66 Cobalt Oy

Years	Activity type	Geologist	Exploration result	Ref
2022	core drilling	Otso Markkanen	NA	5, 6
	Diamond drilling started in summer 2022, guided by recent geophysical and till geochemical surveys. Plan to drill six holes in 2022. The Säynäjävaara deposit corresponds to K8 in Latitude 66 Cobalt Oy reporting.			
	Intersections			
	HoleID	L66K8DD01		
	From-To	55,3-59,2		
	Length	4m		
	gold	4,11ppm		
	cobalt	0,03%		
	HoleID	L66K8DD02		
	From-To	77,9-81,7		
	Length	3,8m		
	gold	9,48ppm		
	HoleID	L66K8DD02		
	From-To	89,8-100		
	Length	10,3m		
	gold	4,84ppm		
	cobalt	0,04%		
	HoleID	L66K8DD03		
	From-To	23,9-33,2		
	Length	9,3m		
	gold	4,32ppm		
	cobalt	0,03%		

2021	detailed geochemistry	Otso Markkanen	geochemical anomaly	6
	Detailed till geochemical survey (base-of-till)			

2021	detailed geophysics	Aaron Davies	NA	
	Ground electromagnetic survey in 2021			

Belvedere Resources Ltd

Years	Activity type	Geologist	Exploration result	Ref
2004-2004	core drilling	Toby Strauss	mineralized zone identified	3, 4, 16
	Core drilling (reconnaissance drilling): 12 diamond-drill holes, total 941 m.			
	Intersections			
	HoleID	SAY0003		
	From-To	45,1		
	Length	6,5m		
	gold	9,5ppm		
	cobalt	0,01%		
	copper	0,02%		
	HoleID	SAY005		
	From-To	76,3		
	Length	7,3m		

	gold	2,4ppm
	cobalt	0,03%
	copper	0,01%
	HoleID	SAY012
	From-To	30,7
	Length	4,4m
	gold	13,5ppm
	cobalt	0,04%
	copper	0,02%

2004-2004	detailed geophysics	Toby Strauss	geophysical anomaly	3
	TEM survey indicated two conductive zones			

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
2000-2000	regional geophysics	Heikki Pankka	key geological features	1, 8, 11, 12, 14, 15
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

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

1983-1984	detailed geology	Heikki Pankka.	key geological features	1, 8, 11, 12, 14, 15

1983-1983	detailed geophysics	Heikki Pankka	key geological features	3, 13
	Ground magnetic, VLF-R and radiometric survey, Ground magnetic and electromagnetic response detected for mineralised zone. Two conductive zones dipping towards each other.			

1983-1984	core drilling	Heikki Pankka	mineralized zone identified	8, 10
	Core drilling (reconnaissance drilling): 18 diamond-drill holes, in total 1938 m *Elements enriched in the ore: Au, Ag, Co, CO2, K, S, Se, Te, W (Pankka et al. 1991)*			
	Intersections			
	HoleID	R301		
	From-To	38,6-61,9		
	Length	23,3m		
	cobalt	0,12%		
	gold	0,3ppm		
	HoleID	R305		
	From-To	91-116,5		
	Length	25,5m		
	gold	4,6ppm		
	cobalt	0,03%		
	HoleID	NA		
	From-To	NA		
	Length	1,5m		
	gold	45ppm		
	HoleID	NA		
	From-To	NA		
	Length	36m		
	cobalt	0,25ppm		

RESOURCES AND RESERVES

Most recent

Type:	Company:	Year:	Date:	Calc Method:	Reference:
Resource	Geological Survey of Finland	1991	NA	Non-compliant resource estimate	15
	Category:	**Inferred mineral resource**			
	Tonnage:	**0,4 Mt**			
	gold	1 ppm			
	copper	0,02 %			
	cobalt	600 ppm			
	Cutoff:	**NA**			

GEOLOGY

Host rock: Sericite Schist, Mafic volcanic rock, Sericite quartzite

Sericite Schist (Host rock)

Rock type: Host rock
Proportion: major
Grain size: Fine grained 0.2 - 1 mm
Color: NA
References: 7, 8, 11, 12, 14, 15, 19, 20

Other minerals:

Mineral	Proportion	Mineral texture
Sericite	present	Alteration product

Textures
Foliated

Metamorphic description:

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

Geological age:

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

Mafic volcanic rock (Host rock)

Rock type: Host rock
Proportion: major
Grain size: Fine grained 0.2 - 1 mm
Color: NA
References: 11, 12, 15

Other minerals:

Mineral	Proportion	Mineral texture
Chlorite	major	
Dolomite	major	
Quartz	major	

Textures

Granoblastic

Alteration:	Distribution:	Degree:	Relation to mineralization:
carbonate alteration	Disseminated	Strong	
Comments: Also carbonate veining			

Metamorphic description:

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

Sericite quartzite (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: Fine grained 0.2 - 1 mm
Color: NA
References: 7, 8, 11, 12, 14, 15, 19, 20

Ore minerals:

Mineral	Proportion	Mineral texture
Chalcopyrite	minor	
Cobaltpentlandite	minor	
Gold	present	
	Native gold is chiefly associated with silicates, less commonly as inclusions in pyrite. Fineness; 95% Au, 3% Ag, 1.5% Se	
Pyrite	minor	
Pyrrhotite	minor	
Rutile	minor	
Selenide	minor	
Telluride	minor	
Uraninite	minor	

Other minerals:

Mineral	Proportion	Mineral texture
Actinolite	present	Alteration product
Albite	present	Alteration product
Biotite	present	Alteration product
Calcite	present	Alteration product
Chlorite	major	Alteration product
Dolomite	present	
K-Feldspar	present	Alteration product
Magnetite	present	Alteration product
Quartz	major	Alteration product
Sericite	present	Alteration product
Talc	present	Alteration product
Tremolite	present	Alteration product

Textures
Foliated

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.			
biotite alteration	NA	NA	Syn
sulphidation	NA	NA	Syn
carbonate alteration	NA	NA	Syn
sericitic alteration	NA	NA	Syn
chloritic alteration	NA	NA	Syn

Metamorphic description:

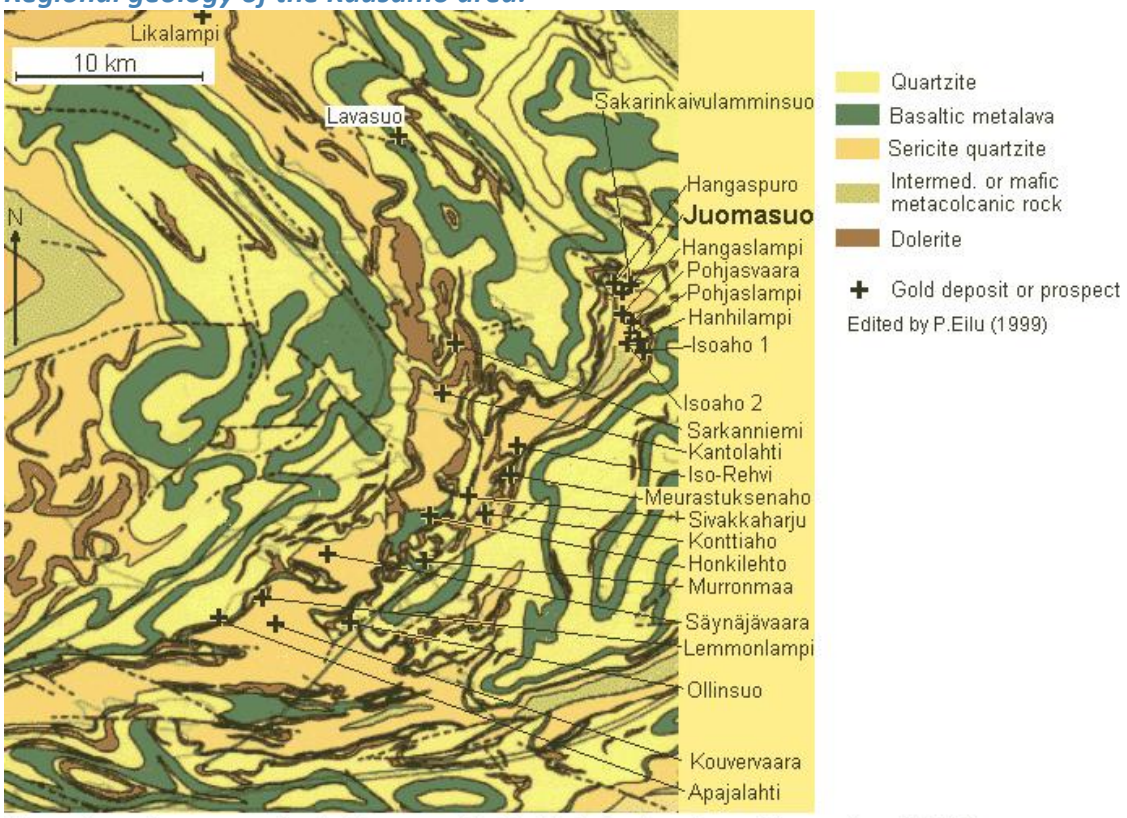
Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	low metamorphic grade	NA		

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Paleoproterozoic (2500-1600 Ma)	1800-2070		Y
Comments: Mineralisation between 2.07-1.8 Ga.			
Paleoproterozoic (2500-1600 Ma)	1600-2500		N

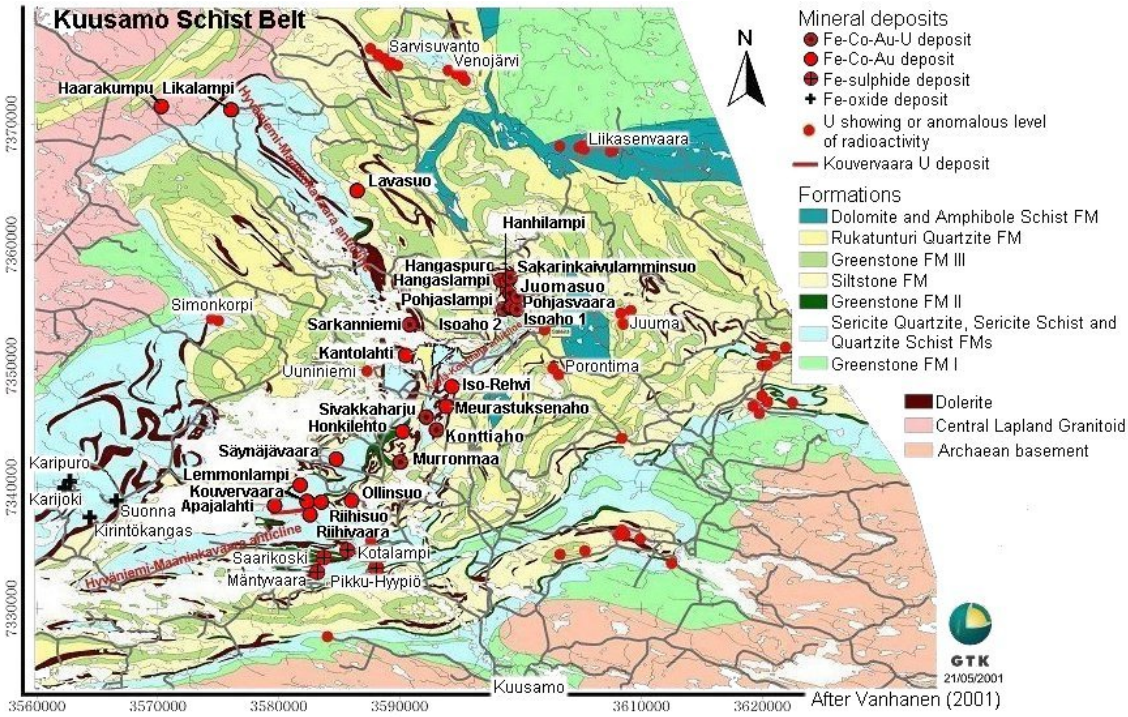
Figures

Regional geology of the Kuusamo area:

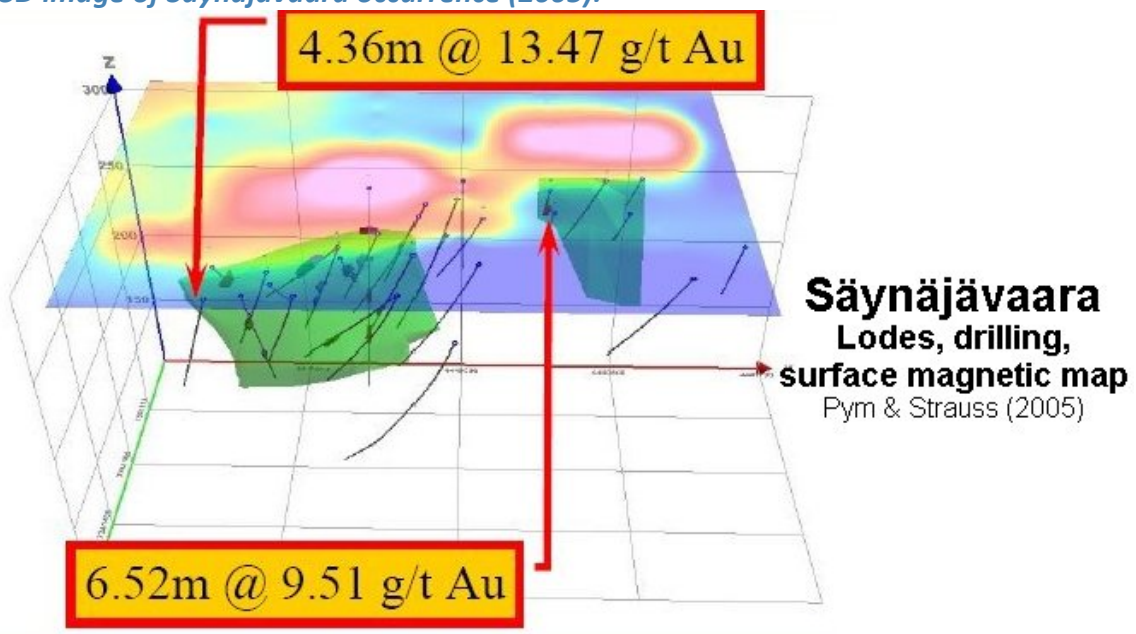


Deposits and prospects in the Kuusamo Schist Belt. Geology from Silvennoinen (1992).
Solid and dashed, curved lines indicate boundaries between lithological units, faults and shear zones

Regional geology and mineral deposits of the Kuusamo area:



3D image of Säynäjävaara occurrence (2005):



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