Tuongankuusikko

Alternative Names: Tuonganoja, Tuongankumpu
Occurence type: occurrence

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	NA	NA	NA	NA
copper	2	NA	NA	NA	NA
nickel	3	NA	NA	NA	NA
cobalt	3	NA	NA	NA	NA

Easting EUREF: 438752,288
Northing EUREF: 7499765,863
Easting YKJ: 3438900
Northing YKJ: 7502900

Discovery year: 1990
Discovered by: Outokumpu Oy
Province: Kittilä (Au, Cu)
District: Sirkka (Cu, Au, Ni, Co)
Comments: Discovery: Revision and reanalysis of exploration data from the 1960s. First indications were Cu-rich sections detected by Rautaruukki in 1968. The existence of gold mineralisation was confirmed by diamond drilling in 1990. The occurrence comprises three lodes: Tuongankuusikko, Tuonganoja, and Tuongankumpu.
References: 4, 5, 6, 7

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
Sub type 1: Au-Co-Cu
References: 4

Dimension

Expression: exposed
Form: discordant
Shape: NA
Length (m): 300
Width (m): 20
Thickness (m): NA
Depth (m): 150
Area (ha): NA
Dip azim: NA
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA
Dimension comments: Open along strike at both ends and at the depth of about 100 m

Holder history

Current holder: B2Fingold Oy
Years: 2020-2023
Holding type: Exploration permit

Previous holders:

Company	Years	Holding type	Comments
Aurion Resources Oy	2014	Mining permit	App. for exploration permit
Drake Resources Sweden AB	2011-2012	Claim reservation (old law)	NA
Tailtiu Oy	2007	NA	NA
Polar Mining Oy	2001-2006	NA	NA
Outokumpu Mining Oy	1986-1994	Claim (old law)	NA

EXPLORATION ACTIVITY

Outokumpu Oy

Years	Activity type	Geologist	Exploration result	Ref
1990-1991	detailed geophysics	Osmo Inkinen	NA	4
	The graphitic phyllite gives a response on both slingram and magnetic survey.			

1990-1993	core drilling	Osmo Inkinen, Rauno Hugg	NA	4, 5
	Core drilling (reconnaissance drilling): 12 diamond-drill holes, total 1741 m; The existence of gold mineralisation was confirmed by diamond drilling. In addition 5 drill holes in 1990 and 6 drill holes in 1991 and 1993, total in 1991 and 1993 509 m)			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	28,5m		
	gold	0,41ppm		
	cobalt	0,04%		
	copper	1,36%		
	nickel	0,14%		
	Comments	*Metal content calculated by weighted sample length*		
	HoleID	TNG-14		
	From-To	NA		
	Length	2,7m		
	gold	1,33ppm		
	copper	2,66%		
	nickel	1,07%		
	cobalt	0,08%		
	Comments	*element content calculated by weighted sample length*		
	HoleID	NA		
	From-To	NA		
	Length	17,5m		
	gold	1,18ppm		
	copper	1,73%		
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	4ppm		

1988-1990	detailed geochemistry	Osmo Inkinen	NA	1, 2
	Cu and Au anomaly in till .			

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1976-1976	regional geophysics	NA	key geological features	
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

Outokumpu Oy

Years	Activity type	Geologist	Exploration result	Ref
1968-1969	core drilling	Osmo Inkinen	NA	4, 5
	11 drill holes			

Rautaruukki Oy

Years	Activity type	Geologist	Exploration result	Ref
1960	core drilling	NA	NA	5
	bedrock mapping and diamond drilling during 1960's			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	18m		
	copper	0,45%		
	HoleID	NA		
	From-To	NA		
	Length	2,5m		
	copper	1,3%		

Figures

Local geology:

Location of the Tuongankuusikko gold mineralisation. In front, one of the refilled exploration trenches. The location is roughly at the boundary between forest and a peat bog.
Photo Pasi Eilu, 21/8/1998.

GEOLOGY

Host rock: Graphite Phyllite, Intermediate volcanic rock, Mafic volcanic rock

Graphite Phyllite (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 3, 4, 5
Comments: Low-grade Cu mineralisation covers most of the graphitic phyllite unit; Au mineralisation is, apparently, concentrated near the margins of the Cu mineralisation. The occurrence comprises three lodes: Tuongankuusikko, Tuonganoja, and Tuongankumpu.

Ore minerals:

Mineral	Proportion	Mineral texture
Chalcopyrite	major	
Gersdorffite	minor	
Gold	present	
Pyrrhotite	major	

Other minerals:

Mineral	Proportion	Mineral texture
Albite	minor	
Calcite	present	
Graphite	minor	
Quartz	minor	

Alteration:	Distribution:	Degree:	Relation to mineralization:
albitic alteration	NA	NA	NA
silicification			

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		
Comments: Metamorphic peak during D2, thrusting during D3 was at least partly post-peak, late metamorphic.					

Geological age:

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

Intermediate volcanic rock (Host rock)

Rock type: Host rock
Proportion: minor

Grain size: NA
Color: NA
References: 3, 4

Alteration:	Distribution:	Degree:	Relation to mineralization:
albitic alteration	NA	NA	NA

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		
Comments: Metamorphic peak during D2, thrusting during D3 was at least partly post-peak, late metamorphic.					

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: minor
Grain size: NA
Color: NA
References: 3, 4, 5
Comments: The occurrence is at the contact zone between albitised metasedimentary and metavolcanic rocks.

Alteration:	Distribution:	Degree:	Relation to mineralization:
carbonate alteration	NA	NA	Pre
albitic alteration	NA	NA	Pre

Metamorphic description:

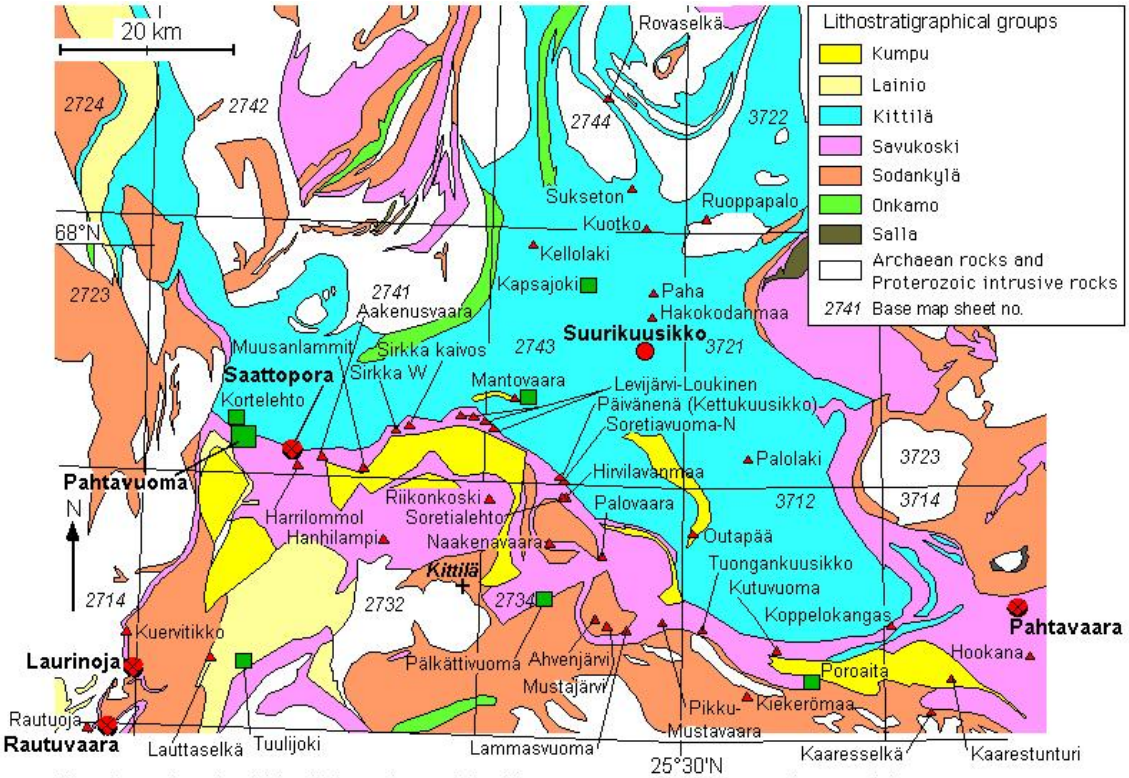
Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	low metamorphic grade	NA		
Comments: Metamorphic peak during D2, thrusting during D3 was at least partly post-peak, late metamorphic.					

Geological age:

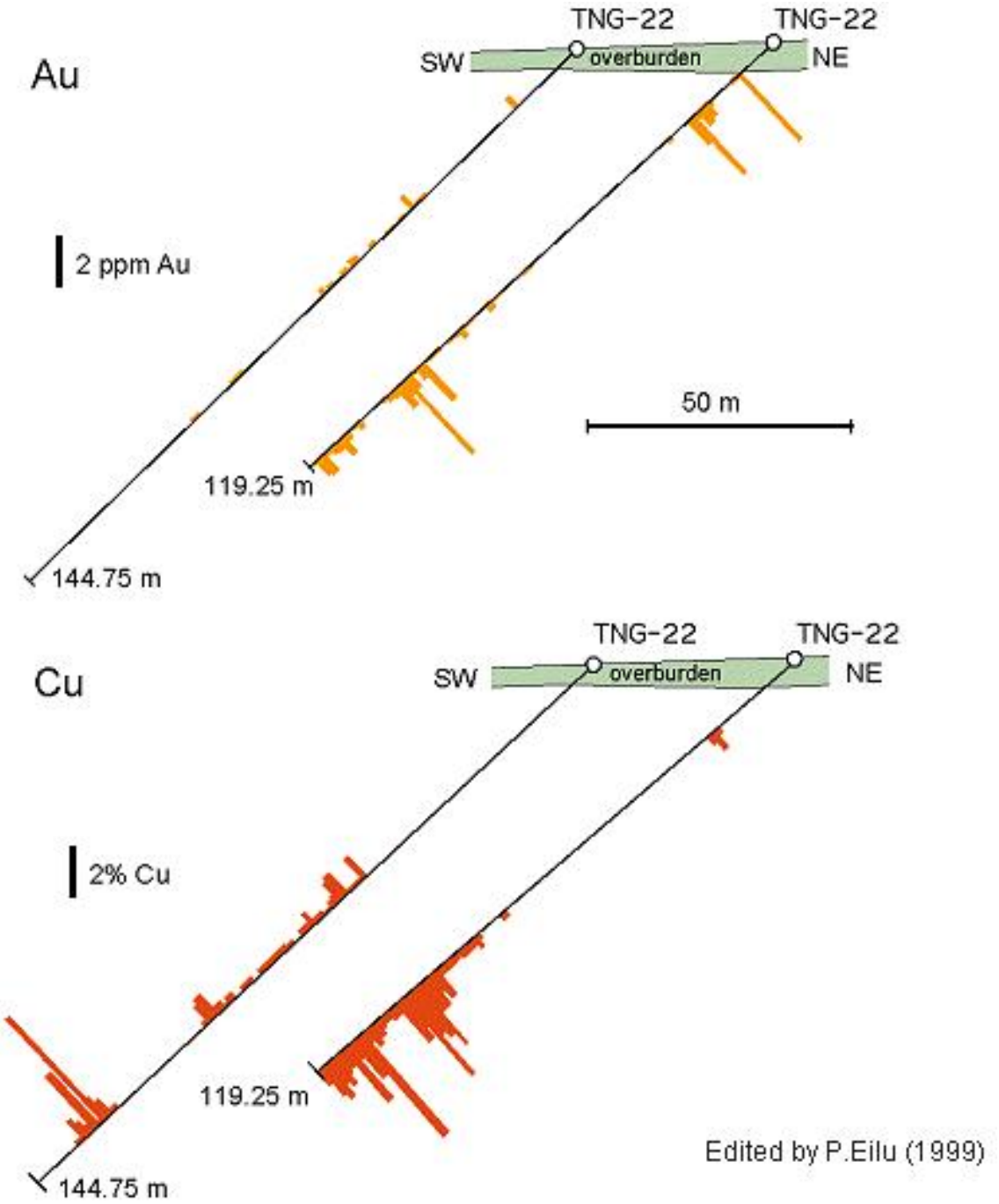
Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Paleoproterozoic (2500-1600 Ma)	1600-2500		N

Figures

Regional geology:



Zinc (green) and gold (red) deposits and significant prospects in the central parts of the Central Lapland greenstone belt. Lithostratigraphy from Lehtonen et al. (1998). Edited by P. Eilu (2007)



Au and Cu in diamond-drill holes in section L51.565, Tuongankuusikko, Kittilä. From Inkinen (1992).

REFERENCES

1. Hugg Rauno, 1993. Kaivoslain 19 §:n mukainen tutkimustyöselostus Kittilä, Tuonganoja1, kaiv. rek. nr. 3911/1, Outokumpu Oy*http://tupa.gtk.fi/raportti/valtaus/3911_1.pdf*

2. Hugg Rauno, 1995. Kaivoslain 19 §:n mukainen tutkimustyöselostus KittilänTuongankumpu-nimisestä valtausalueesta, kaiv. rek. nr. 4781/1 ja 5202/1, Outokumpu Oy *http://tupa.gtk.fi/raportti/valtaus/4781_1.pdf*

3. Hölttä, P., Väisänen, M., Väänänen, J. & Manninen, T. 2007. Paleoproterozoic metamorphism and deformation in Central Lapland, Finland. Geological Survey of Finland, Special Paper 44, 7-56. *http://tupa.gtk.fi/julkaisu/specialpaper/sp_044_pages_007_056.pdf*

4. Inkinen, O. 1992. Kaivoslain 19 pyk. mukainen tutkimustyöselostus: Kittilä, Tuongankuusikko, kaiv. rek. n:o 4570/1. Outokumpu Oy, Report 080/3712/OI/92. 2 p. (in Finnish) *http://tupa.gtk.fi/raportti/valtaus/4570_1.pdf*

5. Korkalo, T. 2006. Gold and copper deposits in Central Lapland, northern Finland, with special reference to their exploration and exploitation. Acta Univ. Oulensis, A Scientiae Rerum Naturalium 461. 122 p.*http://herkules.oulu.fi/isbn951428108X/isbn951428108X.pdf*

6. Lehtonen, M., Airo, M.-L., Eilu, P., Hanski, E., Kortelainen, V., Lanne, E., Manninen, T., Rastas, P., Räsänen, J. & Virransalo, P. 1998. Kittilän vihreäkivialueen geologia: Lapin vulkaniittiprojektin raportti. Summary: The stratigraphy, petrology and geochemistry of the Kittilä greenstone area, northern Finland: a report of the Lapland Volcanite Project. Geological Survey of Finland, Report of Investigation 140. 144 p.*http://tupa.gtk.fi/julkaisu/tutkimusraportti/tr_140.pdf*

7. Väisänen, M. 2002. Structural features in the Central Lapland greenstone belt, northern Finland. Geological Survey of Finland, Report K 21.42/2002/3. 20 p. *http://tupa.gtk.fi/raportti/arkisto/k21_42_2002_3.pdf*