Sakatti

Occurence type: deposit

Commodity	Rank	Total measure	Total production	Total resource	Importance
nickel	1	425796 t	NA	425796 t	Medium sized deposit
copper	2	844488 t	NA	844488 t	Medium sized deposit
palladium	3	21,71 t	NA	21,71 t	Medium sized deposit
cobalt	3	20424 t	NA	20424 t	Medium sized deposit
platinum	3	28,37 t	NA	28,37 t	Medium sized deposit
gold	4	14,65 t	NA	14,65 t	Medium sized deposit

Easting EUREF: 489331,889
Northing EUREF: 7492618,639
Easting YKJ: 3489500
Northing YKJ: 7495750

Discovery year: 2009
Discovered by: Anglo American Exploration B.V.
Comments: Discovered by drilling in combined aeromagnetic, electromagnetic and base-of-till geochemical anomalies in the region. Also, "refusal to downgrade Ni-Cu-PGE potential solely on basis that the results did not conform to the widely accepted genetic model" (Brown 2016).
References: 2, 3, 4, 5, 6, 8

Mineral deposit type

Group: Metallogenic deposit
Main type: Ultramafic-mafic (magmatic)

Dimension

Expression: exposed
Form: discordant
Shape: NA
Length (m): 950
Width (m): NA
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: NA
Dip: 45
Plunge azim: 315
Plunge dip: NA
Orientation method: NA
Dimension comments: Subcropping below till and peat, so no real outcrop of the ore exists. Open along strike and at depth. Satellite ore bodies to the NE and SW of the main ore.

Holder history

Current holder: AA Sakatti Mining Oy
Years: 2022-2024

Holding type: Exploration permit

Previous holders:

Company	Years	Holding type	Comments
AA Sakatti Mining Oy	2015	Exploration permit	NA
Anglo American Exploration B.V.	2004-2009	Claim (old law)	NA

EXPLORATION ACTIVITY

Anglo American Exploration B.V.

Years	Activity type	Geologist	Exploration result	Ref
2007-2008	detailed geochemistry	NA	geochemical anomaly	4, 6
	Bottom of till + bedrock subcrop sampling indicated the location of potential ore			

2006-2013	core drilling	NA	mineralized zone identified	2, 3, 4
	A total of 134 DDHs			
	Intersections			
	HoleID	09-MOS8-023		
	From-To	164,4-316,5		
	Length	152,2m		
	copper	0,39%		
	nickel	0,13%		
	platinum	0,42ppm		
	palladium	0,12ppm		
	gold	0,12ppm		
	Comments	*Disseminated sulphides in the upper parts of the intrusion*		
	HoleID	11-MOS8-052		
	From-To	779,3-810,7		
	Length	31,4m		
	copper	2,72%		
	nickel	1,29%		
	platinum	0,38ppm		
	palladium	0,34ppm		
	gold	0,21ppm		
	HoleID	NA		
	From-To	NA		
	Length	150m		
	copper	1,01%		
	nickel	0,23%		
	gold	0,29ppm		
	Comments	*This was the discovery hole*		

2006-2009	detailed geophysics	NA	geophysical anomaly	
	Regional-scale aerogeophysical data purphased from GTK assisted in early stages and helped in selecting ground geophysical survey areas			

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1984-1991	regional geochemistry	NA	geochemical anomaly	
	Regional till geochemical survey			

1977-1994	regional geophysics	NA	key geological features	
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

1973-1977	regional geology	Aimo Tyrväinen	key geological features	10, 11
	Regional bedrock mapping			

1971-1980	regional geochemistry	Pekka Lestinen, Eelis Pulkkinen	key geological features	9
	Till geochemical survey: line sampling with line spacing 1-2 km and smple spacing along the lines 100-200 m. Stream sediment geochemical survey			

RESOURCES AND RESERVES

Most recent

Type:	Company:	Year:	Date:	Calc Method:	Reference:
Resource	Anglo American Exploration B.V.	2016	31.12.2016	JORC code	1
	Category:	**Indicated mineral resource**			
	Tonnage:	**3500000 t**			
	copper	3,45 %			
	nickel	2,47 %			
	palladium	1,18 ppm			
	cobalt	0,11 %			
	platinum	0,98 ppm			
	gold	0,33 ppm			
	Cutoff:	**copper 1 %**			
	Category:	**Inferred mineral resource**			
	Tonnage:	**40900000 t**			
	copper	1,77 %			
	nickel	0,83 %			
	cobalt	0,04 %			
	platinum	0,61 ppm			
	palladium	0,43 ppm			
	gold	0,33 ppm			
	Cutoff:	**copper 1 %**			
	Category:	**Indicated and inferred mineral resource**			
	Tonnage:	**44400000 t**			
	nickel	0,959 %			
	copper	1,902 %			
	cobalt	0,046 %			
	platinum	0,639 ppm			
	palladium	0,489 ppm			
	gold	0,33 ppm			
	Cutoff:	**copper 1 %**			

MINING

Sakatti

Easting EUREF: 489331,889
Northing EUREF: 7492618,639
Status: Under development
Comments: In mine project phase since 7.2.2018
References: 7

GEOLOGY

Host rock: Peridotite, Gabbro, Dunite
Wall rock: Cataclastic rock, Mafic volcanic rock, Paraschist, Mafic hypabyssal rock, Komatiite

Peridotite (Host rock)

Rock type: Host rock
Grain size: Medium grained 1 - 2 mm
References: 5, 8
Comments: Variably altered (serpentine, tremolite-actinolite), komatitic in textures

Geological age:
Ore minerals:

Mineral	Proportion	Mineral texture
Chalcopyrite	present	Dissemination
Chromite	minor	Cumulus
Melonite	present	
Merenskyite	present	
Millerite	present	
Moncheite	rare	
Pentlandite	present	Dissemination
Pyrrhotite	present	Dissemination
Violarite	present	

Other minerals:

Mineral	Proportion	Mineral texture
Augite	present	Intercumulus
Chromite	present	
Magnetite	minor	
Olivine	present	Cumulus
Orthopyroxene	present	Intercumulus
Serpentine	major	
Tremolite	less than half	

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:		
Paleoproterozoic (2500-1600 Ma)	2063-2063	2063	Y		
Comments: This based on Re-Os dating of sulphides and magnetite					
Radiometric age:	**Method:**	**Age:**	**Error (Ma):**	**Mineral:**	**Reference:**
	Re-Os	2063	35		8

Gabbro (Host rock)

Rock type: Host rock
Comments: Coearse-grained 0.5-15 m thick gabbroic intervals.

Dunite (Host rock)

Rock type: Host rock
References: 8

Comments: Olivine adcumulate located at the bottom part of the intrusion. Spinifex textures, komatitic?

Other minerals:

Mineral	Proportion	Mineral texture
Chromite	minor	
Olivine	major	
Serpentine	less than half	

Cataclastic rock (Wall rock)

Rock type: Wall rock
Comments: Heteregeneous polymictic breccia composed of anhydrite, dolomite, calcite, albite, talc, chlorite, quartz. Possibly an evaporitic collapse breccia.

Mafic volcanic rock (Wall rock)

Rock type: Wall rock
Comments: Altered to chlorite-amphibole.

Paraschist (Wall rock)

Rock type: Wall rock

Mafic hypabyssal rock (Wall rock)

Rock type: Wall rock
References: 8
Comments: Gabbroic sills.

Komatiite (Wall rock)

Rock type: Wall rock
Grain size: Fine grained 0.2 - 1 mm
Comments: Wide-spread wall rock to the peridotite. Composed of fine grained pyroxene (cpx and opx) - plagioclase - olivine groundmass with mm-sized plagioclase and olivine phenocrysts.

Other minerals:

Mineral	Proportion	Mineral texture
Clinopyroxene	minor	
Olivine	more than half	
Serpentine	minor	

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