

MEMORANDUM

Norway Nickel Project
Norseman AS

To:
Direktoratet for Mineralforvaltning
Ladebekken 50
7066 Trondheim
Norway

February 27, 2023

Re: **2022 Field Program at the Kautokeino Nickel Project**

Background

Fennoscandia is prospective for Ni-sulphide deposits (e.g. Pechanga, Sakatti, Kevitsa), as well as orogenic Au deposit (Kittala), IOCG deposits (Kiruna), VMS deposit (Boliden district) and Ti-V-Fe deposits. The boundaries between Archean and Proterozoic rocks on surface are also an excellent indicator for cratonic margins and intracontinental rift zones from mantle plume impingement. At the regional scale, the Kautokeino Ni-Cu property is located along this Archean-Proterozoic contact within a Paleoproterozoic greenstone belt that formed during rifting of two cratonic blocks. Regional till geochemical sampling in 2012, carried out by Dalradian Resources, highlighted numerous Ni-Cu-Co-PGE glacial till geochemical anomalies which potentially indicate the presence of bedrock mineralisation. Norseman Minerals initiated claim staking and follow-up work on these geochemical anomalies in 2022.

Kautokeino Ni Project

The project consists of 5 claim blocks denoted the Northwest, Northeast, Southwest, Southeast, and Addjetjakka (see Figure 1). The main infrastructure is the town of Kautokeino, the Municipal capital, and the paved Highway 93 from Alta (on the coast, with an airport) to Kautokeino, a trip that is about 130 km and takes about 2 hours by vehicle.

2022 Field Program

From July 11, 2022 to July 13, 2022, Francis MacDonald and Christopher Schmidt carried out 3 days of prospecting and geologic mapping on the Addjetjakka, Southeast and Northeast claim blocks within the project area. 37 samples and 147 geologic waypoints were taken during this time. The rock samples were sent to ALS - Ireland lab for geochemical assay including multi-element and whole rock analysis.

Geologic Observations

Within claim block Addjetjakka, Day 1 –

Geology reported on the Norwegian Geological Survey regional maps is somewhat accurate – mafic tuffs/volcaniclastic rocks dominate the area which are strongly magnetic. A granitic unit is present which is not captured in the regional geology map. Mafic tuffs have up to 5% disseminated py>cpy, in one location, sulphide veins up to two centimeters wide crosscut dominant foliation. Also, trace cpy in an actinolite-calcite vein, these cut volcaniclastics. Out outcrop of mafic/ultramafic intrusive rock, strongly weathered, knobby texture on weathered surface. MgO content is ~14%, this is most likely the high MgO gabbro that has been noted in government geology mapping and previous exploration reports. A calcite-rich dyke outcrops in the area which is most likely a carbonatite dyke. Similar carbonatite-type dykes have been noted at the Bidjovagge IOCG deposit in the northwestern part of the Kautokeino greenstone belt.

Within claim block Southeast, Day 2 –

The Southeast claim block has very little outcrop. Most geologic observations were made from boulders in a road which are assumed to be relatively in place (from within 1 kilometer). Mudstones predominate throughout the area, but a couple outcrops of melanocratic gabbros were observed. One boulder was found with semi-massive py +/- cpy-po within fine-grained cherty sediments. The combination of sulphidic sediments and gabbros is permissive for Ni-sulphide mineralization

Within claim block Northeast, Day 3 –

One east-west river was prospected during Day 3. Lithologies present were dominated by fine-grained mudstone that are variably graphitic. Zones of semi-massive pyrrhotite are present that occur in outcrop up to 100 meters long by 10 meters wide – overall sulphide percentage is ~20%. Pyrrhotite is hosted in graphitic sediments and didn't return any anomalous geochemical values for economic metals. Gabbro dykes crosscut sediments in place – Ni sulphide mineralization is permissive based on lithology observed.

Geochemical Results

A total of 37 rock samples were sent for 4-acid – ICPMS analysis. From the 37 samples, 5 were anomalous in Cu (>1000 ppm). 4 of these samples were located in the Addjetjakka claim block and were hosted in mafic tuffs with disseminated py>cpy, or within sulphide veins that crosscut foliation. 1 sample was anomaly in the Southeast claim block with 0.16% Cu and 0.1% Ni that was hosted in semi-massive pyrite within cherty fine-grained sediments in a boulder in the road. All semi-massive pyrrhotite samples from the Northeast claim block that were hosted within graphitic argillite did not return any anomalous geochemical values

Conclusions

Addjetjakka

Based on 1 day of prospecting/geological observations, the Addjetjakka target is permissive for Ni-sulphide mineralization based on the occurrence of high MgO gabbro. Bidjovagge-type IOCG mineralization is permissive, and maybe more probable, based on the observation that sulphide/Cu-anomalous veins crosscut dominant foliation. The presence of carbonatite dykes, similar to Bidjovagge, also suggests that similar mineralization might be found in the area.

The area has very little outcrop and a high chance of hiding mineralization beneath extensive glacial and vegetation cover. Geophysics surveys (IP, EM, magnetics, gravity) should be completed in the area in order to define geophysical anomalies. Additional geologic mapping should be completed as the regional-scale government maps do not record granitic units in the area. Till sampling coverage completed by Dalradian Resources is sufficient.

Southeast Block

Based on 1 day of prospecting, very little outcrop was observed. The presence of sulphidic argillaceous sedimentary rocks and melanocratic gabbros is permissive for Ni-sulphide deposits. The highest Ni value from rock samples was from this area (0.1% Ni in semi-massive pyrite within cherty sediments).

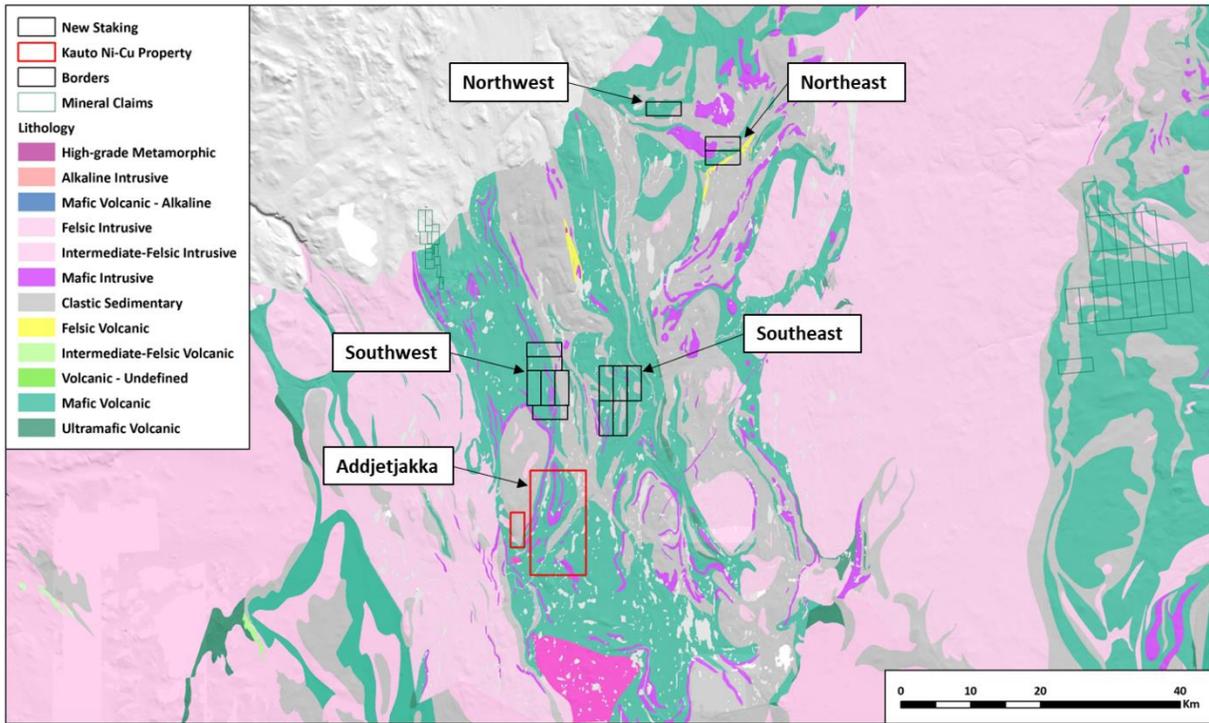
Till sampling within the Southeast block is currently at a 1km x 1km spacing. This could be tightened up to a 250m x 250m grid in order to constrain Cu-Ni anomalism in till. A VTEM-MAG survey is recommended to target strong conductive + magnetic high units which also have strong magnetic vector anomalies.

Northeast Block

Based on 1 day of prospecting/geological observations, most of the outcrops observed were clastic sedimentary rocks that are sometimes graphitic. Massive pyrrhotite within graphitic sediments is not anomalous in economic metals. Gabbros that cut sulphidic sediments indicate Ni-sulphide mineralization is permissive.

We did not reach the location of most Ni-Cu anomalous till geochemical values. The east-west trending river that transects the claim block offers excellent outcrop and boulder exposure and should be prospected. VTEM-MAG will be of little use due to graphitic sediments and the presence of barren pyrrhotite. Till geochemistry sampling should be infilled to a 250m x 250m grid aiming to narrow down the search space. If a coherent geochemical anomaly is defined, targeting conductive-magnetic anomalies within geochemical anomalism may be an effective drill targeting strategy. Geologic mapping within this area should also be effective.

Figure 1



Appendix A – Samples Descriptions

Sample_ID	Date	Lat_wgs84	Long_wgs84	Notes
4303	2022-07-11	68.953133	22.912013	Sub cm py +- cpy veins cutting mafic vcl. 5veins over 50cm. Vein look like they cut foln. Outcrop in creek
4304	2022-07-11	68.953303	22.912421	Dark green grey fg mafic volc/vcl. 5% dissem py, probably trace cpy from peacock and blue colored weathering. Mm scale veins of sulphides as well. Blotches of black, vfg magnetite. Rock is very Str magnetic . Py veins turn into tremolite (?) or some kind of amphibole, light green, fibrous, fibers are perpendicular to vein walls, veins xcut foln
4302	2022-07-11	68.952753	22.912238	Dark grey green fg mafic volc? Agglom? 2% cg anhed globular py. Boulder in creek
40404	2022-07-11	68.953048	22.91189	Mafic volcancis, magnetic, big pyrite crystals
4306	2022-07-12	69.106805	23.143316	Msv py w trace cpy-po (vw magnetic) zone, probably vein hosted, within cherty fgetased rock. Boulder in road
40416	2022-07-13	69.419161	23.583273	Subcrop sedimentary rock, banded sulphides, more rocks similar close by
4328	2022-07-13	69.41901	23.56692	Semi msv po w trace cpy. Mag pen point on cpy grain. Outcrop. Probably graphitic sed host
4327	2022-07-13	69.418652	23.567438	Semi msv po +- py-cpy outcrop. Hosted in graphitic sediments, slightly brecciated. Also qtz veins around w semi msv po within and on margins. Outcrop in creek, at least 20m long, creek goes NS
40412	2022-07-13	69.423914	23.601128	Outcrop gossan
40405	2022-07-11	68.955056	22.916321	Mafic volcancis - fine grained - dark with disseminated pyrite
40417	2022-07-13	69.418762	23.567236	Massive Py and Po >50%
40401	2022-07-11	68.952786	22.912384	Dark green gray, fine grained, mafic volcancis / basalts, strongly magnetic, 2% pyrite and blue mineral,
40413	2022-07-13	69.42282	23.601177	Gossan outcrop - semi.massive - blue peacock color staining, brittle, outcrop over 10m2
4313	2022-07-13	69.422967	23.602437	Gossan cobble in creek, cemented w fe oxide matrix, looks brecciated. Lots of Fe oxide stained rocks here, looks fairly local
40406	2022-07-11	68.949272	22.90236	Fine grained Basalt - magnetic - 2% pyrite - some Chalcopyrite
4318	2022-07-13	69.423869	23.601326	Gossan area, selective sample of framboidal textured gossan
4315	2022-07-13	69.423367	23.601412	Semi gossan, looks like mafic host. Coble in creek. Whole Creek is fe oxide stained, no vegetation
40415	2022-07-13	69.419614	23.585401	Mafic volcancis with pyrite stringers - boulder in stream.
4316	2022-07-13	69.423852	23.601307	Gossan subcrop, this sample is selected pieces that have green to peacock sheen. Gossan is friable, looks sedimentary /has primary layering. Some areas have framboidal gossan texture. Mostly massive, not many fragments
4307	2022-07-12	69.126754	23.162868	White orange grey mg strongly fe carb altered rock, UM? Trace py. Boulder in 50cm wide creek

4320	2022-07-13	69.419244	23.582993	Dark green mg gabbro, boulder in creek, 2% dissem + possible network py. Non magmatic. No po
40407	2022-07-11	68.947725	22.899179	Mafic vclastic, Str magnetic. Only very trace py
4324	2022-07-13	69.417785	23.574816	Gossan within gabbro boulder along the contact of msv calcite vein. Gabbro is Str foln, probably local source. Sample is high graded for gossan zone
4322	2022-07-13	69.417685	23.575087	Gossanous gabbro boulder in creek. Sheared. I think very local - outcrop of gabbro on the creek bank
4326	2022-07-13	69.418497	23.567589	Black cg either sediment of gabbro, boulder in stream. 2% dissem py. Magnetic
4321	2022-07-13	69.418303	23.578437	Clastic seds w 10% py. Cobble in stream
4308	2022-07-13	69.420923	23.612312	Rusty qtz vein boulder in driveway of gravel pit, probably from the sand gravel pit? White to dark grey qtz, trace to 0.2% py, sole fresh, some bxwk
4325	2022-07-13	69.41865	23.573829	Little bar in stream, 5% of boulders are 10% banded and dissem pyrite w trace cpy. Matrix is black, probably mudstone, w some areas very soft and having a metallic sheen when scratched - probably graphitic.
4323	2022-07-13	69.417729	23.575092	Semi msv, network texture? Pyrite within gabbro? Maybe sediments. Black areas are metallic, non magnetic, not sure what it is? Probably graphite
4311	2022-07-13	69.420801	23.607937	Rusty qtz vein cobble, sub rounded, in gravel pit. Trace to 0.2% py
40414	2022-07-13	69.422486	23.599116	Quartz vein within sedimentary rock, 5cm thick, dark red brown oxidized sulphides within vein
4319	2022-07-13	69.422272	23.598277	Rusty qtz vein w 0.5% py. Outcrop in creek, hosted in clastic sediments, wackes and ailtstone. Qtz is white to dark grey
4301	2022-07-11	68.952182	22.912792	Actinolite solomite vein within mafic volcis, trace cpy. Biotite alt on margins. Boulder in creek
40408	2022-07-12	69.10553	23.149371	WR - fine grained intrusive mafic Rock - fine grained - weathered - mica visible - dark color
40411	2022-07-12	69.12739	23.161814	Gabbro intruding meta sedimentary rock - specs of Pyrite and Chalcopyrite - small 10cm Gabbro
40409	2022-07-12	69.106473	23.14396	WR - calcite and iron carbonate rich
40410	2022-07-12	69.108433	23.140703	White orange grey fg rock, Str fe carb alt, w fe carb-qtz veining making up 10% of the rock. 1% euهدral fg magnetite, 0.5% cg glob of py, 3mm wide. UM?

Appendix B – Assay Certificates