

**Banded iron formations in the Neiden – Notsynene area,  
Sør-Varanger, Finnmark**

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## Neiden and Notsynene

Kiruna Iron AB was granted exploration licences in the Neiden and Notsynene areas in 2011. This report is a brief summary of known occurrences of banded iron formations (BIF) between Neiden and Varangerbotn as well as description from a field visit to one of them.

The Archean gneisses in East Finnmark consist mainly of felsic ortho- and paragneisses. They host the economically most important ore deposit in Finnmark, the Sydvaranger banded iron ore.

### List of BIF occurrences from Neiden in the south-east to Varangerbotn and the Caledonian Nappes in the north-west.

Information (UTM, thickness and Fe-assays) taken from the Ore Database, NGU:

Vegskillvatnet	354725 7731464	
Oaivit	355448 7732579	1-1.5m thick, 26.7% Fe
Cizzejavri	355327 7733908	1-1.5m thick, 18.1% Fe
Øvre Neiden	354891 7735398	approx 2m
Indre Neiden	361157 7734730	
Finnsknaus	363769 7734724	1-2m thick, 12.4% Fe
Sandneset	367605 7734899	
Stonga	370545 7738729	up to 2m thick, 18.1% Fe
Mikkelsnes	366741 7737345	0.5m thick, 10.2% Fe
Dazagaia	363726 7738869	0.3m thick, 22.7% Fe
Kaffikjelvatnet	361982 7739020	1-1.5m thick, 23.8% Fe
	362494 7739121	>10m thick, >30% Fe magn
Myrland	362557 7738130	0.2-0.4m thick
Riestuvarri	362845 7738604	3-5m thick, 19.8% Fe
Norskebekken	361131 7737728	up to 4m thick, 14.0% Fe
Neiden	360118 7738058	0.1-5m thick, 18.3% Fe
Soarvenjunni	359472 7737519	800m long and up to 4-5m thick, 23.2% Fe
Ferdesbekken	357300 7738427	covered, located by aeromag (NGU 1960)
Ferdly	357952 7739528	0.3-1m thick, 21.7% Fe
Ferdesvatn	357542 7740162	1.5m thick, 18.3% Fe
Urralas	?	
Klokkarelva	355941 7742279	0.5m thick
Galsajåkka	354011 7742781	0.5m thick, 15.0% Fe
Galsaluobbal	354543 7742367	7m thick (unmineralised layers intermixed), 21.7% Fe
Siljuvarri	355161 7742215	0.3m thick
Hyttebekken	357728 7741741	at least 1m thick, 22.0% Fe
Ferdesmyra	352345 7742503	4 BIF layers of 0.2-0.7m within 6m thickness, 15.1% Fe
Ferdesmyra øst	357202 7741512	3 narrow spaced BIFs, each 0.2-1.5m thick,

Notsynene	352518 7741089	13.6% Fe 8 BIFs, each 0.05-0.5m thick, within 10m thickness, 21.1% Fe
Hæikagoattejavri	351236 7742663	4 BIF layers (2.5, 1.5, 1.0, 0.5m) within 9m, 20.8% Fe
Småvatnelva	348452 7742977	5 dm-thick BIFs within 2m thickness, 22.0% Fe
Cabbalanjasoai	347327 7743289	9m thick with few intermixed 0.5-1m thick amphibolite layers. 8m below, another BIF. Further 10-15m below, compass indication (covered), 20.0% Fe
Hirsajavri	?	
Njucanjunnas	?	
Vuosku	346370 7742650	26.8% Fe
Suddesvuome	346025 7743227	5m thick, 19.3% Fe
Hirsajåkka	346582 7740518	19.6% Fe
Haugajavri	348431 7739703	covered, located by aeromag
Hirsavarri	345570 7739935	4-5m thick, in garnet-biotite gneiss, aeromagnetic anomaly continues at least 4 km towards NE, 19.2% Fe
Gædgesuolujavri	339379 7743208	covered, located by aeromag
Bugøyfjord	?	
Botnelvfjellet	357080 7755654	1m thick, 12.7% Fe
Holmvatnfjell	?	not found
Gardsjøen	29 50`E 69 50`N	Juve et al 1995
Brannsletta	587627 7767554	3m thick, 11.6% Fe
Latnæringen	575637 7773975	1-1.5m thick, 26.4% Fe
Fogdebekkhauget	?	not found
Ildstedberget	?	not found
Siggivarri	?	not found
Ræppengualba	?	not found

### Banded iron formation

The BIFs are hosted in several-kilometer-long amphibolite horizons. The most significant amphibolites are the 300-500m thick Neiden amphibolite, and the more westerly, 200m thick Notsynene amphibolite. Other amphibolite horizons hosting BIFs occur in the Garsjø Complex (up to 50m thick), in the Brannfjell Group / Myrland Formation, and the Mikkelsnes Sequence (10-40m thick amphibolite). The Hirsavarri deposit is the only non-amphibolite-hosted BIF, occurring in garnet-biotite schist.

The BIFs are often extensive along strike, but seldom exceed a few meter thickness, commonly 1-2m. The thickest is Cabbalanjasoai with 9m, and Iversen (1990) reports Kaffikjelvatnet to be more than 10m thick and contains in excess of 30 % Fe magn.

The size (thickness) of the Neiden-Varangerbotn deposits are far from that of the Bjørnevatn ore body (which has undergone several faces of isoclinal folding) and the other deposits in the Bjørnevassgruppen to the east, and they are lower in grade.

## **Field visit to the Kaffikjelvatnet occurrence**

This mineralisation is easily accessible along a 2 km long footpath running northwards from Kotala.

At UTM 594342 7736991 the fine-grained quartz-banded magnetite mineralisation is exposed over a width of 21 m, including an intermixed, 3 m wide hornblende gneiss layer. Hanging-wall is hornblende gneiss and foot-wall is gabbro.

The upper part (the eastern) of the BIF runs with a regular N-S strike, with dip varying from vertical to low-angle dip towards east. The lower, western part is strongly folded. Both the foot- and hanging-wall contacts seem to be dipping approximately 20° east. Estimated true thickness is about 10 m.

The BIF thins out southwards, and 50 m to the south it is only traceable below cover as weak compass indication. According to Iversen (pers com) the BIF can be traced to north of Kaffikjelvatnet, giving a strike length of minimum 450 m. However, according to the geological map the BIF-bearing formation (mica schist) does not extend north of Kaffikjelvatnet, which is also supported by the aeromagnetic map. Iversen indicates a grade in excess of 30 % Fe mag (Ore Database). The aeromag response from Kaffikjelvatnet is rather modest compared to other BIF horizons in the Neiden-Varangerbotn area.

## **Reference**

Iversen, E. 1990: Kartblad 2434 III – Høybuktmoen, kartbladbeskrivelse. Int. rapp. 2170. Prospektering A/S.