

Hovdaneset

History

The following was written in Norges Bergverksdrift (1883): “some years ago Thomas Mølstre found visible gold in a quartz vein hosted in gneissic granite at Hovdaneset. The vein strikes ESE-WNW, dips N and carries pyrite with chalcopyrite. Since then Mr. Niels Berg from Stavanger has extracted gold from a winze in the quartz occurrence which in its hanging wall has a weathered band of gneissic composition. Other quartz veins occur around this larger quartz vein.” In 1884 Norges Bergverksdrift writes: “Vestlandske Grubekompani has explored the gold occurrences at Hovde in Sveen. After discouraging work on some gold occurrences on Bømlo (fig. 1.1B) the company has this summer focused its work on the Hovde occurrences. In Niels Berg’s mine, a winze has been driven to 32 m while drifting amounts to 17 m. The thickness of the quartz vein is 0.5-1.0 m and carries chalcopyrite with varying gold content – up to 26 ppm. The average gold content is 11-12 ppm. Four to eleven employees have extracted approximately 130 tons from Niels Berg’s mine. Another vein occurs in a bog above Niels Berg’s mine. It has been worked in a 10 m deep winze but mining has been unprofitable apart from some spectacular hand specimens with visible gold from 2-3 m depth. In Steinerviken just north of Hovdanæset is an occurrence called Knutsen’s mine. It has been worked in a manner analogous to Niels Berg’s mine.” Reusch (1888) writes that 382.2 grams of gold were extracted from 50 tons of quartz which equals 7.65 grams/1000 kilo. Reusch quotes Niels Berg for saying that when the ore is low in sulfides, it is also low in gold. Reusch also mentions a gold-rich quartz-vein at Rognskårviken northeast of Hovdaneset. Wulff (1996) took three samples (table 6) at the largest of the old workings and describes a number of winzes and test pits in the shearzone hosted quartz-veins. Fig. 7.10 shows the area and a fault that is more or less parallel to the Hardanger fiord fault – a crustal scale structure which probably played a major role in the formation of the meso-thermal gold occurrences at Lyckling and Hidleneset on Bømlo (Wulff, 1996).

Geology

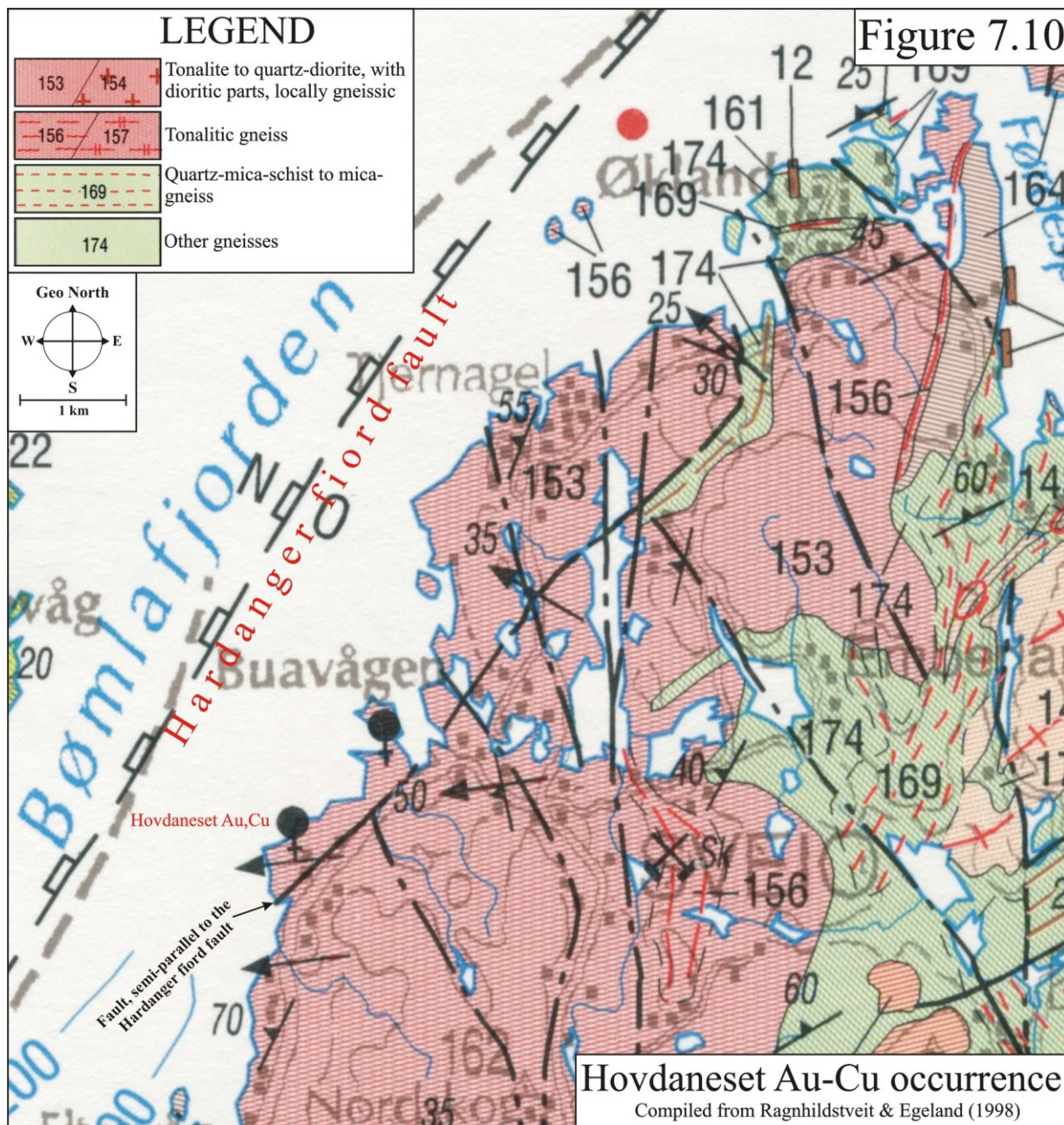
The largest of the quartz-veins at Hovdaneset (Ho2 – Ho3) was mined in a winze (now waterfilled) and in a c. 25 m long trench outside which lies a minimum of 500 tons of waste rock. The vein is up to 50 cm wide. Another quartz-vein can be followed for about 200 m and was mined in two test pits (Ho4 and Ho5). At Ho1 is a water-filled winze driven in a 25-30 cm quartz-vein. The shear-zone related quartz-veins are hosted by granitic gneiss. The shearing continued after the formation of the quartz-veins which are today more or less boudinaged. The quartz is mostly fine-grained – sugary. Some chalcopyrite, pyrite and pyrrhotite accompany the more or less banded quartz-veins.

Samples

Twelve samples: 563070-81. The richest sample (grab sample from waste rock dump) returned 81.2 ppm Au, 50 ppm Ag and 1.57% Cu. A part of this sample was sawed and two specks of gold were noticed. The larger of the two specks is 5x0.5 mm and is fracture-related. A chip-sample (60 cm, spanning the quartz vein and a little of the host rock), returned 18.8 ppm Au and 0.14% Cu. The samples richest in gold are also enriched in bismuth suggesting the presence of Au-Bi minerals.

	Au	Ag	Cu	Zn	Pb	As	Sb	Cd	Bi	Mo	W	Fe	S
Sample#	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%
HO0037.01	14.8	8.5	7733	75	4	5	-2	2.5	95	1	4	1.8	1.4
HO0037.02	5.4	1.1	1105	24	3	2	-2	-0.2	18	14	-2	2.7	1.6
HO0037.03	0.2	0.7	983	66	4	3	-2	-0.2	2	5	-2	3.6	1.1

Table 6. Older grab samples from Hovdaneset (Wulff, 1996)



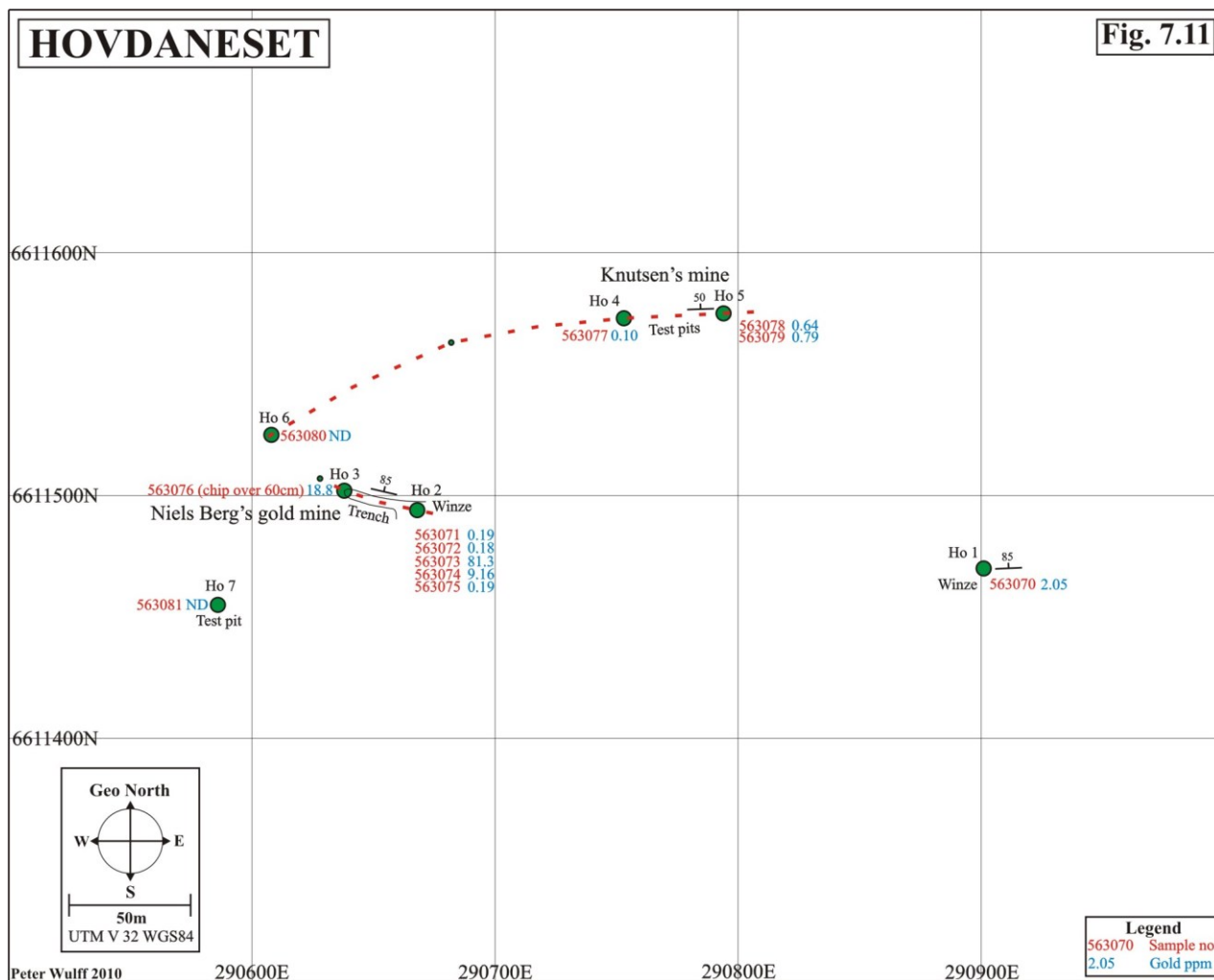


Figure 7.12E, visible gold in sample 563073.

Sample ID	Locality	UTM WGS84		Sample description	Au	Ag	Cu	Zn	Pb	As	Sb	Cd	Bi	Mo	Fe	S	P	Sr	Al	Ba	Ca	K	Mg	Na	Mn	Ni	Co	Cr	Ti	V
		East	North		ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	%	ppm
Ho0037.01	Hovdaneset	290668	6611494	Gneiss with low chalcopyrite.	14.80	8.5	0.78	0.00	4	5	<5	<0.5	95	n.a.	2	n.a	u.d.	2	n.a	2	n.a	n.a	n.a	n.a	59	16	10	3	n.a	1
Ho0037.02	Hovdaneset	290668	6611494	Gneiss with low chalcopyrite.	5.40	1.1	0.11	0.00	3	2	<5	<0.5	18	n.a.	3	n.a	u.d.	3	n.a	6	n.a	n.a	n.a	n.a	69	21	4	6	n.a	4
Ho0037.03	Hovdaneset	290668	6611494	Gneiss.	0.19	0.7	0.10	0.00	4	3	<5	<0.5	2	n.a.	4	n.a	u.d.	14	n.a	22	n.a	n.a	n.a	n.a	245	20	21	5	n.a	8
563070	Hovdaneset	290901	6611470	Ho1. Rusty sugary quartz with trace pyrite. Aggregate sample.	2.05	1	0.03	0.00	6	<5	<5	<0.5	93	7	2	0.6	150	130	2.2	80	0.74	0.16	0.29	0.80	131	5	3	203	0.07	18
563071	Hovdaneset	290668	6611494	Ho2. Rusty, silicified gneiss and quartz with some pyrrhotite.	0.19	1	0.08	0.00	7	<5	<5	<0.5	<2	2	7	3.6	170	560	8.2	360	2.94	1.22	1.03	2.54	383	15	42	91	0.12	37
563072	Hovdaneset	290668	6611494	Ho2. Rusty quartz. No sulfides.	0.18	<0.5	0.03	0.00	7	5	<5	<0.5	<2	4	1	0.2	30	72	1.5	90	0.33	0.24	0.18	0.50	65	9	2	208	0.02	8
563073	Hovdaneset	290668	6611494	Ho2. Gneiss w >5% chalcopyrite>pyrrhotite. The most sulfide-rich sample.	81.30	50.4	1.57	0.01	10	9	<5	4.3	171	39	5	3.3	120	497	7.1	330	2.40	0.79	0.58	2.86	283	25	6	165	0.08	28
563074	Hovdaneset	290668	6611494	Ho2. Gneiss w >5% chalcopyrite>pyrite.	9.16	28.8	2.14	0.01	9	14	<5	2.3	72	2	6	3.8	380	229	6.0	360	1.49	1.28	0.37	2.01	264	13	31	189	0.20	45
563075	Hovdaneset	290668	6611494	Ho2. Rusty gneiss, no sulfides.	0.19	<0.5	0.04	0.01	6	5	<5	<0.5	<2	1	4	0.5	660	551	8.8	510	3.93	1.39	1.54	2.69	531	8	11	118	0.27	77
563076	Hovdaneset	290638	6611501	Ho3. Chip-sample spanning c. 60 cm. Rusty gneiss and quartz, trace chalcopyrite and pyrite.	18.75	5.3	0.14	0.00	5	<5	<5	<0.5	17	7	3	0.3	360	255	5.0	240	2.25	0.95	0.78	0.92	391	4	5	208	0.11	32
563077	Hovdaneset	290794	6611575	Ho4. Aggregate sample of quartz-vein. No sulfide.	0.10	<0.5	0.01	0.00	2	6	<5	<0.5	<2	1	1	0.0	130	99	1.6	50	0.90	0.16	0.21	0.30	121	4	2	211	0.03	12
563078	Hovdaneset	290794	6611575	Ho5. Aggregate sample consisting of different vein material (quartz). Trace pyrite.	0.64	0.7	0.04	0.00	5	8	<5	<0.5	5	<1	2	0.9	180	174	3.0	150	0.94	0.41	0.26	0.94	123	6	6	228	0.06	17
563079	Hovdaneset	290753	6611573	Ho5. Chip-sample spanning c. 60 cm. Rusty quartz>>gneiss, some pyrite in a few fragments.	0.79	0.7	0.02	0.00	3	10	<5	<0.5	51	3	1	0.2	70	92	1.8	90	0.40	0.29	0.12	0.76	58	2	2	199	0.03	9
563080	Hovdaneset	290608	6611523	Ho6. Aggregate sample of rusty quartz-vein.	0.00	<0.5	0.00	0.00	5	9	<5	<0.5	<2	1	1	0.1	10	40	0.9	30	0.27	0.17	0.12	0.32	51	4	1	235	0.02	6
563081	Hovdaneset	290586	6611455	Ho7. Aggregate sample of slightly rusty and white quartz.	0.00	<0.5	0.00	0.00	4	8	<5	<0.5	<2	<1	1	0.0	10	20	0.5	20	0.12	0.08	0.09	0.13	37	5	1	248	0.01	4
563199	Åsen DH2	5,13	6,88	Dacite w fine-medium-grained pyrite as dissemination and in bands.	0.01	<0.5	0.04	0.03	4	19	<5	0.9	3	1	14	5.4	370	22	7.3	90	1.0	0.9	2.7	1.6	2110	9	35	65	0.58	303
563200	Åsen DH2	17,00	17,93	Dacite w fine-medium-grained pyrite as dissemination and in bands. Possibly traces of sphalerite.	0.01	0.6	0.02	0.51	26	14	<5	14.3	2	<1	8	2.6	220	144	8.2	90	5.4	0.5	3.4	2.6	4040	90	35	258	0.37	221
563201	Åsen DH2	120,05	120,75	Chert with 17-18 cm chlorite. Weak pyrite at margins to chlorite.	0.00	<0.5	0.01	0.01	4	6	<5	<0.5	<2	<1	9	0.3	280	133	3.7	10	5.1	0.2	1.7	0.7	723	74	19	220	0.13	124
563202	Åsen DH1	93,72	94,20	Tuff, intermediary. With very green mica - fuchsite, possibly.	0.00	<0.5	0.02	0.01	2	170	<5	<0.5	3	1	5	0.7	40	68	9.3	90	1.2	2.9	1.4	1.8	794	530	132	2170	0.21	415