Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
BV 3760			Trondheim	
Kommer fra ..arkiv	**Ekstern rapport nr**	**Oversendt fra**	**Fortrolig pga**	**Fortrolig fra dato:**
	Sul 252/73/7			

Tittel

Projec t 905-7, Winkie Drilling at Birkeland Test Grid

Forfatter	Dato	Bedrift
Nixon, Frank	1973	Sulfidmalm A/S Falconbridge Nikkelverk A/S

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Iveland	Aust-Agder	Østlandske		

Fagområde	Dokument type	Forekomster
Boring Geokjemi Kjernebeskrivelser		
Råstofftype	**Emneord**	
Malm/metall		

Sammendrag

BV3760

A/S SULFIDMALM

INTER-OFFICE MEMORANDUM

Date: 25th June, 1973

To: Falconbridge Nikkelverk A/S

cc: A.M. Clarke, H.T. Berry, F. Nixon ✓

From: J. B. Gammon

Subject:

Project 905-7, Winkie Drilling at Birkeland Test Grid,

Report No. 252/73/7.

Please find attached Nixon's notes on the results of 3 short Winkie drill holes put down to test the anomalous sources on our geophysical test grid in the Evje-Iveland area. In view of our reduced interest in this area no further evaluation is planned.

JBG

FOR FALCONBRIDGE NIKKELVERK A/S

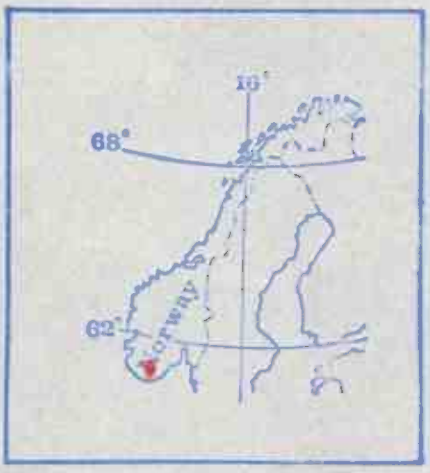
A/S SULFIDMALM

PROJECT 905-7

NOTE ON WINKIE DRILLING AT BIRKELAND TEST-GRID, IVELAND, S. NORWAY.

1973.

F. NIXON



INTRODUCTION.

Winter 1972 it was decided to buy new lightweight drill rods for Sulfidmalms winkiedrill and at the same time cut down from AX to IEX size. These changes were made in order to increase footage from the WINKIE machine. Equipment arrived in Kristiansand at the end of January and prior to the first drilling job in Østfold it was decided to test out the new equipment near Kristiansand. The Birkeland Test Grid (reports 204-72-7 and 142-71-7) was chosen for the drilling tests. On this grid an anomaly detected by ABEM slingram had been used as a test for Sulfidmalms various geophysical systems that Sulfidmalm has at its disposal (ABEM slingram various frequencies. Crone horizontal and coaxial shootback various frequencies. Vertical loop, broadsize technique and fixed transmitter. Geonics VLF and magnetics McPhar Fluxgate). Two birds were thus killed with one stone, i.e. getting a check on the nature of the conductor and testing the new drilling equipment.

LOCATION.

The test site is located in the Iveland area. Reports (142-71-7 and 204-72-7) give details of the geology and geophysics.

WORK CARRIED OUT.

Three short holes to a combined length of 34.85 m were drilled. The locations are shown in fig. 1 in relation to ABEM gun high freq. map where the imaginary component is contoured.

The work was hampered due to late delivery of bits from J. Schmit and absence of Sulfidmalms driller due to family bereavement. Difficult terrain and snow conditions made for set up problems.

../2

Hole 1. 50W/430N, 55°/N45°E. 7.70 m.

Hole 2. 50W/430N, 70°/N45°E. 18.45 m.

Hole 3. 25W/432N, 55°/North. 8.70 m.

RESULTS.

All three holes intersected sulphide mineralization. Hole 1 intersected amphibolites with small 2 cm - 20 cm ultrabasic veins. The ultrabasics were well mineralized, mainly pyrrhotite with minor chalcopyrite and pyrite.

Hole 2. Results very similar to hole 1. Amphibolite with mineralized ultrabasic lenses in the first 10 meters of the hole. From 10 m to end of hole unmineralized amphibolites.

Hole 3. Amphibolite with two intersections of ultrabasic which were well mineralized 20-30% sulphides, dominantly pyrrhotite with minor pyrite and chalcopyrite.

ASSAY RESULTS.

Hole	Depth.	Ni%	Cu%	S%
1	1.5-2.0 m	0.14	0.17	2.6
1	3-4 m	0.40	0.45	9.6
1	4-5 m	0.14	0.18	3.0
1	5-6 m	0.17	0.15	3.2
1	6-6.5 m	0.18	0.20	3.3
1	6.5-7 m	0.09	0.11	0.7
2	1.5-2 m	0.11	0.12	1.5
2	3.5-4 m	0.29	0.19	7.5

../3

Hole	Depth	Ni %	Cu %	S %
2	4-5 m	0.43	0.28	10.5
2	5-6 m	0.16	0.15	3.0
2	6.0-6.5 m	0.14	0.12	2.5
2	6.5-7 m	0.09	0.12	1.4
2	7-7.5 m	0.07	0.10	1.6
2	7.5-8 m	0.07	0.15	1.9
3	1.0-1.66 m	0.20	0.12	1.6
3	1.66-2.57 m	0.60	0.45	12.9
3	2.93-3.54 m	0.46	0.98	15.6

CONCLUSIONS.

The anomaly drilled is due to sulphides associated with ultrabasic rocks. The sulphides are mainly pyrrhotite with subordinate pyrite and chalcopyrite. The nickel content is low but the sulphides, which are in places massive form a good geophysical anomaly and should give a good response to most geophysical techniques. The best nickel assays run 0.6% Ni, this was however a pure sulphide rich intersection, and because of the irregular nature of the sulphides an average assay of the mineralized zone would run much lower than 0.6% Ni because of the large amount of dilution that must be taken into account. The area is considered a good test area but not an economic proposition.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 50W/430 N BEARING: N 45°E DIP: 70 HOLE No: W 2 SHEET No: 1

LOGGED BY: NIXON STARTED: PROPERTY:

CASING: FINISHED: BIRKELAND TEST GRID

CORE SIZE: IEX TESTS (CORRECTED):

FROM	TO		DESCRIPTION
0	18.45		Medium grained amphibolite, cut by small ultrabasic lenses and quartz/pegmatite stringer. Most of the ultrabasic lenses are mineralized with po. cp. py. and in parts the amphibolite also carries a small dissemination of sulphides plus some magnetite.
			1.60-1.78 ultrabasic 2-5% dissem. sulphides.
			2.70-3.00 ultrabasic 5-10% sulphides.
			3.84-4.00 ultrabasic 30% sulphides.
			4.00-4.83 ultrabasic 10-20% sulphides (4.20-4.30 massive po).
			5.10-5.28 ultrabasic 10-20% po.
			5.42-5.65 ultrabasic 10% sulphides.
			6.15-6.20 ultrabaisc 2% sulphides.
			7.00-7.09 ultrabasic 50% sulphides.
			In rest of section ultrabasic lenses are unmineralized.
			18.45 end of hole.
			Core Angles.
			3.50 65° contact
			5.40 55° foliation
			6.70 55° "
			9.30 65° "
			17.20 65° "
			The sulphides encountered are sufficient to cause the observed anomalies.

A/S SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: 25W/432N BEARING: N DIP: 55° HOLE No: W 3 SHEET No: 1

LOGGED BY: NIXON STARTED: PROPERTY

CASING: FINISHED: BIRKELAND TEST GRID

CORE SIZE: IEX TESTS (CORRECTED):

FROM	TO		DESCRIPTION
0	1.66		Medium grained fairly massive amphibolite, that is cut in a few places by small ultrabasic type dykes of hornblendite. One of these dykes at 1.16 is mineralized with sulphides dominantly po with a little py and cp over 0.5 cm.
1.66	2.57		Meta pyroxenite green and massive with 40% sulphides dominantly as po ca. 5% cp. little visible py. Sulphides are mainly massive.
2.57	2.94		Massive amphibolite.
2.94	3.54		Med. gr. massive meta pyroxenite with 20-30% sulphides po. cp. py.
3.54	4.25		Pegmatite white in colour. Med grained down to 4 m after 4 m becomes more fine grained and over last 10 cms carries 10-20% po.
4.25	8.70		Amphibolite.
			The sulphides intersected explain the anomalies observed.

A/S SULFIDMALM

DIAMOND DRILL RECORD

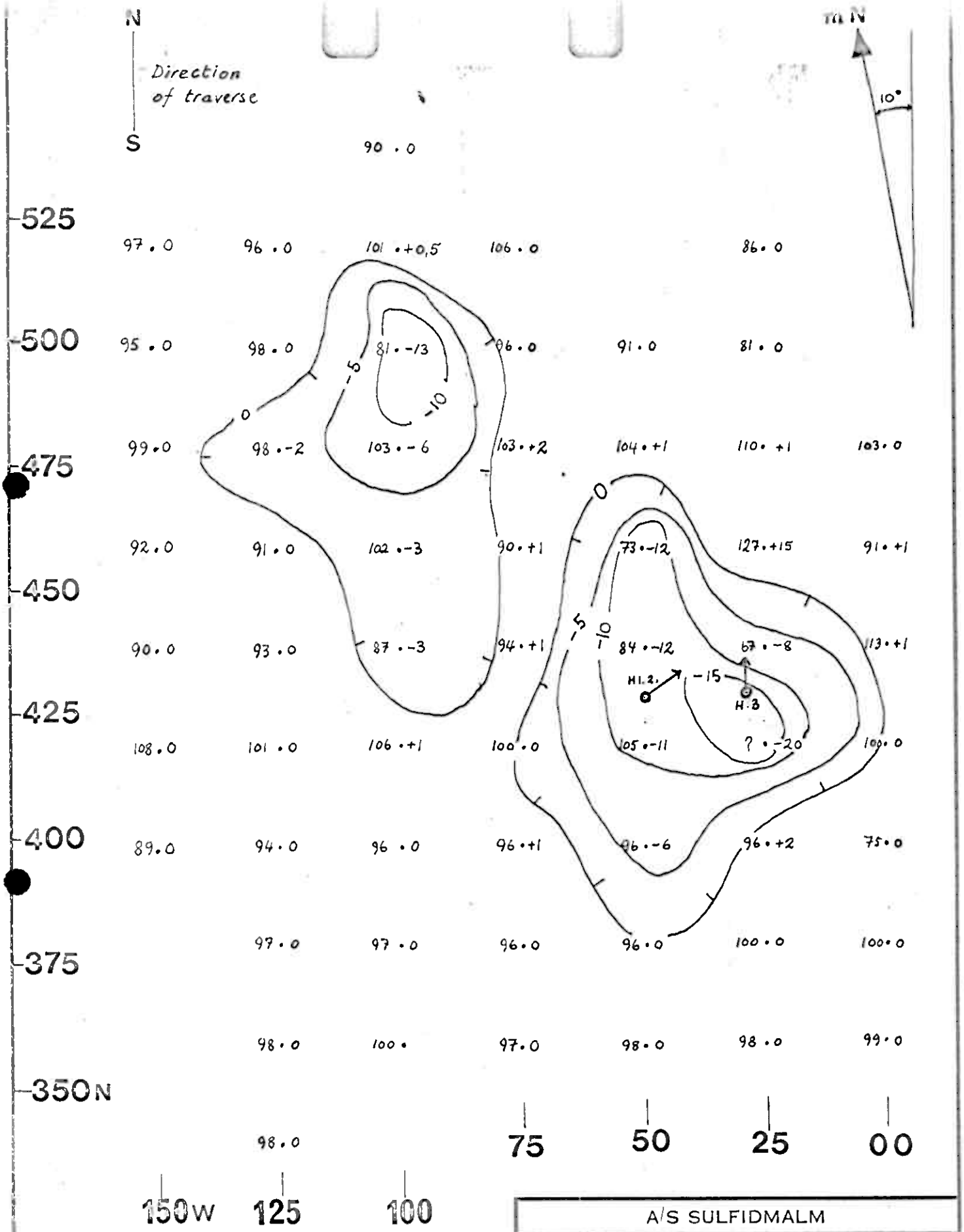
LOCATION: 50W/430N BEARING N 45° E DIP: 55 HOLE No: W 1 SHEET No: 1

LOGGED BY: NIXON STARTED: PROPERTY BIRKELAND

CASING: FINISHED: TEST GRID

CORE SIZE: LEX TESTS (CORRECTED):

FROM	TO		DESCRIPTION
0	7.70	m	Medium grained fairly massive amphibolite cut by small (up to 20 cm) lenses of a green meta pyroxenitic rock. The ultrabasic is mineralized. (dominantly pyrrhotite with minor pyrite and chalcopyrite). In places the amphibolite carries a very minor sulphide dissemination and it also has a slight magnetite content. The amphibolite is also cut by small quartz and pegmatite stringers.
			1.50-1.69 very minor sulphide dissemination.
			1.69-1.83 ultrabasic with minor (2%) dissemination of cp and po.
			3.02-3.06 ultrabasic. 5% sulphides.
			3.75-3.90 ultrabasic. 3.80-3.90 m massive po.
			Rest of meter from 3 to 4 m carries smaller ultrabasic lenses and entire section runs 5% sulphides.
			4.30-4.44 ultrabasic 2% sulphides.
			4.50-4.67 ultrabasic 1% sulphides.
			4.94-5.10 ultrabasic 2% sulphides.
			6.34-6.54 ultrabasic 5-10% sulphides.
			7.54-7.62 ultrabasic 5% sulphides.
			7.70 m end of hole.
			The sulphides encountered are responsible for the various geophysical anomalies observed.
			Hole was stopped due to slow progress due to failure of supplier to deliver proper drillbits.



A/S SULFIDMALM

BIRKELAND GRID
ABEM GUN IMAG.GOMP.
LOCATION OF DRILLHOLES

SCALE	1:1000	DRAWN	FN
DATE	20.3.73.	TRACED	FN.