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REPORT ON  
HILL-RUST PROPERTY  
Faro Area, Whitehorse Mining Division  
Yukon Territory

for

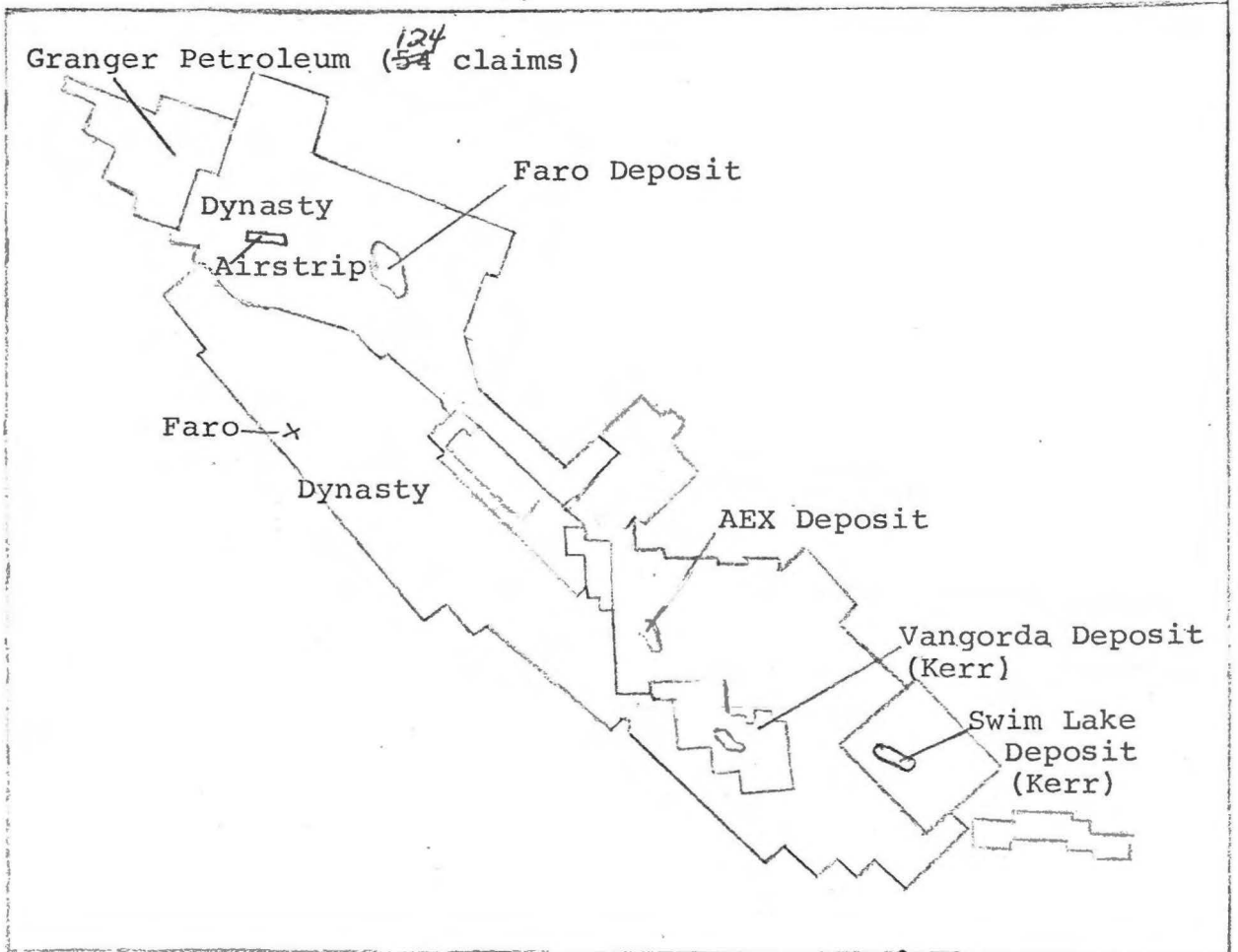
Granger Petroleum Corporation N.L.

Toronto, Ontario  
August 15, 1974

Robert L. V. Ekstrom  
B.A.Sc., P.Eng.

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INTRODUCTION

In August, 1974, Granger Petroleum Corporation (Suite 3102, Simpson Tower, 401 Bay Street, Toronto, Ontario, M5H 2Y4) requested the author to study the available data on the Hill-Rust Property and submit a report with recommendations. The report was compiled using company reports made for Jacola Mines Limited and Hecla Operating Company and published reports and papers as noted in the bibliography.

CONWEST.  
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416.  
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SUMMARY

The Hill-Rust property in the Faro area of the Yukon lies five miles northwest of the airstrip at the Anvil Mine. The property is 125 air miles or 240 road miles from Whitehorse. A tractor road has been made from the airstrip to the property. The 128 claims in the group are currently held by Jacola Mines Limited and are in good standing until at least January 9, 1975. The property is in moderately mountainous country with early snow and late springs.

The Faro area has been active since 1953 and four deposits have been located to date, the Faro, Swim, Vangorda and Grum. The first three of these have a total indicated reserve of 77 million tons grading some 8% combined lead-zinc and 1.5 oz. per ton silver. The Faro is currently being mined by open pit.

The Hill-Rust property has been under option to Hecla Operating Company since 1967 and various surveys have been done including gravity, partial I.P., partial magnetometer, airborne magnetometer and EM, geological mapping and 3,008 feet of diamond drilling on two of the fifteen gravity anomalies.

Sulphides with some lead and zinc have been located on the property. To date the best analysis has been 3% lead, 2% zinc and 5.6 oz. per ton silver.

The deposits of the area are found as strata-bound deposits in the lower member of the Lower Cambrian phyllites. Rocks of this type strike towards the property from the Faro deposit and probably exist on the claims. The property is well situated lying between the Tintina Trench and the Anvil Batholith.

It is known that certain of the deposits located to date do not respond to all the exploration methods used in the area. The author feels that the work to date has been inconclusive and because of the location and the fact that unexplored gravity anomalies exist on the claims, the property is a good exploration opportunity and a programme of work should be initiated.

In order to proceed logically the programme should be broken into four phases:

- Phase I - IP surveys and geological mapping  
\$30,000.
- Phase II - Diamond drilling followup on targets  
\$105,000.
- Phase III - Detail diamond drilling  
\$420,000.
- Phase IV - Feasibility study  
\$ 50,000.
- Total estimated budget \$605,000.

### PROPERTY, LOCATION AND ACCESS

The property is comprised of 128 claims in the Faro Area, Whitehorse Mining Division, Yukon Territory, recorded in the name of Jacola Mines Limited. The complete list of the claims shown in Appendix A with the expiry and record dates and grant numbers was compiled from data received from Granger Petroleum Corporation N.L.

The property is located 125 miles north-northeast of Whitehorse, Yukon, at Latitude 62°24' North and Longitude 133°30' West. The Anvil Mine and airstrip lie five miles southeast of the property. The airstrip can be reached by scheduled air flights from Whitehorse or by a good gravel road. The road-distance from Whitehorse is 240 miles.

A tractor road has been made from the airstrip to the property. Because of permafrost and soil conditions the tractor road will probably have to be repaired before drill equipment could be mobilized.

### LOCAL RESOURCES AND ENVIRONMENT

The property is situated in moderately rugged country with elevations ranging from 3200' ASL in the southwest to 6000' ASL in the northeast. The long-distance average gradient is approximately 30%. Bush and swampy ground cover the lower portions of the property but most of the favourable area lies above the tree line at 4600' ASL.

Water is available from several streams cutting the property. Major items of supply and service are available from Whitehorse and Carmack and some assistance might be found at the Anvil Mine, five miles from the property. Minor supplies might be available at Ross River (36 miles).

The climate is typical for the area and summer work is recommended whenever possible. Snowfall can be expected

at any time of the year at the higher elevations.

### HISTORY

Successful exploration work in the area began in 1953 when the Vangorda deposit was staked. Activity in the area following that find lead to the location of the Swim deposit and the Faro in 1965. Exploration died down after 1967 but continued work over previously tested ground by AEX Minerals Corp. led to the discovery at the Grum deposit immediately north of the Vangorda in 1973.

The Rust-Hill claims were staked by Dynasty Investments Limited in March, 1966 and later turned over to Jacola Mines Limited. Airborne EM and magnetometer surveys were carried out during 1966.

Hecla Operating Company optioned the property in 1967 and continued exploration until June, 1974 when the option was allowed to lapse. In 1967 geological and geochemical surveys were carried out on two airborne anomaly areas and Huntec carried out ground EM, magnetometer and I.P. surveys over the two anomalies. In 1969 Overland Exploration Services carried out gravity surveys and Seigel and Associates carried out I.P. over gravity anomaly "A". The 1970 programme included bulldozer trenching, 3008 feet of diamond drilling, geological mapping, magnetometer surveys and road construction.

During the period of the option, Hecla staked additional claims bringing the total to 128 and all the claims were turned over to Jacola Mines at the termination of the agreement.

### PREVIOUS EXPLORATION RESULTS

The gravity survey located 15 gravity anomalies on the property. I.P. surveys on gravity anomaly "A" located an anomaly which when drilled was said to be explained by a band

of 25% sulphides. Gravity anomaly "B" was said to be explained by a band of denser rock intersected in drilling. The magnetometer survey and geochemical surveys failed to find anomalous conditions. Geological mapping located rocks said to be similar to those associated with the ore at the Faro deposit and several small showings of semibanded lead and zinc mineralization were located on the property. The best grab sample taken assayed 3% Pb (lead), 2% Zn (zinc) and 5.6 oz. per ton Ag (silver) across six inches.

Although several bands of pyrite with sphalerite (zinc sulphide) and galena (lead sulphide) were mentioned in the logs, no samples were taken.

On the other properties in the area, work has indicated that: the Faro has reserves of some 63 million tons grading 3.4% Pb, 5.7% Zn and 1.20 oz. per ton Ag, and is producing at a rate of 2 million tons per year from an open pit mine; the Vangorda contains 9.4 million tons at 3.2% Pb, 5.0% Zn, .27% Cu, 1.76 oz. per ton Ag and 0.02 oz. per ton Au; and the Swim deposit has 5 million tons grading 9.5% combined Pb-Zn and 1.5 oz. per ton Ag.

#### REGIONAL GEOLOGY

The report by Tempelman-Kluit in G.S.C. Bulletin 208 gives an excellent detailed account of the geology, structure and ore deposits of the Faro, Vangorda and Swim area. In summary, the lead and zinc deposits are found in metamorphic sediments (phyllites) of late Proterozoic and/or early Cambrian time. The Cambrian rocks are overlain by later Paleozoic and Mesozoic sediments and Cenozoic (Tertiary) volcanics. The rocks have been intruded at various times with acid to basic rocks. The largest of these is the Anvil Batholith which has intruded and up-lifted the host rocks northeast of the deposit area.

The ore deposits are in contact with the intrusive rocks in many places and the northwest trending fault system of the Tintina Trench passes southwest of the deposit area.

The massive sulphide deposits are in the lower unit of the Cambrian rocks and Tempelman-Kluit is convinced that they were emplaced almost at the same time as the host rock whether of hydrothermal replacement or strata-bound volcanic origin and that situation and contortion of the rocks and the ore has been simultaneous since Cambro-Ordovician time.

The host phyllites, although now much drag folded and contorted are generally flattly dipping in trend and the enclosed deposits have a much larger plan area than cross or longitudinal section area. With the larger dimensions conforming to the general plane at the present attitude of the bedding.

A zone of bleached rock surrounds the deposits which may assist in locating new deposits.

The favourable host rocks trend towards the Rust-Hill claims and probably underlie at least part of the group.

#### LOCAL GEOLOGY AND MINERALIZATION

The property is underlain by contorted and folded phyllites of Hadrynian (Proterozoic) and Cambrian phyllites striking generally west northwest and dipping 30° southeast. The rocks have been cut by diorite, gabbro and granite dykes and/or sills. Greenstone exposures have been mapped in the southwest part of the property which probably correlate with the thicker bands of volcanics observed in the Upper Cambrian strata in other areas. Although no exposures have been seen the Anvil Batholith contact is considered to pass close to the north boundary.

The phyllites vary in composition from normal to calcareous quartzites and contain bands of greenstone, marble and skarn zones. Drilling has indicated a more variable composition than shown by the mapping and the folding, suspected faulting, and lack of exposure make interpretation difficult.

Banded sulphide zones have been seen, particularly in the area of gravity anomaly A and the drilling has indicated the presence of bands containing 20-25% sulphides up to 63 feet thick. Galena and sphalerite are noted as being present but no samples have been taken. Pyrrhotite is also present. It has been postulated that a larger overturned or otherwise disoriented fold may exist joining gravity anomalies A and B. If such a fold exists, it would be difficult to spot useful holes until the structural problems are resolved.

#### EXPLORATION TECHNIQUES

Aho has indicated that gravity, I.P., Turam, geochemistry, EM and magnetometer surveys have all been useful methods or did have responses on some of the located deposits. He also warns that any or all the methods might not work on a given deposit and that the methods can respond to physical characteristics which are not associated with the deposits.

The deposits appear to be strata-bound in a particular band of Lower Cambrian age.

#### CONCLUSIONS

The Hill-Rust property is on strike from the known Faro Area mineral deposits and probably underlain by the productive Cambrian phyllite horizon. Geophysical, geological and geochemical surveys have showed that fifteen gravity

anomalies exist, at least one of these had a coincident I.P. anomaly but magnetic surveys were inconclusive. Drilling on the A gravity anomaly indicated a sulphide source for the I.P. anomaly but the B gravity anomaly appeared to be on a denser rock type.

The success of AEX Minerals Corp. in locating a new zone on worked-over ground north of the Vangorda deposit indicates that perseverance pays.

Because the property lies on the favourable horizon, has unexplored gravity anomalies, has not had complete I.P., magnetometer, EM and geochemical surveys, and any existing deposit may not respond to all or any one of these exploration methods, it is felt that the property is still relatively unexplored. It remains an exploration opportunity for the location of lead-zinc deposits and another phase of exploration should be commenced. Because of the present information base it will be necessary to advance by stages and a four phase programme is recommended.

#### RECOMMENDATIONS

A programme of exploration should commence with I.P. surveys on the interesting area of the property with emphasis on the gravity anomalies and more detailed geological mapping. Phase 2 would be followup drilling on selected I.P.-gravity-geological targets.

With the extra data from the initial drill programme a second phase of drilling would probably be indicated.

The fourth phase, assuming success in the drill programme, would be a preliminary feasibility study on any deposits located.

BUDGET

The following is an estimated budget for the four phases envisaged. Tenders will have to be requested to reach exact cost figures, but the figures below are considered realistic at to-day's prices.

Phase I

I.P. surcey -	
20 miles at \$800.00 per mile	\$ 16,000.
Detailed geological mapping	
Geologist and helper	9,000.
Supervision	2,000.
Contingency	<u>3,000.</u>
Total Phase I	30,000.

Phase II

Diamond Drilling followup	
Estimate 3 holes at 1000'	
4 holes at 500'	
5000' at \$20. per foot	\$100,000.
Sampling, assaying, logging	<u>5,000.</u>
Total Phase II	\$105,000.

Phase III

Diamond Drilling - detailed	
20,000 feet at \$20. per foot	\$400,000.
Sampling and assaying	<u>20,000.</u>
Total Phase III	\$420,000.

Phase IV

Feasibility Study	\$ 50,000.
Total Phases I - IV	\$605,000.

Respectfully submitted,

Toronto, Ontario  
August 15, 1974.



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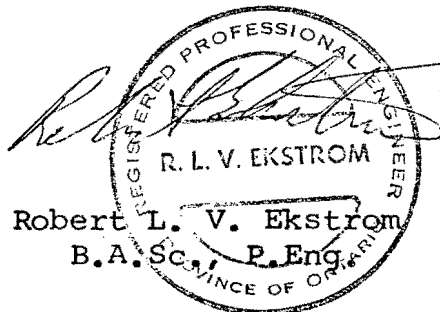
- Tempelman-Kluit, D.J. - Geologic Setting of the Faro, Vangorda  
and Swim Base Metal Deposits, Yukon  
Territory  
G.S.C. Paper 68-1 Part A pp. 43-52
- " - Anvil - Vangorda District, Yukon  
G.S.C. Paper 69-1 Part A pp. 38-39
- " - Geology and Origin of the Faro,  
Vangorda and Swim Concordant Zinc-Lead  
Deposits, Central Yukon Territory  
G.S.C. Bulletin 208
- Aho, A.E. - Base Metal Province of Yukon  
CIM Bulletin, April, 1974, pp. 397-409
- " - Vangorda - Swim Project  
AEX Minerals Corp. Informative Bulletin  
December, 1973 pp. 4-8
- Kerr Finds (news release)  
Globe and Mail, Toronto, June 25, 1974

CERTIFICATE

I, Robert L. V. Ekstrom, hereby certify:

1. That I am a Geological Engineer and reside at 1 Rolph Road, Toronto, Ontario.
2. That I am a registered member of the Association of Professional Engineers of Ontario.
3. That I graduated from the University of Toronto with the degree of Bachelor of Applied Science (Geology) in 1956.
4. That I have been engaged in geological work concerned with mining and exploration for eighteen years.
5. That the foregoing report is based on company reports made available by Granger Petroleum Corporation N.L., published reports and papers and verbal communications.
6. That I have no personal interest, nor do I expect to receive any interest, directly or indirectly in the property or securities of Granger Petroleum Corporation N.L.

Toronto, Ontario  
August 15, 1974.



## APPENDIX A

List of Claims*Jaehola*

## Rust-Hill Property, Whitehorse Mining Division, Yukon Territory

<u>DATE OF EXPIRY</u>	<u>RECORD DATE</u>	<u>CLAIM</u>	<u>GRANT NUMBER</u>
Jan. 9, 1975	Jan. 7, 1970	HEC 1 - 15	Y48411 - Y48425
Jan. 28, 1975	Feb. 16, 1966	HILL 1 - 9	99509 - 99517
"	"	HILL 11	99519
"	"	HILL 13 - 24	99521 - 99532
"	"	HILL 30	99538
"	"	HILL 32	99540
"	Mar. 21, 1966	RUST 1 - 4	Y3441 - Y3444
"	"	RUST 17	Y 3457
"	"	RUST 19 - 22	Y3459 - Y3462
"	"	RUST 24	Y3464
"	"	RUST 34 - 38	Y3474 - Y3478
"	July 30, 1968	HECK 13 - 17	Y25570 - Y25574
"	"	HECK 23 - 24	Y25568 - Y25569
"	Sept. 13, 1968	DA 3	Y29771
"	"	DA 8 - 13	Y29776 - Y29781
"	"	DEE 45 - 46	Y29785 - Y29786
"	Feb. 16, 1966	HILL 25 - 29	99533 - 99537
"	"	HILL 31	99539
"	Mar. 21, 1966	RUST 18	Y3458
"	July 28, 1967	FUBAR 1, 3, 4	Y20447, Y20449, Y20450
"	July 30, 1968	HECK 1 - 4	Y25554 - Y25557
"	"	HECK 7 - 8	Y25560 - Y25561
"	"	HECK 10-12	Y25563 - Y25565
"	"	HECK 18-20	Y25575 - Y25577
"	"	HECK 21-22	Y25566 - Y25567
"	Sept. 13, 1968	DA 1 - 2	Y29769 - Y29770

## APPENDIX A

List of Claims (cont'd.)

<u>DATE OF EXPIRY</u>	<u>RECORD DATE</u>	<u>CLAIM</u>	<u>GRANT NUMBER</u>
Jan. 28, 1975	Sept. 13, 1968	DA 4 - 7	Y29772 - Y29775
"	"	LA 30 -32	Y29782 - Y29784
Jan. 28, 1976	July 28, 1967	FUBAR 2	Y20448
"	"	FUBAR 5	Y20451
"	"	FUBAR 7 - 8	Y20453 - Y20454
"	"	FUBAR 9	Y20463
"	"	FUBAR 11-12	Y20465 - Y20466
"	"	FUBAR 23-30	Y20469 - Y20476
"	"	FUBAR 31-34	Y20479 - Y20482
"	"	FUBAR 35-36	Y20477 - Y20478
"	July 30, 1968	HECK 5 - 6	Y25558 - Y20559
"	"	HECK 9	Y25562
Jan. 28, 1977	July 28, 1967	FUBAR 10	Y20464

Total 128 claims

# Canadian Oresearch Inc.

SUITE 10 - 85 KING STREET EAST

TORONTO 210, ONTARIO

TELEPHONE: 363-3590

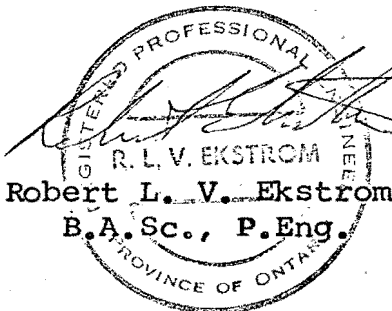
August 15, 1974.

To Whom It May Concern:

The foregoing report on the Jacola - Hill - Rust Property, Faro Area, Yukon, was compiled at the request and for the use of Granger Petroleum Corporation N.L.

This letter confirms that Granger Petroleum Corporation N.L. can use and issue signed copies of the accompanying report as required.

Yours very truly,

A circular professional seal for Robert L. V. Ekstrom, a Professional Engineer in the Province of Ontario. The seal contains the text "REGISTERED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. In the center, the name "R. L. V. EKSTROM" is printed. A handwritten signature is written across the seal.

Robert L. V. Ekstrom  
B.A. Sc., P. Eng.