

# CRONE GEOPHYSICS LIMITED

MISSISSAUGA, ONTARIO

*Faro #1*  
Expt  
019734

CASE HISTORY # 16

March 1970

## Discovery of the ANVIL - LEAD-ZINC mine in the Yukon Territories of Canada

The Anvil mine recently brought into production, was discovered in June of 1965. It is located 230 land miles north of Whitehorse and 250 miles south-east of the famed 1890's Klondike gold fields. The mine consists of two separate flat-lying orebodies that at one time were probably joined. Faro #2 orebody occurs under shallow overburden and rock cover, and contains 5 million tons of 10% lead-zinc. The Faro #1 orebody occurs under deep overburden and rock cover containing 58 million tons of similar grade ore.

The mine was discovered in two short exploration seasons by a determined group of men - Dynasty Explorations of Vancouver. Their program employed all the methods available to modern exploration - prospecting, geology, geochemistry, and geophysics. These methods cannot easily be applied in the Yukon - rugged terrain, extensive overburden, permafrost, glaciation and graphitic formations provide technical problems in addition to the obstacles of operating in remote northern areas. This case history outlines how Dynasty by selection of the proper method at the proper time located the orebodies. It is also an excellent example of both the advantages and limitations of the basic geophysical methods used - gravity and electromagnetics.

Basis for the Dynasty search was the Vangorda Creek deposit discovered through prospecting by Alan Kulan in 1953. This deposit contained 9 million tons of 8% combined lead-zinc which is non-commercial in this remote area. In 1953, I convinced Prospector's Airways, the company developing the Vangorda deposit, that gravity surveys could be a powerful tool for both exploration and evaluation of base metal prospects in this area where large tonnages are the dominant economic aspect. A test case was made over the Vangorda deposit that is documented in "Methods & Case Histories in Mining Geophysics C.I.M.M. 1957" by E. O. Chisholm. The test was highly successful predicting the total tonnage of sulphides within 10% of the drilled tonnage. This work formed the basis for further exploration in the Yukon and provided the key that later opened up the Faro #1 and Swim Lake orebodies.

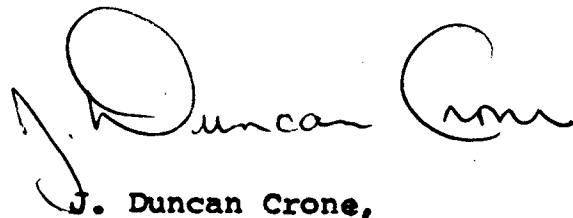
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Dynasty explored a large belt both east and west of the Vangorda Deposit. Initial attention was drawn to the Faro Creek area by scattered float containing primarily copper mineralization that has yet to be traced down. Soil sampling produced several strong zinc and lead anomalies.

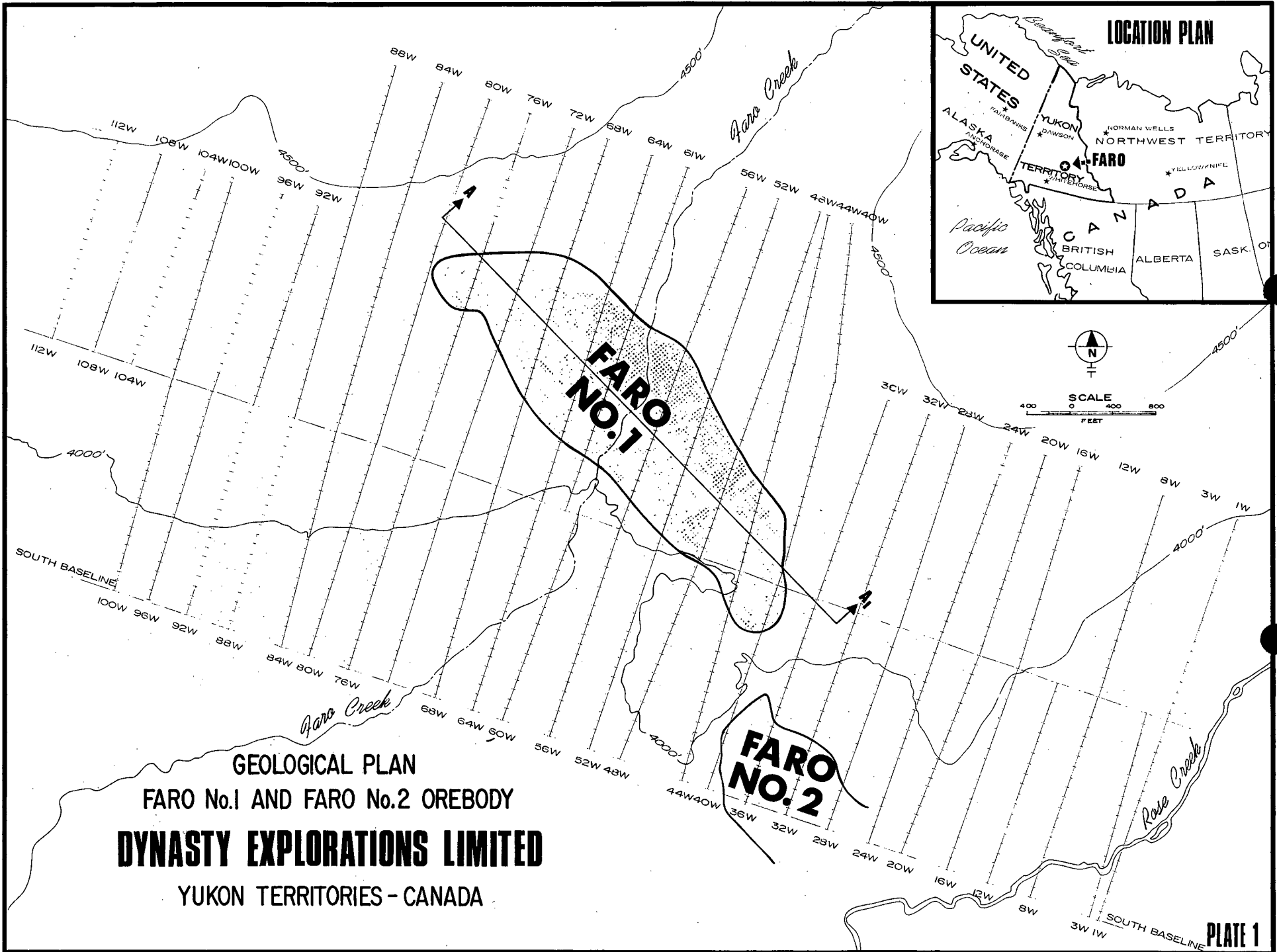
A "Crone Shootback EM" survey produced a strong anomaly adjacent to the geochemical highs. This was the first target drilled and was the discovery hole for the Faro #2 orebody. A weak EM anomaly of  $-3^{\circ}$  occurs over the Faro #1 orebody, but was not recognized as significant at that time. This is to be expected, since the Faro #1 ore occurs at depths of 365 feet and EM coil separation of 200 feet was used. A separation of 300 feet would have outlined this orebody, but a wider separation is seldom used in surveys over mountainous terrain.

The gravity survey as stated previously, proved to be the decisive tool producing a weak .50 milligal anomaly over the Faro #2, but outlining a strong 2.7 milligal that accurately defines the Faro #1 orebody. The discovery hole on this anomaly intersected 265 feet of overburden and altered rock, then 175 feet of massive sulphides.

I think this case history brings home the fact that mining exploration is becoming less and less a matter of luck. In the gold rush of the 1890's, the odds of success were probably 80% luck - 20% skill. Now I believe these odds are reversed, with skill and technology increasingly being required for successful finds.








A handwritten signature in cursive script, reading "J. Duncan Crone". The signature is written in dark ink on a white background.

J. Duncan Crone,  
Geophysicist.

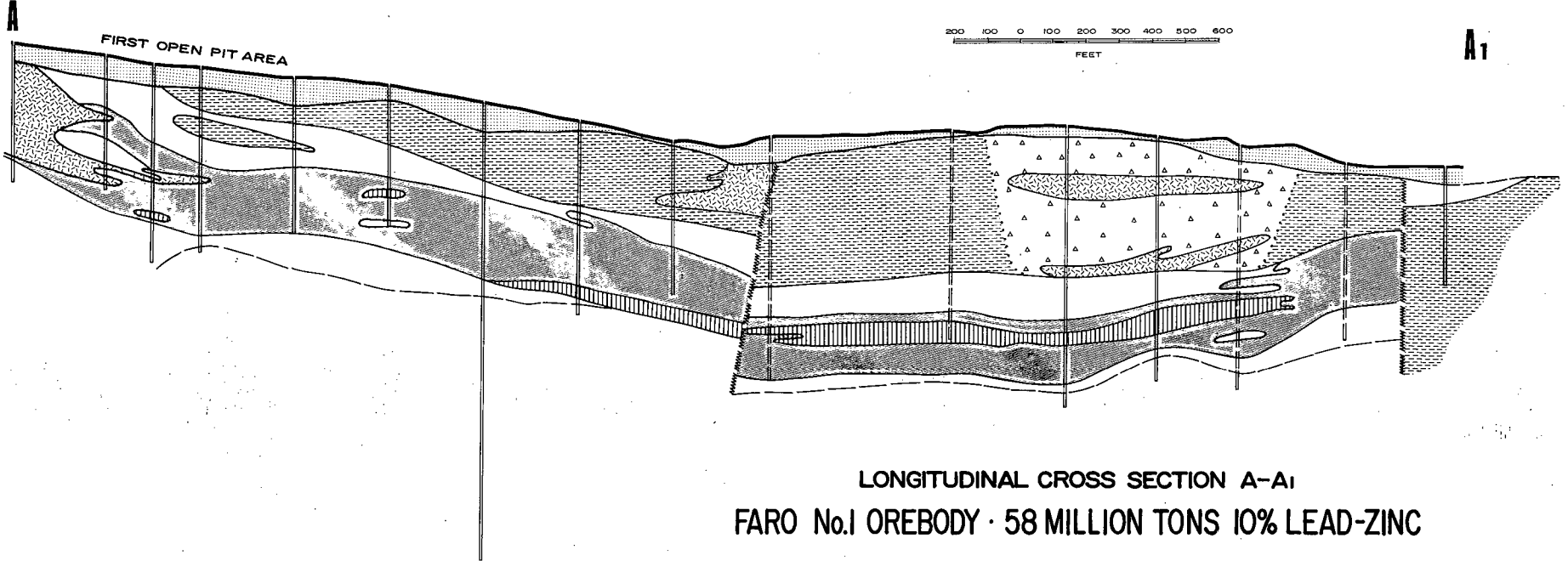


**GEOLOGICAL PLAN**  
**FARO No.1 AND FARO No.2 OREBODY**  
**DYNASTY EXPLORATIONS LIMITED**  
**YUKON TERRITORIES - CANADA**

**LEGEND**

- MASSIVE AND BANDED SULPHIDES 
- DISSEMINATED SULPHIDES 
- QUARTZ DIORITE 
- BIOTITE CHLORITE QUARTZ 
- PHYLLITE, LOCALLY GRAPHITIC OR TUFFACEOUS 
- 'BLEACHED' RHYLLITE 
- BRECCIA 

**SCALE**



LONGITUDINAL CROSS SECTION A-A1  
 FARO No.1 OREBODY · 58 MILLION TONS 10% LEAD-ZINC

**DYNASTY EXPLORATIONS LIMITED**

YUKON TERRITORIES · CANADA