

PRODUCT *Zn, Ag, Au, Fe ?*

PROVINCE OR TERRITORY

*Offshore British Columbia*

N.T.S. AREA

*102 G/9, 16*  
~~102 J~~

*Zinc*  
REF.

NAME OF PROPERTY

*Explorer Ridge*

HISTORY OF EXPLORATION AND DEVELOPMENT

LOCATION

*Offshore, some 220 kilometres west of Cape Scott (NW tip of Vancouver Island)*  
Lat. *49°45'* Long. *130°16'*

VANCOUVER SUN

Date JUL 7 1984

Mining Division

District

Page B 6

County

Township or Parish

# Huge mineral deposits found off coast of B.C.

Lot

Concession or Range

Sec.

Tp.

R.

Special to The Sun  
**VICTORIA** — Huge deposits of easily accessible mineral resources lie off the B.C. coast, Washington state school of oceanography geophysicist Paul Johnson said Friday. Johnson said he is "very, excited" by massive metallic sulphide deposits found on Explorer Ridge less than 220 kilometres west of Cape Scott on northern Vancouver Island.

The sulphide deposits are the most extensive in the world and probably contain large concentrations of zinc, silver, gold and iron, he said in interview. "It's rare to find this concentration of sulphide."

Because the sulphide deposits lie in less than 2,000 metres of water there would be no problem dredging for the minerals, said Professor Johnson. Professor Johnson was part of a

scientific party organized by the University of Victoria using the federal Ocean Sciences Institute submersible Pisces IV, which investigated the biological and geological aspects of hot water vents along the ridge.

The Pisces IV returned to the institute Friday.

However, mining of the ocean floor might be stymied by federal-provincial disputes over ownership of offshore minerals, as well as concerns about the destruction of recently discovered marine life forms unique to the ridge.

The ridge's hydrothermal vents and sulphide chimneys spew out water as hot as 306 degrees celsius.

The Pisces made 11 dives lasting about nine hours each during the expedition, which began June 14.

OWNER OR OPERATOR AND ADDRESS

DESCRIPTION OF DEPOSIT



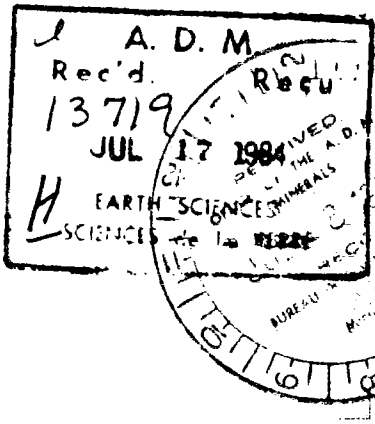
*3 copies for info. to J. SWARTZGUTIK*  
**MEMORANDUM**

*J. BRENNAN*

*R. KELLY*

*A. SOZANSKI*

*Andy - Have you considered a new section of NMI cards for the offshore, including smokers? RJP 1984*



TO  
A  
Dr. W.W. Hutchison  
Dr. J.G. Tanner  
Dr. R.A. Price  
Dr. J. Fyles  
Dr. R.B. Campbell

FROM  
DE  
Director,  
Pacific Geoscience Centre

SUBJECT  
OBJET  
LARGE SEAFLOOR SULPHIDE DEPOSITS RECENTLY DISCOVERED BY PISCES IV SUBMERSIBLE

Cruise

PISCES IV dives, V. Tunnicliffe (U. Victoria biologist) chief scientist. Geological studies P. Johnson (U. Washington). Cruise emphasis primarily biological. Received extensive publicity.

Location

On Explorer Ridge, 200 km. west of Northern Vancouver Island 49°45'N, 130°16'W. (Not near boundaries - clearly in Canadian zone)

*102 C/g, 16*

Characteristics

- (a) Sulphides - a chain of deposits within eastern notch of rift zone. Each area is at least 100 m by 100 m with mounds of sulphide completely covering seafloor. The "Magic Mountain" deposit is the order of 200 m by 300 m in area. The thickness is unknown but no pillows or other volcanics show through (approximately 0.1 M tonnes per meter thickness so is a significant deposit).
- (b) Vents - cones extend above the sulphide deposit debris. Thin spires rise from these cones and vent 200° - 300° C water. "Grey Smoke" is precipitating sulphides. The maximum temperature measured was 306° C. Warm water appears to be percolating up through much of the sulphide area - "shimmering water".

Tectonic Environment

Approaching the main field along the rift from the south, old extinct vents with some deposits trend to warm water vents, then to active area. All of the volcanics look old, e.g. manganese encrusted and some sediment cover, suggesting that the area is in a pre-eruptive stage. Magma probably has moved up to beneath the ridge and has caused fracturing. The fracturing has permitted seawater access to the magma, but in this eruptive cycle no lava has yet reached the surface.

To the south of the main field, many vents contain no H<sub>2</sub>S (so no characteristic vent life). The deposits then appear to be iron hydroxide. Sub-seafloor boiling is suggested to have removed the H<sub>2</sub>S in these areas.