



Our File: PB 5220 Z301  
MIN 75

August 22, 1991

Leo D'Or Mining Inc.  
1431 Howe Street  
Vancouver, British Columbia  
V6Z 1R9

Mr. Massoud S. Madari

Proposal for Geological Engineering Services  
Leo D'Or Marble Prospect

Dear Sir:

This letter presents the revisions of our August 6, 1991 proposal for engineering services and geological mapping on the Leo D'Or Marble prospect in response to Dr. Nick Carter's fax request of August 20, 1991.

**1. SITE DESCRIPTION**

The Leo D'Or claim is located approximately 30 km southeast of Port McNeill on northern Vancouver Island, at the northeast end of Bonanza Lake. The claim covers an area some 1500 m square and includes a portion of the lake. The only access to the property is via a Crown Forest Industries private logging road.

Work has been undertaken at the site by Klohn Leonoff for the White Mountain Marble Corporation, previous Project Managers to Leo D'Or Mining. The work which was undertaken in March, 1988 was limited in scope due to restricted access to most of the area by snow cover. The site is forested and comprises rugged terrain with high relief. Topographic maps of the claim area show elevation ranges of 875 ft at lake level to almost 3000 ft at the high point on the property. Soil cover is generally shallow and numerous bedrock outcrops exist.



Available mapping at a scale of 1:250,000 shows that most of the claim area is underlain by Quatsino Formation limestone. The property is located near a massive granitic intrusive, referred to as the Bonanza Lake Batholith, thus the limestone has been marbleized. This granitic intrusion is present at the eastern edge of the claim area. The Quatsino Formation limestones rest paraconformably on Karmutsen volcanics and these rocks may also be present on the property.

Available geologic information on the Quatsino Formation indicates it is composed of an upper massive limestone unit and a lower limestone interbedded with siltstone. Thicknesses for the upper and lower units are reported to be 250 ft and 460 ft respectively at a site near Beaver Cove, just north of the project area. In the vicinity of the granitic intrusion the limestone is reported to be highly silicified with irregular rusty coloured veining and bedded or brecciated structures.

## 2. SCOPE OF WORK

It is our understanding that Leo D'Or wish to undertake a more detailed assessment of the property to establish a detailed surface map of topography and establish geological limits of the limestone unit within the claim area using geologic mapping and drilling. The purpose of the mapping will be to determine the structure and thickness of the marble formations, determine what colours are available and estimate strength and purity of the deposit from both chemical and physical tests.

As requested, we have prepared this proposal to undertake geologic mapping and drill inspection and coordinate drilling by others. We will not be able to offer any opinion as to the quality and purity of the marble for it's intended purpose. This will be the responsibility of Leo D'Or. We have prepared the cost estimate for each task separately so that individual tasks can be defined and undertaken separately. Due to the very high cost of drilling in this remote site, we recommend a two-phase approach to the exploration.

Geologic mapping will be undertaken initially (Phase I), to provide an estimate of the areal extent and depth of zones within the claim area. This should then be followed soon after by Phase II, the drilling and laboratory testing. Drill holes will be located based on the results of Phase I. A summary of the tasks proposed and brief description of our understanding of the scope is outlined below.

### **3. PHASE I**

#### **3.1 Task 1 - Geological Mapping**

Geological mapping will be undertaken by Klohn Leonoff personnel. Detailed mapping along 50 m spaced east-west lines will be done over a 500 m x 500 m area in the south eastern claim area centred on "Onyx Hill" and a second area immediately east of and above the area of detail completed by Klohn Leonoff in 1988. Rock type, colour, textures, degree of fracturing and alteration would be assessed for each outcrop. Reconnaissance mapping will cover the entire claim area incorporating the results of detailed mapping.

#### **3.2 Task 2 - Drill Core Logging**

Drill cores recovered from recent shallow drilling of several drill holes within a 200 m square area on "Onyx Hill" will be logged in detail and results incorporated to the detail geological mapping data.

#### **3.3 Task 3 - Preliminary Report**

It is considered that Phase I of this project described above will provide an approximate outline of the marble deposit and a preliminary estimate of rock variability and quality. Following completion of the field work in this phase we propose to summarize the results in a data report and submit this to Leo D'Or for review prior to the start of Phase II. If Phase II were started prior to completion of Phase I this report would consist of a letter with summary drawings only. If Phase II were cancelled then a complete data report would be submitted for your records.

#### 4. PHASE II

Additional data as to the nature of the unweathered deposit at depth will be required if Phase I results are promising and a decision to proceed with Phase II is made. This phase would consist of three tasks which include drilling, laboratory testing and reporting as noted below.

##### 4.1 Task 1 - Drilling

As requested, we have obtained a cost estimate for approximately 1000 lineal metres of coring using NQ triple tube wireline apparatus to recover core. We have assumed the drilling will be conducted at eight to ten locations on the property. Due to time constraints drilling is proposed in two 10-hour shifts. All drill core would be recovered by the drillers and logged in the field by our site engineer during the daylight shift. The core would be boxed and shipped to Leo D'Or storage in Vancouver.

Due to the rugged topography of the site and lack of site access, it is assumed that the drilling program will require helicopter support. We have assumed that 10 drill rig shifts will be required for the project and that each shift will require approximately three hours of flying time to complete. A round trip flight from the helicopter to the site will add one half hour to each shift.

##### 4.2 Task 2 - Laboratory Testing from Klohn Leonoff

The commercial viability of developing the property into a marble quarry depends upon available colours, colour consistency, limestone purity and durability. Marble used commercially for building stones must meet certain physical and mechanical requirements for strength, durability, and appearance. A currently accepted standard for suitability is produced by the American Society for Testing and Materials (ASTM). We propose to subject samples of the limestone to the ASTM testing to determine their preliminary compliance with this standard. Strength testing would be undertaken by Warnock Hersey Professional Services Ltd. Strength testing would be undertaken on one sample set per hole or block samples if possible.

In addition to the strength testing identified, laboratory testing to evaluate chemical quality is recommended. We recommend that chemical testing be undertaken by Geotex to evaluate the percentage of calcium carbonate using chemical or x-ray procedures. We estimate that the testing of the samples would be undertaken on approximately 100 to 200 samples.

#### **4.3 Task 3 - Reporting**

A summary report combining all the subconsultants data reports would be provided by Klohn Leonoff. The report will be a data report providing Leo D'Or with a summary of geological properties and areal extent of the deposits. The report will not make any recommendations on the commercial feasibility of the property. In addition, this phase of the report will not include any engineering design of quarry slopes, access road alignments or plant facilities.

#### **5. PERSONNEL**

Our project team for this assignment would be under the direction of Project Manager Mr. Harvey McLeod who has a strong engineering geology background and is familiar with the Leo D'Or property. Mr. McLeod would be assisted by Mr. Malcom McFadyen and Mr. Mircea Burcescu. Mr. McFadyen and Mr. Burcescu have considerable experience in exploration geology and geological engineering. The project would be reviewed by Mr. Lisle Jory. Curriculum vitae for Mr. Harvey McLeod, Mr. Mircea Burcescu, Mr. Malcom McFadyen and Mr. Lisle Jory are appended to this letter.

#### **6. COST ESTIMATE**

Table 1 presents a preliminary cost estimate for the proposed investigation. This is our best estimate of the cost of the program for the scope of work requested by Mr. Carter. It should be regarded as an estimate only which may change depending upon scope changes as the project proceeds. We estimate that approximately \$193,260 would be required to complete the work outlined. The basis for the Klohn Leonoff charges are provided on the attached Schedule of Services, Charges and Conditions of Agreement.

GST will be invoiced as a separate item on a Request for Payment submitted by Klohn Leonoff. The appropriate GST levy shall be paid to Klohn Leonoff in addition to the amounts paid for the work done. The budget presented does not include an allowance for GST.

Klohn Leonoff will be pleased to undertake the project management and technical supervision for this project. We will be pleased to review and authorize all invoices for Leo D'Or from the various subconsultants required for this project. **However, we request that Leo D'Or contract directly with all the subcontractors required for this project.**

Klohn Leonoff has a company policy with new clients that a deposit is requested in advance of beginning work. We would request that an amount of \$25,000 be deposited in a separate KL account which would be credited toward our final invoice. We also request that all invoices be paid in full within one month of invoicing.

**Table 1 - Preliminary Cost Estimate**

PHASE I			
TASK 1 - GEOLOGICAL MAPPING and TASK 2 - CORE LOGGING			
Project Manager - H. McLeod	\$125/hr	8	1,000
Project Engineer - M. McFadyen	\$80/hr	96	7,840
Intermediate Engineer - M. Burcescu	\$70/hr	96	6,720
DISBURSEMENTS			
Accommodation and Meals			1,500
Travel			2,620
<b>TOTAL ESTIMATED COST OF THESE TASKS</b>			<b>\$19,680</b>

TASK 3 - REPORTING			
Project Reviewer - L. Jory	\$135/hr	8	1,080
Project Manager - H. McLeod	\$125/hr	8	1,000
Project Engineer - M. McFadyen	\$80/hr	40	3,200
Drafting	\$65/hr	40	2,600
Secretarial	\$40/hr	20	800
Disbursements			600
ESTIMATED COST OF THIS TASK			\$9,280
TOTAL ESTIMATE FOR PHASE I			\$28,960
PHASE II			
TASK 1 - DRILLING PROGRAM			
Project Manager - H. McLeod	\$125/hr	8	1,000
Project Engineer - M. McFadyen	\$80/hr	50	4,000
Intermediate Engineer - M. Burcescu	\$70/hr	280	19,600
DISBURSEMENTS			
Accommodations and Meals			2,200
Tonto Drilling			
1000 m at approximately \$62 per metre		63,000	
Mobilization - Demobilization		5,250	
Standby/Moves (assume 10 days at \$85/hr)		10,000	
Consumables		2,000	
Clearing 10 sites for drilling		4,500	
Core shipping		500	
Total drilling estimate			85,350
Helicopter rig move			25,000
ESTIMATED COST OF THIS TASK			\$137,150

TASK 2 - GEOCHEMICAL AND OTHER LABORATORY TESTING			
Project Manager - H. McLeod	\$125/hr	8	1,000
Project Engineer - M. McFadyen	\$80/hr	8	640
<b>DISBURSEMENTS</b>			
Geotex Consultants			
X-ray diffraction testing, 200 samples at approximately \$20 per sample			4,000
Warnock Hersey Professional Services Ltd.			
ASTM exterior grade marble index testing, approximately \$400 per test set times approximately 1 test per hole			4,000
<b>ESTIMATED COST OF THIS TASK</b>			<b>\$9,640</b>
TASK 3 - PROJECT MANAGEMENT AND REPORTING			
Senior Review - L. Jory	\$135/hr	16	2,160
Project Manager - H. McLeod	\$125/hr	8	1,000
Project Engineer - M. McFadyen	\$80/hr	80	6,400
Intermediate Engineer - M. Burcescu	\$70/hr	40	2,800
Drafting	\$65/hr	40	2,600
Secretarial	\$40/hr	40	1,600
<b>DISBURSEMENTS</b>			
Telephone and Fax			600
Printing			350
<b>ESTIMATED COST OF THIS TASK</b>			<b>\$17,510</b>
<b>TOTAL ESTIMATE FOR PHASE II</b>			<b>\$164,300</b>
<b>TOTAL ESTIMATE FOR BOTH PHASES</b>			<b>\$193,260</b>



August 22, 1991

We trust you will find this proposal satisfactory and look forward to working with you.

Yours very truly,  
KLOHN LEONOFF LTD.

A handwritten signature in black ink, appearing to read 'H. McLeod', written in a cursive style.

Harvey McLeod, P.Eng.  
Manager, Mining Services Division

CP:jes  
Encl.