

# NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002

March 20-22, 2002

Mount Peyton Hotel, Grand Falls-Windsor



GOVERNMENT OF  
NEWFOUNDLAND  
AND LABRADOR



Exploits Valley  
Economic Development  
Corporation

Canada

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# NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002

## Welcome Participants

Stone Symposium 2002 focuses on the Newfoundland and Labrador dimension stone industry. The symposium, which is in its third year, is the only dimension stone meeting of its kind in Canada. This year's meeting has been a joint effort between the Exploits Valley Economic Development Corporation, the original organizers, and the Dept. of Industry, Trade and Rural Development. Additional support for the meeting has come from Atlantic Canada Opportunities Agency (ACOA), Human Resources Development Canada, the Dept. of Mines and Energy and the Newfoundland and Labrador Chamber of Mineral Resources.

Stone Symposium 2002 is an opportunity for industry personnel, government officials, prospectors and other interested parties to interact, network and learn about the emerging dimension stone industry. This year's format has been expanded to include: a tour of the International Granite Corporation quarry and monument plant; a full day plenary session incorporating focus group discussions; and a full day of prospector training. The focus groups will allow for creative discussion on the challenges facing this industry and opportunities to overcome these challenges leading to an expanded, self-sufficient and world-recognized dimension stone industry.

Crucial to expanding the provincial dimension stone industry is the identification of new sources of marketable stone. World stone markets are inundated with the more common varieties and colours. Competition and low price dictates that the Newfoundland and Labrador dimension stone industry must concentrate on finding stone varieties that bring something unique to the market. It is on these so-called "unique" stones that we must focus and Stone Symposium 2002 is the first step in this process. Prospector training in relation to dimension stone has to focus initially on market awareness and basic quarry assessment, both of which are key to identifying marketable sources of "unique" stone. We are extremely fortunate in having two highly respected industry personnel facilitating the dimension stone training session. Mr. Chris Johnson and Ms. Sherry Dunsworth bring a wealth of information and knowledge on marketing and quarry assessment.

We the organizers hope you find the symposium beneficial and informative. Marvel at the craftsmanship displayed at the monument plant, listen to the presentations, partake in the discussions and learn from the training session. Remember: *Newfoundland and Labrador: A Wealth to Explore*".

The Organizing Committee:

*Dave Evans*

*Mike Regular*

*Taylor Parsons*

# NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002

## AGENDA

### Mount Peyton Hotel, Grand Falls-Windsor March 20-22

#### **Wednesday, March 20**                      ***International Granite Corporation Fabrication Plant***

*12:30 PM*    Depart Mount Peyton Hotel parking lot 12:30 PM sharp for tour of the International Granite Corporation/Cabot Granite Fabricators Incorporated Monument Plant. Tour will return to the Mount Peyton by approximately 5:00 PM

— *Evening Activities* —

*7:00 PM*    Opening Reception and Registration (A cash bar will be available).  
Welcoming remarks by Mr. Phil McCarthy, Assistant Deputy Minister, Dept. of Industry, Trade and Rural Development

#### **Thursday, March 21**                      ***Newfoundland and Labrador Stone Symposium 2002***

##### ***Morning Session***    *Session Chair: Dr. Lawson Dickson, Dept. of Mines and Energy*

*8:00 AM*    Registration (Registration desk will remain open throughout the sessions)

*8:30 AM*    Welcoming remarks by Mr. Jerome Moore, Vice-Chair, EVEDC

Opening Remarks by:

- Mr. Kirk Tilley, Dept. of Industry, Trade and Rural Development
- Mr. Mike Regular, EVEDC
- Mr. Ken Martin, Director of Business Programs, ACOA

*9:00 AM*    The Newfoundland and Labrador Dimension Stone Industry: An Update. Mr. David Evans, Dimension Stone Development Officer, Dept. of Industry, Trade and Rural Development

*9:10 AM*    The Role of the Newfoundland and Labrador Chamber of Mineral Resources, Mr. Bob Kelly, Executive Director

*9:30 AM*    The Role of the Dept. of Mines and Energy. Mr. Allister Taylor, Assistant Deputy Minister, Dept. of Mines and Energy

*9:50 AM*    The Rose Blanche Lighthouse (A New Light On Newfoundland Stone). Ms. Rita Anderson,

Southwest Coast Development Association

10:30 AM — *Coffee Break* —

10:50 AM Focus Groups: Facilitator, Mr. Bob Kelly

12:00 PM Lunch: *Guest Speaker:* Mr. Gary Pearse, Equapolar Resource Consultant Incorporated will speak on “The Dimension Stone Development Process: From Grass Roots Exploration to Operating Quarry”

***Afternoon Session Industry Overview Presentations*** Session Chair Mr. Jerome Moore  
Vice-chair  
of the  
EVED  
C

1:30 PM The Torngait Ujaganniavingit Corporation Dimension Stone Operation, Mr. Ben Saimat, Quarry Master

1:50 PM An Update on International Granite Corporation, Cabot Granite Fabricators Incorporated and Newfoundland Quarries Corporation: Mr. Gerry Pritchett, Owner and Mr. Bill Warren, Past-Chair, Newfoundland and Labrador Chamber of Mineral Resources

2:10 PM Epoch Rock Where Do We Go From Here? Mr. Jim Radford, President and CEO

2:30 PM Carew Services Incorporated: A Summary of Products and Services, Mr. Dave Carew, Owner

2:50 PM Pye’s Ridge North – A World Class Marble Prospect, Mr. Kevin Brewer, Managing Director, Atlantic Stone

3:10 PM — *Coffee Break* —

3:30 PM The Rooms – Stone Selection and Use in a Contemporary Newfoundland Building. Mr. Charlie Henley, PHB Group Incorporated

4:10 PM Report from Focus Groups and Summary

— ***Evening Activities*** —

7:00 PM Reception (Cash bar)

7:30 PM Dinner: Guest Speaker, the Hon. Beaton Tulk, Minister of Industry Trade and Rural Development

**Friday, March 22**

**Training Session**

*Course Facilitators:*

- *Mr. Chris Johnson, Vice-President of Marketing and Sales, Epoch Rock Incorporated*
- *Ms. Sherry Dunsworth, Consultant Geologist*

*8:00 AM* Opening remarks: Mr. Dave Evans, Dept. of Industry, Trade and Rural Development.

*8:05 AM* Part 1: Market Segments and Trends  
A) Overview  
B) Key Marketing Elements and How They Affect Stone Selection

*9:00 AM* Discussion

*9:30 AM* Part 2: Colour Identification From a Marketing Viewpoint  
A) Overall Colour Trends  
B) Market Testing

*10:30 AM* — *Coffee Break* —

*10:30 AM* Discussion

*11:00 AM* Part 1: Geological Factors and Features to Consider in Prospecting for Potential Dimension Stone Sites  
A) Overview  
B) Major Geological Features and Factors to Consider in Prospecting for Potential Granite Dimension Stone Sites

*12:30 AM* Discussion

*12:30 PM* *Working Lunch*

*1:30 PM* Part 2: Dimension Stone Assessment and Quarrying Techniques  
A) A Logical Approach to Dimension Stone Deposit Assessment: Data Gathering and Analysis  
B) General Quarrying Techniques and Equipment

*3:00 PM* — *Coffee Break* —

*3:00 PM* Discussion

*3:30 PM* Concluding Remarks, Mike Regular, EVEDC

## ABSTRACTS AND SPEAKER BIOGRAPHIES

### *The Newfoundland and Labrador Dimension Stone Industry: An Update*

**Abstract:** Newfoundland and Labrador has a long history of dimension stone quarrying. Early quarrying efforts provided stone for fortifications, church and government buildings. With the development of the railway, stone was quarried for bridge abutments, the St. John's railway station and cobble stone. Local stone was also used for lighthouse construction and roofing material. However, the use of local stone as a building material died out in the early part of the 20<sup>th</sup> Century.

In the 1970s and the 1980s, there was renewed interest in the province's stone resources. Resource assessment and demonstration projects were carried out by the Dept. of Mines and Energy. Since 1990, successful quarrying and fabrication plants have been established at Ten Mile Bay and Iggiak Bay in northern Labrador, Borney Lake in central Newfoundland and at Britannia Cove in eastern Newfoundland. Small flagstone quarries are also operated seasonally in eastern and western Newfoundland. In late 2001, a world class gang saw plant went into operation at Argentia utilizing imported blocks and exporting finished product mainly to US markets.

**Speaker:** Mr. Dave Evans, Dimension Stone Development Officer, Dept. of Industry, Trade and Rural Development. Dave is a graduate of Memorial University with an M.Sc. in Economic Geology. He has 20 years experience and worked previously as a Project Geologist with the Dept. of Mines and Energy. Dave has worked extensively throughout the province completing deposit level studies of gold and base metal mineralization and regional geological mapping, and he has authored numerous publications and maps. In 2001, Dave joined the Dept. of Industry, Trade and Rural Development as a sector champion responsible for implementing a provincial dimension stone strategy.

Dave is a member of the Association of Professional Engineers and Geoscientists of Newfoundland, the Newfoundland Branch of the Canadian Institute of Mining, a director of Environmental Resource Management Association, and president of the Grand Falls-Windsor Heritage Society.

Dave is a native of Grand Falls-Windsor where he currently lives with his wife and two daughters.

### *Newfoundland and Labrador Chamber of Mineral Resources Dimension Stone Initiatives*

**Abstract:** The Newfoundland and Labrador Chamber of Mineral Resources (NLCMR) is a Non-profit organization that represents the interests of all groups and individuals active in the Province's mining, stone, quarry and exploration sectors. It is the Chamber's mandate to encourage the prosperous, orderly and environmentally responsible development and growth of the mineral industry throughout Newfoundland and Labrador.

One of the key areas of focus for the Chamber is further development of the dimension stone sector. To advance the industry, the Chamber has undertaken two key initiatives with support from the Atlantic Canada Opportunities Agency. The first is the Dimension Stone Infrastructure Support Program which is used to provide infrastructure support such as road access and laydown areas to potentially viable quarries or to enable expansion of existing operations.

The second initiative is the Dimension Stone Promotional Projects Program. This program provides support to high visibility projects designed to profile the potential uses for dimension stone throughout the province.

The presentation will provide details of both programs plus some insight in to future Dimension Stone Initiatives of the Chamber.

***Speaker:*** Bob Kelly – Executive Director, NLCMR. Bob Kelly is presently the Executive Director of the Newfoundland and Labrador Chamber of Mineral Resources. He is a Professional Geoscientist graduating from Memorial University of Newfoundland in 1976 and also the Executive Program at the University of Western Ontario’s School of Business in 1994. He is a member of APEGN, PDAC, CIMM and MAC.

Bob has over 25 years in the mining industry starting out as an exploration geologist in western Canada. He then spent 21 years in various management roles at the Iron Ore Company of Canada’s mining operation in Western Labrador.

He has been with the Chamber of Mineral Resources almost two years now and is working with various stakeholder groups to responsibly develop the mineral industry throughout the province.

### ***The Role of the Dept. of Mines and Energy***

***Speaker:*** Allister Taylor was born in Grand Falls and graduated from Grand Falls Academy. He moved to the State of Rhode Island in 1970 where he attended Rhode Island College and graduated with a Liberal Arts Degree in Economics in 1974. Returning to the province he worked with Abitibi Price in Grand Falls, and in 1980 started his career with the Provincial Civil Service with the Dept of Mines and Energy as an Energy Conservation Officer. In 1988 he was appointed to the position of Senior Energy Analyst with the then Department of Energy. In 1995, Allister moved to the Department of Industry Trade & Technology as an Industry Development Analyst. In 1997 Allister was appointed to the position of Manager of Economic Impact Analysis with the Project & Program Analyst Division of the Department of Finance. In 1998 he was appointed to the position of Mineral Policy Consultant with the Department of Mines and Energy. In December 2000 Allister was appointed to the position of Assistant Deputy Minister (Mines) with the Department of Mines and Energy. He is a member of MEMS (Mineral Economics & Management Society), CIM, PDAC and is the Province’s representative on the Federal/Provincial Intergovernmental Working Group on mineral matters.

### ***The Rose Blanche Lighthouse (A New Light on Newfoundland Stone)***



***Abstract:*** This presentation will focus on the challenges of restoring the Rose Blanche lighthouse, the last remaining granite lighthouse on the Atlantic Seaboard. It is also the only lighthouse in the world to be restored from ruins. The presentation will take the listener through the restoration process and speak on the funding sources obtained to undertake such a project and on the community partnerships that were made. Local people were trained in the field of stone quarrying and stone masonry. The restoration has been a major undertaking for the area. A pictorial display will show the ruins, restoration process, the quarry, site developments and the present day finished product. The Rose Blanche lighthouse was opened to the public on July 23, 1999 and has seen over twenty thousand visitors. This project is now in its fourteenth year with new activities being added yearly. Decommissioned before Confederation the lighthouse is expected to become a working aid to navigation on Provincial Lighthouse Day August 2002.

***Speaker:*** Rita Anderson, Executive Director, South West Coast Development Association. Ms. Anderson was born, raised and educated in Newfoundland. A native of Port aux Basques, she has held employment positions with the Government of Prince Edward Island, the United Food and Commercial Workers Union, the Women's Enterprise Bureau, and for the last nine years has served as Executive Director of the South West Coast Development Association. During this period a great deal of the association's work has revolved around tourism. Ms. Anderson has been involved in numerous projects including, the Rose Blanche lighthouse, the Cape Ray lighthouse, the restoration of the Port aux Basques Heritage Centre, summer theater, trail development and design, and community infrastructure. Two of the projects that the association has been involved with have received Manning Awards. She is involved in a variety of organizations including the Port aux Basques Area Chamber of Commerce and the Gateway Tourism Association of which she is an executive member. Ms. Anderson is also an executive member the Lighthouse Society of Newfoundland and Labrador. Her knowledge of the area means that she is often called upon to act as a tour guide. She is married to Wayne and has a son, Jeremie who is presently serving with the Canadian Navy and is part of Operation Apollo.

### ***Stone Exploration and Development***

***Abstract:*** This talk presents a review of the dimension stone process from grass roots exploration, through project evaluation, testing, market studies, and feasibility analysis. Capital and operation costs for typical projects are presented.

***Speaker:*** Mr. Gary Pearse P. Eng., B.Sc., M.Sc., Equapolar Resource Consultants. Mr. Pearse has over 35 year, broad-based mineral sector experience. His work includes: geological survey mapping in Canada and Nigeria; mineral exploration and development across Canada and in East and West Africa; vice-presidency of a mineral subsidiary of an oil and gas company, service as a government mineral economist, and consulting. Among his duties with the Geological Survey of Nigeria he was a member of the task force that prepared Nigeria's first Five Year Economic Plan and established the country's position as a member of the International Tin Council. He was also responsible for the

regional mapping program and authorship of this section of the final report. With the Canadian Government he undertook engineering-economic studies in the mineral sector and has authored numerous chapters in the annual *Canadian Minerals Yearbook*.

For many years, Gary has worked as a consultant, mainly in the industrial mineral and rare metals fields. He is recognized internationally for his thorough market and transportation studies, his knowledge of the mineral-based manufacturing industry and his project management from grass roots exploration through feasibility, design and development. He has more than 100 papers, reports and articles in print and numerous client reports covering geological, engineering and economic topics. He holds a diploma from the International Gemmological Institute (IGI) in Antwerp as an appraiser of rough diamonds. His skills give his work in all three fields uncommon depth and he enjoys an excellent reputation among his peers as a mineral economic analyst and forecaster.

Mr. Pearse was also involved with some of the early dimension stone evaluation work conducted in within Newfoundland and Labrador.

### ***Torngait Ujaganniavingit Corporation (TUC): An Update of the Dimension Stone Operation***

***Abstract:*** Torngait Ujaganniavingit Corporation (TUC) is involved in the production of dimension stone, and is 100% owned by the Labrador Inuit Development Corporation (LIDC), and has revenues in excess of \$3 million for the 2000 operation year, and assets valued in excess of \$12 million. TUC was set up in 1990 and began dimension stone production at its Ten Mile Bay Quarry in 1992. The quarry has now completed its 8<sup>th</sup> full year of operation. More than 500 cubic meters of trimmed saleable block was produced in 1994, and since then production has steadily increased to its current production rate of 1000 cubic meters per operation year. The extracted raw stone is shipped to Italy and then sold to processing plants all over the world. A second quarry was developed at Iggiak Bay, Labrador in the summer of 2000, which will produce a similar material to that quarried at Ten Mile Bay. The Iggiak stone, however, is a different colour, brownish granite with multi-coloured crystals while the Ten Mile Bay stone is gray with dark blue crystals. Work crews and supervisors are well trained and experienced by virtue of the past 8 years of development and operation. During that time practical expertise has also been developed in equipment procurement, equipment maintenance and logistics.

TUC employs over 100 people in quarrying, processing, construction and marketing. The ongoing success of TUC's quarry operations has evolved into the development of two stone processing plants, one at Ten Mile Bay North and the other at Hopedale.

TUC's head office is located in Nain, the most northerly populated community in the province of Newfoundland and Labrador.

***Speaker:*** Mr. Ben Saimat, Quarry Master, Torngait Ujagannivingit Corporation. Mr. Saimat was born at Nain, Labrador and completed his high school education at Jens Haven Memorial School in Nain. He fished with his father until the collapse of the fishery in 1987 and then found work with the Labrador Inuit Development Corporation at its caribou processing facility. In 1993 he became employed with TUC, in the dimension stone industry. He has gained the skills and experience required to be promoted to Quarry Master in 1998. He has completed a Crane Operator's Course, is a licenced Radio Operator, a licenced driller/blaster and has obtained a certificate as Master of Small Crafts for Inland Waters.

Ben lives in Nain with his wife and four children. He is an avid outdoors man and enjoys teaching his sons the skills his father taught him on the land. He is a member of the volunteer Search and Rescue Team, and coaches Minor Hockey.

### ***An Update of International Granite Corporation/Cabot Granite Fabricators Incorporated.***

***Abstract:*** International Granite Corporation is responsible for quarrying operations and providing raw block for Cabot Granite Fabricators Incorporated plant. Black granite (gabbro) is the primary stone used in the monument fabrication facility and most of the raw block is obtained from Quarry #5 which is located adjacent to the plant. Quarrying methods include a combination of quarry bar and diamond wire saw technology. The company also quarries a limited variety of stone from sites near Seal Cove, Hodges Hill, Crown Ridge and Comfort Cove and is actively seeking additional quarry sites.

In January, 1998, Cabot Granite Fabricators Incorporated, a subsidiary of International Granite Corporation, opened a 20,000 sq. foot monument stone fabrication facility near Borney Lake. An all-weather gravel road connects the plant with the Trans Canada Highway. Current production focuses on monument blanks for export, and engraved monument stone for local use. The company can also produce counter top, cladding, flooring and curbing stone products. Cabot Granite Fabricators recently obtained a contract to provide finished stone for the provincial museum and archive complex "The Rooms" located in St. John's.

Newfoundland Granite Corporation is responsible for the marketing of finished stone produced by Cabot Granite Fabricators. The company operates showrooms in Gander, Clarenville and Bonavista, Sydney, Nova Scotia, St. John, New Brunswick and Charlottetown, Prince Edward Island.

***Speakers:*** Mr. Gerry Pritchett, owner, operator, the Pritchett Group of Companies. Mr. Pritchett has been involved in the provincial stone industry since the early 1990s. His companies, International Granite Corporation and its subsidiary. Cabot Granite Fabricators Incorporated, have quarry operations at Borney Lake, Hodges Hill, Crown Ridge and Seal Cove, and a monument fabrication facility at Jumpers Brook.

Mr. Bill Warren, Past-chair of the Newfoundland and Labrador Chamber of Mineral Resources, and owner of Island Industrial. Bill is chair of the Chamber's dimension stone committee. He has been involved in the dimension industry since 1991 and the provincial mining industry since 1970.

## ***Epoch Rock, Where Do We Go From Here?***

### **Abstract:**

What we have achieved  
Hills to climb  
Places to go  
Partnering in Quarries

In November, 2001, Epoch Rock Incorporated opened its 42,000 sq. ft., state-of-the-art gang saw factory at Argientia. The plant has six Breton gang saws capable of handling blocks up to 1.6m high by 3.5m long, and a single 19 head Breton polisher. The gang-saw blocks are purchased directly from international and national quarries. The blocks are cut into 2 and 3 cm thick slabs, polished on one side, and exported to U.S. markets. Epoch Rock Incorporated is interested in accessing sources of "unique" Newfoundland and Labrador stone as these would help EpochRock guarantee timely delivery of product and reliability of supply of product. It would also be advantageous to have a unique product to offer to the market.

**Speaker:** Mr. James A. Radford, President of Epoch Rock Incorporated. Mr. Radford was born and educated in Newfoundland and has been self-employed for the past 22 years. He was formerly employed with: IBM Canada from 1965-1966 where he was involved with computer systems programming, system analysis and design; and from 1968 to 1980 and Corporate Data Processing Manager with Steers Limited and Crosbie Enterprises Limited. In 1980, Jim founded Unified Systems Limited, which he built into a company with 75 employees, offices in Newfoundland, Nova Scotia and Ontario, and sales of \$8 to \$10 million. Unified Systems was sold to NewTel Enterprises Limited.

Mr. Radford is a Shareholder and Director of the following companies:

- First Watch Marine Incorporated - President, International Marketing/Sales High Tech. Products
- Glenco Drive Incorporated - Managing Director, Office/Warehouse Real Estate Holdings
- Synergy Incorporated - President, Miscellaneous Investments
- Epoch Rock Incorporated - President/CEO
- Stone Island Holdings Limited - President/CEO

Mr. Radford is a member/past-member of the following industry advisory committees:

- Cabot College of Applied Arts. Technology - Computer Programs Industry Advisory Committee (7 years)
- Key Corporation Technical Training Institute - Provincial Technology Program Advisory Board (5 years)
- IBM Canada - VAR Advisory Council (Value Added Remarketer) (7years)
- IBM Canada - VAR Advisory Council (Value Added Dealer) (3 years)

Mr. Radford is a member/past-member of many service, business and fraternal organizations, in many of which he held executive positions, including;

- Rotary International
- St. John's Board of Trade
- NATI - Newfoundland Association of Technical Industries
- Alliance of Manufacturers and Exporters of Canada
- Newfoundland Ocean Industries Association
- Masonic Fraternity
- Shrine of North America
- Royal Newfoundland Yacht Club

***Carew Services Inc.***

***Abstract:*** Dave Carew will be presenting a brief history of the company and a summary of services and products offered by Carew Services Inc. The company's stone depot, storage facilities, stonework facility, showroom and administrative headquarters are located on the main road from St. John's to Portugal Cove (west of Windsor Lake). The company has been in operation since 1975 and is well known for it's high quality landscaping work in the St. John's area. The company specializes in the use of natural Newfoundland stone in the landscape, quarried from a number of quarries around the province as follows:

Bell Island	limestone and quartz
Goobies	granite boulders
Conception Bay	sandstone
Pynns Brook	blue sandstone
Port au Port Pen	limestone

Other stone products such as plum, green and blue slate and granite are purchased locally.

Recently, the company expanded its product range to include value-added stone products. Industrial standard splitting and cutting machinery at their stonework facility provides for the production of customized stone, cut to order for both the commercial and residential market.

***Speaker:*** Dave Carew is the owner/operator of Carew Services Inc. and has been with the company for over 20 years. He resides with his family at Portugal Cove and is a member of the Board of Directors of Landscape Newfoundland and Labrador (LNL) and a member of the Landscape and Horticultural Industrial Adjustment Services Committee.

### ***Pye's Ridge North - A World Class Marble Prospect***

***Abstract:*** The Pye's Ridge area, near Deer Lake, western Newfoundland, has been known for its potential for world class marble deposits since the early 1990's. Atlantic Stone has conducted extensive assessment of several marble units in the northern portion of the ridge. The company attended StoneExpo - an annual international stone exhibition and conference held in the United States. At StoneExpo samples from Pye's Ridge North received a strong market response from major stone distributors from around the world. As a result of this successful promotion, Atlantic Stone has devised a comprehensive business plan and feasibility analysis which shows that this project is viable. Further market studies in the New England/Boston market are underway and the company is now initiating an extensive resource assessment program including exploration drilling, block removal, block testing and processing, and quarry engineering. Atlantic Stone hopes to initiate production of marble at Pye's Ridge North this year.

***Speaker:*** Mr. Kevin Brewer, Managing Director and Founder of Atlantic Stone Incorporated. Mr. Brewer has been active in the dimension stone sector for over 15 years. His first exposure to the sector was in the capacity of Policy Advisor to Energy, Mines and Resources Canada where he helped devise development strategies for the initial stone developments in the Buchans area. His next involvement in stone, was during his tenure at the Argentinia Management Authority where he was fortunate to become involved in the business and development plan for Epoch Rock. This stimulated his personal interest to develop a stone quarry in Newfoundland. For the past two years he has been conducting extensive research into potential dimension stone sites within our province and has completed assessment of several properties including granites at Lumsden and Old Woman's Pond and marble at Silver Mountain, North Lake, Old Man's Pond and Pye's Ridge. After attending StoneExpo 2001 in Fort Lauderdale in November he decided to focus development plans on Pye's Ridge North.

Mr. Brewer holds degrees in Masters of Business Administration and Science (Honours) from Memorial University and is a registered professional geoscientist in Newfoundland and Labrador. He currently teaches business courses at Memorial.

### ***The Rooms - Stone Selection and Use in a Contemporary Newfoundland Building***

***Abstract:*** The Rooms is the new home of the Provincial Museum, Archives and Art Gallery. The design for the building is based on an abstraction of traditional out port fishing rooms and their

relationship to one another and to the land. The building is a landmark structure on a prominent location in the capital city. A significant civic building, housing and representing the culture of Newfoundland and Labrador deserves of use of high quality and durable materials. Newfoundland stone was a natural choice. While budget has limited its use as a traditional exterior cladding material it is showcased at the main entrance and interior public areas of the building. Charlie Henley of PHB will give an overview of the building, how the stone was selected and what technical issues are involved in exterior and interior applications.

***Speaker:*** Charles Henley, MNAA, PHB Group International. Charles Henley is an architect with well-developed skills in design, construction and people management. His broad experience in various building types and sizes has enabled him to undertake any size building project with skill and confidence over the nineteen years. Through his practice Charles has developed good communication and design skills and has proven his abilities in problem solving, dispute resolution and facilitation. His professional work involves all aspects of architectural practice from pre-design through concept to contract documents and commissioning. His main responsibilities include programming, master planning, urban design, building design, design management, contract document production, client liaison and quality assurance.

#### **Education:**

- Technical University of Nova Scotia, Bachelor of Architecture, 1982
- Technical University of Nova Scotia, Bachelor of Environmental Design Studies, 1981
- Memorial University of Newfoundland, Two year Pre-Architecture.

#### **Continuing Education:**

Dalhousie University, Continuing Education, Project Management Course, 1999 and Time Management Course, 1997.

Guide to Better Contracts and Contract Review and Revision, Security Insurance of Hartford Seminars.

Acoustics and Wall Noise Control for Buildings, National Building Code, Part 3, 5 & 9, Building Envelope Performance and Durability, National Fire Code, National Research Council Seminars.

Masonry Veneer and Steel Stud Wall Systems, Canada Mortgage and Housing Seminar.

Building Envelopes for Historic Structure, Royal Architectural Institute of Canada, Ken Greenberg.

Urban Design for Liveable Cities, Royal Architectural Institute of Canada, Ken Greenberg.

Lecturer in Business Practice Management at Dalhousie School of Architecture, Halifax, Nova Scotia.

**Association:**

- Past-President, Newfoundland Association of Architects, 2001-Present.
- Member Newfoundland Association of Architects, 1994 - Present.
- Member Newfoundland Association of Architects, Graduate Representative, 1982 - 1983.
- Provincial and founding member of The Great Fire Foundation 1982-1987. A citizens group promoting public participation in urban related issues.

**Employment:**

- 1989-Present PHB Group Inc., Principal. Formerly Pratt @Henley@Blackwood Architects Inc.
- 1983-1981 Charles Henley and Associates, Principal.
- 1982, 1981, 1979 The B.A.E. Group, Architectural Assistant.
- 1981 Chandler/Kennedy, Architectural Group, Calgary, Alberta.



# NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002

## Topics for Focus Group Discussion

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1. What are the major development challenges/obstacles facing:

a) Established producers

b) Prospectors

c) Developers

2. Given current fiscal realities, what can government (Provincial and Federal levels) do to promote, support and enhance the provincial dimension stone industry (services, information, expertise, market analysis, trade shows, reverse shows etc.)? *Think of this in term of established producers versus prospectors/developers with grassroots or advanced level projects.*

3. Discuss the following in relation to secondary processing of stone. Use the items listed below to focus discussion.

*All dimension stone producers are faced the same problem, an excessive volume of waste and an over abundance of seconds or B-Grade stone unsuitable for the main product line. This material represents a significant expense for the operator. Secondary processing or additional product lines are required to utilize this resource and secure the primary producer. However, local markets for this material are not developed and the perception that stone is too expensive as a substitute for traditional building materials is difficult to overcome.*

- Public awareness of local stone products

- Cost reduction to make stone attractive to a wider market

- Demonstration projects in high traffic areas

- Attracting individuals/companies to invest in secondary processing

4. Marketing of stone, the five Ws:

- Who should be involved in the marketing process?

- What do we hope to accomplish from the marketing process (partnerships, markets quarry developers etc.)?
- Where do we go to market potential stone sources (US, Europe etc.)?
- When should we consider a stone ready for marketing?
- Why should potential investors develop or support Newfoundland and Labrador stone?

5. Discuss the merits of the following statement and how can this equipment be made available to prospectors and quarry developers?

***For realistic quarry assessment and market analysis large block must be obtained from proposed quarry sites. Removal of large block requires specialized equipment (quarry bars, diamond wire saws and specialized drills) which is not readily available within the province. This equipment also requires specialized technical knowledge in both setup and operation.***

6. Where do we go post-Stone Symposium 2002 (what do we target next, investment forums, training etc.)?

# DIMENSION STONE TRAINING SESSION

## NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002: PROSPECTOR TRAINING SEMINAR March 21– 22, Grand Falls-Windsor, Newfoundland

By: S.M.Dunsworth, M.Sc., P.Geo.

### PART 1 – Geological Parameters to Consider in Prospecting for Potential Dimension Stone Sites.

#### 1. OVERVIEW

The primary objectives of this short teaching seminar are to provide prospectors with a review of: (a) the dimension stone industry in Newfoundland and Labrador today, and (b) the basic geological concepts and tools which they can utilize when prospecting for dimension stone in Newfoundland and Labrador.

*Dimension stone is defined as any stone that is quarried or cut in accordance with specific required dimensions.*

#### 1.1 An Introduction to Dimension Stone: A World Perspective

The dimension stone industry is very much a world-wide industry, involving more than 50 major countries that are currently producing, exporting, and consuming stone products (i.e.: rough block, monument blanks, polished slabs, tiles, and cut-to-size finished products). The industry is a very close-knit community, one which congregates at major stone trade shows and conferences that are held each year throughout the world (i.e.: USA, Brazil, China, Italy, Spain, Portugal, Germany, India).

The United States of America is the world's biggest consumer of dimension stone. It is instructive to look at the value (\$USD) of dimension stone imported to the USA from the entire world, and examine what percentage of that stone is imported from Canadian stone producers (Table 1).

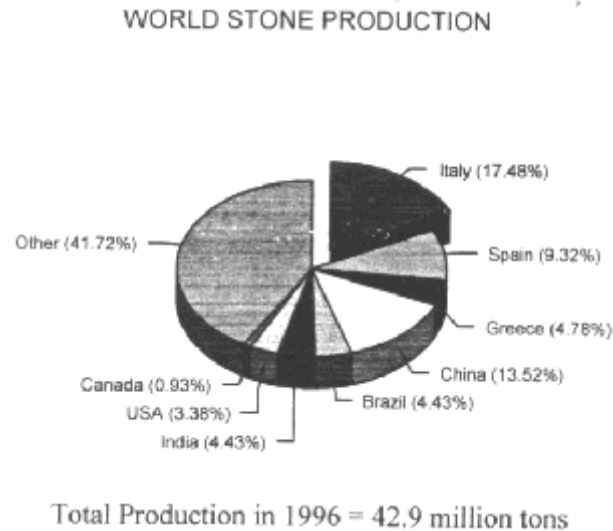
From a world perspective (Table 2), the total world dimension stone production for 1996 was estimated at 50 million tons (Resource Development Assoc., 1998). Of this total, the USA produced 3.4% while Canada less than 1% of this overall world production.

TABLE 1: Granite, marble and slate dimension stone imports (mostly finished product) to the USA from 'The World', compared to Canada imports only, for the year July 2000 – July 2001 (compiled from statistics reported in Stone World magazine).

	GRANITE		MARBLE		SLATE	
	TOTAL	CANADA	TOTAL	CANADA	TOTAL	CANADA
Total	\$402,273,300	\$28,745,000	\$578,684,900	\$6,388,840	\$75,770,900	\$3,672,197

Monthly Average	\$33,522,775	\$2,395,420	\$48,223,740	\$532,400	\$6,314,242	\$306,016
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TABLE 2: Chart showing the total world dimension stone production for 1996 (from Resource Development Assoc., 1998).



## 1.2 The Dimension Stone Sector of the Newfoundland and Labrador Mining Industry:

### 1.2.1 The main rock types (lithologies) utilized for dimension stone are:

- (1) Granite – including homogenous types, granite with a mineral grain (planar and/or linear mineral(s) orientation, and granite with igneous layering or variable banding and veining including gneiss,
- (2) Marble – including limestone, marble (metamorphosed limestone), travertine, onyx,
- (3) Other stones – including sedimentary rocks (sandstone, conglomerate), metamorphic rocks (quartzite, schist, slate), and volcanic rocks (lava rock such as basalt, pyroclastic rock such as tuff).

### 1.2.2 Quarries presently operating in Newfoundland and Labrador:

#### 1.2.2.1 The Mount Peyton – Borney Lake Gabbro of central Newfoundland.

The Mount Peyton gabbro was prospected and sampled by government geologists for its dimension stone potential during the early 1980's. The first trial quarry was opened in the late 1980's on the side of a modest, north-south trending ridge. Several additional sites were opened further north along the same ridge during the early 1990's, but it wasn't until 1994 that stone with characteristics suitable for the monument industry was identified from a fourth site. A detailed geological assessment of the Mount Peyton gabbro's dimension stone potential did not begin until 1995, when detailed geological mapping and diamond core drilling was carried out at the new Quarry # 5 site. Subsequent mapping and drilling led to the discovery of the Upper Christmas Pond site in 1997. Small size block production from these sites provides material to the Jumper's Brook monument plant run by Cabot Granite Fabricators Inc., a subsidiary of the

International Granite Corp. The Mount Peyton monument grade gabbro is comparable to in quality to Zimbabwe Black, which currently sells at \$600 to \$1000 US per cubic meter. Present production at the Jumper's Brook plant includes finished monuments for the local and regional marketplace, monument blanks for export to other provinces, and custom stone fabrication and installation in the province.

#### **1.2.2.2. Newfoundland Slate, Nut Cove, eastern Newfoundland**

In the late 1880's a small slate quarry was opened at Nut Cove, on the north side of Smith Sound, to supply roofing slate for export markets. In 1986, Newfoundland Slate Inc. was formed to reactivate the old quarry site. Newfoundland Slate Inc. entered into a joint venture in 1992 with Miller-MacAsphalt to open a state-of-the-art processing plant at nearby Burgoyne's Cove. The company shipped 4,700 tonnes of purple and green roofing tiles to Canada, USA, Europe, Australia and Japan in 1995. The plant closed in the late 1990's, and the equipment was auctioned off. The Nut Cove quarry was reactivated in 2000 by Hurley Slate Works and a small plant was opened in the quarry.

#### **1.2.2.3 Ten Mile Bay Anorthosite Quarry, Nain area, Labrador**

The site of the Ten Mile Bay anorthosite quarry was evaluated for dimension stone by Brinex Limited in the early 1960's. Small blocks were quarried and shipped south, but Brinex could not establish a market at that time. The site was re-evaluated and promoted by government geologists in the mid 1980's. An Italian geologist/marketing expert visited the site in 1990, and in 1992 began working with the Labrador Inuit Development Corporation (LIDC) to develop a modern quarry at Ten Mile Bay. The anorthosite is known as "Blue Eyes", and it is unique in that it contains 1 centimeter crystals of iridescent blue labradorite, giving the stone an extremely attractive blue sparkle appearance. Premium quality, large gangsaw size blocks of anorthosite are produced from Ten Mile Bay and sold throughout the world for a very high price of \$2,500 US per cubic meter. Exploration in the Nain area for other quarry sites, has led to the development of a second quarry at Iggiak Bay, 20 km south of Nain, with limited production beginning in 2000. The anorthosite stone from this quarry contains larger, multi-colored labradorite crystals. The LIDC has recently built a stone processing plant in Hopedale to fabricate furniture and monuments from smaller and/or irregular shaped blocks.

### **1.2.3 Dimension stone products being produced in Newfoundland and Labrador.**

#### **(1) Gangsaw blocks:**

The term "gangsaw blocks" refers to the large blocks of stone that range in size from between 6 and 10 cubic meters and weigh between 15 to 38 metric tonnes. Smaller blocks are sold in the marketplace only if the material is of extremely high quality and/or in high demand. The blocks of stone are typically "dressed" or "finished" (squared on all sides) in the quarry. Before the blocks leave the quarry they are inspected for quality, marked or labeled, then they are usually transported to a block yard. Once at the yard, the blocks undergo further inspection and then are displayed for purchase by block buyers.

In this province the only production of gangsaw blocks is from the Ten Mile Bay anorthosite quarry. The bulk of the gangsaw blocks from Ten Mile Bay are shipped directly from the quarry to Italy for distribution throughout the world. The company currently ships a small numbers of blocks to two sites on the island of Newfoundland: (a) the Epoch Rock Inc. slab fabrication plant at Argentia, and (b) the Newfoundland

Quarries Corp. Jumpers Brook monument plant. In addition, some of the gangsaw blocks are shipped from Labrador to a distributor in Quebec, and then exported into the USA.

## **(2) Polished Slabs:**

Large gangsaw blocks of granite and marble/limestone are typically cut into 2cm and 3cm thick slabs which are then ground smooth and polished to a high gloss finish. The stone slabs sometimes need to undergo a resin treatment before polishing, to increase hardness and durability of the more porous stones. The “polished slabs” are on average 270cm long by 160cm high; they are ‘packaged’ at the plants and then shipped into the marketplace for residential use (i.e.: countertops, bathrooms, fireplaces, etc.) and commercial applications (i.e.: interior and exterior cladding, flooring, etc.)

Commercial production of finished granite slabs is currently ongoing at the Epoch Rock Inc. stone fabrication plant located at Argentia, Newfoundland. This new state-of-the-art plant consists of six 40-tonne capacity Breton gangsaws, a diamond wire saw, and one Breton 19-head polishing line. The Epoch Rock Inc. plant began producing granite slabs in late 2001 for export to distributors primarily in the USA. The gangsaw blocks are imported to the Argentia site from around the world (i.e.: Labrador, Norway, Brazil, South Africa, United States). The use of local stone, when it becomes more readily available, is a top priority for Epoch Rock Inc.

## **(3) Monuments:**

The term “monuments” refers mostly to finished headstones that are used as grave markers in cemeteries. Monuments also include large, elaborate memorials for war veterans, historic figures and events, etc. The monument industry is an old, established business that utilizes predominantly granite, and lesser marble rock types. The requirements for a stone’s color, texture and durability are usually very specific, and it is sometimes difficult to introduce new stones.

The only production of monuments in the province is at the Jumpers Brook plant, which is located south of Bishops Falls, in central Newfoundland. The plant is owned by Newfoundland Quarries Corp. and they use ‘black granite’ block from their nearby gabbro quarries, and a small amount of blocks from other smaller quarries that they operate. The monument slabs, typically around 15 cm thick, and are either sold as blanks to outside monument fabricators, or finished on site for sale into the local marketplace. There are a limited number of polished monuments exported out of province.

## **(4) Slate Roofing and Floor Tiles:**

The production and export of premium quality slate roofing and floor tiles from the Nut Cove quarry dates back to the late 1880’s. The slate from this deposit is high quality, with low-absorption and fade-resistant qualities. The stone is virtually identical to some of the well known Welsh slates.

## **(5) Landscaping Stone:**

There is a growing ‘in-province’ market for Newfoundland landscaping stone, especially in the St. John’s region, where approximately 80% of it is consumed. Landscaping stone is typically a fine to medium grained sandstone, which readily splits into 3cm to 10 cm thick pieces for use as flagstone for patios,

retaining walls, etc. Carew Services Limited, based out of Portugal Cove, quarry most of their own stone from around the St. John's area, and they also truck stone from western Newfoundland. Fisher Hills Bluestone operates a sandstone quarry near Pynn's Brook in western Newfoundland. They produce large, thin slabs of sandstone for specialty requests, medium sized patio stone, and they have a hydraulic splitter to make wallrock. The company has also produced 30cm to 60cm thick slabs of sandstone for larger landscaping projects.

## **2. MAJOR GEOLOGICAL FEATURES AND FACTORS TO CONSIDER IN PROSPECTING FOR GRANITE DIMENSION STONE SITES.**

The following section will focus on the geological features and factors to consider during the prospecting for, and early stage evaluation of, a GRANITE dimension stone for residential / commercial usage. The use of the term granite will include all granites, gabbro and gneissic materials. Similar, but not identical, information would pertain to the prospecting of other rock types.

### **2.1 Characteristics influencing the marketability / commercial value of a specific GRANITE dimension stone.**

Prospecting for granite dimension stone can be a much more focused activity if the prospector keeps in mind the following points when carrying out an exploration program.

#### **2.1.1 The visual and esthetic features of the granite (i.e.: color, textures, grain size)**

The visual or aesthetic features of a granite are of prime importance when evaluating the marketing potential of the stone. Remember, if the visual features of a stone are not desired in the market place, then you will not be able to profitably sell it.

The major factors are:

##### **(1) Color:**

The color and overall tone of the granite must be compatible with the present market trends. If yellow granite is in, then the shade of yellow and consistency of the shade of yellow across the slab is evaluated. If the stone is a green granite, then the shade of green – whether dark or light or olive-green etc. - will make or break the sale of the stone. Black granite “gabbro” must fall within a range of black to gray black, not greenish-black or brownish black in order to sell at a profit. Any presence of a subtle mottling of the color must be noted and evaluated.

##### **(2) Textures:**

The texture of a granite refers to the visual features such as mixtures of larger and smaller crystals, regular or irregular banding or lines in the rock, individual spots or clusters of grains, or alignments of individual crystals which will give an overall visual pattern (Plate 1A). A visual evaluation for both the presence and

the consistency of these features through a deposit are of prime importance, even during the earliest stages of surface exposure prospecting of the granite body. These features are very important when selling a product, and therefore they play a large part during the evaluation of a stone's dimension stone potential. A further difficulty in the textural evaluation, is that specific market trends are always changing.

### **(3) Grain size:**

The grain size refers to the actual size of the individual grains or crystals that together make up the granite. Some granites are homogenous, showing a consistent grain size throughout the rock (Plate 1B). The grain size may be fine grained (i.e.: individual grains are < 1mm in size and difficult to see with the naked eye), medium grained (i.e.: individual grains are 1-2mm in size with individual grains visible to the naked eye), (Plate 1B) or coarse grained (i.e.: individual grain area >2mm in size). Other granites are inhomogeneous, showing larger grains or phenocrysts surrounded by, or "floating" in a groundmass in "interstitial" smaller grains (Plate 1B). The grain size characteristics of a granite

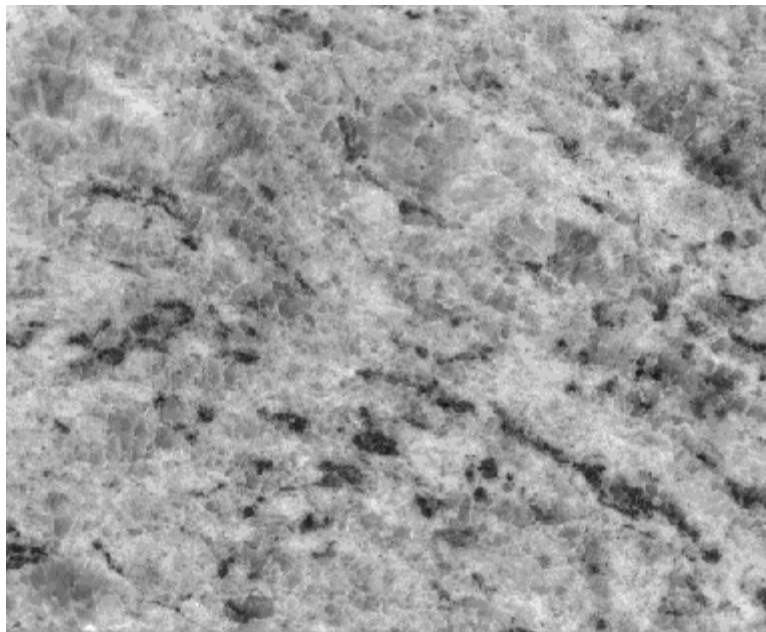


PLATE 1A: An example of heterogeneous textured granite with mixtures of larger and smaller crystals, and irregular banding defined by the alignment of elongate crystals.



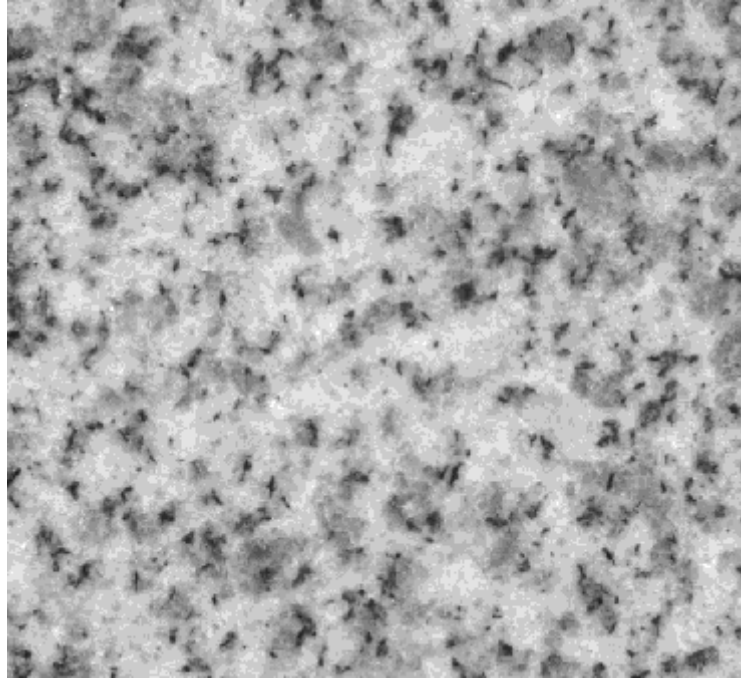


PLATE 1B: An example of homogenous textured granite showing a consistent, medium (1mm -2.5mm) grain size and no preferred mineral alignment throughout the rock.

are extremely important during the evaluation of the stone's dimension stone potential. The grain size affects the overall color and texture of the stone, and therefore it's distinct visual character.

### **2.1.2 Technical features (i.e.: petrography, mineralogy, physical-mechanical properties)**

The technical features of a stone refer to the petrography, mineralogy, chemistry and physical-mechanical properties and how these features influence the performance of a stone and the choice of stone for particular uses (i.e.: indoor, outdoor, intense sunlight exposures, pollution, exposure to chemicals, grease, oil etc.). The technical features of the stone will need to be determined throughout the process of evaluating the quality of granite from a deposit. The better the characteristics, the higher quality rating for the stone and increased acceptance for various uses in the marketplace.

#### **(1) Mineralogy and Petrography**

The mineralogy describes the types and composition of the minerals that together comprise a granite stone. The common rock forming minerals in a granite are: clear to white, or light gray quartz; feldspars - including salmon-pink potassium feldspar and white plagioclase; dark green-black pyroxene; black amphibole; brown-black biotite and white muscovite, plus a minor assortment of accessory minerals. Petrography describes the detailed characteristics and genesis of these minerals that comprise a granite. Knowing the granite's mineralogy and petrography takes on particular importance when determining the method of extraction and the workability of a stone (how and why the stone reacts to different cutting techniques).

These factors also help to understand (and possibly prevent) problems of alteration in the stone (i.e. susceptibility to color variation or decreased mechanical resistance under different polishing conditions, or color alteration under exposure to different pollutants under a variety of conditions). Finally, these factors are important in assessing a granite's natural degree of alteration, mineral alignment and internal strain (i.e.: degree of clay or sericitic alteration of the major rock forming minerals, preferred mineral orientation in relation to the preferred cutting direction, degree of internal straining of larger crystals as relates to brittle failure under external strain, etc.)

## **(2) Physical-Mechanical Properties**

The physical-mechanical properties of a rock describe the specific workability and durability of a granite which aid in determining the limits for usage of a specific granite under particular installation conditions. The main physical-mechanical properties which dimension stone is tested for are: specific gravity (weight per unit of volume), compressive break load (before and after freezing), porosity and imbibition (stone's ability to absorb liquids), elasticity-bend resistance, tensile strength, thermal dilatibility, shock-impact resistance, wear and slip resistance and hardness (Mohs and Knoop scales).

### **2.1.3 Available volumes (i.e.: consistency of material, raw material volume and block size)**

The long-term marketability of a specific granite demands that the material is consistent in the visual (i.e.: color, texture, grain size) and physical-mechanic properties. A consistent, even if perhaps limited, supply of the stone is also required to maintain confidence in supply of raw material to the marketplace. Unless a material is of unusually high demand and/or high value, the marketplace demands large gang saw block size to yield large slab sizes for most residential and commercial uses. In the case where a specific cut orientation is required, then the squaring of the blocks must maintain a minimum length to height ratio to satisfy the consumer needs.

## **2.2 Major geological/ geographical/geomorphology parameters to consider during an early stage evaluation of the commercial viability of a GRANITE dimension stone site:**

The following list of geological and geographical-geomorphical parameters can be used when conducting an initial stage commercial /geological evaluation of a potential dimension stone quarry site.

### **2.2.1 Lithological (rock) characteristics (color, textures, grain size and grain orientation, jointing and layering).**

The consistency of a granite's color, grain texture and size, igneous layering or banding and obvious mineral alignment are all features that need to be addressed during the early stages of prospecting for a potential dimension stone quarry site. For instance, the market demand for a homogenous granite will require that the color and grain size are extremely consistent throughout the deposit. If the granite is typically banded with variations in the color, grain size and banding, then a careful evaluation must be made to determine the consistency of these irregular features through the surface exposure of the granite body. The occurrence of flaws such as xenolith inclusions, unusual mineral clusters or bandings, vugs and gas cavities, or dykes

and cross-cutting vein structures must be carefully evaluated. The presence, orientation and spacing of dominant and subordinate jointing are critically important in determining the potential for extraction of usable block size. A program of diamond core drilling may be required to determine the consistency and distribution of the stone's characteristics at depth. This expenditure should be undertaken only after evaluating all of the parameters during the early stage assessment.

### **2.2.2 Volume and spatial distribution of economically available stone material**

The prospector must keep in mind the volume as well as the spatial distribution of a potential granite dimension stone deposit. If the aerial extent of the granite body is limited by the presence of major features such as structural faults, contacts with other rock types, lakes, or topographic depressions etc., then the volume of economically extractable material may be too limited. Similarly, if the identified granite is somehow interbanded or confined by other granite phases within the same granite body, then the volume of economically extractable material may be limited.

### **2.2.3 Topography of deposit and environmental impact**

The topography of a granite deposit and potential environmental impact are first order assessment criteria. If the topography is low, with abundant bogs and lowlands, then the cost of quarrying will be considerable higher than quarry development in a topographic high region. Likewise, the proximity to environmentally sensitive areas (i.e.: the headwaters of rivers leading into a town's water supply, designated salmon rivers, etc.) must be incorporated in the early stage of assessing potential development of a quarry.

### **2.2.4 Vegetation, overburden and surface weathering**

The costs and legalities associated removal of vegetation and overburden from a potential dimension stone site must be evaluated at the early stage of assessment. Timber lands may be under lease to logging companies, thickness of overburden may change dramatically along the sides of hills, and depth of surface weathering may affect deeper levels within a granite body.

### **2.2.5 Geographic location and transportation**

The proximity of a dimension stone deposit to existing road transportation routes and port infrastructure is an obvious part of the economic viability equation. Transportation of personnel and equipment to the site, and transport of finished block material to local processing plants or ports for container or bulk export, are all key questions to be considered in the early stage assessment of a potential dimension stone site.

## **PART 2 – Dimension Stone Assessment and Quarrying Techniques**

### **3. A LOGICAL APPROACH TO DIMENSION STONE DEPOSIT ASSESSMENT: DATA ACQUISITION AND ANALYSIS**

The scientific evaluation of a dimension stone deposit is completed by means of a logical and organized methodology. The prospector can make use of this information as he/she plans for and carries out the early stages of an exploration program for dimension stone.

#### **3.1 Defining the regional exploration focus area**

The initial stage in organizing for exploration for potential dimension stone sites is to gather and examine all of the relevant information available from existing resources, including topographic maps, geological maps, geology reports, and airphotos. The geology reports and maps aid the prospector in focusing upon specific granite outcrop areas. Topographic maps and airphotos provide information pertaining to access and proximity to transportation infrastructure, amount of outcrop exposure, contour elevations and drainage conditions.

#### **3.2 Prospecting (delineating the target zone, general mapping and sampling)**

The prospecting of a granite body requires systematic coverage of the regional area to pinpoint the specific target areas. Once targeted, then it is important to conduct general mapping and careful observation of the surface rock exposure to make an initial assessment of the rocks geological characteristics as outlined above in Section 2. Samples collected from the site must be: (a) representative of the granite in general, and (b) be large enough to show the true color and texture of the stone in polished surface. The sampling can be carried out using a sledgehammer, plugs and feathers and a pionjar drill. Mineral exploration license(s) should be in place.

#### **3.3 Initial assessment of the quarry potential**

The initial assessment of the quarry potential provides the prospector with the exercise of gathering all of the known factors relating to the stone, and analyzing this data before proceeding with more expensive and time consuming exploration and assessment work.

If the geological factors are positive, the geographical location favorable, and the market response to test samples positive, then the detailed geological work should proceed along with further market analysis and product development

#### **3.4 Detailed quarry potential assessment**

The detailed geological mapping of the site will provide an understanding of the spatial distribution and orientation of any fabric elements (i.e.: rift, run, hardway for quarrying based upon planar and/or linear mineral alignments) in the deposit. It will also identify how these geological elements relate to the

topography of the site, and how to incorporate these factors, as well as environmental and logistical considerations, into the initial stages of quarry planning

### **3.5 Diamond core drilling program**

If the information obtained to date from the ongoing resource assessment and marketing investigations are positive for quarry development, then the next logical step is to proceed to a targeted program of diamond core drilling. The purpose of this drilling is to aid in determining: (a) the geometry of deposit, (b) the spatial distribution of characteristic structural and textural features, (c) the block size potential, (d) the resource calculations for the deposit and (e) the detailed quarry plan.

### **3.6 Trial quarrying, test block extraction and processing, physical-mechanical properties and market response**

Test block extraction and processing should proceed with early stage quarry planning and trial quarrying. The results of the drilling program will feed directly into the quarry plan. The test block material must be collected from outcrop that is truly representative of the deposit. Physical-mechanical testing should be carried out at this time to provide this specific information to the ongoing market analysis.

### **3.7 Quarry development plan, assessment of site specific quarrying techniques and environmental impact**

All of the geological information collected from the detailed geological mapping, core drilling, trial quarry and test block programs, evaluation of block size and reserve calculations, identification of specific quarrying extraction techniques, excavation equipment, and block dressing equipment, in combination with geographical constraints and marketing analysis will all be formulated into a comprehensive quarry development plan. This information will then be incorporated into the economic feasibility study (i.e.: including all information to delineate capital costs, production costs, rehabilitation costs and revenue generation and determine the true economic viability of the quarry development).

## **4. GENERAL QUARRYING TECHNIQUES AND EQUIPMENT**

### **4.1 Quarry terminology (for a surface exposed quarry):**

- (a) Quarry front or face – part of the quarry presently undergoing quarry operations
- (b) Quarry step – the right-angle shape of the quarry face with a vertical rise (the riser) and adjacent horizontal plane (the foot)
- (c) Quarry floor- the horizontal surface of the quarry, towards the front of the quarry face that is used for the handling and squaring of blocks
- (d) Bench – the large, orthogonal shaped portion of the rock face that is cut from the step, overturned onto the quarry floor and ready for cutting into blocks
- (e) Ramp – an inclined surface that gives vehicle access to the quarry floor(s) and quarry steps
- (f) Plateau – a horizontal part of the quarry located between two quarry floors and as thick as a riser.

(g) Dump – site for depositing the waste rock from quarrying activities

#### **4.2 Generalized steps to quarry development and related equipment**

(a) Access and site preparation – This phase consists of road construction, removal of vegetation and overburden, infrastructure development for power generation to operate air compressors, water pumps, etc.

(b) Development and cutting of the first quarry face – This process can utilize the diamond wire saw, the chain saw, slot drills, quarry bars, flame cutters, percussion hammers, horizontal and down-hole drills.

(c) Overturning of bench onto quarry floor – This phase involves the use of splitting bags, hydraulic jacks, block and tackle, and excavator equipment.

(d) Sectioning bench into blocks – This stage uses a combination of diamond wire saw, chain saw, quarry bars, slot drills, rotary percussion hammers and jackhammers)

(e) Transportation and dressing blocks for commercial usage – This operation requires the use of a derrick, loader and/or excavator, diamond wire saw, stationary chain or diamond belt saw and splitting wedges.

(f) Examination and grading of blocks – This is a critical stage requiring the use of an excavator or loader, and the trained eye of an experienced on-site company block inspector.

(g) Transport of blocks to block yard – The final stage to re-inspect and grade the blocks prior to exposure to the customer block buyer.

#### **5. AFTERTHOUGHT**

In summary, the dimension stone industry is really in its infancy here in Newfoundland and Labrador. The prospecting, discovery, geological evaluation, market promotion and quarry development requires a lot of money and time. The stone must be of suitable quality and have a unique appeal to compete in the international market place in an economical price range. It is an industry that, like any other successful business venture, requires careful planning, scientific analysis, and ongoing economic and market evaluation. Although we have vast areas of the province yet to be thoroughly assessed for dimension stone, the job of discovering economically viable deposits is not easy, rather like a “needle-in-a-haystack”. The exploration and evaluation is as difficult as looking for base or precious metal deposits, and the marketing is subject to highly demanding and ever changing international trends. As a province, we should promote the local use of our stone. However, the true industry potential lies in supplying product for the international marketplace.

#### **Biographical Information:**

Sherry Dunsworth, M.Sc., P.Geo., is a professional geologist with over 20 years of geological experience. She has carried out dimension stone exploration and drilling programs throughout the province, and has supervised the opening of new quarry sites. As a block buyer for Epoch Rock Inc, she has visited international quarries (Norway, Italy, Brazil, USA), and is currently working as a dimension stone consultant. Sherry serves as a Geoscience representative on the APEGN council, a member of the Department of Mines and Energy Mineral Adjudication Board, and is a member of the Chamber of Mineral Resources and NALE.

## NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002

Mount Peyton Hotel, Grand Falls-Windsor, March 20-22, 2002

### CHRIS JOHNSON'S OUTLINE:

#### PART 1 – MARKET SEGMENTS AND TRENDS

##### (1) Overview:

- (a) An Introduction to Marketing of Dimension Stone. – the distribution of stone was one of the last vestiges of a multi-layered distribution system. Like almost all industries, that is changing. As customers get more sophisticated, and information becomes more available through trade shows and the internet, customers begin to find ways to buy more directly. This also is making price more competitive.
- (b) Key Segments;
  - (A) Monumental – this market is obviously tied to demographics and is less prone to fashion – although there is some, and is based on only a few colors; black, gray and red.
  - (B) Residential Construction – this is almost exclusively kitchen countertops which are mostly granite. September 11<sup>th</sup> and its aftermath hurt the middle market but the high end remained strong. However, this market is expected to resume with the overall economy. In this segment, fashion rules.
  - (C) Commercial Construction – Exterior, Interior, Cut-to-size. This segment is very affected by the reduction in travel, and the hotel segment is expected to be in a slump for 2 years. Other development projects, like office building, depend on the region. Colors are beginning to merge with residential market.
  - (D) Landscaping & other outdoor features – this is a smaller segment, utilizing waste material not usable in other segments, and has enormous local potential.
  - (E) Raw Block – a market dominated by large block trading houses, and very hard to participate in alone.
- (c) Key Materials;
  - (A) Granite – the giant part of the industry, mostly because of performance – this includes gabbros, gneisses and conglomerates. This can include monuments, landscape stone, kitchen countertops and commercial cladding.
  - (B) Marble – a smaller segment, particularly strong in floor tile and mosaics - mostly residential applications.
  - (C) Limestone – a popular tile & stone segment for the extremely high end market – performance issues, and very hard to differentiate color.
  - (D) Slate – a strange small market with potential in floor tile. The fashion part of the market are metamorphic slate as imported from India & China. Other typically



North American colors (Black, Red, Green) are at the lower price end and good for outdoor landscaping and roofing tiles.

## **(2) Key Marketing Elements and how they affect stone selection.**

### **(A) Availability**

- Block Size – at Epoch Rock, our average size based on purchases so far has been 6.797 cubic meters each, measuring 285cm(l) x 160cm(h) x 149cm(w) As a rule of thumb, we need slabs a minimum of 260cm long and at least 150-160cm high. Our maximum does not exceed 310cm long or 175cm high. Somewhere between these two sizes lies an optimum.
- Consistency – it is impossible to stress how critical this is to our customer base. They inevitably sell from samples of previous shipments, so their customers are expecting a matching slab. Material has to be consistent from block to block, and consistent within a slab.
- Distribution – a product sells that is well distributed. For us to sell an existing stone is a lot easier than to launch a new stone. The cost of sampling a new material is high, and the time to get those samples to key decision makers is a very slow process.

### **(B) Appearance**

- Color Pallet – color is a fashion attribute that is very hard to work with. As color tastes change, and particular stone can come into fashion, while another stone can go out of fashion. Currently, there is a rising interest in dark browns. This is new – last year we reported a desire for all things yellow and light gold. There has been a desire since September 11<sup>th</sup> for darker colors, and some people have told me that darker colors sell in Winter, with lighter colors in Summer. Also, darker colors are said to reflect a more serious attitude in the consumer. Neither of these hypotheses have been confirmed – but we are watching them. Certainly, a demand for darker colors have been reflected in our sales. The only way to assess color potential is a Field Market Survey.

### **(C) Performance**

- Structural Characteristics – to be successful countertop material requires a hardness that not all granites have. While there are some exceptions, most popular granites are fairly dense. An absence of pits, fissures, cracks or “oil spots” are desired to. Presence of these factors make a stone a “problem stone”, and are very hard to sell.

### **(D) Price**

- Factors which contribute to cost – the cost of a block is not directly proportional to the market selling price of a slab, so cost is critical when figuring profitability. Selling price of slabs are a function of market

demand, number of competitive colors, conditions of excess capacity, etc. Factors of cost usually have more to do with waste percentages, since – other things being equal – it would cost the same to quarry one stone versus another. “Other things” are never equal.

## **PART 2 – COLOR IDENTIFICATION FROM A MARKETING VIEWPOINT**

### **(1) Overall Color Trends**

- Fashion – is the mystical process by which all persons move in similar directions with regard to color and look. While it impossible to predict, we find that other products often predict color tastes – for instance the cabinetry used in kitchens, and these fall into warm tones of Walnut, Mahogany and Cherry. One year ago, this list was Gold/Beige/Brown/Tan, Green, Blue-Gray, Black, Burgundy. Today all categories have shifted to the darker end, and Burgundy has moved up to number two.
- Tradition – certain colors have always been strong, and are what the consumer “perceives” as granite. This always helps dark green, which is a perennial design color and a known granite color. This is particularly important for the “middle market”, like the customer who goes to Home Depot.
- Evolution of the “Aware” customer – as the use of natural stone grows, the consumer becomes more aware and informed. The higher end of the market, therefore, actually begins to recognize common colors, and perceives those as “overdone”. There is demand at the high end for unusual, previously unseen colors.

### **(2) Market Testing**

- Field Market Survey – the ultimate judge is the consumer, and the person who deals closest to the consumer is most able to assess a new stone. Epoch Rock spends a great deal of time in dialog with the marketplace to keep on top of color trends and color preferences. If a stone looks plausible at first inspection, then a field survey is warranted to get an estimate of demand and a projection of possible selling price.

**Speaker:** Christopher L. Johnson is currently the Vice President of Sales & Marketing for Epoch Rock, Inc., North America’s newest and most advanced gang saw factory, based in Argentia, NF. Mr. Johnson oversees the sales and marketing of the company’s slabs into the US and Northern Europe.

Previously, Johnson was a self employed Independent Sales Representative & Consultant in the stone industry for 10 years; doing business as The Linley Company, and before that, for four years, he was National Sales Manager; with Walker Zanger, Inc. (aka Westchester Marble & Granite) in New York City.

Prior to being in the stone industry, Mr. Johnson held a number of sales & marketing positions in the cutlery industry, most notably with Oneida Ltd, both in the US and in Europe, including being European Marketing Manager for Oneida based in London.

Mr. Johnson has a B.S. in Industrial Economics, and an MBA, both are from Union University in New York. Privately, he is involved in a number of charities, including being Churchwarden and a member of the Board of Trustees of the Cathedral of St. John the Divine in New York City.

# NEWFOUNDLAND AND LABRADOR STONE SYMPOSIUM 2002

## Focus Group Discussion Results and Summary

1. What are the major development challenges/obstacles facing:

a) Established Producers

- Transportation
- Capital Access - Private Fund - Public Fund
- Expertise - Information Access
- Cost of Equipment
- Marketing
- Value Added (grey vs pink vs black)
- Emphasize Wanted Colours
- Labour Costs
- Acceptance in Market
- Infrastructure Costs
- Market Penetration (Share)
- Product Diversification
- Access to Financing

b) Prospectors

- Transportation Costs
- Capital Access
- Land Issues (Private vs Public)
- Expertise
- Recognition
- Marketing - End Use. How are stones marketed, process to gauge demand.
- Sample Recognition
- Prospector Training
- Funding
- Knowledge of Market Requirements
- Prospector Assistance

c) Developers

- Transportation
- Capital Access
- Land Issues
- Expertise
- Recognition

- Public Education
- Training
- Attract Investment
- Costs (required program - mapping, diamond drilling, block removal)
- Marketing (test block, block shipment)
- Infrastructure Availability
- Financial Assistance
- Market Analysis

2. Given current fiscal realities, what can government (Provincial and Federal levels) do to promote, support and enhance the provincial dimension stone industry (services, information, expertise, market analysis, trade shows, reverse trade shows etc.)? What can private industry do? Think of this in terms of established versus prospectors/developers with grassroots or advanced level projects.

#### Government

- Need Expansion
- ? Expertise
- Long Term Commitment
- Local Procurement
- Website
- Trade Shows
- Sources of information - Dept. of Industry, Trade and Rural Development - Canada-Nfld Business Service Center
- Information is fragmented i.e. Dept. of Mines and Energy, Dept. of Industry, Trade and Rural Development, Chamber of Mines etc. Need to pull information together and facilitate its access. Have linkages through a common website.
- Not agreement on Chamber vs. Zonal Board website.
- Increase exposure of the industry, which is not good. - Trade Shows - Web Page
- Discussed reverse trade shows - bringing architects in would this be more effective than sending out/ visiting trade shows with samples?
- Transportation is expensive in Canada (Cheaper to export to Europe). Is this an issue that can be addressed so more products can be shipped within Canada?
- Prospectors will utilize government expertise if available.
- Politicians should be interested in what's going on in their districts, even if it is not at the production stage.
- Government should be advocates to well established producers to help prospectors extract block, rent equipment from them etc.
- Government should subsidize the rental of equipment.
- Would like government to maximize coverage of the stone industry through a website for the province that would exhibit all prospectors, producers etc. and their products.
- Very supportive of the having a reverse trade show.

- Prospectors would like to be going to more trade shows and would like government support, both financially and through expertise of geologists and officials with trade show experience.
- Grants from the mineral industry incentive program, but it should be more inclined to give the maximum amount (\$4000 grant), because grants of \$1500 and \$2000 are good but often not enough.

#### Private

- Find investors with incentive reduce risk
- Tax incentive Flow Trough Shares
- ? Expertise
- Long Term
- Website - Trade Shows
- Reduce cost and competition-increase market share.

3. Discuss the following in relation to secondary processing of stone. Use the items listed below to focus discussion.

***All dimension stone producers are faced the same problem, an excessive volume of waste and an over abundance of seconds or B-Grade stone unsuitable for the main product line. This material represents a significant expense for the operator. Secondary processing or additional product lines are required to utilize this resource and secure the primary producer. However, local markets for this material are not developed and the perception that stone is too expensive as a substitute for traditional building materials is difficult to overcome.***

- Public awareness of local stone products
- Cost reduction to make stone attractive to a wider market
- Demonstration projects in high traffic areas
- Attracting individuals/companies to invest in secondary processing

(Understanding of these were somewhat limited)

- Is expertise available e.g. installing stone?
- There is not a lot of information on stone if entrepreneurs want to use it.
- Need to find out what the uses are in the market place.
- Stone products must compete on price with other materials.
- Demonstration projects were thought to be effective in increasing awareness.

#### Awareness

- Need builders with experience (in stone)

- Educate developers - Architects
- Use full cost accounting (?) To sell government if dollars stays in province.
- Specialized buyers (waste)
- Need to increase per capita usage.
- Demo projects to make product known - fireplaces etc.
- Approach craft associations - make artists aware - give them pickup truck full and give them promotional material

#### Waste Product

- Develop product to present to market
- Approach builders (developers)
- Demonstration project in retail shop
- Advertise on Internet
- Target builders to get product known
- Transportation costs (problem)
- Specialized buyers US park furniture
- Good support as in Quebec
- Local market very small (0.005m<sup>3</sup> in Canada)
- Tiles (economics)
- Crush waste
- Often negative feedback from government when an individual wants to get funding to start a small business using waste products.
- We should be maximizing the amount of use of waste. government is advocating recycling all the time, this is one material that can be recycled and can make money from.
- Prospectors don't have a lot of time to go into secondary prospecting, so they usually don't mind small cottage business utilizing the waste.
- Seconds and B-Grade stone should be used and invested in by government, if it can be produced and sold at a competitive advantage.
- High demand products that can be made from waste e.g. cutting boards, park benches fish ponds, water fountains.
- The Seconds-B-grade Stone coming from a limited number of producers should be no threat to competitors (cottage business) because the expertise that is included in producing the end product is what adds the value-added and makes it marketable.
- Must stress that people will buy local if it is competitive products and competitive prices.

#### 4. Marketing of stone, the five Ws:

- Who should be involved in the marketing process?
- What do we hope to accomplish from the marketing process (partnerships, markets quarry developers etc.)?

- Where do we go to market potential stone sources (US, Europe etc.)?
- When should we consider a stone ready for marketing?
- Why should potential investors develop or support Newfoundland and Labrador stone?

#### Who

- Market study on market needs and other products (processors).
- Specialists
- Educate public (TV. Interviews etc.).
- Industry Association
- Attend international stone shows.
- Awareness of government (federal and provincial) building plans - knowledge of federal plans are in Ottawa, etc.

#### What

- Partnerships -unique stone - resources - expertise.
- Attract new customers

#### Where

- Europe good as US (eastern seaboard close).
- Local

#### When

- Adequate volume to service market (reserves) (developed quarry).
- Buyer awareness
- Market Awareness
- Specialists
- Website
- Agents

#### Why

- Profitability
- Unique or special stone.
- Important to have knowledge of what is in demand.
- Marketing strategies are divers, not universal.
- How do we get pre-assessment and what's in demand.
  - ▶ Use local expertise, i.e. Epoch, Cabot Granite.
  - ▶ Do field market survey assessment by expert.
  - ▶ Possible cataloging and pricing and what we have in samples.
  - ▶ Possible mentor ship program.
  - ▶ Possible reverse trade show i.e. bring in the experts.
  - ▶ One on ones with distributors work best, trade shows not the best venue.



- ▶ Possibility of expertise/position in Dept. of Mines and Energy.
- We need a couple of winners to take to market. This will improve our image.
- Some damage has been caused by taking samples to show without developed quarry.
- Prospectors need honest answers regarding samples.

5. Discuss the merits of the following statement and how can this equipment be made available to prospectors and quarry developers?

***For realistic quarry assessment and market analysis large block must be obtained from proposed quarry sites. Removal of large block requires specialized equipment (quarry bars, diamond wire saws and specialized drills) which is not readily available within the province. This equipment also requires specialized technical knowledge in both setup and operation.***

- Need to rent equipment for quarry assessment
- Possibility of Chamber through government support purchasing equipment and rent to prospectors at reduced cost.
- Statement not correct is readily available International Granite for example (done gratis in most cases for prospectors. Need a hand to support this!
- Epoch Rock - new opportunities
- Show for prospectors - show wares - in conjunction with CIM/Baie Verte Mining Conference
- Fund for trail quarry development - 30-50 K

6. Where do we go post-Stone Symposium 2002 (what do we target next, investment forums, training etc.)?

- Keep up symposium -shows
- Advertise / public knowledge / articles
- Website
- Key aspects of moving the industry forward should be identified, (marketing, resources, etc.) And each aspect promoted and monitored.
- Core group of people should be identified (prospectors, producers, etc.) And provide feedback 3-4 times per year on where the industry is going.
- Generally favourable responses on the format of this symposium more comments at the end.
- Trade show / prospector forum / attract investors ? NB! Italian/ US ?
- Resource assessment - needed 5-10 years - need info on this
- More info regionally!
- Need defined objectives and what we hope to accomplish.
- Work with people that are well-advanced to produce winners.  
Would like annual event.

- This type of session is excellent because maximum amount of information for the minimum amount of money.

## Summary of Data

### 1. What are the major development challenges/obstacles facing:

a) Established producers: Challenges faced by established producers include debt financing, costs related to the operation of plant and quarry (labour, equipment and infrastructure), transportation and marketing. Marketing of stone, both new varieties and established lines, key to success, requires market penetration, product acceptance and quality control. Operation must diversify product lines, aim for value added products to survive.

b) Prospectors: Prospectors need a source of expertise/training for assessment and marketing. Access to financing both private and public. Land issues was also noted as a concern.

c) Developers: Challenges faced by developers attempting to open a new quarry include, a lack of expertise, access to funding for assessment, marketing and quarry development/infrastructure, transportation strategy/cost. Marketing expertise is also crucial to successful development. Land issues of some concern. Public awareness/recognition of local product and potential is also a challenge.

### 2. Given current fiscal realities, what can government (Provincial and Federal levels) do to promote, support and enhance the provincial dimension stone industry (services, information, expertise, market analysis, trade shows, reverse shows etc.)? *Think of this in term of established producers versus prospectors/developers with grassroots or advanced level projects.*

Most of the discussion focused on what government could be doing as opposed to the private sector. Government has to make a long term commitment to support the industry. It has to be a source of expertise for marketing, assessment, geological information and business strategy. Government should continue to organize trade shows and examine concept of reverse trade shows/pro prospector shows. Government should also fund prospectors to attend trade shows (done for the mineral industry trade shows, however not really the same type of venue available for the stone industry). Government should develop a provincial dimension stone website which would help draw various sources of information together (i.e. Dept. of Mines and Energy - Dept. of Industry, Trade and Rural Development) Government should also adopt a local stone procurement policy and work towards increasing public awareness of the provincial stone industry.

### 3. Discuss the following in relation to secondary processing of stone. Use the items listed below to focus discussion.

*All dimension stone producers are faced the same problem, an excessive volume of waste and an over abundance of seconds or B-Grade stone unsuitable for the main product line. This material represents a significant expense for the operator. Secondary processing or additional product lines are required to utilize this resource and secure the primary producer. However, local markets for this material are not developed and the perception that stone is too expensive as a substitute for traditional building materials is difficult to overcome.*

- Public awareness of local stone products
- Cost reduction to make stone attractive to a wider market
- Demonstration projects in high traffic areas
- Attracting individuals/companies to invest in secondary processing

Education seemed to be the common thread to much of the discussion surrounding this topic. Entrepreneurs and architects need to be educated on potential uses of local stone, particularly the so-called waste material. The general public also has to be educated to alternate sources of building materials, this may lead to an increased per capita consumption. Need to look at potential uses for waste and b-grade stone - craft industry - specialized products (value-added e.g. furniture, tiles etc.). Demonstration projects are an excellent way to advertise and educate.

#### **4. Marketing of stone, the five Ws:**

- Who should be involved in the marketing process?
- What do we hope to accomplish from the marketing process (partnerships, markets quarry developers etc.)?
- Where do we go to market potential stone sources (US, Europe etc.)?
- When should we consider a stone ready for marketing?
- Why should potential investors develop or support Newfoundland and Labrador stone?

Who: Government and Industry Association

What: Partnerships-Expertise-Customers

Where: Europe/US/Local

When: We have a product to take to market. After professional field-market survey completed

Why: Local expertise (International Granite/Epoch Rock)

5. Discuss the merits of the following statement and how can this equipment be made available to prospectors and quarry developers?

***For realistic quarry assessment and market analysis large block must be obtained from proposed quarry sites. Removal of large block requires specialized equipment (quarry bars, diamond wire saws and specialized drills) which is not readily available within the province. This equipment also requires specialized technical knowledge in both setup and operation.***

There is a need for a source of basic quarry equipment, possibly through the Chamber and rented by prospectors for a minimal fee. Equipment is available from local producers.

6. Where do we go post-Stone Symposium 2002 (what do we target next, investment forums, training etc.)?

Make the symposium an annual event. Work towards increasing public awareness through articles/advertising, demonstration projects, website. Trade shows, prospector forums, reverse trade shows key to attracting investors. Resource assessment needed. Establish a group of industry people/prospectors who could be poled 3-4 times a year on industry. Need to define objectives and what is to be accomplished.

## **Common Themes**

### A) Established producers

- Financing a challenge for infrastructure and product diversification.
- Secondary processing needed to stabilize industry (need local market - educate the public), identify potential secondary uses for stone. Demonstration Projects good for promotion.
- Market penetration and maintenance of market share.

### B) Prospectors and Developers

- Training crucial (marketing, assessment, quarry development).

- Investors needed to finance quarry development and marketing.
- Expertise required for quarry assessment, marketing and quarry design.

#### C) Promotion

- Attend trade shows to, gather information, and to promote stone (when stone is ready for promotion).
- Prospector shows to promote stone (fund prospectors, venue?).
- Reverse trade shows.
- Develop provincial website, this will link sources of data and expertise and promote stone and industry.
- Promote locally to create local market - can be done through articles, trade shows and demonstration projects.
- Educate entrepreneurs, architects, public to provincial stone.

#### D) Resource Assessment

- Undertake resource assessment.
- Target several stones that have market potential (may require bringing expertise to complete the assessment).