Proposed

RIA APPLIED RESEARCH LABORATORY (RARL)

To be established during 2005

In

The Port of Newport
Newport, Oregon

By

RIA MINES INC.

2003 NW Oceanview Drive
Newport, Oregon 97365

Email: tbm@riamines.com

INTRODUCTION

Nepheline Syenite (NS) has been around for years and has been used in a number of applications where the NS deposits were available.

Nepheline Syenite (NS) is a versatile material with much undeveloped potential. For years, various industries have used NS in a number of applications; however, they have stopped short of utilizing the full potential of NS because of the limited nature of the mineral deposits. That is about to change.

RIA Mines, Inc. has obtained a large deposit of NS just south of Newport, Oregon. The US Geological Service reports the Table Mt. Deposit to have 40 million tons of proven reserve and 700 million tons of probable reserve. That makes our deposit the largest known in the world. Obviously such a resource will enable us to profit from sales for current applications, but we also have a responsibility to both develop uses for NS wisely-- not only because of the material's potential to benefit society, but also because developing the proper technological uses will add value to our company's product.

In this preliminary section NS is defined and the chemical composition of it is given by the US Geological Survey and the reserves are detailed.

In the first section of this proposal those currently-used applications will be detailed and explored.

In the second part of this proposal we will detail the areas that NS can we used or has already been used with substantial success yet without much empirical data being released. In some cases this is due to NS being used in military programs or other secret and/or confidential programs. This will be a non-profit organization that will be affiliated to RIA Mines Inc. and/or a currently established non profit organization or university.

The third part of this proposal will outline the purposes of the RARL and specify what this applied research lab (RARL) will undertake for both RIA Mines as well as other clients. The personnel involved with this endeavor will be listed.

The fourth section of the proposal will itemize with what institutions the RARL will affiliate around the world.

The final part of this proposal will indicate the time line for the execution of the establishment of the RARL.

A new material needs testing and verification. It is the intention of this new lab (RARL) to undertake this task with the new material to bring NS into many uses as quickly as possible.

The location of the RARL will be in the Port of Newport, Oregon. Other manufacturing facilities of RIA Mines Inc. will also be located there.

PRELIMINARY INFORMATION ON NEPHELINE SYENITE

What is Nepheline Syenite?

The Table Mountain nepheline syenite ore has a Mohs scale hardness of 6, a specific gravity of 2.57, and an average weight of 160 pounds per cubic foot.

U. S. Geological Survey Professional Paper 840, and the State of Oregon Department of Geology and Mineral Industries Bulletin 8, show that the unprocessed material from Table Mountain consists of:

SiO_2 (silica) 59.62%

AL_2O_3 (alumina)18.60%

Fe_2O_2 (Ferric Oxide) 02.86%

The composition of commercially processed Grade A nepheline is:

SiO_2 (silica) 60.04%

AL_2O_3 (alumina) 23.06%

Fe_2O_2 (ferric oxide) 00.08%

Supposedly a limiting factor in utilizing the Table Mountain material, as is, in the production of clear glass and ceramic items has been the high iron content. The discoloration caused by the iron is not a factor in beer and wine bottles. Recent mill tests show the removal of iron not to be a problem at all. And higher iron content has been shown to be desirable in roofing granules in that the impurity filters UV rays.

The main competitor in North America, the Blue Mountain, Ontario deposit owned by Indusmin Ltd, operates on raw material that contains 2% ferric oxide. After processing, this waste is sold as 56% Fe.

Besides the iron content, other factors limiting utilization of the Table Mountain

material such as rock wool, and alumina, and extenders only seem to be location, and the initial cost of developing production. The material, due to the size of blocks and hardness of the rock, makes a good jetty stone.

And, as the light to medium gray (with a blue tint) granite-like rock takes a good polish, displaying a soft cloud-like effect, nepheline syenite material is a desirable dimension stone for building facing, memorials, and floor tiles. The Audubon Society Field Guide to North American Rocks and Minerals states that the nepheline syenite quarried at Magnet Cove, Arkansas, is an excellent building stone.

Recently we have had a number of researchers requesting samples of our nepheline syenite ore for their projects including a researcher from the University of Toronto, researching nepheline syenite in the steel making process.

Also a number of researchers who requested we sent ore for their research in making "self-sealing" glass caskets for safer transportation and storing of nuclear waste products.

We are being told by many of these researchers that Nepheline Syenite shall be the next "miracle industrial mineral" of this century.

U.S. Geological Survey Certificate of Analysis

Syenite STM-1

A sample of peralkaline nepheline syenite was collected from a sill that underlies Table Mountain which is approximately 60 km WNW of Eugene, Oregon. The rock sample was light to medium gray and had a glassy luster. The material was holocrystalline and very fine to fine grained, having a very pronounced trachytic texture (Flanagan, 1976).

Element concentrations were determined by cooperating laboratories using a variety of analytical methods. Certificate values are based primarily on international data compilations (Abbey, 1983; Gladney and Roelandts, 1988; Govindaraju, 1994). Initial USGS studies (Flanagan, 1976) provide background information on this material.

Recommended Values

Oxide	Wt %	±	Oxide	Wt %	±

SiO_2	59.6	0.49	CaO	1.09	0.06
Al_2O_3	18.4	0.23	MgO	0.10	0.02
Fe_2O_3	2.87	0.02	Na_2O	8.94	0.20
FeO	2.09	0.03	K_2O	4.28	0.07
Fe_2O_3 T	5.22	0.1	P_2O_5	0.16	0.01
			TiO_2	0.14	0.01

Glossary

Symbol	Definition
Fe_2O_3T	Total iron expressed as Fe_2O_3
S_{tot}	Total concentration of sulfur
Wt %	Percent of total element concentration
µg/g	Total element concentration expressed as micrograms of element per gram of solid sample
±	One standard deviation

Notes

Unless otherwise indicated, total element concentrations are reported for material on an as-received basis, i.e., no drying.

Element	µg/g	±	Element	µg/g	±	Element	µg/g	±
Ba	560	60	Gd	9.5	0.8	Sm	13	1
Be	9.6	0.6	Hf	28	2	Sr	700	30
Ce	260	18	La	150	6	Ta	19	1.2
Cl	460	40	Mn	1700	120	Tb	1.6	0.2
Cs	1.5	0.1	Nb	270	12	Th	31	3
Dy	8.1	0.5	Nd	79	7	U	9.1	0.1
Er	4.2	0.4	Pb	18	1.8	Y	46	5
Eu	3.6	0.3	Rb	118	6	Yb	4.4	0.4
F	910	50	Sb	1.7	0.2	Zn	235	22
Ga	35	5	Sc	0.61	0.07	Zr	1210	120

Element	µg/g	Element	µg/g	Element	µg/g
Ag	0.08	Co	0.9	Ni	3
As	4.6	Cr	4.3	S_{tot}	43
B	6.4	Cu	4.6	Sn	6.8
Bi	0.13	Li	32	Tm	0.7
Cd	0.27	Mo	5.2	V	8.7

Certificate Information

Denver, Colorado - revised March 1995
David B. Smith
Central Region Mineral Resources Team (formerly Branch of Geochemistry)

Physical description and the Reserves – Proven and Probable

Table Mountain is a plateau of 2,800 feet in altitude in the Suislaw National Forest. It has stands of Douglas fir as well as two natural springs. On a clear day one can see the Pacific Ocean - 12 miles direct. Currently there are at least five quarries on the property, which have been utilized by the U.S. Forest Service, Georgia Pacific Co. and others.

As the U.S. Forest Service has been quarrying and crushing some of the material on the site for road gravel, it is not expected the “environmental” issues will be used as an excuse to slow development of the operation.

According to Bulletin 81 (1973) Environmental Geology of Lincoln County, Oregon, by the Oregon Department of Geology & Mineral Industries, and Henry Harris (1962) Economics of Coast Range Igneous Rocks in Oregon, U.S. Bureau of Mines unpublished report, the deposit is 300 feet thick, and covers one square mile - please see claim map in the USGS report.

The Oregon Department of Geology & Mineral Industries Bulletin assumes, from the vertical relief of the deposit (i.e: the elevation difference from outcrops on the top of the mountain, to the bottom of the exposure, adjusted for the angle of the slope), an indicated total of 700 million tons of recoverable nepheline syenite.

The USGS Professional Paper 840, which features the Table Mountain nepheline syenite, suggests the deposit may be 400 feet thick. Using this number the indicated quantity is 700 million tons of probable reserve.

The immediately proven and able-to-mine reserves are between 35 and 40 million tons. Currently five quarries are open and could be mined with just a simple operating permit from the U.S. Forest Service. One of those quarries is currently being operated by the Forest Service for obtaining gravel to cover the logging roads needed in the Table Mountain area. Thus the immediate environmental restrictions are not major.

CURRENT USES OF NEPHELINE SYENITE

1. Roofing Granules – Local market in the Northwest and California. Presence of iron is be a plus.

2. Glass manufacture

    a. Soda Ash (Colored Glass) - Coors Beer and Gallo Wine has expressed interest in using our material. Material can be shied also as “gravel.”

    b. Soda Ash (Clear Glass)

3. Nuclear Waste Disposal

   The Westinghouse project at Hanford has the go ahead. Nepheline Syenite is superior for use in building “glass logs” as it is subject to acid leaching in regular glass.

4. Ceramics Filler

5. Plastics Filler

6. Paint Filler

   Specialized marine paints make up the glass-like qualities of Nepheline Syenite to protect ships from corrosion and to save fuel.

7. Paper Filler

8. Insulation

9. Dimension Stone

   Besides floor tiles, building sheathing and for other building purposes, an additional niche market shall be memorial markers for Japan.

10. Jetty Stone

11. Polymer Resin Uses

    This state-of-the-art material use involves Nepheline Syenite in a material similar to Kevlar, which can be molded into lightweight boat hulls, shipping containers, etc. that would have the built-in “R” factor.

PURPOSE OF THE RARL AND AREAS IT WILL HANDLE

The main purpose of the RIA Applied Research Laboratory (RARL) will be to find the practical applications for nepheline syenite and therefore take it from the theoretical realm to the practical market– and in some cases, develop uses vital to our country and the world.

There are four areas of applied research the RARL shall pursue:

1. Nuclear waste containers, shields and protectors

2. Insulation for all kinds of products including housing, coolers, roofs, etc.

3. Protection against bullets and other projectiles

4. A new material to substitute for steel with substantially lighter weight

In the previous section, some parts of these areas have been mentioned. Although industries are using some applications, thorough experiments have not always been undertaken to verify that NS is superior. These areas are of vital concern to the US and the world, so we should get thorough data and verify the most effective uses of NS-- the applications in which it is proven to be superior.

Table Mountain Nepheline Syenite as a polymer resin

There have been very exciting products made from nepheline syenite and we need to follow this up with further applied research and through appropriate research organizations and universities.

1. Making self-sealing containers for storage and transportation of nuclear waste.

Westinghouse is one of the large contractors at the Hanford facilities in Washington State. They are currently running tests on nepheline syenite to be used as storage “coffins” for nuclear waste materials both for permanent storage as well as transportation.

The polymer resin becomes a self-sealing material seemingly ideal for such purposes.

The scientists with the Department of Energy that operate the nuclear waste and storage facility feel that nepheline syenite is an ideal substance for using in these “coffins” but have said that there is not enough available in the United States for such use. Once Table Mt. is in full operation there will be a more than adequate supply.

We feel very optimistic that the “coffins” will be used not only in the United States but also around the world for such storage and transportation of nuclear waste materials.

Once these tests are successfully concluded, there will be a major breakthrough for the company in the sale of nepheline syenite as a polymer resin to manufacture these “coffins.” Development of this revolutionary, unique product will make our company very valuable.

3. The insulation qualities of this material are truly also remarkable.

We are thinking of making a simple item like a cooler. This material has been tested with an R rating of 90.

Both in the developed world as well as the developing world coolers are needed that have excellent insulation as well as being light. The use of foam has its limitations.

The insulating property can also be used in the building industry worldwide.

We have an order for building 5,000 homes of 36 square meters for the tsunami survivors just in a small part of Aceh (Indonesia).

In another development we have indication we will get an order to build 300 hurricane-proof houses in Florida. It can withstand 200 mile an hour winds as a building block.

There are other applications also.

It is truly a NEW Material!

3. Making bullet proof material such as vests, armor for military vehicles, possibly even tanks, for buildings and bunkers.

This is a very unique material for the military. Mixed with steel wool it can stop either a bullet or a shell. The fact that it can be used as material to stop even nuclear-tipped bullets and absorb the radioactive material from the bullet is truly remarkable.

4. Making a substance as hard as steel and at seventy percent less weight

This product has already been made into a polymer resin and the creators of such resin envisaging it being used in boats (as a substitute for fiberglass) and for use in coal rail cars so that they would be lighter in weight so as to carry more coal.

Nepheline syenite is used in Canada as a substitute for soda ash. Therefore it is a primary ingredient in the making of glass. It has both nepheline and silica in it. Consequently it is natural to have these ingredients to make a polymer resin for a substance that could be as strong as steel but much lighter weight.

A number of people in the Northwest have used nepheline syenite to make this resin and further experiments are taking place.

The company will devote considerable resources to develop these processes after the initial core business commences.

The automobile industry would have great use for this material if the weight of a car could be reduced by 65%. All kinds of fuel efficiencies would be realized.

The Management and faculty of RARL will be obtained from universities, research laboratories, governments and business from around the world.

The work of the RARL shall be funded from research grants from government, universities, foundations, and companies interested in the potential products that the RARL can develop.

AFILLIATED ORGANIZATIONS WITH THE RARL

We shall endeavor to obtain the best research facilities and the best researchers from around the world to work together on this challenge of making new products from NS.

Nearest home will be the best technical university in the State of Oregon – **Oregon State University** in Corvallis which is only 50 miles from Newport. We will draw on both facilitates as well as faculty from this distinguished Oregon university.

We have already talked to the best mining school in the United States to work with us here in Newport – the **Colorado School of Mines** in Golden, Colorado. It has a stellar reputation both in the US and around the world as one of the finest mining schools available.

We might approach either the **California Institute of Technology (Cal Tech)** and/or the **Massachusetts Institute of Technology (MIT)** to join us in helping to develop some of the specialized products that we will need for the success of this endeavor. This might especially be true in the development of this new material that could be a lighter weight but just as strong as steel made of NS.

In the United Kingdom the **Immobilisation Science Laboratory of the University of Sheffield** has done an outstanding job of working on materials and has expended efforts on developing material especially for nuclear waste containers. We have discussed this proposal with the Director of the ISL and he would be willing to cooperate closely with RARL.

Through our Board Director, Dr. Nikolay Mungalov, we are to be working with the **Russian Academy of Sciences** and their various Institutes in developing a very close working relationship with them on both products as well as an exchange of personal. The Russians have worked with NS for the last 30 years largely on projects for the military, some of which are now allowed to be de-classified.

There are several research organizations in both France and Germany that will be affiliated and working with RARL. These arrangements have yet to be worked out.

TIME LINE FOR IMPLEMENTATION

The Time Line for the implementation of RARL is now being discussed and within the coming weeks will be finalized. It will have a close working relationship with RIA Mines Inc. There will be some Directors from RIA Mines Inc. as Trustees of RARL.