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Lynx Geosystems Inc.

Proposal

Proposal for

Mining Computing Systems

for

Anvil Range Mining Corporation

June 1996

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1. Introduction

1.1 Background - This proposal is a response to the initial request for an integrated PC based computer solution for Anvil Range Mining Corporation presently opening a Whitehorse exploration and development office apart from the Faro Mine Site. The request was outlined in conversations with Joe Van den Broeck out of the Faro Mining Operation and Richard Arndt in Whitehorse. This submission is focused on noted key issues mentioned in these conversations.

1.2 Objective - This proposal addresses the key requirements of providing a PC level mining software that is capable of data management and analysis, geological and geostatistical modeling, integrating open pit creation plus optimization, underground development design with drill hole data, and topographic data. To this end, we feel our product microLYNX is an appropriate fit, in terms of its technical capabilities, its ease of learning and use, the design philosophy, and the Lynx development direction for the future.

It is noted that this proposal will only deal with the implementation of systems in the Whitehorse office. It is however understood that the system implemented at the Faro Mine Site will influence the direction taken at Whitehorse. Therefore, it should be noted that pricing has been calculated based on the implementation at both sites.

This proposal is a response to an inquiry from Anvil Range Mining Corporation. The prices and special offers contained in this proposal are valid for the period of 30 days.

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2. Requirement Analysis

2.1 Anvil Range Statement of Requirements - From information provided by Mr. Richard Arndt, we have learned that there is a requirement for a system to model geology, geochemistry, drill holes, ore reserves along with underground mine design. In other words, an open system that is capable of interfacing seamlessly with several different data sources is highly desirable.

In summary, we concluded that five critical requirements need to be addressed by the proposed software solution. These are :

- ***Easy input of data***
- ***Integrated technology***
- ***Application to underground mining***
- ***Ease of use and training flexibility***
- ***Training/Support in Whitehorse, YT***

2.2 Proposed Solution - The proposed solution incorporates all three integrated modules that make up the microLYNX product line comprised of the "Exploration", "Reserves" and "Mining" modules. The philosophy behind microLYNX is that no system can be all encompassing and able to deal with the diversity of requirements. As a result, the efforts over the last few years have concentrated in isolating the common denominator functions, and providing those as a common engine or tool box. Surrounding this tool box is an interface method that allows the system to be used in conjunction with other systems. Where de facto standards have evolved - such as ACCESS, LOTUS, DBASE and AutoCAD - a direct interface has been provided. Where less common systems are involved, a Data Transfer Utility system has been created. This allows an intermediate data repository to be created by the user, to be made available to other systems. It is an ASCII mechanism that is rather universal. For this purpose, Lynx created extensive import/export facilities throughout the software. This feature allows graceful movement of information between systems. Where there is no direct interface, Lynx provides transitional data holding areas that can be tailored by the user, providing a means of in/out access to the system. The system design is focused in maximizing the ability to coexist.

Links with other data systems - Below are some of the interfaces included in the system:

- Other mining packages - Geocom.
- Existing geological, survey and mining databases, via formatted ASCII files.
- External systems - Dbase, Lotus, AutoCAD, and Whittle
- Assay laboratories - several formats

Integrated Technology - Three modules make up the microLYNX System. They are the Exploration, Reserves and Mining modules. These completely integrate data and results in a transparent seamless way. Each module can be purchased independently and progressively in a cost-effective manner, responding to growth as it occurs. The system can be used in a networked environment or as a single user system, with effective portability to any remote office or field location.

Underground Mine Design – microLYNX incorporates such underground mine design tools as auto-generation along c-line, ramp and tunnel design, interactive grade elevation design, CAD tools to honor grade and curvature, geometric design tools and excavation profile definition.

Ease of use and learning - We have always taken pride in the fact that the training time for microLYNX is minimal. The system is very easy to learn and use. Menus are familiar drop-down type with functions organized into logical groupings. Execution of the functions are standardized. Tutorials have also been created to walk the user through the microLYNX+ System in a step-by-step manner and give a comprehensive review of the training course for future reference.

Support in Whitehorse,YT - We would propose to support the installation from Vancouver via phone, fax, e-mail, internet and modem. Lynx has had great success for many years supporting clients in the Europe, Africa, Asia and South America not to mention our Canadian clientele.

2.3 Product/Service Advantage - Lynx was the first to implement interactive graphics. Lynx led the industry in using menus. Lynx was the pioneer in splitting systems into PC and UNIX. We are the first to have successfully created a modeling engine that not only drives multiple exploration and mining applications, but also is able to deal directly with the accuracy limitations of traditional grid techniques. Lynx led the industry in the development of 3D underground design software. Our pricing structure is based upon being competitive and state-of-the-art.

We provide learning systems for microLYNX that may be purchased as separate material. This is an easy way for users to follow a workshop/hands-on tutorial system, that allows them to learn in their own time. It also provides the vehicle for the client to set-up his own internal training group.

To support its products, Lynx works closely with a list of international Business Partners, Representatives and Dealers, all located in strategic areas throughout the world. In conjunction with these partners, Lynx is able to complement state-of-the-art technology with implementation, support, consulting and training services.

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3. Company and Product Background

3.1 Company History - Lynx Geosystems is a privately owned corporation that has been in operation since 1987. Lynx currently employs a complement of twelve persons. This includes a team of professional geoscientists with broad experience across the geosciences specializing in the natural resource and environmental industries.

Lynx is a world leader in geoscience software systems. Its 200+ client list includes many international mining corporations, mining and environmental consultants, government agencies, research institutions and industrial corporations. The company specializes in three-dimensional modeling and visualization technology for interpretation, modeling and evaluation of complex sub-surface applications. The development of the proprietary 3D modeling technology allowed the company to effectively service a multiplicity of mining and environmental applications through a common integrated engine technology.

3.2 Product Summary - microLYNX is a Windows/DOS based product, which has as its focus on traditional modeling techniques and data management methodologies that have evolved over the decade. These service the exploration and mining functions of a wide range of international client base. Working in conjunction with Lynx Mining Consultants, based on Perth, Australia, microLYNX has become a highly interactive, easy to use project-oriented system. It is designed to aid geologists and engineers in the phases of exploration, mine evaluation and mine planning. The software has a modular format which allows it to be selectively applied to the user's particular requirements. microLYNX incorporates extensive interactive graphics, uses pull-down menus and incorporates technical (non-computer-oriented) wording and icons for menus and prompts. To accommodate the varied needs of different mining environments, the modules of the system have been clustered into three distinct groups: Exploration, Reserve and Mining functions.

4. Recommended Software Modules

4.1 microLYNX Mining - The microLYNX Mining System is a project-oriented system designed to aid geologists and mining engineers. Aside from highly integrated architecture, microLYNX provides features like an automated design option which can be used conjunction with the other design options.

microLYNX Mining includes features such as:

- **Underground Survey and Development Design**
- **Mine Planning and Scheduling**
- **Open Pit Mine Design**
- **3D Lerach Grossman Pit Optimization**

microLYNX Reserves - This module includes a complete Ore Reserve Modeling system, which combines industry standard geometrical modeling methods, including: Block, Grid, Polygonal and Sectional Reef modeling. These integrate with various estimation procedures, including Solid Interpolation, Surface Interpolation, Inverse Distance and kriging. Other features in this module include:

- **Survey information manipulation, analysis and display**
- **Surface modeling**
- **Complete suite of map and spatial data management facilities**

microLYNX Exploration -The Exploration module is designed for the geoscientist or geotechnician who wants a comprehensive field or office computer assistant. Focused on practicality and efficiency, among others, it includes the following features:

- **Data Management**
- **Statistical and Geostatistical Analysis**
- **Visual display functions in both 2D and 3D**
- **Geological Interpretation**

4.2 Financial Proposal - This is a general estimation, costs may vary according to site and user requirements. As noted above, the implementation of a solution is dependant and part of a broader corporate plan. Lynx has taken this into consideration along with the necessity of giving more than one user access to the system at one time.

The cost categories to be considered are **license fees, support fees, upgrade and training fees,** all of which are structured in a flexible pricing and support policy. This structure is explained in detail below so as to:

- Illustrates the flexibility of the scheme
- Provides a guideline on the potential costs

See Section 7 for the Executive Proposal.

4.3 Site Licensing - The pricing scheme allows growth to occur as required, with no longer term commitment required. The current international pricing structure is based upon the three main options mentioned. A single site license for each option is as follows, in US$:

- Exploration ——— $ 3,500
- Reserves (Includes Exploration) ——— $10,000
- Mining (Includes Reserves) ——— $20,000

Networked seats - A site license can be modified on the basis of how many seats are added to the networked configuration. Each seat is charged at a 30% premium for an additional seat license, with only the hardware limiting the number of seats. For example, if two seats were required for the Exploration system (server plus additional seat), then the site license fee of $3,500 would be modified by a 30% premium to total $4,550 for the site license. The addition of a third seat at later date would result in and additional charge of 30% (or $1,050) to make a total site license of $5,600.

Note that the offer outlined in Section 7 allows for three concurrent users of the system based on current stated requirements.

Volume discounts - Where a number of site licenses are to be purchased, a basic discount policy would come into effect, providing a discount that becomes larger depending on the number of site licenses purchased within a specific rolling period of (one year). The current discount scheme is as shown in the table:

Discount Schedule per Site License (Server)

Site Licenses	Site 1	Site 2-3	Sites 4-5	Sites 6-20	Sites > 20
Discount rate	No discount	10%	20%	30%	40%

As a part of a broader corporate solution, Lynx is willing to offer the Faro Mine Site and any other Anvil Range owned site the same terms.

5. Services Options

5.1 Upgrade Fees - New and current software releases can be purchased at any time during their life cycle, or acquired through an upgrade subscription fee via an annual rate. The subscription guarantees that all new release(s) will be received within the subscribed period - normally a year. The upgrade fees for the site licenses are shown below:

System	Basic Upgrade	Subscription
Exploration	$1,000	$ 350
Reserves	$2,500	$1,000
Mining	$5,000	$2,000

The Upgrade fee is charged for each site license and will be modified on the basis of the network premium, then subjected to the same discount rules as for the site license discounts. Should the subscription lapse, the site will have the option of bringing the lapsed maintenance up to date, by paying the subscription fee, or simply purchasing an upgrade.

5.2 Support Fees - Two basic support options are available:

Annual subscription - Support may be subscribed to on "a site license" basis, at any time. In such cases a fee is charged equal to 10% of the total site license fee. This entitles all seats falling under that site license to receive support. This option is highly recommended in the first year of operation.

On Call Support - Support is available to anyone on a "on call" basis. Any registered seat may call a support center. The client will be billed on minimum increments of 10 minutes, at a rate of $25.00 per each 10 minutes.

5.3 Training Fees - Lynx and authorized Lynx Dealers provide a five day training session. The microLYNX training program is available at the Lynx Training Center in Vancouver, on a regular schedule. It is a hands-on tutorial approach presented by a qualified instructor. This course follows the microLYNX Training Guide which is available to customers who complete the formal training program. Optionally, the Training Guide can be purchased for $1,000. The training can also be provided on site or at a designated authorized site.

On site training - Fees for on site training are based on a daily rate and are scheduled at the clients location. On site user training is provided for a period of 5 days at $750/day. The trainer

expenses, including travel costs, meals and accommodations are charged to the client. Note that travel days are charged at $250/day.

Scheduled training courses - These are available at Lynx's Head-Office or at an authorized dealer location. These are charged on a per person basis, at $2,000 per person -$400 per day. Where additional people are included from the same company, the rate would be $200 per day.

5.4 Additional Services – Lynx is able to provide data entry, data transfer, implementation and consulting services, either on a turnkey or other basis. Seminars and Special Educational courses are also available.

6. Hardware Considerations

6.1 Recommended Hardware - microLYNX is designed to operate in the Windows/DOS environment, as available on a range of PC systems. An IBM PC, PS/2, or any 386, 486, Pentium compatible is adequate, including notebooks and laptops. To facilitate effective operation and application, a minimum configuration is required:

- Minimum of 4 Mbytes memory
- Arithmetic co-processor
- DOS 5.0 and/or Windows 3.1
- High resolution graphics board (EGA, VGA, SVGA, Sigma), with compatible monitor
- Minimum of 80Mbytes Hard Disk Drive.

In addition, various peripheral devices are required by the system. The following list covers the more popular devices:

- Printer - laser, dot matrix, inkjet, color or monochrome
- Hewlett-Packard plotter or 100% HPGL compatible - A4 to A0
- Digitizer - Calcomp, GTCO, Kurta, Summagraphics,...
- Survey data recorder - any one of many: Wilde, Sokkisha, Topcon, ...

6.2 System constraints - microLYNX is designed to deal with large scale problems and data sets. Several system constraints are a function of computer capacity. The following system constraints are examples:

- Maximum user defined data fields per sample: 50
- Maximum number of samples per hole: 32000
- Maximum number of isolated samples in a file: 32000
- Maximum number of sample/holes per project limited by disc storage capacity
- Maximum number of elements - blocks - in an ore reserve model in any direction: 32000
- Maximum number of contiguous files may be used to define a model
- Maximum number of strings and/or string points in a file: 32000
- Maximum number of points in a triangulated DTM: 20000

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7. Financial Proposal

The following proposal is based upon the installation of a three user site license for the microLYNX PLUS Mining System being implemented in the Whitehorse.

	LIST PRICE	ANVIL RANGE
Three User microLYNX PLUS Mining System	$32,000	$22,000
Annual Upgrades and Support	$ 6,400	$ 4,400
Training - 5 days in Whitehorse	$ 3,750	$ 3,750
Travel Days - 1 days @ $250/day	$ 250	$ 250
Total	$42,400	$30,400

Note that all pricing is in $US and that all taxes are for the clients account. In addition, travel and living expenses are to be billed separately.