

Risk in Exploration: Managing for Success

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Introduction

Mineral exploration is an economic activity and one in which few companies see true success and the majority never find anything of significance. Yet the business is in many ways no more risky than other sectors – 83% of all companies fail. If risk is financial exposure by probability of success, as an exploration programme progresses from early stage to development the risk increases both for the company and for people who have invested in it. Early stage, get it wrong and lose only US\$100,000, later stage and could be US\$10 million or more!

For the major mining companies increasingly in need of new quality projects after the downturn in exploration funding, they too have risks. Do they first of all do it themselves or become involved through options/joint ventures/strategic alliances with “junior” companies. If the latter, can these companies find the resources urgently needed to replace their production. Are they are focused on quality work, the ability to turn over projects rather than the short term interest of share value increase?

E&D (Exploration & Development) companies as this author prefers to call them rather than “junior mining” companies, few of which ever mine or have an intention to do so, have limited supply of funds without success. How can they manage for success and what should investors / major mining companies look for in E&D companies to help assess the risks and likelihood of success involved?

Risk in Exploration

One of the key elements of exploration management is risk management. Risk management should be an integral part of every business and not just as exercise in meeting regulatory requirements. The evaluation and controlling of risks that face exploration companies will ensure that opportunities are not missed, and competitive advantage is enhanced. In exploration a company with a low risk appetite is highly unlikely to succeed, the company must have various strategies for managing a given risk. Companies need to consider all the types of risks they face, whether strategic, operational, financial or related to compliance issues.

Strategic risk for example is focusing too much of a companies effort on one specific project to the detriment of others. This is a crux issue for exploration companies. As a company focuses on one project it is immediately conveying to its shareholders and the market certain perceptions and expectations. Of course as the project moves forward

in the exploration programme the financial exposure increases, however, the perception to the market is that the company is increasingly confident of success. If the programme at any level is poorly managed, the risk exposure is in actual fact higher not lower as that company expends large sums of money that do not go to add value.

Exploration has to be viewed as a portfolio of projects and exploration planning should focus on designing an appropriate portfolio. The focus must always be on quality projects that indicate the potential to host an economic deposit by the work done at any particular point. The importance of the economic understanding of target scale – has this prospect on basis of alteration, geology and some rock samples the potential to host 500,000 oz or 5,000,000 oz! Truly the US\$60 million question, get it wrong and an expensive mistake has just started.

For the major mining companies mines are very rarely found. Their spending of millions of dollars in the belief that ultimately a major ore body will be found is flawed. Majors likewise need to look at exploration as a portfolio, but a portfolio of investments and strategic alliances in E&D companies with the arrangement as far as possible providing an alignment of interests so that both parties work for the common benefit – value for the market for the E&D company and making genuine discoveries for the major.

Exploration portfolios must consider location. There is no point in discovering a potentially economic deposit in a country that lacks the legal-fiscal regime to enable exploitation. Yet, how often do we see companies expending large amounts of money in just such a country. This is poor portfolio management. Of course this now has to be weighed against geologic potential. There are companies that believe that one has to go to such countries where probable lack of exploration means a greater chance of success.

Political risk assessment is an especially dynamic field especially these days as can be seen from developments in Russia recently. For exploration companies this area is a wild card, how secure are projects in China? If a major discovery is made, is a major mining company going to be willing to come in and share the risk? If not, has the company the financial ability and more importantly the skill base to develop it alone.

There is also social and environmental risk now as well. The rise and fall of Manhattan Minerals revolved around just this risk with their Tambo Grande project.

The risk now from the major mining company's perspective is the lack of, and likelihood of finding deposits that fit their size criteria. Are companies avoiding this risk in the short term with the ongoing spate of mergers and acquisitions? Even if so, they will ultimately face the problem. It is interesting to note in the oil sector, how with the high price of oil that the major companies are paying down debt, buying back shares and hoarding cash, whilst the smaller producers in the oil whereby they are developing assets into packages for possible acquisition by the majors. The similarities with the mid tier sector of the mineral resource industry are apparent and makes this a possible vital growth factor area of the future market. This was exemplified in the battle between Glamis Gold and Goldcorp for Wheaton River, also the Iamgold - Gold Fields – Coeur D'Alene merger and acquisition saga.

All these various factors can be controlled at various levels within an E&D company, but ultimately the main risk factor is a company's people. This is reflected from top down. The board has the responsibility of the shareholders at heart (at least we hope so!), the board is dependent on its exploration senior management to be able to make critical decisions based on limited data as to whether a potential ore body is present,

the field geologists carry out the hard work and make initial observations. More often or not the key decision is whether to walk away or not, maximum value having been added and any further exploration expenditure not able to add to that.

One fundamental element in the management of exploration, either from a major company perspective or as an exploration company is that the highest level of geological, geophysical, geochemical, metallurgical, mining and financial acumen is employed. The resource sector has until lately been starved of financial capital, but this is no longer the case. However, in the downturn, there has been a huge loss of human capital, the vital skill base to the sector. In these current times it is only people that can sustain the competitive advantage of a company. This is because people potentially have three aspects which can bring sustainable competitive advantage: the ability to create rarity, value and inimitability.

- ❖ People are rare because all competitors don't have them.
- ❖ They are valuable because they impact on the bottom line.
- ❖ Inimitable because they cannot be copied or substituted by competitors.

People are the biggest risk in the exploration business and the key element that has to be managed for success. The scarcest resource in any E&D organization is *performing economic geologists*.

The Business of Exploration – Managing for Success

Critical success factors are strong and empathic leadership, training, clear direction, and innovation propelled forward by excitement and enthusiasm, rather than time pressure or share price.

Leadership is different to management. Good management brings a degree of order and consistency to key dimensions like the quality and likely potential of a project. Leadership, by contrast is about change. Part of the reason it is so important is that in recent years the mineral exploration world has become more competitive and uncertain.

In addition to being the leader, the CEO has the ultimate responsibility for risk management. It should be part and parcel of his/her agenda at all times not just when disaster strikes. This management of risk by the CEO should be supported by the chairperson who should lead and encourage discussions of risk and control issues at board meetings.

If the people factor is so important, one would consider that the major companies are in the best position to employ such people with attractive remuneration packages. However, this is no guarantee. Due to the structure in such established firms, innovation is difficult. They may employ the most capable people, but then set them to work within processes and business models that doom them to failure. We are now in a very different scene the industry for many reasons has failed to attract new people, and at the same time has been releasing some of the best. The latter fit a category of employee defined as the knowledge worker (Drucker, 1999). Economic geologists, especially exploration

geologists are creative thinkers, whose ideas can be turned into valuable products i.e. economic discoveries.

A knowledge worker, in the context of exploration is anyone who, for a significant part of his/her work, uses and interprets information that they have gathered over the period of their career to make decisions, or to support others in making decisions. In the knowledge economy, E&D companies need to manage their knowledge resources or their intellectual capital assets, and to leverage them for the benefit of the stakeholders.

What motivates – and especially what motivates knowledge workers – is what motivates volunteers. Volunteers, we know, have to get more satisfaction from their work than paid employees, precisely because they do not get a pay-check. They need, above all, the challenge. Creative people work for the love of a challenge. They crave the feeling of discovery, that finding of something new. They want to do good work. Though all good people chafe, under what they see as bureaucratic obstructionism, creative people actively hate it, viewing it not just as an impediment but as the enemy of good work. No wonder explorationists always complain within major mining company structures! They need to know the company's mission and to believe in it. They need continuous training. They need to see results. Some researchers (Gratton, 2000; Davenport, 2005) now believe that the productivity of the knowledge worker is likely to become the focus for the management of people. In terms of exploration groups, as in R&D, one does not “manage” people, the task is to lead people, and the goal is to make productive the specific strengths and knowledge of each individual. Keep them intellectually engaged, clear petty obstacles out of their way and they will make discoveries for you. It is in this context that the big corporations, even if they maintain exploration teams, are unlikely to be successful.

The challenge in a creative activity, like E&D, is to continually innovate. A management that does not learn to innovate will not last long. Companies these days have to be designed for change as the norm and to create change rather than react to it. For example, the early recognition of a new or slightly different style of mineralization would enable an E&D company to re-evaluate an old area. The recognition of new metallurgical techniques may allow a company to re-evaluate sub-economic resources.

People need to be gelled into teams – teams that react to change and understand the risks involved.

A team is a small number of people with complementary skills who are committed to a common purpose, performance goals and approach for which they hold themselves mutually accountable (Katzenbach & Smith, 1993). Geologists by the very nature of their work tend to be loners – eccentric figures reluctant to fit the mould.

A team needs to be lead – success depends on leadership. Traditional geological skills need to be supplemented with broader leadership capabilities.

Effective teams have the following benefits:

- ✓ Teams can ensure that different viewpoints and perspectives are taken into consideration early on.
- ✓ Teams can cut across traditional vertical lines of authority.
- ✓ Teams can make better decisions in as much as they consider more points of view than an individual could.

- ✓ Teams bring together complimentary skills and experiences.
- ✓ Teams are flexible and responsive to changes, addressing them with greater speed and accuracy.
- ✓ Teams provide unique social dimension that enhances the economic and administration aspects of work.
- ✓ Teams have more fun.

The last few years has seen many companies release geologists. The loyalty of geologists to companies has thus been largely thrown away. It is critical from a leader's perspective and that of the team to maintain loyalty within the group. This requires belief in and commitment to one's people. If as being advocated that in the future companies will rely more and more on knowledge workers, then anything that binds these workers to a company, big or small must be worth pursuing.

If the company gets it right with the people, it is still no guarantee of success. Edison noted that inventive (creative) genius is "99% perspiration and 1% inspiration". The added key here for geologists is that pointed out by the leading economic geological consultant, Dr. Richard Sillitoe (1995, 2001): maximizing the rock contact time of the exploration team. Ore bodies are not found in offices or on computer screens, the critical moment of discovery is the geologist hitting the rock, receiving the assay and selling the project on basis of alteration, geology etc to his superior. It is often stated that the high cost of exploration is one of the main disincentives for exploration. However, if people – the geological team- is one of the critical factors in exploration success, it is actually a relatively low-cost. Essentially, the systematic testing of ideas is what enables E&D companies to discover and define resources. Drilling is relatively expensive, though costs are coming down. Yet again, in terms of the potential value of a discovery, it is a relatively low-cost activity. What is critical in E&D is that unpromising properties are eliminated at the earliest possible time, before expenditure becomes too high, instead of becoming an expensive mistake. If exploration geologists are to play a leading role in their own business they have to understand the real *business* difference between *ore* and *mineralization* (Dow 2002).

In E&D terms, the advances in developing databases and better geochemical and geophysical data do not remove the human element in exploration. It does allow geologists to focus on interpreting better data, learning from on the ground exploration – mapping and interpretation, and ultimately making decisions on the economic potential of a prospect or area. The value of the geologist as a knowledge worker actually increases, as they are firstly in a position to use their knowledge to decide IF the data is of value, especially if it is of an area they are familiar with. Secondly, it allows them to focus on target areas with potential, rather than doing routine field work to define targets. Finally, the geologist knowledge worker is in a position to rapidly turnover targets and defines quality targets, with a greater probability of hosting an ore deposit, thus focusing on shortening the time of exploration to discovery.

The knowledge that a geologist accrues is critical. A geologist with only experience in Archean geology is not likely to be the best person to explore for epithermal gold in the Andes. A geologist with limited mineralization style and location is for no fault of his/her own going to be limited in their scope or appreciation of new countries, new geology, new culture and new styles of mineralization. This highlights the

importance of mentoring and training new economic geologists. Any training is cheap by comparison with the cost of poor, inexpert, unconfident exploration. The difference between good and bad exploration is vast and costly – one finds it the other does not! There is no better example than the exploration business of the old saying “if you think education is expensive, try ignorance”.

The ultimate economic geologist is the one who has seen the most styles of mineralization, reviewed from an economic standpoint the most exploration/ mining projects, because each one is different. An economic geologist is part mining engineer, part metallurgist, now part environmentalist but most importantly recognizes the potential geologically first to apply these part time skills to make a good evaluation of a projects economic potential.

Conclusions

The mineral exploration business is a risky business – but no more so than any other business where success is rarity and failure the norm. The key factor is that to define the risk in the exploration business is that the investor, the broker or the major mining company whoever must look at the management, the quality of the geological team and the project portfolio. In a business where the success rate is 1 in 10,000, the company with the best performing people will have the advantage to cut these odds to a respectable level by using their acquired knowledge to make critical decisions of where, how and the likelihood of making that rare discovery.

People are the biggest risk in the exploration business and the key critical element to be managed for success.

REFERENCES

Davenport, T. H., 2005, Thinking for a Living: How to Get Better Performance and Results from Knowledge Workers. Boston MA: Harvard Business School Press. 226p

Dow, J.A.S., 2002, Exploration Geology – Business and Leadership Challenges for the Future. S.E.G. Newsletter July, p. 17-21.

Drucker, P. F., 1999, Management Challenges for the 21st Century: New York HarperCollins Publishers, 224p.

Gratton, L., 2000, Living Strategy: Putting people at the heart of corporate purpose. London Financial Times Prentice Hall. 256p

Katzenbach, J.R. and Smith, D.K., 1993, The Wisdom of Teams, Boston, MA: Harvard Business School Press. 304p.

Sillitoe, R.H., 1995, Exploration and Discovery of Base- and Precious-Metal Deposits in the Circum-Pacific Region during the last 25 years. Resource Geology Special Issue No.19, 119p.

Sillitoe, R.H., 2001, Exploration and Discovery of Base- and Precious-Metal Deposits in the Circum-Pacific Region – A Late 1990's Update. Resource Geology Special Issue No.21, 65p.