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VIEWS II

Exploration and Discovery: Paradigm Shift Required



DAVID J. HALL†
(SEG 1999 F)

INTRODUCTION

Early in 2009, the resource sector was in the doldrums. Now the sector is back in vogue, metal prices have recovered, and optimism has returned.

Gaming tables are open and the professional money players are out there wooing investors to attract large sums of money to develop the next great play, or the last old one repackaged. There will be a lot of money made...and lost. This game will certainly continue, despite the fact that we are still in a crisis. Why? Because we just are not finding enough quality deposits with at least some potential to become mines. We need to see more attention and funds directed at greenfields exploration and focused on discovery. We need to go back to good science and field-based exploration and training, and identifying the mine finders of the future.

THE LACK OF DISCOVERY!

One of the factors critical to the future success of any mining company is a growing inventory of high-quality mineral resources. Historically, exploration has been central to developing this inventory. Mineral exploration is, of course, intrinsically linked to the rest of the mining industry; no mine exists without the exploration, discovery, and development processes that make up the business of mineral exploration

David J. Hall

David Hall obtained his B.A. degree from Trinity College, Dublin, then spent 2 years in Zimbabwe before completing an M.Sc. degree in MinEx at Queen's University, Ontario. He spent a year in Sudan and 4 years in Egypt before joining Anglo American to establish porphyry-epithermal exploration in Turkey. Subsequently, he managed exploration projects in eastern Europe and the Middle East before moving to South America with Minorco, where he then established AngloGold exploration. Since 2000 he has been involved in establishing, financing, and running exploration companies in Canada and London, and although Chairman of two AIM-listed companies, he is active in planning, running, and reviewing exploration programs.

†E-mail, david@ed-group.com

(Hall and Redwood, 2006). Yet this inventory is poor; the results of the recent surge, 2003 to 2008, in exploration spending have yet to show a new portfolio of exciting major discoveries. This is highlighted in the case of gold. The Metals Economics Group reported in 2009 (MEG, 2009) a total of 62 significant discoveries globally for the period 1997 to 2007, each containing at least 2 million ounces (Moz) in total reserves and resources. These discoveries contain a potential 377 Moz of gold in anticipated recoverable reserves—less than half of the estimated gold mine production during the same period. Even anticipating additional reserves from these and smaller discoveries, the industry's recent discovery rate still falls well short of what is needed in the long term. This is further substantiated by McKeith et al. (2010). A similar story is evident for other metals as well.

The increasing trend of companies focusing their efforts on near-mine or brownfields targets and a reduction in greenfields exploration also compounds the problem. With recent cutbacks the order of the day, the exploration and discovery pipeline is going to be even more seriously affected.

EDUCATING THE MARKET

The investor market has begun to realize that not all exploration plays promoted by junior company executives are going to come to something. Brokers are aware that they need to understand the sector better and identify truly good companies, management, and projects, rather than simply promoting the next play on which they could easily raise finance and, therefore, their commission before moving on and leaving investors to hold, in some cases, an empty can!

The market needs to understand that failure in terms of an economic discovery is the norm in the business of E&D (Exploration and Discovery). The market and companies must comprehend that projects with little hope of economic success need to be identified as early as possible and abandoned before further, expensive exploration. Investors, brokers,

and geologists can all learn a lot from a rigorous analysis of failure to identify economic deposits, even if there are some technical successes.

Perhaps we need a new publication, *Journal of Exploration Failures!*

The days of recycling old projects or promoting poor-quality projects that have virtually no chance of developing into an end product, a mine, must end. We need to see true E&D companies undertaking real research and development with sophisticated partners, mining companies, or investors.

To put it into context, R&D (Research and Development) companies that operate in the biotech sector cannot just pick up an idea and promote it. They have to do cutting-edge scientific work. This is what companies in the E&D sector must be doing—cutting-edge exploration—whether this exploration in new areas, application of new geological models to old areas, development of new geological models for deposit types, or application of new techniques in the search for blind and conceptual targets of significance.

This strategy will encourage mining companies to be more commercial, focusing on the business of mining and downstream products while outsourcing E&D to realize the value of innovations and expertise (Table 1), as proposed previously (Hall, 2007).

THE PARADIGM SHIFT

Strategy

Traditionally, strategy was defined as an integrated set of actions leading to a sustainable competitive advantage. This paper is a call for just such a strategy. The task of leaders in E&D must be to overcome the paralysis that at present dooms most of the exploration sector, and to begin shaping the future. A starting point would be to take stock of what they know about the industry and the surrounding economic environment;

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Views II (Continued)

TABLE 1. The Relationship between Mining and E&D

TODAY	VISION FOR THE FUTURE
Mining makes the difference between success and failure of a mining company.	Mining companies can focus on their priorities for success.
E&D is an expensive, risky process that cannot be relied upon to support the portfolio of mining companies.	Mining companies are free to select the right projects for their portfolio, from the right E&D group, at the right time.
Mining and E&D have traditionally struggled to work together in mining companies due to clashes in culture, objectives, and priorities.	Exploration risk is spread across a number of focused E&D groups.
The not-found-here mentality may result in exploration groups within a mining company encouraging internal projects over external projects.	Mining companies maintain links with development. A clear business relationship is defined between mining groups and E&D. E&D is free to sell innovations to whoever is defined as the best customer.

such an understanding will probably suggest needed changes in strategy. One of these is a closer relationship between focused E&D companies, mining companies, and knowledgeable investors.

This interaction must go beyond the simple option, joint venture, or, “Here’s a project we are not interested in,” route. Mining companies must work with E&D companies to build quality R&D companies. Also, this is a good time to grow closer to university research groups and to consider engaging experienced economic geologists—so called “inspirers” (Thompson and Kirwin, 2010), perhaps retired—to assist and oversee research on projects of interest to companies with a view to delivering information and recommendations of value.

Business is all about building a great team and passing on knowledge and experience. Recently, this is not what the majority of E&D and mining companies have been doing, as they have been concerned with survival and restructuring. Indeed, for many of the so-called junior companies, it has been about getting a property and promoting it with little or no importance attached to building up capable scientific teams. The E&D business needs to get back to good scientific exploration, using the best people in their disciplines while training up those who currently lack experience.

The scarce resources in any company today are discretionary spending, talent, and the ability to focus. The critical people-gap that we have all heard about is likely to become a gaping hole as a result of the current downturn

unless we do something about it now. We need to get the most experienced geologists away from running public companies (in their geologically inappropriate attire of suit and tie) and get them on the rocks again, where they can create the most value. The challenge here is making profits from these talented people by making discoveries.

In major mining companies, we have seen knee-jerk reactions to the recent financial crisis. Many executives react instinctively during economic slow-downs by cutting discretionary spending across the company. Such an indiscriminate slash-and-burn response is a big mistake because it fails to distinguish between short-term operational and long-term strategic programs. Unless the downturn threatens the company’s existence, such as those who took on debilitating debt, executives should focus on rooting out operational slack and inefficiency, not modifying or sacrificing strategic initiatives that build capabilities for long-term advantage.

Companies should take a more strategic approach to cutting E&D costs by using today’s difficult environment as an opportunity to refine the focus, practices, and management of E&D organizations. This path helps companies not only to cut their costs but also to raise productivity within their portfolio and to shorten the time period to that critical decision point—go or no-go? This will position these companies for greater success in the future.

E&D portfolios

An early step in any company is to examine the E&D portfolio rigorously

and to accelerate the most strategically promising projects while cancelling irrelevant or moribund ones. Of course, it is obvious that companies ought to be doing this all the time, but many resist because of other challenges therein. In many groups, company geologists get emotionally attached to projects (“Just one more hole!”) rather than critically reviewing each project. This weakness is commonly due to technical management that fails to objectively rank projects.

Portfolios often grow organically, especially in major companies, with little central oversight, so it can be difficult for senior executives to get their minds around the totality, let alone expected value, of its E&D activities. Another challenge is targeting specific projects for elimination, which means having difficult conversations with the people who lead them. It is far easier to ask for sweeping cuts (e.g., in a particular geographic region or across the whole breadth of the exploration division) than to cut specific projects.

Efficiency

Barrett et al. (2009) reported that in many industries—including automotive, energy, basic materials, high-tech, and medical devices—all but the most vigilant product developers could terminate one-quarter to one-third of their R&D projects and thus liberate resources for redeployment. The same may be equally true for E&D activities.

Elastic exploration timelines, permitting problems, office work as a substitute for field work, and overall waste in E&D processes in most companies do more to dampen the spirits of top explorationists than senior managers realize. By seizing on the sense of urgency that difficult times generate and challenging how we go about the business of E&D, companies can pinpoint the huge potential for improvements and, at the same time, spark the creativity and energy of geologists.

Business intelligence

Better business networking promotes faster, more effective decision-making. This requires that E&D teams improve networking not only within their sector but also by seeking external ideas from people in a variety of industries, disciplines, and contexts—so-called knowledge brokering (e.g., Billington and

Davidson, 2010). Companies can gain insights into potential moves of competitors by weighing news reports about their activities, as well as stock analyst reports and private information gathered at conferences. Such intelligence is always important, as it allows companies to benchmark their activities and become aware of competitors' activities; in a crisis, this can make the difference between missing opportunities to buy distressed assets and leaping in to snare them.

To get this business intelligence, companies need a network, typically led by someone with strong support from the top. These networks are best developed by people with years of experience in the business. The more eyes and ears across commodities, geography, and new discoveries, the better for the E&D team to understand what is happening around them. A network is critical because information is most useful if it moves not just vertically, up and down a group, but also horizontally out to the field staff.

Opportunity

E&D is just one long-term strategic activity that is being hit in major mining companies in this current market. Yet, with innovative thinking there lies opportunity. Projects of merit within mining companies can be funded by E&D companies. There is money in the market and if the key criteria for investors are quality management, good projects, and a major mining partner to take on the financial burden in the happy event of success (and when they have the money again in the near future), then this is a way for mining companies to further advance their best projects, for the E&D com-

pany to add value, and for investors to be rewarded in the long term for such success.

Even during the best of times, organizations often pay lip service to professional development. A downturn presents the perfect downtime to enhance the skills of people who really need to excel. Downturns are no time to tighten control, but are instead opportunities to inspire people to become more innovative, knowledgeable, and competitive. Forward-looking companies will search outside for specialist talent in hopes of stealing a march on competitors, or simply pick up the best of those let go by their competitors.

This professional development can be applied in E&D at both major and junior levels and by interaction between them.

Large companies need large mines, mid-tier companies need lesser sized ones. It is important to get away from the vague hope that spending millions of dollars on exploration will result in that major new orebody...some day!

CONCLUSIONS

Mining companies must change their relationship with E&D companies and develop relationships that provide alignment of interest so that both work for their common benefit—the discovery and development of new deposits. The market—including brokers, nominated advisers (as in the case of London), and investors—must be more aware of what defines the qualities of a good E&D company, including quality technical expertise and scientific ability, risk management, major partners, etc. We hope that funds will be chan-

nelled to the most deserving companies rather than the best-promoted ones. The lack of discovery in the recent boom is of great concern and we need to get away from previous models of one-project companies and recycling old projects with little chance of economic success. This will require an emphasis on regional target generation and development of new projects, advancing the best ones in current portfolios and weeding out those unworthy of further investment by getting back to good-quality exploration rooted in science- and field-based work.

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