

The image features a large, dark blue rectangular box in the top left corner containing the text 'RIO TINTO' in white, serif, all-caps font. The background of the entire page is a wide-angle photograph of a vast, flat, reddish-brown landscape, likely a salt flat or a dry lake bed, with several small mounds of earth scattered across the surface. In the distance, a range of mountains is visible under a clear sky. Three people are walking across the flat in the lower right quadrant, providing a sense of scale to the vastness of the environment.

**RIO
TINTO**

Exploration

Rio Tinto's search for new mines is conducted throughout the world. We place few restrictions on target commodity and instead seek any high quality orebody in a favourable location that can be developed responsibly into a mine with long term profitability.

Rio Tinto owns, in whole or in part, several of the world's largest and most valuable mineral deposits.

Mineral exploration, conducted with rigorous prioritisation of projects and a strong commercial focus, is one of the most cost effective ways of adding new mineral resources to sustain and augment Rio Tinto's portfolio of mining businesses.

Rio Tinto owns, in whole or in part, several of the world's largest and most valuable mineral deposits. Despite their size, these deposits become depleted as ore is mined and will eventually be unable to sustain production.

The responsibility of Rio Tinto Exploration is to recognise opportunities, and help discover or acquire new world class mineral deposits that can maintain and expand the Group's mining activities and provide options for growth. A complementary search for additional resources near existing mines is conducted by the individual Rio Tinto businesses.

Exploration for new mineral resources can be a costly and high risk investment given the relatively small surface area of an ore deposit, the rarity of deposits in the Earth's crust and the likelihood that deposits will be partly or wholly concealed beneath the surface. Despite these technical challenges, Rio Tinto Exploration has delivered numerous world class discoveries to Rio Tinto over the last 55 years. These discoveries form the core of the Group's resource base and will continue to do so for many years to come.

Currently, Rio Tinto is exploring in 30 countries for a broad range of commodities including copper, diamonds, nickel, industrial minerals, gold, bauxite, iron ore and coal.



Above: Sediment sampling from a stream - an early part of the search for clues to minerals.

Front cover: Rio Tinto Mining and Exploration geologists sampling on a salar (salt lake) at over 4,000m elevation in the La Puna area of the Andes, north Argentina.



A technician dries mineral samples in a testing laboratory.

Current Rio Tinto mines and projects attributable to Exploration

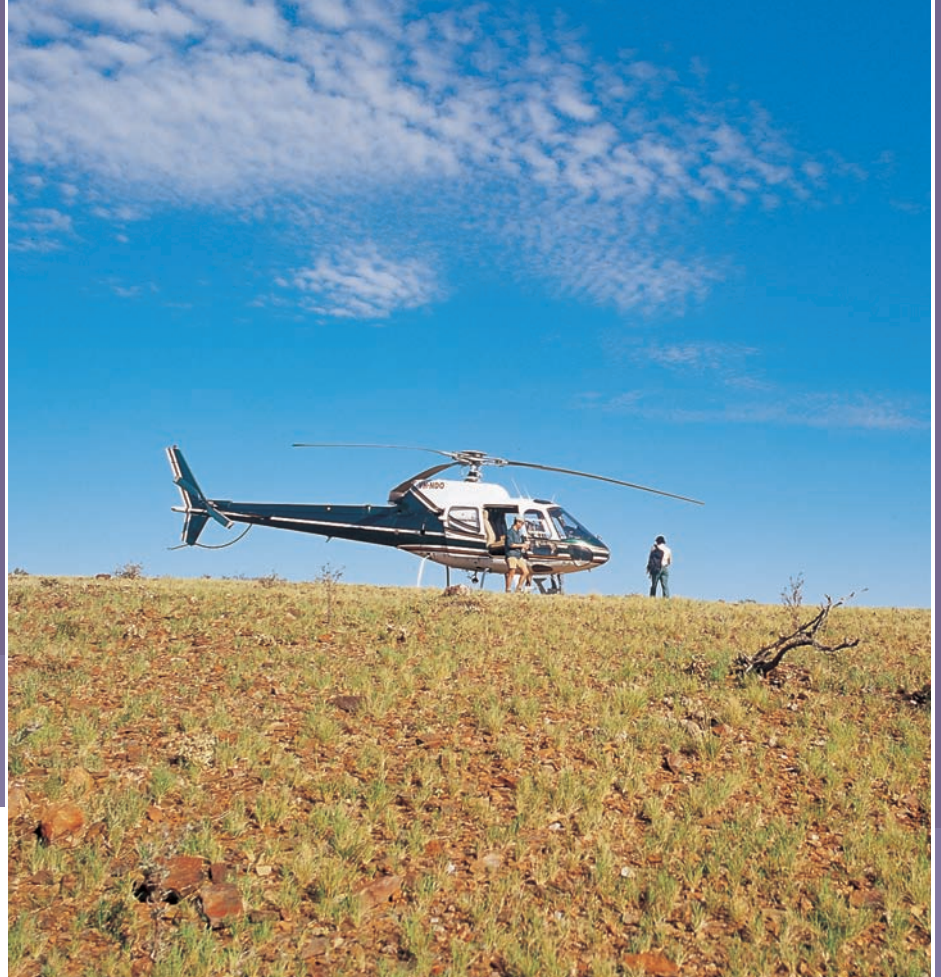
<i>Country</i>	<i>Year</i>	<i>Deposit</i>	<i>Metal/Mineral</i>
Canada	1947	Lac Allard	Ilmenite
Australia	1955	Weipa	Bauxite
Australia	1962	Mt. Tom Price	Iron Ore
Namibia	1968	Rössing	Uranium
Australia	1970	Tarong	Coal
Indonesia	1977	Kelian	Gold
Australia	1979	Argyle	Diamonds
Canada	1994	Diavik	Diamonds
Zimbabwe	1999	Murowa	Diamonds
Turkey	2000	Kazan	Trona
Argentina	2000	PRC	Potash
United States	2002	Resolution	Copper
Iran	2003	Sari Guray	Gold
United States	2004	Eagle	Nickel-Copper
Guinea	2004	Simondou	Iron Ore

Rio Tinto's statistics show that an average of only one in 350 prospects that are drilled will yield a mine for the Group.



Above: Drill cores are examined and logged by the Exploration team at the Simandou project, Guinea, West Africa.

Right: Helicopters are the workhorses of exploration crews, transporting personnel and materials.



Rio Tinto Exploration has a worldwide presence that provides it with formidable competitive advantage.

Organisational structure

In keeping with Rio Tinto's international portfolio of mines, Rio Tinto Exploration has a worldwide presence that provides it with formidable competitive advantage. It is organised into four geographically based regional exploration teams each operating from a regional headquarters office and several district offices and a fifth team that looks for industrial minerals on a global basis. Each office conducts exploration programmes in its own area of responsibility and seeks low cost early stage resource acquisitions. In addition, a small and highly mobile team of experienced geologists pursues new opportunities throughout the world.

Staff and budget

Rio Tinto Exploration in its current form was born in 1996 by the merger of the exploration groups of RTZ (The Rio Tinto Zinc Corporation) and CRA (Conzinc Riotinto of Australia).

Since that time, restructuring has led to a significant improvement in exploration success with the development of the strongest portfolios of prospects the Group has ever had.

Cash exploration expenditure generally runs between US\$9 million and US\$110 million per year. Wherever possible, employees are recruited and trained locally to maximise employment benefits to the host country. However, permanent staff in senior technical and support positions are commonly moved between regions in order to train local staff and ensure the transfer of best practices. Rio Tinto Exploration has an active graduate recruitment programme operating in a number of countries and also looks for top quality mid career recruits. The Exploration Group employs about 190 geologists and geophysicists around the world with a total staff complement of about 880 people.



Above: Rio Tinto exploration geologists discuss a sample.

Right: Alluvial diamond panning near Gooty, in the Cuddapath hills, Anantapur, Andhra Pradesh, India.



Mineral exploration involves the search for minerals accumulations which can be profitably mined.

The exploration process

Mineral exploration involves the search for mineral accumulations which can be profitably mined. The complete exploration process can be defined by five key stages, as described below. The likelihood of a project progressing through each stage of exploration decreases drastically (in the order of 3,000 to 1) as the process moves through the stages. The decision to proceed to the next stage of exploration is made using a thorough risk analysis, which includes consideration of health, safety, environmental, community, and political risks as well as technical geological risks. Any one of these factors may form the basis for deciding not to proceed with a project.



Geologists in the field consult their maps, in the Andes, northern Argentina.

Exploration process matrix

	<i>Area selection</i>	<i>Target identification</i>	<i>Target testing</i>	<i>Resource delineation/ evaluation</i>
	Does the area have potential to contain an orebody for Rio Tinto?	Is there a target present which could represent the mineral deposit sought?	What is the nature and abundance of minerals in the target area?	What is the size, metallurgy and grade of the deposit discovered? Will it be economic?
<i>Involves</i>	Review of geological information and mining history. Issues identification. Area visit.	Geological mapping. Geophysical surveys. Geochemical surveys.	Limited trenching.	Drilling many holes.
<i>Time required</i>	A few weeks.	Some months.	Some weeks to a few months.	Many months to a few years.
<i>Cost</i>	Some tens of thousands of dollars.	Tens of thousands to a few hundred thousand dollars.	Hundreds of thousands of dollars.	Millions of dollars.
<i>Environmental impact</i>	Negligible.	Limited clearing of vegetation.	Small excavations. Minor water usage. Limited track/road access. Possible dust and noise. Drill sites. Helipads. Small camps.	Excavations. Water usage. Possible dust and noise. Drill sites. Helipads. Camps.
<i>Community impact</i>	Negligible.	Access to community land. Some local services and supplies required. Some local labour required.	Continued access to land. Some local services and supplies required. Some local labour required.	Continued use of land. Significant local services and supplies required. Local office and accommodation required. Local labour required.
<i>Prospects proceeding to next stage</i>	100%	-10%	-0.3%	-0.06%

Does the area have potential to contain an ore body for Rio Tinto?

Area selection is the first stage of the exploration process and involves deciding where to explore. Every decision is based on a desktop evaluation of geological, geophysical and geochemical data and on an assessment of health, safety, environmental and community issues that may impact upon an exploration programme. Communities and other groups that may be affected by exploration are identified at this stage. Areas of high ecological or cultural sensitivity and regions with a high security risk, human rights issues or anti-mining culture are eliminated or downgraded.

Exploration rights are secured for a selected area prior to the commencement of exploration. Most countries have a formal system for granting exploration licences that places expenditure and other obligations on the company. The licence entitles a company to undertake exploration work in a designated area over a specified period of time.

Is there a target present which could represent the mineral deposit sought?

Target identification involves the location and prospecting of mineral occurrences within a selected area. Work may involve geophysical and geological surveying or sampling of rocks and stream sediments for geochemical analysis. Target identification requires only minor clearing of vegetation to access sample sites and there is little capacity to cause damage to the environment. Community discussions at this stage are focused on securing temporary land access and opportunities may exist for short term local employment and use of local services and supplies.

What is the nature and abundance of minerals in the target area?

Target testing involves the preliminary sub-surface evaluation of the better prospects. Work may involve limited access track and camp construction, trenching and drilling. All ground disturbances adhere to an environmental management plan to ensure best practice. Perhaps one in 30 of the prospects at this stage will prove to be of interest and the remainder will be abandoned without further work.

What is the size, metallurgy and grade of the deposit discovered?

Resource delineation involves additional drilling to estimate the extent of ore grade mineralisation. Work may involve extensive clearing for access tracks, larger camp construction and drill sites. Baseline environmental and community studies may commence at this stage. Resource delineation will involve longer term access to land and further opportunities will arise for local employment and service provision. A deposit with development potential for Rio Tinto will be identified on perhaps one in five of the prospects that receive delineation drilling.

Will it be economic?

Resource evaluation involves more detailed investigation of a deposit under the direction of a Rio Tinto business unit. Work involves infill drilling to accurately measure the size and grade of the deposit, metallurgical studies to assess metal recoveries from the ore and a preliminary assessment of project economics. A potentially attractive project for Rio Tinto will be identified from perhaps one in two of the deposits that proceed through resource evaluation. Feasibility is the final stage in the evaluation process involving detailed geological, metallurgical, engineering and financial studies that will allow Rio Tinto to decide whether to mine a deposit. Most deposits that proceed through feasibility will be mined.



Spiny and toxic cactus species present a major safety hazard to exploration team members in the area of Rio Tinto's Resolution project, Arizona, US.



The earliest stage of exploration requires area visits.



A typical drilling rig in the resource evaluation stage of exploration.

Fact sheets in this series comprise:

A world leader
Global business, local neighbour
Mining and the environment
Engagement through partnership
Aluminium
Copper
Diamonds
Energy
Industrial Minerals
Iron Ore
Exploration
Technology

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Currency: All \$ values refer to US dollars unless stated otherwise.

For convenience, the expression Rio Tinto is used to describe both Rio Tinto plc and Rio Tinto Limited and companies within the Group, even though these companies are generally separate and independently managed.

Ownership: Where Rio Tinto is not the sole owner of a company, the percentage interest is shown.

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