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DESARROLLO MODELO DE NEGOCIO PARA LA COMPAÑIA DE SERVICIOS DE PERFORACIÓN

TESIS PARA OPTAR AL GRADO DE MAGISTER EN GESTIÓN Y DIRECCIÓN DE EMPRESAS

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SUMMARY OF THE THESIS TO OPTAIN DEGREE
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GENERATION A BUSINESS MODEL FOR DRILLING SERVICE COMPANY

The current context of the exploration drilling industry requires collaborating companies with a different vision in the form of executing services, where integration of high technical innovations to reduce the total cost of the exploration drilling is very well seen. Future trend in exploration also is to drill deeper, underground drilling customers are looking greater productivity, so increase in productivity will be favored.

The methodology used for this work considers, studying the drilling industry market in Chile, identifying the general environmental factors that may affect the business such as Political, Economic, Social, Technological, Ecological and Legal factors. Analyzing the internal characteristics, identify and analyze the closest competitors in the market. Study of the characteristics of consumers and finalize the study to a risk analyze. Based on the industry analyze made appropriate strategy for the business will be defined that includes marketing plan, operational plan and financial plan.

The results obtained shows that ADC possesses the financial and human resources, capabilities and competencies necessary to enter the drilling industry in Chile. ADC has a advance in technology in specialized drilling. Every day increasing need for underground and deep hole drilling opens an interesting market to ADC in Chile.

Study shows that ADC would be in a position to achieve the proposed market shares within a 5-year horizon, which would allow it to capture 21% of the underground drilling market and 48% of the growing directional drilling market. Carrying out the financial analysis, a positive net present value of $ 2.2M USD is observed, with an internal rate of return of 230.0%, which gives shareholders an interesting project and expects paybacks.

RESUMEN DE LA TESIS PARA OPTAR AL GRADO ACADÉMICO DE: Magíster en Gestión y Dirección de Empresas
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FECHA: 2020
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DESARROLLO MODELO DE NEGOCIO PARA LA COMPAÑIA DE SERVICIOS DE PERFORACIÓN

El contexto actual de la industria de perforación de exploración requiere que las empresas colaboradoras tengan una visión diferente en la forma de ejecutar servicios, donde la integración de las altas innovaciones técnicas para reducir el costo total de la perforación de exploración se ve muy bien. La tendencia futura en la exploración también en Chile es la perforación más profunda, los clientes con operaciones subterránea buscan una mayor productividad, por lo que se favorecerá el aumento de la productividad.

La metodología utilizada para este trabajo considera, al estudiar el mercado de la industria de perforación en Chile, identificar los factores ambientales generales que pueden afectar el negocio. Factores políticos, económicos, sociales, tecnológicos, ecológicos y legales. Analizando las características internas, identificacion y analizisis los competidores más cercanos en el mercado. Estudio de las características de los consumidores y finalización del estudio con un análisis de riesgos. Con base en el análisis , se definirá la estrategia adecuada para el negocio que incluye por ejemplo un plan de marketing, plan operativo y un plan financiero.

Los resultados obtenidos muestran que ADC posee los recursos financieros y humanos, capacidades y competencias necesarias para ingresar a la industria de perforación en Chile. ADC tiene un gran avance en tecnología en perforación especializada. Altamente creciente necesidad de perforación subterránea y perforacion profunda abre un mercado interesante para ADC en Chile.

El estudio muestra que ADC estaría en condiciones de alcanzar participacion del mercado propuestas dentro de un horizonte de 5 años, lo que le permitiría capturar el 21% del mercado de perforación subterránea y el 48% del creciente mercado de que es perforación direccional. Al llevar a cabo el análisis financiero, se observa un valor presente neto positivo de $ 2.2M USD, con una tasa interna de retorno del 230.0%, que brinda a los accionistas un proyecto interesante y espera de reembolsos.

Dedication

To my wife for all her help during this project

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1 INTRODUCTION

Under the current context of the copper mining industry in Chile and in relation to the analyzes cited in this research, it is expected to detect opportunities for Arctic Drilling Company and its services in Chile. Achieving emphasis to the drilling service for mining, especially for underground and directional drilling services. Specialized technical drilling as it's a diversification strategy related to the integration of high technology and that currently does not yet have a powerful market with much rivalry.

Technical activities after the drilling of drill holes and that require in various stages of the development of projects and production processes, the execution of drillings to obtain information that supports the mining plans and the operational continuity of a deposits.

This research also responds to the needs of the board of Arctic Drilling Company, who want more knowledge about the drilling markets in Chile. This business model generated will be used as a base in other markets afterwards and will be used as a base to generate strategy for Arctic Drilling Company in Chilean market.

Directional drilling is an innovated way to drill mineral deposit targets with horizontal holes with a predetermined path in the same place, thus significantly reducing the time and costs of exploring a deep drilling program and raising the productivity index. Drilling services in underground has a market that in the future we think will be increased by several mining projects that are changing from open pit to underground mine operation.

In summary, through the application of directional drilling and new underground drilling technology saves time, saves operations costs, and obtain geological information in less time that contributes to a better mining planning and decision making.

1.1 Justification

The drilling industry has been characterized for many years as a follower of mining activity and therefore experiences a cyclical behavior similar to mining; In addition, it has high rates of serious accidents, irregular productivity that impact the results of the drilling and engineering campaigns, and the contribution of engineering for those drilling harder to implement. Between 2005 and 2011, the industry experienced strong growth driven by the large number of mining projects under development and by significant investments in exploration, however from 2012 the activity begins to decline due to the lower investment in exploration worldwide. Although, the drilling industry that provides services to Mining is currently experiencing a complex scenario with percentages of asset utilization around

reaching less than 30% in 2018 due to lower demand for services, mainly in exploration activities; however, the same effect has not been produced in those activities that are directly related to the operation of the mines, there is an interesting demand for specialized technical drilling of the type such directed drilling, increase in underground drilling and drilling for preconditioning hydrofracturing. This investigation has analysist these 2 market where there is not yet a significant number of competitors. Chile is among 4 largest markets in the world when in exploration budget. In 2018 direct investment in exploration was 596 million dollars in. According to the benchmarking of ADC and its providers, it can be said that currently in Chile there are 640 drilling machineries in Mining, where we can calculate that approximately only 200 drilling machines are active and working at the moment. How ever ADC's competitive advantages correspond to the technical experience of more than 15 years in services associated with the mining industry, powerful offer of specialized services, integrating strong innovations in the development of functional drilling machines and standardization of support activities.

ADC has experience in drilling contracts and international services, underground methodology. This experience and knowledge is supported in part by the application of a rigorous and thorough process of recruitment and selection of personnel with special concern in having personnel with a high level of commitment and involvement in the areas of security. Protection of resources and the environment, interpersonal relationships, and productivity according to the requirements that the principal and company demand. In the same way, based on the internal policies of the company, constant improvement and training programs are carried out in all the areas involved, generating a work team environment based on cooperation and permanent complementation between the different disciplines that interact, which translates into a harmonious work climate of respect, trust and with defined objectives. Having a special concern in detecting and controlling deviations that attempt with the required address.

The ADC drilling rigs have been designed with the safety and protection of workers and their environment in mind. Among its features are cages and security systems that cover the drilling unit, interlock system that consists in opening the rotation unit protection, it stops being in zero rotation, protection of the movement operation booth and transfer, wireless remote control unit positioning (rack) drilling, positioning unit, displacement and control of hydraulic components through gradual movement systems, among many other elements. ADC drilling equipment has been designed and built to move independently. The mobile unit is easy to operate, achieving a speed of up to 10 kms / hrs through its rolling system consisting of transmission of cardanic energy to axles and tires with high traction and reliability. As part of the constant investigations and operational improvements, it incorporates cameras connected to the drilling equipment, which transmits images in line to the screens located in the cabin. Since equipment is self-

propelled and is designed with the integration of most of the own components for drilling service, such as built-in electrical panel, cable in cable holder, mud pump, primary-secondary hydraulic pumps, lighting, electric motor allows efficient transfer times between wells, sections and levels of mining developments and mines, managing to reduce these times by more than 70% versus traditional equipment mounted on tracks or skids.

1.2 Objectives

To propose a model business plan to help great the Arctic Drilling Company strategy in Chile for drilling services.

Specific Objectives:

- Investigating the drilling market in Chile
- Design a model for business plan.
- Obtaining information necessary for the analysis.
- Industry analysis
- Competitiveness analysis.
- Internal analysis.

1.3 Methodology

The realization of this study will have the different tools that accompany a conventional business plan. Which will give us to know the methodology of development of the project in question. Next, each of these tools is mentioned.

- Analysis and Market Research.
  The collection and analysis of information, in regard to the world of business and the market.

- PESTEL Analysis
  Strategic planning that allows identifying the general environmental factors that may affect the business. It is about the Political, Economic, Social and Technological, Ecological and Legal factors will reveal the external environmental influences in the performance of the business.

- SWOT Analysis
  Analyzing the internal characteristics (Weaknesses and Strengths) and external (Threats and Opportunities) to know the real situation in which the organization is to plan the strategy of the company.

- Study of the Competition.
  Realization of the study to analyze who are the closest competitors to the company to develop.

- Strategy Creation
  Based on the objectives outlined in the previous sections of the plan, the most appropriate strategy for the business will be defined.

- Prepare Marketing Plan
  Describes the advertising and service marketing activities for future futures. Describes the commercial activities that are related to the achievement of certain marketing objectives within the established calendar.

- Operation Plan of the Company
  The Operations Plan summarizes all the technical and organizational aspects that concern the preparation to the provision of services.

- Financial Plan and Economic Evaluation
  Financial analysis consists of evaluating the current economic-financial situation of the company, projecting and finding out the future liquidity of the company.

- Risk analysis
  Study of the causes of possible threats and probable unwanted events and the damages and consequences that they may cause.

2 BUSINESS DESCRIPTION

2.1 Identification of the Company and Service

ADC is a Finnish based drilling company established in Rovaniemi Finland 2004, specialized in sustainable drilling, providing full-scope exploration drilling services and developing and manufactures next generation drilling rigs. Actually, operating in 6 different countries. Has a presence in Chile from 2014 through its subsidiary ADC Services SpA.

2.2 Mission

ADC's mission is to be a specialist in mineral exploration drilling technology, an agile customer-driven partner for the mining industry. To be known for its success in high quality, environmentally friendly operations, improved safety and technological development in drilling.

2.3 Vision

Promote new innovations that gradually replace conventional products, through an emphasis on technological innovation that puts us at the forefront in offering new products and being recognized in the mining exploration area for new types of core recovery drilling. World leader offering directional drilling and underground drilling, being one of the companies with the highest level of services in the mining area and technological innovation, with an increase in income in economies of different countries, making compatible the local laws, environment and social responsibility with the sustainability of the business. With these advantages, ADC is able to offer high level drilling services that contribute with mining investors in the search for new objectives that allow the natural replacement of exploitable resources.

2.4 Description of the Services of the company

Arctic Drilling Company (ADC), a Finnish based company that is known for manufacturing drilling equipment and providing drilling services for mining exploration.

ADC serves its customers around the world, always reliably and safely, guaranteeing efficient drilling even in extreme conditions. Offering the best certified exploration drilling rigs in the field and professional personnel whose skills have been finely honed in practical work. Drilling jobs are always carried out in an environmentally friendly manner, so that the impact on surrounding nature is as small as possible. ADC is an efficient, environment-friendly, and reliable partner for surface and underground drilling.

Aziwell is a Norwegian company that, together with ADC, has developed a tool called Azidrill. Azidrill is a system for directional drilling with recovery of the core, whose main characteristic is to perforate following a controlled direction, allowing to maintain a hole within the given limits or to perforate to intercept targets or underground locations in a specific angle. The technology also provides means to drill ore deposits or bodies where

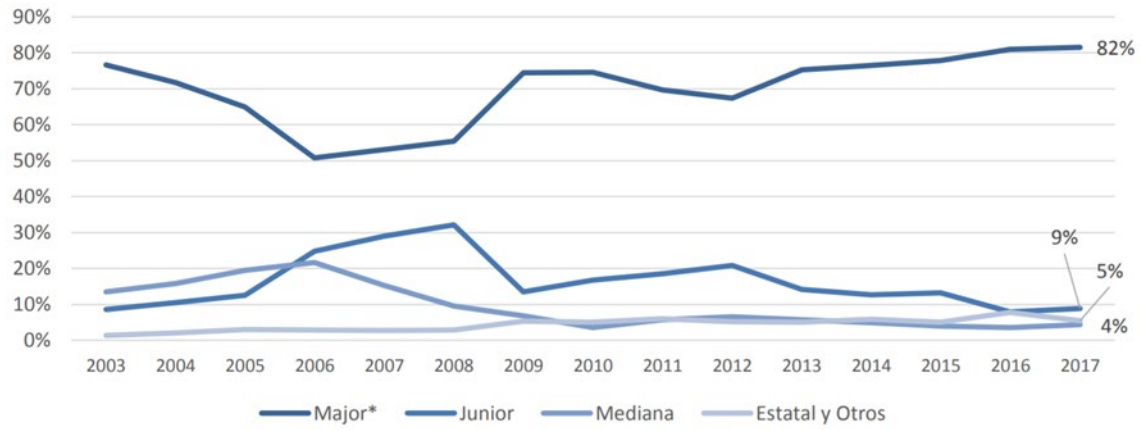
vertical access is difficult or impossible, for example, under a city, a lake or below a topography difficult to drill.

Directional drilling has a long history in the oil and gas industry and is increasingly used in mining thanks to the technological advances that have made management tools more feasible for mining drilling.

2.5 Market

There are 2 markets where ADC will aim, which are diamond drilling in underground mines for geology, geotechnical and production. Second market where ADC will aim is deep holes and especially directional drilling. Both markets currently do not have a large size of competition in the Chilean market.

Figura 29: Distribución porcentual del presupuesto en exploración en Chile según el tipo de compañía, periodo 2003 – 2017



Nota: * Incluye CODELCO

Fuente: COCHILCO sobre la base de datos de SNL Metals & Mining (2016) [1]

We will focus on meeting the demand for exploration and production drilling services (underground mines) in the mining companies with the areas of operations, project development and exploration, clients such as:

- Codelco Chile North Division (Chuquicamata, Ministro Hales, Gaby, Salvador) and Codelco Chile South Divisions (Andina and El Teniente)

[1] Source COCHILCO

- Emsa (Exploraciones Mineras Filial Codelco)
- Antofagasta Minerals (Minera Los Pelambres, Explorationes)
- BHP Billiton (Minera Escondida, Spence, Cerro Colorado and Explorations)
- Lundin Mining (Candelaria)
- Anglo American (Los Bronces),
- Newmont Goldcorp (Nueva Union, Caspiche, Explorationes)
- Newcrest (Exploration) and Yamana Gold (Minera Peñon, Minera Florida).

3 FRAME OF CONCEPTS

3.1 PESTEL analysis

A PESTEL analysis is a framework or tool used to analyze and monitor the macro environmental factors (external marketing environment) that have an impact on the organization.

- Political factors

  It is about how and to what extent a government intervenes in the economy. This may include: government policy, political stability or instability in foreign markets, foreign trade policy, tax policy, labor legislation, environmental legislation, trade restrictions, etc.
  From the previous list it is clear that political factors often have an impact on organizations and how they do business. Organizations must be able to respond to the current and future planned legislation, and adjust their operating standards accordingly.

- Economic factors

  Economic factors have a significant impact on how an organization does business and also how profitable they are. The factors include: economic

growth, interest rates, exchange rates, inflation, disposable income of consumers and businesses, among others.
These factors can be divided into macroeconomic and microeconomic factors. Macroeconomic factors are concerned with the management of demand in any given economy.

- Social factors

  Also known as sociocultural factors, are the areas that involve the shared beliefs and attitudes of the population. These factors include: population growth, age distribution, health awareness, professional attitudes, etc. These factors are of particular interest since they have a direct effect on the way organizations understand customers and what drives them.

- Technological factors

  Knowing how quickly the technological landscape changes and how this affects the way we market the products. Technological factors affect marketing and their management in three different ways:
  - New ways of producing goods and services
  - New ways to distribute goods and services
  - New forms of communication with target markets

- Environmental factors

  Environmental factors have become more important in the last years due to the growing for example scarcity of raw materials, pollution targets, doing business as an ethical and sustainability, carbon footprint goals set by governments.

- Legal factors

  Legal factors include: health and safety, equal opportunities, advertising standards, consumer rights and laws, labor rights, product labeling and product safety. It is clear that companies need to know what is and what is not legal to operate successfully. Successful operating it becomes a more complicated to a company who operates in different countries since each country has its own set of rules and regulations.

After completing the PESTEL analysis, we can use this to help identify the strengths and weaknesses for a SWOT analysis.

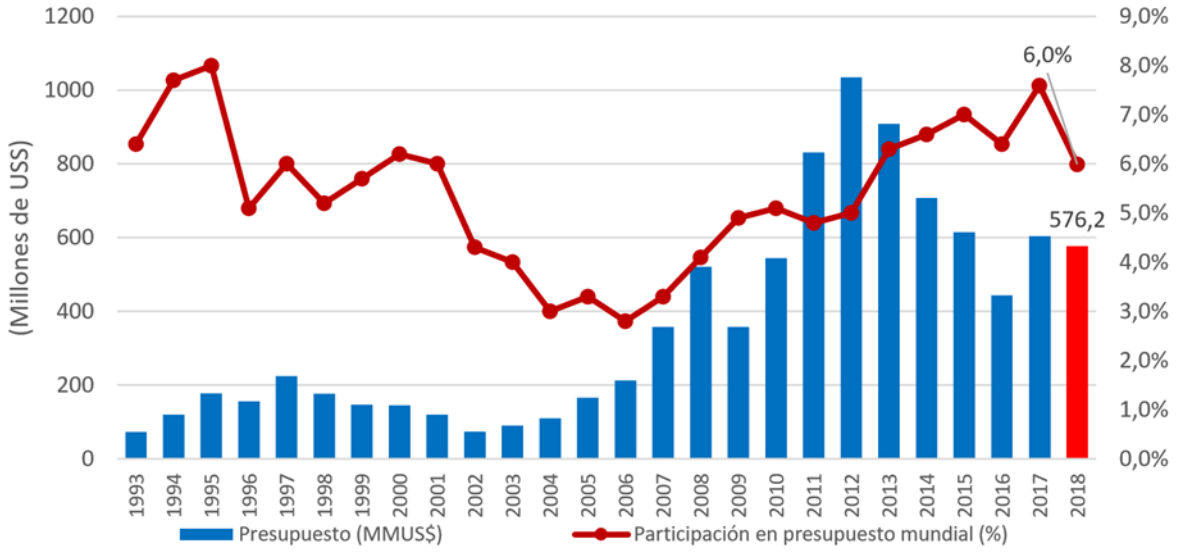
4 ANALYSIS OF THE INDUSTRY, COMPETITORS, CUSTOMERS AND MARKET SIZE

4.1 Industry Analysis

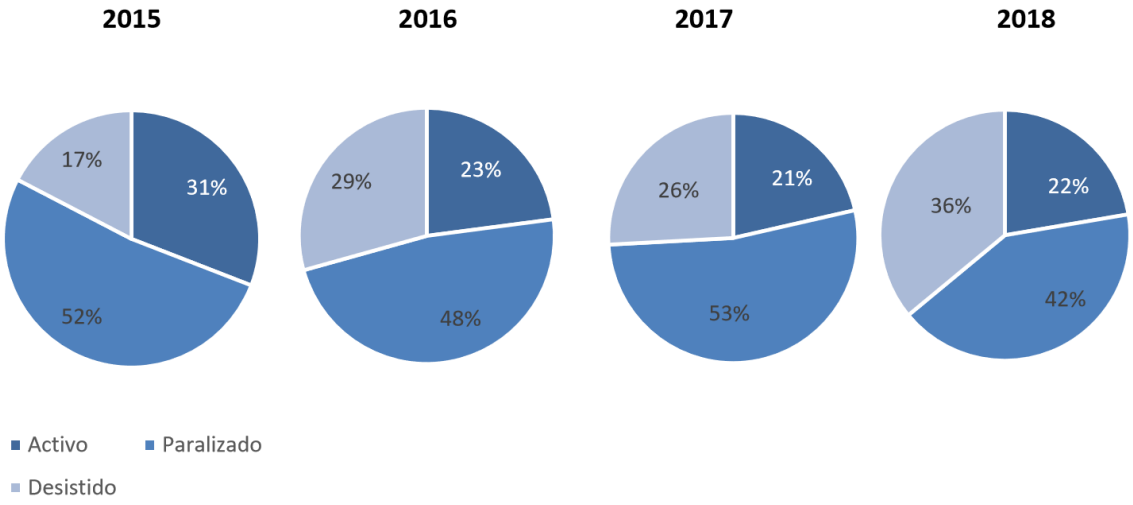
The data that chart this decline in exploration activity in 2018, the global budgets for exploration of non-ferrous minerals in 2017 totaled about US $ 8,500 million, 2018 it did increase to US $ 10,100 million, an increase of 19%. The improvement in metal prices and margins recorded since 2016 has encouraged producers to expand their efforts. In the same period, the support of stock markets for junior companies also increased, increasing the amount and amount of financing granted, which allowed the sector to increase its budgets by 35% in 2018 compared to the previous year.

However, they remain below the record levels recorded between 2010 and 2012, when in full boom of the price of metals the activity moved resources for US $ 21,500 million. In Chile, it was not the exception, at the beginning of 2017 there was a small rebound in investment in exploration by the Junior Mining and to a lesser extent the Majors, in any case there is still an oversupply of drilling equipment in the market in the exploration area.

Figura 17: Presupuesto histórico en exploración en Chile versus su participación porcentual en el total mundial



[2]



Fuente: Cochilco, S&P Global y compañías exploradoras

[3]

[2] Source S&P Global Market Intelligence
[3] Source COCHILCO

There is also a market in production drilling with a diamond drilling rigs especially for preconditioning for hydrofracturing in Block cave mining method. Currently used in the state-owned company Codelco in its divisions El Teniente in DET (Distrito el Teniente) and NNM (Nuevo Nivel Mina). During the year 2019 Codelco's Chuquicamata Subterraneo project entered into construction, where hydrofracking will also be occupied for preconditioning.

However, despite this temporary condition regarding the conditions of the mining industry, the demand for specialized drilling services and that are part of the operating areas of the mining companies, shows according to the benchmark (2019-2023), requirements more drill holes in preconditioning type works for hydrofracturing in mining in Block caving, necessary for the operational continuity of the mines and the trend towards the development of underground mining projects (Teniente New Mine Level, Andean Phase 2, Chuquicamata Subterráneo, Escondida, Los Bronces .). This market segment in particular, has not yet represented an important interest for the large drilling companies in Chile, which have always been oriented to important meter production and which are mainly associated with the areas of exploration and development (infill) of mining projects.

In more general terms, it is possible to point out that this industry has the following characteristics:

- Intensive assets: drilling machinery, drilling supplies and support equipment.

- Low specialization of the workforce: capacity and skills of the technical personnel that operates the drilling equipment.

- Technological requirements that are directly related to the quality and characteristics of the drilling. The technical characteristics of the probing equipment determine the depths of the wells, the productivity and the safety with which the work is carried out. On the other hand, in order to meet the technical requirements of the well requested by the client, innovation needs arise in the development of the service.

- Risky operation product of working conditions when human-machine contact exists.

- Labor conflicts.

- Low productivity, which is not in line with the current conditions of the mining industry.

Competitive companies that offer directional drilling or underground drilling can still be counted by one hand. Companies with high-end drilling equipment are generally not interested in using these specialized drilling systems. An increase is estimated in both underground drilling and also in directional drilling.

4.2 Key Actors of the Industry

In the drilling industry, the following key actors are identified:

- Economic Actors: Mining Companies (CODELCO, BHP Billiton, AMSA, among others), Engineering Services Companies (Arcadis, Geosinergia engineering companies), Drilling Companies (Geotec, Boart Longyear, Competitors), Suppliers of Machinery and Drilling Supplies, Suppliers in Support Services, Investors.

- Socio-Cultural Actors: Unions, Institutes and Industrial Associations, Communities

- Political-Institutional Actors: Sernageomin, SEREMI of Health, Labor Directorate, Ministry of Mining,

4.3 Pestel Analysis ADC

Political Analysis: According to the political analysis carried out, it is possible to point out that there are no political stability problems that affect the decision to invest in the drilling Industry that provides services to mining. The attractiveness of mining in Chile is its privileged mineral endowment with large deposits; its regulations are favorable to investors and general economic and political stability; its maturity as a mining jurisdiction with developed road and port infrastructure. The relative attractiveness of Chile to international investors is reflected in the 2018 survey of the Fraser Institute, which ranked Chile in the top 10 jurisdiction in the world for investment based on the Investment Attractiveness Index.

4.3.1 Economic Analysis:

The economy of Chile advanced 1.6 percent year-on-year in the first quarter of 2019, easing from a 3.6 percent expansion in the previous period and missing market expectations of 1.8 percent. Exploration budgets 2018 in Chile did drop 6% from the year before totaling 565 million USD. However, considering the economic importance of copper

mining in the country, the amount of projects still to be developed; lot of whom are in detention waiting for a better condition in the price of copper; and the operational continuity of the current deposits that must maintain their operations in operation, allow us to estimate that the economic situation does not represent an impediment to enter the drilling industry, particularly considering the target market where we aspire to position our company.

4.3.2 Socio-Cultural Analysis

In this aspect, we can consider 2 relevant aspects: the availability of skilled labor for this type of services, the possible labor problems and the problems that may exist with the community when developing services for an industry that It is not well considered by the population. However, both mentioned issues are fully manageable under good planning of recruitment and selection processes, excellence in communication with workers to maintain a good working environment and integrate the company with the community through job offers, auspices and cooperation's.

4.3.3 Technological Analysis

Considering the current conditions of the drilling industry and the technical requirements in terms of specialized drilling, the innovation and development of new technologies in drilling equipment in terms of productivity and safety is important. Currently in the international market there are several technologies that have not yet been fully benefited in the Chilean market. Normally Chile is one of the last markets to try new technologies that could benefit. Factors and technological challenges for the field of exploration can be mentioned that the deposits are increasingly deeper and difficult to access, drilling in close to glaciers among others. Underground drilling service companies providing their services for geological purpose in mines in general are still using technologies from year 1960, which offers a great window for ADC to offer its most advances technological products. Because of the low price of copper and the copper law, large miners have been forced to look for ways to reduce their costs in operations and explorations. This opens a window to integrate new technologies into mining and exploration process.

4.3.4 Environmental Analysis

The main challenges of the industry are focused on the care and respect for the environment, through the efficient use of resources (water), where the planning and quality of the work directly affect the proper use of these resources. Here, the Company must comply with existing environmental regulations and, with advanced technology, minimize the impact on the environment.

4.3.5 Legal Analysis

In this aspect, key factors that can generate an important impact in the industry correspond to the tax and labor reforms, which implies that the Company must be framed in the current legal regulations.

4.4 Analysis of the Competitive Forces

4.4.1 New Entrants-Entry Barriers.

Regarding economies of scale, these are important in the cost competitiveness; Brand identification is an important factor in the technical qualification of bidding processes. The capital requirement for investment in machinery is an important factor due to the cost of the equipment, which is related to the specificity and high technological level; To this must be added the necessary working capital at the beginning of the contract and in the financing of the administrative structure. The differentiation of the service is a factor to be considered in the election by of the clients, since they are very specialized services and can integrate other related areas, constituting a strong barrier to entry. Biggest barrier in Chile is the barriers that competitive companies build with having people inside the mining companies, having a good relationship with them and even having shareholders in the company. Therefore, entry barriers in the industry are high.

4.4.2 Power of Buyers.

There are a significant number of buyers in the industry (mining companies), with specific service requirements that are framed in bidding processes and direct quotes. The existence of threats as a backward integration, it does not constitute a relevant factor

since drilling services are specialized, not being part of the core business. The demands in terms of quality by buyers are high, which is directly related to the quality of information that supports the mining business. The profitability of the buyers is average in the current context of the industry product of the optimization of costs. Therefore, the power of buyers is medium-high.

4.4.3 Power of the Substitutes.

The drilling can consider as substitutes other study mechanisms such as aerial and satellite photographs; geophysical methods, geochemical and other geological techniques as drones. However, this type of mechanisms corresponds to complementary methods used mainly in prospecting stages or as preliminary information means in the different stages of engineering, not being able to deliver the quality of data required in the development of mining projects (Design, Planning, Operation, Processes, etc.) Therefore, the power of the substitutes is low.

4.4.4 Rivalry of Competitors.

The number of direct competitors is low; There are 3 competitors with greater market share, with higher fixed and variable cost structures. However, there is a great variety of competitors, the specialization that occurs in the total mining industry of 63 drilling companies but in technical and safety terms, limits the number of companies that are in a position to be chosen by the bidding processes of the customers. Even more, if we consider only the target market associated with underground drilling, the number of competitors is limited to 4-5 drilling company. In directional core drilling there are 2 companies that can offer the same services and drilling for hydrofracturing 2 companies offering the same service than ADC in Chile.

4.4.5 Power of suppliers

The main suppliers of the industry are the manufacturers of drilling equipment and tools. The current offer is attractive due to the lower dynamism of the industry, with the option of reaching good commercial agreements in terms of prices and payment terms. There are no threats from suppliers to make a forward integration. Regarding the contribution of quality by suppliers this is a key factor, since the technology and quality of equipment and drilling supplies are determining factors in the results obtained. In the case

of HR associated with drilling and also considering this resource as a supplier, there is availability of qualified, specialized workforce with experience as a result of the lower activity of the industry, so under this scenario, its bargaining power It is low.

4.4.6 Exit Barriers

The cost and specificity of the equipment is high, since there are several types of equipment for each type of drillings to be made, so its possible sale in the case of leaving the industry, is not immediate. There are emotional barriers that may involve high costs resulting from the termination of the HR associated with the Company; On the other hand, there are no governmental restrictions that limit the exit of the industry. Regarding the costs of exit, these are means because you must consider the faithful performance of contracts, where there are always associated documents called bank guarantees taken in favor of the client, which may limit the early termination of a contract by the drilling company that chooses to exit the industry. Therefore, exit barriers are means.

4.4.7 Abstract Competitiveness of the Drilling Industry.

In summary, it is concluded that it is attractive to enter this industry, given that there are strong entry barriers and exit barriers in the middle range. Although, the power on the part of the buyers is medium high, mainly due to a lower demand capacity due to cost containment processes, in the case of the mining operations are still maintaining a level of requirement for drill drilling services, which should increase as the current price of the copper, so we think it is not an impediment to enter the industry in question. Regarding competitors, there is an important rivalry, with a capacity of depreciated and available assets to operate, which forces them to look for those drilling contracts that involve large quantities of meters and low requirements technicians, so it is interesting to concentrate on the drilling of specialized drillings that are directly related to the services that ADC currently develops, to which must be added the trajectory and Know How of the Company, the trust and contractual relationships with clients constituting an important commercial capital.

This industry is tempting because there are strong barriers to entry and barriers to exit. Although the buyer's average power is high, it is mainly a lower demand for capacity through cost reduction processes, but in generally there is more requirement for specialized drilling services, which should increase when the current price of copper improves, so we think that's the way it is.

Regarding the competitors there is a high rivalry and many companies with their equipment utilizationt currently below 30% a capacity of depreciated and available assets to operate with low prices. Even in specialized drilling such as directional drilling and underground drilling there is still no such rivalry.

4.5 Competitor Identification.

We can differentiate the main competitors in the drilling industry that provides services to the Major Mining Companies in Chile in 2 groups:

- Large Companies

  Geotec Boyles Bros S.A., Foraco Chile Ltda, Boart Long Year Chile Ltda, Major Drilling S.A., Soletanche Bachy S.A. Orbit Garant Perforaciones Chile SpA

  These are international companies, with a broad base of mining clients, have a track record and deliver a variety of drilling services in the areas of exploration, development and production.

  They have international experience in directional drilling and also underground drilling.

- Medium Companies

  ICEM SA, Pro Drilling SA, Georock,Terraservice and AC Perforaciones Most of them correspond to companies with national capitals, with a trajectory in the range of 5 to 20 years and that provide drilling services in the exploration areas, development and production.

To evaluate the ADC income to the drilling industry that serves the major Mining companies, the information was collected with respect to the following aspects: Market participation, type of service, Machinery working currently, Identification and distinctive resources.

In Table No.1 The main characteristics of each of the companies defined as direct competitors are indicated.

TABLE N°1

No	Competitor	% Market	Who are they	Resourses
1	Geotec Boyles Bros S.A	19 %	Company of Chilean capitals present since 1974. It is a member of the Boyles group S.A 49%, associated with the North American company, June 14. 2018 Layne merged with Granite Construction Incorporated.	Currently drilling BHP Escondida, MLP Pelambres, Teck Cominco, Collahuasi. It has about 125 drills, operational 60 DDH / 17 RC / 15 Water Wells. recognized brand in the market with 45 years in the market, Installations in Santiago and Antofagasta. Holding owner of Christensen Chile S.A., consumables and drilling tools, MDF Mud Fluis (Atlas Copco, Epiroc, Baroid).

2	Boart Longyear Chile Ltda.	15 %	World's largest international company, service provider, drilling equipment and drilling tools. It has a history of 125 years in the drilling market.	Currently Drilling Escondida, Candelaria, Spence, Cerro Colorado. 57 drills DDH, 17 DDH UG.
3	Soletanche Bachy	6 %	Company of French origin, present in Chile since 1965. It delivers solutions for foundations projects, urban excavations, soil improvement, exploratory drilling, geotechnical monitoring, tunnels and underground works.	Drilling currently in Chuquicamata, it has 7 drills DDH underground and total 14 DDH drills.
4	AK Drilling	6 %	AK Drilling International S.A. is a supplier of drilling services for mining and oil and gas companies. AK Drilling International has participated in operations throughout Latin America. The	Annual Contracts Drilling for Yamana - El Peñon. 14 DDH - 5 RC - 8 underground drill rigs.

			company is headquartered in Peru and has subsidiaries in Colombia, Chile and Guyana.	
5	Georock	6 %	A company belonging to the Grupolatino S.A., investment company. Year 2007 Grupolatino S.A. buys the geophysical drilling and instrumentation company Geo E-Tech Ltda., founded in 2002 with the purpose of providing diamond drilling services for the hydraulic fracturing of the rock mass in underground mining. Starting in 2010, expansion into the infill diamond drill market began.	It has current contracts for Codelco El Teniente Division, Andina, Gaby. Inventory of 10 multi-brand Refurbished underground DDH Mine equipments, acquired mainly in auctions and auctions, repaired in non-authorized brand workshops. It owns 5 DDH Surface equipment, similar indoor condition mine. Total DDH. It has two (2) refurbished Hydrofracture pumps.

6	ICEM	5 %	Company belonging to Grupo SALFA, ICEM division of exploration drilling, responding comprehensively to the needs of its clients in complex projects in the industrial, mining and construction areas.	Contracts currently for Yamana Gold - Mine Florida 5 ug drills DDH, 11 total DDH.
7	Orbit Garant	5 %	One of the largest drilling companies in Canada, both surface and underground. In Chile via acquiring Captaqua company in 2015 over 60 years of experience, serving the main mining holdings in the country.	Currently drilling at Los Bronces Underground. 5 underground rigs DDH, Total 15 DDH
8	AC Perforaciones	3 %	On November 14, 2012, Claro y Asociados, a consulting and investment firm linked to businessman Jorge Claro, acquired 50% of the company AC perforaciones, a	12 DDH equipment, 0 Interior Mine, 5 RC equipment. Executing DDH / RC contracts for EMSA, Rendic Mining Group.

			mining services company that holds about 5% of this market share.	
9	Major Drilling	3 %	One of the largest drilling companies in the world. Start of activities in the year 1980. With participation in 20 countries	39 drill rigs DDH, 7 underground.
10	Prodrilling	3 %	National company specialized in the development, administration and execution of drilling projects for medium and large mining companies	13 drills DDH, 0 UG. Working with AMSA, Anglo Los Bronces, Barrick.
11	Foraco	2 %	French origin company, within the 3 largest companies in the world, propocioan solutions for mining.	25 Drill rigs DDH, 0 underground, Working with Goldfields, EMSA.

12	Terraservice	1 %	National company that is founded 1995.	3 drill rigs UG DDH, total 13 DDH, 5 RC Schramm 685TS. Working with Freeport, Mantos Copper.

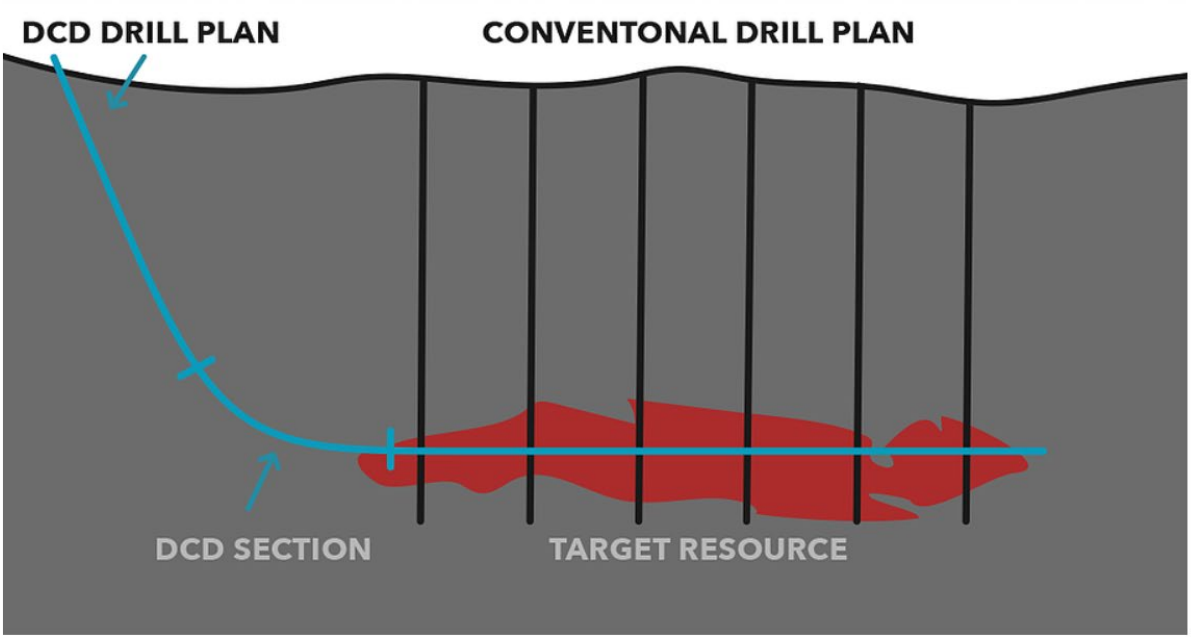
[4]

Regarding the way of competing, we can distinguish in the industry 2 competitive strategies that are directly related to the type of drill to be executed:

Geological drilling underground mines: the predominant competitive strategy is the leadership in costs with the objective of offering the cheapest price in the bidding processes, being predominant the price strategy based on costs and innovative equipment, where the conditions of the demand of the market (client) and Number of competitors are the 2 aspects most analyzed at the time of the development of a proposal by the drilling companies. This segment is aimed at the largest and some medium competitors, since it concentrates the largest number of meters to drill and budgets, normally they award contracts on average for 2-3 years and demand a greater use of assets (machines and tools).

Directional Drilling: this segment differs from the previous one since it involves the drilling of technically more specialized drilling. For this case, the competitive strategy is developed in 2 areas: differentiation and focus; this product that the drilling is more specific which is in direct relation with the technical conditions of the project and the requirements of the clients: drilling, access qualification, among others. Directional drilling is still a new system for the Chilean market so the market-based pricing strategy is defined by defining prices compared to conventional drilling and advantages using the system for example as a minor construction of roads, platforms and drilling location where conventional drilling is not possible. Customer strategy based on technical requests and, in addition, the new system considers an additional value that the client is willing to pay to ensure compliance with the objectives.

[4] Table number 1. Source: self made.



5

[5] Source Aziwell

4.6 Weakness and Strength competitors.

In Table No. 2 The Strengths and Weaknesses are detected based on the analysis of the Competitors.

TABLE N° 2

No	Competitor	% Market	Strentgth	Weakness
1	Geotec Boyles Bros S.A	19 %	Owner CIF (International Training Center) training technician agency, high standards of safety standards. All lines of drillings and complementary services, availability of machinery, availability of spare parts and replacement of parts and pieces. 125 drilling rigs in Chile, Good negotiation power, technical support and infrastructure, Financial backing, Chilean Corporate Group present in government	High burden Fixed Costs / General Administrative Expenses, which impacts on cost USD / meter. Low specific presence in underground perforations, given that their costs are very high for few equipment. Administrative Structure - Slow logistics, due to the size of the company. High turnover of direct works personnel. For contracts with low requirement of number of drill rigs, extremely high costs.

			policy and connections, IDS directional drilling strategic alliance. Good policy of study and innovation in operative solutions for mass drill campaigns. Excellent response for contracts with high number of equipment requirements (about 6-7 simultaneous teams + std by's).	
2	Boart Longyear Chile Ltda.	15 %	Company Manufacturer and Service Provider, 1200 drill rigs in 100 countries, Financial support, Technological development, Tool manufacturing, drilling equipment, permanent feedback Products - Services, Supply Chain,	High Administrative Load, Fixed and General High Costs. Rate of reaction to changes in the slow market. High direct personal turnover of works, Low technical personnel presence with skills and technical skills

			underground experience and directional drilling.	in Chile. Fixed Structures High salaries, low productivity. Regular Security Indicators Equipment with regular mechanical availability indicator.
3	Soletanche Bachy	6 %	Experience both underground surface, financial backing, fleet of 14 DDH teams in Chile	Problems of Performance, Productivity and Quality, particularly with KPI's recovery and deviation. High participation, overhead and fixed costs, generates impact on USD value / meter ?? Slow to react to changes in the market, Personal Lack Operational Leadership, high turnover of personnel.

4	AK Drilling	6 %	High availability of equipment with low prices, experienced human resource and with a clear philosophy of productivity. Policies demanding fulfillment of goals and objectives, above cost. It has facilities in Antofagasta.	Acceptable Safety Indicators, but with criticality in the levels of potentiality of incidents / accidents. High operational and logistic overload, demanding environment due to contractual commitments and its goals.
5	Georock	6 %	Perforation and Hydrofracturing Services (only 2 companies in Chile). Good link network of contacts mainly with Codelco Chile (Georock executives are Ex-Codelco, broad power in business, low price policy as a differentiating element in the market, low operational costs policy.) He has a contract with NLM codelco	Old manufacturing equipment, intervened and modified outside of the original standard. Under commitment with mechanical availability (repair of components, no replacement of components). Equipment with outdated technology (obsolete). No

			lieutenant for 4 years.	policy of development and technological innovation, indicators and recurrence of regular to bad accidents, preventive and corrective maintenance services deficient, low productivity, low level of knowledge and experience human resources, low compliance policy of payments to suppliers. Contract Administration Policy and generation of value through claims (claim), Senior Management and Leadership with low knowledge and experience in

				the probing industry.
6	ICEM	5 %	Financial support, given its condition of belonging to Grupo Salfa, Underground drilling and surface	Specific experience is lacking, lack of qualified technical personnel experience, experience of the professionals in the market, organizational problems. Little presence in the market.

7	Orbit Garant	5 %	Financial support, innovations, underground mine machinery manufacturer, knowledge of directional drilling. Important knowledge in the development and execution of underground mining contracts.	High administrative burden, poor technical results, lack of qualified personnel in the market, regular safety indicators.
8	AC Perforaciones	3 %	Financial support, equipment availability.	He has no experience in directional wells or undergroudn driling. Regular Security Indicators, with high frequency of incidents and potential risk criticality. Low response to maintenance requirements and lifting of ground fault conditions. High operational losses due to

				mechanical damage, low productivity.
9	Major Drilling	3 %	Experience in underground and directional wells, deep wells, financial backing, fleet of 700 teams worldwide	high admin costs, regular security indicators.
10	Prodrilling	3 %	Large commercial capacity of senior management, experienced human resource, financial support from group Precision.	Low underground experience, no experience in directional driling, organizational problems, high personal turnover, high creditors and credit burden.
11	Foraco	2 %	Technological development, financial backing, availability of machinery, experience in directional wells	Lack of qualified technical personnel in Chile, organizational problems, high administrative costs, low

				yields, pending litigation with Codelco Chile. Low availability of equipment, low equipment renewal. High personal turnover Sales Prices High Services.
12	Terraservice	1 %	Experience both underground surface, technical personnel with competence, organizational structure according to market. Leadership High Management with amps knowledge of the exploration market and the probing industry.	No experience in directional wells. Low equipment renewal, low experience in underground drilling, regular safety indicators.

6

[6] Table number 2. Source: self made.

4.7 Characteristics of Consumers

The direct customers/consumers for this type of specialized drilling services correspond in the different mining companies to the following areas: Superintendence of Geology and Superintendence of Geotechnics, Resources, Mining and Development Management, as well as the Superintendence of Projects belonging to the Project Management and Exploration Management.

The technical requirements on the part of the client, correspond to the obtaining of information of the rock, its structural condition, mineralization; in other aspects. These samples will later be used to develop mining plans, design of works and infrastructure on surface or underground, update of the geological, geotechnical and geometallurgical models.

In underground drilling for preconditioning, in the process there is incorporated hydrofracturing after the drilling, which is used to fragment the rock, which means that production will be faster. The preconditioning technique is to produce more fractures through explosives or hydraulic fracturing.

The decisions for the technical and economic evaluation of offers made through bidding processes and direct quotes, where generally empowerment is distributed in the range of 30-40% for the technical offer and in the range of 60-70% for the economical offer.

The following parameters are some that are currently being used by clients to contract drill drilling services:

Technical Criterion:

- Safety Indicators: Frequency Index and Gravity Rate.
- Safety, Quality and Environment Programs.
- Experience in the Service and Technical capacity.
- Staff Experience associated with the service.
- Reliability of the Company.
- Minimum availability for each of the main machinery and equipment.

- Resources Offered in quality and quantity.
- Years of antiquity of the machinery offered.
- Reputation: behavior and working conditions.
- Technological innovation in productive and security terms.
- Certifications according to ISO 9001, ISO 14001 and OSHAS 18001.

Economic Criterion:

- Global economic offer.
- Remuneration and benefits associated with workers.

Financial Background:

- Working Capital and Credit Lines available for Working Capital.
- Financial Information: Balances last 3 years.
- Statement of Results last 3 years.
- Financial Indicators: ratio of liquidity, acid ratio, debtor rate, supplier rate, ROI and ROE.
- Customer Collection Policy.
- Payment Policy to suppliers

Some of the differentiating aspects currently for tenders in general are the following.

- Appropriate management of labor disputes, collective bargaining without significant damages for the company, salaries according to market will be valued.

- Appropriate management of security management will be assessed.

- Companies that in their work methodology consider the use of technological or other innovations that represent an increase in productivity will be favored

- Execution of works with a methodology that means less endowment and/or exposure.

4.8 Macro y Micro Segmentation.

For the Arctic Drilling Company Chile, the following Macro Segmentation associated with customers is defined:

Mining Companies belonging to the Large Mining Industry: Such as Codelco (Andean Divisions, El Teniente, Chuquicamata and Explorations), BHP Billiton, AMSA, Anglo American, Newmont, Lundin Mining, Freeport and Yamana Gold.

The consumers of the service correspond to the areas of exploration, operations and development of mining operations.

With regard to the Micro segmentation associated with customers, this is defined as follows:

Areas of work belonging to the Mining Resources and Development Management of the Mining Companies: Superintendence of Geology.

Project Management and Exploration management of the different Mining Companies.

All areas require specialized technical drilling to maintain the operational and productive continuity of their operations.

4.9 Market Size and Trend.

To estimate the size of the market where the Arctic Drilling Company will position its services, the following should be considered:

Main customers are considered where ADC currently develops drilling services or where they are already developing businesses.

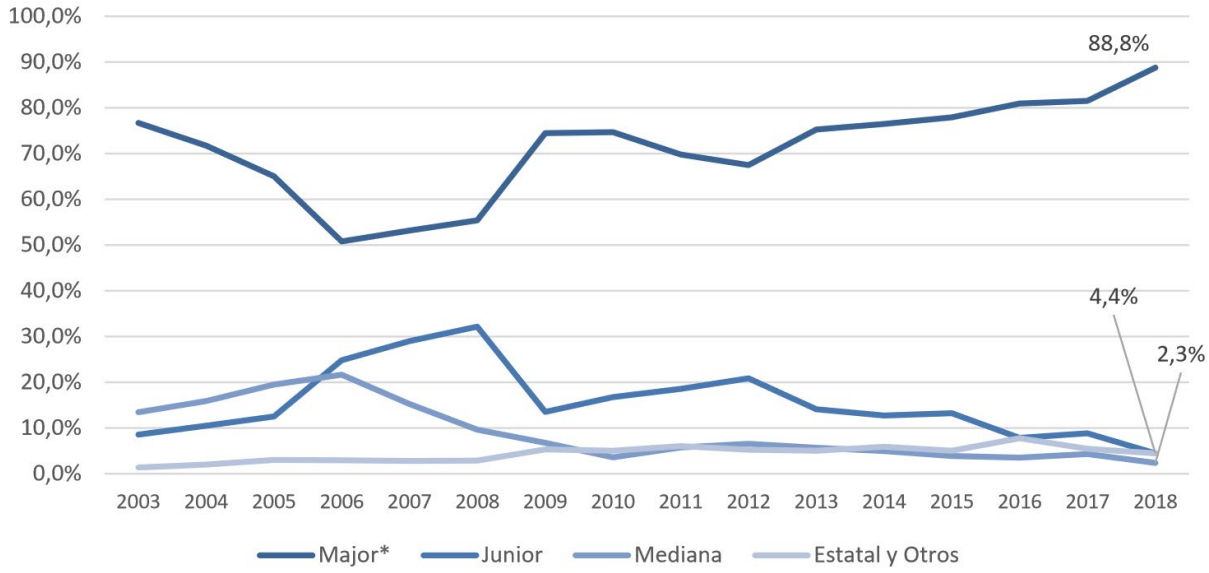
It is analyzed with the available information regarding the projects for the years 2018-2023.

The information regarding meters of drill holes to be drilled is categorized based on the specialties of each drilling campaign.

We define a target market size.

The defined market considers the stages of Explorations, Geological drilling underground mine and drilling Underground mine for hydrofracturing.

In Chile, major or large mining companies are the most relevant players in the field of exploration with 88.8% of the exploration budget.



[7]

In the tables 3 and 4 we can see the estimation of the size of the target market in meters to drill annually, table 3 for underground drilling services and table 4 for directional drilling services.

TABLE N° 3

	ESTIMATION OF METERS OF DRILLING ANNUAL CATEGORY	
	DDH UNDERGROUND	
CLIENT	DDH UG	TOTAL (m)
Teniente GOBM	16000	16000

[7] Source Cochilco

Chuquicamata	15000	15000
Teniente NNM	20000	20000
Teniente GPRO	20000	20000
Candelaria	24000	24000
Peñon Yamana	20000	20000
Florida Yamana	10000	10000
El Salvador	5000	5000
Andina	3000	3000
Anglo American Los Bronces	15000	15000
Others	40000	40000
	188000	188000

[8]

TABLE N° 4

	ESTIMATION OF METERS OF DRILLINGS TO PERFORATE BY ANNUAL CATEGORY	
	DIRECTIONAL DRILLING	
CLIENT	DDH	TOTAL (m)
CHUQUICAMATA	0	0
ESCONDIDA	0	0
AMSA	3000	3000

[8] Table 3 Source: self made.

EMSA	3000	3000
CODELCO GEX	3000	3000
GOLDFIELDS		0
NEWMONT	0	0
FREEPORT	3000	3000
TENIENTE	0	0
LUNDIN	0	0
OTHERS	6000	6000
TOTAL	18000	18000

[9]

In the table number 5 we can see the estimation of the target market annual budget in US dollars for both target markets, underground drilling and directional drilling services.

TABLE N° 5

	TARGET MARKET BUDGET 2019 US$		
	GEOLOGY	DIRECTIONAL DRILLING	
CLIENT	DDH UG	DDH DEEP HOLES	TOTAL USD
Teniente GOBM	4000000	0	4000000
Chuquicamata	3750000	0	3750000
Teniente NNM/AMSA	5000000	1050000	6050000
Teniente GPRO/EMSA	5000000	1050000	6050000
Candelaria	6000000	1050000	7050000
Peñon Yamana	2400000	0	2400000
Florida Yamana	1200000	0	1200000

[9] Table 4 Source: self made.

El Salvador/Freeport	1250000	1050000	2300000
Andina	750000	0	750000
Anglo American Los Bronces	3750000	0	3750000
Others	4800000	6300000	11100000
	37900000	10500000	48400000

10

On the other hand, according to the Benchmark 2019 (first semester) made to the industry and which considers the bidding process and / or in the process of bidding process that are inserted in the defined target market for our Company, they show to date, the existence of a demanding tendency on the part of the clients of the areas of directional drilling, in this type of drilling still being a new solution in the market it is seeing alternatives to direct awards using funds for innovations with different mining companies.

4.10 Conclusions.

- The drilling industry that provides services to mining is an attractive industry product of the large volume of sales in terms of meters to be drilled, profitability rates above 20% and growth rates that are above 15% in periods of great demand.

- The target market defined for our drilling company, indicates that the mine operations area of the mining companies, present an interesting demand for specialized technical drilling, product of the operational continuity needs of the deposits and segment that is being changed. Open pit mines to Chuquicamata type underground block caving mines.

- The directional drilling industry is still in a stage of development and growth in Chile, with greater technological requirements to drill at greater depths. A large increase in the demand for directional drilling is estimated both in the surface and

[10] Table 5 Source: self made.

underground e in the future, especially in the area where obtaining permits to drill and build platforms is becoming more complicated every day.

5 BUSINESS MODEL AND STRATEGY

5.1 Description of the company and Internal Analysist

Arctic Drilling Company Oy Ltd was founded in 2004 as a drilling company that has been established in the Finland to provide drilling services for the mining industry. ADC operates in the drilling services business and manufactures underground drilling machines and surface for sale in the international market. The subsidiary Arctic Drilling Company Chile was founded in 2013 and has been in the Chilean market since that date, 2017 started with a new company in Chile, with which it started operating services since January 2017.

5.2 Company values

Innovation and customer orientation

The company's first objective is to be a pioneer in the development of technological and work practices in the drilling industry. Meet the needs of our customers around the world even in extreme conditions.

Responsibility:

Be responsible for social responsibility when creating new jobs through the growth of the company, pay taxes and work reliably with all parties interested in local legislation.

In the development of products and research, we seek a close collaboration with mining companies as well as universities and research institutes. We strive to develop staff with respect for individuals, rewarding results and treating everyone equally.

Cost effectiveness and sustainable development

The company's objective is continuous growth with good profitability and a constant cash flow that allows us to pay dividends. Compliance with the principles of sustainable development and environmental management is a very important starting point for the long-term success of the company.

5.3 The SWOT Analysist

The SWOT analysis is one of the most popular analyzes, which helps the company identify Strengths, Weaknesses, Opportunities and Threats. In the analysis, the existence of the company is examined in the light of internal and external factors. The internal factors are the factors that company can influence are the strengths and weaknesses. Strengths help the company succeed and achieve goals and objectives. The weaknesses are the opposite of strengths and prevent the company from achieving the objectives and goals.

The main objective of the SWOT analysis is to define the strategies that will develop a specific business model company that best adapts to the company's resources and capabilities for the demand of the operating environment. The different possible strategies are compared with other strategies and the set of strategies that will create and maintain a competitive advantage is identified.

5.4 Swot analysist Arctic Drilling Company Chile

Strenght
□ High investment and product development and innovation.
□ Strict commitment to develop new and better solutions.
□ Culture of Change, quick answers and solutions.
□ Bold and agile decision making.
□ Finnish Technological Background, with high valuation and acceptance in the Chilean market
□ Know how in the manufacture of drilling equipment
□ Technical, Financial and Patrimonial Support Headquarters

□ Portfolio of active Clients worldwide
□ Advantage Manufacturer Drilling Equipment & Services

Oportunities
□ Emerging markets and mining development, especially underground drilling
□ Develop and internalize the basic requirements of the industry.
□ Complementation with the Safety and Environment Regulations.
□ The interest of mining companies in innovation and technology to improve productivity has increased due to lower copper concentrations.
□ Changes in the market, increase in the search for special drilling solutions such as underground drilling and directional.

Weakness
□ Lack of local experience as a company, in participation processes of selection and contracting of Mining.
□ Division of tasks and objectives among executives of the company not yet clearly identified.
□ Company in the process of being widely known by the market, not yet massively identifiable.
□ Lack of large clients / projects, that rely on ADC in Chile.
□ Availability of equipment for deep diamond.
□ Low experience in drilling deep drilling, in diameters usually used in the local market.

Threats
□ Industry cycles, with prices of services to the downside.
□ Cloning of technical solutions developed by ADC.
□ Operational and Capital Financing, insufficient
□ Limited resources, to face market commitments.
□ Search and Selection of highly qualified personnel for short-term contracts.
□ Risk of the key person (Key person risk).
□ Industry with high exposure to accident risk.
□ Excessive supply of equipment available generates a tendency to offer economic services that distort the market and the prices of services. This condition generates a differentiating element, which has no relation with the qualities and technical conditions of the bidders.

6 MARKETING PLAN.

The main objectives for our Marketing Plan are the following:

- Award the minimum number of contracts in the year that allow compliance with the sales plan.
- Have a portfolio of prospects and an adequate success rate to meet sales targets.
- Close relationship with clients must be maintained in order to anticipate and have a timely offer.
- Positioning: Arctic Drilling Company in Chilean market.
- To be recognized by the main clients for our differentiated proposal regarding our technical strengths and innovations.
- The price of our service will be above the market average, while maintaining the level of competitiveness required.

- Customer satisfaction will be our main operational objective.
- Expecting direct awards for innovations and for special solutions.
- Cost effectiveness
- Economic profitability.
- Financial profit.
- Market share.

Enter with an initial participation of 2% of the target market for underground drilling and for year 3 it is expected to reach at least 12% of the target market share without losing sight of the approach. Directional drilling is estimated to enter with a share of 17% of the target market and reach at least 35% of the target market.

6.1 Strategy of market segmentation.

As it has been established to use a competitive strategy of differentiation approach, it is necessary to implement a strategy of market segmentation, with the purpose of capturing business opportunities in limited times; of the above, it is necessary to establish the market to which the service will be directed, our offering corresponds to the macrosegment of the Major Mining in Chile in the table number 6 and 7 It shows the clients and market size for both target markets.

TABLE N° 6

Directional Drilling

CLIENT	DDH	TOTAL (m)
CHUQUICAMATA	0	0
ESCONDIDA	0	0

AMSA	3000	3000
EMSA	3000	3000
CODELCO GEX	3000	3000
GOLDFIELDS		0
NEWMONT	0	0
FREEPORT	3000	3000
TENIENTE	0	0
LUNDIN	0	0
OTHERS	6000	6000
	18000	18000

[11]

TABLE N° 7

Underground drilling

CLIENT	DDH UG	TOTAL (m)
Teniente GOBM	16000	16000
Chuquicamata	15000	15000
Teniente NNM	20000	20000
Teniente GPRO	20000	20000
Candelaria	24000	24000
Peñon Yamana	20000	20000
Florida Yamana	10000	10000
El Salvador	5000	5000

[11] Table number 6 Source: self made.

Andina	3000	3000
Anglo American Los Bronces	15000	15000
Otros	40000	40000
	188000	188000

[12]

Subsequently, micro segmented; that is, we will identify in each client the users and decision makers that will allow the sale to be finalized; Therefore, the sales work plan should focus mainly on generating a work agenda with the users of the major mining companies, such as the Superintendents of Geology and Geotechnics, along with the Mining Resources and Development Managers. In addition, closeness should be established with the decision makers: Supply Directors; Advisers to mining companies, generating ties of closeness and trust to access relevant information, existing needs, new requirements, feedback from bidding processes and others.

6.2 Estimation of Demand and Growth.

To estimate the demand of the target market, the estimate is made based on information from the budgets of customers of the large mining industry for exploration projects; On the other hand, this information is complemented with the information gathered from the bidding processes and current contracts in execution. For the year 2019, a potential market of 188,000 meters is estimated in underground drilling where it is expected to capture a 1.7% market share with the award of one or two projects that contemplate max a total of 5,000 meters of drilling. For directional drilling estimating the demand is more complex because it is a new service in the market in any case it is estimated for 2019 a potential market of 18,000 meters, it is expected to capture a 17% stake for the year 2019 with one or two projects test. Next, in Table No. 8 the projection of growth and the increase of market share is shown.

[12] Table number 7 Source: self made.

TABLE N° 8

Estimation of Demand and Growth.

DDH UNDERGROUND						
		Year 1	Year 2	Year 3	Year 4	Year 5
Market Growt Estimated	%		5 %	5 %	5 %	5 %
Market Size meters	mt	188000	197400	207270	217634	228515
Partitipation objetive Market	%	1,70 %	4,86 %	9,26 %	13,23 %	21,01 %
Minimun Meters	mt	3200	9600	19200	28800	48000
Projection Growth Income	%		300 %	200 %	150 %	167 %
Anual Income	USD	646400	1939200	3878400	5817600	9696000

TABLE N° 9

DIRECTIONAL DRILLING						
Market Growt Estimated	mt	18000	21600	25920	31104	37325
Market Size meters	%		20 %	20 %	20 %	20 %
Participation objective Market	%	17 %	28 %	35 %	48 %	48 %
Minimum Meters	mt	3000	6000	9000	15000	18000
Projection Growth Income	%		200 %	150 %	167 %	120 %
Annual Income	USD	1050000	2100000	3150000	5250000	6300000
Anual Income Total	USD	1696400	4039200	7028400	11067600	15996000

[13]

[13] Table number 8 Source: self made.

6.3 Price Strategy.

The pricing strategy is basically defined by the form of sale that the industry has, which in most cases involves bidding processes, where costs must be opened to the client; According to the above, the strategy consists of establishing a price that considers the costs plus a margin in the range between 15% to 30% of the total costs of the service.

The level of margin will depend on the following aspects of the quote: project duration, number of meters to be drilled, technical requirements, competitors of the process and the strategic importance of the client to ADC.

The price will be determined based on the costs involved in the technical requirements of the drilled meters plus the margin; however, and as a result of the adopted competitive strategy "focus on differentiation and specializing", this will be higher than the price offered by 80% of the competitors and lower than the competitors that maintain a high fixed costs in the attributes evaluated in the positioning and where ADC intends to locate (high standards in security, quality and specialized drilling.). In parallel, the market will be continuously monitored in order to evaluate the behavior of prices in the industry.

From the above, the price and its differentiation with the competition will depend on the costs considered and the level of margin that we want to capture. The most important components to consider are the degree of efficiency in controlling cost, productivity that we can increase by new technology and how value we can create to the customer. Prices offering directional core drilling will be higher than conventional drilling, but of the advance of the technology client has an advance in reducing their costs in total exploration budget. Underground drilling with our advance technology we can offer lower prices than the competition because we win by incising the productivity drilling more meters monthly than the competition.

As directional drilling is a new product in the market, we need to use penetration pricing strategy to first penetrate to the market. We will be offering penetrating prices that are lower than normal to show the clients our quality of our product and extra value they will get to using our product.

The Table 10 shows the reference prices for tenders according to the estimated number of meters to be drilled per month.

TABLE N° 10

Price Determination by Service Provided.

Drill Type		Service		(meters/monthly)	Price (usd/mt)
UG75 ADC	GEOLOGY	UG DRILLING	DDH	1.200	205
UG75 ADC	PRODUCTION FH.	UG DRILLING	DDH	800	205
AZIWELL ADC	EXPLORACION	DIRECTIONAL	DDH	900	350

[14]

The payment conditions for this service are very similar throughout the industry and in

the majority of cases consists of issuing a "payment status" at the end of the month of execution of the service; Once approved, the invoice is generated, which has a credit condition for payment in 30 - 60 days.

6.4 Sales Strategy.

To carry out the sale of these services, General Manager and Operations Director, both professionals with extensive experience in the drilling industry, who will have as main objective the development of the new business of Arctic Drilling Company in Chile, specifying business opportunities through its network of contacts, attracting new clients,

[14] Table number 10 Source self made

actively participating in bids, awarding contracts and supervising commercially the contracts in execution.

On the other hand, Director of Operation will manage the portfolio of new prospects, through electronic purchase portals of different clients, such as Achilles, CODELCO's purchasing portal. which you must register as business opportunities. Subsequently, this information will be sent to the General Manager and Operations Director, so that depending on the degree of complexity and importance of the preparation of the proposals (quotations / bids). In addition, both Managers (General and Operations Director) in their capacity of, will lead and participate actively in the technical-economic preparation of the proposals, technical presentations to the clients with the competitive advantages of the service delivered by the company and direct negotiation with the clients (decision makers) for the closing of the business.

It should be noted that ADC in international operation and its current operations director in Chile both have important contact networks, which often generate direct requirements and therefore this sales mechanism should not be ruled out.

6.5 Promoting Strategy.

To promote the sale, the following actions will be considered:

- Manage the entrance to Purchase Portals of the different mining companies.
- Manage the incorporation and update of the offer of services in Directories of Mining Companies.
- Generate activities of Advertising in Seminars and technical conferences such as PDAC (Congress of Explorations of the world's largest Toronto), EXPOMIN (Mining Expo in Santiago Chile) CHILE EXPLORE CONGRESS (Exploration Congress of Santiago de Chile), SEG, EXPONOR.

6.6 Marketing Budget.

The marketing budget will be associated with the activities of sales and promotion of the service, where the main expense corresponds mainly to the activities related to the (General Managers and Director of Operaciones), their trips, stays, food, meetings of work, rent of vehicles for transfer; the subscription in the shopping portals of the different mining companies and participation in the fairs and seminars. It is worth mentioning that ADC is a member in Mining Finland that is a finland government fund that supports Finnish companies in growth, seminars such as Exponor, Expomin and PDAC are free for society.

In Table Nº 11 the Marketing Budget is identified for the evaluation horizon of 5 years.

TABLE N° 11

		2019	2020	2021	2022	2023
Travel expenses and reprsentacion	USD	3000	3000	3000	3000	3000
Sales portals subscriptions	USD	1500	1500	1500	1500	1500
Participation in fairs	USD	10000	10000	10000	10000	10000
Total Marketing Budget	USD	14500	14500	14500	14500	14500

[15]

7 OPERATIONAL STRATEGY PLAN

The Operations Plan of the ADC, considers in the first place the development of an operations strategy focused on the technical requirements of the clients and what ADC

[15] Table number 11 Source: self made.

has to offer. being necessary to consider the following variables: type and scopes of the service, clients (solutions), execution and sale of the service, market, price, logistics, HR, support activities (Administration, Finance, HR, etc.) and partner network.

To execute the Interior mine services, ADC must incorporate equipment and technology that allow drilling under the mechanisms of underground drilling in depths up to 1200 meters, for diameters NQ, HQ; with high safety standards. The drilling rigs considered are ADC UG110Kw equipment. (Manufactured by ADC Finland Headquarters) To this, all drilling supplies (rods, bits, etc.) and all support equipment must also be considered.

To execute the directional drilling services, it is necessary to consider one drilling equipment that arrives to drill up to 2500m deep holes (Manufactured by ADC Finland Headquarters). Also consider all drilling supplies. Critical drilling tool is Azidrill directional drilling tool. ADC has a global trade agreement with the Aziwell company of leasing the Azidrill tools. The purchase of a drilling machine from other suppliers of drilling equipment such as Boart Longyear, Atlas Copco, EDM and Sandvik will also be evaluated. For the first projects of directional drilling there is also the possibility of renting drilling equipment for deep drill holes.

The operations of ADC, account facilities in the city of Santiago (Headquarters ADC Chile), provided with all the necessary services for the proper functioning of the workshop: everything necessary to store equipment and perform maintenance. Everything necessary for administration such as telephony, fiber optics, internet etc. Regarding the on-site workshop for the storage of machinery and maintenance, the feasibility of leasing a site-workshop in the sector where the functions of potential projects are being practiced will be evaluated at the time.

7.1 Key Resources.

The key resources considered necessary for the drilling service are the following:

- Financial Resources: Own Financial Capital and Head Office, processing of bank credit lines (guarantee slips, current accounts, lines of credit, working capital, etc.).

- Physical Resources: Drills, drilling consumables (bits and drill rods), tools, support equipment for the operation (water tank, trucks, boom truck, crane truck, welding

machines, generators, 4x4 trucks, lighting towers, work site installation (office containers, exchange house, chemical toilets), staff transfer buses, land for storage and maintenance of machinery and equipment.

- Resources associated with authorizations and legal permits: Initiation of sernageomin activities, workday permits, etc.

- Human Resource Key: General Manager and Operations Director, Manager of Operations, Technical Drilling Manager, Maintenance Manager with vast experience in the drilling industry.

- Operative Human Resource: Contract Administrator, Risk Prevention Advisor, Site Manager, Shift Manager, Driller, Driller Helper, Welder, Mechanical Electrical, Directional Drilling Specialist, Drivers.

- Technological Resources: computer equipment, corporate mail accounts, fixed telephony, cellular and satellite.

7.2 Key Activitities

- Incorporation of all key personnel to the activities.

- Incorporation of all the services and information of the services with all its antecedents to the Purchasing Portals of the Clients, among others.

- Visit customers to inform about the incorporation of new services and technology. Sending of mails with brochure of the new products and services.

- Articulation of networks with key partners to ensure cost and term results.

- Development of drilling equipment in conjunction with headquarters.

- Training of the Human Resource.

- Participation in Quotation processes and Public and / or Private Tenders offered to the market by customers.

7.3 Key Association.

The strategic alliances considered are the following:

- Suppliers of Drilling Equipment Technology: Arctic Drilling Company (Head Office), Boart Long Year, Atlas Copco, Schramm, Sandvik, EDM (Exploration Drill Master).
- Suppliers for rental of drilling equipment: Foraco, Boart Long Year, Terraservice, Sandvik, ADC (parent company)
- Suppliers of drilling supplies: Epiroc, Boart Long Year, Diamantina Christensen.
- Suppliers of light and heavy vehicles: Hertz, Derco, Salfa, New Renta Car
- Suppliers in Instrumentation: Comprobe, Aziwell, Reflex
- Material suppliers: Sodimac, Easy, Ferreteria Enol.
- Spare parts: Hidratec, etc.
- Providers of personal protection equipment and work clothes: Garmendia,
- Service Providers associated with Transportation of personnel (LATAM, Sky, Tur Bus, Pullman Bus, Chile Express, Estaboy), fuel supply (Copec, Petrobras), lease of light vehicles (trucks) and heavy vehicles (trucks), accommodation and feeding. To be defined according to the point of execution of the service.

7.4 Cost structure.

The relevant costs that the development of the service considers are the following:

- Fixed costs:
    - Permanent Staff associated with the Company: General Manager, Operations Director, Drilling Specialist, Maintenance and Purchase Manager, HSEQ Manager, Finance and Administrative Manager.

- Permanent Staff associated in warehouse: Mechanics, Administrative Assistant,
- Leasing/Rent of the Facilities.
- Administration services
- Legal advisor cost
- Bank and insurance cost
- Insurances
- Fixed machinery leasing (Light trucks).
- Computing equipment (hardware and software), fixed internet and mobile phones.

- Variable costs:

  In the context of variable costs, all costs directly related to the execution of a Project are considered:

  - Remuneration and social laws of the personnel associated with the execution of a Project.
  - Security equipment and implements.
  - Support Services.
  - Leasing of drill rigs, vans and support vehicles.
  - Maintenance, Repair & Freight Equipment.
  - Tools & Materials.
  - Drilling tools.
  - Drilling additives.
  - Water drilling.
  - Work tools, measuring instruments.
  - Fuel & Lubricant.
  - Lease Infrastructure for site installation: Office Containers etc.
  - Mobilization for the Transport of Personnel.
  - Passages for personnel transfer.
  - Food (breakfast, lunch, dinner and snacks 12-hour shifts).
  - Accommodation (possibly when you are not staying at the site).
  - Satellite telephony.
  - Financial Expenses (Factoring).
  - Insurances.

8 KEY STAFF OF THE COMPANY

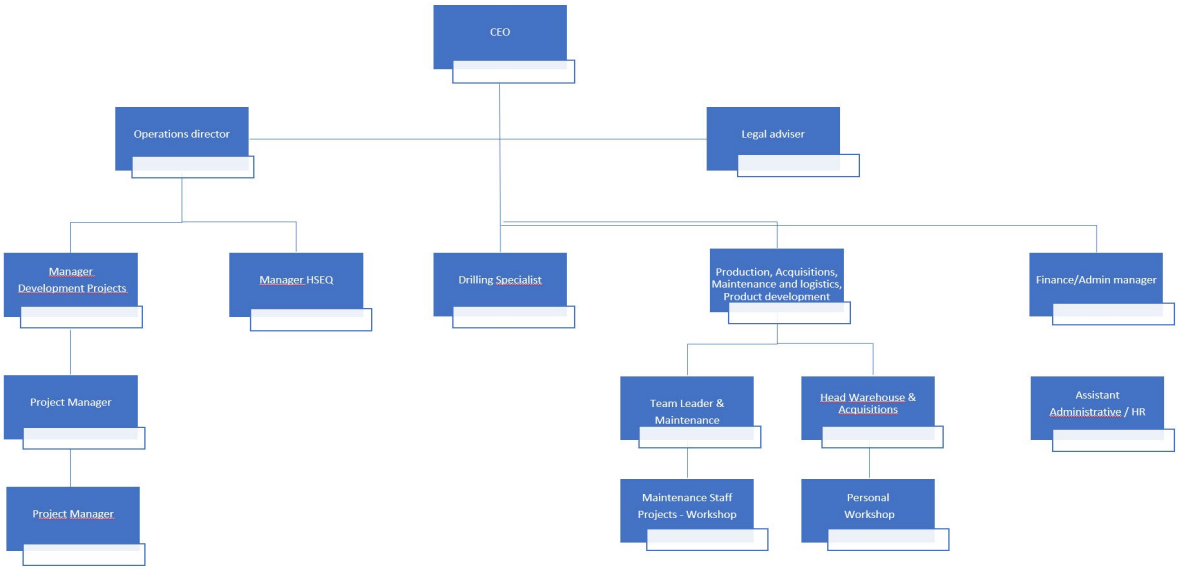
Key personnel of the company are defined by the following positions: General Manager, Operations Director, Maintenance and Purchase Manager and Drilling

Specialist; General Manager ADC Chile as legal representative of the group of the company.

At present, ADC is a Company of Society by actions. Conformed by international capitals with a participation of 2 partners in percentages of 85%, and 15% respectively, 85% corresponding to the parent company Arctic Drilling Company Ltd (Finland) and 15% of Partner (General Manager);

According to the organizational structure of the Business Plan, the company in charge of the ADC Chile drilling service in Chile will report directly to the CEO of the Company, headquarters in Finland. The company in Chile is made up of a General Manager, a Director of Operations, Drilling Specialist, Maintenance and Purchase Manager, Finance and Administrative Manager and HSEQ Manager. In relation to all the Administrative, accounting, financial management, Integrated management system, computing and documentary control; of the society, these will be managed jointly with the 2 positions General Manager and Director of Operations and executed by Finance and Administrative Manager.

Finally, in the matter of incentives for key personnel and society, these are determined by Bonus system associated with Kpi of compliance, which includes bonus for financial results. It is also evaluated to find a local partner of the market, according to the studies of the market to partner with another company that provides drilling services is not in the plans of ADC for the time being.



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9 FINANCIAL PLAN.

9.1 Assumptions for the financial plan

The development of the Financial Plan mainly considers the following assumptions: estimation of market growth, size of the target market and % of participation that is intended to be achieved in the target market, number of meters to be awarded and projection of revenue growth in the evaluation period 5 years.

It is necessary to mention that this type of business and its economic recovery is mainly sensitive to the demand for meters to be awarded annually and the associated price; variables that are related in turn directly to the market share and that determine the revenue line of the cash flow. In the same sense, to reach the estimated income is essential to have the capacity of drilling and% of use of the machinery to meet these estimates, so the drill rig is calculated based on compliance with the objective's financial charters for society ADC Chile SpA.

[16] ADC Chile organization's target state Source: self made.

- Depreciation with linear method in 3 years for machinery.
- The tax rate remains constant throughout the evaluation horizon (27%).
- The project is evaluated at 5 years.
- Cash flow estimated by indirect method.
- Working capital will be financed with depth 10% yearly interest rate.
- Machinery will be financed with debt 4% yearly interest rate.
- 3 year depth time.
- Average drill meter rate is estimated to be 283 USD / Meter.
- Yearly changes in the drill rates is not being considered.

9.2 Results of financial analysis.

Based on the assumptions made, the Income Statement shows a positive EBITDA in the year corresponding to the second year of evaluation of 640 163,66 USD and a Positive Cash Flow in the third year of evaluation (2020) of $ 91 929,86 USD.

- The Net Present Value of the Project (NPV) reaches a 2 050 230,77 USD
- The Internal Rate of Return (IRR) is 239 %
- Loan left after 5 years 1 906 809 USD.

9.3 Investment Plan

To start the activities, the company requires an initial capital of 100 000 USD these amounts will be invested in:

Working capital to operate the first year, and incorporation of the company other intangibles an total amount of 100.000 USD

Investment plan for the drill machinery

Year 0 = 1 UG Total investment 450 000 USD

Year 1 = 1 DEEP Total investment 650 000 USD

Year 2 = 1 UG Total investment 450 000 USD

Year 3 = 1 UG + 1 DEEP Total investment 1 100 000 USD

Year 4 = 2 UG + 1 DEEP Total investment 1 550 000 USD

Total investment in 4 years: 4 200 000 USD

Light vehicle leasing, drilling tool investments are all included in the operational and administration costs.

10 RISK ANALYSIS

Financing and Flexibility Risks (Internal Risk), related to the important investments that must be made in the acquisition of drilling equipment and drill supplies; to which we must add the high requirements of working capital for this type of industry.

Working Capital Risks (Internal Risk). The risks associated with working capital are high, due to the high costs of salary itemization, drilling and production inputs, materials, payment policies by constituents for services, tax payments and imponderables.

Project Continuity and Adjudication (External Risk). This point is key since the fact of not having projects in execution implies the fact of financing all the fixed costs that are composed mainly of equipment acquired by leasing and administrative and sales expenses.

Specialized Human Resources (Internal Risk). Within the envelope, there are jobs that have a certain difficulty in their recruitment, such as Contract Managers, Supervisors or Shift Managers, in addition to drill operators; this due to the specificity and importance of its functions.

Key person risk (Internal Risk) occurs when a business or business unit becomes heavily reliant on a key individual(s). Although this risk is typically found in small to medium enterprises (SMEs), it occurs in companies of all scales. As it is in this business.

An insider threat (Internal Risk) malicious threat to an organization that comes from people within the organization, such as employees, former employees, contractors or business associates, who have inside information concerning the organization's security practices, technological information. The threat may involve fraud, the theft of confidential or commercially valuable information, the theft of intellectual property, or the sabotage.

Labor Security (Internal Risk). Given that in this industry accident risks are common and their severity rates are high, it is extremely important to maintain a safety standard of "0" accident rate.

Mechanical Equipment Availability (Internal Risk). The mechanical availability of equipment is directly related to the maintenance standards and the availability of these resources that are what ultimately generate the income to through the operation, for which any unexpected failure generates delays, increase in cost and with it decrease in profitability.

Unionization (Internal Risk). Given that this area is intensive in human resources, the risks of unionization are high. Historically, this industry has seen important strikes, which are decisive in delaying the execution of Projects directly affecting the profitability of the companies that are the principal and collaborators, to which the image damage must be added with the consequent risk of affecting the sustainability of the business.

Copy of innovation and technology (External Risk). Given that ADC strength is innovation and the local competitions are known to innovation through copying solutions, there is a high risk of copying the equipment’s that ADC manufactures.

Corruption between clients and competitors (External Risk) dishonesty or criminal activity undertaken by a person or organization entrusted with a position of authority, often to acquire illicit benefit. May include in activities when awarding the contracts including bribery and embezzlement.

11 CONCLUSION

The current context of the exploration drilling industry requires collaborating companies with a different vision in the form of executing services, where integration of high technical innovations to reduce the total cost of the exploration drilling is very well seen. Future trend in exploration also in Chile is drill deeper, in underground drilling customers are looking greater productivity, increase in productivity will be favored. Execution of works with a methodology that means less endowment and / or exposure. ADC has a comprehensive advantage to provide drilling services and also developing drilling machinery.

Arctic Drilling Company possesses the financial and human resources, capabilities and competencies necessary to enter the drilling industry in Chile. ADC has a huge advance in technology in specialized drilling. Every day increasing need for underground and deep hole drilling opens an interesting market to ADC in Chile.

Chilean local competition companies still make barriers to entry to the market, that is their only way as they are decades behind in technology and productivity. Mining companies are forced to look for more productivity as the mines faces more complex problem everyday as the mines mineral laws are decreasing every day.

The risks when drilling deeper are higher as the operational risk increased as you have more tools in the hole and deeper drilling needs specialized work force. Drilling costs in Chile are generally higher than in other markets, but with good risk management Chile is an interesting and manageable market for ADC.

In this sense, ADC would be in a position to achieve the proposed market shares within a 5-year horizon, which would allow it to capture 21% of the underground drilling market and 48% of the directional drilling market. Carrying out the financial analysis, a positive net present value of $ 2.2M USD is observed, with an internal rate of return of 230.0%, which gives shareholders an interesting project and expects paybacks.

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13 ANNEX

13.1.1 Annex 1: Total of competing companies

DRILLING COMPANIES IN CHILE											
		Drill Rigs									
Nº	COMPANY NAME	SURFACE	UNDERGROUND	DDH	RC	WATER	TOTAL RC+ WATER	SONIC	ACTUALLY OPERATIVE	CHILE	%
1	GEOTEC BOYLES	65	10	75	12	8	20	0	**35**	95	37 %
2	TERRASERVICE	10	3	13	10	4	14	0	**12**	27	44 %
3	PRO DRILLING	13	0	13	4	0	4	0	**11**	17	65 %
4	BOART LONGYEAR	40	17	57	6	2	8	4	**17**	65	26 %
5	AK DRILLING	6	8	14	3	0	3	0	**11**	17	65 %
6	SOLETANGE BACHY	7	7	14	4	0	4	0	**8**	18	44 %
7	GRIFFITH DRILLING	10	0	10	1	0	1	0	**8**	11	73 %
8	GEOROCK	5	10	15	0	0	0	0	**13**	15	87 %
9	MINERAL DRILLING	8	0	8	5	0	5	0	**3**	13	23 %
10	AC PERFORACIONES	12	0	12	3	0	3	0	**8**	15	53 %
11	BOGGIONI & BOGGIONI	0	5	5	0	0	0	0	**4**	5	80 %
12	FORACO DRILLING	25	0	25	5	0	5	0	**5**	30	17 %
13	ORBIT GARANT	7	5	12	0	7	7	0	**8**	19	42 %
14	IMOPAC	9	0	9	4	0	4	0	**3**	13	23 %
15	MOUNTAIN DRILLING	5	0	5	0	0	0	0	**3**	5	60 %
16	ICEM-SALFA	6	5	11	0	0	0	0	**10**	11	91 %
17	MAJOR DRILLING	32	7	39	10	0	10	0	**6**	49	12 %
18	PERFOCHILE (carmona)	0	0	0	8	0	8	0	**2**	8	25 %
19	SUPEREX	7	0	7	0	0	0	3	**1**	7	14 %
20	DV DRILLING	9	0	9	1	3	4	0	**4**	13	31 %
21	GEO-SUD DRILLING	4	0	4	0	0	0	0	**1**	4	25 %
22	DIAMOND DRILLING	2	3	5	0	0	0	0	**1**	5	20 %
23	IN SITU CORE	3	0	3	0	0	0	0	**0**	3	0 %
24	GEODRILL	5	0	5	0	0	0	0	**2**	5	40 %
25	ARCTIC DRILLING	2	0	2	0	0	0	0	**1**	2	50 %
26	ENERGOLD (ORO ENERGY)	0	0	0	1	0	1	0	**0**	1	0 %
27	CAPITAL DRILLING	0	0	0	2	0	2	0	**0**	2	0 %
28	ESP (Ecominera-Arg)	2	0	2	0	0	0	0	**0**	2	0 %
29	GEO-OPERACIONES	11	3	14	5	0	5	0	**4**	19	21 %
30	PERFOMIN (ossandon)	2	0	2	6	0	6	0	**1**	8	13 %
31	MASTER DRILLING (GENESIS)	8	0	8	0	0	0	0	**0**	8	0 %
32	ANDINOR	0	0	0	0	8	8	0	**4**	8	50 %
33	POZOS PROFUNDOS	0	0	0	0	4	4	0	**3**	4	75 %
34	ORETEST (BIG BEAR)	3	0	3	0	0	0	0	**1**	3	33 %
35	WOLF DRILLING	5	0	5	0	0	0	0	**2**	5	40 %
36	R. MUNOZ	5	0	5	6	3	9	0	**3**	14	21 %
37	BLUE SPEC	4	0	4	2	0	2	0	**0**	6	0 %
38	PERFOCUYO	6	2	8	0	0	0	0	**4**	8	50 %
39	SYNERGY DRILLING	1	0	1	0	0	0	0	**0**	1	0 %
40	GEOSUPPLY	2	0	2	0	0	0	0	**2**	2	100 %
	TOTAL	**341**	**85**	**426**	**98**	**39**	**137**	**7**	**201**	**563**	**36 %**

13.1.2 Annex 2: Investment in Chilean mining - Portfolio of projects 2018 – 2027

Puesta en marcha	Proyectos	Operador	Sector minero	Región	Tipo de Proyecto	Condición	Etapa de desarrollo	Estado permisos amb.	Inversión (MMUS$)
2018-2022	**OTROS PROYECTOS DE DESARROLLO**	Codelco Chile	Estatal - Cu	Varias	Reposición	BASE	Ejecución	EIA aprobado	**2.907**
2018-2022	**PROYECTOS FURE**	Codelco Chile	Plantas Met.	Varias	Reposición	BASE	Ejecución	EIA aprobado	**1.972**
2018-2022	**TRANQUES**	Codelco Chile	Estatal - Cu	Varias	Reposición	BASE	Ejecución	EIA aprobado	**1.380**
2018-2022	**PROYECTOS DE INFORMACIÓN**	Codelco Chile	Estatal - Cu	Varias	Nuevo	POSIBLE	Factibilidad	N/A	**1.375**
2018	**PROYECTO DE AMPLIACIÓN MOLYNOR**	Molynor	Plantas Met.	Antofagasta	Expansión	BASE	Ejecución	EIA aprobado	**240**
2018	**CANDELARIA 2030**	CCM Candelaria	Gran Min. - Cu	Atacama	Reposición	BASE	Ejecución	EIA aprobado	**460**
2019	**MARIPOSA**	Admiralty Minerals Chile PTY LTD	Hierro	Atacama	Nuevo	BASE	Ejecución	EIA aprobado	**70**
2019	**AMPLIACIÓN PLANTA LA NEGRA - FASE 3**	Rockwood Litio Ltda.	Litio	Antofagasta	Expansión	BASE	Ejecución	EIA aprobado	**300**
2019	**PLANTA DIS. Y REF.PEDRO DE VALDIVIA**	SQM Nitratos S.A.	Min. Ind.	Antofagasta	Reposición	BASE	Ejecución	EIA aprobado	**140**
2019	**CHUQUICAMATA SUBTERRÁNEA**	Codelco Div. Chuquicamata	Estatal - Cu	Antofagasta	Reposición	BASE	Ejecución	EIA aprobado	**5.554**
2019	**ORCOMA**	SQM	Min. Ind.	Tarapacá	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**230**
2019	**COLLAHUASI INST. COMPL. 170 KTPD**	Doña Inés de Collahuasi	Gran Min. - Cu	Tarapacá	Expansión	PROBABLE	Factibilidad	EIA aprobado	**302**
2019	**PLAYA VERDE**	Copper Bay	Med. Min. - Cu	Atacama	Nuevo	PROBABLE	Factibilidad	EIA presentado	**95**
2020	**AMPLIACIÓN SALAR DEL CARMEN**	SQM Salar S.A.	Litio	Antofagasta	Expansión	BASE	Ejecución	EIA aprobado	**180**
2020	**SPENCE GROWTH OPTION**	Pampa Norte	Gran Min. - Cu	Antofagasta	Nuevo	BASE	Ejecución	EIA aprobado	**3.300**
2020	**DESEMB. CONC. MANTOS BLANCOS**	Mantos Copper	Gran Min. - Cu	Antofagasta	Expansión	BASE	Ejecución	EIA aprobado	**181**
2022	**DIEGO DE ALMAGRO**	CM Sierra Norte S.A	Med. Min. - Cu	Atacama	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**597**
2020	**AMP. MARG. LOS PELAMBRES FASE I**	Minera Los Pelambres	Gran Min. - Cu	Coquimbo	Expansión	PROBABLE	Factibilidad	EIA aprobado	**1.050**
2020	**LIXIVIACIÓN DE CONCENTRADOS**	Ecometales Limited	Plantas Met.	Antofagasta	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**370**
2020	**SALARES NORTE**	Gold Fields Salares Norte SpA	Oro	Atacama	Nuevo	POSIBLE	Factibilidad	EIA presentado	**1.000**
2020	**PRODUCCIÓN DE SALES MARICUNGA**	SIMCO SpA	Litio	Atacama	Nuevo	POSIBLE	Factibilidad	EIA presentado	**350**
2021	**TRASPASO MINA-PLANTA**	Codelco Div. Andina	Estatal - Cu	Valparaíso	Reposición	BASE	Ejecución	EIA aprobado	**1.321**
2021	**DESARROLLO MANTOVERDE**	Mantos Copper	Gran Min. - Cu	Atacama	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**832**
2021	**NUEVA ESPERANZA - ARQUEROS**	Laguna Resources Chile	Oro	Atacama	Nuevo	POSIBLE	Factibilidad	EIA presentado	**250**
2021	**CERRO MARICUNGA**	Atacama Pacific Gold	Oro	Atacama	Nuevo	POSIBLE	Factibilidad	Sin EIA	**587**
2021	**RAJO INCA**	Codelco Div. Salvador	Estatal - Cu	Atacama	Expansión	POTENCIAL	Prefact.	Sin EIA	**817**
2021	**PRODUCTORA**	SM El Águila Ltda.	Med. Min. - Cu	Atacama	Nuevo	POTENCIAL	Prefact.	Sin EIA	**725**
2022	**DESARROLLO DISTRITO CENTINELA (*)**	Minera Centinela	Gran Min. - Cu	Antofagasta	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**4.350**
2022	**CONTINUIDAD OPERACIONAL ZALDÍVAR**	CM Zaldívar SpA	Gran Min. - Cu	Antofagasta	Reposición	PROBABLE	Factibilidad	EIA presentado	**100**
2022	**SANTO DOMINGO**	Santo Domingo SCM	Gran Min. - Cu	Atacama	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**1.700**
2022	**QUEBRADA BLANCA HIPÓGENO**	CM Teck Quebrada Blanca	Gran Min. - Cu	Tarapacá	Nuevo	PROBABLE	Factibilidad	EIA aprobado	**4.700**
2022	**AMP. CARBONATO DE LITIO A 180 KTPA**	SQM Salar S.A.	Litio	Antofagasta	Expansión	POSIBLE	Factibilidad	EIA presentado	**450**
2022	**LA COIPA FASE 7**	Kinross Minera Chile Ltda.	Oro	Atacama	Reposición	POSIBLE	Factibilidad	EIA aprobado	**200**
2022	**SIERRA GORDA EXPANSIÓN 230 KTPD**	Sierra Gorda SCM	Gran Min. - Cu	Antofagasta	Expansión	POSIBLE	Factibilidad	EIA aprobado	**2.000**
2022	**AMP. MAR. LOS PELAMBRES FASE II**	Minera Los Pelambres	Gran Min. - Cu	Coquimbo	Expansión	POSIBLE	Factibilidad	Sin EIA	**500**
2022	**EL ESPINO**	Pucobre	Med. Min. - Cu	Coquimbo	Nuevo	POSIBLE	Factibilidad	EIA aprobado	**624**
2022	**NUEVA PAIPOTE**	Fundición Hernan Videla Lira	Plantas Met.	Atacama	Expansión	POSIBLE	Factibilidad	Sin EIA	**646**
2023	**NUEVO NIVEL MINA**	Codelco Div. El Teniente	Estatal - Cu	O'Higgins	Reposición	BASE	Ejecución	EIA aprobado	**3.926**
2023	**NUEVAUNIÓN FASE I**	NuevaUnion SpA	Gran Min. - Cu	Atacama	Nuevo	POTENCIAL	Factibilidad	Sin EIA	**3.500**
2023	**DOMINGA**	Andes Iron SpA	Hierro	Coquimbo	Nuevo	POTENCIAL	Factibilidad	Sin EIA	**2.888**
2024	**SULFUROS RT FASE II**	Codelco Div. Radomiro Tomic	Estatal - Cu	Antofagasta	Nuevo	POSIBLE	Factibilidad	EIA aprobado	**2.154**
2026	**EL ABRA MILL PROJECT (e)**	CCM El Abra	Gran Min. - Cu	Antofagasta	Nuevo	POTENCIAL	Factibilidad	Sin EIA	**5.000**
2026	**NUEVAUNION FASE II y III**	NuevaUnion SpA	Gran Min. - Cu	Atacama	Nuevo	POTENCIAL	Factibilidad	Sin EIA	**3.700**
2026	**EXPANSIÓN ANDINA**	Codelco Div. Andina	Estatal - Cu	Valparaíso	Expansión	POTENCIAL	Prefact.	Sin EIA	**2.725**
								Total de la Inversión de la cartera de proyectos 2018 – 2027 (MMUS$)	**65.747**

13.1.3 Annex 3. Cash flow Year 01 – Year 05

YEARLY GROWT			252 %	181 %	155 %	151 %
METER RATES AVERAGE		283	283	283	283	283
RIGS		1 UG + 1 Rent	1 UG + 1 DEEP	2 UG 1 DEEP	3 UG 2 DEEP	5 UG 3 DEEP
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
DRILLED METERS		6200	15600	28200	43800	66000
TURNOVER		1 754 600,00 USD	4 414 800,00 USD	7 980 600,00 USD	12 395 400,00 USD	18 678 000,00 USD
OPEX		-1 375 144,22 USD	-3 168 651,85 USD	-5 164 667,38 USD	-9 486 515,11 USD	-14 164 016,04 USD
ADMIN AND IMPLEMATION COST		-390 908,31 USD	-605 984,49 USD	-776 652,56 USD	-776 652,56 USD	-998 452,56 USD
EBIDTA		-11 452,53 USD	640 163,66 USD	2 039 280,06 USD	2 132 232,33 USD	3 515 531,40 USD
FINANCE COST DRILL RIGS		-18 000,00 USD	-38 233,73 USD	-43 985,61 USD	-73 894,88 USD	-112 222,76 USD
DEPRECIATION DRILL RIGS		-150 000,00 USD	-366 666,67 USD	-516 666,67 USD	-733 333,33 USD	-1 033 333,33 USD
BEFORE TAXES		-179 452,53 USD	235 263,27 USD	1 478 627,79 USD	1 325 004,12 USD	2 369 975,31 USD
TAXES (27%)		0,00 USD	-63 521,08 USD	-399 229,50 USD	-357 751,11 USD	-639 893,33 USD
AFTER TAXES		-179 452,53 USD	171 742,19 USD	1 079 398,28 USD	967 253,01 USD	1 730 081,97 USD
DEPRECIATION DRILL RIGS		150 000,00 USD	366 666,67 USD	516 666,67 USD	733 333,33 USD	1 033 333,33 USD
LOAN DRILL RIGS	450 000,00 USD	650 000,00 USD	450 000,00 USD	1 100 000,00 USD	1 550 000,00 USD	
AMORTIZACION DRILL RIG		-144 156,84 USD	-306 202,96 USD	-352 268,13 USD	-591 802,94 USD	-898 759,97 USD
WORKING CAPITAL	100 000,00 USD	-33 333,33 USD	-33 333,33 USD	-33 333,33 USD		
INVESTMENT DRILL RIGS	-450 000,00 USD	-650 000,00 USD	-450 000,00 USD	-1 100 000,00 USD	-1 550 000,00 USD	
CASH FLOW	100 000,00 USD	-206 942,71 USD	198 872,56 USD	1 210 463,49 USD	1 108 783,40 USD	1 864 655,34 USD
NPV 5 YEARS	2 050 230,77 USD					
IRR	239 %					
ACUMULATED CASH FLOW	100 000,00 USD	-106 942,71 USD	91 929,86 USD	1 302 393,34 USD	2 411 176,74 USD	4 275 832,07 USD

13.1.4 Annex 4. Statement of income

INCOME STATEMENT	Year 1	Year 2	Year 3	Year 4	Year 5
TURNOVER	1 754 600,00 USD	4 414 800,00 USD	7 980 600,00 USD	12 395 400,00 USD	18 678 000,00 USD
OPERATIONAL COST	-1 375 144,22 USD	-3 168 651,85 USD	-5 164 667,38 USD	-9 486 515,11 USD	-14 164 016,04 USD
ADMINISTRATION COST	-390 908,31 USD	-605 984,49 USD	-776 652,56 USD	-776 652,56 USD	-998 452,56 USD
EBIDTA	-11 452,53 USD	640 163,66 USD	2 039 280,06 USD	2 132 232,33 USD	3 515 531,40 USD
FINANCIAL COST	-18 000,00 USD	-38 233,73 USD	-43 985,61 USD	-73 894,88 USD	-112 222,76 USD
DEPRECIATION	-150 000,00 USD	-366 666,67 USD	-516 666,67 USD	-733 333,33 USD	-1 033 333,33 USD
BEFORE TAXES	-179 452,53 USD	235 263,27 USD	1 478 627,79 USD	1 325 004,12 USD	2 369 975,31 USD
TAXES (27%)	0,00 USD	-63 521,08 USD	-399 229,50 USD	-357 751,11 USD	-639 893,33 USD
AFTER TAXES	-179 452,53 USD	171 742,19 USD	1 079 398,28 USD	967 253,01 USD	1 730 081,97 USD

13.1.5 Annex 5. Financial balance

BALANCE (USD)	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
CURRENT ASSET						
Cash and equivalent	$100 000,00	-$206 942,71	$198 872,56	$1 210 463,49	$1 108 783,40	$1 864 655,34
Debtors and account receivable	$0,00	$0,00	$0,00	$0,00	$0,00	$0,00
TOTAL CURRENT ASSETS	$100 000,00	-$206 942,71	$198 872,56	$1 210 463,49	$1 108 783,40	$1 864 655,34
NON-CURRENT ASSETS						
Property, plant and equipment	$450 000,00	$450 000,00	$950 000,00	$1 683 333,33	$2 716 666,67	$1 983 333,33
Accumulated depreciation	$0,00	-$150 000,00	-$366 666,67	-$516 666,67	-$733 333,33	-$1 033 333,33
TOTAL NON-CURRENT ASSETS	$450 000,00	$300 000,00	$583 333,33	$1 166 666,67	$1 983 333,33	$950 000,00
TOTAL ASSETS	$550 000,00	$93 057,29	$782 205,90	$2 377 130,15	$3 092 116,73	$2 814 655,34
PATRIMONY AND LIABILITIES						
Current liabilities						
Commercial accounts		-$33 333,33	-$33 333,33	-$33 333,33		
others payable amortizacion loan	-$450 000,00	-$305 843,16	-$649 640,20	-$747 372,07	-$1 255 569,12	-$1 906 809,15
TOTAL CURRENT LIABILITIES	-$450 000,00	-$339 176,49	-$682 973,53	-$780 705,40	-$1 255 569,12	-$1 906 809,15
Non-current liabilities						
Account payable financial	$0,00	-$18 000,00	-$38 233,73	-$43 985,61	-$73 894,88	-$112 222,76

TOTAL NON-CURRENT LIABILITIES	$0,00	-$18 000,00	-$38 233,73	-$43 985,61	-$73 894,88	-$112 222,76
TOTAL LIABILITIES	-$450 000,00	-$357 176,49	-$721 207,26	-$824 691,01	-$1 329 464,01	-$2 019 031,92
PATRIMONY						
Acumulated utilities	$0,00	-$179 452,53	$235 263,27	$1 478 627,79	$1 325 004,12	$2 369 975,31
TOTAL ASSETS	$0,00	-$264 119,20	$60 998,64	$1 552 439,14	$1 762 652,72	$795 623,42
TOTAL PATRIMONY	$0,00	$0,00	$0,00	$0,00	$0,00	$0,00

13.1.6 Annex 6 Bonus program 2019

Support staff and warehouse

BONUS BASIS	Budget objetives	Priority %	Goal Completions %						Goal Completions %					Year Bonus
			0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %	
Ebidta	14,50	60 %	12,0	12,5	13,0	13,5	14,0	14,5	15,0	15,5	16,0	16,5	17,0	Company Ebidta
Turnover	28,50	20 %	25,0	25,7	26,4	27,1	27,8	28,5	29,2	29,9	30,6	31,3	32,0	Company Turnover
Safety (Lti)	5,0	20,0 %	10,00	9,0	8,0	7,0	6,0	5,0	4,0	3,0	2,0	1,0	0,0	Company Lti
		100 %						ADC Goal 2019						

Drilling service, HSEQ, Maintenance Managers

BONUS *BASIS*	ADC Budget - objectives	Priority o %	Goal completions rate %						Goal completions rate %					Year Bonus
			0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %	
EBIDTA %	25,00	60 %	22,0	22,6	23,2	23,8	24,4	25,0	25,6	26,2	26,8	27,4	28,0	Coverage for all sites % also includes overheads and workshop costs
Safety	5,0	20,0 %	10,00	9,0	8,0	7,0	6,0	5,0	4,0	3,0	2,0	1,0	0,0	Company Lti
Enviroment & Quality	0 Post cleaning cost, Quality cost >5000$	20,0 %	10 000 $	9 000 $	8 000 $	7 000 $	6 000 $	5 000 $	4 000 $	3 000 $	2 000 $	1 000 $	- $	All work sites
		100 %						ADC Goal 2019						

Production, Product development, Purchase

BONUS *BASIS*	ADC Budget - objectives	Priority o %	Goal completions rate %						Goal completions rate %					Year Bonus
			0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %	
EBIDTA %	25,00	60 %	22,0	22,6	23,2	23,8	24,4	25,0	25,6	26,2	26,8	27,4	28,0	Coverage for all sites % also includes overheads and workshop costs
Safety	5,0	20,0 %	10,00	9,0	8,0	7,0	6,0	5,0	4,0	3,0	2,0	1,0	0,0	Company Lti
Quality	0 Post cost, Quality cost >5000$	20,0 %	10 000 $	9 000 $	8 000 $	7 000 $	6 000 $	5 000 $	4 000 $	3 000 $	2 000 $	1 000 $	- $	Internal cost quality deviaton machinery
		100 %						ADC Goal 2019						