SASKATCHEWAN'S ABORIGINAL PEOPLE

AND THEIR PARTICIPATION IN

THE NORTHERN MINING INDUSTRY:

A CASE STUDY

A Thesis Submitted to the College of

Graduate Studies and Research

in Partial Fulfilment of the Requirements

for the Degree of Master of Arts

in the Department of Economics

University of Saskatchewan

Saskatoon

By

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Spring, 1999

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ABSTRACT

The presence of aboriginal people in Saskatchewan has led to several government and private sector initiatives aimed at facilitating the participation of aboriginal people in modern industrial society. A case study was performed on Cameco Corporation, the largest mining company in Northern Saskatchewan, to find out if and how government and private sector initiatives to increase the participation of aboriginal people in the northern mining industry are working. Emphasis was put on defining the status of aboriginal employees within Cameco's mining workforce with respect to job training, promotion, job position, wage rate, and job satisfaction. A simple quantitative evaluation of survey responses was used to establish the position of Cameco's aboriginal/northern employees among their non-aboriginal co-workers and among the typical population residing in the northern part of the province.

In 1994, 42.3% of Cameco's employees at the mine sites were of aboriginal ancestry. Based on Cameco's 1994 employee survey, it was found that relative to the typical person residing in the North, Cameco northern/aboriginal employees had a higher level of schooling, more full time work activity, and a higher employment income. Relative to their colleagues, aboriginal Cameco workers were younger, less educated, fewer years employed and more representative in low skill level/low paying jobs. Aboriginal people were provided with more job training, received more promotions, and had a slightly lower overall job satisfaction.

Based on these findings, OLS and Logit multiple regression analyses were performed to identify how much of the difference between aboriginal and non-aboriginal Cameco

workers, regarding employment related issues, could actually be explained by aboriginal ethnicity. Results showed that, when compared to their colleagues, aboriginal people were more likely to be promoted and to receive job training. However, aboriginal people were less likely to be employed in high level job positions and to earn a high wage rate.

Many results are positive indicators of successful government and private sector initiatives to improve aboriginal peoples' employability by extensive human resource development programs in accordance with recent Surface Lease Agreements. Nevertheless, as shown by this example from the mining industry, the achievement of equal opportunities and of a fully equalized job distribution between aboriginal and non-aboriginal employees will be a long-term process.

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CHAPTER 1: INTRODUCTION

1.1 GENERAL ASPECTS

The 1996 Canada Census reports that in 1996 the province of Saskatchewan had 990,237 residents, of which 111,245 individuals, or 11.2%, were of aboriginal ancestry. However, over time, the two main segments of Saskatchewan's population have developed along separate paths: Status Indians' denial of the right to vote until 1960 and federal jurisdiction over many aspects of their lives led to their exclusion from the provincial community. Although non-status Indians and Metis are under provincial responsibility and have the same rights and duties as the remaining population, they are in a situation similar to the status Indians. The consequence of the separation of aboriginal people from the larger society is social, economic, political, cultural and geographical segregation. Its impact is felt particularly by aboriginal people who live in the northern part of the province - the region with the highest proportion of aboriginal people relative to non-aboriginal people (about 81% according to Census 1996). However, the larger society cannot afford to ignore its aboriginal people and their problems, because the futures of Saskatchewan's aboriginal and non-aboriginal people are critically intertwined:

The aboriginal population of Saskatchewan is forecast to grow at an increased rate relative to the non-aboriginal population over the next decades. A 1997 Aboriginal

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Economic Impact Study predicts that in 50 years the number of aboriginal people could increase to more than 500,000. As a consequence, the aboriginal people and their problems with respect to fair participation in education, employment, business, economic development, and society in general can no longer be ignored. Government, as well as the private sector need to look for ways to plan for the future of aboriginal people since ". . . it is the same process as planning for the future of Saskatchewan as a province"[1].

Over the last decade, the government as well as the private sector have increased their endeavours to provide for an improved participation of Saskatchewan's aboriginal people in modern industrial society. The federal and provincial governments in cooperation with the northern mining industry, and particularly Cameco Corporation as the largest mining company in the North, have established a number of programs in order to increase Northerners'/aboriginal peoples' employability and equal representation within the mining workforce. Studies are needed to keep track of the progress of government and private sector initiatives and to provide input in the design of future aboriginal participation programs.

1.2 THESIS OBJECTIVES

This study evaluates the performance of the mining sector in facilitating the participation of aboriginal people within an industrial society and the industry's success in meeting related federal and provincial objectives. It is argued that a successful participation

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[1]

Federation of Saskatchewan Indian Nations, 1997, p. 3.

of aboriginal people in the northern mining workforce could serve as a model for other industrial sectors to follow. As a case study, Cameco Corporation is chosen in order to investigate the company's efforts to "hire, train, and advance"[2] northern aboriginal people in its mining operations to the maximum extent possible within the framework of federal and provincial legal requirements. Emphasis is put on defining the status of aboriginal employees in Cameco's mining workforce with respect to job training, promotion, job position, wage rate, and job satisfaction.

A quantitative comparison of survey responses is performed to establish the position of Cameco's aboriginal northern employees among the typical population residing in Saskatchewan's North and among their non-aboriginal co-workers.

Because many factors beside aboriginal ethnicity may have some impact on a simple quantitative comparison, an econometric analysis is used to determine the net effect of ethnicity within the company on the likelihood of

- being promoted

- receiving job training

- being in a high paying/high skilled job position

- having a high wage rate

- having a high overall job satisfaction

A significant regression coefficient obtained from the testing of any of the above hypotheses would likely imply differential treatment of aboriginal employees. A review of

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Government of Saskatchewan. 1989 Key Lake Surface Lease Agreement.

the above indicators gives an impression of the efficiency of government initiatives with respect to Cameco's human resource development in the mid 1990s.

Results of this study represent a baseline in measuring the "real world" long-term impact of (over the past five years) intensified government and industry sponsored job training programs for Northerners/aboriginal people which could be used within a follow-up study on the progress of Cameco's employment policy at a later time.

1. 3 DATA ORIGIN

The analyses in this study are based upon Cameco's 1994 mining employee survey. Results of this survey are compared to Census 1991 and 1996 data.

1.4 METHODOLOGY

The study includes descriptive as well as explanatory components. In the descriptive part, Cameco aboriginal/northern employees are compared to the typical person living in Northern Saskatchewan and to their co-workers with respect to several personal as well as employment related issues. The description is based on a simple quantitative comparison of survey responses, including a brief discussion of the survey results. In the explanatory part, the "net effect" of ethnicity on several employment characteristics within the Cameco mining workforce is identified, using OLS and Logit multiple regression analyses.

1.5 THESIS ORGANIZATION

Chapter 2 of this study gives an overview of topic related literature. Subsequently,

the chapter portrays the comparative disadvantage a person of aboriginal ancestry has to face regarding issues such as education, employment and income. It is emphasized that a changing composition of Saskatchewan's population necessitates the full participation of aboriginal people in modern day industrial society. Several government initiatives to accommodate a changing society are presented. The focus is then shifted to the northern mining industry and its aboriginal employment policy within the framework of provincial and federal requirements and commitments. The efforts of Cameco Corporation to facilitate the participation of Northerners/aboriginal people in its mining operations are presented and evaluated. Chapter 3 provides comparisons between the typical aboriginal Cameco employee, his/her co-workers and the typical person residing in Northern Saskatchewan with respect to personal and employment related issues. Chapter 4 establishes hypotheses regarding the influence of ethnicity on several employment related issues. Regression models are developed in order to test the hypotheses. Chapter 5 provides a summary of the regression results. Chapter 6 summarizes and discusses the relevant findings of this study.

CHAPTER 2: THE POPULATION/ABORIGINAL PEOPLE OF NORTHERN SASKATCHEWAN: THEIR PAST, PRESENT, AND THE PLANNING FOR SASKATCHEWAN'S FUTURE

2.1 THE ABORIGINAL PEOPLE OF NORTHERN SASKATCHEWAN: THEIR WAY INTO DEPENDENCY

2.1.1 Historical background

In order to develop an understanding of the present situation of aboriginal people living in the northern part of the province, we have to take a step back into history. Much has been written about Canadian aboriginal people and their historical development over the centuries. The following summary includes essays from Hikel and Corbishley (1984), the Royal Commission on Aboriginal People (1993 and 1996), Armitage (1995), Price (1972), Brizinski (1989), and Intergroup Consultants (1994).

Before the first English and French settlers arrived in the "new world", most Canadian aboriginal people were self-sustaining hunters, fishers, and gatherers. Their economic activities varied according to the seasonal pattern of their major food sources (bison, caribou, etc.). The living conditions of aboriginal people were determined by nature. Flooding and droughts could threaten the survival of an entire tribe. Life expectancy was generally quite short, infant mortality was high, and a migratory lifestyle often did not allow

the tribe to care for the sick or old.

With the arrival of the Europeans, aboriginal peoples' traditional way of life slowly came to an end. Initially, many aboriginal people benefitted from the new settlers. Large scale trade activities (furs were traded for firearms, pots, clothing, etc.), and employment with the Hudson Bay Company allowed them a more sedentary lifestyle, less dependence on nature, and a variety of new goods and services to choose from. With time, however, the depletion of big game and fur-bearing animals led to an increased dependency upon external sources and Europeans in order to survive. As more and more new settlers occupied the continent, aboriginal people were increasingly pushed aside. Regarded as a hindrance to development, they were frequently confined to reserve land that was subject to exclusive federal jurisdiction. In an effort to assimilate the aboriginal population and, at the same time, to give aboriginal people an opportunity to become self-reliant, they were given education and were provided with tools and instruction in agriculture. However, due to the bad quality of the land, floods, droughts, sales restrictions and low prices, only a few highly motivated aboriginal people managed to become self-sufficient. Among them were many aboriginal people of Saskatchewan. They were initially able to grow enough food for their own subsistence and for sale in local markets. Between 1899 and 1929, agriculture represented their most important source of income.

Beginning in the 1940s, the Canadian government slowly began to involve itself more directly into the lives of aboriginal people. Health, education, and welfare, family allowance and old-age pension programs were introduced. In the 1960s, these programs were supplemented by attempts to create jobs within aboriginal communities, frequently

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consisting of temporary make-work-programs. These programs managed to reduce hardship but did nothing to address the issue of rebuilding an economic base. Recognizing this, governments, as well as private companies started to develop initiatives to bring economic, human resource, and business development into aboriginal communities.

The historical background of the aboriginal population from Saskatchewan's northernmost regions is somewhat different from the remaining aboriginal people of the province. During the 19th and first half of the 20th century, the only sustained economic involvement of the northern aboriginal people with western society was the fur trade. Due to the remoteness and harshness of the northern environment, new settlers were not interested in the northern part of Saskatchewan. Hence, the aboriginal culture, based on tradition and communal sharing, survived relatively undisturbed during this period. Beginning with World War II, winter tractor trails and all-weather roads began to reduce the isolation of the northern aboriginal population, resulting in similar pressures and inducements towards urbanized standards and styles of living, as experienced by the remaining aboriginal population in the province.

Status-Indians became a significant political force in the prairies after they were made citizens and allowed to vote in 1960. At this time, "Brotherhoods" were beginning to unite bands in order to formulate new policies in negotiations with the government. The politization accelerated in the 1970s and 1980s. People from band societies entered the continental Aboriginal movement with increasing commitment. This was their first significant experience of organized protest, ranging from town hall meetings to road blocks.

2.1.2 Present situation of Northerners

Focusing now on the present, what are the life circumstances for a typical person residing in Northern Saskatchewan? According to the 1996 Census, 3.1% of the province's population (that is 31,104 individuals) lives in "the North" as defined by Statistics Canada Census division 18. About 81% of the northern population, is of aboriginal ancestry. A study by Intergroup (1994) reports that there exist 52 communities in Northern Saskatchewan, which range in size from less than 50 people to over 2500 (La Ronge). Only about 16% of the northern population lives in towns and cities, 37% lives on reserves. Lack of adequate housing and overcrowded living conditions are common. Many Northerners, particularly those on reserves, still are without sewer and water services.

The northern population is comparatively young and fast growing and the age distribution differs greatly from the province as a whole. According to Census 1996, 38.7% of Northerners is under the age of 15 (23.1% provincially), 55.9% is under the age of 24 (compared to 37.4% in the province), the proportion of children under five is about double that of the provincial average (13.8% versus 7.1%), and the proportion of people 65 years and older is only about a quarter of the provincial average (4.2% versus 14.7%).

The education level in the North is relatively low. The rate of aboriginal students dropping out before grade 12 is estimated to be as high as 90% (Saskatchewan Post-Secondary Education and Skills Training, et al., 1997). Until recently, most schools in the Athabasca region offered schooling only up to grade 9. Hence, students were forced either to finish their education at that level or to leave their home communities to attend high school programs in southern centres. Census 1996 reports that 29.7% of the northern

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population 15 years and older have less than a grade 9 education (13.2% provincially). The 1997 Regional Training Needs Assessment Report states that 53% of people on reserves have less than a grade 9 education. A comparison of post-secondary education levels shows that 35.8% of Northerners hold some trade certificate, diploma, non-university, or university degree compared to 46.3% provincially. Only 11.5% have some university education, relative to 21.6% provincially (Census 1996).

According to the 1996 Census, the potential northern labour force consists of 19,035 individuals. Labour-force-age Northerners form 57.1% of the total population, slightly less than Saskatchewan's average of 62.2%. The majority of the potential labour force is very young - 54.4% is under the age of 35 (provincially 36.8%). However, the actual labour force participation rate is only 55%, compared to 67.3% in the province. Of those who are participating, one fifth is unemployed (7.2% provincially). Referring to the Regional Training Needs Assessment Report (1997), one third of people living on reserves is unemployed. Most other aboriginal people are underemployed and restricted to low-paying, marginal, or entry level jobs with few opportunities for skill development or career advancement.

The 1996 Census reports that income from employment represents 70.4% of total income in northern communities. This is about the same as the average for the rest of the province. Northern Saskatchewan's residents receive 3.6% of their total annual incomes from other sources (such as pensions and investments). Saskatchewan residents obtain 11.9% of their total annual income from other sources. While government assistance comprises 26% of total incomes in the North, the rate for the whole province amounts to

15.9%. A study by Intergroup (1994) reports that in 1991, government assistance to northern reserve communities represented 42% of total average reserve resident income. In total, provincial social assistance payments to northern residents are reported to exceed $20 million annually. Annual federal social assistance to reserve communities is estimated to be greater than $10 million. Northern citizens also receive more than $10 million per year in unemployment insurance benefits.

According to the 1996 Census, the average income of a northern family is $34,904 - about 30% less than the provincial average ($49,483). Even though a relatively large number of aboriginal people engage in commercial hunting, fishing and trapping activities, the average income from these sources is, according to Intergroup, between $1,500 and $6,000 per year and cannot be considered more than a minor supplement to employment income.

The Regional Training Needs Assessment Report perceives the relatively high rate of poverty in the north to be likely one of the many reasons for several social problems:

- the incidence of alcohol and drug abuse per capita is almost five times the provincial rate.

- the suicide rate is almost twice as high as that of the province.

- teen pregnancies account for more than 25% of births in the North compared to 10% provincially.

- the incidence of tuberculosis is 15 times the provincial rate.

- the crime rate is more than four times higher than in the rest of the province.

2.2 ABORIGINAL PEOPLE AND THE FUTURE OF SASKATCHEWAN

Saskatchewan's demography is changing: between 1986 and 1991, the province's population declined 2.0% from an all time high of slightly over one million people counted in the 1986 Census. Between 1991 and 1996, Saskatchewan's population growth was only 0.1% (the second lowest among all Canadian provinces). While the number of Saskatchewan's population remains fairly constant, Saskatchewan's population composition is changing. According to a 1997 Aboriginal Economic Impact Study (Federation of Saskatchewan Indian Nations, 1997), the fertility rate of aboriginal people in Saskatchewan (about 2.36%) is higher than in any other province in Canada and much higher than the fertility rate of non-aboriginal people (around 0.04%). The implications of the different rates of growth can be found in contrasting age profiles of the two populations. Assuming a medium growth scenario, the study concludes that by 2015, 31% of the (registered) Indian population will be classified as young (age 0-17); 62% will fall into the labour force age group (age 18-64); and 6% will be considered elderly (age 65+). By contrast, the non-aboriginal population proportions will be 20% young, 63% labour force age and 17% elderly. A comparison of median ages of the two groups in 1990 shows 23 years of age for registered Indians versus 33 years of age for non-aboriginal people. The corresponding figures for 2015 would be 30 versus 41 years of age, respectively. It is also estimated that by the year 2045, with annual growth rates between 2.2% and 3.3%, the total number of aboriginal people would more than quadruple to more than 500,000.

All these numbers point out an important issue: the productive base will be shrinking due to a decline and a transformation of the labour force at the very time that a rapidly

growing elderly population draws on public services and support. A study by Dumas, et al. (1996) reports that since 1970, 175,000 more persons have left the province than arrived to take up residence. Especially young people are leaving in search of employment and careers. For them, economic and social indicators offer little encouragement to stay. However, due to the attractiveness of Saskatchewan's social programs, most retirees decide to stay, making Saskatchewan's population the country's oldest. A combination of a growing aboriginal population and a declining non-aboriginal population creates conflicting policy demands on the side of the government: it has to take care of an increasing elderly "white" population by redesigning health care and social services and, at the same time, has to consider a growing number of younger aboriginal people - the future providers for the elder ones. Needs and concerns of this large group are primarily associated with education, job training, employment and, above all, with the desire to be treated fairly.

By projecting current economic conditions 50 years into the future, the FSIN-study claims that, unless government as well as the private sector increasingly address aboriginal issues, especially regarding educational as well as economical development, Saskatchewan's social and economic health will be negatively affected. If employment opportunities for aboriginal people continue to grow at the current rate (which is presently less than population growth), while the number of aboriginal people is growing rapidly, the result would be increasing unemployment in the aboriginal communities over the next 50 years. By the end of the 50-year forecast, the proportion of employed aboriginal adults would decrease to only 11% and average personal incomes would continuously decrease. As a consequence, more reliance would be put on governments for assistance with the result that

the non-aboriginal population would have to face an overwhelming tax burden.

In order to decrease the "economic gap" in aboriginal employment and income, the FSIN-study recommends the continuation and growth of aboriginal education, training, and economic development initiatives. These measures would help to make aboriginal people more competitive in terms of human capital, thus assisting business and government in creating economic activity.

The next section will focus on various initiatives the government as well as the private sector are taking in order to help Saskatchewan's aboriginal people to become economically integrated into the larger society. These initiatives concentrate particularly on aboriginal people who are residing in the northern part of the province - geographically segregated from the rest of the Saskatchewan population.

2.3 GOVERNMENT AND PRIVATE SECTOR INITIATIVES

2.3.1 Government initiatives

Since the early 1970s, senior governments have explicitly tried to address the problems of aboriginal poverty and underdevelopment in Northern Saskatchewan (Saskatchewan Indian and Native Affairs Secretariat, 1984). Among the various initiatives were efforts to improve housing conditions (provision of public housing, installation of electricity, water and sewer in some communities), to extend health care, to improve infrastructure, to provide child care facilities and new schools, to build municipal facilities, and to provide support to develop and strengthen local governments.

While these early programs were tailored mainly to improving the quality of life for

Northerners, later established government initiatives put increased emphasis on the creation of sustainable development, on the formation of human capital, and on overcoming barriers based upon racial and cultural factors. The following summary of government programs contains material from Sloan and Hill (1995), from annual reports of the Saskatchewan and Indian Affairs Secretariat (1983-1996), from Saskatchewan Northern Affairs (1998), and from Saskatchewan Post-Secondary Education and Skills Training. The evolution of government initiatives to increase aboriginal peoples'/Northerners' employability and employment and business development can be described as follows:

Most of Saskatchewan outside of municipalities and Indian Reserves is provincial Crown land, administered under The Provincial Lands Act and the Forest Act. Anyone occupying Crown land must have authority from the province. The common form of land disposition, used for a variety of purposes including commercial businesses, community use, recreational dwellings, and traditional resource uses, is a surface lease. This is a two-party agreement between the provincial government and the land user, and its primary function is land rental. The by far largest industrial developments in Northern Saskatchewan have been mining related. With respect to surface leases used for the mining industry, both the format and content have evolved over a number of years, reflecting various changes in Saskatchewan's regulatory and policy regimes. In the 1950s and 1960s surface leases for the mining industry were relative simple dispositions that only provided land tenure to mining companies for their northern projects. In the 1970s and early 1980s, surface leases were expanded to include strict employment quotas of 50% Northerners as well as a 10% bid preference for local businesses. This approach, however, did not meet expectations

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related to socio-economic benefits for northern residents. Surface leases lacked training clauses and, because many Northerners did not have the education and skills to qualify for most mining jobs, mining companies either could not employ enough Northerners or employed them in marginal positions. In an effort to increase the participation of Northerners/aboriginal people at the mines, employment quotas were dropped from surface leases since 1986 and replaced with clauses aimed at maximizing northern employment through training. These clauses commit all mining companies operating in the North to negotiate Human Resource Development Agreements with the Department of Post-Secondary Education and Skills Training. The central feature of these agreements is that employers make a specific commitment to maximize their hiring, training and advancement of northern people at all skill levels of their operation. Similarly, while the 10% bid preference to northern contractors was eliminated from new surface leases, government maintained a clear focus on its preference for Northerners to gain as much employment and business participation from the northern mining industry as possible. Government therefore required companies to provide extensive reports on their efforts with respect to human resource and business development.

There are no formal financial commitments related to the negotiation of Human Resource Development Agreements. Funding of training programs that assist the mines to maximize the number of northern employees on site has historically been cost-shared and planned on a case-by-case basis.

Human Resource Development Agreements provide benefits to both employers and northern people. Employers benefit 1) by hiring a trained, motivated local labour force

which is often pre-screened by pre-employment training; 2) by reducing their on-site training costs through jointly funded training programs; and 3) by publicly demonstrating their commitment to maximize employment of local people, an action which the company may not be able to undertake without the assistance of a cooperative plan.

Northern people benefit 1) by receiving employment priority upon completing their training; 2) by developing transferable skills which can help them maintain more constant employment in a long-term industry; and 3) by developing the economy of northern communities.

Within Human Resource Development Agreements, a Multi-Party Training Plan (MPTP) was initiated in 1993 among all funding agencies and all northern mining operators in order to enable Northerners to take advantage of the opportunities available through new mining developments (e.g., McArthur River and Cigar Lake Mines). A study done by Lendsay and Painter (1998), the 1997 Year End Report and MPTP summary statistics of Saskatchewan's Post-Secondary Education and Skills Training (1998) provide a detailed description of the MPTP and its success. In summary, the MPTP was a five year, $10.5 million[3] training-to-employment cooperative initiative of the province of Saskatchewan (represented by Saskatchewan Education, Training and Employment), the Government of Canada, (represented by Human Resources Development and Indian and Northern Affairs Canada), and the northern mining industry (represented by Cigar Lake Mining Corporation, Cogema Resources, and Cameco Corporation). The MPTP included assessment,

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[3]

The actual cost of the MPTP at the end of its five year period was more than 13.1 million.

counselling, upgrading, skill and job training, and employment phases. The objective was to fill 60% of the new positions created by mine development, construction jobs, and supporting services by northern residents, and to increase the number of northern residents employed in the mining industry as apprentices, journeymen, technicians, technologists, and other higher-skill occupations. Development and delivery of training was a collaborative effort, involving the industry (it carried 49% of the cost), the Saskatchewan Institute for Applied Science and Technology (SIAST), Northland College, Aboriginal education and training institutions, and the Northern Services Branch. The MPTP has just finished its five year period. During the length of its operation, a total of 1,137 individuals have enrolled into the program. Of them, 1,040 persons, or 91%, were of aboriginal ancestry. 575 training certificates have been awarded. A further 280 individuals of those enrolled have completed their courses, resulting in a graduation/completion rate of 75%. Of the 575 training certificates, 319 have been awarded in skill training (e.g., geological technician, surveyor assistant), 95 in apprenticeship training (e.g., carpenter, mechanic, electrician), 91 in basic adult upgrading (e.g., workplace literacy), and 70 in technical/supervisory training. As of June 30, 1998, a total of 321 students have been tracked to employment[4]. 75% of them found employment in the mining sector, the remaining 25% found employment in their bands or in the private sector in mostly seasonal apprentice positions.

Via the Multi-Party Training Plan it was possible to increase the number of Northerners in the mining industry and to increase northern peoples' skill levels in the

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[4] Trainees who have not been tracked to employment include those who gained employment during mine construction and are now working elsewhere as well as students who took adult upgrading and are continuing their education and training.

mining workforce. On average, throughout 1997, 48% of the 2,245 company and contract employees on site were Northerners, with 84% of them being of aboriginal ancestry. For comparison, in 1986, only 336 employees, or 32% of the total mining labour force came from the North. A skill profile of companies' employees[5] shows that in 1997 Northerners held

- 70% of all equipment operator positions (51% in 1990)

- 87% of all mill operator positions (72% in 1990)

- 73% of all support service positions (no change from 1990)

- 27% of all trades positions (22% in 1990)

- 41% of all professional/technical positions (26% in 1990)

- 21% of all supervisory positions (14% in 1990)

The representation of aboriginal people among Northerners in these job categories ranged from 60% (supervisory positions) to 90% (mine equipment/mill operator, support service). The Federal Department has confirmed that the Multi-Party-Training Plan has resulted in a four to five times higher rate of participation for aboriginal people in mine employment than any other similar initiative in Canada (1997 Year End Report of Saskatchewan's Post-Secondary Education and Skills Training, 1998). Based on this success, a second phase of the MPTP is already on its way.

Examples of additional government initiatives that have evolved over the past decade

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Saskatchewan Post-Secondary Education and Skills Training, Averages of quarterly employment reports, 1998.

in order to encourage northern/aboriginal employment and business development are

- the Native Business Development Program (1992) and the Northern Development Fund (1995), which provide term loan financing and marketing, promotion, research and development assistance to small and medium sized business ventures in the North.

- the 1993/94 Northern Employment and Employee Development Program (an agreement between the Province and employers residing in the North to subsidize training).

- the 1992 Aboriginal Employment Development Program (provides assistance to employers and aboriginal education institutions to link potential employers with suitable aboriginal candidates and to relate training to real job opportunities).

2.3.2 Private Sector Initiatives

Several companies and industries which operate in Northern Saskatchewan have taken an active effort to increase the number of northern aboriginal people among their trainees, employees, and contractors. Examples are the forestry and tourism industry, and companies such as the Bank of Montreal, the Royal Bank, the TD Bank, and Petro Canada. However, it is the mining industry which is considered "the single largest factor in providing the economic foundation necessary to develop the Northern Saskatchewan economy"[6]. In fact, northern workers, contractors, and joint venture partners received $206 million from

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[6] Government of Saskatchewan, Northern Affairs News Release, 1997.

northern mines in 1997.[7]

Cameco Corporation is the largest mining company operating in Saskatchewan. With its head office in Saskatoon, Saskatchewan, Cameco Corporation is the world's largest publicly traded Uranium company and a dominant member of the international Uranium industry. Cameco was formed in 1988 by the merger of the Saskatchewan Mining Development Corporation (a provincial crown corporation) and Eldorado Nuclear Limited (a federal crown corporation). Today, Cameco is a publicly traded company with only 9.6% of shares retained by the governments of Saskatchewan and Canada. It has a partnership interest in three operating uranium mines, at Key Lake (66.67%), Rabbit Lake (66.67%), and Crow Butte, Nebraska (32.31%), and in two proposed mines currently under review; McArthur River (55.84%) and Cigar Lake (48.75%, voting 50.75%), both in Northern Saskatchewan. Cameco has also an interest in two gold mines, one at Contact Lake, Saskatchewan (66.67%), the other at Kumtor in the Republic of Kyrgyzstan (33.33%). It also owns and operates Uranium refining and conversion facilities at Blind River and Port Hope, Ontario.[8]

Within its mining operations in Saskatchewan, Cameco tries to cooperate with Northerners/aboriginal people of impacted communities. This cooperation with Northerners takes place in the form of addressing peoples' concerns (especially with respect to Uranium mining), and in providing Northerners with an opportunity of educational upgrading,

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[7] Saskatchewan Secondary Education and Skills Training. Mining Benefits to Northern Saskatchewan. 1998.

[8] Cameco 1995 Annual Report and Joint Federal/Provincial Panel on Uranium Mining Development in Northern Saskatchewan, 1997.

employment and business development. The cooperation with northern residents is regulated in Human Resource Development/Surface Lease Agreements with the provincial government as well as in federal Employment Equity legislation. Since Uranium mining is always subject to public scrutiny, Cameco has a strong incentive to exceed its legal commitments. Cameco's president Bernard Michel puts it this way: ". . . our relationship with Northerners is as valuable to us as the richness of our ore deposits."[9]

Cameco seeks to maximize opportunities for Northerners in its mining operations. The following summary consists of input from Sloan and Hill (1995), Intergroup (1994), Joint Federal/Provincial Panel on Uranium Mining Development in Northern Saskatchewan (1997), Regional Training Needs Assessment Report (1997), Lendsay and Painter (1998), Cameco Employment Reports (1994, 1996, 1998), and interviews with Cameco representatives.

- When it comes to employing Northerners in mining projects, their generally low education and skill levels are significant constraints to hiring. In addition, many prospective employees do not possess the relevant wage employment experience. In order to address these challenges, Cameco has introduced a number of initiatives. Northern education and career incentive programs encourage students to stay in school and achieve higher levels of academic training. Career information services expose students to career opportunities in the mining industry. Work placement and summer employment provide work experience opportunities. An annual scholarship

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[9]

(Sloan, Hill, 1995, p. 35).

program provides financial assistance for post-secondary education. With respect to employment training, Cameco sponsors northern institutional training initiatives and participates directly in the development and implementation of mining related northern training programs, such as the Multi-Party Training Plan. The company offers a guarantee of employment to graduates from selected northern training programs, on a job availability basis. Cameco has also in-house training and development initiatives for northern employees in technical, trades and management training positions within the company and has introduced succession planning for senior (experienced) Northerners. In the technical jobs area, for example, Cameco has created 21 in-house technical training positions beyond operational requirements and has made these opportunities available primarily to northern aboriginal people. The same model is used to improve aboriginal peoples' representation in trades jobs. The result of Cameco's training efforts is such that the representation of aboriginal people in management and supervisory positions has increased from 0.9% in 1994, to 9.8% in 1996, and to 14.4% in June 1998. At the same time, a decreasing number of aboriginal people has worked in less skilled jobs, such as support services: while aboriginal peoples' representation in support services was 56.3% in 1994, and 65.5% in 1996, as of June 1998, the proportion decreased to 45.2%

- When a position in Cameco's operations becomes vacant, the company follows a policy to recruit Northerners first. Recruitment does not occur from anywhere else until it has been determined that there is no suitable northern resident available. Cameco also requires its major contractors to seek and develop northern/aboriginal

sources of supply for goods and sub-contract services. All these commitments have resulted in an increase in employment opportunities for Northerners and aboriginal people: while in 1990 the northern representation rate was only 33%, it exceeded 50%[10] in 1995. As of June 1998, 354 of Cameco's 743 mining employees (47.6%) were Northerners. 38.6% were of aboriginal ancestry. For comparison, in 1989 only 29% of Cameco's mining work force was aboriginal.

- Cameco supports northern businesses by tendering many of its contracts solely in the North. Where practical, preferential bidding is used to encourage the development of northern contract services. Jobs are generally packaged to be within the capabilities of northern suppliers. Some of Cameco's major contractors with aboriginal ownership (currently over 30) are Snake Lake Construction, PADC Security, Eagle Air, and Kitsaki Meats. Some contracts, however cannot be tailored to fit northern suppliers' capabilities; in this case, Cameco encourages the formation of joint venture partnerships between northern firms and experienced southern suppliers. This facilitates the transfer of resources and management expertise into the North, thereby developing the capability of Northerners to bid and manage larger contracts. Successful examples of this type of partnership are companies such as Northern Resources Trucking , Six Seasons Catering, and Inter North Construction. The volume of Cameco's northern business contracts showed an upward trend over the years; in 1991, it amounted to $10.6 million, and reached $75 million in 1997.

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[10]

This included permanent employees working for Cameco or its permanent long-term contractors.

2.4 RELATED ECONOMETRIC LITERATURE

One objective of this study is to establish the net effect of aboriginal ethnicity on several employment related characteristics within Cameco's mining workforce. To be more specific, in addition to dealing with Aboriginal job satisfaction, we want to focus on job training, promotion[11], job position, and the wage rate of aboriginal Cameco employees. The following review of related literature served as a guide for the upcoming analyses.

Patrinos and Sakellariou (1991) studied the components of the overall aboriginal[12] and non-aboriginal wage differential attributable to human capital characteristics, and those components that were due to wage discrimination and other factors. Techniques drawn from the earnings function literature (e.g., Oaxaca, 1973, Mincer, 1974, and Gunderson, 1989) were applied to data from the 1986 Statistics Canada Labour Market Activity Survey. The authors found that 41% of the wage differential between aboriginal and non-aboriginal people was due to productivity related characteristics. The remaining difference was considered "unexplainable", reflecting discrimination and other productivity unrelated factors not included in the analysis. Within the earnings function, the explanatory variables were the number of years of schooling, the number of years of potential labour market experience, dummy variables reflecting ethnicity, union membership, marital status, and residence, and dummy variables to control for employment in managerial, professional, manual labour, and clerical/sales jobs. Results indicated that the average returns from

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[11]

Promotion is defined as advancement from one job category to the next.

[12]

Aboriginal people living on-reserve, females, Metis and Inuit people were excluded from the sample.

schooling were higher for non-aboriginal people than they were for aboriginal people. Non-aboriginal people also received higher returns from labour market experience. Residence in the Atlantic provinces in particular was found to exert a large negative effect on non-aboriginal earnings, whereas residence in Quebec and Ontario increased earnings for aboriginal people. Managerial and professional employment was also found to increase aboriginal earnings relative to employment in other job categories.

In a similar study, George and Kuhn (1994) analysed the size and structure of aboriginal and non-aboriginal wage differentials in Canada. The methodology was based on applying a combination of OLS earnings regressions and Probit analyses to 1986 Statistics Canada Census data. For aboriginal people living off-reserve, outside the Yukon and Northwest Territories, and working full time and full year, the authors found an overall wage gap of about 11%. The wage differential was larger for aboriginal people living on-reserve and for those residing in the Yukon and Northwest Territories. Differences in observable characteristics such as education, language and region accounted for about 50% of the wage gap. Within the earnings functions, George and Kuhn included the explanatory variables age, and dummies reflecting respondents' sex, marital status, education, training, residence, language, and ethnicity. Results indicated that for both, aboriginal and non-aboriginal people, wages rose with both education and training and that wages and age had a concave relationship. In addition it was found that women, and particularly women of aboriginal ancestry, had larger returns from education when compared to men.

Within the literature on promotion, Cannings (1988) studied the extent to which gender affects career success within a managerial structure, by investigating rates of

promotion among middle managers in a large Canadian corporation. Data obtained from questionnaires was analysed using the Logit model. Independent variables expected to have an impact on the probability of promotion were the dummies gender, marital status, educational level, subject of formal education, and the first department in which the individual worked at the company. Additional variables, included in the model, were the age of the individual at the time he/she started employment in the company, a measure of the individual's relative productivity, and a measure of the individual's early childhood socialization. Results indicated that female managers were less likely than their male colleagues to be promoted. In addition it was found that womens' disadvantage was not primarily the result of different "acquired" attributes such as level of education, but rather the result of discrimination.

In a US study, Altonji and Spletzer (1991) analysed the relationship between employer training and the characteristics of workers and jobs. Data was based on the National Longitudinal Survey of the High School Class of 1972. Standard OLS and Logit regressions included variables reflecting gender, race, post-secondary education, aptitude and achievement measures, high school curriculum, and job characteristics. The results indicated that the incidence of training was slightly higher for women than for men, but that the amount of training was higher for men. It was also found that black people received more training than white people. Post-secondary education had a strong relationship with training, but a significant part of that link reflected differences in aptitude and achievement measured at the end of high school.

2.5 CHAPTER SUMMARY

Beyond a review of topic related literature, this chapter provided a survey on the life circumstances of a typical person residing in Northern Saskatchewan. Geographically separated from the remainder of the province, the northern population is characterized by a very high percentage of aboriginal people. Compared to the rest of the province, Northerners have a younger age, less education, a lower labour force participation rate, higher unemployment, less income, more government assistance, and more social problems. A changing age structure within Saskatchewan's population necessitates increased efforts to facilitate full participation of the northern population in Saskatchewan's industrial society. Several initiatives have been taken by governments and private sectors to create sustainable human capital, employment opportunities, and business development in the North. Promising efforts to increase the representation of Northerners and aboriginal people in the industrial work force have been made by the mining industry in accordance with the objectives of recent Surface Lease Agreements. As a prominent representative of the mining sector, Cameco Corporation has taken various initiatives to increase the northern education level (e.g., via stay in school programs), to support northern businesses (e.g., via joint ventures), and above all, to maximize the employment of Northerners/aboriginal people within all job categories (e.g., via preferential recruitment and trainings programs).

More detailed information on the progress of the mining industry in its efforts to allow full participation of aboriginal people in modern industrial society appears useful for other industries and may create an incentive to follow.

In the next chapter, Cameco Corporation is depicted as a case study to compare the

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typical northern/aboriginal Cameco employee with the average Northerner and with his/her

co-workers on several personal and employment related issues.

CHAPTER 3: THE TYPICAL NORTHERN/ABORIGINAL CAMECO EMPLOYEE AND HIS/HER STATUS OUTSIDE AND WITHIN THE COMPANY

Beyond the objective to maximize the percentage of northern/aboriginal employees in the mining work force, more recent Surface Lease Agreements (such as the 1989 Key Lake Surface Lease Agreement) require the mining industry to

- encourage people from northern communities to become stable and productive employees.

- create a positive economic climate in northern communities.

- upgrade, educate, and protect employees.

- provide a healthy and rewarding work environment.

- organize and implement its trainings programs so that employees completing the training will be able to use the skills acquired and time spent as credit toward certification or status recognition in Saskatchewan.

This section outlines some of the most relevant personal as well as job related characteristics of aboriginal/Northern Saskatchewan mining employees, including their attitudes toward working for Cameco. At the same time, aboriginal/northern employees are

compared with typical northern residents and their non-aboriginal/non-northern colleagues across a variety of personal and job related issues. This and all successive analyses are based on selected data from Cameco's 1994 mining employee survey.

The outcome of these comparisons provides a first estimate on Cameco's success rate in meeting recent northern/aboriginal employment objectives. This 1994 "benchmark" could be used as a baseline in measuring the "real world" long-term impact of the MPTP via a follow up study in upcoming years.

3.1 MAIN DATA SOURCE

In order to gain insight on how working at the mine would affect Cameco's employees, their families and their communities, the company conducted an employee survey in June, 1994 at its Key Lake and Rabbit Lake Mines. In its survey, Cameco focused particularly on its Residents of Saskatchewan's North (RSN) employees. "RSN" is a term that is commonly used in Human Resource Development Agreements between mining companies and the Province of Saskatchewan. It includes those residents who, at the time of hire at a mine, have spent one half of their lives or at least 10 years as residents of Northern Saskatchewan. It also includes people whose primary residence was in Northern Saskatchewan for three years prior to, and including, the date of application at a mine (Intergroup, 1994).

According to Intergroup, the employee survey was based on the results of a focus group research and drafted with input of Criterion Research Corporation, Intergroup Consultants Ltd., and Cameco Corporation . Respondents had to fill out a questionnaire (see

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Appendix), which consisted of 42 mainly closed-ended questions (partly with sub-questions). The questionnaire was split into two parts: one part - the one the following analysis is concentrating on - was to be answered by all sample subjects, the other part (11 questions) only by Residents of Saskatchewan's North. Researchers from the Criterion Research Corporation travelled to each mine site to guide groups of 10-20 employees through the questionnaire. Employees self-administered the survey, with assistance from the researchers, where required. The survey was anonymous and voluntary.

According to Intergroup, 73% of Key Lake employees (290 employees out of a total permanent workforce of 397 people in June, 1994), and 81% of Rabbit Lake employees (196 employees out of a total permanent workforce of 242 people in June, 1994) completed the survey for an overall response rate of 76% (486 employees out of a combined permanent workforce of 639 people). Employees not completing the survey included those on vacation, disability leave and sick leave, as well as those who chose not to participate in the survey. The respondents' characteristics closely approximated those of the workforce with respect to age, gender, residence and ethnicity so that statistical weighing of the survey results was not performed by the research consultants.

Input from Criterion Research, as well as analyses of the survey's micro data allowed the construction of comparable employee profiles out of the combined Key Lake and Rabbit Lake sample of 486 respondents. For this purpose the sample was divided into four different response groups: Aboriginal people, non-aboriginal people, Residents of Saskatchewan's

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North (RSN), and Non-Residents of Saskatchewan's North (NRSN)[13]. However, the four groups were not mutually exclusive: 88.2% of RSN were of aboriginal ancestry and 85.2% of NRSN were of non-aboriginal ancestry. Accordingly, the response pattern of aboriginal and non-aboriginal people was the same as the one of RSN and NRSN, respectively. The subsequent analyses compare the group of RSN Cameco employees to the Northern Saskatchewan Census population and they compare the groups of aboriginal and non-aboriginal employees within the Cameco mining workforce on several personal and employment related characteristics. The key findings are tabulated and described below. Unless otherwise stated, percentages are calculated excluding the non-respondents (the response rate ranged from 95% to 100%), and respondents whose answer to certain survey questions was "don't know" or "don't remember". Due to rounding, percentages may not add up to 100%.

3.2 THE TYPICAL RSN/ABORIGINAL CAMECO EMPLOYEE IN COMPARISON WITH THE TYPICAL PERSON RESIDING IN THE NORTH

The following section compares Cameco's aboriginal employees with the typical resident of Northern Saskatchewan. Some results from Cameco's 1994 survey, as well as additional information from the company (see sections 3.2.2.3 and 3.2.2.4) are compared to Census profile data in order to find out how representative selected characteristics of a Northern Cameco employee are with respect to the same characteristics of the typical

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The purpose of including RSN and NRSN becomes evident in the next section.

person residing in Northern Saskatchewan. Thus, it may be possible to identify whether Cameco is selective in its hiring of Resident of Saskatchewan's North (RSN) employees and how employment in the mining industry may change the life circumstances of Northerners (according to Census 1996, 6.8% of Northern Saskatchewan employed individuals worked in a mining profession). With the 88.2% of RSN Cameco employees being of aboriginal ancestry, it is possible to focus on the aboriginal employees although the following discussion is based upon RSN Cameco employees.

When Cameco RSN are contrasted with other Northern Saskatchewan people, the definitions of these two groups are not completely identical. As mentioned above, the concept "RSN" includes individuals who, at the time of hire at the mine, have spent one half of their lives or at least ten years as residents of Northern Saskatchewan. It also includes those people whose primary residence was in Northern Saskatchewan for three years prior to, and including, the date of application at the mine. Statistics Canada, however, identifies a Northern Saskatchewan resident as a person permanently residing in Census Division 18 at the time of the survey. Nevertheless, question 29a in the Cameco survey asked RSN respondents whether they were still living in the North at the time of the survey. 72.9% of RSN individuals agreed. Thus, their population may be considered very similar to the Census population. Another issue is important when comparing Cameco data with Census data: sometimes answer categories in the two questionnaires tend not to be identical (e.g., one questionnaire may have only one question that deals with a certain issue, the other one may use two questions for the same issue, or questions in the two surveys may have a different number of answer categories). In cases like this, some answer categories must be

collapsed and others excluded in order to make the two surveys compatible.

Whenever Census data is used, it should be noted that Statistics Canada collects data on a 100% basis or on a 20% sample basis with data weighed to provide estimates of the entire population. For the purpose of this paper, 100% data is used unless otherwise mentioned. What should also be remembered when working with Census data is the "random rounding" procedure (figures are rounded to either 5 or 10) Statistics Canada uses in order to guarantee anonymity to Census respondents (especially those living in small communities).

3.2.1 Composition of RSN Cameco employees in comparison with the Northern Saskatchewan population

3.2.1.1 Ethnicity[14]

According to the employee survey, 187 out of 486 survey respondents reported to be RSN. Of them, Cameco hired 165, or 88.2%, who identified themselves to be of aboriginal ancestry. According to Census 1991, 65.2% of Northern residents were aboriginal; according to the latest Census, the proportion was 80.8%. Comparing these numbers it can be concluded that Cameco on the one hand employs a larger proportion of NRSN than RSN, but within the RSN employees, it tends to hire proportionately more aboriginal than non-aboriginal people. Table 3.1 gives an overview.

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[14]
20% Census data. What should be taken into account is that, unlike Census 1991 (and previous Censuses), Census 1996 shifted the focus away from using the background of a respondent's ancestors to determine his/her ethnic origin, to an individual's own perception of whether he/she thinks to be aboriginal or not (1996 Census Dictionary).

Table 3.1: Aboriginal ethnicity		
Cameco	**Census 1991**	**Census 1996**
88.2%	65.2%	80.8%

3.2.1.2 Marital status[15]

When the marital status of Cameco RSN employees is compared to the marital status of other Northerners, the marriage rate of Cameco RSN tends to be higher than the one for Northerners. In fact, 52.5% of Cameco respondents reported to be married, compared with 43.1% of the people in the 1991 Census and only 38.8% of respondents in the 1996 Census. What is surprising, however, is the higher proportion of Cameco employees indicating to be either separated or divorced (13.7%) when compared to the 1991 and the newest Census (6.6% and 7.7%, respectively). Table 3.2 illustrates the above.

Table 3.2: Marital status			
	Cameco	**Census 1991**	**Census 1996**
Married	52.5%	43.1%	38.8%
Single	32.4%	46.0%	49.4%
Separ./divorced	13.7%	6.6%	7.7%
Other*	1.4%	4.3%	4.1%

*"other" was one category Cameco survey participants could choose from. As for the census survey, the comparable category was "widowed"

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Since Census data did not include the category "common law" in the same question, Cameco data was made comparable to Census data by excluding respondents whose marital status was common law and re-calculating the proportions of respondents in the categories "single", "married", "separated/divorced" and "others". Further, the two categories "legally married and separated" and "divorced" were collapsed into one category in the Census data to make comparisons possible.

Some factors that might have had an influence on this result are summarized below.

- In the Cameco survey only workers between the ages of 18 and 64 were questioned, whereas in the Census all individuals 15 years of age and older where asked about their marital status. Hence, it appears possible that the smaller proportion of married individuals in the Census data may be caused by the lower age of survey respondents.

- While in the Cameco survey only one question asked respondents to indicate whether they were single, married, separated, divorced, or whether they were living in a common law relationship, the Census included this last choice as a separate question. Hence, the problem may be that a person who is separated/divorced but who is now living in a common law relationship may check the category "common law" in the Cameco survey. However, in the Census survey this same person may identify himself/herself to be separated/divorced in the first question and as living in a common law relationship in the second question. It may not have been sufficient to exclude the category "common law" from the Cameco results and to re-calculate the proportions.

3.2.1.3 Number of children

With respect to the number of children under the age of 18, respondents have at home, there seems to be no difference between Cameco employees and the typical Northern individual: the average number of children Cameco RSN reported to have was 1.77 - the same average was shown in the 1996 Census. As for Census 1991, the average number of

children was 1.80 (see Table 3.3).

Table 3.3: Average number of children		
Cameco	Census 1991	Census 1996
1.77	1.80	1.77

What should be considered, however, is the fact that these seemingly identical numbers may actually be quite different from each other when the following is taken into account: the Cameco survey asked its respondents how many children under 18 years of age live in their home (question 36 in the survey). Respondents could theoretically also include children of non-family members living under the same roof. Thus, in fact, Cameco RSN may have fewer children than other Northerners.

3.2.1.4 Level of Schooling[16]

Asked about the highest grade level of secondary education they received, 28.8% of Cameco survey subjects reported to have less than grade ten. In the 1991 Census, 54.7% stated to have a secondary education of less than grade nine.[17] The comparable number for the 1996 Census was 46.3%, meaning that education in the North has improved over time. This also becomes evident in the proportion of Census subjects having between nine and twelve years of education: in 1991 the number was 45.3% whereas in 1996 it increased to

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[16]

20% Census data.
Respondents 18 years and over were questioned in the Cameco survey whereas in the Census respondents 15 years and over were asked.
[17]

It could not be found out from the Census data how many individuals had an education of less than 10 years. Only the number of people with less than grade 9 education was given.

38

53.7%. The proportion of Cameco workers with an education of ten years or more was

71.2%. In 1991, 34.8% of Northerners stated to have an education/training beyond high

school, in 1996 the proportion was 35.8%. At Cameco, 62.4% of the RSN employees

reported to have an education beyond high school[18]. Hence, Cameco employees appear to

have a higher level of secondary education than their typical northern counterparts. Table

3.4 provides an overview.

Table 3.4: Highest level of education completed			
	Cameco	**Census 1991**	**Census 1996**
Less than grade 9	n/a*	54.7%	46.3%
Less than grade 10	28.8%	n/a	n/a
Grade 9-12	n/a	45.3%	53.7%
Grade 10-12	71.2%	n/a	n/a
Education beyond high school	62.4%	34.8%	35.8%

* "n/a" means that no data was available.

3.2.2 Composition of RSN Cameco employees in comparison with the Northern

Saskatchewan labour force population

3.2.2.1 Age distribution[19]

18

In the Census "further education" meant having a trade certificate/diploma, a university, or other non- university education. In Cameco's survey it meant having a technical/trade school, grade 12, or university education.

19

20% Census data
In the Census data, participation rates for the two age groups 15-24 and >24 are only shown as a percentage of the labour force of the two groups. In order to make the figures comparable to Cameco data, participation rates are shown as a percentage of total labour force. In the interpretation of the results it should be considered that in order to calculate the participation rate of people older than 24 in the Census data, the whole Census population 24 years and over has been used whereas in the Cameco data only employees age 24 to 64 were included.

Of Cameco's RSN employees, 12.3% were in the age group 18-24. The proportion of older RSN employees, i.e., mine workers in the age group 25-64 comprised 87.7% of all workers. For comparison, in the 1991 Census, the participation rate of Northerners age 15-24[20] was 19.6%, and of 25 years and older it was 80.4%. The numbers for the 1996 Census were 17.9% for Northerners age 15-24 and 82.1% for those 25 and over. Table 3.5 provides an overview. It seems that Cameco mining employees are over-represented in the older age groups but under-represented in young ages.

Table 3.5: Labour force age composition			
	Cameco	Census 1991	Census 1996
Below age 25	12.3%	19.6%	17.9%
Age 25 and older	87.7%	80.4%	82.1%

3.2.2.2 Sex Composition

The proportions of males and females working for Cameco at the mine were 91.5% and 8.5%, respectively. According to the 1991 Census, the participation rate (as percentage of the total labour force) of males was 60.4%, the one for females 39.6%. In 1996 it was 57.8% for males and 42.2% for females. It follows that women are much under-represented in Cameco's mining workforce (likely due to the predominantly physical work a mining job requires, and likely due to the rotation schedule that would put a strain on womens' traditional family obligations), whereas males are highly over-represented. Table 3.6 provides an overview.

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[20]

Data was not available for the 18-24 age group but only for ages 15-24.

Table 3.6: Labour force sex composition			
	Cameco	Census 1991	Census 1996
Males	91.5%	60.4%	57.8%
Females	8.5%	39.6%	42.2%

3.2.2.3 Work activity[21]

Most of Northern Saskatchewan's work activity involves part time work. In the 1991 Census full time work comprised only 40%, and in the 1996 Census it comprised 39.1% of all work activity of individuals 15 years and over. Mining employees usually do not work in part-time employment (11 hour shift). However, according to Cameco's June 1998 Human Resource Report, the company employed 31 (10.4%) of its 299 RSN employees at Key Lake and Rabbit Lake on a temporary basis. Table 3.7 illustrates the above.

Table 3.7: Work activity			
	Cameco	Census 1991	Census 1996
Full time work	89.6%	40.0%	39.1%
Part time work	10.4%	60.0%	61.9%

3.2.2.4 Employment income[22]

The average full time/year gross employment income in Northern Saskatchewan was $28,997 according to Census 1991 and $30,531 according to Census 1996. For part time

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[21]

[22] 20% Census data.

20% Census data.

workers, it amounted to $9,420 per year in the 1991 Census and $10,506 per year in the

1996 Census[23]. In contrast, the 1997 average gross employment income for the typical

Cameco RSN employee (full year and part year employment) was $41,240 per year

(Cameco 1997 RSN Participation Report). For comparison, the average yearly family

income of Northerners was $31,021 according to the 1991 Census and $34,904 in the 1996

Census. Table 3.8 provides an overview.

Table 3.8: Average employment income			
	Cameco	Census 1991	Census 1996
Full time work	$41,240*	$28,997	$30,531
Part time work	n/a	$9,420	$10,506

* Includes part time work. Full time employment income was slightly higher.

In this section, the main objective was to provide a comparison between RSN

Cameco employees and the typical person residing in Northern Saskatchewan, based on

selected personal and employment related characteristics. The next section will establish the

position of a typical aboriginal Cameco employees among his/her non-aboriginal colleagues.

3.3 THE TYPICAL ABORIGINAL CAMECO EMPLOYEE IN COMPARISON WITH CO-WORKERS

The following analysis is also based upon Cameco's 1994 employment survey. For

ease of reference, question numbers corresponding to the survey questionnaire are provided.

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[23]

In the Census results, figures are only given for males and females separately.

3.3.1 Ethnicity (Question 39)

Of all survey participants, 201 individuals (42.3%) stated to be of aboriginal ancestry. 274 (57.7%) reported to be non-aboriginal (Table 3.9).

Table 3.9: Ethnicity	
Aboriginal	201 (42.3%)[24]
Non-Aboriginal	274 (57.7%)[24]
Not stated	11 (2.3%)[25]

3.3.2 Residence (Question 38)

187 (38.6%) of the respondents were Residents of Saskatchewan's North (RSN). Of them, 165 individuals (88.2%) were of aboriginal ancestry, 21 respondents (11.2%) of the RSN were non-aboriginal. However, the majority of the sample, that is, 297 persons (61.4%), indicated that they were NRSN. Of them, 36 individuals (12.1%) were aboriginal people, 253 (85.2%) were non-aboriginal people (Table 3.10).

Table 3.10: Residence			
	Total	Aboriginal*	Non-Aboriginal*
RSN	187 (38.6%)	165 (88.2%)	21 (11.2%)
NRSN	297 (61.4%)	36 (12.1%)	253 (85.2%)
Not stated	2 (0.4%)		

* Due to non-respondents, one RSN and eight NRSN could not be identified according to their ethnicity.

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[24]

[25] Percentage of respondents.

Percentage of all sample subjects.

3.3.3 Demographic characteristics

3.3.3.1 Gender (Question 41)

442 (91.5%) of the respondents reported to be male. The proportion of males was 88.6% among the aboriginal employees, 93.4% among the non-aboriginal employees, 86.1% among RSN, and 94.9% among NRSN (Table 3.11). An explanation for the relatively small percentage of women in the sample and within the Cameco mining labour force may be that particularly women with children may find it difficult to combine a seven day in and out shift with their family responsibilities. In addition, women, due to physical constraints may be less likely to work in typical mining jobs. As a result, women may be more likely to work in support services or clerical jobs where only a limited number of employees is needed.

Table 3.11: Gender					
	Total	**Aboriginal***	**Non-Aboriginal***	**RSN**	**NRSN**
Male	442 (91.5%)	178 (88.6%)	256 (93.4%)	161 (86.1%)	281 (94.9%)
Female	41 (8.5%)	23 (11.4%)	18 (6.6%)	26 (13.9%)	15 (5.1%)
Not stated	3 (1.0%)				

* Due to non-respondents, the number of aboriginal and non-aboriginal males does not equal the total number of males.

3.3.3.2 Age (Question 31)

Looking at the age profile of the survey respondents, it becomes evident that (on average) non-aboriginal people tend to be about nine years older than aboriginal people

(Table 3.12). The mean age for aboriginal people was 33.59 years, versus 42.74 years for non-aboriginal people. While 63.6% of aboriginal respondents indicated to be 34 years and under, the comparable number for non-aboriginal respondents was only 16.5%. In fact, more than half of the aboriginal people stated to belong to the 25-34 age category. Considering employees 45 years and older, only 12% of aboriginal people indicated to belong to this age group. However, the respective proportion for non-aboriginal people was 38.8%. An explanation for the different age profiles may be that non-aboriginal people more often tend to have a better education and work experience. Hence, they very likely have higher level jobs at the mine site, are likely to be employed for many years, and thus tend to be older.

Table 3.12: Age				
	Aboriginal	**Non-Aboriginal**	**RSN**	**NRSN**
18-24	22 (10.9%)	3 (1.1%)	23 (12.3%)	2 (0.7%)
25-34	106 (52.7%)	42 (15.4%)	94 (50.3%)	54 (18.2%)
35-44	49 (24.4%)	122 (44.7%)	49 (26.2%)	122 (41.2%)
45-54	20 (10.0%)	76 (27.8%)	18 (9.6%)	87 (29.4%)
55-64	4 (2.0%)	30 (11.0%)	3 (1.6%)	31 (10.5%)
not stated	0 (0.0%)	1 (0.4%)	0 (0.0%)	1 (0.3%)
Average	33.59	42.74	33.48	42.58

3.3.3.3 Marital status (Question 35)

When questioned about their marital status, 75.5% of all non-aboriginal employees stated to be married. In contrast, only 39.3% of the aboriginal employees were married, which may be explained by their younger age profile. Age may also explain the high

proportion of aboriginal people living in common law (27.9%) and living as singles (21.9%) when compared to non-aboriginal people (common law 5.5%, single 6.2%). Table 3.13 provides an overview of the results.

Table 3.13: Marital status				
	Aboriginal	**Non-Aboriginal**	**RSN**	**NRSN**
Married	79 (39.3%)	206 (75.5%)	73 (39.0%)	219 (74.0%)
Common Law	56 (27.9%)	15 (5.5%)	48 (25.7%)	23 (7.8%)
Single	44 (21.9%)	17 (6.2%)	45 (24.1%)	16 (5.4%)
Div./Separ.	20 (10.0%)	35 (12.8%)	19 (10.2%)	37 (12.5%)
Other	2 (1.0%)	1 (0.4%)	2 (1.1%)	1 (0.3%)
Not stated	0 (0.0%)	1 (0.4%)	0 (0.0%)	1 (0.3%)

3.3.3.4 Number of Children (Question 36)

On average, aboriginal mine workers tend to have more children under the age of 18 at home: their average number of children was 1.79, while the comparable number for non-aboriginal people was only 1.08. Accordingly, 17.6% of aboriginal respondents versus 3.3% of non-aboriginal people reported to have more than three children at home. Culture and a younger age profile for aboriginal employees may be explanations for this trend. Table 3.14 illustrates the above.

Table 3.14: Number of children <18 years				
	Aboriginal	**Non-Aboriginal**	**RSN**	**NRSN**
None	65 (32.7%)	133 (48.7%)	60 (32.4%)	142 (48.0%)
One	32 (16.1%)	38 (13.9%)	34 (18.4%)	38 (12.8%)
Two	45 (22.6%)	65 (23.8%)	39 (21.1%)	73 (24.7%)
Three	22 (11.1%)	29 (10.6%)	20 (10.8%)	31 (10.5%)
Four	21 (10.6%)	7 (2.6%)	18 (9.7%)	10 (3.4%)
More than four	14 (7.0%)	2 (0.7%)	14 (7.6%)	2 (0.7%)
Not stated	2 (1.0%)	1 (0.4%)	2 (1.1%)	1 (0.3%)
Average	**1.79**	**1.08**	**1.77**	**1.11**

3.3.4 Level of human capital

3.3.4.1 Level of schooling (Question 32)

When asked about the highest grade level completed in high school, aboriginal respondents differed from non-aboriginal respondents by more than one whole grade: aboriginal people had an average of 10.01 years of schooling, whereas non-aboriginal people had an average of 11.23 years of education. 4% of the aboriginal employees had only a grade six education or less, which meets the commonly defined definition of "functional illiterate". None of the non-aboriginal respondents reported to have only a grade six education or less. On the other hand, 63.7% of non-aboriginal people and only 37.3% of aboriginal people had a grade twelve education. The majority of the aboriginal respondents (54.8%) had a high school education of grade 10 or less. Table 3.15 provides more detail.

Table 3.15: Highest level of schooling				
	Aboriginal	**Non-Aboriginal**	**RSN**	**NRSN**
Grade 6 or less	8 (4.0%)	0 (0.0%)	7 (3.7%)	1 (0.3%)
Grade 7-9	58 (28.9%)	22 (8.1%)	47 (25.1%)	34 (11.5%)
Grade 10	44 (21.9%)	46 (16.8%)	42 (22.5%)	50 (16.9%)
Grade 11	16 (8.0%)	31 (11.4%)	19 (10.2%)	29 (9.8%)
Grade 12	75 (37.3%)	174 (63.7%)	72 (38.5%)	182 (61.5%)
Not stated	0 (0.0%)	1 (0.4%)	0 (0.0%)	1 (0.3%)
Average	**10.01**	**11.23**	**10.14**	**11.08**

As mentioned in other parts of this paper, a lack in education for Northern Saskatchewan individuals, and especially for aboriginal people, is a well-known problem. The reasons for this unfortunate situation are manifold. A very high dropout rate of students, poor teaching conditions, and a lack in schools offering a grade twelve education, are some possible explanations.

3.3.4.2 Further training/education since high school (Questions 33a, 33b)

60% of aboriginal respondents versus 79.1% of the non-aboriginal respondents reported to have undergone further training since they completed school. More than half of them reported having been enrolled in a trade/technical school. Non-aboriginal people had more training involving a university education relative to aboriginal people (22.7% versus 13.3%, respectively). However, more aboriginal employees (10.7%) than non-aboriginal employees (6.5%) ended their education after finishing grade twelve (Tables 3.16 and 3.17).

Table 3.16: Did respondents receive any further training/education beyond high school?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	120 (60.0%)	216 (79.1%)	116 (62.4%)	227 (76.7%)
No	80 (40.0%)	57 (20.9%)	70 (37.6%)	69 (23.3%)
Not stated	1 (0.5%)	1 (0.4%)	1 (0.5%)	1 (0.3%)

Table 3.17: Areas of further training/education*				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Trade/technical school	64 (53.3%)	119 (55.1%)	59 (50.9%)	124 (54.6%)
University	16 (13.3%)	49 (22.7%)	18 (15.5%)	50 (22.0%)
Grade 12	14 (11.7%)	14 (6.5%)	12 (10.3%)	17 (7.9%)
Other	38 (31.7%)	48 (22.2%)	38 (32.8%)	49 (22.7%)
Not stated	4 (3.3%)	11 (5.1%)	3 (2.6%)	14 (6.2%)

* Although respondents could have given multiple answers, areas of further training/education were limited to a maximum of two in the coding process by Criterion Research. Percentages were taken from the number of respondents who reported further training/education since high school, irrespective of the number of answers respondents gave. Due to multiple answers, percentages will not add up to 100%.

3.3.5 Employment characteristics

3.3.5.1 Years employed (Question 34)

Asked about the number of years employed at the mine, aboriginal respondents had (on average) more than three and one half years less experience than non-aboriginal respondents: while aboriginal employees had an average of 7.02 years of employment at the mine, non-aboriginal employees had an average of 10.65 years. The proportion of non-aboriginal people, who stated that they worked at the mine for more than ten years was

56.6%. Only 25.4% of aboriginal people reported to have worked at the mine this long. Table 3.18 illustrates the results. One possible explanation for the longer employment of non-aboriginal people may be that when Rabbit Lake and Key Lake mine explorations started in the mid 1970s, the participation of aboriginal people/Northerners was - due to lacking qualifications - not very high. No extensive Human Resource Development Agreements existed to induce companies to maximize the training and employment of aboriginal people/Northerners. Non-aboriginal people, however, had the knowledge and experience to build and operate the mine and, hence, have worked more years at the mine.

Table 3.18: Years of employment at the mine				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Less than 1	26 (12.9%)	14 (5.1%)	28 (15.0%)	12 (4.0%)
1-2	33 (16.4%)	12 (4.4%)	30 (16.0%)	15 (5.1%)
3-5	36 (17.9%)	44 (16.1%)	37 (19.8%)	44 (14.8%)
6-10	55 (27.4%)	49 (17.9%)	44 (23.5%)	61 (20.5%)
more than 10	51 (25.4%)	155 (56.6%)	48 (25.7%)	165 (55.6%)
Average	7.02	10.65	6.84	10.66

3.3.5.2 Job position (Question 6)

When respondents were questioned about the job categories they have worked in since they started at the mine, the most frequent job mentioned by aboriginal employees was labourer (46.3%), followed by mine equipment operator (39.3%) and mill operator/helper (34.3%). For comparison, only 14.2% of non-aboriginal employees worked as labourer, 19% worked as mine equipment operator and 15% worked as mill operator/helper.

However, non-aboriginal people were more prevalent in higher skill level jobs, such as tradespersons, apprentice, technicians, technologists, professionals, supervisors, and managers. Table 3.19 provides an overview.

Table 3.19: Employment positions at the mine*				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Labourer	93 (46.3%)	39 (14.2%)	90 (48.1%)	44 (14.8%)
Mill operator/ helper	69 (34.3%)	41 (15.0%)	63 (33.7%)	48 (16.2%)
Mine equipm. operator	79 (39.3%)	52 (19.0%)	73 (39.0%)	61 (20.5%)
Driller/blaster/ dewatering	33 (16.4%)	19 (6.9%)	29 (15.5%)	23 (7.7%)
Warehouse person	12 (6.0%)	16 (5.8%)	11 (5.9%)	18 (6.1%)
Support/admin.	8 (4.0%)	7 (2.6%)	7 (3.7%)	8 (2.7%)
Trades person/ apprentice	45 (22.4%)	111 (40.5%)	33 (17.6%)	124 (41.8%)
Technician/ technologist	22 (10.9%)	47 (17.2%)	20 (10.7%)	50 (16.8%)
Clerk/admin.	10 (5.0%)	13 (4.7%)	14 (7.5%)	9 (3.0%)
Professional	1 (0.5%)	28 (10.2%)	3 (1.6%)	26 (8.8%)
Supervisor/ manager	10 (5.0%)	101 (36.9%)	13 (7.0%)	104 (35.0%)

*since respondents were allowed to give more than one answer, percentages, which are taken from the number of sample subjects in each response group, will not add up to 100.

The lack of higher level jobs held by aboriginal people may likely be due to these individuals' lower level of education and less further training after high school, when compared to their colleagues. Also, as mentioned above, many aboriginal people tend to be

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younger and hired more recently, so that they may not yet be qualified for higher positions. Programs such as Surface Lease Agreements and the Multi-Party Training Plan have been established to achieve a more equal representation of aboriginal people/Northerners across all job levels.

3.3.5.3 Promotion and training (Questions 7a, 8, 9)

Of all respondents, 55.4% stated to have been promoted in the past. Of them, aboriginal people received more promotions than their counterparts (64.5% and 48.5%, respectively). This is very likely due to the fact that aboriginal employees tend to occupy lower job levels, in which more possibilities exist to advance than in higher positions, in which promotions are mainly based on vacancies. When asked whether they were currently (i.e., at the time of the survey) under training for another position at the mine, 16.9% of aboriginal employees agreed. The proportion for non-aboriginal people was only 11.1%. About 72% of the respondents indicated that this training was for a better paying job than they had at the time of the survey. This was true especially for aboriginal employees (76.5%) when compared to non-aboriginal employees (69%). Table 3.20 provides an overview.

Table 3.20: Promotion and training				
Did respondents receive any promotion in the past?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	129 (64.5%)	129 (48.5%)	114 (62.0%)	149 (51.2%)
No	71 (35.5%)	137 (51.5%)	70 (38.0%)	142 (48.8%)
Not stated	1 (0.5%)	8 (2.9%)	3 (1.6%)	6 (2.0%)
At the time of the survey, did respondents participate in any job training?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	34 (16.9%)	30 (11.1%)	31 (16.7%)	34 (11.5%)
No	167 (83.1%)	241 (88.9%)	155 (83.3%)	261 (88.5%)
Not stated	0 (0.0%)	3 (1.1%)	1 (0.5%)	2 (0.7%)
Was this training for a better paying job?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	26 (76.5%)	20 (69.0%)	22 (71.0%)	25 (73.8%)
No	8 (23.5%)	9 (31.0%)	9 (29.0%)	8 (24.2%)
Not stated	0 (0.0%)	1 (3.3%)	0 (0.0%)	1 (2.9%)

3.3.6 Job satisfaction

Respondents were asked several questions concerning their attitudes toward working at the mine. They were asked about their overall satisfaction with their job, and more specifically about their satisfaction with mine safety, rotation and work schedule, income, benefits and vacation, social environment, and equality issues.

Before comparing response groups with respect to their satisfaction with different

work related issues, it must be emphasized that minor differences in ratings between aboriginal and non-aboriginal respondents may be meaningless. As mentioned before, aboriginal employees had less education and were younger than non-aboriginal employees. However, judgement tends to become more moderate with education and age. Hence, in comparison with non-aboriginal respondents, aboriginal respondents may have been more extreme in their responses in questions dealing with the degree of their satisfaction.

In some of the succeeding analyses the term "average satisfaction level" is mentioned. The average satisfaction level is calculated by assigning numbers to the different levels of satisfaction with "1" indicating "very unsatisfied" and "5" indicating "very satisfied". An average is calculated by multiplying the number of respondents in each satisfaction-category with the numbers assigned to these categories. The results are then summed up and divided by the total number of respondents within each of the four response groups.

3.3.6.1 *Overall satisfaction* (Questions 15f, 17)

In general, employees felt quite positively about their job, although aboriginal employees seemed to be slightly less satisfied: 86% of aboriginal people versus 90.8% of non-aboriginal people stated that overall, considering all circumstances, they were happy working at the mine Table 3.21 provides an overview.

Table 3.21: Are respondents happy about their job at the mine?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	172 (86.0%)	246 (90.8%)	163 (87.6%)	261 (88.8%)
No	28 (14.0%)	25 (9.2%)	23 (12.4%)	33 (11.2%)
Not stated	1 (0.5%)	3 (1.1%)	1 (0.5%)	3 (1.0%)

Questioned whether they would be happy if, as adults, their children would work at the same mine, the vast majority of non-aboriginal respondents (72.2%) agreed. A much smaller majority of aboriginal respondents (57.1%) seemed happy about this prospect. Table 3.22 illustrates the results.

Table 3.22: Would respondents be happy if, as adults, their children worked at the mine?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes[26]	80 (57.1%)	179 (72.2%)	81 (62.3%)	185 (69.3%)
No[26]	60 (42.9%)	69 (27.8%)	49 (37.7%)	82 (30.7%)
Don't know[27]	60 (29.9%)	23 (8.4%)	56 (29.9%)	27 (9.1%)
Not stated	1 (1.0%)	3 (1.1%)	1 (0.5%)	3 (1.0%)

3.3.6.2 Satisfaction with monetary returns (Questions 13a, 13b)

Asked about their satisfaction with the amount of money they earn, respondents, on average, appeared to be quite happy. Aboriginal and non-aboriginal employees seemed to

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[26] Percentage of all sample subjects excluding non-respondents and respondents who "don't know".

[27] Percentage of all sample subjects.

have a nearly identical average satisfaction level (3.49 and 3.45, respectively). More specifically, 58.5% of aboriginal respondents stated to be very satisfied and satisfied (22% reported to be very satisfied). For comparison, 53.7% of non-aboriginal respondents reported to be very satisfied and satisfied (including only 14.6% indicating to be very satisfied). However, a relatively high proportion of aboriginal employees reported to be very unsatisfied (11%) when compared to 4.4% of non-aboriginal employees. Table 3.23 provides an overview of the results.

Table 3.23: Satisfaction with monetary returns				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Very satisfied (5)	44 (22.0%)	40 (14.6%)	48 (25.8%)	36 (12.1%)
Satisfied (4)	73 (36.5%)	107 (39.1%)	66 (35.5%)	117 (39.4%)
Neutral (3)	41 (20.5%)	75 (27.4%)	36 (19.4%)	85 (28.6%)
Unsatisfied (2)	20 (10.0%)	40 (14.6%)	15 (8.1%)	45 (15.2%)
Very unsatisf. (1)	22 (11.0%)	12 (4.4%)	21 (11.3%)	14 (4.7%)
Not stated	1 (0.5%)	0 (0.0%)	1 (0.5%)	0 (0.0%)
Average	3.49	3.45	3.56	3.39

When respondents had to rate their happiness with benefits they receive (such as life and health insurance), the vast majority of mine workers showed a positive response. Aboriginal employees had a similar average satisfaction level than non-aboriginal employees (3.99 and 3.93, respectively). More specifically, 76.5% of aboriginal respondents and

74.8% of non-aboriginal respondents reported to be satisfied (including 33.5% of aboriginal and 28.8% of non-aboriginal respondents indicating to be very satisfied). Table 3.24 provides more detail.

Table 3.24: Satisfaction with benefits				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Very satisfied (5)	67 (33.5%)	79 (28.8%)	67 (36.0%)	80 (26.9%)
Satisfied (4)	86 (43.0%)	126 (46.0%)	79 (42.5%)	137 (46.1%)
Neutral (3)	28 (14.0%)	46 (16.8%)	21 (11.3%)	55 (18.5%)
Unsatisfied (2)	15 (7.5%)	16 (5.8%)	14 (7.5%)	19 (6.4%)
Very unsatisf. (1)	4 (2.0%)	7 (2.6%)	5 (2.7%)	6 (2.0%)
Not stated	1 (0.5%)	0 (0.0%)	1 (0.5%)	0 (0.0%)
Average	3.99	3.93	4.02	3.90

3.3.6.3 Satisfaction with other work issues (Questions 13c, 13g, 13h, 15c, 15g)

Asked about their happiness with respect to vacation entitlements, aboriginal employees appeared to be more satisfied when compared to their counterparts: the average satisfaction level for aboriginal employees was 3.78, the one for non-aboriginal employees was only 3.59. More specifically, the proportion of aboriginal respondents reporting to be happy was 67.4% (including 33.2% stating to be very happy). The corresponding proportion for non-aboriginal respondents was 59.7% (including 26% stating to be very happy).

Asked about how happy they were with respect to the scheduling of their vacations,

aboriginal employees seemed to be somewhat less happy when compared to non-aboriginal employees: the average satisfaction level for aboriginal workers was 3.59, whereas for non-aboriginal workers it was 3.65. Accordingly, 63.3% of non-aboriginal people indicated to be very satisfied and satisfied with when they are allowed to take vacations. The comparable proportion for aboriginal people was 59.1%, although they responded more frequently in the "very satisfied" category (33.3% versus 25.4%).

The overwhelming majority of respondents seemed to like their 7-day-in, 7-day-out rotation schedule and their daily work schedule. Despite possible interferences with traditional customs, aboriginal employees appeared to be slightly more happy than their colleagues about the rotation schedule (80% of aboriginal people versus 77.6% of non-aboriginal people). The average satisfaction level was 4.15 for aboriginal respondents compared to 4.06 for non-aboriginal respondents. A large proportion of aboriginal people (43.5%) indicated to be very satisfied with the work rotation. The comparable proportion for non-aboriginal people was 34.2%.

Questioned whether they think that the uranium mine would be a safe place to work, a great majority of respondents (about 79%) agreed. However, aboriginal respondents were somewhat less positive: whereas 93.4% of non-aboriginal people felt safe, only 87.4% of aboriginal people did.

Asked whether they would worry about their health working at the mine, aboriginal respondents seemed more concerned than non-aboriginal respondents: whereas only 21.9% of non-aboriginal employees stated to be worried about their health, nearly twice as many aboriginal employees did (41.2%). The (in comparison with non-aboriginal people) relatively

high percentage of aboriginal peoples' health concerns may be explained by strong believes associating "good health" with an undisturbed, pristine environment. Concurrently, aboriginal people show frequently a fundamental skepticism with respect to scientific predictions, such as radiation protection issues. Table 3.25 provides an overview of the above.

Table 3.25: Satisfaction with other work related issues					
Satisfaction with		Aboriginal	Non-Aboriginal	RSN	NRSN
amount of vacation*	% satisfied (Average)	67.4 (3.78)	59.7 (3.59)	65.9 (3.79)	60.1 (3.57)
vacation scheduling*	% satisfied (Average)	59.1 (3.59)	63.3 (3.65)	56.0 (3.55)	64.7 (3.67)
work rotation*	% satisfied (Average)	80.0 (4.15)	77.6 (4.06)	82.2 (4.21)	75.6 (4.02)
mine safety	% feeling safe at mine	87.4	93.4	88.0	92.7
health matters	% worried about health	41.2	21.9	40.7	22.9

* The percentage of respondents who stated to be very satisfied and satisfied as well as the average satisfaction level are reported.

3.3.7 Perceptions about equality in treatment (Questions 14c, 15a, 15b, 15e)

Among the respondents, perceptions about equality are not, in some cases, as positive as perceptions of other issues. Significant differences between response groups can be observed. Thus, a large proportion of respondents (about 43%) did not agree that "no matter where one is from, everyone is treated the same". Non-aboriginal people in particular felt this way (56.6%, when compared to 45.3% of aboriginal people). Table 3.26 provides more detail.

Table 3.26: Is everybody at the mine treated the same?				
	Aboriginal	**Non-Aboriginal**	**RSN**	**NRSN**
Yes	93 (54.7%)	109 (43.4%)	89 (55.6%)	119 (44.2%)
No	77 (45.3%)	142 (56.6%)	71 (44.4%)	150 (55.8%)
Don't know	31 (15.4%)	20 (7.3%)	27 (14.4%)	25 (8.4%)
Not stated	0 (0.0%)	3 (1.1%)	0 (0.0%)	3 (1.0%)

Most of the respondents (about 51%) did not agree that "as long as people work hard, everyone has the same chance to get ahead at the mine". Again, a larger proportion of non-aboriginal employees (64.5%) felt this way when compared to aboriginal employees (51.8%). Table 3.27 illustrates the above.

Table 3.27: As long as someone works hard, does everybody have the same chances to get ahead at the mine?				
	Aboriginal	**Non-Aboriginal**	**RSN**	**NRSN**
Yes	82 (48.2%)	86 (35.5%)	77 (49.0%)	97 (36.7%)
No	88 (51.8%)	156 (64.5%)	80 (51.0%)	167 (63.3%)
Don't know	31 (15.4%)	32 (11.7%)	30 (16.0%)	33 (11.1%)

When it comes to aboriginal issues, a strong majority of non-aboriginal respondents stated that aboriginal employees were treated as well as non-aboriginal workers (80.9%), and that aboriginal employees were just as likely to get promoted (82.9%). However, only 57.7% of aboriginal respondents felt this way with respect to the first issue, 56.8% with respect to the second issue. An interesting observation is that several respondents - mostly

non-aboriginal people/NRSN - created their own answer category in questions regarding

aboriginal issues, stating that aboriginal workers were actually treated better than non-

aboriginal workers. Tables 3.28 and 3.29 give more detail.

Table 3.28: Are aboriginal workers treated as well as non-aboriginal workers?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	94 (57.7%)	208 (80.9%)	92 (59.4%)	218 (79.6%)
No	64 (39.3%)	27 (10.5%)	59 (38.1%)	33 (12.0%)
Don't know	37 (18.4%)	17 (6.2%)	31 (16.6%)	23 (7.7%)
Better	5 (3.1%)	22 (8.6%)	4 (2.6%)	23 (8.4%)
Not stated	1 (0.5%)	0 (0.0%)	1 (0.5%)	0 (0.0%)

Table 3.29: Are aboriginal workers just as likely to be promoted than non-aboriginal workers?				
	Aboriginal	Non-Aboriginal	RSN	NRSN
Yes	88 (56.8%)	203 (82.9%)	83 (57.2%)	214 (81.1%)
No	65 (41.9%)	34 (13.9%)	59 (40.7%)	43 (16.3%)
Don't know	46 (22.9%)	27 (9.9%)	42 (22.5%)	31 (10.4%)
Better	2 (1.3%)	8 (3.3%)	3 (2.1%)	7 (2.7%)
Not stated	0 (0.0%)	2 (0.7%)	0 (0.0%)	2 (0.7%)

3.4 CHAPTER SUMMARY

In this chapter we tried to establish the position of a typical norther/aboriginal

Cameco employee outside and within the company at a given point in time (1994).

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When comparing Cameco RSN employees to the Census population it was found that Cameco tried to hire a proportionately large number of aboriginal people within its RSN labour force. Cameco RSN seemed to be somewhat different from the average Northerner in terms of demographics such as marital status, level of secondary and post-secondary education, and labour force composition. When compared to the typical northern person, Cameco RSN seem to be better off in terms of reliable employment and income.

A comparison of aboriginal Cameco employees with their co-workers indicated that

- Aboriginal people comprised a smaller number, had a stronger female representation, were younger, were less likely to be married, and had more children.

- Aboriginal people had a lower education level, were less years employed at the mine, had lower job positions and received more promotions and training.

- Aboriginal people were about equally satisfied with their jobs, were slightly more satisfied with income and benefits, were less happy about the idea to have their children, as adults, work at the mine, and were more concerned about their health working at the mine.

- Aboriginal people were more likely to think that everybody at the mine is treated the same. However, when asked to compare how aboriginal employees are treated relatively to non-aboriginal employees, aboriginal respondents were more likely to think that they were treated differently than their co-workers.

With respect to the objectives of recent Surface Lease Agreements, Cameco showed a relatively high success rate in

- creating a large and stable northern/aboriginal work force (more than 42% of aboriginal people with an average of seven years of employment).

- providing a safe and rewarding work environment (more than 87% of aboriginal people felt safe at the mine and most aboriginal people showed a high level of job satisfaction).

- implementing trainings programs resulting in promotions and better paying jobs (about 17% of the aboriginal employees participated in job training at the time of the survey and more than 64% had been promoted in the past).

Because job, family, life, and health issues are closely interrelated, the relatively high job satisfaction of Cameco's aboriginal workforce may be helpful to create a positive economic climate in more "vibrant" northern communities. On the other hand, continued efforts will be required to equalize the job distribution between aboriginal and non-aboriginal people at Cameco's mine sites. Concurrently, concerns of a relatively large number of aboriginal employees with respect to fair treatment and promotions, as well as to health related issues will have to be addressed.

A number of explanations have been provided to account for the differences between aboriginal and non-aboriginal Cameco workers. The next chapter focuses on analysing how much of the differences between employees in the Cameco workforce is actually attributable to aboriginal ethnicity.

CHAPTER 4: ECONOMETRIC ANALYSIS

4.1 HYPOTHESES TO BE TESTED

Based upon Cameco's 1994 employee survey, a comparison was made between aboriginal/RSN Cameco mine workers and other Cameco mining employees across various personal and employment related issues[28]. The results were presented in Chapter three. It was found that, among others, relative to their co-workers, a larger percentage of aboriginal employees received job training and promotions, and worked in lower skill level jobs. In addition it was found that aboriginal workers had a slightly lower overall job-satisfaction when compared to their colleagues. Many explanations, some of which have already been provided, could be found for these outcomes. A younger age of aboriginal employees relative to non-aboriginal employees, less education, and less job experience were only three possible factors accounting for the differences among workers. However, so far, no effort was made to assess the "direct" or "net" effect of aboriginal ethnicity on certain job related issues. This means that in order to evaluate Cameco's aboriginal policy and its efforts to integrate aboriginal people/Northerners in its mining labour force, we needed to focus on the "true" contribution of ethnicity on matters such as promotion,

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[28]

Due to the very high percentage of RSN within aboriginal employees and vice versa, the concepts "RSN" and "Aboriginal" are used interchangeably in the following analyses. Later, it is also tested whether Aboriginal-RSN differ from Aboriginal-NRSN.

training, job position, wage rate, and job satisfaction, while controlling for other variables such as age, education, and years of employment, which may also have had an influence. More specifically, we tested the hypotheses that aboriginal ethnicity would have no effect on the likelihood of

- being promoted.

- receiving job training.

- being in a high paying job position.

- having a high wage rate.

- having a high overall job position.[29]

A rejection of any of these hypotheses would likely imply differential treatment of aboriginal people with respect to the underlying assumption.

All analyses are based upon Cameco's 1994 employee survey and some additional information received from the company. The following sections present hypotheses that will be tested, the choice of appropriate model specification, and explanatory variables.

4.2 MODEL SPECIFICATION

The economic justification for models used within the upcoming regression analyses combines marginal productivity theory, human capital theory, the theory of job training, as well as the theory of labour market discrimination.

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[29]

Within the topic of overall job satisfaction we also test for the hypotheses that ethnicity has no effect on the likelihood of
- being happy if, as adults, respondents' children worked at the same mine
- being satisfied with one's salary

Marginal productivity theory

The marginal productivity theory implies that a profit maximizing firm that is a price taker in factor markets hires a factor up to the point at which its price equals the marginal product (Ehrenberg and Smith, 1994) . The cost, for example, of adding an extra employee to the firm's work force is the wage that must be paid. In these circumstances, a firm adjusts the quantity of the variable factor it hires at the established market price. This condition may be written as

$$w = MP \qquad\qquad [1]$$

where w is the real price of a unit of the factor.

Having established that the wage a person earns in a given firm is dependent on his/her marginal product, what are the factors that determine a person's marginal product, or better, a person's productivity?

Human capital theory

Considering Human Capital Theory, investments are made in human resources so as to improve their productivity and therefore their earnings (see Becker, 1993 and Mincer, 1974). Costs are incurred (direct as well as opportunity costs) in the expectation of future benefits (higher wages). Empirical studies (e.g., Dooley, 1986 and Vaillancourt, 1995) indicate a strong relationship between education and lifetime earnings. The income streams of persons with more education generally lie above the streams of individuals with less education. These studies also show that earnings increase with age and thus (presumably) labour market experience until age 40 or 50 and then decline slightly. This concave

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relationship between age and earnings is generally attributed to the accumulation of human capital in the form of on-the-job training and experience, a process which displays diminishing returns.

According to Benjamin, Gunderson and Riddell (1998), estimates of the rate of return from education are generally obtained by comparing different individuals at a point in time. After controlling for other observed factors that influence earnings, the differences in individuals' earnings are attributed to differences in educational achievement. This result is obtained via the estimation of a human capital earnings function. The theoretical derivation of this function is as follows:

If an individual I had zero years of schooling, the person would receive the wage

$$w_i = w_0(x) \qquad\qquad [2]$$

where w_0 is the person's productivity in the absence of education. It depends on x, a set of worker characteristics that affect an individual's productivity. If the person has one year of schooling, the rate of return would be

$$r = [w_1(x) - w_0(x)] / w_0(x) \qquad\qquad [3]$$

or, stated differently,

$$w_1(x) = (1 + r) w_0(x) \qquad\qquad [4]$$

where w_1 is the person's wage with one year of education. If it is assumed that the rate of return to schooling, r, is constant for each additional year of schooling, the wage with S years of schooling is

$$w_S(x) = (1 + r)^S w_0(x) \qquad\qquad [5]$$

Taking logarithms on both sides, the wages of an individual with S years of schooling are

$$\ln w = \ln w_0(x) + S \ln(1 + r) \approx \ln w_0(x) + rS \tag{6}$$

since $\ln(1 + r)$ is approximately equal to r (at least when r is very small).

Let $w_0(x)$ be specified by

$$w_0(x) = a + u_i \tag{7}$$

with the implication that earnings in the absence of schooling are equal to a constant, plus

a random unobservable component (e.g., other personal productivity related factors, such

as motivation and ability). Then, the human capital earnings function would be

$$\ln w_i = a + rS + u_i \tag{8}$$

When the previously mentioned association between earnings and age (as a proxy for

experience) is taken into account, the function would become

$$\ln w_i = a + rS + b\,Age + u_i \tag{9}$$

In general this can be written as

$$w = f\,(\text{education, experience, other personal productivity related factors}) \tag{10}$$

Theory of labour market discrimination

Becker (1971) states that in discriminating labour markets employers pay a wage

rate w to a member of a discriminated group

$$w = MP - d \tag{11}$$

where d represents the extent to which productivity is subjectively devalued for a member

of a discriminated group. The term d, reflecting personal characteristics such as race or sex,

is unrelated to a person's productivity. The general equation for d is

$$d = d\,(\text{race, sex, ...}) \tag{12}$$

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Another model of discrimination, one with the same implication as Becker's model, but with a different source of discrimination, is proposed by Aigner and Cain (1977). The authors state that employers, in predicting their employees' potential productivity, may supplement information on individual data (test scores, educational attainment, etc.) with information on the average characteristics of the groups to which employees belong (race, sex, etc.). Market discrimination may arise because employees with the same measured productive characteristics (test scores, education, etc.) will be treated differently on a systematic basis depending on group affiliation. This kind of discrimination is known as "statistical discrimination".

Complete specification of models explaining promotion, job position and wage rate

A substitution of [10] into [11] yields

w = f (education, experience, other personal productivity related factors) -

$$- d \text{ (race, sex, ...)} \qquad [13]$$

or, in more general terms,

$$w = \theta \text{ (education, experience, other personal productivity related factors, personal}$$

$$\text{productivity unrelated factors)} \qquad [14]$$

Focusing now on several of the hypotheses we want to test using regression analyses, we will design our models for wage rate, job position and promotion according to the specification in equation [14]. Due to some deficiencies in the wage data (see section 4.6), we include job position and promotion as alternative indicators of the wage rate. The

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higher (skilled) the job position, the higher is usually the wage rate. As for promotion, wages usually rise as a result of a promotion. Considering the explanatory variables in the three models,

- education is reflected in the number of years an employee has spent in high school and in whether the individual has received any further education beyond high school.

- experience is reflected generally by age and also in the number of years an employee has worked at the mine.

- promotion is included in the models explaining wage rate and job position to capture the effect of other personal productivity related factors. If, for example, an employer observes that a worker is very ambitious and hard-working in his/her job, the employer may reward the worker by giving him/her a promotion. This implies a high positive relationship between wage rate/job position and promotion.

- sex and ethnicity are included to capture the possibility of discrimination.

Theory of job training

According to Ehrenberg and Smith (1994) and Becker (1993), providing job training to workers is based upon cost-benefit analyses on the part of the employer. Profits are maximized if the net marginal benefit of job training (expected higher productivity in the future minus higher wage rate in the future) is equal to the marginal cost of job training (e.g., decreased worker productivity during training, material costs).

Net MB of job training = MC of job training   [15]

or, more specifically,

$$\sum_{i=1}^{n} [\text{Net MB}_i /(1 + \gamma)^i] = w^0 + \text{costdir} \qquad [16]$$

where γ denotes the discount rate, n denotes the number of remaining years an employee

is expected to work for the company following job training, w^0 denotes the wage rate of an

employee at the time of the job training, and costdir denotes the direct cost of training.

In general,

$$\text{job training} = f \text{ (benefit, cost)} \qquad [17]$$

A discriminating employer discounts the marginal benefit of job training for a

member of a discriminated group such that

$$\sum_{i=1}^{n} [\text{Net MB}_i/(1 + \gamma)^i]- d = w^0 + \text{costdir} \qquad [18]$$

where $d = d$ (race, sex, ...) represents the extent to which the marginal benefit of job training

provided to a member of a discriminated group is subjectively devalued. The term d is

unrelated to a person's productivity. A decreased marginal benefit/productivity resulting

from job training leads to less job training provided to a member of a discriminated group.

Complete specification of the model explaining job training

Accounting for the possibility of discrimination in [4], the general equation for job training

becomes

$$\text{job training} = \theta \text{ (benefit, cost, personal productivity unrelated factors)} \qquad [19]$$

Considering our regression analysis for job training, we will design our model according to the specification in [19]. As for the explanatory variables in the model,

- age is included to reflect a decreased net marginal benefit of job training. As an employee gets older, he/she is expected to work less additional years for the company following job training such that trainings cost may not be recovered by the employer.

- the number of years an employee has spent in high school and whether he/she has received any further education beyond high school are included to reflect an increased net marginal benefit of job training. If an employee has a high level of education, he/she may be more likely to be a quick learner and efficient trainee.

- the number of years an employee has worked at the mine are included to reflect a decreased net marginal benefit of job training. The more years an employee has worked at the mine, the more job experience he/she has acquired and the lower the benefit from additional training to the company.

- job position is included to reflect an increased marginal cost of job training as employees are in higher (skill) level job positions.

- sex and ethnicity are included to capture the possibility of discrimination.

In the upcoming sections more detail will be provided about the regression models used in our analyses. The above discussion about economic theories influencing the choice of models used in the testing of our hypotheses provides a theoretical benchmark for our econometric testing procedures.

4.3 PROMOTION

The dependent variable in the analysis of promotion comes from the survey question where respondents were asked whether any of the jobs they ever had at the mine were due to a promotion or progression[30]. Respondents could answer either "yes" or "no" or they could choose not to respond. In our analysis we wanted to find out what factors affect the probability of an employee being promoted. More specifically we wanted to know whether the mere fact of being aboriginal/northern would have any influence on the chance of being promoted. Other variables which were assumed to have an impact on whether an employee received a promotion were also included in the model.

For the analysis of promotion and its determinants, the dependent variable is dichotomous, taking on two discrete, mutually exclusive and exhaustive outcomes: Either a person received a promotion or he/she did not. A dummy variable captures the two possibilities, in that it takes a value of 1 if the individual was promoted, and a value of 0 if the person was not promoted. The dependent variable Y was assumed to be affected by a number of observable explanatory variables X_k, which were expected to influence the probability P that an event, in this case a promotion, would occur. Greene (1997) terms models like this Qualitative Response (QR) Models. Among the methods that are used to estimate QR (methods like the Linear Probability Model (LPM), the Gompertz model, or the Burr model), the Logit and Probit are the most common models employed (Aldrich, Nelson, 1994). However, due to its (mathematical) convenience, the Logit model is

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[30]

More explicitly, the question asks whether an employee has received at least one promotion since he/she has started working at the mine. Theoretically, the individual could have had already many promotions during his/her years at the mine.

generally used in preference to the Probit (Gujarati, 1995). The analysis of the variables affecting promotion was performed using Logit. In fact, with the exception of the fourth hypothesis - that being aboriginal would not affect the wage rate - all remaining hypotheses were in a form suitable for Logit.

According to Aldrich and Nelson (1994), a possible challenge with QR models is that $\sum b_k X_{ik}$ is used to approximate a probability number, P_i [$P_i \equiv P(Y_i = 1)$], constrained to be from 0 to 1, while $\sum b_k X_{ik}$ is not so constrained. Aldrich and Nelson suggest that one way of approaching this problem would be to transform P_i to eliminate both constraints in the following manner: the upper bound $P_i = 1$ is eliminated by looking at the ratio $P_i / (1 - P_i)$. This ratio must be positive (since $0 < P_i < 1$), but there is no longer an upper bound: as P_i approaches 1, $P_i / (1 - P_i)$, which can also be called the odds of an event occurring, goes toward infinity[31]. The lower boundary of zero can be eliminated by taking the natural logarithm, log $[P_i / (1 - P_i)]$, the result of which can be any real number ranging from plus to minus infinity. It is now assumed that for the Logit model the transformed dependent variable is a linear function of the explanatory variables:

$$\log [P_i / (1 - P_i)] = \sum b_k X_{ik} \equiv Z_i \qquad [20]$$

where

$$P_i = \exp[Z_i / (1 + \exp(Z_i)] \qquad [21]$$

This function is continuous and is able to take on any value from 0 to 1. It is close to 0 when Z_i ($= \sum b_k X_{ik}$) is near negative infinity, and it increases monotonically with Z_i until

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[31]

(1 - P_i) is the probability that the event, here a promotion, did not occur.

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it goes to 1 as Z_i approaches positive infinity. This relationship can be depicted in a smooth S-shaped curve which is symmetric about the point $Z_i = 0$.

According to Aldrich and Nelson (1994), Logit parameters are typically estimated by the Maximum Likelihood Method (MLE), a method concerned with picking parameter estimates that imply the highest probability or likelihood of having obtained a given sample *Y*. Computer software packages like Shazam are helpful in estimating Logit models. However, the main idea is to establish a likelihood function

$$L(Y|X_i,b) \equiv P(Y|X_i) = \prod P_i^{Y_i} (1 - P_i)^{1 - Y_i} \qquad [22]$$

where i = 1,......, N and *Y* is the probability of observing a particular sample of N values of Y, given all N sets of values X_i. This can be re-written as

$$\log L(Y|X_i,b) = \sum [Y_i \log P_i + (1 - Y_i) \log(1 - P_i)] \qquad [23]$$

where i = 1,......, N

Then, first derivatives are computed with respect to each of the k coefficients b_k and set equal to zero. Solutions of these k equations will yield the MLE estimators. The equations are:

$$\sum_{i=1}^{N} \{Y_i - [\exp(\sum b_k X_{ik}) / 1 + \exp(\sum b_k X_{ik})]\} X_{ij} = 0 \qquad [24]$$

where j = 1,......, k

Coming back to the hypothesis how various factors affect the likelihood of being promoted, the general model for this analysis can be written as

$$\log[P/(1-P)] = a_0 + a_1 TG + b.x \qquad [25]$$

where

P   = the probability of having received a promotion

(1 - P) = the probability of not having received a promotion

TG   = target group: a bivariate dummy variable, indicating whether a respondent is of aboriginal ancestry or not[32]

b   = vector of coefficients

x   = vector of other explanatory variables

Usually, one might expect that ethnicity or residency shouldn't make a difference in a company's decision to give a promotion. However, if initiatives (such as Human Resource Development Agreements and the MPTP) to economically integrate a larger number of RSN/aboriginal people into the mining force and into higher skill level jobs are successful, aboriginal employees may have a greater possibility of being promoted when compared to their colleagues. It follows that the coefficient for ethnicity is expected to be positively associated with the likelihood of having received a promotion.

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For additional runs, TG was treated as a bivariate dummy variable, indicating 1) whether a person was a RSN-aboriginal person not, and 2) whether a person was a NRSN-aboriginal person or not. The term "Target group" (TG) will be used throughout all analyses.

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Although we want to concentrate our analysis on testing whether being aboriginal/RSN would affect the likelihood of receiving a promotion, a number of additional hypotheses regarding several other explanatory variables were also tested.

An employee's gender may influence the likelihood of having received a promotion in that males may be more likely than women to be promoted. Males are more likely to stay longer with a company so that a company may be more likely to invest into job training, leading to promotion. Women, however, may be less likely to stay with a company (pregnancy, raising children). Hence, they may be offered less chances for promotion. It follows that the coefficient for gender is expected to be positively related to the dependent variable.

Age may have an impact on promotion in that, with increasing age, the likelihood of having received a promotion increases, leading to a positive association of age and promotion. As an employee gets older, he/she has accumulated not just job experience, but also life experience and may thus be more valuable to the company.

The more years a person has completed in high school the better may be his/her chances of receiving promotions. Having a better high school education may signal stamina, goal-orientation, and eagerness to learn to the employer. This may be true particularly for employees coming from the North, where it is less common for students to complete high school. In addition, the more high school education a person has, the higher the likelihood that he/she will pursue further studies, making him/her a more valuable asset for the company. It follows that the coefficient of high school education may be positively related to the dependent variable.

A person with training or education beyond high school may be more likely to be promoted than someone with only a high school education. In other words, the parameter for additional training/education beyond high school may be positively related to promotion. Companies may reward their employees for having spent time, effort, and money to improve their human capital. In addition, since employees with an increased knowledge base become a more valuable asset for the firm (and one that may be more likely to switch employers due to increased job opportunities), the company may create incentives for the worker to stay with the company via promotions.

The more years a person has worked at the mine, the more likely he/she may be having received a promotion, for with increasing seniority an employee may have had more chances for career advancement due to promotions. It follows that the parameter for years of employment may be positively related to promotion.

The more general model [25] can be refined to take into account the above mentioned explanatory variables affecting the likelihood of having received a promotion (as well as their expected signs):

$$\log[P/(1 - P)] = a_0 + a_1 TG + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 \qquad [26]$$
$$(+) \qquad (+) \quad (+) \quad (+) \quad (+) \quad (+)$$

where

P   = the probability of having received a promotion

(1 - P) = the probability of not having received a promotion

TG   = A bivariate dummy, indicating whether a respondent is a member of the target

         group (i.e., whether a respondent is an aboriginal person, RSN-aboriginal person,

or NRSN-aboriginal person)

x_1 = a bivariate dummy, indicating whether a respondent is male or not

x_2 = the age of the respondent in categories from one to five, with category one representing the youngest employees (age 18-24), and five representing the oldest employees (age 55-64)

x_3 = the highest grade level respondents completed in high school in categories one to five, with category one representing employees with a grade 6 education or less, and five representing employees who completed grade 12

x_4 = a bivariate dummy, indicating whether a respondent has received further education/training beyond high school or not

x_5 = the number of years a respondent had been working at the mine in categories one to five, with category one representing employees who have been at the mine for less than one year, and five representing employees who have been at the mine for more than ten years

4.4 JOB TRAINING

For the regression analysis of job training, the dependent variable is dichotomous: either an employee was under job training at the time of the survey or he/she was not. Due to the qualitative nature of the dependent variable, the Logit method can be applied. The explanatory variables (as well as their definitions) are identical to the ones used for the analysis of promotion. However, as additional variable, a respondent's job position is included. Several hypotheses regarding the likelihood of being provided with job training

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will be tested.

If initiatives such as the MPTP are successful in encouraging mining companies such as Cameco to provide increased on-site-training-programs exclusively to Northerners, aboriginal people/RSN may be more likely to receive job training than their co-workers. It follows that the parameter for ethnicity is expected to be positively related to the likelihood of obtaining job training.

Males may be more likely to be involved in job training, in other words, the parameter for gender is expected to be positively related to job training. The reasoning behind this assumption is similar to the one already used when talking about the association between gender and the likelihood of being promoted.

With increasing age, an employee's likelihood of receiving job training may decrease. Many older employees may already have reached the peak of their career (usually around the age of about 50) and may prefer stability over change. In addition, with older employees the company may find it less profitable in terms of return to provide job training (marginal cost may exceed marginal benefit). It follows that the parameter for age may be negatively associated with the dependent variable.

The parameter for high school education as well as the parameter for education/ training beyond high school are assumed to be positively associated with the likelihood of being provided job training: the more education an individual has, the more likely he/she is to be provided job training. The employer may assume that a person who has a good education may have more interest in his/her personal development and advancement. Hence it may be rewarding to develop this individual's human capital in the best possible way in

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order to work for the company's advantage.

The more years a person has worked at the mine, the less likely he/she is to receive job training, resulting in a coefficient for years of employment that may have a negative association with the dependent variable. The more years an employee has worked at the mine, the more job experience he/she has already acquired and the lower the benefit to the company from additional training.

On the one hand, it may be argued that job training tends to be very job-specific, either emphasizing manual, physical or psychological skills, or focusing on academic abilities, making it difficult to decide whether job position has any impact at all on training. On the other hand, an employee who works in a low skill level/low paid job position may be more likely to receive job training than a person in a high skill level/high paid job position, making the parameter for job position negative. The reasoning behind this may be that an individual who is in a lower paid job position may still have much room for financial improvement he/she can get via a promotion following job training. In addition, providing job training to an employee in a low paid job position imposes a decreased marginal cost on the company.

The resulting specific model for the analysis of job training is

$$\log[P/(1 - P)] = a_0 + a_1 TG + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 \qquad [27]$$
$$\quad\ (+) \quad\ (+) \quad (-) \quad\ (+) \quad\ (+) \quad (-) \quad (-)$$

The term on the left measures the likelihood of receiving job training. With the exception of x_6, all other explanatory variables are exactly identical to the ones used in the model analysing promotion.

x_6 = a bivariate dummy, indicating whether a respondent at the time of the survey was employed in a (high skilled) job that earned an average hourly wage rate of more than \$30 (1) or less (0). In order to create this variable, data from question 6 of the survey, where respondents had to check all the jobs they had worked in at the mine, and information provided by Cameco about the hourly wage rate ranges (1998 values) in each job category, were combined. Each of the different job categories respondents reported was assigned an average hourly wage rate[33]. For each respondent the job yielding the highest average wage rate was assumed to be the most likely job the person was employed in at the time of the survey[34].

4.5 JOB POSITION

For the following analysis, respondents were divided into two groups: the first group included those individuals who were employed in a job position that earned an average hourly salary of more than \$30[35], the second group consisted of persons who were employed in job positions that earned less[36]. It should be emphasized that we are talking about the *average* hourly wage rate in a given job position. It is for example possible for an employee whom we categorized as member of the second group to get a salary of well

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[33]

Since no information was provided about individual salaries of employees in a given job category, the mid-point of the range was assumed to be the average wage income.

[34]

By this step the number of jobs a given employee may have worked (respondents could give multiple answers) in was reduced to one.

[35]

One could also say that job positions that earn an average of more than \$30 (professional, manager, supervisor) are higher skill level positions.

[36]

For a more detailed description see description of parameter x_6 in the analysis of job training.

below $30 due to the fact that 1) salary ranges in some professions may be quite large, and 2) within a job category there exist several levels, each of them paying a different wage rate.

Within the regression model, the dependent variable job position takes on a bivariate/dummy form in that a respondent is either working in a job position with a wage rate of more than $30 or not. Focusing on our hypothesis, we try to find out whether being a RSN/Aboriginal affects the job position a person is working in.

As before, the dichotomous character of the dependent variable permits the use of the Logit method. The regression model that will be used in this analysis will be identical to the one used in the analysis of job training, except that this time the dependent variable will be job position. Further, the variable x_6 (job position) will be excluded. Instead, a dummy variable is included for x_6, reflecting whether a respondent has received a promotion or not. Several hypotheses regarding the likelihood of working in a job category (such as professional, manager or supervisor) that earns an average hourly wage of $30 or more can be tested.

If Cameco and programs such as Human Resource Development Agreements or the MPTP have achieved their objective, an equal job distribution among aboriginal people/ Northerners and their co-workers should exist. However, since it likely takes a long time to make aboriginal people/Northerners equally representative in all job positions, these individuals may be less likely to be employed in high average wage job positions than their co-workers, leading to a negative coefficient for ethnicity.

An employee's gender may influence job position in that males may be more likely than females to work in job positions that earn more than an hourly $30. In other words,

the parameter of gender is assumed to have a positive sign. In a typical male dominated profession like mining, males tend to have more opportunities for career development, not only within a job category but also between job categories, making it more likely for males to have a high salary. Females, however, often tend to be more prevalent in "typical women jobs" like clerk or secretary, where the chances for financial advancement are more limited.

The older an employee gets, the more likely he/she may be in a higher paying position. This may be true either because 1) the person has already worked many years at the mine and has thus required the knowledge, experience and seniority to work in higher paying positions, or 2) the person has many years of experience in a different setting (e.g., in a different mine or in the corporate office) and is transferred to the Key Lake and Rabbit Lake mine site (where the survey took place) in the position of a manager or supervisor. If this reasoning is correct, the parameter for employee age may be positive.

The more years a person has spent in high school, the higher is the likelihood that he/she will engage in further training such as university, and the higher his/her chances for a higher paid employment. In other words, the high school parameter will have a positive association with the dependent variable. An individual who has made it through high school (and may plan to pursue further studies) may possess a high degree of self-actualization and a wish for personal and professional advancement. On the job, the person may be more productive and, hence, more valuable for the company.

Individuals, pursuing further studies/training beyond high school, may more likely get into higher paying job positions than persons with only a high school education The reasoning behind this is identical to the one above. It may again be concluded that the

parameter for further training beyond high school is positive.

The parameter for years of employment is assumed to be positive: the more years a person has spent at the mine, the more likely he/she may work in a job that pays an average wage rate of more than $30. This may due to more time/opportunities given to the person to advance either within a given profession or between different job categories.

A person who has been promoted since he/she started working at the mine may be more likely in a well paying job than a person who has never received a promotion. The promotion parameter is thus assumed to be positive. The reason for this possible outcome is self-explanatory in that promotions are usually the only way to a better paying job.

The specific model for the analysis of job position can be written as

$$\log[P/(1 - P)] = a_0 + a_1 TG + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 \qquad [28]$$
$$(-) \quad\;\; (+) \qu\;\; (+) \quad (+) \quad (+) \quad (+) \quad (+)$$

With the exception of the dependent variable, which measures the likelihood of being in a high paying job position, and the variable x_6, which measures promotion, the variables are exactly identical to the ones used in the analysis in of job training (section 4.4).

4.6 WAGE RATE

A more refined analysis to the one above, is to take the average hourly wage rate in each mining profession (see question 6) and regress it on the same explanatory variables already used in section 4.5, which were a respondent's ethnicity, sex, age, high school education, further education beyond high school, years worked at the mine, and promotion. In order to create the dependent variable, each of the different job categories checked by

the respondents in question 6 of the survey questionnaire was assigned an average hourly wage rate[37]. For each respondent the job yielding the highest wage rate was assumed to be the most likely job the person was employed in at the time of the survey.

In this analysis the dependent variable is no longer dichotomous, but it consists of eight different average hourly wage rate categories[38]. Hence the model can no longer be considered being a Qualitative Response Model, testable via the Logit approach. Instead, one would assume that the Ordinary Least Square (OLS) Method could be used without major difficulties. However, due to the very nature of the dependent variable, two problems we have to be aware of are errors of measurement and heteroscedasticity.

Since the dependent variable consists of average values, it is inherently the case that it is measured with error. For example if we have the model

$$Y_i = a + bX_i + u_i \qquad [29]$$

where

Y_i = hourly wage rate

X_i = a vector of variables influencing hourly wage rate

u_i = stochastic disturbance term

and data for individual respondent's hourly wage rate is not available, but only average values Y_i^*, such that

$$Y_i^* = Y_i + w_i \qquad [30]$$

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[37]

   Cameco provided the range of wage rates in each job position (1998 values). The midpoint of the range was assumed to be equal to the average hourly wage rate.
[38]

Several of the 11 job categories in question 6 of the survey had the same average hourly wage rates.

where w_i denotes errors of measurement in Y_i,

we are actually measuring

$$Y_i^* = (a + bX_i + u_i) + w_i \qquad\qquad [31]$$

$$Y_i^* = a + bX_i + (u_i + w_i) \qquad\qquad [32]$$

$$Y_i^* = a + bX_i + v_i \qquad\qquad [33]$$

According to Kennedy (1985) the existence of errors in measuring the dependent variable "causes no problems". Gujarati (1995) is more specific. He states that in the presence of measurement errors in the dependent variable, one should be aware that OLS estimators usually tend to be less efficient, eventually leading to smaller t-statistics. With this in mind, we will now focus on the problem of heteroscedasticity.

One assumption of the classical linear regression model is that, given the explanatory variables, the disturbances in the population regression function have all equal variance (i.e., they are homoscedastic). However, our dependent variable possesses considerable variability (heteroscedasticity) in that the number of employees within a given average wage rate category varies between 7 (warehouse person) and 185 (mill operator/helper, mine equipment operator, driller/blaster/dewatering). The variability did not follow a specific pattern. For example, job categories with a high wage rate had more employees than job positions with a low wage rate. Performing OLS and disregarding the presence of heteroscedasticity tends to result in estimators that are no longer efficient (i.e., they no longer possess minimum variance). Inferences drawn upon the results of OLS may be misleading in that for example the t-statistics tend to be much smaller than would be the

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case without heteroscedasticity. In order to reduce the problem of heteroscedasticity in the analysis, an effort was made to identify variables within the regression model and outside of the model which may have high explanatory power with respect to the variation in the error term. These variables (or transformations of them) are then regressed on the squared residual of the initial OLS regression. Subsequently, the square root is taken from the resulting values for the residual. The values (e*) are then inversed and multiplied with each term of the original regression model. Subsequently, a new regression is performed with the transformed initial model. Inferences are based upon the results of this new regression. After several trial and error runs, it was found that regressing the error term of the original model on the square root of the age parameter and the square root of the number of respondents in each wage class yielded the best results. Due to the complexity of the nature of heteroscedasticity in our model, the best possible result was a heteroscedasticity reduction by one fourth, as measured by the Breusch-Pegan-Godfrey test[39].

The above procedure resulted in the following model[40]:

$$Y/e^* = a_o/e^* + a_1 TG/e^* + b_1 x_1/e^* + b_2 x_2/e^* + b_3 x_3/e^* + b_4 x_4/e^* + b_5 x_5/e^* + b_6 x_6/e^* \quad [34]$$
$$ (-) \qquad (+) \qquad (+) \qquad (+) \qquad (+) \qquad (+) \qquad (+)$$

where

Y   = average hourly wage rate

e*   = term resulting from the procedure described above

TG   = target group

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[39]

The test statistic which follows a chi-square distribution initially had a value of 71.50. This value decreased to 53.13, using the transformed model.

[40]

For a more detailed description of the explanatory variables used in this model, please refer to previous sections.

x_1 = respondents' gender

x_2 = respondents' age

x_3 = high school education

x_4 = training/education beyond high school

x_5 = years worked at the mine

x_6 = promotion

Since the above model is just a refined analysis to the one already performed in the previous section, the hypotheses to be tested about the explanatory variables are identical to those in part 4.5. In short, it is assumed that the parameters will be negative for ethnicity and positive for gender, age, high school education, training/education beyond high school, years of employment at the mine, and promotion.

4.7 OVERALL JOB SATISFACTION

The dependent variable in the analysis of promotion comes from the survey question where respondents were asked whether they were generally happy working at the mine. Respondents had the option to answer "yes" or "no" (or they could choose not to respond at all). In the following analysis we are interested in finding out whether, ceteris paribus, RSN/aboriginal people are more likely to be satisfied with their workplace than their colleagues. The nature of the dependent variable is such that the Logit approach can be applied in the analysis. More specifically, the general regression model for the analysis of overall job satisfaction looks like the one in [25] in section 4.3. Several hypotheses

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regarding the likelihood of a respondent being satisfied about his/her job can be tested.

The parameter for ethnicity may be positively associated with the likelihood of being satisfied with one's job: RSN/aboriginal people may be more satisfied with their job than other employees since being engaged in paid employment leads to a steady income and a feeling of independence. On the other hand, aboriginal people have to give up part of their culture in order to fully participate in modern industrial society. This may make them less satisfied with their job. It follows that the effect of ethnicity on job satisfaction is indeterminate.

A person's gender may influence job satisfaction in that males may be more likely to be satisfied with their jobs, leading to a positive gender-coefficient. A possible cause for this assumption is that in a male dominated workplace (91.5% of the survey respondents were male), males may have a more (intrinsically as well as extrinsically) rewarding job, offering opportunities and choices for professional, personal, as well as financial advancement. In addition, working within a 7-day-in 7-day-out rotation schedule may be more strenuous for women than for males to adapt, because women may have more emotional difficulties to leave their families to themselves every second week.

The coefficient for age may affect the likelihood of a person being satisfied in his/her job in a positive way in that with increasing age, employees may be more satisfied with their work. Support for this assumption is offered by Mayo and Snyder (1991), who compared several causes of the age/job satisfaction relationship, among others the so-called "grinding down" hypothesis. It suggests that there tends to exist a higher job satisfaction in older workers due to the fact that their work-related expectations and aspirations are

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progressively ground down over time by the normal frustrations and disappointments of everyday life. Another hypothesis, the so-called "Lordstown" hypothesis suggests that younger workers tend to be less satisfied with their work because they have relatively higher expectations about the quality of their work experience. Schermerhorn, Templer, et al. (1992) report that surveys have shown that employees under age 30 usually tend to be less satisfied with their job than workers in older age groups.

Married employees may be more likely satisfied with their job. The rotation schedule offers two possible benefits to the employee: An employee may look forward to his/her 7 day "holiday" to spend quality time with his/her spouse/family. However, at the same time an employee may also enjoy the time away from the family in order to be by him/herself and with colleagues/friends. If the above reasoning is correct, the parameter for marital status is expected to be positive.

An employee who has children younger than 18 years of age living at home may be more likely satisfied in his/her job. The reasoning behind this is the opportunity granted by the rotation schedule to have a combination of two different "worlds": an employee is able to spend quality time with his/her kids (and partner) every second week, and at the same time to be by him/herself and with colleagues/friends during the shift-week. However, it may not be easy to be a parent for one week and then be away for another week. Especially when the children are small and bondages form between parents and children, it may be hard on both parties to be separated. It may also be difficult for an employee to be away from home when an obstinate teenager tries to undermine the parents' authority. It follows that the effect of the marital status coefficient on job satisfaction may be indeterminate.

The more high school education an individual has the more job satisfaction he/she may have. In other words, the parameter for high school education is expected to be positive. The more years a person has spent in high school, the higher the possibility that the individual pursues further studies beyond high school. According to Mottaz (1984), an increased education tends to have, on average, a high payoff in terms of intrinsic rewards (such as task autonomy, task involvement, and task significance), and, hence, overall work satisfaction. If this reasoning is correct, it may be assumed that the coefficient for high school education has a positive sign.

Employees with education/training beyond high school may be more happy with their jobs than employees with less education. The reasoning behind this assumption is the same as the one above. Again, the coefficient is expected to be positive.

The parameter for years worked at the mine is assumed to be negatively associated with job satisfaction, in that an employee may become less satisfied with his/her job the more years he/she has been employed. When a person joins a company (either coming from school or from another profession), he/she is usually full of expectations and enthusiasm. However, within a very short period of time, the employee must often realize that not all expectations can be fulfilled and that often routine work and boredom kick in. Frustration and dissatisfaction may result. As the worker gets older (and wiser), this effect may reverse.

A person employed in a job category providing an average hourly wage rate of more than $30 may likely be less satisfied with his/her job than a person working in a job position that earns less. It may be the case that the higher an employee's salary, the more competitive he/she may become. As promotions in higher paid positions tend to be based

mainly on vacancies, power struggles between co-workers may become more and more common. Since the satisfaction with one's salary is often a very important component of overall job satisfaction, a person who never seems to be satisfied with the amount of money he/she earns usually tends to have less overall job satisfaction. On the other hand, a different kind of argument can be made: jobs that earn an employee more than $30 hourly wages are likely to provide more intrinsic (besides extrinsic) rewards, thus the likelihood of being satisfied with one's job tends to increase. In conclusion, the overall effect of the parameter for wage rate is assumed to be indeterminate.

The coefficient for promotion is assumed to have a positive association with overall job satisfaction in that employees who have received (a) promotion/s may be more likely to be satisfied with their job. By being promoted, employees receive a signal telling them that they do a good job, that they are valuable for the company, and that the company rewards them for their efforts. The consequence may be that employees get increasingly involved in their job (especially if they like their job) and try to do even better in the future.

The specific regression model for overall job satisfaction can be written as

$$\log[P/(1 - P)] = a_0 + a_1 TG + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9 x_9 \qquad [35]$$
$$\quad\quad\quad\quad\quad (?) \quad (+) \quad (+) \quad (+) \quad (?) \quad (+) \quad (+) \quad (-) \quad (?) \quad (+)$$

where

P   = the probability of being satisfied with one's job

(1 - P) = the probability of not being satisfied

TG   = target group

x_1 = a bivariate dummy variable, indicating whether a respondent is male or not

x_2 = the age of a respondent in categories from one to five, with category one representing the youngest employees (age 18-24), and five representing the oldest employees (age 55-64)

x_3 = a bivariate dummy, indicating whether a respondent is married or not

x_4 = a bivariate dummy, indicating whether a respondent has children <18 years of age or not

x_5 = the highest grade level respondents completed in high school in categories one to five, with category one representing individuals with a grade 6 education or less, and five representing employees who completed grade 12

x_6 = a bivariate dummy, indicating whether a respondent has received any further education/training beyond high school or not

x_7 = the number of years a respondent had been working at the mine in categories one to five, with category one representing employees who have been at the mine for less than one year, and category five representing workers who have been at the mine for more than ten years

x_8 = a bivariate dummy, indicating whether a respondent at the time of the survey was employed in a (high skilled) job that earned an average hourly wage rate of more than $30 (1) or less (0)

x_9 = a bivariate dummy variable, indicating whether at least one of a respondent's jobs at the mine was due to a promotion or not

In this section, overall job satisfaction and its determinants were analysed. In the upcoming two sections, the focus is upon two facets of overall job satisfaction. In short, we try to find out whether RSN/aboriginal people, when compared to their co-workers, are more likely to be happy if, as adults, their children work at the same mine and whether they are more likely to be satisfied with their salary.

4.8 HAPPINESS ABOUT CHILDREN LATER WORKING AT THE MINE

The dependent variable for this analysis comes from the survey question where respondents were asked whether they would be happy if, as adults, their children worked at the same mine. Employees had the choice to answer either "yes", "no" or "don't know" (or could choose not to respond). A dichotomous dummy variable was created such that it took on a value of 1, if respondents agreed to be happy about their kids later working at the mine, and 0, if respondents reported not to be happy about this outlook or not to know. Again, our main focus is to test whether RSN/aboriginal people tend to be more likely than their colleagues to be happy about their kids later working at the mine.

The general regression model is the same as [25] in section 4.3. Within the analysis of a respondents' happiness about their children later working at the mine, a number of hypotheses can be tested.

On the one hand, RSN/aboriginal people may be more happy if, as adults, their kids work at the same mine. This assumption is based upon the reasoning that these people may realize that (contrary to many other industries), the mining company offers them not only a stable employment and income, but also an opportunity to participate in (and to influence)

industrial society. Individuals may realize that a balance can be found between traditional and modern culture. On the other hand, there may be aboriginal people who have difficulties finding a balance between traditional and modern values. These individuals may like to see their children work in employment that is more controlled by traditional values (e.g., working in aboriginal communities once opportunities for economic development have been created). It follows that the effect of ethnicity on the dependent variable is indeterminate.

Male employees may be more likely happy than female workers if their children later worked at the mine. In other words, the parameter for gender is expected to have a positive sign. Unlike most female workers, males tend to have more opportunities to enter different job positions offered at the mine site and are also more likely to advance to higher positions. Thus, they may have a more favourable impression of mining employment.

The coefficient for years worked at the mine is expected to have a negative association with the dependent variable: the more years a respondent has worked at the mine, the less likely he/she may be excited about the prospect of his/her children working there. While employees use the initial years of employment to establish their position within the company, there comes a time when employees have reached their career peak. After this, most employees tend to have little chance for further professional advancement. Many individuals may find themselves boxed in, frustrated, bored, and dissatisfied with their routine work. With feelings like this, employees may not think too positively about mining employment (or employment with all its ups and downs in general).

A respondent who is employed in a job that earns more than $30 per hour is more likely to be happy about his/her children later working at the mine, likely resulting in a

positive parameter for years of employment at the mine. Job categories that earn an employee more money (e.g., supervisor, manager), also tend to provide the employee with more intrinsic rewards. He/she may actually enjoy a job providing self-esteem, self-actualization, and power. An employee who feels good about the job he/she is in, will likely think that a mining job may also be a good choice later for his/her children.

Respondents, who have a high overall job satisfaction are more likely to be happy if their children later decide to work at the mine. Hence, the coefficient for job satisfaction is assumed to have a positive influence upon the dependent variable. Overall job satisfaction reflects a multitude of components, among others satisfaction with one's pay, benefits, social environment, workplace equality, career chances, and balance between personal as well as professional life. If an employee is generally happy about all these issues, he/she obviously will have the impression that the mine is a good place to work at.

Taking all explanatory variables into account, the specific regression model[41] for this analysis can be written as

$$\log[P/(1 - P)] = a_0 + a_1 TG + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 \qquad [36]$$
$$\quad\; (?) \qquad (+) \quad\; (-) \quad\; (+) \quad\; (+)$$

where

P   = probability that respondents are happy about their kids later working at the same mine

(1 - P) = probability that respondents are not happy about their kids later working at the same mine

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For a more detailed description of the explanatory variables, please refer to previous sections.

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TG = target group

x_1 = respondents' gender

x_2 = years worked at the mine

x_3 = job position

x_4 = overall job satisfaction. A bivariate dummy reflecting whether a respondent was satisfied with his/her job or not

4.9 SATISFACTION WITH SALARY

The dependent variable for this analysis comes from the survey question where respondents had to indicate their degree of happiness about the money they earn on a scale from 1 to 5, where 1 meant that the individual was very happy/satisfied, and 5 meant that the individual was very unhappy/unsatisfied. For the purpose of our analysis, the five different degrees of happiness/satisfaction were combined in only two categories: the first category included categories 1 and 2, the second category included the remainder, including the neutral category 3. The result was a binary dependent variable which, within a Logit model, was regressed upon several explanatory variables.

The general regression model is identical to [25] in section 4.3. A number of hypotheses regarding the way how the explanatory variables may affect respondents' satisfaction with their salaries can be tested.

Relative to their colleagues, RSN/aboriginal people may be more satisfied with their salary. This may be due to the fact that, when compared to the average person living in Northern Saskatchewan, Cameco RSN tend to have a higher income (see chapter 3, Table

3.8). On the other hand, RSN/aboriginal people may be less satisfied with their earnings because their colleagues usually tend to earn more. It follows that the net effect on the dependent variable may be indeterminate.

Considering how a respondents' gender influences the likelihood of being satisfied with one's salary, it may be assumed that males may be more likely satisfied when compared to women, because males are usually more prevalent in job positions with a higher earning potential, such as manager or supervisor. If this reasoning is correct, the coefficient for respondents' gender would likely be positive.

The older an employee gets, the more likely he/she may be satisfied with what he/she earns. When an employee is still very young, the individual wants to plan his/her future, would like to buy a car, a house, and may want to establish a family. The person may have the feeling to never have enough money on hand to spend. At he same time, younger employees may still lack skills and above all experience to hold high level, well paying job positions. Older employees, however, may already have reached their full earning potential (usually around age 50). They likely got used to a stable lifestyle that can be accommodated with the money they earn, or they may have learned over the years to reduce their expectations and to be satisfied with what they have. If this reasoning is correct, the parameter for age is expected to be positive.

The more children an employee has, the less likely he/she may be satisfied with his/her salary. In other words, the coefficient for number of children is assumed to have a negative association with the dependent variable. Children tend to put a heavy burden on their parents' pocket books: starting from day care, over increased living expenses to

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accommodate a growing family (e.g., bigger car, bigger house), up to a college/university education, children need to be financed. This may be particularly hard if one parent (the one not working at the mine) decides to stay at home with the kids instead of working[42].

The more years a respondent has completed in high school, the more satisfied he/she may be with respect to what the person earns. Hence, it may be assumed that the coefficient for high school education has a positive sign. With more years spent in high school, the likelihood that the person engages in further education increases. With more education, the likelihood for a person to get an intrinsically as well as extrinsically rewarding job increases, likely resulting in higher overall job satisfaction as well as financial satisfaction.

The coefficient for education/training beyond high school is expected to have a positive impact on the dependent variable. This assumption may be based upon the same reasoning as already developed above.

The parameter for years worked at the mine is expected to be negatively associated with a person's satisfaction with his/her salary in that the more years a person has been employed at a job, the less financially satisfied he/she is likely to become. A possible explanation for this assumption is that with more energy and effort put into one's job , some kind of over-expectation with respect to a fair compensation is likely to develop.

A person who is working in a job position that earns an average hourly wage rate of more than \$30 may likely be less satisfied with his/her salary in comparison to a person earning less. As already mentioned when talking about overall job satisfaction, the more a

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Often there may be no other choice because the partner working at the mine is only available every second week to help out with the kids

person earns, the more likely he/she becomes overly competitive in his/her working environment, continuously fighting for promotions and for even higher salaries. If this assumption is correct, the parameter for wage rate is expected to be negative.

The detailed regression model for this analysis is given below[43]:

$$\log[P/(1 - P)] = a_0 + a_1 TG + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 \qquad [37]$$
$$\quad\quad\quad\quad (?) \quad (+) \quad (+) \quad (-) \quad (+) \quad (+) \quad (-) \quad (-)$$

where

P   = the probability of being satisfied with one's salary

$(1 - P)$ = the probability of not being satisfied with one's wage rate

TG   = target group

x_1 = respondents' gender

x_2 = respondents' age

x_3 = number of children <18 years of age living at home in categories one to six where one includes all respondents with no kids at home, and five includes employees with more than four children

x_4 = high school education

x_5 = education/training beyond high school

x_6 = years employed at the mine

x_7 = job position

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For a more detailed description of the explanatory variables, please see previous sections.

4.10 CHAPTER SUMMARY

This chapter established the econometric framework for the testing of our hypotheses. In particular, regression models were specified based on economic theory and applied to selected data from Cameco's employment survey. The next chapter will provide a summary of the regression results.

CHAPTER 5: REGRESSION RESULTS

In the previous chapter, regression models to test our main hypotheses have been established. Within these models, we included, besides ethnicity, several other explanatory variables and tried to measure their effect on the dependent variables. So far, due to the very high proportion of aboriginal people within the RSN population, we haven't made a distinction between aboriginal people and Residents of Saskatchewan's North. However, it may be interesting to find out whether differences exist between RSN-aboriginal people and NRSN-aboriginal people regarding their situation within Cameco's workforce. After all, programs such as the MPTP and Cameco's northern employment policy (based on federal and provincial requirements) focus particularly on integrating "Northerners" into the mining force. For the purpose of comparing RSN-aboriginal people and NRSN-aboriginal people, additional regression analyses for each dependent variable were performed[44]. The following sections discuss the combined results.

5.1 PROMOTION

The regression of how the likelihood of being promoted is affected by various

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[44]

Except for the target group, all other explanatory variables remained unchanged.

explanatory variables has been performed with a sample of 462 (out of 486) respondents[45]. As expected, the results indicate that being aboriginal/RSN affected the likelihood of receiving a promotion. In other words, ceteris paribus[46], aboriginal people/RSN were more likely to be promoted when compared to their colleagues. With respect to the other explanatory variables in the model, a respondent's age, and years worked at the mine were found to be significant factors in determining promotion. However, whereas, as predicted, years worked at the mine had a positive influence on the likelihood of being promoted, the sign for age was inconsistent with our predictions. Results indicated that, with increasing age, the likelihood of receiving a promotion declines.

Two additional regression analyses were performed for RSN-aboriginal people and NRSN-aboriginal people. It was found that, when compared to their co-workers, RSN-aboriginal people were significantly more likely to get promoted. Considering the other explanatory variables (which remained unchanged from the first analysis), they displayed the same pattern as before, except that in the regression for NRSN the variable x_3 (grade level completed in high school) changed to become a significant determinant of promotion. However, the sign of the coefficient was not consistent with our prediction in that more years spent in high school actually lead to a decreased likelihood of receiving a promotion. Table 5.1 provides an overview of the results.

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[45]

For this and all other regression analyses in this paper, only respondents who provided information on all the variables used within the model were included in the analysis. The sample size for each regression analysis is provided at the bottom of each table. As mentioned earlier, respondents' characteristics closely approximated those of the workforce so that no corrections for non-response error were performed.

[46] We can only control for other variables within the model.

Table 5.1: Promotion			
	Aboriginal	**RSN-Aboriginal**	**NRSN-Aboriginal**
Variable	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**
Constant	-1.69 (-2.13)	-1.17 (-1.52)	-0.07 (-0.12)
TG (Target group)	**0.86 (3.31*)**	**0.65 (2.45*)**	**0.56 (1.43)**
x_1 (Gender)	0.72 (1.92)	0.71 (1.88)	0.60 (1.63)
x_2 (Age)	-0.36 (-2.81*)	-0.40 (-3.12*)	-0.51 (-4.35*)
x_3 (Grade completed)	-0.11 (-1.12)	-0.14 (-1.55)	-0.21 (-2.35*)
x_4 (Further education)	0.43 (1.79)	0.39 (1.63)	0.32 (1.37)
x_5 (Years worked at mine)	0.54 (5.50*)	0.52 (5.36*)	0.47 (5.06*)
Sample size: 462			

* indicates confidence levels of 95% or higher

5.2 JOB TRAINING

In the regression of job training on ethnicity and a number of other variables it was found that, as expected, aboriginal/northern employees were significantly more likely[47] than their colleagues to receive job training. Against expectations, however, none of the remaining explanatory variables seemed to have a statistically significant influence on the dependent variable.

When regression analyses were performed for RSN-aboriginal people and NRSN-aboriginal people, only RSN-aboriginal people were significantly different[47] from their co-workers in terms of having a higher likelihood of receiving job training. As for the other

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[47]

90% confidence level.

explanatory variables in the model, they displayed the same pattern as before, except that in the regression for NRSN-aboriginal people the variable x_2 (Age) became significant[47] and consistent with our prediction. Table 5.2 gives an overview of the regression results.

Table 5.2: Job training			
	Aboriginal	**RSN-Aboriginal**	**NRSN-Aboriginal**
Variable	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**
Constant	-2.52 (-2.38)	-2.41 (-2.26)	-1.33 (-1.63)
TG (Target group)	**0.65 (1.82*)**	**0.62 (1.70*)**	**0.08 (0.16)**
x_1 (Gender)	-0.13 (-0.28)	-0.11 (-0.25)	-0.19 (-0.41)
x_2 (Age)	-0.19 (-1.03)	-0.18 (-1.02)	-0.29 (-1.71*)
x_3 (Grade completed)	0.07 (0.52)	0.05 (0.42)	-0.01 (-0.09)
x_4 (Further education)	0.52 (1.50)	0.52 (1.48)	0.46 (1.31)
x_5 (Years worked at mine)	0.07 (0.60)	0.07 (0.60)	0.04 (0.32)
x_6 (Job position)	0.33 (0.95)	0.30 (0.87)	0.16 (0.48)
Sample size: 468			

* indicates confidence levels of 90%

5.3 JOB POSITION

In the regression of job position on ethnicity and several other variables it was found that, as expected, aboriginal people/RSN were less likely than their colleagues to work in a high skill level job, i.e., in a job category that earns more than an average hourly wage of $30. Considering the remaining explanatory variables, a respondent's age, the number of grades completed in high school, and whether the individual had been promoted in the past,

appeared to be significant factors affecting the dependent variable[48]. The signs of the coefficients of these variables were consistent with our prediction.

Regression analyses for RSN-aboriginal people and NRSN-aboriginal people showed that, when compared to other Cameco mining employees, RSN-aboriginal people were less likely to be in a (on average) high paying job position[49]. The remaining explanatory variables displayed the same pattern as mentioned above, except that in the regression for NRSN-aboriginal people the variable x_4 (further education) became moderately significant and consistent with our prediction. Table 5.3 provides more detail.

Table 5.3: Job position			
	Aboriginal	**RSN-Aboriginal**	**NRSN-Aboriginal**
Variable	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**
Constant	-4.79 (-4.32)	-5.19 (-4.97)	-8.24 (-8.18)
TG (Target group)	**-2.48 (-6.18*)**	**-2.58 (-5.32*)**	**-1.07 (-1.83)**
x_1 (Gender)	0.32 (0.59)	0.31 (0.56)	0.76 (1.41)
x_2 (Age)	0.63 (3.89*)	0.64 (4.03*)	0.90 (6.03*)
x_3 (Grade completed)	0.35 (2.59*)	0.40 (3.14*)	0.55 (4.56*)
x_4 (Further education)	0.50 (1.48)	0.47 (1.44)	0.62 (2.01*)
x_5 (Years worked at mine)	-0.21 (-1.64)	-0.18 (-1.43)	0.03 (0.28)
x_6 (Promotion)	1.99 (6.50*)	1.85 (6.25*)	1.52 (5.49*)
Sample size: 462			

* indicates confidence levels of 95% or higher

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49 The number of years worked at the mine were only moderately significant.

The confidence level was 90% for NRSN-aboriginal people.

5.4 WAGE RATE

In the regression of wage rate on ethnicity and various other explanatory variables we found that, as expected, aboriginal/northern mining employees were less likely to earn a high wage rate when compared to their colleagues. With respect to the remaining explanatory variables in the model, a respondent's gender, age, the number of grades completed in high school, and whether the individual had been promoted in the past seemed to have a statistically significant impact on the dependent variable. The signs of the coefficients of these variables were consistent with our prediction. Table 5.4 provides more detail.

Table 5.4: Wage rate			
	Aboriginal	RSN-Aboriginal	NRSN-Aboriginal
Variable	b-coefficient (t-statistic)	b-coefficient (t-statistic)	b-coefficient (t-statistic)
Non-constant term	20.11 (15.34)	19.69 (18.89)	13.11 (11.33)
TG (Target group)	-3.43 (-6.71*)	-2.88 (-6.98*)	-0.30 (-0.41)
x_1 (Gender)	1.23 (2.51*)	0.43 (1.07)	1.52 (2.26*)
x_2 (Age)	0.93 (3.70*)	1.17 (5.57*)	1.77 (6.95*)
x_3 (Grade completed)	0.43 (2.79*)	0.28 (2.16*)	0.81 (4.63*)
x_4 (Further education)	-0.49 (-1.37)	0.02 (0.05)	0.32 (0.70)
x_5 (Years worked at mine)	0.01 (0.03)	-0.01 (-0.03)	0.19 (1.03)
x_6 (Promotion)	2.64 (7.14*)	3.08 (8.48*)	2.62 (6.12*)
Sample size: 462			

* indicates confidence levels of 95% or higher

Additional regression analyses for RSN-aboriginal people and NRSN-aboriginal people showed that when compared to their co-workers, only RSN-aboriginal people were less likely to work in a job that provides a high average wage rate. As for the other explanatory variables in the model, they displayed the same pattern as above, except that in the regression for RSN-aboriginal people a respondent's sex was no longer significant. Table 5.4 provides a summary of the regression results.

As mentioned above, within this analysis we encountered heteroscedasticity, which we could not completely eliminate but only curtail. One side effect of heteroscedasticity is a t-statistic that is lower than under the condition of homoscedasticity. However, heteroscedasticity should not present too much of a problem in our analysis: looking at the t-statistics in table 5.4, they are either very high or very low and, thus, unlikely to be affected by heteroscedasticity.

5.5 OVERALL JOB SATISFACTION

In the regression of overall job satisfaction on ethnicity and several other variables it was found that, when compared to their co-workers, aboriginal people/Northerners were less likely to be satisfied with their job. As for the remaining explanatory variables, a respondent's marital status[50] and years of employment at the mine seemed to be significant factors influencing the dependent variable. The signs of the variables' coefficients were consistent with our prediction.

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Marital status was significant on a 90% confidence level.

Regression analyses for RSN-aboriginal people and NRSN-aboriginal people showed that, in comparison to their colleagues, only NRSN were significantly less likely to be satisfied with their job. There appeared to be no difference between RSN-aboriginal people and their co-workers in terms of overall job satisfaction. As for the other explanatory variables in the model, they displayed the same pattern as in the above analysis[51]. Table 5.5 illustrates the results.

Table 5.5: Overall job satisfaction			
	Aboriginal	RSN-Aboriginal	NRSN-Aboriginal
Variable	b-coefficient (t-statistic)	b-coefficient (t-statistic)	b-coefficient (t-statistic)
Constant	5.37 (4.11)	4.46 (3.42)	4.20 (3.76)
TG (Target group)	**-0.85 (-2.10*)**	**-0.21 (-0.51)**	**-0.93 (-2.06*)**
x_1 (Gender)	-0.98 (-1.49)	-0.90 (-1.37)	-0.80 (-1.23)
x_2 (Age)	0.002 (0.01)	0.04 (0.18)	0.07 (0.38)
x_3 (Marital status)	0.63 (1.75)	0.77 (2.18*)	0.77 (2.21*)
x_4 (Children)	0.04 (0.12)	-0.06 (-0.56)	-0.07 (-0.64)
x_5 (Grade completed)	-0.25 (-1.72)	-0.19 (-1.30)	-0.18 (-1.31)
x_6 (Further education)	-0.19 (-0.52)	-0.13 (-0.36)	-0.10 (-0.28)
x_7 (Years worked at mine)	-0.36 (-2.29*)	-0.29 (-1.90)	-0.28 (-1.86)
x_8 (Job position)	0.06 (0.14)	0.24 (0.58)	0.22 (0.55)
x_9 (Promotion)	0.24 (0.71)	0.12 (0.36)	0.15 (0.45)
Sample size: 456			

* indicates confidence levels of 95% or higher

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[51]

Marital status was significant on a 95% confidence level; years worked at the mine was significant at the 90% confidence level.

5.6 HAPPINESS ABOUT CHILDREN LATER WORKING AT THE MINE

In the analysis of how various factors affect the likelihood that a respondent would be happy if his/her kids later worked at the mine it was found that aboriginal people/RSN were less likely than their colleagues to be excited about this prospect. Considering the remaining variables in the model, a respondent's job position as well as his/her overall job satisfaction appeared to be significant factors impacting on the dependent variable. The signs of the variables' coefficient were consistent with our predictions.

The regressions for RSN-aboriginal people and NRSN-aboriginal people showed that in comparison with their co-workers, only RSN-aboriginal people were less likely to be happy about the idea that their kids later worked at the same mine. With respect to the other explanatory variables in the model, they displayed the same pattern as in the above analysis. Table 5.6 provides an overview of the results.

Table 5.6: Happiness about children later working at the mine			
	Aboriginal	**RSN-Aboriginal**	**NRSN-Aboriginal**
Variable	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**
Constant	-0.62 (-1.10)	-0.81 (-1.46)	-1.48 (-2.86)
TG (Target group)	**-0.93 (-4.19*)**	**-0.84 (-3.66*)**	**-0.39 (-1.05)**
x_1 (Gender)	0.34 (0.98)	0.31 (0.88)	0.35 (1.02)
x_2 (Years worked at mine)	-0.09 (-1.16)	-0.09 (-1.05)	0.001 (0.02)
x_3 (Job position)	0.57 (2.24*)	0.64 (2.56*)	0.91 (3.83*)
x_4 (Job satisfaction)	1.29 (3.79*)	1.36 (4.01*)	1.32 (3.94*)
Sample size: 467			

* indicates confidence levels of 95% or higher

5.7 SATISFACTION WITH SALARY

In the analysis of how various factors, including ethnicity, affect the likelihood of a respondent being satisfied with his/her salary, no significant difference could be established between aboriginal/RSN employees and their colleagues. With respect to the other variables in the model, the number of years a respondent was employed at the mine appeared to be a significant factor influencing the dependent variable. As predicted, the more years a person had worked at the mine, the less likely he/she was to be satisfied with his/her salary. A respondent's gender, the number of grades completed in high school, and the number of years worked at the mine seemed to be significant factors influencing the dependent variable. However, the signs of the coefficients of these explanatory variables were inconsistent with our prediction: not males, as expected, but females were more likely to be satisfied with their salary. The more years respondents have spent in high school, the less likely they were to be satisfied with their salary. The more respondents earn, the higher their likelihood of being satisfied with their salaries.

Additional regression analyses for RSN-aboriginal people and NRSN-aboriginal people did not change the above results. Table 5.7 provides an overview.

Table 5.7: Satisfaction with salary			
	Aboriginal	**RSN-Aboriginal**	**NRSN-Aboriginal**
Variable	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**	**b-coefficient (t-statistic)**
Constant	3.93 (4.68)	3.69 (4.49)	3.49 (4.99)
TG (Target group)	**-0.27 (-1.05)**	**-0.15 (-0.55)**	**-0.27 (-0.73)**
x_1 (Gender)	-0.91 (-2.26*)	-0.90 (-2.23*)	-0.87 (-2.17*)
x_2 (Age)	-0.11 (-0.85)	-0.09 (-0.70)	-0.07 (-0.55)
x_3 (Children)	-0.06 (-0.81)	-0.06 (-0.85)	-0.07 (-0.92)
x_4 (Grade completed)	-0.20 (-2.14*)	-0.18 (-1.98*)	-0.17 (-1.95)
x_5 (Further education)	-0.25 (-1.07)	-0.24 (-1.02)	-0.22 (-0.97)
x_6 (Years worked at mine)	-0.37 (-3.89*)	-0.36 (-3.82*)	-0.35 (-3.78*)
x_7 (Job position)	0.40 (1.64)	0.43 (1.79)	0.45 (1.89)
Sample size: 468			

* indicates confidence levels of 95% or higher

5.8 CHAPTER SUMMARY

In this chapter we tried to identify the "net effect" of ethnicity on several employment related issues within Cameco's mining work force. It was found that in comparison to their co-workers, aboriginal workers, and particularly aboriginal people who were also Residents of Saskatchewan's North, were more likely to receive promotions and job training. It was also found that RSN-aboriginal people were less likely to have a high wage rate, less likely to be in a high skill level/high paying job position, and less likely to be happy if their children later worked at the mine. When it comes to overall job satisfaction,

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only aboriginal people who were Non-Residents of Saskatchewan's North were significantly less likely to be satisfied with their job. No significant difference between survey respondents could be established with respect to employees' satisfaction regarding their salaries.

CHAPTER 6: SUMMARY, DISCUSSION AND CONCLUSION

6.1 SUMMARY

The presence of aboriginal people in Saskatchewan and their growing importance for the province have initiated several government and private sector programs directed to bring human capital, employment, and sustainable development into the North. Human Resource Development/Surface Lease Agreements and the establishment of the Multi-Party Training Plan (MPTP) were important initiatives aimed at increasing the number of Northerners/aboriginal people in mining related employment across all job positions. As a major representative of the mining industry, Cameco Corporation has shown a number of promising efforts to establish a fair representation of northern, and particularly aboriginal employees, in its mining operations in accordance with general objectives defined in typical recent Surface Lease Agreements.

This thesis focused on investigating if and how government and private sector initiatives to increase the participation of aboriginal people in the northern mining industry are working. Based on Cameco's 1994 employee survey, northern/aboriginal Cameco employees were compared to the 1991 and 1996 Northern Census population on several personal as well as employment related characteristics. Some of the most important findings were that, relative to the typical person living in Northern Saskatchewan, the typical

Cameco Northerner was better off in that he/she had a higher level of schooling, more full time work activity, and a higher income. It was also found that within its northern labour force, Cameco employed proportionately more aboriginal employees, males, and older workers.

The same 1994 employee survey was used to investigate how the typical aboriginal employee at Cameco compares to his/her non-aboriginal colleagues on several personal as well as job related issues. It was found that relative to their non-aboriginal co-workers, aboriginal Cameco employees were younger, had less education, had worked less years at the mine, were more representative in low skill level jobs, were provided with more job training (especially for better paying jobs), and received more promotions. In addition, aboriginal workers, relative to their co-workers, had a slightly lower overall job satisfaction, and were more concerned about their health working at a uranium mine. When compared to their co-workers, a larger proportion of aboriginal respondents reported that everybody at the mine is treated the same and has equal chances to get ahead at the mine. When asked to compare how aboriginal people are treated relatively to their co-workers, a higher proportion of aboriginal employees thought that they were treated differently than their colleagues[52].

In order to perform a more detailed analysis and evaluation of efforts to integrate Northerners/aboriginal people in the mining labour force, we tested how much of the

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[52]

It is possible that some aboriginal people felt that they were actually treated better as their non-aboriginal colleagues and were also more likely to be promoted. However, these options were no answer categories in the questionnaire. As mentioned before, a few respondents (aboriginal and non-aboriginal people) created their own answer category for both cases.

difference between aboriginal and non-aboriginal Cameco employees, regarding employment related issues, is actually explained by aboriginal ethnicity. More specifically, we tested whether ethnicity would have any effect on the likelihood of

- being promoted

- receiving job-training

- being in a high skilled/high paying job position

- having a high wage rate

- having a high overall job satisfaction[53]

Within the regression analyses, we differentiated between three groups: aboriginal employees in general, aboriginal employees who are Residents of Saskatchewan's North (RSN), and aboriginal employees who were Non-Residents of Saskatchewan's North (NRSN). The regression results reveal that, when compared to their co-workers,

- aboriginal employees and particularly RSN-aboriginal employees were more likely to be promoted.

- aboriginal employees and particularly RSN-aboriginal employees were more likely to receive job training.

- aboriginal employees and particularly RSN-aboriginal employees were less likely to

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[53]

Within the topic of job satisfaction, we also tested for the hypotheses that ethnicity would have no effect on the likelihood of
- being happy if, as adults, respondents' children worked at the same mine
- being satisfied with one's salary

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be employed in (high skilled) job positions that earn an average hourly wage rate of more than $30.

- aboriginal employees and particularly RSN-aboriginal employees were less likely to earn a high average wage rate.

- aboriginal employees and particularly NRSN-aboriginal employees were less likely satisfied with their job. No significant difference with respect to job satisfaction could be found for RSN-aboriginal employees.

- aboriginal employees and particularly RSN-aboriginal employees were less likely to be happy if, as adults, their children worked at the same mine.

- There was no significant difference between aboriginal and non-aboriginal workers with respect to pay-satisfaction.

Cameco in cooperation with the government appears to be successful in integrating a large number of aboriginal people into the mining workforce and in offering aboriginal employees increased chances (training and promotions) for entering higher level, better paying, and satisfying job positions. However, the achievement of a fully equalized job distribution between aboriginal and non-aboriginal employees will be a long-term process.

6.2 DISCUSSION

Considering our hypotheses, we found that being aboriginal would increase the likelihood of being promoted and the likelihood of receiving job training: Cameco offered more training and progression opportunities to its aboriginal employees and particularly

RSN-aboriginal employees than to its non-aboriginal employees. It could be argued that by providing a somewhat preferential treatment to its aboriginal employees, Cameco was engaging in "reverse discrimination". However, it must be remembered that over many decades there was a major lack of training and progression opportunities for the aboriginal population, and particularly for aboriginal people residing in the northern part of the province. Regulatory objectives included in Surface Lease Agreements and the MPTP actually aim at providing northern/aboriginal employees with a (temporary) comparative advantage relative to their co-workers. It is through training and promotions that aboriginal people become qualified to increasingly participate in mining employment and to be equally representative throughout the various job categories.

Considering Aboriginal's job position and their wage rate, we found that being aboriginal would decrease the likelihood of being in a high paying (high skilled) job position and the likelihood of receiving a high wage. This was specifically true for RSN-aboriginal people. It was stated at the beginning of this paper that aboriginal people who reside in the northern region of the province are more likely to be disadvantaged in terms of (among others) fair employment opportunities. That was one reason why government and private sector initiatives were founded to give Northerners/aboriginal people a chance to become employable and equally representative to Non-Northerners/non-aboriginal people in all job levels. Over its five year period, the Multi-Party Training Plan initiated by the governments and the mining industry has dramatically increased the number of aboriginal mining employees and their chances to get into higher skilled, better paying job positions: Cameco's employment reports show that since the start of the MPTP the proportion of aboriginal

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employees in managerial and supervisory positions has increased from 0.9% in 1994 to 14.4% in June, 1998. At the same time, the representation of aboriginal employees in lower skill level positions, such as support services, decreased from 56.3% in 1994 to 45.2% in June, 1998. The employment survey we based our analyses on was done in June 1994 - not even one year into the MPTP[54]. Very likely, if another employment survey was done today, the difference between aboriginal and non-aboriginal employees (and between RSN-aboriginal people and NRSN-aboriginal people) in terms of job position and wage rate would be less significant.

With respect to overall job satisfaction, we found that only NRSN-aboriginal people were significantly less satisfied with their job when compared to their co-workers. Considering respondents' happiness if, as adults, their children worked at the same mine, we found that RSN-aboriginal people were less happy about this prospect. It seems that money did not have an impact on these outcomes, because no difference between aboriginal and non-aboriginal workers in terms of pay-satisfaction could be observed. However, what may explain the lower overall job satisfaction among aboriginal people who are not Residents of Saskatchewan's North is some kind of dissatisfaction about the comparative advantage (in terms of training and promotion opportunities) an aboriginal person residing in the North is offered. An explanation for the reluctance of RSN-aboriginal people to later have their children work at the mine may be the lack of compromise between traditional and modern values. In comparison to their southern colleagues (who have to some extent

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[54]

The MPTP started in October, 1993.

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adapted to modern society), RSN-aboriginal people are likely more involved in their culture and traditional values - something that is easily disturbed by modern industrial values. At the same time, RSN-aboriginal people recognize the need to become a participant in the larger society. For them, mining employment is one (but not the only) possibility to establish their position in the industrial society. It is also possible that many aboriginal employees regard mining employment (and the associated training) as a mere stepping stone to gain human capital in order to become more independent, and self-sufficient. Their ultimate vision may be to create, some time in the future, their own self-sustaining economy in which they would be able to integrate tradition within their own modern industrial society and where their children could work.

Results of the study as well as a discussion thereof were provided above. However, the reader should be aware of some shortcomings of the study which may have had an influence on the outcome.

- The response rate of the 1994 Cameco survey was only moderately high (76%).

- Micro-Data for the wage rate was not accessible. Instead only salary ranges for different job categories were provided. The average wage rate in a given job category was assumed to be equal to the mid-point of the range. In addition, advancement within a job category could not be taken into account.

- The number and quality of explanatory variables used in the regression analyses was limited by the availability of data.

Directions for further research may include a replication of this study with more recent and improved data. This would be helpful in defining the progress the mining industry has made as a result of the MPTP and in following the stipulations as outlined in recent Surface Lease Agreements.

The economic multiplier[55] of the total spending of the Saskatchewan North is presently estimated to be 1.15, i.e., if the total expenditures are $150 million, the incremental benefits would reach a total of $170 million. A refined study may be desirable to provide updated estimates on how much of aboriginal peoples' human capital and income from employment and business services provided to the mining industry is actually staying in the North and is constructively used for the creation of sustainable economic development.

6.3 CONCLUSION

A number of government and private sector initiatives have evolved during the last decade in order to facilitate the participation of Saskatchewan's aboriginal population in the larger industrial society and thus to strengthen the production base of the province's economy. Cameco's 1994 employee survey and the Multi-Party Training Plan demonstrated that the mining industry in cooperation with federal and provincial governments has been able to increase the number of aboriginal people in its workforce, to create a more equal work-environment, and to provide aboriginal people with valuable transferrable assets

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[55]

Lendsay and Painter, 1998.

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(education, training, work experience). However, it is equally important that the mining industry keeps up its efforts within the framework of federal and provincial government initiatives and regulations. A fully equalized job distribution between aboriginal and non-aboriginal people has still a long way to go. But it is also necessary for a wide variety of other Saskatchewan industry sectors to become increasingly involved in Aboriginal training and employment[56] - according to Census 1996, only 6.8% of the Northern labour force is employed in mining. In addition, since existing northern mining operations tend to have only a limited lifespan (unless new orebodies are discovered), aboriginal people must be given an opportunity to sustain human capital and spin-off effects which have evolved through the mining industry. Measures are required to encourage different kinds of industries (not just the natural resource based industry) to expand into the North and to maximize the number of aboriginal people in their labour force. Only a combined effort of government and industries to promote aboriginal labour, management, and enterprise may be able to safeguard the survival of Saskatchewan life as we know it, in the interest of both, the province's aboriginal and non-aboriginal population.

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[56]

The forestry industry, for example, intends to engage in a Multi-Party Training Plan initiative similar to the one in mining in order to increase the number of Northerners in the forest sector.

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APPENDIX

CAMECO'S 1994 EMPLOYEE SURVEY

CAMECO MINE EMPLOYEE SURVEY

KL 1   RL 2

SECTION A: FIRST EXPERIENCE AT THE MINE

1a. Think back to when you first started working at the mine. Did you get enough information about your job and the work site? (CHECK ONE BOX ☑)

           Yes   ☐ 1 - GO TO QUESTION 2
           No   ☐ 2 - CONTINUE
           Don't remember   ☐ 3 - GO TO QUESTION 2

1b. What information would you have liked to get that you did not?

_____ __ __

_____ __ __

2.   Was there too much, about right, or not enough informaton on ..... ? (CHECK ONE BOX ☑ FOR EACH ITEM)

	Too Much	About Right	Not Enough	Don't Remember
a. The rotation schedule	☐ 1	☐ 2	☐ 3	☐ 4
b. The camp facilities	☐ 1	☐ 2	☐ 3	☐ 4
c. The job you would do	☐ 1	☐ 2	☐ 3	☐ 4
d. Training and education programs available to workers	☐ 1	☐ 2	☐ 3	☐ 4
e. Opportunities for promotion	☐ 1	☐ 2	☐ 3	☐ 4
f. How much you would be paid	☐ 1	☐ 2	☐ 3	☐ 4
g. Other benefits such as life and health insurance	☐ 1	☐ 2	☐ 3	☐ 4

3.   Were you told who to talk to if you had questions about any of the items listed in Question 2?

           Yes   ☐ 1
           No   ☐ 2

4a. How easy or difficult was it to get used to the 7 day in/7 day out rotation? (CHECK ONE BOX ☑)

           Very easy   ☐ 1 - GO TO QUESTION 5A
           Somewhat easy   ☐ 2 - GO TO QUESTION 5A
           Somewhat difficult ☐ 3 - GO TO QUESTION 5A
           Very difficult   ☐ 4 - CONTINUE

4b. (IF VERY DIFFICULT) What was very difficult? Why?

_____ __ __

_____ __ __

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5a.   What was your <u>first</u> job at this mine?

_____ — —

5b.   How satisfied or happy were you with the on-the-job training you received for your first job at this mine? (CHECK ONE BOX ☑)

                Very happy/very satisfied   ☐ 1
                Happy/satisfied   ☐ 2
                Not very happy/not very satisfied ☐ 3
                Not at all happy/not at all satisfied ☐ 4

5c.   Do you feel other types of training would have been more useful?

                Yes   ☐ 1 - CONTINUE
                No   ☐ 2 - GO TO QUESTION 6

5d.   What other types of training would have been more useful?

_____ — —

_____ — —

6.   At this particular mine have you worked as a ..... ?   (CHECK ALL RESPONSES ☑ THAT APPLY TO YOU)

                Labourer   ☐ 01
                Mill operator   ☐ 02
                Mine equipment operator   ☐ 03
                Driller/blaster/de-watering   ☐ 04
                Warehouse person   ☐ 05
                Nurse   ☐ 06
                Tradesperson   ☐ 07
                Technician/technologist   ☐ 08
                Clerk/administrator   ☐ 09
                Professional   ☐ 10
                Supervisor/manager   ☐ 11
                Other (Specify)

                _____ — —

                _____ — —

7a.   Were any of these a promotion or progression? That is, did any of these positions involve more skill and/or responsibility than the last position?

                Yes   ☐ 1 - CONTINUE
                No   ☐ 2 - GO TO QUESTION 8

7b.   How good was the training for the job that was a promotion or progression? Was it ..... ? (CHECK ONE BOX ☑)

                Very good   ☐ 1
                Good enough   ☐ 2
                Not very good   ☐ 3
                No training   ☐ 4

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8.	Are you being training for another job (position) at the mine right now?

         Yes   ☐ 1 - CONTINUE
         No   ☐ 2 - GO TO QUESTION 10

9.	Is this training for a better paying job than the job you have right now?

         Yes   ☐ 1
         No   ☐ 2

10.	In the future, would you be interested in training for a position that requires more skill and responsibility?

         Yes   ☐ 1
         No   ☐ 2

11.	Do you have any other comments on training?

_____ __ __

_____ __ __

SECTION C: WORKING AT THE MINE

In this section we would like to know how you feel about working at the mine.

12.	First, think about the facilities at the mine site (camp). How satisfied or happy are you with each of the following things at the camp? One represents "very happy or satisfied" and 5 represents "very unhappy or unsatisfied." (CHECK ONE BOX ☑ FOR EACH ITEM)

	Very Happy/ Very Satisfied			Very Unhappy/ Very Unsatisfied	
a. The room you stay in	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b. The food	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c. Places to relax (recreation facilities)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d. After work activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
e. Transportation between your home community and the site	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
f.. The television and radio service provided	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

(IF BOX 4 OR 5 CHECKED FOR "F") Why are you unhappy/unsatisfied with the television and radio service?

_____ __ __

_____ __ __

13. Now think about working at the mine in general. Please read each of the statements below and check if you are very happy/very satisfied or very unhappy/very unsatisfied with each. (CHECK ONE BOX ☑ FOR EACH ITEM)

	Very Happy/ Very Satisfied				Very Unhappy/ Very Unsatisfied
a. The amount of money you earn	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b. The benefits, such as health and life insurance, you get for working at the mine	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c. The work rotation; that is, 7 days at work and then 7 days off	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d. The daily work schedule (11 hours)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
e. The people you work with at the mine	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
f. Your supervisor/foreman	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
g. The amount of vacation you get	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
h. When you get to take vacation	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
i. On-the-job training	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

14. Now think about how people at the site get along together. Please read each statement and mark "yes" or "no." (CHECK ONLY ONE BOX FOR EACH STATEMENT)

	Yes	No	Don't Know
a. My supervisor treats me the same as other workers	☐ 1	☐ 2	☐ 3
b. Women are generally treated as well as men at work	☐ 1	☐ 2	☐ 3
c. Native workers are treated as well as non-native workers	☐ 1	☐ 2	☐ 3
d. The people working here get along well together	☐ 1	☐ 2	☐ 3
e. The people I work with are like my family away from home	☐ 1	☐ 2	☐ 3
f. I have friends here I can talk to about problems	☐ 1	☐ 2	☐ 3

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15. Below are some more statements about working at the mine. Please check "yes" or "no" for each.

	Yes	No	Don't Know
a. As long as you work hard, everyone has the same chance to get ahead at the mine	☐ 1	☐ 2	☐ 3
b. Native workers are just as likely to get promoted to better jobs as other workers	☐ 1	☐ 2	☐ 3
c. This uranium mine is a safe place to work	☐ 1	☐ 2	☐ 3
d. Promotions are only given to workers who have at least a high school education	☐ 1	☐ 2	☐ 3
e. It doesn't matter where you are from, everyone is treated the same here	☐ 1	☐ 2	☐ 3
f. I would be happy if, as adults, my children worked at this mine	☐ 1	☐ 2	☐ 3
g. I am worried about my health because of working in a uranium mine	☐ 1	☐ 2	☐ 3

16a. Have you used the Employee Assistance Program (counseling)?

Yes   ☐ 1 - CONTINUE   No   ☐ 2 - GO TO QUESTION 17

16b. How helpful was the Employee Assistance Program? Was it very helpful, helpful enough, or not very helpful? (CHECK ONE BOX ☑)

Very helpful   ☐ 1 - GO TO QUESTION 17
Helpful enough   ☐ 2 - GO TO QUESTION 17
Not very helpful   ☐ 3 - CONTINUE

16c. Why was it not very helpful?

_____ __ __

_____ __ __

17. Overall, thinking about everything, are you happy working at the mine?

Yes   ☐ 1   No   ☐ 2

18. What do you like the most about working at the mine? Please list up to three things you like about working here.

i. _____ __ __

ii. _____ __ __

iii. _____ __ __

19. What do you like the least about working at the mine? Please list up to three things you do not like about working here.

i. _____ __ __

ii. _____ __ __

iii. _____ __ __

If you are classified as an RSN (resident of northern Saskatchewan) at hire, please fill this section out. If you are not a northerner (RSN), go to Section E on page 11.

20. Some people say that working at the mine has made things in northern communities better, others think things are worse, some think that things have not changed much because of the mine.

What do you think? In general, are things better, worse, or about the same in your original home community because local people are working at the mine? Please check one.

Better ☐ 1
Worse ☐ 2
About the same ☐ 3

21. What is the <u>best</u> thing that has happened to your family because of your job at the mine?

_____ — — —

22. What is the <u>worst</u> thing that has happened to your family because of your job at the mine?

_____ — — —

23. Thinking about the community you lived in when you were first hired at this mine, do you think the mine jobs make things better, worse, or about the same for your community with respect to ..... ? (CHECK ONE BOX ☑ FOR EACH ITEM)

	Better	About the Same	Worse	Don't Know
a. Drug and alcohol abuse in your community	☐ 1	☐ 2	☐ 3	☐ 4
b. Family problems in your community	☐ 1	☐ 2	☐ 3	☐ 4
c. The way elders in your community are treated	☐ 1	☐ 2	☐ 3	☐ 4
d. The way women in your community are treated	☐ 1	☐ 2	☐ 3	☐ 4

24. Please indicate how you feel about each of the following statements. Please check "yes" if you agree or "no" if you don't agree.

	Yes	No	Don't Know
a. People in the community look up to those who work at the mine	☐ 1	☐ 2	☐ 3
b. It is good for people in the community to see others with steady jobs at the mine	☐ 1	☐ 2	☐ 3
c. The work rotation makes it more difficult for me to hunt, trap, or fish	☐ 1	☐ 2	☐ 3
d. The work rotation is hard on my family	☐ 1	☐ 2	☐ 3

25. Are you involved in your community more, less, or about the same amount <u>now</u> as you were before your job at the mine? (CHECK ONE BOX ☑)

More than before ☐ 1
Less than before ☐ 2
About the same ☐ 3

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26a. How much do you hunt, fish, and trap now? Would that be ..... ?

A lot   ☐ 1
A little   ☐ 2
Not at all   ☐ 3

26b. Do you hunt, fish, and trap more, less, or about the same now as you did before you got the job at the mine? (CHECK ONE BOX ☐)

More than before   ☐ 1
Less than before   ☐ 2
About the same   ☐ 3

27. Overall, do you think your family is happy or not happy that you are working at the mine?

Happy   ☐ 1
Not happy   ☐ 2
Don't know   ☐ 3

28. Overall, do you think the people in your community are happy or not happy that you are working at the mine? Please check one.

Happy   ☐ 1
Not happy   ☐ 2
Don't know   ☐ 3

29a. Do you still live in the North?

Yes   ☐ 1 - GO TO QUESTION 29C
No   ☐ 2 - CONTINUE

29b. How many years ago did you move South?

Less than 1 year   ☐ 1 - GO TO QUESTION 29D
1 - 2 years   ☐ 2 - GO TO QUESTION 29D
3 - 5 years   ☐ 3 - GO TO QUESTION 29D
More than 5 years   ☐ 4 - GO TO QUESTION 29D

29c. (IF YOU STILL LIVE IN NORTHERN SASKATCHEWAN) Do you think you will move south sometime in the future?

Yes   ☐ 1 - CONTINUE
No   ☐ 2 - GO TO QUESTION 31

29d. Why did/would you move south?

_____ _ _

_____ _ _

29e. Would you move/have moved south even if you did not have the job at the mine?

Yes   ☐ 1
No   ☐ 2
Don't know   ☐ 3

30a. Does it have a big or small impact on your community when mine workers move south?

Big   ☐ 1 - CONTINUE
Small   ☐ 2 - GO TO QUESTION 31
Don't know ☐ 3 - GO TO QUESTION 31

30b. Why do you think that?

_____ __ __

_____ __ __

SECTION E: BACKGROUND INFORMATION

All information in this section will be kept strictly confidential.

31. How old are you? (CHECK ONE BOX ☑)

18 - 24 ☐ 1
25 - 34 ☐ 2
35 - 44 ☐ 3
45 - 54 ☐ 4
55 - 64 ☐ 5

32. What was the highest grade level you completed in school?

Grade 6 or less ☐ 1
Grade 7 - 9   ☐ 2
Grade 10   ☐ 3
Grade 11   ☐ 4
Grade 12   ☐ 5

33a. Have you taken any further training since you left school?

Yes ☐ 1 - CONTINUE
No   ☐ 2 - GO TO QUESTION 34

33b. What was it?

_____ __ __

34. How many years have you worked at this mine? (CHECK ONE BOX ☑)

Less than one year ☐ 1
1 to 2 years   ☐ 2
3 to 5 years   ☐ 3
6 to 10 years   ☐ 4
More than 10 years ☐ 5

35. Are you ..... ? (CHECK ONE BOX ☑)

Married   ☐ 1
Living common law ☐ 2
Single (never married) ☐ 3
Separated/Divorced ☐ 4
Other   ☐ 5

36. How many children under 18 years of age (dependents) live in your home? __ __

37. How many adults (18 years of age or older), including yourself, live in your home? __ __

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38. Are you a resident of northern Saskatchewan (RSN)?

             Yes   ☐ 1
             No   ☐ 2

39. Are you ..... ?

             Aboriginal/Native/Metis   ☐ 1
             Non-aboriginal/non-native ☐ 2

40. What language(s) do you speak at home? (CHECK ALL THAT APPLY)

             English ☐ 1
             Dene   ☐ 2
             Cree   ☐ 3
             Other   ☐ 4

41. Are you ..... ?

             Male   ☐ 1
             Female ☐ 2

42. Please use the space below to provide any other comments you would like to make about any subject.

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

_____ __ __

THANK YOU FOR YOUR TIME

Please Tear On Dotted Line

OFFICIAL ENTRY FORM

(One Entry Per Person)

Name: _____

Phone Number: _____

Home Community: _____