

# **Hardrock Mining and the Evolution of the Roles for Women**

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## **ABSTRACT**

History has shown that the hardrock mining industry is not a typical workplace for women. Of course there have been the exceptions over the last century, mostly associated with women working in industry jobs while many of their male counterparts fought in war. The mining industry in Sudbury, in particular, has been the subject of various research efforts and publications detailing the roles of women in industrial labour positions during wartime. Other than this period in time, women have had few opportunities to work within the hardrock mining industry – and have been primarily restricted to administrative duties.

More recently, with government regulations on hiring practices and with the social emphasis on equal-opportunity efforts, the mining industry has shown a progressive attitude toward hiring women into the workforce. This paper examines the roles for women at Inco Limited. During the last decade, there have been various initiatives for equal opportunities to men and women. For instance, Inco has demonstrated affirmative action 1) in hiring women in technical roles, 2) in advancing women into supervisory positions, and 3) in encouraging and offering opportunities for women to work in labour positions. In fact, the Company's statistics show an upward trend for women in these roles. One obvious reason for the increase, besides management philosophy, is the diminished requirement for extreme physical activity related to work and just a requirement for mental capacity.

Now, with some newly hired young women entering the workforce, the Company faces another exciting opportunity for establishing programs and policies related to career development, maternity leave and benefits. This challenging opportunity is a learning phase for Company management, co-workers and the women themselves. The upside of an equal-opportunity work environment is obvious with a balanced team for all roles and departments. It is the design and implementation of the plan that achieves this goal that is now of fundamental importance. Some thoughts on the possibilities and the opportunities for the industry are shared in this paper.

**Keywords:** Gender Equity, Mining, Affirmative Action, Canadian Legislation, Company Policies

## **INTRODUCTION**

Despite the fact that since 1974 women's groups, mining companies and government legislation have been aimed at creating a gender-free mining industry, there remains gender inequity.

This paper summarizes the history of affirmative action policies that have been initiated in an attempt to address this gender issue in the mining industry whereby both the Company's and the government's

policies for equity-based workforces are reviewed, using Inco Limited as the main case study. Based on these past actions, the challenges of the future will be discussed along with potential solutions and recommendations.

## **HISTORY**

Mining has long been perceived as a macho domain, largely due to its past requirement for heavy manual labour. In the 1930's, the legislation that was drafted

to describe mining stated “[it is] too dangerous for women and the work too strenuous” (1). Even during the Women’s Liberation Era of the halcyon 1960’s The International Labour Organization Underground Work Convention of 1935 was ratified in Canada (1966) forbidding the employment of women in any mine except: (i) women employed in health and welfare services, (ii) those who spend a period of training underground in connection with a non-manual occupation, or (iii) those who are holding positions of management in non-manual work.

The Labour Code did not address this issue and only prohibited discrimination on the basis of color, race national origin or religion, and did not identify gender as an area of non-discrimination.

World War II saw the initial entrance of women into most industrial labour forces including mining. However, women did not go underground despite the major labour shortage (2). Under the authority of the War Measures Act, permission was given to allow employment of women at the mine headframe in occupations normally forbidden. As a result, on August 13, 1942, under the Order-in-Council PC. 7032 the “Employment of Female Persons by International Nickel Company of Canada Limited, in the vicinity of Sudbury” was issued. This resulted in over 1400 women being hired to perform surface work at Inco’s operations during 1942 and to the end of World War II.

The introduction of women into the mining industry was a radical change because mining was a singularly masculine pursuit in all aspects of its production, from the actual mining to smelting and refining. Except for coal mines in Nova Scotia, where women and children had been employed to haul coal-bearing carts on surface, there was no historical precedent for employment of women. Until this point in time, women in Sudbury had largely been employed in domestic roles (23% in 1941) or smaller cottage industries (such as manufacturing clothing).

The jobs women were allowed to perform were largely unskilled and of low-status. Women from that era reported that this was largely due to “a policy designed to protect men’s privileged positions as ‘skilled’ workers...thus keeping women’s admission to ‘skilled’ jobs at a minimum” (2). The demand for a continuous and increased supply of nickel during the war also contributed to the unskilled nature of the work, highlighted in an Inter-departmental committee on labour coordination December, 1941: “jobs will be broken down, and the trained mechanics will devote their time to the most skilled part of the work.

The rest of the work will be divided among others next to the mechanics in line, each of whom ought to be broken in on *his* job with a few weeks of training. New employees will be taken on at the bottom on the least skilled jobs and moved up rapidly as circumstances and their abilities permit.”

At Inco, women were first hired as ‘process labourers’ in the milling and smelting departments and as ‘rock pickers’ in the rock houses at the mines. The highest position achievable for women during this time was that of ‘matron’.

Inco employed matrons specifically to oversee the welfare of female workers. Government policy dictated that these positions were not supervisory “when 12 or more females [are] employed in an area, a matron must be hired as a personnel or welfare contact. The matron is not a forelady and does not supervise work”.

At the end of World War II, the Mining Act of Ontario stated that women were no longer legally employable in mining operations, except in a technical, clerical or domestic capacity. Thus between mid-1945 and December of that year, there were mass layoffs of women. As a result, the post-war years witnessed a return to unquestioning acceptance of the principles of male economic primacy in the public sector. Although many women returned to their homes as a matter of duty, their perceptions had been changed forever and these women began to take on different roles in their communities and society.

It wasn’t until 1974 that permanent legislation began to affect true female enrolment into the industry. Largely driven by a continually growing shortage of labour, the potential of a female labour force was again recognized. In Ontario, women were still restricted from working underground or at the workforce of an open pit, but by 1974 in Manitoba, prohibitive legislation was overruled by the Canadian Federal Rights Act, due to the necessity of increasing the workforce. In fact in July 1974 Inco’s Manitoba Division stated, “ that the decision to employ females was based solely on the company’s need for employees” (3). Inco first hired women in January 1974 at its Pipe Mine. Inco Manitoba reported they had 75 women employed in non-clerical positions, making up 7.5% of the professional workforce and 2% of the labourers (1), one of the largest employers of women in the mining industry at that time (September 1974).

Social conscience was also beginning to give impetus to the employment of women in mining (3). By

September 1974, 58% of Canadian companies reported placing women in jobs once dominated by men. One year previous, only 25% of the companies employed women as professionals and labourers. As women entered the workforce on a permanent basis, the myths and misconceptions surrounding a woman's ability in the mine were slowly quashed.

By 1990, about 70% of new employees hired into Canadian firms were women and representatives of other minorities (6). In many respects, this change in hiring was due to supply and demand.

Hiring practices also changed as a result of political pressures with new legislation for fair employment practices such as those outlined in the Pay Equity Act, effective in Ontario in 1988 (7). Equal pay for equal work is a policy at Inco. At the time of the new Act, all jobs and pay rates were examined at Inco and any inequities were resolved (19). In 1991, Employment Equity consisted of two mandatory federal programs: 1. The Employment Equity Act, and 2. Canada's Constitution: The Charter of Rights & Freedoms. These programs, along with federal and provincial employment standards legislation and human rights codes, helped to guarantee equity rights. The guidelines exist for businesses to review employment systems – to identify and eliminate practices that are discriminatory (8).

Despite the laws, equality in the workplace is not a reality for certain designated groups. While employers do not intentionally develop or maintain blatant discriminatory employment policies or practices, there is a question why promotions and hiring are so difficult for women. Certainly, in the past, women were expected to stay at home. Yet there has been a subtle yet determined change in the minds of the women. In fact, over the last few decades, more and more women have been choosing non-traditional fields for their careers. In 1982, 15% of the students enrolled in engineering, natural sciences and math programs were females and in 1994 the number had increased to 19%. In the trades, 0.5% of the students were women in 1988 and this number doubled to 1% by 1992. In medical and dentistry University programs, the average female enrolment increased to 32% in 1994 from 18% in 1982 (9). These statistics show women are moving into non-traditional careers and some of the reasons for this pursuit are: higher wages, to get out of the house and meet new challenges, to learn a skill or trade, and for the opportunity of advancement.

Women have chosen jobs in mining industry in particular since they felt it was time that they

participated in the industry. In response, the men in the mining industry have become more open to women working alongside them as colleagues. Once skeptical about a woman's physical strength and stamina, women proved themselves more than capable. The necessity for brawn in the mining industry has also been diminished. Indeed, with the advent of new technology, intellectual skills are required more than muscle power. Companies also initiated education programs prior to hiring women (e.g. Caland Ore Company Ltd.), to facilitate the acceptance of women into the mines. This helps the traditional employees accept female counterparts.

#### INCO'S AFFIRMATIVE ACTION POLICIES (1980 TO 2001)

As with many industries, there has been a gradual erosion of barriers in Inco's workplaces – where policies, practices or procedures that exclude employees from full participation in the workforce were and still are being identified and eliminated. The barriers can be systematic in nature (where the discrimination could be embedded, for example a physical job requirement such as a person's height) or the more difficult to control overt barriers that are based on improper implementation of organizational policies (such as a manager's bias or chauvinism). Within Inco, the policies that were reviewed for this study are those dealing with hiring, career progression and management as well as working conditions.

In the hiring of new employees, Inco has an interesting history of practices. As recently as the 1970's, the Company had strict requirements for new employees to surpass a certain weight limit (19). This has been abolished as an unfair discriminatory practice. Now at Inco, each job has been assessed with a Physical Demands Analysis (PDA), as completed by a third-party physiotherapy center or internal experts. Based on the job tasks required, a person's physical ability is assessed – these findings show the most physically demanding job at Inco is that of an underground miner. As a result, there are no physical restrictions placed on a potential employee other than an isometric strength test for new miners. The PDA for a miner is based on the requirement for lifting and handling a jackleg drill. This drill is approximately 120 lbs in weight and thus the PDA requires that a person be able, from the seated position, to lift a milk crate weighing 120 lbs, carry it 10 feet and place it on a shelf at shoulder height. Both Company and Union representatives originally agreed to this requirement. This strength testing of newly hired miners merely verifies that at a certain point in time an individual is able to lift this

weight and place it on a shelf. There is no requirement to pass this test annually or otherwise. As well, the immediate or cumulative musco-skeletal damage to each miner (as a result of lifting heavy weight) is not being measured (17).

In terms of ergonomics, in ideal lifting conditions (i.e. flat work surface with no bending or reaching requirements) the average maximum weight that should be lifted is 51 lbs (in accordance with the National Institute for Occupational Safety & Health). The weight limit reduces as lifting conditions worsen.

Today, the use of jacklegs is limited to a number of sites and a number of users. From recent investigations, numerous hand-held drills are in circulation in the mines but very few of these drills are used regularly in all mines. With this in mind, the question of the relevancy of this test is raised particularly since there are many jobs underground for laborers that do not require strength testing (18). Since isometric testing eliminates a high percentage of women and some men from employment as underground miners, a review of the physical requirements for this job position is likely warranted.

In the early 1990's, Inco's President in Sudbury initiated a new hiring practice based on his personal philosophies. He mandated the Company's Employment Officers to consciously hire women, particularly in the technical fields such as engineering (19). As a result, many women were hired almost on a 1:1 ratio with their male counterparts. By the end of 1995, Figure 1, there were 22 women engineers working in Inco's Ontario Division, while prior to 1990 there were only five. As a result, an informal support group was initiated by Human Resources in 1995 to offer advice and talk about any conflicts or concerns in the workplaces for these women. In 2001, 23 female engineers are working at Inco.

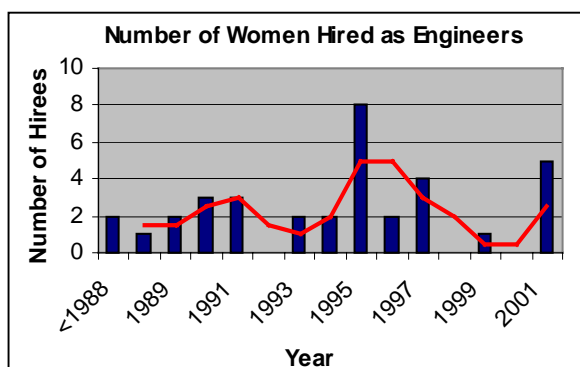


Figure 1. Hiring of Female Engineers at Inco.

Inco's same management leader was openly supportive of women in the industry and participated

in a local conference "Women in Engineering – Initiative '92 and Beyond (Laurentian University)" as a guest speaker. He encouraged school counselors to inspire female students to pursue careers in engineering and the mining industry (11). This leader also actively encouraged women to apply for supervisory roles as "Foremen" underground and in surface plants – and he was a keen advocate for women to work as labourers alongside men. Most of his expectations have come to fruition because there are women now working in a range of non-traditional roles in Sudbury with one general manager, one manager, four superintendents, fourteen supervisors, three fore persons, and approximately 90 labourers (working underground and in the surface plants). Since 1990, there has been an increase in the number of women hired into unionized labour roles, Figure 2. In 2001, 165 women are working at Inco and more than 700 have been employed since 1945.

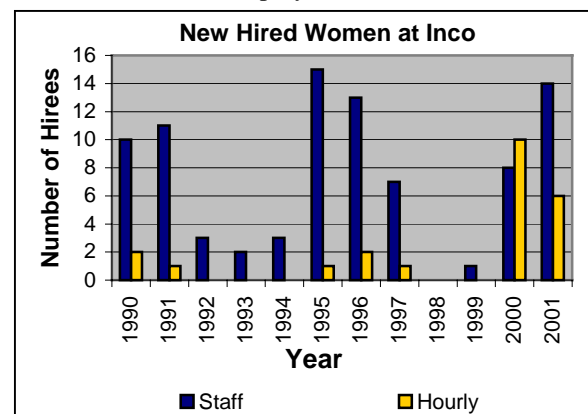


Figure 2. Number of Women Hired Per Year.

From Figure 2, the hiring of female staff has been erratic since 1990. In fact, there were two key events in the last decade that affected the number of women in various roles. In 1992 and 1998, due to low nickel prices, Inco was forced to reduce and re-align the workforce. In 1998, as many as 15 newly hired female and male engineers were laid-off based on "hire date" rather than on personal performance and future potential. As well in 1992 many administrative jobs were eliminated and the workforce was re-aligned. Workers in those eliminated positions were given first opportunity to work in available underground labour positions (18). Given the choice, many male and female employees voluntarily left the Company while others took the challenge of working in those non-traditional roles. Of those that transferred into labour positions, some have since resigned or bid back into office jobs while others have remained in their new career roles. It is also interesting to review the number of promotions for women at Inco (from 1980 to 2001) Figure 3.

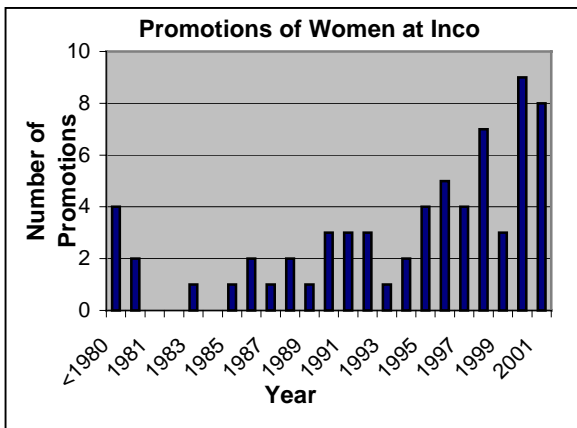


Figure 3. Women's Promotion Trends.

In Figure 3, prior to 1980 there were only four promotions for women into supervisory roles (based on employment records that date back to 1945). Since 1980, there is an apparent upward trend in the number of promoted females per year. However, many of the recent promotions are for the same group of women – with promotions from one plant into another. This lateral move is still seen as positive since these women are getting excellent experience in many facets of the Company for a higher potential to be further promoted in the future. Since 1980, there have been only 33 women at Inco in Sudbury to receive a promotion to a supervisory or management role. In 1991, a woman was promoted to the role of the Company's comptroller and this was a significant achievement. But, by 2001 there have been only two other promotions for women to manager positions. Indeed, there is a significant lack of women in supervisory roles on the mining side of the Company (with only two women in supervisory positions in mining engineering and no women working as fore persons in the underground operations). The majority of the female supervisors are in Accounting, Human Resources and in the surface plants.

For career progression at Inco, there is a long-standing annual review process for each employee to discuss her/his performance against set goals. This review is also the one annual opportunity assigned for setting a planned development path for the employee. This policy was originally called Personal Management System (PMS) but was renamed Personal Development Review (PDR) in the 1990's due to female connotations with the acronym PMS. This annual review is completed between the immediate supervisor and the employee. Training of supervisors for this responsibility has been lax since the last session of "Coaching and Counseling" was conducted in the late 1980's (18). In general, the review process is being performed inconsistently.

Due to downfalls in the performance review policy, it was revamped in 2000 and split into two initiatives: a performance effectiveness review (still done annually between the employee and supervisor) and a development process. Career development is the sole responsibility of the employee to direct, with coaching from the direct supervisor and with mentoring from the boss's boss (this mentoring concept is aligned with the theories of "Requisite Organizations"). To help assist each employee's development planning, Inco has listed key jobs and their associated requirements on a Company intranet site for employees to access. The jobs can be reviewed so each employee can select her/his preferred career path (20).

In some personal communications with females at Inco, a possible reason for being overlooked for promotion has been the lack of stated goals by the female with her immediate supervisor (10). Although her skills may be noticed, she must clearly verbalize her wish to be promoted. If not, her supervisor may assume she is not interested. In fact, a man's approach would be more direct, more confident – and this has been further supported in a recent publication from the Professional Engineers of Ontario where studies show males tend to over-estimate their abilities while females are less confident and underestimate their skills (12). Similarly, proactive women who aspire to move up the ladder in an organization have stated the lack of female promotions has led them to leave Inco (10). They have moved to companies and fields where career development and upward mobility is more progressive and more apparent (i.e. with actual role models). From these comments, it is clear that female talent retention is an issue for Inco and the industry.

In the area of work practices, Inco does have a strong sexual harassment policy (16) and a gender equity statement, as disclosed under its Human Rights Standards whereby "in accordance with applicable legislation, it is a Company policy to provide equal employment and advancement opportunity to qualified individuals on a non-discriminatory basis" and "all employees [must] be able to enjoy a work environment free from all forms of discrimination and harassment" (13). In terms of job titles, there have been recent discussions about using gender-neutral names (19). This has not happened and many women work in trades and jobs with titles such as "craneman", "conveyorman", "hoistman", etc. Even in supervision, women at Inco still carry the title "foreman". Although the renaming of job titles will be time-consuming and administrative in nature, there is a known positive psychological impact on

employees when gender-neutral titles are used for men's and women's roles.

## DISCUSSION

In 1992 the Canadian Committee on Women in Engineering (CCWE) identified significant gender bias in the engineering profession - whereby mining was highlighted as a particular concern. Certainly, the number of women working at Inco has been a concern, but the facts indicate that there has been a continual increase in the representation of women in the workforce. In the 1960's, women represented a mere 0.3% of the total workforce at Inco and according to the 2001 employment data, women now make up 4.9% of the group. While the total number of women working at Inco is increasing, the total number of employees is dropping due to innovations and mechanization. Currently at Inco, women make up almost 5.6% of the staff group while women front-line workers constitute only 2.8% of the total unionized workforce. Inco's data also indicates women are continually seeking and filling different types of jobs - with women working in a wide variety of front-line hourly positions as well as in technical, supervisory and management positions. Based on the Sudbury operations, it is clear the number of women in non-traditional roles has been steadily increasing, especially in the last 20 years. In fact, the last 10 years has seen a significant increase in the number of women filling supervisory and management functions, compared to historical data.

Occupational distributions of workers in Canada indicate women made up 43% of those persons employed in management and administrative roles in 1994 - which is up from 29% in 1982 (9). In Canada, females make up 5.5% of the practicing professional engineers (7). Based on the trends elsewhere, there is obviously room for continued growth and improvement at Inco in terms of employing an equal representation of employees, based on culture, age, race, gender, etc. In the past, equal opportunities were approached from a legal and moral standpoint, based on fairness. This is still vital, but there is a growing recognition of the business benefits associated with an equalized workforce. Business solutions from a diverse team will be more balanced and broad in perspective than the solutions reached by a uni-dimensional workgroup.

Presently, there is no mandate for hiring and promoting women. In fact, senior management does not want to set a quota for promoting women since "the best people, regardless of gender, should be considered for development" (20). The hiring data

indicates a high percentage of females being hired into positions for technologists and engineers (18). But, since Mining Engineering programs have fewer women graduates as compared to Metallurgy and Mineral Processing, Inco's representation of women engineers (newly hired) is more prominent in the surface plant locations as compared to the mining operations (18).

There is no formalized mentoring scheme at Inco and no official support network for the visible minority group of women. To address these issues, there are two initiatives that could assist the recruiting, retaining and promoting of women - one from within Inco and one from outside the Company. The first initiative, launched in 2001 as "Trailblazers", is a training program for high-potential employees.

The program offers stretch opportunities to prepare individuals for roles of higher complexity in the organization. In the first "Trailblazer's" team of 14, there are two women. Additional teams are planned - as selected from a group of 70 employees who have been identified as high-achievers at Inco. In this program, mentoring is seen as being imperative to the success of these individuals such that a one-on-one relationship (of one's choosing) is a first-step task in the program. Each mentor, who is at arms-length from the employee, is a member of Inco's management team. Overall, the "Trailblazers" program aims to fast-track the career progression of certain high-potential employees at Inco (20).

The second initiative is the formation of a volunteer group in 1998 (sponsored by Laurentian University's School of Engineering) called Women In Science and Engineering (WISE) Sudbury Chapter (15). The WISE group has three key goals: (i) to create a support network for women (ii) to inform and encourage young women to consider careers in science and technology, (iii) to inform Sudburians about the achievements of women in these careers. Of the 20 full-time members, over 50% are Inco employees - including the President, Past-President and Secretary. The educational role is key for the volunteers, yet personal professional development and interaction among the women is also of prime importance to the group's directives and to the members. The WISE team exemplifies the relational learning and applications of theory women tend to favour. Group work and collaborative approaches (where there is a critical mass of women in the team) are enjoyable for women (12). The high-proportion of WISE members who are Inco employees perhaps indicates the need these professional women have for

shared work with other women – and suggests this need is not being met through work assignments.

#### FINAL THOUGHTS

For several decades, women have been enrolling and completing post-secondary education – in fact, women make up the majority of full-time students in most facilities today (9).

So why does the mining industry have such difficulty in accepting, recruiting and retaining women as working partners? Obviously, the responsibility has to be shared between industry, education facilities and families. This has been described through Inco's case study whereby the acceptance of women in the workforce alone and gender equity rules have not been successful in redressing the balance. It is obvious women and men are different (e.g. Mars and Venus) and yet want to be equals.

Let's embrace the difference – and further identify, understand and exploit the positive benefits of having a diverse (different) yet equally represented workforce. Quite simply, a diverse workforce is needed with an equal representation of all groups within the Company. This diversification yields a well-balanced team approach. It is suggested that the major areas for further development in obtaining a gender balance could involve the following:

#### *Advocacy of the importance of gender in mineral resources management*

- CCWE suggest an infusion of women into the industry may bring a distinctive female perspective on technological issues – a social awareness of the 'female' values concerned with issues of health, occupational safety, environment and family, currently lacking in the industry (5). The mining industry has aggressively sought economic benefit, rather than a socially responsible approach as well. Women who are socially conditioned to be nurturers can offer a major contribution by helping to develop a more humane and socially beneficial industry than previously witnessed.

#### *Policy development in relation to gender within the mining industry:*

- Day care (for shift workers particularly).
- Flexible work - to balance families and careers.
- Financial support for maternity/parental leave.
- Recruitment and career development policies that are sensitive to approaches used by women.

#### *Accountability within mining companies with respect to the gender perspective:*

- Re-evaluate the applicability of isometric strength tests in light of the technology era.
- Acknowledge that there are few, if any, physical restrictions for employment in the industry.

#### *Educational Improvements:*

- Competence development through sensitization and training.
- Use of gender-neutral language and job titles.
- Affirmative action in education facilities starting in elementary schools to improve women's self-confidence.
- Address the denial that exists with women and men in the industry that there is no 'gender' imbalance.
- Acknowledge that men and women learn and solve problems differently – and that diversity is a benefit to business solutions. Determine those differences and exploit them.
- Address the problem of gender bias entrenched in cultural beliefs to eliminate restrictive stereotyping.
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