

## WOMEN IN MANAGEMENT: 16 YEARS AFTER GRADUATION

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*Presented at the Geological Association of Canada Meeting 1993, Edmonton, Alberta*

Historically, there have been few women in the mining industry and none in management positions. The scarcity of women geologists in the industry used to reflect the small number of women studying geology at university. However, from 1975 to 1990, the percentage of women graduating in geology in Canada increased from 8.5 to 25.p% (Table 1).

**Table 1:**  
**Female Representation Among Bachelor's Degree Graduates in Canada.**

	<u>Graduates</u>		<u>Proportion of Women as a percent</u>	
	1975	1990	1975	1990
All Graduates	80,754	109,812	44.4	55.7
Male-dominated Disciplines	25,921	44,926	16.8	36.1
Geology	531	374	8.5	25.9
Law	2,670	3,362	20.8	47.2
Medicine	2,011	2,290	23.9	45.9
Business/commerce	5,328	13,819	13.3	45.8
Chemistry	746	987	19.3	36.7
Computer science	799	2,194	21.9	19.8
Engineering	4,078	7,056	1.8	11.7

Reference: Statistics Canada, 1992.

Even so, the authors found that there is still a significant lack of women in management positions, based on an informal study and numerous interviews. In mining companies, the senior women are mainly in administrative rather than technical jobs. The most senior women in Canadian mining is Peggy White, a metallurgical engineer and president of Royal Oak Mines Inc., yet she has never held a senior r position in any company that she did not own.

For the purpose of this discussion, the definition of management is adapted from the Association of Professional Engineers of Ontario (APEO) *Classification Guide of Engineering Responsibility Levels*, with alterations underlined. The levels of responsibility increase from A to F, and D is the first management level at which there is “...direct and sustained supervision of other geologists or the first level of full specialization. Requires application of mature geological knowledge in planning and conducting projects having scope for independent accomplishment and coordination of difficult and responsible assignments.”

The authors are particularly interested in responsibility levels achieved by engineers who graduated in 1977, as both authors graduated with B.Sc. degrees from Carleton or Queen’s universities that year. The APEO June 1992 *Survey of Employers* provided statistics (Table 2) indicating that, of 522 engineers who graduated in 1977, 75% were classified as Level D or higher.

**Table 2:  
Level of Responsibility and Salary for  
Engineers Graduated in 1977.**

Responsibility Level	Number of Graduates	Median Annual Salary
A	0	0
B	7	\$45,498
C	125	\$57,120
D	240	\$67,028
E	112	\$75,666
F	38	\$84,600

Association of Profession Engineers of Ontario, 1992.

To determine how far female geologists had advanced “16 years after graduation”, the authors probed the work history of 11 of the 13 women who graduated with them. A summary of their careers may be a snapshot of the general pictures for women geoscientists (Table 3).

**Table 3:**  
**Following the careers of 11 female geology graduates,**  
**16 years after graduation**

<b>PERSON</b>	<b>MSc GEOL.</b>	<b>OTHER MASTERS</b>	<b>PhD GEOL.</b>	<b>CURRENT WORK</b>
				<b>UNIVERSITY</b>
MLH			Yes	Associate professor, Temple U.
JP	1981		1987	Assistant professor, Concordia U.
				<b>GOVERNMENT</b>
PJW	1983			Part-time physical scientist, GSC
KK		1981 MSc civil engineering		Project officer – wastes and impacts, Atomic Energy Control Board
CC		MA geography		Part-time seismic analyst, CANMET
				<b>CONSULTING/CONTRACT</b>
KG	1985?			Contract geologist, Asamera Minerals
LB	1980?			Consulting geochemist, X-Ray Assay Labs
GA		1980 MEngSc civil engineering	June 1993?	Self-employed part-time contract researcher, seismic hazard evaluation
MJW	1982			Self-employed part-time editor and journalist
				<b>OUTSIDE GEOLOGY</b>
JS		1979 MA philosophy, politics, and economics		Self-employed part-time economic policy consultant
BT	MSc geophys.	MBA		Financial analyst, Ont. Teachers' Pension Plan Board

The most striking feature is that 10 of the 11 pursued graduate-level education, in geoscience or other fields. Two of the women are now faculty members in geology departments; three work for government agencies; four are consultants or contract employees in a geoscience field; and two are out geology altogether, in the fields of economics and finance. Six of the women have young children. Notably, none of the group is employed by a mining company. On the basis of the APEO classification, it appears that none of the women in this group has achieved Level D.

The authors did not survey the male members of these classes, but to the best of our knowledge, 21% of the 76 men who graduated in geology from Queen's and Carleton in 1977 are employed by mining companies or are consultants to the mining industry. Only 5% are at a university or government organization. A full 20% are in the oil and gas industry. Fourteen percent are known to have changed careers, and it suspected that the remaining 40% have probably also dropped out of geology. It is not known how many of the male class members have attained management Level D.

The 1977 female graduates were asked if they would advise a young woman to study geology if she was interested in the subject. Many of the comments were cautionary, such as: "There is no impediment for women, even though it is male-dominated profession;" and, "Being female is a definite drawback since it is still men in their 50's and 60's making the decisions."

They were also asked for their recommendations to women entering the field. Most of their answers pertained to men as much as to women:

- Students should get as varied an education as possible, including math, sciences and communication skills. Networking with other students will improve self-confidence and develop contacts.
- A woman's chances of advancing her career are better in places with affirmative action programs, such as universities and government agencies.
- Volunteer to improve networking opportunities.
- Work hard to establish a career before having children.

- Many women find they prefer being self-employed or working in a small consulting firm. This lacks the security of working for a large organization but has several advantages. There are fewer barriers to advancement; women consultants seem to be more easily accepted as experts than women employees; work hours and travel commitments can be more flexible, to accommodate the needs of young families.

Most of the women interviews for this paper are at least moderately ambitious, bright and are seeking positions of increasing responsibility and challenge. Despite this, they will probably never achieve management status in the mining industry. There are several reasons: the shrinking number of jobs in the industry, the 'flattening' of organizations, and a lack of tradition in promoting women. However, women may have more chances for advancement in future because of two factors: the small number of new geology graduates will lead to an increased demand for geologist; and younger, perhaps less conservative managers will eventually be in charge of hiring and promotion.

Women currently exist who are capable and experienced. Hopefully another 16 years will not have to pass before others like them are accepted in management positions.

## **REFERENCES**

Statistics Canada, 1992, A Degree of change: Catalogue 75-001E.

Association of Professional Engineers of Ontario, 1992, 1992 Report on engineers' salaries – Ontario, based on a survey of employers as of June 1, 1992, 17p.





