

Wireless Communications

Niche Profile

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Introduction

The wireless communication industry is growing in northern Alberta. Oil and gas producers use two-way radios, cellular phones, and remote monitoring of well sites and gas transmission lines. Forestry companies use radios, phones and geographic positioning systems. Other businesses and the general public are making increased use of cellular phones. Along with the popularity of these systems and devices comes a demand for skilled technicians to install, maintain and repair the equipment and the system infrastructure. Several northern Alberta communications companies have approached Grande Prairie Regional College (GPRC) and Fairview College with a concern that there is a lack of training available that is specific to the wireless communication industry.

This report examines the demand for courses designed to provide graduates of programs in electronics or telecommunications with the skills and knowledge needed to install, maintain and repair wireless communication equipment and systems.

Methods

Information for this report was gathered through a series of interviews with representatives of companies providing wireless communications services as well as educators and other experts in the field. The Internet also proved to be a valuable research medium.

Employment

There are an estimated 100 to 120 radio/wireless technicians working for approximately 40 communications companies who sell, install and maintain communications equipment such as cellular telephones, two-way radios and remote monitoring systems. Most of these companies are relatively small, with most of those surveyed employing two or three technicians each in any one locality and none employing more than ten. The Grande Prairie and Peace River areas are home to almost one-half of the communications companies in northern Alberta.

There are also a number of technicians working for utility companies or for network providers such as Telus Mobility and Cantel. The total number working for these companies in northern Alberta is likely between 30 and 50.

The industry will likely continue to grow, hiring more technicians in northern Alberta despite an expected 12% reduction in employment for communications equipment installation personnel across Canada between 1995 and 2000. Survey responses indicate that most communications companies expect to have from one to five additional technicians on staff within the next three to five years. That suggests that across northern Alberta a conservative estimate would see 10 to 20 new technicians hired in each of the next five years.

Employment with utilities, oil and gas producers and network providers is not expected to increase as much as that with communications companies.

Industry Trends

- The primary customers for all of the communications companies surveyed are in the oil and gas industry. Installation and maintenance contracts with oil & gas companies account for some 70% of the wireless communications business in northern Alberta. Forestry makes up roughly 20% and the general public and other businesses account for the remainder.
- The technology that communications companies in northern Alberta use today is mostly analog. Cantel uses analog technology for just over 50% of their work, but most companies work with analog equipment about 90% of the time. All of those surveyed agree that digital technology is going to play an increasing role in the industry through the years but not all agree on the rate of change. Any new transmission towers constructed will be microwave (digital) facilities. Nonetheless, analog technology, or “legacy equipment”, as one expert put it, is likely to be in use for the next decade at least. There is a great deal of analog infrastructure already in place and this will not easily be abandoned.
- Many of these businesses are operated by former AGT employees who went into business on their own following corporate downsizing at AGT. These people received their wireless training on the job from AGT but cannot afford to provide the same level of training to their employees.
- The employee turnover rate within the industry is fairly low. Once people become trained and experienced as radio technicians they tend to stay in the business. This is in spite of the apparently low wages for workers in this industry. New employees at one of the companies surveyed earn about \$11.00 per hour, while an experienced technician with a certificate from NAIT earns roughly \$19.50 per hour.
- There is little work done in the area of cellular telephone repair. Most equipment is modular, so that any damaged pieces are simply removed and replaced rather than repaired. Entire units that are damaged are also replaced and sent to the manufacturer, rather than being repaired by the service provider. This will become increasingly true over the next few years.
- Local Multipoint Communications Systems (LMCS) is seen as a possible major factor in the future of telecommunications. Industry Canada has recently issued licenses to three companies to broadcast using this technology, which could eventually carry TV, Internet, and telephone signals among others. This industry is in its very early developmental stages and its part in the future of wireless telecommunications is unknown.

- Personal Communications Services (PCS) is another developing aspect of telecommunications. PCS could potentially replace both the home telephone and the cellular phone with one device, operating on one phone number. This is expected to play a large role in wireless communications in the future.

Available Training

Most radio technicians currently in the field began their training with a diploma in electronics technology or in telecommunications engineering technology from SAIT, NAIT or DeVry Institute. These are general programs, not geared toward wireless communications. NAIT does offer some radio frequency training as part of its program (two respondents said that this was the best part of the program) but it is optional.

NAIT's electronics curriculum is undergoing a review process that includes industry consultation. NAIT is considering alternate delivery methods for their program components. SAIT is reportedly looking into remote delivery of their electronics courses.

NAIT also provides training modules on contract to companies such as Alberta Power and Nova Gas Transmission Ltd.

Training Most Needed

While most of those interviewed for this study agree that electronics and communications technicians tickets are valuable background training, those who want to work in wireless communications need further training. The following, in fairly general terms, are the additional knowledge sets and skills most needed by wireless technicians according to those surveyed

- Radio Frequency knowledge, including:
radio theory, systems, repeaters, trunking, transmitters, modulation, receivers, frequency re-use, interference locating, and related subjects
- Cellular systems
- Computer skills
- Status and Control systems
- Paging systems
- Power construction
- Oilfield parameters and data transmission
- Public relations and marketing skills
- Industry regulations, licensing
- Trouble-shooting techniques

Comments on Training in the industry

- Industry personnel operating in central or southern Alberta are less likely to see a need for new training programs than are those living and working in the north. As one oil company representative pointed out, in northern Alberta it is difficult to obtain the levels of communications service that are common in the south.
- A few companies reported that some of their most qualified radio technicians received their training in the Canadian Armed Forces.
- Telus and Cantel tend to have their employees trained on specific equipment by the equipment manufacturer. One technician reported that once he was hired full-time by a network provider, he was immediately sent to Dallas for a month of training.
- Cantel would not be likely to contract training from a local college, preferring to have their training standardized across the country. The company would, however, support an individual employee who wanted to improve his skills in a certain area by taking a course or module from a local institution.
- Shawn Hayter of Cantel and Bob Miles of Expert Communications both expressed a particular interest in taking part in any further industry input into the development of a wireless training program at GPRC and Fairview College.
- All but two of the communications companies surveyed would support short, upgrading modules for their employees.

Implications for Training

There is a market for a post-diploma program in wireless communications. The northern Alberta job market would likely absorb some 20 graduates per year. In addition, there is a market for short upgrading modules for those already in the industry. This program should be largely based on analog technology but it will have to include some digital technology as well. In order to remain current, the level of digital training would have to increase yearly.

One possible alternative to developing an independent program would be to enter into partnerships with NAIT or SAIT for program development and delivery.

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Internet sources

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