

Dillon Controls, Ltd.

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"The choices themselves seem simple enough," thought Jac Dillon, "either we enter the U.S. market in Pennsylvania and New York, we forget about the U.S. for the time being, or we do some more marketing research." Dillon was president of Dillon Controls, Ltd., located in Brantford, Ontario. The company was formed in 1980 and, after a slow start, had grown steadily to its present size of 25 employees and annual revenues of about \$1.6 million. About 2% of these revenues came from sales to U.S. accounts.

THE AQUAWATCH SYSTEM

Dillon Controls' product line centred about its AquaWatch System, a design of computer hardware and software for the monitoring and control of pressurized water flows. Most often these water flows consisted of either potable water or sewage effluent as these liquids were stored, moved, or treated by municipal water departments.

The System employed an AquaWatch microcomputer installed at individual pumping stations where liquids are stored and moved. Often, stations were located many kilometres

This case was written by Professor James E. Nelson and Doctoral Student Mark S. Johnson, University of Colorado. It is intended for use as a basis for class discussion rather than to illustrate either effective or ineffective administrative decision making. Some data are disguised. © 1990 by the Business Research Division, College of Business and Administration and the Graduate School of Business Administration, University of Colorado, Boulder, Colorado, 80309-0419. Reprinted with permission.

apart, linking geographically dispersed water users (households, businesses, etc.) to water and sewer systems. The microcomputer performed a number of important functions. It governed the starts, stops, and alarms of up to four pumps, monitored levels and available capacities of storage reservoirs, checked pump capacities and power consumptions, and recorded pump flows. It could even measure amounts of rainfall entering reservoirs and adjust pump operations or activate an alarm as needed. Each microcomputer could also be easily connected to a main computer to allow remote control of pumping stations and produce a variety of charts and graphs useful in evaluating pump performance and scheduling needed maintenance.

The AquaWatch System provided a monitoring function that human operators could not match in terms of sophistication, immediacy, and cost. It permitted each individual substation to control its own pumping operations; collect, analyze, and store data; forecast trends; transmit data and alarms to a central computer; and receive remote commands. Alarms could also be transmitted directly to a pocket-sized receiver carried by one or more operators on call. A supervisor could continually monitor pumping operations in a large system entirely via a computer terminal at a central location and send commands to individual pumps, thereby saving costly service calls and time. The System also reduced the possibility of overflows that could produce disastrous flooding of nearby communities or contamination of potable water.

Dillon Controls personnel would work with water and sewage engineers to design and install the desired AquaWatch System. Personnel would also train engineers and operators to work with the System and would be available 24 hours a day for consultation. If needed, a company engineer could be physically present to assist engineers and operators whenever major problems arose. Dillon Controls also offered its clients the option of purchasing a complete service contract whereby company personnel would provide periodic testing and maintenance of installed systems. The contract called for clients to pay Dillon for all direct costs of the service plus 15% for overhead.

An AquaWatch System could be configured a number of ways. In its most basic form, the System would be little more than a small "black box" that monitored two or three lift station activities and, when necessary, transmitted an alarm to one or more remote receivers. An intermediate System would monitor additional activities, send data to a central computer via telephone lines, and receive remote commands. An advanced System would provide the same monitoring capabilities but add forecasting features, maintenance management, auxiliary power backup, and data transmission and reception via radio. Prices to customers for the three configurations in early 1991 were about \$1500, \$2800, and \$4800.

AQUAWATCH CUSTOMERS

AquaWatch customers could be divided into two groups—governmental units and industrial companies. The typical application in the first group was a sewage treatment plant having some four to 12 pumping stations, each station containing one or more pumps. Pumps would operate intermittently and—unless an AquaWatch or similar system were in place—be monitored by one or more operators who would visit each station once or perhaps twice each day for about a half-hour. Operators would take reservoir measurements, record running times of pumps, and sometimes perform limited maintenance and repairs. The sewage plant and stations typically were located in flat or rolling terrain, where gravity

could not be used in lieu of pumping. If any monitoring equipment were present at all, it typically would consist of a crude, on-site alarm that would activate whenever fluid levels rose or fell beyond a preset level. Sometimes the alarm would activate a telephone dialling function that alerted an operator some distance from the station.

Numerous industrial companies also stored, moved, and processed large quantities of water or sewage. These applications usually differed little from those in governmental plants except for their smaller size. On the other hand, there were a considerably larger number of industrial companies having pumping stations and so, Dillon thought, the two markets offered about identical market potentials.

The two markets desired essentially the same products, although industrial applications often used smaller, simpler equipment. Both markets wanted their monitoring equipment to be accurate and reliable, the two dominant concerns. Equipment should also be easy to use, economical to operate, and require little regular service or maintenance. Purchase price often was not a major consideration—as long as the price was in some appropriate range, customers seemed more interested in actual product performance than in initial outlays.

Dillon thought that worldwide demand for these types of systems would continue to be strong for at least the next ten years. While some demand represented construction of new pumping stations, many applications were replacements of crude monitoring and alarm systems at existing sites. These existing systems depended greatly on regular visits by operators, visits that often continued even after new equipment was installed. Most such trips were probably not necessary. However, many managers found it difficult to dismiss or reassign monitoring personnel who were no longer needed; many were also quite cautious and conservative, desiring some human monitoring of the new equipment “just in case.” Once replacements of existing systems were complete, market growth would be limited to new construction and, of course, replacements with more sophisticated systems.

Most customers (as well as non-customers) considered the AquaWatch System one of the best on the market. Those knowledgeable in the industry felt that competing products seldom matched AquaWatch's reliability and accuracy. Experts also believed that many competing products lacked the sophistication and flexibility present in AquaWatch's design. Beyond these product features, customers also appreciated Dillon Controls' knowledge about water and sanitation engineering. Competing firms often lacked this expertise, offering their products somewhat as a sideline and considering the market too small for an intensive marketing effort.

The market was clearly not too small for Dillon Controls. While Jac Dillon had no hard data on market potential for the United States, he thought that annual demand there could be as much as \$30 million. In Canada, the total market was at least \$4 million. Perhaps about 40% of market demand came from new construction while the rest represented replacements of existing systems. Industry sales in the latter category could be increased by more aggressive marketing efforts on the part of competitors in the industry.

DILLON CONTROLS' STRATEGY

Dillon Controls currently marketed its AquaWatch System primarily to sewage treatment plants in Canada as opposed to industrial companies. Approximately 70% of its revenues came from Ontario and Quebec. The company's strategy could be described as providing technologically superior equipment to monitor pumping operations at these plants. The

strategy stressed frequent contacts with customers and potential customers to design, supply, and service AquaWatch Systems. The strategy also stressed superior knowledge of water and sanitation engineering along with up-to-date electronics and computer technology. The result was a line of highly specialized sensors, computers, and methods for process controls in water treatment plants.

This was the essence of Dillon Controls' strategy, having a special competence that no firm in the market could easily match. The company also prided itself on being a young, creative company, without an entrenched bureaucracy. Company employees generally worked with enthusiasm and dedication; they talked with each other, regularly, openly, and with a great deal of give and take. Most importantly, customers—as well as technology—seemed to drive all areas in the company.

Dillon Controls' strategy in Canada seemed to be fairly well decided. That is, Dillon thought that a continuation of present strategies and tactics should continue to produce good results. However, an aspect that would likely change would be to locate a branch office having both sales and distribution functions somewhere out west, most likely in Vancouver. The plan was to have such an office in operation within the next few years. Having a branch office in Vancouver would greatly simplify sales and service in the western provinces, not to mention increase company sales.

Beyond establishing the branch office, Dillon was considering a major strategic decision to enter the U.S. market. The North American Free Trade Agreement, which came into effect in 1989, was prompting many Canadian companies to look southward. Among other things, the agreement eliminated all tariffs on computer products (such as the AquaWatch System) traded between Canada and the United States. In addition, Dillon's two recent visits to the United States had led him to conclude that the market represented potential far beyond that of Canada and that the United States seemed perfect for expansion. Industry experts in the United States agreed with Dillon that the AquaWatch System outperformed anything used in the U.S. market. Experts thought that many water and sewage engineers would welcome Dillon Controls' products and knowledge. Moreover, Dillon thought that U.S. transportation systems and payment arrangements would present few problems.

Entry would most likely be in the form of a sales and service office located in Philadelphia. The Pennsylvania and New York State markets seemed representative of the United States and appeared to offer a good test of the AquaWatch System. While the two states represented only 12% of the U.S. population, they accounted for almost 16% of U.S. manufacturing activity. The office would require an investment of some \$200 000 for inventory and other balance sheet items. Annual fixed costs would total upwards of \$250 000 for salaries and other operating expenses—Dillon thought that the office would employ only a general manager, technician, and secretary for at least the first year or two. Each AquaWatch System sold in the United States would be priced to provide a contribution of about 30%. Dillon wanted a 35% annual return on any Dillon Controls' investment, to begin no later than the second year. At issue was whether Dillon could realistically expect to achieve this goal in the United States.

MARKETING RESEARCH

To estimate the viability of a U.S. sales office, Dillon had commissioned the Browning Group in Philadelphia to conduct some limited marketing research with selected personnel

in the water and sewage industries in the city and surrounding areas. The research had two purposes: to obtain a sense of market needs and market reactions to Dillon Controls' products and to calculate a rough estimate of market potential in Pennsylvania and New York. Results were intended to help Dillon interpret his earlier conversations with industry experts and perhaps allow a decision on market entry.

The research design itself employed two phases of data collection. The first consisted of five one-hour interviews with water and sewage engineers employed by local city and municipal governments. For each interview, an experienced Browning Group interviewer scheduled an appointment with the engineer and then visited his office, armed with a set of questions and a tape recorder. Questions included:

1. What procedures do you use to monitor your pumping stations?
2. Is your current monitoring system effective? Costly?
3. What are the costs of a monitoring malfunction?
4. What features would you like to see in a monitoring system?
5. Who decides on the selection of a monitoring system?
6. What is your reaction to the AquaWatch System?

Interviewers were careful to listen closely to the engineers' responses and to probe for additional detail and clarification.

Tapes of the personal interviews were transcribed and then analyzed by the project manager at Browning. The report noted that these results were interesting in that they described typical industry practices and viewpoints. A partial summary from the report appears below:

The picture that emerges is one of fairly sophisticated personnel making decisions about monitoring equipment that is relatively simple in design. Still, some engineers would appear distrustful of this equipment because they persist in sending operators to pumping stations on a daily basis. The distrust may be justified because potential costs of a malfunction were identified as expensive repairs and cleanups, fines of \$10 000 per day of violation, lawsuits, harassment by the Health Department, and public embarrassment. The five engineers identified themselves as key individuals in the decision to purchase new equipment. Without exception, they considered AquaWatch features innovative, highly desirable, and worth the price.

The summary noted also that the primary use of the interview results was to construct a questionnaire that could be administered over the telephone.

The questionnaire was used in the second phase of data collection, as part of a telephone survey of 65 utility managers, water and sewage engineers, and pumping station operators in Philadelphia and surrounding areas. All respondents were employed by governmental units. Each interview took about ten minutes to complete, covering topics identified in questions 1, 2, and 4 above. The Browning Group's research report stated that most interviews found respondents to be quite cooperative, although 15 people refused to participate at all.

The telephone interviews had produced results that could be considered more representative of the market because of the larger sample size. The report had organized these results about the topics of monitoring procedures, system effectiveness and costs, and features desired in a monitoring system:

All monitoring systems under the responsibility of the 50 respondents were considered to require manual checking. The frequency of operator visits to pumping stations ranged from monthly to twice daily, depending on flow rates, pumping station history, proximity of nearby communities, monitoring equipment in operation, and other factors. Even the most sophisticated automatic systems were checked because respondents "just don't trust the machine." Each operator was responsible for an average of 15 stations.

Despite the perceived need for double-checking, all respondents considered their current monitoring system to be quite effective. Not one reported a serious pumping malfunction in the past three years that had escaped detection. However, this reliability came at considerable cost—the annual wages and other expenses associated with each monitoring operator averaged about \$50 000.

Respondents were about evenly divided between those wishing a simple alarm system and those desiring a sophisticated, versatile microprocessor. Managers and engineers in the former category often said that the only feature they really needed was an emergency signal such as a siren, horn, or light. Sometimes they would add a telephone dialer that would be automatically activated at the same time as the signal. Most agreed that a price of around \$2000 would be reasonable for such a system. The latter category of individuals contained engineers desiring many of the AquaWatch System's features, once they knew such equipment was available. A price of \$5000 per system seemed acceptable. Some of these respondents were quite knowledgeable about computers and computer programming while others were not. Only four respondents voiced any strong concerns about the cost to purchase and install more sophisticated monitoring equipment. Everyone demanded that the equipment be reliable and accurate.

Dillon found the report quite helpful. Much of the information, of course, simply confirmed his own view of the U.S. market. However, it was good to have this knowledge from an independent, objective organization. In addition, to learn that the market consisted of two, apparently equally sized segments of simple and sophisticated applications was quite worthwhile. In particular, knowledge of system prices considered acceptable by each segment would make the entry decision easier. Meeting these prices would not be a major problem.

A most important section of the report contained an estimate of market potential for Pennsylvania and New York. The estimate was based on an analysis of discharge permits on file in governmental offices in the two states. These permits were required before any city, municipality, water or sewage district, or industrial company could release sewage or other contaminated water to another system or to a lake or river. Each permit showed the number of pumping stations in operation. Based on a 10% sample of permits, the report had estimated that governmental units in Pennsylvania and New York contained approximately 3000 and 5000 pumping stations for waste water, respectively. Industrial companies in the two states were estimated to add some 3000 and 9000 more pumping stations, respectively. The total number of pumping stations in the two states—20 000—seemed to be growing at about 2% per year.

Finally, a brief section of the report dealt with the study's limitations. Dillon agreed that the sample was quite small, that it contained no utility managers or engineers from New York, and that it probably concentrated too heavily on individuals in larger urban areas. In addition, the research told him nothing about competitors and their marketing strategies and tactics. Nor did he learn anything about any state regulations for monitoring equipment, if indeed any existed. However, these shortcomings came as no surprise, representing a consequence of the research design proposed to Dillon by the Browning Group some six weeks ago, before the study began.

THE DECISION

Dillon's decision seemed a difficult one. The most risky option was to enter the U.S. market as soon as possible. There was no question about the vast market potential of the U.S. However, the company's opportunity for a greatly increased bottom line had to be balanced against the threat of new competitors who were, for the most part, larger and more sophisticated than Dillon Controls. In fact, a friend had jokingly remarked that "a Canadian firm selling microprocessor controls in the U.S. would be like trying to sell Canadian semiconductors to the Japanese."

The most conservative option was to stay in Canada. Of course, Dillon Controls would continue to respond to the odd inquiry from the United States and would continue to fill orders that the company accepted from U.S. customers. However, it would not seek this sort of business in an aggressive fashion. Nor would it seek representation in the United States through an agent or distributor. The latter option put Dillon Controls out of the picture as far as controlling sales claims, prices, product installation, service, and other important aspects of customer relations was concerned.

In between the two extremes was the option of conducting some additional marketing research. Discussion with the Browning Group had identified the objectives of this research as to rectify limitations of the first study as well as to provide more accurate estimates of market potential. (The estimates of the numbers of pumping stations in Pennsylvania and New York were accurate to around plus or minus 20%.) This research was estimated to cost \$40 000 and take another three months to complete.