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NATIONAL ROUND TABLE ON THE ENVIRONMENT AND THE ECONOMY SYMPOSIUM ON DECISION-MAKING PRACTICES

CASE STUDY: LE GROUP SNC

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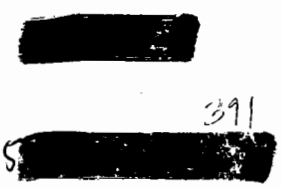
September 1990



This case study is divided into two parts. The first part describes the Groupe SNC, its activities, structure and expansion into the environmental sector. The second part describes the Groupe SNC's approach to defining its future role in applying the concept of lasting development, the chief elements of its environmental strategy, the past corporate reorganization, and the effects of these changes on Groupe SNC management.

PART 1: CASE DESCRIPTION

1. Description of the Firm

The Groupe SNC is a public corporation headquartered in Montreal. For the past several years, it has ranked among the foremost Canadian engineering firms. Engineering and construction account for approximately 50% of its annual sales of roughly $400 million, the other half chiefly generated by the manufacture of defence products. The Groupe SNC has approximately 4,000 employees, 1,800 of whom work in the fields of engineering and construction for its subsidiary SNC inc., the exclusive focus of the following discussion.

In the past, the Energy and Major Projects, Chemicals and Petroleum and Mines and Metallurgy sectors were the chief sectors of engineering and construction activity, generating two-thirds to three-quarters of revenues. However, given its size, SNC inc. is capable of comprehensive intervention, and telecommunications, the environment, transportation, industry and other sectors are important fields of activity. Geographically, the Groupe SNC's engineering activities are conducted Canada-wide, primarily in Quebec, Ontario and the West, with inroads into the United States, and the North American market accounts for approximately 80% of its total sales. Nevertheless, SNC remains one of the chief Canadian exporters of engineering services, with export sales in the neighbourhood of $30 million annually.

Anticipating the growing opportunity within this sector, the Groupe SNC recently conducted a major overhaul of its focus and organization, making the environment a major sector in its future development.

2. Environmental Organization and Activities

Within the SNC organization (see Diagram 1), its chief component consisting of divisions and subsidiaries, environmental engineering services were formerly classified as a division of the engineering-

construction subsidiary SNC inc., on the same basis as the major sectors of traditional activity. Over the past few years, environmental projects have accounted for 5% to 10% of engineering activity, and the Environment Division was incorporated as a subdivision of the Energy, Major Projects and Environment Division, although for all practical purposes it continues to operate independently.

The organizational chart of the Environment and Public Works Division (see Diagraph 2) describes the sectors of activity subsequently targeted by SNC which, in addition to covering up a large range of environmental specialities and interventions, included urban infrastructure projects. The most important areas of activity involved the treatment of waste water and industrial effluent, solid waste and toxic waste management, noise control, and so on. Geographically, the Environment Division operates almost exclusively in Quebec, except for solid waste studies performed throughout Canada. The Division also performs a significant amount of industrial treatment engineering work generated by other Groupe SNC division.

Another aspect of SNC's environmental activities has been its efforts since 1985 to act as the designer, financier and operator of waste or toxic substance conversion or salvage facilities. The Environment Division has launched various promising projects in Quebec, but was unable to bring them to completion due to financing problems.

The Groupe SNC's major achievement with this type of project will be the Peel incinerator in Ontario, Near Toronto. Under this project, the Groupe SNC entered a long-term agreement with the regional government of Mississauga, and built facilities which it co-owns with a group of financiers at a cost of $53 million, and also operates. This achievement, soon planned for start-up, was mounted by the Groupe SNC's Ontario subsidiary, W.P. London and Associates.

The Groupe SNC's environmental activities are also distinctive by the research and development effort invested in new household and industrial waste salvage and conversion technologies for commercial marketing. The Groupe SNC organizations involved include the Research and Technology Division and a subsidiary, La société de recherche SNC inc. (SNC-Recherche), under the Division's authority. The Research Division is responsible for technological planning and management for the Group, while SNC-Recherche conducts R&D projects in accordance with internal terms of reference or through outside contracts, in addition to its technological forecasting work.

The Groupe SNC's emphasis on environmental R&D owes to the perception of this field's rapid technological development and numerous commercial opportunities. Moreover, unlike other fields, such as metallurgy or industrial procedures, the cost of developing

new environmental technologies is considered more affordable. The technological development projects undertaken to date have been mounted with the financial assistance to R&D provided through various government programs.

Diagram 1
Simplified Organization of SNC Inc.
Prior to Environment Reorganization

GROUPE SNC

SNC inc.			SNC ltée
Engineering and Construction			defence products
Industry, etc. Chemicals and Petroleum Mines and Metallurgy Other Divisions	Energy, Major Projects and Environment Division Environment and public works	Research and Technology Division sub-division	SNC inc. research firm

Diagram 2

Environment Division Organizational Chart Prior to Reorganization

Energy
Major Projects and
Environment Division

Environment
and
Public Works
Subdivision

Urban infrastructures	Industrial processing		Bio-physical impact
Expertise and special projects	Noise pollution	Solid waste	Municipal treatment

Two achievements in particular deserve mention: the development of a process to produce oil from waste water treatment sludge ("oil from sludge-OFS") and a bio-reactor for the anaerobic conversion of liquid effluent from farm/food plants (dairies, slaughterhouses. etc.). The OFS process was developed by the Waste Water Technology Centre of Environment Canada, with assistance from the SNC inc. Environment Division, which later acquired the licence. However, research on development of the bio-reactor was conducted within the Research and Technology Division.

The first concrete results of these research and development efforts will come when an agreement is reached between the regional government of Toronto and the Groupe SNC to scale the OFS procedure to the Highland Creek waste water treatment plant in Scarborough. As in the case of the Peel incinerator, the Highland Creek project was mounted by the Ontario subsidiary of the Groupe SNC, on behalf of a company it will partly own.

An agreement was also signed with a major Quebec dairy plant to conduct a scale demonstration of the bio-reactor process.

3. Expansion of the Environment Sector

Over the past few years, SNC's environment managers and experts perceived new and important opportunities emerging in the environmental engineering field, and believed that capitalizing on these opportunities required not only broadening the company's expertise into new fields, but also developing its intervention ability to enable a shift from its traditional role as a service supplier to that of an environmental entrepreneur, a role it has only just begun to play.

At the same time, it became evident that the local environmental engineering market was better served by firms with a strong municipal or regional presence, among a clientele which, to that point, had not been a corporate priority given the highly competitive market and the usual small-scale nature of environmental projects compared to the Group's customary activities. Lastly, SNC's environmental R&D efforts led to the acquisition of new technologies offering promising markets, which it seemed could be better worked through a new approach to corporate development and management.

Thus, in late 1989, the Groupe SNC appeared ready to launch major changes to revive its environmental activities.

PART 2: SOLUTIONS CHOSEN

1. Factors Underlying the Change

Market forces seem to have played a major part in prompting the profound change in the Groupe SNC's approach to the environmental sector. Of the three main factors that seem to have triggered the change, two directly reveal the influence of market forces:

- the perception of major future growth in the environmental engineering services market and its shift toward the construction and operation of conversion, recycling and restoration facilities from the traditional study, engineering and project management services; and
- the desire to increase penetration of the local environment market.

The third factor accounting for the change also relates to the market, although more indirectly, in terms of exploring future opportunities. This factor was:

- The Groupe SNC's acquisition of environmental research and development capabilities, and the ability to identify and apply new technologies.

The decision to change was a relatively slow process. As a result, the market perception evolved over a number of years, while the Groupe SNC pursued its efforts to break into local markets and tried to initiate a few projects that took it out of its usual engineering role to act as financier, builder and operator.

Furthermore, the Groupe SNC's environmental R&D efforts, underway since 1979, led to the establishment in 1987 of the previously mentioned organizational structure, and to SNC's involvement over the past five years in "oil from sludge" and bio-reactor projects.

2. The Change Process and Strategy

With the forces of change already at work in the organization, the catalyst seems to have been the arrival of new Groupe SNC directors in 1989. Under their stewardship, the company steered a new development course, with the environment as a prime sector for expanding activities and promoting the company's skills and products.

The change process triggered by new management first consisted of mandating a corporate task force to produce a strategic plan including:

- a review of market opportunities;
- an analysis of the Groupe SNC's strengths and weaknesses
- identification of potential growth sectors;
- a statement of objectives; and
- development of a strategy, as well as means and a schedule for implementation.

The objective of the strategy developed was to increase SNC's environmental activity over a two- to three-year period, until it generated approximately 25% of the engineering-construction sector's total sales.

This objective reflects the findings of the review of growing market opportunities in the environmental sector, whether locally, nationally or internationally, given the universal nature of the problems, as well as the regulations and control programs. However, the market analysis revealed that the most significant areas of future opportunity would involve site restoration, effluent treatment and waste salvage, rather than site studies and engineering projects alone. This observation confirmed the need for a change from the type of services offered in the past.

Basically, the strategy adopted to achieve the rapid growth objective for the Group's environmental activities includes three elements:

1) increase penetration of the environmental engineering services market by purchasing companies firmly established at the local level;

2) to capitalize on market opportunities, seek vertical development that combines design, financing, turnkey construction and operation of facilities, and create alliances to do so;

3) develop and acquire environmental technologies.

In turn, implementation of this strategy involves four major elements:

1) reorganize SNC inc.'s environmental activities;

2) acquire local engineering firms and enter alliances or acquire firms involved in operating environmental systems;

3) allow "product champions" to market the technologies developed or acquired by the Groupe SNC;

4) pursue the development of environmental technologies by the Research and Technology Division and bring to bear the expertise of other SNC divisions.

Although implementation began only a few months ago, some major elements of the strategy have already been achieved. During the second quarter, SNC acquired the firm LGL, the fourth largest engineering group in Quebec, whose strengths are its strong municipal presence and skills in the water treatment field (sanitary and municipal engineering). Other acquisitions will be considered in other regions to enlarge SNC's local base and range of environmental services.

A second step was complete with the reorganization of the Groupe SNC's environmental activities. Noting the growing importance of the environmental component, the reorganization recognized the environment as a self-supporting field of activity by raising the status of the Environment Division within the corporate structure to the same level as SNC's chief engineering divisions. The reorganization (see Diagram 3) also involved recentering SNC's activities in a number of promising markets identified in the strategic plan in the fields of industrial treatment and impact studies are left to subsidiaries with a local mandate, such as LGL, required to operate and develop independently in these fields.

Thus, the new Environment Division is now organized into departments or modules (see Diagram 4) covering four sectors of activity: consultation, industrial treatment, hazardous waste, and energy and new technologies. These modules are mandated to promote application of the new technologies developed or acquired by SNC and to enter partnerships with other operators to establish operational units integrated within SNC or in which SNC holds shares. With the reorganization, the Division has also acquired the human resources required to plan and manage its growth.

The first step in implementing the strategy consists of focusing exclusively on the defined markets, to be developed in Quebec and Ontario, where the Groupe SNC is most firmly established, and experiment with the integrated service approach while pursuing the search for new technologies with the R&D Division.

Basically, other elements of the strategy have yet to be implemented. It would be difficult to do more in so short a time, since the type of changes and initiatives targeted by the strategy involved various restrictions in terms of human and financial resources, and require intensive, long-term project planning and preparation, and considerable effort by the organization to adapt.

3. Implications for Organization Management

The strategic focus on operating rather than engineering services implies a new type of organization and management. At the organizational level, corporate satellite units will have to be created to operate the procedures or sites. These satellite structures will be independent profit centres, managed in a more hierarchical manner than an engineering services company, with a short-term philosophy and close relations with clientele. In terms of the Environment Division of SNC inc., which will be mandated to develop these projects and later act as mother-company and financial holding company, this will mean a more complex management structure for promoting and managing a broadened network of companies and diversified activities.

The Environment Division will also be involved in matrix-like line relations with regional subsidiaries in Quebec, Ontario, the United States and elsewhere, for coordination purposes. These are major changes for managers and professional engineers accustomed to selling a service and working within a management framework determined by the project.

Diagram 3

Simplified Organization of SNC Inc.
Prior to Environment Reorganization

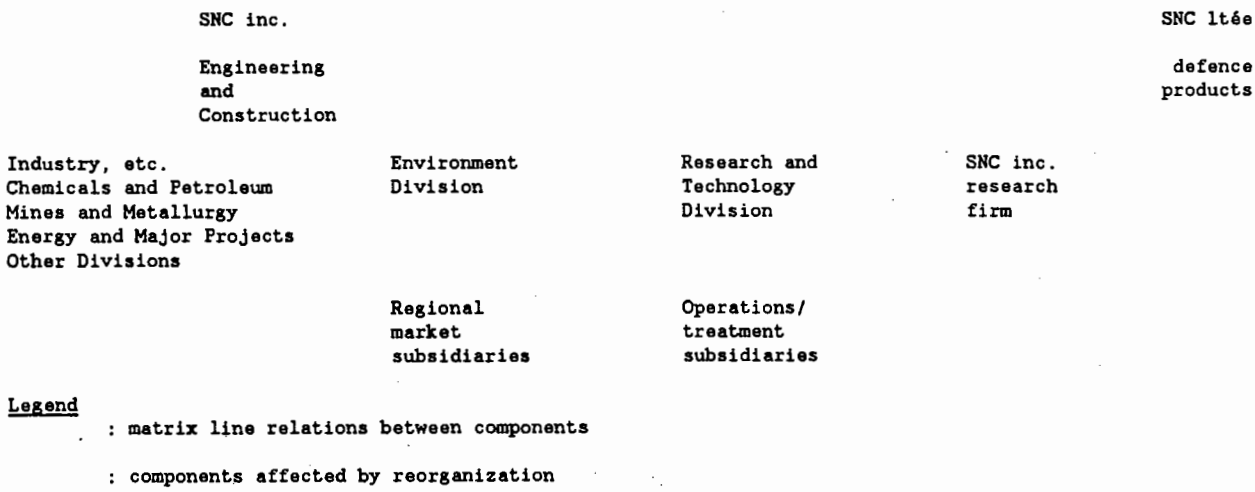


Diagram 4

Organizational Chart of Environment Division Subsequent to Reorganization

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Environment Division

Business Development — **Permits**

Marketing — **Government Relations**

Consulting	Industries	Hazardous Waste	New Energy
Audits	source reduction	site restoration	electrical production from waste
contingency plans	effluent treatment	biotechnology	cogeneration
training	recycling	industrial cleaning	OFS process
noise			household waste transformation plants

Line relation with other divisions, local subsidiaries and operating units

Evaluation and Control

The program for implementing the strategy and its subsequent evaluation will entail the standard management tools used for service company management: budgets and marketing plans, with the corresponding analysis and control methods. Thus, mechanisms specific to the environment field are not expected to be introduced into management. However, the increased complexity of managing a network of companies will require greater use of these tools, and a strengthened management team.

As well, the implementation of SNC's "total quality" program will undoubtedly foster the integration of environmental considerations into project design. Indeed, "total quality" engineering will mean the systematic and controlled pursuit of quality in projects designed by the engineer, in an approach that mobilizes the entire company, extending beyond the short term to encompass an ongoing relation with the client. The application of "total quality" thus ensures the future environmental viability of the projects, and will contribute to the concept of lasting development.

Human Resources and Motivation

The "environmental" strategy requires increased human resources, both at the technical and management levels. In light of existing restrictions regarding the availability of trained and experienced specialists, SNC will develop its resources internally, through on-

the-job training. Furthermore, the company will broaden its internal seminar and course program to include the environment, and will increase its financial support of outside training.

Concerning the motivation of individuals participating in the change and implementation of the strategy, no specific motivation mechanisms related to environmental issues are planned. However, the company's environmental strategy may be a considerable source of motivation for managers and engineers, since the scope of their activities will broaden and they will become more important. Furthermore, their career opportunities will widen in an expanded network of companies outside the consulting field, in the management of operations, sales or research, with higher or more attractive monetary and sometimes non-monetary incentives than available in engineering consulting.

In more concrete terms, motivation to make the strategy a success will rely on the Environment Division's "product champions", responsible for promoting technologies and integrated services, through incentives based on performance and responsibility. Motivation will also be a factor in terms of R&D structures and will be fuelled, among other things, through publication opportunities, participation in scientific events, and so on.

Information Management

Lastly, technological information is a key element of SNC's environmental activity development strategy because it enables the identification and acquisition of technologies the Group can market, and because it ensures the Group's competitiveness by helping to keep its services at the leading edge of technological knowledge. Thus, the success of technological information will depend on an adequate ability to identify and evaluate technologies through research, and adequate liaison between research structures and the Environment Division and the subsidiaries concerned.

- make the environment a priority field of R&D activities;
- perform enough internal research to be able to develop technologies;
- reconvene a technological committee of experts working for the Group in various fields; and
- methodically pursue forecasting activities by assigning specific fields to committees and individuals with SNC-Recherche and/or the Technological Committee, and by maintaining constant contact with those who develop technologies and offer licenses in strategic areas of interest to SNC.

4. Conclusion

The idea of changing an organization to help achieve lasting development applies in a different manner to engineering firms because they do not directly interact with the environment. The engineering firm reacts to the market's demand for its services, and the environmental impact of its work is determined by the laws and regulations governing engineers in a given field. That does not mean that engineering companies are devoid of any ecological conscience. However, they essentially respond to market dictates first, which are the dictates of their clients.

Adapting to the challenges of lasting development is therefore a different matter for service company such as SNC than for a manufacturing firm or for government. Indeed, while the other two are obliged to take measures to change their own behaviour or that of society in general, sometimes at the cost of painful economic choices, engineering firms are confronted by a demand for services in new fields or specialities created by regulatory changes and ecological awareness. The firm then decides whether to adapt its structure and make the investment required to provide these services, which is relatively simple given limited degree of capitalization in the service sector.

However, adopting a strategy to develop integrated environmental services, as the Groupe SNC did, has a much more far-reaching scope in achieving lasting development. However, this approach has profound effects on corporate management. The technological research initiative, and the creation and operation of facilities designed to enable such development, requires reorganizing certain components of the company and adopting a matrix management philosophy enabling the integration of engineering departments and operating units.

The company must then go farther than the simple sale and supply of specialized, environmental services, and acquire the ability to identify and finance investments, and later manage the facilities. That requires strengthening its technological expertise, ties with government and the public, financial means and human resources.

Large engineering firms such as SNC inc. are asked to play a special role in implementing lasting development, given that some of their clients are major polluters, and that they often have a deep understanding of the problems facing them. The role of large engineering firms is not only to diminish pollution, but to prevent it.

In conclusion, the Groupe SNC, through its strategy for developing integrated environmental activity and the introduction of a total quality program, has positioned itself to play this role and make a significant contribution to lasting development.