
Bluestone Group, Inc.

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The case was written as part of a Stanford University Civil Engineering course entitled "Organization and Management of Human Resources." The primary purpose of the case (which was a course term project) is to provide the students with an opportunity to apply the theories and design tools presented in the organizational theory class by observing and analyzing how a real project organization in the construction/engineering industry is set up and managed.

The case can be divided into the following two parts: Part I is a survey of the Bluestone organization overall. Information about the company was obtained from published sources as well as several interviews with Bluestone personnel. These data were then entered into OrgCon to generate a recommended organizational structure for Bluestone.

Part II deals with the structure of a smaller organization within Bluestone, and the students chose to study the field engineering unit in Bluestone's Alkylation Plant Modernization Project at Oilco Baylands Refinery. The configuration of the unit is analyzed as well the inter-relationships both within and outside the unit of its members using the definitions laid down in this book. From this analysis the students were able to suggest the optimal organizational structure for this unit.

Professor Raymond E. Levitt comments that "for Part II of this case, the students did not apply OrgCon directly, although you can clearly see the influence of OrgCon in their analysis. Although students may not routinely use it to solve cases, they can assimilate many of the important ideas and approaches inherent in the OrgCon knowledge base by going through the process with OrgCon only once."

The case is very comprehensive in its analysis and application of OrgCon.

Background

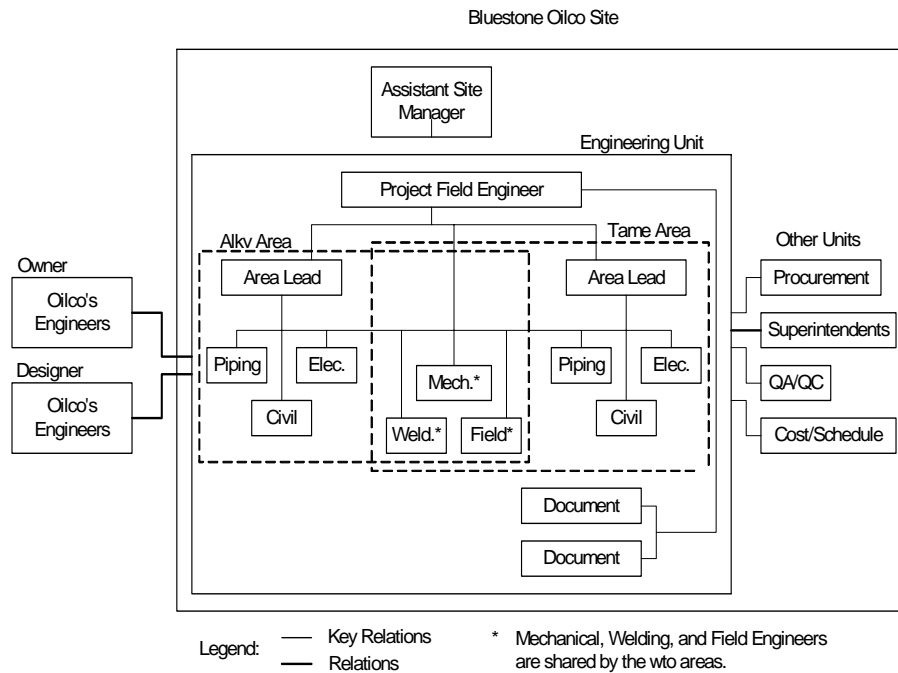
Bluestone is a Los Angeles-based professional engineering and construction organization whose stated purpose is to provide premier technical management and directly related services to develop, manage, engineer, build, and operate installations for its customers worldwide. It was founded in 1898 as a builder of railroads. Since then its services have grown to encompass diverse technical fields in many geographical locations. Bluestone currently consists of companies organized along three different fronts with business lines (e.g. petrochemical and power), functional organizations (e.g. construction and financing), and geographical offices (e.g. Los Angeles and Houston) (Figure 1). All of these privately held companies are brought under the aegis of Bluestone Group, Inc., with Richard Bluestone, a fourth-generation representative of the founding family, at the helm. In 1993, Bluestone worked on 173 major projects in twenty-one countries throughout the world

For this report, members of Bluestone's Alkylation Plant Modernization Project at the Oilco Baylands Refinery were interviewed. They are all Bluestone Construction Company personnel on assignment to this project. They were asked to give us their perspectives on not only the project itself but the Bluestone organization overall as well.

Those interviewed were:

- Site Manager
- Project Field Engineer
- ALKY Area Engineer
- Piping Engineer.

Figure 1. Bluestone Group, Inc. Organization chart



Part I

Several methods were used to collect input data for OrgCon. Company brochures and informal conversations with people both inside and outside of Bluestone provided general information about the organization. The actual OrgCon questions were also incorporated into a questionnaire and distributed to the interviewees—trusting that the employees themselves can offer better insights in areas such as operating procedures and management style. Interestingly, while these questionnaires provide invaluable information regarding Bluestone, there were some definite inconsistencies which seemed to reflect the respondents' perspective regarding their niche in the organization. For example, the project engineers tended to believe more that they had clearly defined tasks to follow than the managers did. Also, although there are indications that some of Bluestone's business lines may actually embrace a rather functionally-oriented philosophy, most of the interviewees believed Bluestone overall to be a matrix structure. It is a case of projecting their immediate environment in Bluestone Construction and the Oilco site onto the larger Bluestone whole. The input data then are based firstly on the questionnaire results. Should there be glaring inconsistencies among the answers, the most likely answer was selected by evaluating other sources of information, and the certainty factors were adjusted accordingly. In some cases, such as the size of the company, a published value was used in favor of the questionnaire results.

Current Organization

Bluestone is a large organization which has a high level of education among its 20,000 employees. Its management has a medium preference for delegation and a medium uncertainty avoidance. This is demonstrated by the fact that the top management:

- Prefers to let some decisions be made by other managers,
- Has both a short-time and long-term horizon when making decisions,
- Is risk neutral,
- Prefers to use both motivation and control to coordinate the activities.

The organization currently executes an analyzer with innovation strategy. This strategy of seeking new opportunities but also maintaining its profitable position is appropriate when there is:

- Medium requirement for product innovation,
- Medium-routine technology—with some flexibility allowed,
- Product diversity,
- Medium capital investment—constraining some capabilities but leaving others adjustable,
- Strong concern for high quality.

Bluestone meets all of the above criteria. Further, the top management shows a preference for a medium level of delegation and a medium level of uncertainty avoidance.. This can be obtained via control over current operations. Product innovation should be less controlled, however. This again calls for an analyzer with innovation strategy. The organization's characteristics are determined to be as follows:

- Organizational complexity is high,
- Horizontal differentiation is high,
- Vertical differentiation is high,
- Spatial differentiation is high,
- Centralization is medium,
- Formalization is medium.

Based on the above analysis, an OrgCon analysis can be performed.

Part II

The Bluestone Alkylation Plant Modernization Project was observed for the second part of this report. The goal of this project is to construct a new alkylation plant in the existing Oilco Baylands Refinery to help produce cleaner automobile fuel, that complies with the new federal regulations to be in effect by 1996. Bluestone is the prime contractor in this project; Oilco, the owner; and Peterson, the designer. The project is executed under a cost reimbursable contract valued at \$253 million. It started on October 4, 1993, and is scheduled to be completed by September 21, 1995.

The Bluestone project staff is directed by a two-boss site manager who reports to both Bluestone Petrochemical and Bluestone Construction Company (Figure 1). The organization of the project has a staff of 63. The Site Manager supervises the field division and the service

division through an Assistant Site Manager and a Project Service Superintendent respectively. He supervises the rest of the staff directly. Under the assistant site manager is a Project Field Engineer who supervises the field engineering unit.

The specific unit whose structure and coordination we chose to study was this field engineering unit and its nineteen members.

Goals and Objectives of the Dominant Coalition

The overall goal of the Alkylation Plant Modernization Project is to achieve the points defined in the cost reimbursable contract for a successful project, such as completing the project 15 percent under the budget in order to receive a one million dollar incentive. To achieve this, Bluestone tries to build a harmonious and trusting working relationship with the owner and the designer following the general guidelines set forth in *Cost-Trust Relationship*. At the field engineering level this strategy translates into developing a highly-qualified team to guide and direct the project to the highest quality at the lowest cost and promoting this team spirit not only amongst the engineers but also to the owner and the designer.

Environment

There are several organizations external to the engineering unit with which the unit must interact (Figure 2). The engineers identified their interactions with the owner, the designer and the superintendents as the key relationships:

- *Owner and designer*: The engineering unit maintains very close relationship with these two groups of people. As is consistent with the team building concept the members of all three groups share the same office space and communicate with each other freely and constantly.
- *Superintendents*: This is the group of people the engineering unit come in contact the most. The engineers rely on the superintendents to make sure that designs are constructed out properly, and feedbacks from the superintendents allow the engineers to act as the intermediary between the field and the owner and designer. Problems between field supervision and engineering are discussed and resolved at weekly meetings.

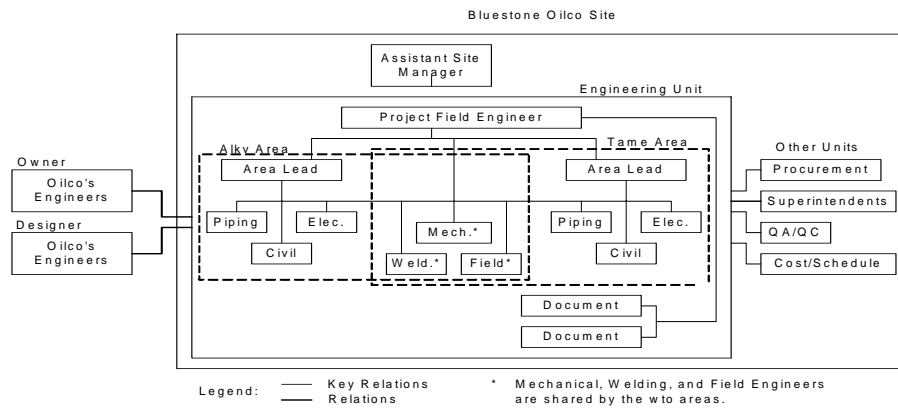
The greatest source of uncertainty is the design changes requested by the owner and designer. Since the drawings are not 100 percent completed, the uncertainty is high. However, because those with the owner, the designer, and the superintendents are the engineering unit's only major external interactions, its environmental complexity is not high and the equivocality is low.

Work-flow and Technologies Used

The most important job for the engineering unit is to carry forward the installation on schedule while minimizing rework. The unit holds a weekly meeting to check on the progress in all engineering concerns and to plan out in detail the work to be done in the next three weeks. Each individual has his own field of technical specialty (electricity, piping, civil, mechanical, etc.) for which he is responsible. The interdependence in the unit among different specialties is not overly strong. Rather, contacts between an engineer and an outside specialist in his field occur more frequently. However, an engineer who needs minor assistance from any other members of

the unit can simply ask for it directly. When more substantial assistance is required, the two leads in the unit coordinate this matter (Figure 2).

Figure 2. Environment which surrounds the Engineering Unit



Bluestone uses a formal service grade system as well. An entry-level engineer usually starts from Level 22 or 23, and his or her grade advances based on seniority and performance. Bluestone also encourages its employees to seek out further training and education if they so desire.

Automation is not prevalent inside the engineering unit. E-mail is implemented widely, and there is a project-wide Procurement Tracking System (PTS) which the engineers use to place purchase orders. However, because of the nature of the project, face to face communication is still the dominant means of information flow. The engineers also indicated that paper rather than electronic media is the preferred method of documentation from both the legal and the ease of use points of view. The piping engineers do have a computer database called *Piping* which details the layout, length, size, and materials of all the piping connections. The electrical engineers use a similar system called *Setroute*.

Existing Organizational Structure

The engineering unit is headed by a project field engineer, who is delegated much authority by his direct superior, the assistant site manager. The project field engineer can make purchasing decisions up to about \$500,000 without his superior's prior approval. He in turn also prefers to delegate his authority to his subordinates, indicating a low preference for microinvolvement. His main task is planning and meeting a long-term schedule along with the owner and the designer.

Underneath him there is no distinct official hierarchical structure. Instead of having formal managers between the Project Engineer and his engineers, the unit has two senior engineers acting as area leads during the bulk installation stage (Figure 2). The situation-specific nature of this arrangement exhibits the trait of an ad hoc configuration. However, it is also a divisional configuration since the engineering responsibility is divided into the ALKY and TAME Areas at this stage. Each area has a full complement of civil, piping, and electrical engineers. The line between areas is not clearly drawn, however. Each lead is free to assist or borrow personnel from the other area. Each area lead can also make decisions affecting up to about \$5,000 based on only his judgment. This amount is not stated in the regulations but rather comes about as a tacit understanding among the project members. Another important role of the leads is to instill the company culture in younger engineers.

Clearly a large portion of the project field engineer's authority is transferred to his subordinates. Therefore, we can conclude that the engineering unit is very decentralized. However, the project field engineer and the area leads still prefer to be informed of the decisions that their subordinates or unit members make, and bucking the chain of command is generally frowned upon.

Currently the project is in the transition period of swinging, from bulk installation to turnover (start-up) mode. Consequently the unit's configuration is now changing from the area engineering configuration to a functional one. The two area leads become turnover coordinators at this stage. Some engineers may be experiencing slight confusion regarding their responsibility as a result of the change, but overall the transition can be considered as smooth. The structure of, and the atmosphere in the engineering unit remains quite informal. There are comparatively few written rules. Instead, the staff has a tacit understanding of how some things should be done which comes about as part of the company culture.

Incentives are based on Bluestone's overall performance as stipulated in the contract and can be broadly categorized into three award types based on safety, quality, and on-time and on-budget delivery. Any reward is distributed to all project staff members.

We may now summarize and conclude that the engineering unit possesses the following characteristics:

- High management preference for delegation—low centralization,
- Proactive decision making—medium formalization,
- Two informal groups with two leads in the unit allocated to two areas—ad hoc and divisional configuration,
- Medium media richness,
- Staff of three to five under each lead (total of eighteen underneath the manager) and two informal vertical layers—short span of control and small number of vertical levels,
- Tacit understanding rather than written rules and standards,
- Many face to face meetings and interactions among individuals,
- Informal and free communication,
- Freedom to act first based on one's own judgment and report later,
- Reward distribution based on overall organization's performance.

Questions for Consideration

1. Are there strategic misfits?
2. Which organizational structure would be appropriate for Part I?
3. Which organizational structure would be appropriate for Part II?
4. Compare the current and recommended structure.