

An R&D Laboratory Case Study

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Abstract—A case was prepared for study at the 1979 Engineering Management Conference. It is presented here along with the analysis of the conference study group with the thought that it might stimulate letters to the Editor with additional analysis and viewpoints.

INTRODUCTION

AN R&D LABORATORY case was prepared in a Federal Government setting for study at the 1979 Engineering Management Conference. The case was included in the Conference Digest given to registrants when they arrived. A specific set of procedures was recommended to the participants.

PROCEDURES

Following is a description of a research laboratory (The Acey Ducey Research Laboratory).

Arrangements

If you are interested, study teams will be formed at the beginning of morning and afternoon sessions as listed in the program. Proceed to the designated place to join a team. The case should be completed in one half-day session.

On the last afternoon there will be a discussion session where representatives of the study teams will present their analysis of the case and their recommended solution to the problems. All participants are welcome at this discussion session.

Purposes

- 1) To apply participants' knowledge and experience to the solution of ACDuC problems as an educational exercise.
- 2) To exchange ideas, opinions, and experiences among participants.

Participant Duties

- 1) Carefully review the case and perform an analysis of ACDuC before going to the session.
- 2) Participate in the organization of the case study work session.
- 3) Participate in the establishment of work session goals.
- 4) Contribute to the work session activity.
- 5) Give other participants the benefit of your training and experience.
- 6) Be concise, considerate, tactful, and stimulating.
- 7) Assist in the achievement of work session goals within the time limit.

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Case Analysis Suggestions

- 1) Form a clear mental picture of the situation.
- 2) Assemble and appraise the facts.
- 3) Determine alternate solutions.
- 4) Choose a course of action.
- 5) Examine the decision for validity.
- 6) Implement the decision.

ACEY DUCEY RESEARCH LABORATORY

The Acey Ducey Research Laboratory (ACDuC) is a major Federal electrotechnology research and development laboratory of the Department of Benevolence (DoB). It has a long and distinguished history of making major contributions to the advancement of the electrotechnology state-of-the-art for applications both within and beyond the DoB mission. Many distinguished alumni can be found in positions of major responsibility in other federal research laboratories, in private industry, and in the leading universities.

The dynamic personnel of ACDuC have had a dynamic organization. Major reorganizations of large parts of the laboratory have been implemented every two to three years to keep the organization in step with the changing times. The present organization is shown in Fig. 1 and some statistical data are given in Table 1.

The organization is a combination of functional discipline and operational project groups. The experts are administratively attached to the functional branches and are assigned to participate on various project teams as required. Project assignments are often full-time jobs that last for the life of the project which can be five to ten years.

The changing organizational configuration has been accompanied by changes in management personnel as various people have been hired, retired, promoted, and reassigned. Until a few years ago the Laboratory Director was George Greenstone, a very people-oriented engineer that believed in participative management. Major decisions were made on the basis of a consensus of the Executive Committee (EXCOM) consisting of the Director; Deputy, Associate, and Assistant Directors; and Division Chiefs. The EXCOM set the overall directions, and the organization did a good job of running itself. The R&D and Engineering Division Chiefs were entrepreneurs who dealt with existing and potential customers to bring in the financial support. Actually, many of the more aggressive senior people in the branches and sections of the R&D and Engineering divisions were also entrepreneurs who developed customers and wrote proposals for new work. George Greenstone spent a considerable amount of time visiting the branches to see what was happening and offer technical suggestions for the

TABLE I
STATISTICS

Fiscal Year	TY-10	TY-9	TY-8	TY-7	TY-6	TY-5	TY-4	TY-3	TY-2	TY-1	THIS YEAR (TY)	* TY+1	** TY+2
People	4070	4290	4490	4460	4180	3990	3940	3870	3770	3660	3550	3450	3350
\$M	640	620	600	570	520	490	400	370	270	260	250	240	230
New Programs	4	3	4	3	4	4	3	2	2	0	0	0	1
Patent Applications	43	47	45	41	43	40	42	40	32	25	15	-	-
Published Papers	2900	3050	3140	3090	2860	2700	2660	2430	2060	1970	1390	-	-

*Budgeted.

**Estimated.

***9 months.

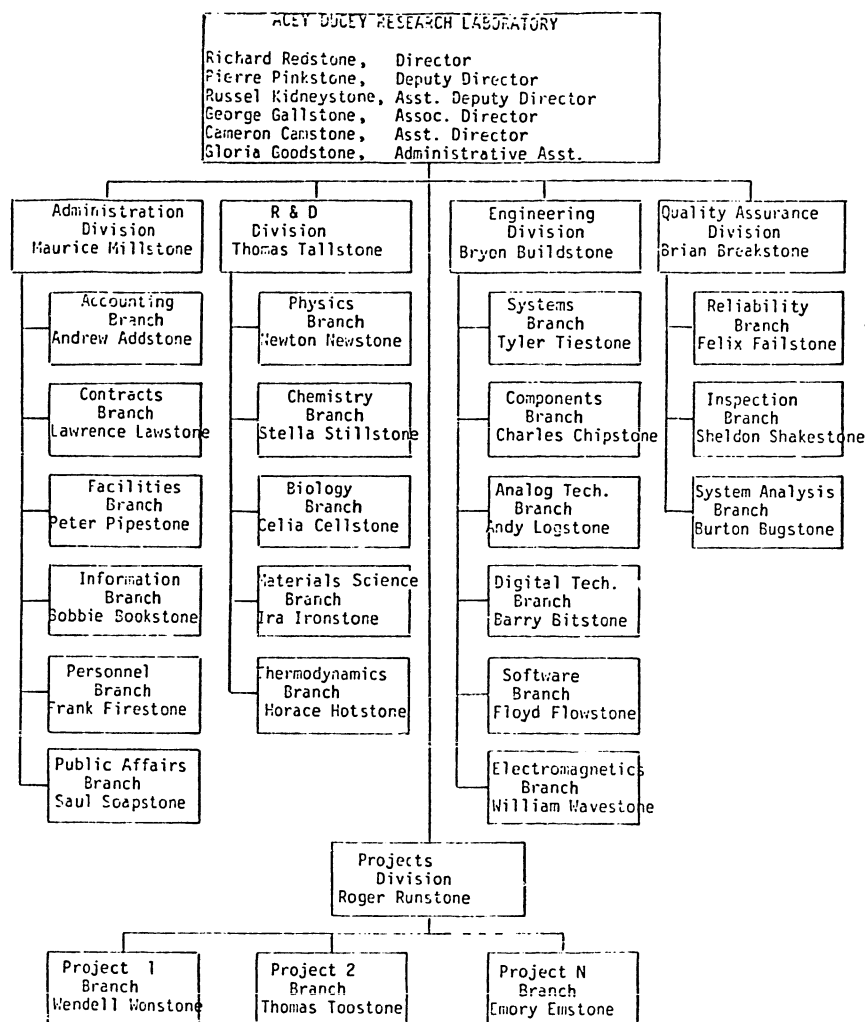


Fig. 1. Organization.

problems being attacked. George was quick to recognize the creativity of the staff, and awards were presented for the significant achievements to enhance motivation. In this thoroughly technical organization the administrative division viewed its job as one of helping the technical people do their job. Cooperation among the divisions was good at all levels.

The participative environment with the EXCOM operating by consensus did not result in the entire organization following the same pattern. In fact, the Division Directors filled the vacuum, became rather authoritarian and often appeared arbitrary in their decision making. Most of the important and creative ideas originated at the very bottom of the organiza-

tion. Management served as a filter to reject the majority of ideas and only pass through those it liked to DoB management. At DoB decision making was also relegated to accepting or rejecting the ACDuC proposals.

The people at ACDuC were all very busy and the morale was high. Cars could be seen in the parking lot even in the wee hours of the night. Some of the goal-oriented managers had a nagging uncomfortable feeling that everyone was so busy doing their own thing that there was no thought given to formulating goals for the Laboratory or its Divisions. What was clear was that the projects, as major ACDuC commitments, had the top priority. Management at DoB was no help in setting ACDuC goals because they were experiencing their own reorganizations and turnover as a result of changes in administrations. There was no agreement within DoB on what their goals were or should be.

Employment at ACDuC was steady until about ten years ago when federal support of electrotechnology began to wane. At that time the White House and Congress combined to reduce the civil service manpower at the laboratory. In the beginning, the reductions were accommodated by normal attrition without major effects except on the ability to recruit new young staff members from the universities. However, during the last five years of George Greenstone's administration it was necessary to have two reductions in force (RIF) to reduce to the lowered ceilings. These each amounted to involuntary separations of about 1 percent with another 2 percent affected employees taking advantage of the opportunity for early retirement. Most of those involuntarily separated obtained other federal jobs (some at higher grades) due largely to the good reputation ACDuC enjoyed in the government.

When George Greenstone announced his desire to retire, Richard Redstone was brought in from another agency to run the laboratory. Dick has a Ph.D. in chemical engineering and many years experience in managing projects, although this was his first assignment managing a significant number of people. Dick was very goal oriented and somewhat dismayed at the participative process. At one of his early staff meetings he declared "we have to get this thing under control."

With the changing national climate Dick could see the need to move in new directions and to work on projects that would produce benefits to the citizenry if ACDuC was to enjoy future support from the White House and Congress. He saw that major efforts in new (as yet undefined) directions could not be initiated without significant manpower, so he initiated a major effort to define available resources. No longer should people be doing their own thing. A computerized manpower charging and reporting scheme was instituted (with duplicate time cards) with strict manpower budgets assigned to approve projects and those people not so assigned forced to charge an overhead ("available for other work") number. A top level proposal committee was established with Dick as Chairman to approve all proposals before they went to a customer to prevent people at lower levels from discussing new work with potential customers that would result in perceived commitments that would have to be honored. The Administrative Division was doubled during the first year to 30 percent of the staff to administer the new control systems and the large increase in paperwork.

Richard Redstone was concerned about the lack of manpower flexibility caused by the difficulty of firing civil servants. Although he was not sure of the new directions that made sense for his laboratory, he believed there were some subprofessional skills at ACDuC that would not be needed. Accordingly, he arranged for a third RIF early in his tenure to eliminate these people even though normal attrition was adequate to get ACDuC below the end-of-year ceiling. He believed that with the vacancies thus created he would be able to bring in some of the vital new blood that had not been attracted for over five years. However, ACDuC closed the year well below its ceiling because the total demand for engineers had increased, and industry starting salaries were 20-25 percent above the government entry level. ACDuC could not compete salary-wise and previous recruiter pitches based on the security of government service sounded less convincing to students who had heard about the RIF's.

Morale at ACDuC had deteriorated as evidenced by the traffic jams on the access roads as everyone rushed to get out at quitting time. The parking lots were deserted a half-hour later. Everyone griped about the large amount of paper work. There were as yet no goals to indicate the future directions, and those charging overhead were afraid they were candidates for the next RIF. There were no major new projects in the budgets for last year, this year, or next year, and none had made it through the proposal committee for the following year. People were unable to help each other with problems as in the past. Any request for help had to be answered with "what is the charge number?" and the tight manpower budget prevented any answer except "I don't have one for you."

Dick Redstone saw he needed help to turn the Laboratory around and sought out his friends with whom he had worked before. As a result, all positions at branch level and above that became vacant after Dick arrived were filled by people from other agencies. This served to restrict advancement opportunities at ACDuC and had an adverse impact on lower and middle management morale.

The Civil Service Commission conducted an audit of the manpower development activities at ACDuC and concluded that more could be done. This brought a quick affirmation from Dick Redstone of his commitment to manpower development and the institution of special workshops by an outside contractor. During the last year almost all of the managers from Division Chief down have participated in discussions of public program management, goal setting, project selection and evaluation, and personnel motivation.

You are now sitting around the lunch table in the executive dining room with some of your fellow middle and lower level management colleagues discussing what you, as individuals can do for the future of ACDuC, your people, and yourselves. How can your recent training be put to use?

DISCUSSION

During the final discussion of the case the participants identified the following problems:

- 1) There is an inability to recruit new talent.
- 2) There are no adequate goals at either the laboratory (ACDuC) or department (DoB) levels.
- 3) There is not a sufficient numbers of do-ers.

4) There is a need for new projects, a need to identify the sources of new projects, and to match them to the capabilities of the laboratory.

5) The central control of manpower may not be appropriate to a research organization.

6) There is no centralized planning function.

7) Administrative functions are at the same level as line functions.

The participants perceived four major alternatives for the middle managers at ACDuC:

1) The Division Chiefs could go to the Secretary of DoB and urge removal of the top people.

2) Resign and seek employment elsewhere.

3) Hang on and wait for a change (wait for Dick to leave).

4) Work to improve the situation by trying one or more of the following approaches:

a) Devise a set of goals for the laboratory and take them

to the Director, either as a group or individually or through "one of his men."

b) Unofficially contact former clients to have them "solicit" laboratory services.

c) Work through the office of the local congressman whose district includes the Laboratory.

d) Contact DoB to determine if they have any plans.

e) Make proposals to the ACDuC New Business Committee or its individual members.

f) Take actions to accelerate the demise of the Laboratory.

There was a general consensus that these were all valid alternatives, but no attempt was made at prioritization. The tenor of the participants grew more pessimistic as the discussion progressed and possible alternative solutions were examined in the light of the factors that created the problems they were attempting to solve.
