

April 1967

Brief 67-10092

NASA TECH BRIEF



NASA Tech Briefs are issued to summarize specific innovations derived from the U.S. space program, to encourage their commercial application. Copies are available to the public at 15 cents each from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

GREMEX—A New Management Training Concept

The explosive growth of science and technology has created a seemingly overwhelming paradox: the effective management of vast manpower and dollar budgets allocated to programs whose goals are well defined, but whose achievement requires a course of action evolved from many alternatives.

In today's space and defense project-oriented research and development the problem is particularly acute, where scientific needs and technological development must be blended and matched against the harsh realities of available manpower, funds, and time schedules.

In an effort to meet these shortcomings, management simulation techniques are being employed to offer training in management problems. GREMEX (Goddard Research Engineering Management Exercise) was developed to provide experience in R&D project decision making from a management rather than technological perspective.

A hypothetical project, S-101, The Orbiting Optical Observatory, is the setting for the GREMEX Exercise. The game begins when a Project Development Plan (PDP) is given to the participant for study. This represents a situation in which the technical objectives have already been established, development and testing activities have been defined, and their costs estimated. An optimum time to complete project development also has been established. In addition, the probability of success of the testing program, i.e., project reliability, has been estimated.

Built into the model are "inherent success probabilities" in regard to reliability, to cost, and to time estimates of each of the development and test activities. As the exercise progresses, these are used to determine the actual time and cost consumed and

whether technical performance objectives were realized.

The player-participant in the exercise, who assumes the role of the project manager, influences performance, cost and time estimates, etc., by decisions he is given the opportunity to make—or not, if he so chooses. For example, the participant will determine the type of contract, select the contractor, and award the contract quickly; with proper judgments applied, he will better his chances of achieving time, cost and performance objectives.

Sets of decisions are made and put in the form of computer instructions. The computer readout then gives the status of the project on the basis of the decisions made and the other factors programmed into the game. Plays and reports represent one month time increments.

The player thus has opportunities to test old methods and, if he wishes, to try some new approaches. This he can do without being concerned about the potential rewards or penalties that may weigh his decisions in real life. Real life in this context, is the management of multimillion dollar satellite and other space age projects exploring the universe or sending men to the moon.

A description of this management simulation technique is contained in the report: "Goddard Research Engineering Management Exercise (GREMEX)," October 1966.

Note:

Copies of this report are available from:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland 20771
Reference: B67-10092

(continued overleaf)

Patent status:

No patent action is contemplated by NASA.

Source: M. J. Vaccaro and M. F. Denault
(GSFC-574)