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- Mr. L. K. O’Leary — AT&T
- Professor Brian Moore — University of Texas
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- Participative Employee Problem Solving
- Job Enrichment — Pilot Programs

Please register me for the 7th ASPI National Forum to be held at the Statler Hilton Hotel in Washington, D.C., May 14-16, 1975

<table>
<thead>
<tr>
<th>Name</th>
<th>Firm/Agency/Organization</th>
<th>Division</th>
<th>Street</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
</thead>
</table>

Our organization is a Corporate member of ASPI: Yes ( ) No ( )

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<table>
<thead>
<tr>
<th></th>
<th>ADVANCE REGISTRATION</th>
<th>REGISTRATION AFTER APRIL 15, 1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPI Members</td>
<td>$110</td>
<td>$135</td>
</tr>
<tr>
<td>Non-Members</td>
<td>$135</td>
<td>$160</td>
</tr>
</tbody>
</table>

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FEATURES:
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An Analysis Of The Basic Criteria For Evaluating The Administration
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Contributions in the form of articles, photos, letters to the editor, etc., are welcome. Editorial policy dictates the right to edit or reject any material submitted for publication. Views and comments of contributors do not necessarily constitute the endorsement or opinion of the American Society For Performance Improvement, the Society of American Value Engineers, the National Association of Suggestion Systems, nor that of the National Property Management Association.

PERFORMANCE Magazine is published by Charger Productions, Incorporated, 34249 Camino Capistrano, Capistrano Beach, California 92624. Second class entry at San Clemente, California 92672.
ON THE COVER

An unprecedented fifth Sustained Craftsmanship Award was presented to Convair representatives in San Diego, California, by Brigadier General Michael E. De Armond. In making the presentation January 28, 1975, General De Armond said, "The Convair Division is the only contractor in any field to receive a fifth Sustained Craftsmanship award. This certainly marks an exceptional achievement."

Left to right in photo are: (top row) Colonel Knox, SAMSO; Colonel Boy, DCAS; R. Jumont, NASA; J. Brown, Convair; and Colonel Bathke, DCAS. Bottom row: M. White, DCAS; Grant Hansen, Convair; General De Armond, DCAS; and R. Schneider, Convair.

VALUE ENGINEERS ANNOUNCE THREE-DAY CONFERENCE

What does value engineering mean to a top corporation executive? Can it be profitable? If so, how? These and similar topics will be explored by world authorities at a conference of the Society of American Value Engineers May 11-14, 1975, at the Hilton Hotel in downtown Baltimore, Maryland.

The three-day conference will include such additional subjects as: planning the value task effort; transforming ideas into practical designs; ingredients of successful value management; value engineering to counter inflation in building construction; behavioral science to improve productivity; and selling ideas and getting agreements.

Industrial exhibits will include such new developments as nonvacuum electron beam welding, low-cost casting methods, short-run low-cost complex extrusions and low life-cycle cost building components.

Speakers will include Arthur Mudge, vice-president, Joy Manufacturing Company; Dr. Rosemary Fraser, Miami University of Ohio; Axel Peter Reid, president, Krehl & Reid, Karlsruhe, Germany; C. Rand, Research and Development Service, Oslo, Norway; and Dr. Bruce Whitwell, economist, Hempstead, England.

Registrations received before April 7 are $95 for SAVE members and $135 for others. After April 7, fees are $105 and $145, respectively. For more information, contact D.E. Reed, P.O. Box 521, Hunt Valley, Maryland 21030, Phone: (301) 765-4504.

HOT TIME FOR DISC’S COST-CUTTERS

Although the cold weather may inhibit the activities of some people, many cost-conscious employees at the Defense Industrial Supply Center (DISC) in Philadelphia have been hot with numerous Value Engineering projects recently. In one action, a purchasing agent and an equipment specialist combined their skills to accumulate supplementary technical data on a Plain, Rod End Bearing managed by DISC. This data enabled the technicians to redesign the bearing and revise the procurement specification. This in turn expanded the procurement base on the item and resulted in DISC’s slashing the unit price from $270 to $64.

Continued on next page

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UPDATE
Continued from page 5

On a single contract involving the bearing, over $10,300 was saved.

A similar type of investigation by DISC's High Dollar Breakout Team resulted in a $5,500 savings on a recently procured species of special grommets. DISC is a field activity of the Defense Supply Agency and procures vital industrial type hardware for use by the U.S. Armed Forces throughout the world.

HOW TO IMPROVE PRODUCTIVITY AND ENRICH HUMAN WORK

The University of Wisconsin-Extension will present a short course, How to Improve Productivity and Enrich Human Work, during the week of June 2-6, 1975. It will be held in the Wisconsin Center on the Madison Campus and the fee is $350.

Purpose of the course is to show engineers, managers, executives and others how a systems design approach can achieve optimum planning and/or maximum improvement for any operation or system while concurrently obtaining job enrichment for the people involved. Examples of the many successful applications include such diverse systems as data processing, heat treat processing, organization structure, production control, health care, education, assembly methods, maintenance, research and development, and railroads.

Among the topics covered in depth are: a universally applicable and prescriptive definition of the word system; the effective use of available and new technology in an organization; the right philosophy for improving and planning operations; the five phase strategy; management policies for effective change; and the role of decision making in design. Applications are emphasized with case studies.

For information on registration and specific program content, contact James E. Nicholls, Department of Engineering, University of Wisconsin-Extension, 432 N. Lake Street, Madison, Wisconsin 53706. Telephone: 608-262-2061.

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ROBERT E. SLOUGH, JR. is the manager of Services and Communications for the RCA Corporation. He was graduated from the University of Pennsylvania in 1950 with a BA degree in Journalism. Slough has been a staff writer and editor of weekly and daily newspapers and has written for radio stations in Pennsylvania and New Jersey. He joined RCA in 1953 and has had broad operating experience in various areas of Industrial Relations: Employee Suggestion System, Employee Services, Training and Compensation.

NASS Membership Experience And Salary Profile
Part I

By Robert E. Slough, Jr.

Most special purpose organizations - professional, trade associations, industry groups - from time-to-time request information from their membership. There are several reasons why the NASS Board of Directors thought it wise to do this last year. The Board needs this type of information as a base for its decisions; the members and their needs from the substance of NASS activities. Our objective is to shape the policies, programs and activities of NASS, giving full consideration to the members. It was thought that your Board could make better decisions that will benefit you and the Association, if we know more about the membership - who we are, what we do, the extent of our involvement in suggestion systems, etc.

THE PROFILE

In mid-1974, a brief questionnaire was sent to all the 1,000 NASS members. The questionnaire asked for information such as age, education, type of employment, amount of time spent in suggestion work, degree of influence on suggestion policy, amount of involvement with the mechanics of suggestion system administration, and salary data. Because of the length of the profile, the salary information will be published as Part 2 of the profile. This will also permit us to go into more depth in this important salary area. The return rate of questionnaires was twenty-six percent, which is considered a good return for mailed questionnaires of this type.

A REPORT OF THE RESULTS

NASS Membership Profile

Important to the understanding of and planning for any organization is the knowledge of the background - age, education, experience, etc. - of the membership. Following is our profile. Included is the statistical data derived from a tabulation of the questionnaire and a narrative description of the highlights of the tabulated material.

<table>
<thead>
<tr>
<th>Age</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 25 years</td>
<td>21</td>
</tr>
<tr>
<td>26 - 35 years</td>
<td>23</td>
</tr>
<tr>
<td>36 - 45 years</td>
<td>24</td>
</tr>
<tr>
<td>46 - 55 years</td>
<td>28</td>
</tr>
<tr>
<td>56 - 65 years</td>
<td>22</td>
</tr>
</tbody>
</table>
We are generally a mature group. Most of us are over 40, but we have a significant number less than 40 — some in their early 20s and 30s. The median age is between 36 and 45.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>83</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
</tr>
</tbody>
</table>

We are predominantly a male group.

<table>
<thead>
<tr>
<th>Highest Education</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>13</td>
</tr>
<tr>
<td>College - Some</td>
<td>32</td>
</tr>
<tr>
<td>Bachelors</td>
<td>44</td>
</tr>
<tr>
<td>Masters or More</td>
<td>11</td>
</tr>
</tbody>
</table>

We are a well-educated group, judging from the formal education completed. Eighty-seven percent have gone beyond high school; fifty-five percent have college degrees.

**Employment**

The type of employment and the kind of responsibilities we have may be important in planning activities and program of NASS.

<table>
<thead>
<tr>
<th>Employed in</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>63</td>
</tr>
<tr>
<td>Government</td>
<td>27</td>
</tr>
<tr>
<td>Stores-Offices</td>
<td>7</td>
</tr>
<tr>
<td>Nonprofit</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
</tbody>
</table>

We represent the suggestion systems of different types of organizations — sixty-three percent are employed in manufacturing organizations; twenty-seven by various levels of government; the rest primarily in stores and offices.

<table>
<thead>
<tr>
<th>Business</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate</td>
<td>35</td>
</tr>
<tr>
<td>Division</td>
<td>30</td>
</tr>
<tr>
<td>Plant</td>
<td>35</td>
</tr>
</tbody>
</table>

Those of us employed in business enterprises are spread fairly evenly at corporate, division and plant levels in our organizations.

<table>
<thead>
<tr>
<th>Government</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region or District</td>
<td>38</td>
</tr>
<tr>
<td>Agency</td>
<td>30</td>
</tr>
<tr>
<td>Department</td>
<td>20</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
</tbody>
</table>

Those of us employed in government are more diverse in our scope; thirty-eight percent in regions or districts, thirty percent at agency levels, twenty percent at department level.

In terms of supervisory responsibility, about three-quarters of us supervise others — the median number of subordinates: one to five.

**Length of Employment — Time in Present Job**

We tend to be long stayers with our employers, but we are generally mobile within our organization.

<table>
<thead>
<tr>
<th>Length of Service</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>4</td>
</tr>
<tr>
<td>1 - 5 years</td>
<td>15</td>
</tr>
<tr>
<td>6 - 10 years</td>
<td>23</td>
</tr>
<tr>
<td>11 - 20 years</td>
<td>23</td>
</tr>
<tr>
<td>Over 20 years</td>
<td>35</td>
</tr>
</tbody>
</table>

A significant percentage of us have been with our present organizations a long time — thirty-five percent with current employer over twenty years; fifty-eight percent over ten years.

<table>
<thead>
<tr>
<th>Time in Present Position</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1 year</td>
<td>24</td>
</tr>
<tr>
<td>2 - 5 years</td>
<td>36</td>
</tr>
<tr>
<td>6 - 10 years</td>
<td>23</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>17</td>
</tr>
</tbody>
</table>

However, sixty percent have been in our present positions five years or less. Seventeen percent have held their present position over ten years.

The median length of time with the same organization is between six and ten years; the median time in the present position is two to five years.

**Job Titles**

Even though the common denominator of members of NASS is our involvement with suggestion systems, many of us do other things for our organizations and our titles are, therefore, diverse; reflecting this diversity. The following are examples:

- Personnel Director
- Suggestion Program Manager
- Industrial Engineer
- Administrative Assistant
- Technical Specialist
- Executive Director
- Information Specialist
- Education & Training Coordinator
- Cost Reduction Coordinator
- Work Simplification Coordinator
- Manager, Compensation, Labor Relations & Services
- Manager, Salary Administration
- Manager, Industrial Engineering
- Manager, Employee Communications
- Supervisory Clerk
- Suggestion Coordinator
- Incentive Awards Coordinator
- Employee Services Assistant
- Employment Representative
- Quality Assurance Technician
- Director of Food Service
- Manager, Idea System
- Safety Engineer
- Director, Patient Service
- Senior Management Analyst
- Production Research Engineer
- Employee Motivational Programs Manager
- Executive Staff Assistant
- Manager, Employment & Benefits
- Secretary and Assistant Treasurer

**PERFORMANCE**
EXTENT OF MEMBERS INVOLVEMENT IN SUGGESTION SYSTEMS

As noted above, the NASS membership has quite diverse overall responsibilities, even though the common bond of members is interest in, and responsibility for, our employers' suggestion systems. This section of the report will be concerned with the extent of members' involvement.

<table>
<thead>
<tr>
<th>Percent of Time Spent</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 - 100</td>
<td>35</td>
</tr>
<tr>
<td>75</td>
<td>13</td>
</tr>
<tr>
<td>50</td>
<td>16</td>
</tr>
<tr>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>Less Than 25</td>
<td>22</td>
</tr>
</tbody>
</table>

Members' reports of the amount of time they spent on suggestion work shows that thirty-five percent are almost totally engaged with such programs. On the other hand, twenty-two percent spend less than twenty-five percent of their time this way — no doubt due to their broader responsibilities.

<table>
<thead>
<tr>
<th>Other/Responsibilities</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Benefits</td>
<td>19</td>
</tr>
<tr>
<td>General Personnel</td>
<td>26</td>
</tr>
<tr>
<td>Safety</td>
<td>8</td>
</tr>
<tr>
<td>Engineering</td>
<td>7</td>
</tr>
<tr>
<td>Company Communications</td>
<td>11</td>
</tr>
<tr>
<td>Corporation Planning</td>
<td>3</td>
</tr>
<tr>
<td>EDP</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
</tr>
</tbody>
</table>

Those of us not full-time in suggestion work are engaged, also, in employee benefits, nineteen percent; general personnel, twenty-six percent; safety, eight percent; engineering, seven percent; company communications, eleven percent; corporate planning, three percent; EDP, one percent.

The Other category, twenty-five percent, represents a significant percentage and is typified by members' titles listed above.

<table>
<thead>
<tr>
<th>Influence on Policy, Mechanics</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little or None</td>
<td>5</td>
</tr>
<tr>
<td>Moderate</td>
<td>26</td>
</tr>
<tr>
<td>Substantial</td>
<td>59</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>

A substantial number of us, sixty-nine percent, report that we have a substantial degree of influence on our suggestion policy.

<table>
<thead>
<tr>
<th>Involved in Policy, Mechanics</th>
<th>Percent of Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much</td>
<td>79</td>
</tr>
<tr>
<td>Moderate</td>
<td>16</td>
</tr>
<tr>
<td>Little or None</td>
<td>5</td>
</tr>
</tbody>
</table>

SUMMARY AND CONCLUSIONS

Surveys are usually taken by groups such as NASS in order to have data about their members that will allow the officers to plan programs, policies and activities that meet the needs of the membership. It is hoped that this profile will serve such a purpose.

There are two concepts important to program planning that should be taken into consideration in viewing the needs of any group: heterogeneity and homogeneity. In homogeneous groups there is a unity of purpose and a commonality of needs and interests. Planning is therefore simplified. In heterogeneous groups planning of programs, policies and activities becomes complex, because of dissimilar or diverse needs and interests.

Based on the results of this NASS Membership Experience and Salary Profile the unifying theme of NASS membership is involvement in, and responsibility for, various aspects of our employers' suggestion systems. Beyond that we become heterogeneous.

* We represent a variety of types of organizations.
* We have responsibility at various levels of business and government organizations.
* Some of us are new to the suggestion business; others are old timers.
* Some spend full-time in suggestion work; others spend less than twenty-five percent of their time in suggestion work.
* Some of us have major responsibility for suggestion policy formulation, while others are mainly involved in the mechanics of suggestion administration.
* Some have responsibility for fairly small suggestion programs — the program affecting less than five hundred employees — others have responsibility for large programs — affecting over 50,000 employees.

The number of employees eligible — one indication of the size of the suggestion systems we administer — varies greatly from those affecting five hundred or fewer employees to those affecting over 50,000 employees. The median size is the system that affects between 1,000 and 5,000 employees.

The officers of NASS have a real challenge in developing programs, activities and policies that will satisfy the diverse needs and interests of our 1,000 members. They have been successful in the past. It is hoped that the data from this study will help in some measure to influence the NASS leadership in developing even more viable programs, policies and activities.

(The NASS Membership Experience And Salary Profile will be concluded in the next issue of PERFORMANCE.)
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CONSERVE RESOURCES — FOCUS ON FUNCTION

By James G. Musser, Jr.

JAMES G. MUSSER, JR. was elected vice-president — Engineering of White Motor Corporation in 1971. In January, 1973, he became group vice-president — Engineering and Recreational Products, which includes Rectrans Division. He had been president of Rectrans, Inc., which became a division of White in 1971. Musser, who has been closely involved in vehicle engineering since his graduation from college in 1967, served as Rectrans’ president since the company’s founding in 1970. He directed the engineering, design and production of the Discoverer 25, an aerodynamically shaped new concept in luxury motor homes.

Prior to joining Rectrans, Musser was with General Motors eleven years and served as chief design engineer for the Chevrolet Vega. From 1966 to 1969 he was assistant chief engineer at Chevrolet, with responsibility for engines, drive train and chassis components. New products designed and produced during this period include the Chevrolet turbo hydromatic transmission, the 350 and 400 cubic-inch displacement engines, the Camaro and the New Chevy II.

Musser is an honor graduate of Pennsylvania State University, with a BS degree in mechanical engineering.

(Keynote address presented October 25, 1974, to the North Central Regional Conference, Society of American Value Engineers.)

In terms of what’s happening in the world around us, this is a most timely occasion for value engineers to gather and exchange information and ideas. You have chosen as your theme “Conserve Resources.” To which might also be added “...and Increase Productivity.”

This country and the world currently face a critical economic challenge — the need to control inflation. This situation places the value engineer in a crucial role, since his efforts are basic to increasing productivity — which is the only way we can continue to improve our standard of living without double digit inflation.

Although I’m not an economist, a basic fundamental appears obvious to me regarding inflation. Each of us has a desire to improve our standard of living. So long as we collectively do more or produce more, we should expect to have more without the inflationary spiral. However, there’s no such thing as a free lunch. We cannot expect to earn more unless we collectively can produce more. Governments or societies that try to provide more without that productivity improvement are obviously accelerating inflation.

How, then, can we improve our standard of living? We cannot simply work harder, because our physical resources are limited. In fact, the progress we have made in the industrial age has come through harnessing energy so that it can greatly magnify our physical effort. Thus, we can, when
 aided by machinery and electronics, produce substantially more.

It is a social challenge, not an engineering or a value engineering question, how the fruits of this increased output should be distributed among the workers, the owners and managers of businesses, and the consumer. However, I believe we can all agree that each segment should benefit.

With this background, it seems to me that the solution to improving our standard of living without the disastrous effects of inflation rests squarely on the shoulders of we who are engineers. Obviously, economic, political and social policies can create inflation even if we do our job, but an increase in the standard of living without inflation cannot be achieved, regardless of any of these other policies, unless we devise ways of increasing productivity and reducing product costs through innovative design. In other words, political decisions may adversely affect the economy, regardless of what we do, but in no way can the politicians solve the problem without our efforts.

The energy crisis and inflation have had a significant influence on the public mood. It seems to me the public is now ready to give the kind of support needed for value engineers to do an effective job. Terms such as cost effectiveness have been used by the government for a number of years, particularly on military items, but such terms had previously not been associated with social needs or problems. The general mood was that we, as a country, could do anything we set our minds to, that our resources — and here I'm thinking of human resources as well as physical ones — were virtually unlimited.

How many times did we hear during the automotive safety movement that no price was too great to save even a single human life? Recent events have shown too clearly that we are a country and a world of limited resources. The public is no longer thinking in terms of “no price is too great to pay,” but rather how can we get the best effect in solving our problems with the resources we have available. In the automotive safety arena, for the first time cost effectiveness of the various regulations is being seriously questioned. It seems to me this is a very healthy attitude, and one which will see the techniques of value analysis applied not only to the products of industry, but to virtually every area of our society.

Today, of course, we are faced with some new considerations in going about our value engineering job. In the products with which I have been associated, value analysis has been an active discipline in reducing product costs through elimination of redundant functions, reduction in material costs, and changes in processing to reduce manpower input. In my experience, little consideration has been given to power or energy consumption. The electrical energy consumed by machine tools or the other means of production in the types of products I have been associated with, all too often have not really been identified. They have been buried in the plant burden rate and really didn't surface as we looked at alternate processing, materials, etc.

The reason for this is quite simple. In the past, energy has been so cheap that except in certain processes in which large amounts were used, the consumption of energy wasn't really felt to be very important. Energy isn't cheap any more, and all indications seem to be that it is going to continue to increase in cost.

This is not to say that energy is not available. It is. We are not an energy poor country. Rather, we have placed exhorbitant demands on our resources of certain types of energy — oil and gas — without planning and without regard to the long-term consequences.

The energy is there. For example, some experts point to a way to double our domestic oil reserves, right now, exclusive of additional exploration. This method is based on the fact that commonly used methods of primary pumping and secondary recovery recover only about one-third of the oil actually in the ground in a field. The way to retrieve the other two-thirds — called tertiary recovery — involves the use of special chemicals. It has not been tried on a large scale, but the technology appears to be available if the economics can be made to work.

Further, the Bureau of Mines has estimated the country's coal reserves at nearly four hundred billion tons, which is enough to last almost seven hundred years at current rates of consumption.

Our recoverable shale oil reserves are estimated to be sufficient to meet our oil needs, at the present rate of consumption, for thirty-five years after our natural oil reserves are exhausted.

The Atomic Energy Commission estimates our uranium reserves at one million tons of uranium ore — enough to meet our total electric power needs for twenty-five years. By the time we need uranium at anything like that rate, the breeder reactor should be able to provide an almost endless supply of fuel; to say nothing of the possibility of harnessing nuclear fusion, using hydrogen as a fuel.

But all of this brings us back to the basic problem — cost and planning. Each of the sources mentioned above requires considerable investment of some sort before the energy can be harnessed. And beyond that are broader questions. For example, the Shah of Iran has stated that petroleum should be conserved for its uses in making chemicals and plastics, and alternative sources of fuel should be found for running cars and generating power. This is a good point — we are closer to alternatives for those uses of oil than we are to replacing it in chemical formulations.

The need for an energy policy and a national energy policy is more important than ever before.
development program are clear. But this is a matter over which the politicians have more control than we engineers.

What, then, can engineers, working within their own specialties and within the nation's corporations, do about conserving resources and increasing productivity?

As we at White Motor Corporation have found out, plenty — with the wholehearted backing of management.

I'd like to take you through some of the changes we have made at White over the past three years, but first, for perspective, I hope you will bear with me while I relate the type of business we are in.

Heavy-duty trucks, those of over 26,000 pounds gross vehicle weight, are the largest single product category at White. You have heard or seen some of the names that we market — White, Autocar, White Western Star, and White-Freightliner. Heavy-duty truck volumes are low by automotive standards, a large plant will produce perhaps sixty trucks a day — as compared to sixty automobiles an hour. But the degree of customization reaches lengths unheard of in automobiles. We think nothing of producing trucks with basic components such as battery boxes, fuel tanks, exhaust systems, air tanks and so on, specially located just for one individual order. This ability to customize to meet unique requirements is our specialty.

Farm equipment is another major business at White. Here some of our engineering problems are quite different. A tradition of batch production, sometimes months ahead of the selling season, is one factor. And highly seasonal sales is another. You've probably heard of farm equipment names like Oliver, Minneapolis-Moline and Cockshutt. These historic names are now all being brought together under the White nameplate as new products are introduced to market.

We have some other proud names within the White Motor Corporation family. Euclid off-highway haulers. Alco engines and White Superior engines and compressors.

As many of you know, in May, 1971, S.E. "Bunkie" Knudsen was asked by the White Motor Board of Directors to become Chairman and Chief Executive Officer of the Company. He accepted and began the job of restoring the company to a position of market leadership and profitability.

We who joined White with Knudsen had the advantage of a new perspective. We were able to question the traditional ways of doing things and from this have come a number of changes which are helping us conserve our physical and human resources and to increase productivity.

Let me illustrate a few, with the thought that some may spark an idea or two applicable to your own areas of responsibility.

A basic change came in organization. In engineering, for example, each of three truck manufacturing locations had been operating virtually as a separate company. Each was doing its own product engineering, with a chief engineer and all, and yet the opportunities for commonality were huge.

To overcome this, a Truck Group was formed to manage and administer all the truck operations. This encompassed all functional areas, including engineering. A vice-president of engineering for the group was appointed and so far four new trucks have been introduced under this system and a whole new family of trucks is under development, with the first scheduled to be introduced early next year.

It is with this new family that we are really applying concepts which will conserve resources and improve productivity.

For example, the trucks have been designed for the maximum commonality between the various types and nameplates. This has increased volumes on many parts to the level where more elaborate tooling can be justified. The result will be a better product at lower cost.

When this new family is completely in production, we will be producing our total line utilizing about 20,000 parts as against 100,000 parts currently. The savings here are tremendous in materials handling, purchasing, inventories, and in increased volume on many common items.

Although the problems in farm equipment production are quite different, we are taking the same approach where possible. Our new tractors are being designed around families of basic components, such as engines, transmissions and rear axles. Thus, we were able to produce a radically new four-wheel-drive articulated tractor, with a lower center of gravity and a highly competitive price, utilizing the transmission, drive train components and castings from conventional two-wheel-drive units.

Perhaps one of the more interesting and satisfying programs which we have launched is one called the Manufacturing Productivity Improvement Program, or MPIP for short. This was developed at one of our largest plants as a means of identifying and implementing better ways to get the products assembled.

Under MPIP sixteen teams were formed, covering the six main departments within the plant. Team members are primarily foremen who attack their MPIP projects generally after working hours. In all, some 177 personnel are involved.

Potential projects are presented to a steering committee consisting of the plant manager and various functional managers, such as engineering, production and so forth. The steering committee decides on whether to proceed with implementing each MPIP project.

Participants receive no compensation or other incentive beyond the satisfaction of contributing to the success of the program and mention in a special MPIP newsletter.
issued from time to time. And yet, the results have been outstanding.

The MPIP teams have begun to question all the traditional ways of doing things. Their achievements have ranged from items such as reducing twenty-nine men in three departments for an annualized savings of over $400,000 to noticing that taillights were still being purchased with a lens to illuminate the license plate, even though the plates were no longer being mounted under the light.

Large and small, annualized savings for 1973 were $1.3 million, with even more projected for 1974.

To me, the main importance in this program is the human element. This particular plant is an old one. It has grown over the years to cover more than two million square feet and employs nearly 3,000 persons, of whom nearly four hundred are salaried, management personnel. Many of these men and women have been around for a long time, and it might be understandable if they were fairly set in their ways.

And yet, MPIP proves this is not the case. They are interested in their jobs and their company. And they take personal pride in being able to find ways to improve plantwide productivity.

This program is important in another way, because it improves inter-departmental communication. For example, when manufacturing personnel spotted an operation which was being performed by various suppliers just for White, they questioned whether it was still needed. The question was a good one, but could only be answered through conferring with engineering. And once it had been determined that the special item was no longer needed, purchasing had to be involved.

Similarly, manufacturing and sales have worked together in other MPIP programs. Also manufacturing and service, which runs its own procurement of after-market items.

From a program of this sort the company benefits and the individuals benefit. Traditional isolation of functions breaks down to permit communication without affecting management control. And, on the subject of our discussion here today, productivity increases and materials are conserved through better management.

Communication is also important in activities outside the normal realm of engineering, but within the area of learning how to do the job better.

This activity focuses on purchasing and what has been called expediting — and we all know that obtaining parts and materials on time in sufficient quantities is a major task these days.

At White we are approaching this situation on a number of fronts.

One approach is on a fairly basic level, through maintaining very close contact with our suppliers on a person-to-person basis. Our Truck Group, for instance, has coaxed a highly experienced man from retirement to travel among various suppliers and expedite production and deliveries. But this job is more than just prodding for, when he finds problems, frequently we will jump in to help where we can. What he is really doing is opening a new and more responsive channel of communication between the suppliers and White, and this new channel is helping both do a better job.

But we see the needs for communication as going far beyond the plant level. Each day key suppliers are making decisions crucial to us in terms of their own future plans for product mix, new plant capacity and basic marketing strategy. We have come to the conclusion that if they don't know something about our plans and programs, then some of these decisions may well be at variance with our future needs.

As a result, starting with our Farm Group, we have begun to take our story to the upper management of key suppliers. We use professionally prepared slide presentations to tell the overall story, plus a follow-up slide presentation specifically tailored to the supplier in question.

We do not hesitate to spell out our future plans in some detail. After all, we are asking these companies to include us among their prime prospects for future growth, and they should have good information on which to base their decision.

Our results with this approach have been excellent. Not only have we been able to maintain or increase our purchases from key sources, but they have helped us with advice. In addition, we are improving our own order procedures for greater speed and efficiency.

Just as with the MPIP program, the key lesson learned here is the need for communication.

It is faddish in business to gripe about too many meetings. And all of us have attended meetings which we later felt were unnecessary. But the basic need for communication continues. Through programs like MPIP and our programs with suppliers, we are reaping the benefits of communication — and these benefits are helping us in conserving our resources and improving productivity.

The Oil and Gas Journal, Bible of the petroleum industry, recently reported that it now appears certain that total energy consumption will decline in the United States in 1974 for the first time since 1958. Oil demand will probably be off about two percent and total energy consumption decline about one percent.

The decline is traced to three main sources: restrictions on supply, slower economic activity and conservation efforts.

Similarly, you have all read about Detroit's programs to reduce the weight on the 1975 cars. And doubtless many of you have made significant contributions to those achievements.

And, just as at White, I am sure that many other firms are seeking ways to reduce the number of parts, reduce costly procedures and processes, and otherwise use less material, energy and manpower to achieve the same level of production.

What I am leading up to is that we, as engineers, can have an impact. We can make a contribution. And using all our skills in engineering, in organizing and in communicating, we will be significant contributors to the ultimate solutions which will extract this nation from the pressures of inflation, without throwing it into economic disaster.
THOMAS W. PARKER is the Suggestion Program administrator of The Boeing Commercial Airplane Company's 707/727/737 Division and its related administrative and technical divisions. The Suggestion System encompasses 20,000 employees. It generated over four million dollars in savings in 1974. Parker was the first-place winner in the 1971 NASS International Papers competition and the recipient of the Winter, 1971, NASS Journal Cover Award. He holds a BA degree from the University of Washington and is completing a Juris Doctor degree at the University of Puget Sound Law School.

By Thomas W. Parker

For as long as many Americans can remember, our country has enjoyed a standard of living unsurpassed in any country of the world. This abundant life is due, in no small degree, to the ingenuity of the American people in producing more at less cost. The ideas which became so fruitful were offered, not only by the engineers and scientists of our generation, but by all workers at all levels. This characteristic of improvement by ideas has become a predictable certainty in any well-managed enterprise, so that prices and outputs absolutely depend on these improvement factors to be competitive.

The suggestion system has played a vital role in encouraging and sponsoring the ideas of employees; it has made a major contribution to the abundant life we have enjoyed. Born in the late Industrial Revolution and developed into a well-accepted technique during World War II and the post-war years, modern suggestion systems contribute billions of dollars worth of efficiency to the American Gross National Product each year, and allow workers a voice of participation in the nuts and bolts management of business.

During the past year or more, almost all of us have felt the pinch as our abundant life became less abundant. The economic pressures of
participating in a world market and the increased wages and profits of our businesses were not matched by the productivity gains that had been a habit of the past. The American worker no longer was producing as much for a dollar as he had before.

Other economic problems have resulted in a scarcity of foods, gasoline and other materials which many Americans had not experienced and never dreamed possible. The American people face difficult economic challenges in this decade. The ingenuity and resourcefulness of each individual is needed.

Suggestion systems, likewise, face difficult challenges. Many NASS officials and members foresaw the suggestion system concept growing into a necessity for every organization, institution and business, with a highly successful world future of more participation and larger awards ahead. In our enthusiasm for our work, we have avoided a reality which is hurtful to face: The suggestion system concept is in grave difficulty. The danger signs are apparent to those who are objective.

During the recession period of the early Seventies, scores of large companies either discontinued their suggestion programs or forced them into a dormancy that spawned ineffectiveness. This phenomenon was directly contrary to the basic premise of suggestion systems, which is that cost saving, morale and new ideas are vital during such periods. It was as if the suggestion program was seen as a fringe benefit, instead of a program which returns a profit to the company.

A corollary to this problem is the lack of top management support which so many experience. Somehow, suggestion system claims are only superficially believed at those levels and when the chips are down, not believed at all. Another danger sign is the degree to which profit-oriented companies are deflecting from our concepts while nonprofit institutions, such as hospitals, public agencies, utilities and government, adopt them. A glance through the NASS membership rosters of previous years indicates that the makeup of our membership has changed considerably; we wonder why many large companies are not interested.

Another indication is the lack of development of a suggestion profession in the literal sense. A close look at administrators and jobs points out that many suggestion program administrators’ positions are used for the exposure training of younger managers or as a good place to use the skills of a middle-aged manager who has gotten off the ladder of upward ascension. Very seldom does anyone regard these positions as a life-long career; except, perhaps, at corporate levels. As we all now there is practically no mobility within the profession between companies.

During the past few years we have seen upper, company management giving attention to other programs and techniques where we thought our program offered all the benefits that were needed. Motivation programs have sprung up offering trinkets and beads, coffee cups and key rings for desired behavior or ideas, indicating that employees can be motivated without large cash awards.

Many companies are experimenting with group dynamics, teamwork and various forms of piecework and profit-sharing that, they claim, get better results, creates less jealousy and are far easier to administer than a suggestion award system. Then, there is a host of other techniques, such as work simplification, value analysis, value engineering and think tanks, which do not always seem compatible with our systems and which sometimes threaten to replace them.

These indicators might vary widely among industries and geographic areas, but that does not change the fact that their totality presents a darker image than even the realists among us like to see.

This does not have to be so. Suggestion systems can have a brighter future, if we will expand our thinking to give them a role they do not now enjoy.

James T. Johnston, at our 1973 NASS Conference said, “The hardest people to change...are those who are in the change business.”

Most of our suggestion systems have not been substantially changed in over thirty years. We resist change to our methods and concepts as if they were the only unyielding, true principles of our time. We teach and preach change, we ridicule resistance to change and, yet, we have failed to allow our suggestion system concepts to be as dynamic as the world around them. All of us receive suggestions on changing the suggestion system, but how many are really evaluated with an open mind or answered without a routine form letter?

Suggestion systems have a wondrous potential if we will resist restricting them to the administrative functions we usually contemplate as a suggestion system. If we begin to see suggestion systems in terms of the vital essentials which make them work, we expand their future potential beyond anything we are doing today and eliminate competition with any other technique or program.

The reason for this is that the essentials of a suggestion program should not include a method, system or technique, as in value analysis or work simplification. They do not need to be tied to any one compensation or recognition system, as in profit-sharing or trinket programs. They should not have to include any specific method of evaluation, such as investigative specialists, line management or committees.

In its most common denominator, a suggestion system is people, ideas, evaluation and compensation/recognition, all of which are independent entities, not subject to any restrictions; unless we make them so.

Our problem is that our suggestion concept has been so limiting that we have failed to include a great number of people and organizations who agreed with the purpose and the essential elements, but disagreed with the method or technique. If we leave the technique or method open — so that everyone might use what works best for him — the suggestion system becomes a very flexible concept, capable of encompassing everyone and with limitless possibilities for the future.

Now, let us examine each of the essentials separately, so that we can see the potential.
PEOPLE — who should participate?
The suggestion concept says that "No one is as smart as everyone," so everyone should be included. However, this seldom occurs because of a company's desire to keep some employees who are hired to think from getting significant amounts of money in addition to salary. And so we have a problem with the size of the compensation affecting who might participate. In some companies, ideas from these people are channeled into other programs with limited recognition/compensation. Rather than to exclude a segment of the work force from the program, isn't it a more flexible approach to adjust the compensation so that all can be reached by the program? The more limiting factors there are in a program, the less people will participate. People are an essential element, so let's not have any more limiting factors than necessary.

IDEAS — What kinds are eligible?
Most of us eliminate certain kinds of ideas. Why? Either because we do not wish to compensate them, as in the case of routine maintenance, etc., or because we have difficulty evaluating or implementing them, as the case of preliminary design, management and union matters, personnel programs, etc. Rather than limiting the essential element of ideas, why not adjust our evaluation or compensation instead? For example, many of these matters are merely requests for information on company policy. Many are duplicates of previously received suggestions and could be answered by a standard letter giving the specific information or answer; perhaps an item in the company newspaper is in order. In the case of routine maintenance, can't we adjust our award system so that it is flexible enough to give compensation/recognition commensurate with the value of the input? There is always a reason why an employee submits a suggestion. Exclusion because of subject matter ignores the reason and limits an essential item.

EVALUATION — is one element in which we have done a fairly good job. There are many ways to evaluate suggestions and most companies use the one that works best for them. Many feel that a disinterested third party evaluation is the most objective and fair method of evaluation. For our purposes, this is too limiting. We need an interested second party to sponsor the idea and get a change made, if feasible. A great many good ideas from good people die because of lack of sponsorship, so good evaluation is usually done by the suggester's management if they appreciate him. A bias in favor of the suggester is good for the program.

RECOGNITION/COMPENSATION — is a vital element, but not in the sense in which we are accustomed. The size of the compensation is not as important as the spirit in which it is given. That fact has been proved by our neighbors in the trinket programs. Recognition is the key element in

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awarding ideas; more than any material thing or cash that could be given. Cash and material items merely reinforce, and are tokens of the recognition.

This knowledge should be useful to us when we contemplate upper management's objection to suggestion programs: the old bugaboo of paying out hard cash for savings that never seem to show up in the profit/loss statements. We need to stop pushing our suggestion savings as hard savings because, in reality, not all of them are. While it is not our responsibility to make use of the time that ideas save, we should admit to ourselves that, in many cases, that time is used up in Parkinsonian waste.

The success and quality of a suggestion system does not depend on the percentage of savings given as an award or the amount of the awards, but in the number of people who submit ideas and the quality of the evaluation and recognition. Higher percentages and larger awards are not necessary to the trends of the future and we ought to recognize that.

Our Compensation/Recognition system ought to be equitable in nature, but not necessarily uniform among employees. Perhaps there ought to be a flexibility available to reward effort and ingenuity over and above the ordinary. Perhaps some of us should decide that compensation could be better handled through the normal wage and salary reviews, based upon our data, and provide only the tools for recognition or compensation. We should not shrink from allowing other functions and managers to play a key role in the suggestion system, if it offers advantages. Recognition/Compensation is one area where we, as Suggestion Program administrators, are limited in the impact of our efforts.

Has our discussion been of value? I hope so, because the suggestion concept needs to grow and change to meet the needs of the future. If we become aware of the limitations we have placed upon ourselves and our suggestion systems, this awareness should become a tool in our hands to shape a dynamic program to meet the needs of our people, our companies and our nation.
MAJOR THOMAS J. ATKINSON, USA, is commanding officer of the 517th Transportation Company (aircraft maintenance, direct support), Ft. Bragg, North Carolina. He received a BS in industrial management from the University of Baltimore and an MBA from the University of Alabama. A graduate of the U.S. Army Command and General Staff College, Air War College Associate program and Industrial College of the Armed Forces Associate program, he was affiliated for four years with Martin-Marietta Corporation in cost control and pre-production cost estimating for aircraft and missile programs. He also teaches business law at Embry Riddle Aeronautical University, Ft. Eustis, Virginia.

WAS TOTAL PACKAGE PROCUREMENT REALLY BAD?

By Thomas J. Atkinson

Historical Development

As the Nixon Doctrine takes effect in the 1970s, the requirement for flexible strategic mobility for our Army Forces has been rendered increased attention. From the earlier life aircraft, the C-124 and the C-133, to the current C-141 and C-5A, the emphasis has been on the strategic deployment of U.S. troops and equipment in an increasingly responsive manner.

Strategic airlift allows for U.S. power to be projected around the world without the undesirable balance of payments problem, basing troops overseas or the cost of pre-positioning stores of supplies and equipments, and attendant base rights agreements with foreign countries. An additional benefit is a reduction in requisitioning, in lead-time and in pipeline inventories.

The Military Airlift Command (MAC) is the U.S. Air Force element responsible for providing this strategic mobility to the Army. Its inventories consist of 276 C-141 Starlifters and 78 C-5A Galaxy aircraft. The C-141 is utilized primarily for moving personnel, while the C-5A, its larger sister, is the equipment mover. The effectiveness of this mobility concept has been proved in such operations as "Blue Light," where a 25th Infantry Division brigade was moved to the Republic of South Vietnam (RVN) from its base in Hawaii; "Eagle Thrust," in which the 101st Division was moved to RVN, and many others. The movement of the 82nd Airborne Division to the Dominican Republic and the annually recurring "Reforger" series of movements to Europe are more recent examples of the use of rapid deployment.

Obviously, some troops must remain in overseas bases to meet our international obligations and to provide in-country visibility. However, our viable strategic airlift capability allows us to maintain and retain a creditable response posture, as well as provide an economy of force structure with inherent flexibility via minimized continental base forces.

Today, the C-5A can transport about 100,000 pounds of cargo for 4,500 miles, or 353 people including crew at a speed of more than five hundred miles per hour. It has three times the capability of the C-141 and will load about ninety-eight percent of the current array of Army equipment. The requirement to meet the strategic demands of foreign policy, mobility, economy, and to transport oversized and heavy Army table of organization and equipment (TOE) material is being met by the C-5A Galaxy.

Total Package Procurement Concept

The C-5A was purchased by the Air Force via the total package procurement concept (TPPC). To better understand much of the criticism attributed to the C-5A, a review of this procurement procedure once used by the Department of Defense, is necessary.

TPPC was conceived by the Air Force based on previous experiences gained from the acquisition of major weapon systems. The concept envisioned that all development, test and production would be procured in a competitive environment under a single Total Package contract containing firm commitments as to price, performance and schedule.

Former Assistant Secretary of the Air Force for Installations and Logistics Robert H. Charles has been credited with initiating this proposal. In his statement to the Proxmire subcommittee hearings on economy in government, Charles indicated this acquisition procedure would prevent contractor buy-ins. This would be accomplished by eliminating the procedure of letting a development contract on a competitive basis and being put in the position of granting a follow-on production contract to the same con-
tractor, since he alone gained the desired technical expertise to build the equipment.

An alternative is maintaining two or more development contracts and giving the production contract to the lowest bidder of the development contractors, considering equal technological sophistication of the product. This also is expensive as it duplicates development costs. However, since production costs are about eighty percent of the total equipment cost, it is reasonable to attempt to eliminate the sole source environment of a single developer.

If one is to truly minimize costs, neither the single nor the duplicate competitive development contractor system will achieve the desired results. A logical conclusion is to let one initial competitive contract for both development and production. This was total package procurement.

Some assumptions in this theory include risk, technological state-of-the-art, proper incentives, realistic production and delivery schedules, reliability of the contractor, and the fact that a firm will be honorable in its business arrangements with the government. That is to infer the contractor will not buy-in in anticipation of a future government bailout.

On major systems, many of these assumptions were nebulous at best. Considering any progress in the state-of-the-art, even the best contractor cost estimates or government should-cost estimates are exactly that — estimates. Furthermore, the monopsonistic environment of military hardware procurement may promote a corporate goal of revenue maximization, survival and blue sky estimates which equal buy-in. Since the government has the only game in town, a firm's short-run economic strategy may well contain a contribution margin philosophy. All things considered, TPPC was recommended as the type contract for procurement of the C-5A.

Fat Albert

The C-5A Galaxy is affectionately called Fat Albert by those in the Air Force who fly it. Newsweek magazine has named it Moby Jett; Fortune, an airborne Holland Tunnel or a flying subway train. But, by any name, it is the largest aircraft in aviation history.

Developed to meet the strategic requirement for mobility, economy and flexibility, the C-5A began as a specific operational requirement (SOR) by the Air Force in 1964. The technology was basically considered to be within the state-of-the-art; however, the size and performance specifications were untested. On April 27, 1964, the Air Force released requests for proposals (RFP) for parametric studies of the CX-HLS [Cargo Experimental-Heavy Logistic System] concept.

The firms deemed acceptable prospective bidders for the airframe were Boeing, Lockheed-Georgia, and Douglas. The engine producers resulted in General Electric and Pratt and Whitney gaining study contracts. Preliminary conceptual studies were initiated and resulted in a competitive award for the airframe under a TPPC, fixed-price incentive contract.

Ultimately, the contract was directed to Lockheed. It appears likely that the decision to award the contract to Lockheed was based largely on political considerations rather than design approach. Lockheed did submit a lower-cost bid, but whether it was in fact a lower bid or whether it was offered as a rationale to justify their selection, only time will tell.

The political problem centers around the fact that Lockheed-Georgia was completing its C-141 production line and, with no other business for the Lockheed Marietta plant, the area would become economically depressed and possibly result in the total loss of Lockheed for future defense business. Lockheed's low bid was $1,946 billion for fifty-eight aircraft. General Electric received the engine contract for $581 million. Subsequent contracts were let to acquire a total of eighty-one aircraft.

The Contract

The C-5A contract was the first contract written under the new, total package procurement concept. As a firm, fixed-price, incentive-type contract, it reflected the general clauses called for under the Armed Services Procurement Regulatons (ASPR). Some important idiosyncrasies, however, are worthy of special note.

In the early part of the performance, progress payments to Lockheed were increased to cover extensive pre-delivery costs. Under total package procurement, Lockheed was responsible for total system performance, including the General Electric engines, provided as government-furnished aircraft equipment (GFAE), after acceptance for installation on the vehicle.

Part XXIV of the contract barred an increase in target or ceiling price for a single change order of less than $100,000. This provision attempted to prevent the get well criteria from creeping into the program as a cure for a potential contractor buy-in. Change orders over $100,000 would be negotiated on a decreasing profit scale.
The contract itself called for five test and fifty-three production aircraft, with options for fifty-seven and eighty-five additional aircraft. A unique formula was devised for incorporation into the contract to recompute the price should the government exercise its options. This controversial clause has been called the Sweetheart Clause or the Golden Handshake. It called for basing the contract cost of the option aircraft on the cost of the initial production run.

Basically, if the first production run incurred a cost overrun of one hundred percent, by re-negotiating the price for an option run via the repricing formula, the government would be paying 240 percent of the contract price for that run. Included also was a clause limiting the government's cost-sharing percentage to seventy percent of the cost of any overrun up to 130 percent of the target cost. Additional overruns were to be the total responsibility of Lockheed.

Problems

The C-5A has had more than its share of cost, performance and delivery problems. It and its procurement technique, TPP, have received much notoriety. Both Congress and the media have castigated this program as the epitome of mismanagement.

A symptom of an optimistic bid by Lockheed was detected in the initial bidding process. An Air Force cost estimate developed an in-house production cost of $2,240 billion. Lockheed won the development and production contract with a bid of $1,946 billion, as opposed to $2,031 billion and $2,320 billion by Douglas and Boeing, respectively. The initial total cost, as perceived by the Air Force, was:

- Lockheed (airframe) $1,946 billion
- General Electric (engine) .581 
- Miscellaneous equipment .458 
- $2,985 billion

According to House subcommittee data, the cost of a total of 120 aircraft to be delivered over a ten-year period was to be $3,454 billion. The cost was in excess of $4.4 billion for only eighty-one aircraft.

Performance characteristics came under microscopic scrutiny early in the program. Tests showed a need for extensive redesign to reduce drag and weight. In 1971, the delivered C-5As had 251 deficiencies per aircraft, and in 1972 they had 126 deficiencies per aircraft. Besides operational readiness being reduced due to deficiencies, at least $259 million would be required to correct them. The result was the buy being reduced to eighty-one aircraft, the last of which was delivered two years after the original estimate.

Summary

Total package procurement put both development and production under one contract. It was created to eliminate the possibility of a contractor buying-in by giving an over-optimistic bid to attain a development contract, thereby assuring the follow-on production contract; where the profit is. It also is intended to reduce the possibility of change orders being used as a vehicle for get-well money. The concept would bring costs to an absolute minimum by eliminating the single-developer-buy-in philosophy and also the expense of a minimum of two development contractors to attain competition for the production contract.

Is there anything wrong with this philosophy? Funds are always limited. This basic philosophy is neither erroneous nor ill-conceived. There are additional considerations, however, that bear on its implementation.

The rigidity and inflexibility of the C-5A contract did not allow for cost/performance trade-offs, as both were firm. Keith Anderson, Lockheed's corporate vice-president for government contracts, said in an interview, "It was a complicated contract, a terribly complicated contract."

The contractor in the case of the C-5A at least made a fixed-price bid to build an aircraft to fixed specifications on a firm delivery rate. Development, although unique, was considered within the state-of-the-art. The problem was that production was to be concurrent. In any development process, there are what is termed in the trade the unknown unknowns or simply unk-unk's. This, coupled with concurrent production, leads to obvious problems plus increased cost.

There were no prototypes in this version of TPP. Bugs are ironed out from production aircraft. The obvious intent of this type contract is program acceleration coupled with minimum cost; in the C-5A instance, diametrically opposed goals. Robert Anderson, president and chief operating officer of Rockwell International, said; "The whole idea of trying to price something you've never designed or built before is absurd."

There are basic economic incentives for the firm in this monopsonistic environment. Survival of the firm in austere times tends to a revenue maximization firm goal. Corporate
organization, as well as individual job continuation and salary, is a dependent variable to firm total dollar volume and, hence, is optimum in contract estimates. The two imperatives in the weapons business are: Get the contract and get the funds.

“We bid on those jobs and we got them when we won because it was our business to take them. It was either take them or go out of business. We don’t operate in a free market situation. If we don’t like the way one guy wants to deal we can’t go out and deal with somebody else. If the Defense Department doesn’t like our bomber design, we can’t go sell it to Russia or China.

“...when the Defense Department says we’re going to do it this way, we do it this way. They’re the only game in town.” Jean Heller, *Times Herald*, Newport News, Virginia.

Economic analysis must also include inflation as a contributing culprit. It accounted for $500 million of the cost increase. This type of cost growth is unavoidable, regardless of the procurement philosophy or the type contract utilized. Escalation clauses cover the contractor from the effects of inflation, but the dollar increase is still criticized by Congress, media and public.

The outcome of this procurement is history. On December 30, 1970, the Defense Department revealed its proposed plan to assist Lockheed in avoiding bankruptcy. The contract was re-negotiated to a cost minus fixed-loss form and allowed for cost/performance trade-off flexibility.

Is TPP dead? Not quite! Deputy Secretary of Defense D. Packard, at hearings before a subcommittee on appropriations on March 18, 1971, stated:

“...asking for competition through the total package procurement procedure is, as we have sorely learned, inviting a buy-in gamble. We should now recognize from brutal experience that this system is generally unworkable and should not be used except under two very specific and very special and very unusual conditions. One is in the case of a development which is only a minor modification of something already in production. This recognizes that a major cost is already fixed because only a small part of that system or item will be changed. The other case where total package procurement might be satisfactory is in a small program where a contractor obviously has adequate resources to absorb the loss, because a loss there is almost certain to be when a total package procurement is awarded in a competitive environment.”

As another consideration, TPP may be an efficient procurement tool even if the low-bidding firm in competition is utilizing a revenue maximization or contribution margin theory for survival. The risk may be greater for both the firm and the government, but if the cost parameters were defined, would the contract not be beneficial to both the government and the contractor? Another viable contract may result when a low bidder can promote firm economies of scale either in production or management and thus reduce his costs.

Implicit in any firm analysis by the government should be a complete financial analysis to determine financial sufficiency and economic motives. Data are readily available for a study such as a production/facilities analysis to determine capacity, including corporate plans for expansion/contraction. Any bidding firm will provide these data during a pre-award survey.

Finally, an in-house cost estimate utilizing nonparametric costing techniques or any best method, including the popular should-cost procedures, must be conducted for comparative analysis.

With the above tools a contracting officer will be able to determine the feasibility of a TPP contract for a given system. TPP is not dead. As Fred O. Green, the president of Litton Industries, said, “...McNamara pushed the pendulum all the way across the board.” Its return will come when minimizing costs becomes the imperative and the cost/firm analysis outlined above becomes a fact and not a superficial estimate. Competition is no substitute for government knowledge.

The C-5A

The C-5A aircraft itself has proved to be an outstanding success. Its capability to lift oversized cargo not only saves time and money, but moves large military equipment to strategically critical locations in a responsive manner. Some examples include the 1972 lift of equipment to South Vietnam and the resupply of Israel during the most recent Middle East War.

During this latter conflict, C-5As carried M-48 and M-60 tanks, CH-53 helicopters and A-4 tail sections. Other examples include a 28,000-pound propeller for a naval warship, fins for a Saturn I-B booster rocket, a 61,000-pound, ninety-foot-long fuel tank, a 150,000-pound A-70 flight simulator, Navy sonar drones, and a 100-bed mobile army hospital to Nicaragua during the recent earthquake.

The Air Force still has a requirement for additional strategic airlift capability. Of the eighty-one C-5As originally purchased, seventy-eight are still flying. Whether funds will be made available for a follow-on buy, or the development of a new aircraft, remains to be seen. The C-5A has proved its capability and its vital necessity under Nixon Doctrine strategies.
AN ANALYSIS OF THE BASIC CRITERIA FOR EVALUATING THE ADMINISTRATION AND PERFORMANCE OF AN EMPLOYEE SUGGESTION SYSTEM

Part 2

Eddie Gunter, Jr., author;
Neil B. George, collaborator

NEIL B. GEORGE began his career with The Babcock & Wilcox Company's Naval Nuclear Fuel Division in Lynchburg, Virginia, as a technician in 1959. George served as senior estimator for seven years and currently serves as the Suggestion System coordinator which generated over $170,000.00 in gross savings last year. In August 1974 George was certified by NASS as a Suggestion System Administrator. He also will receive his Bachelor of Arts degree in Business Management from Lynchburg College in the Spring of 1975.

EDDIE GUNTER, JR. began his career with the Babcock and Wilcox Company's Naval Nuclear Fuel Division in Lynchburg, Virginia, as a Contract Tooling coordinator in 1968. With B&W, Gunter served as senior estimator and senior standards engineer and currently serves as project system analyst for one of the six Project Management teams at NNFD. He received his Bachelor of Arts degree and his Master of Business Administration degree from Lynchburg College.

(Editor's Note: Part I (Chapter 1 and 2) of this article was published in the January/February, 1975, issue. It will be concluded in the May/June, 1975, issue.)

CHAPTER 3
Policies In The Suggestion System

SCOPE OF THE SUGGESTION SYSTEM: The scope of the suggestion system may be very broad to encompass all phases of the company's operations, or it may be narrowly restrictive. The rules which outline the eligibility of the suggestion and/or the suggester establish the limits. In any event, the scope must be clearly defined.

ELIGIBILITY: SUGGESTION AND SUGGESTER: The policies concerning eligibility of the suggestion define the type of suggestions for which awards may or may not be paid.

One significant innovation found in Wallace Egbert's 1969 study was that a suggestion need not be original to receive an award. Some 169 out of the 217 companies
which responded to his survey took that position. And 21 companies defined eligibility with numerous qualifications whereas the remaining 27 companies still maintained that an idea had to be original.

Egbert's survey among 375 full and part-time administrators thoroughly researched the evaluation procedure. He reported that many had overcome the old thorn-in-the-side originality by a statement or policy which read: "Do not decline an idea merely on the basis of (lack of) originality. If an idea causes action to be taken, even though it is not original, it is awardable."

According to the Policies and Management guides of the company under study, "An employee shall be considered eligible for a cash award for an adopted suggestion only if origination or initiation of the idea embodied in his suggestion is clearly and rightly outside the scope of his job requirements. Employees in executive, administrative, professional or supervisory capacities are not eligible for awards, if their suggested idea relates to their own work or area of responsibility."

Robert N. Hart, Suggestion Award coordinator for the City of San Diego, advises against excluding an employee from a cash award solely on the basis of his salary or whether he is in charge of a line of work. The specific nature of his responsibilities are a more important criterion to determine his eligibility. "Good ideas for improvement must usually come from those most familiar with the details of the work being done." For this reason, Hart feels that it is a poor policy to eliminate suggestions that occur in one's field of work or responsibility.

Hart recommends the adoption of the following policy: "The only suggestions to be considered ineligible for a monetary award should be those that are specifically covered in the specifications for the employee's position and understood by all to be expected of the employee." Specific expectations should be known and acknowledged by the employee, his supervisor and the management above them. There should be virtually no general duties interpreted to deprive an employee of an award for the submission of a money-saving improvement.

Suggestion eligibility should be simple, concise and clearly understood by the employees. And yet, eligibility as to who may receive awards seems to be a most difficult thing to define. It seems that every system must be tailored to its own particular company. Only the following two basic concepts are generally accepted:

1. The eligibility rules should not be so rigid to exclude practically everyone and to restrict suggestions in fertile areas of operation.
2. The eligibility rules should reflect management's sincerity in desiring participation and willingness to pay for usable suggestions commensurate with value received.

Policy 1007-A1 within the company under study states that certain suggestions will not be considered for adoption or award. Among these not considered are the following:

1. Plans being considered and acted on by the company. However, if a suggestion proposes a worthwhile improvement which the company had not considered in its plans, the suggestion, if adopted, is eligible for an award.
2. Ideas relating to improvements of a new or altered installation until ninety days elapse from the date the new or altered installation is complete.
3. Improvements resulting from direct work assignments or instructions issued by supervision or management.
4. Submittals pointing out an obvious condition, fault or error caused by the failure of an employee to perform an expected or assigned duty correctly.
5. Proposals concerning the performance of work left to the employees' best judgment and on which no standardized instructions have been given as to procedure. However, if the improvement proposed on such work is radically new to that trade or skill, the suggestion, if adopted, is eligible for an award.
6. Requests for supplies, services, information, tools or equipment which are or might be ordinarily furnished as standard practice, or which can be obtained by a request to a supervisor.
7. Indefinite statements or observations that "something should be done" or similar criticisms of conditions or methods without offering positive means for correction or improvements.

An encouraging trend concerning suggester eligibility from the 1969 study revealed that many companies were taking the position that their rules on eligibility should reflect who could participate and receive awards. Very few stated who could not receive awards.

Another trend concerning suggester eligibility from that 1969 study revealed that companies who allowed their management people to participate had a restriction that the idea must not be a direct work assignment or work of the individual's department. According to the 1972 Annual Statistical Report from NASS, eighty out of 93 small companies used cash as the award for adoptable suggestions. Because all awards are considered earnings and must be reported as such, it is so involved that the employees cannot readily understand the company expects to receive from the accepted idea.

AWARDS: Although specific policies defining limits of awards and payments must be established by each company for their own suggestion program, the following general guidelines should prove helpful in this process:

1. Awards should represent a fair amount of the value the company expects to receive from the accepted idea.
2. The formula for determining payments should not be so involved that the employees cannot readily understand it.
3. Award formulas must be such that consistency will exist in the awards evaluation.

According to the 1972 Annual Statistical Report from NASS, eighty out of 93 small companies used cash as the award for adoptable suggestions. Because all awards are considered earnings and must be reported as such, it is easier, and generally better accepted by the employee, to pay cash awards. Other types of awards included bonds, merchandise, certificates, plaques, letters, pen sets, gift certificates, trips, trophies, stock, trading stamps, plaques, dinners, safety shoes and jewelry. These types of awards were used with special promotion or as an added incentive to stimulate participation and/or improve quality. However, there must be a planned program with the expected results large enough to justify the use of these awards.

The division under study uses cash as the award for adoptable suggestions. As an added incentive to stimulate participation, the division also uses personalized certificates and plaques.

Shown in Table 5 is the number and dollar amount of suggestions awarded to female employees (hourly and salary), by department, over the last three years in the suggestion program of the division under study. Table 2 showed that females participate hardly at all. The awards bear this out, because the total paid is a far smaller fraction than the eight percent of females in the division work force. A female hourly employee has not received a cash award for an adoptable suggestion since 1972.
Table 5. Number and Dollar Amount of Suggestions Awarded to Female Employees (Hourly* and Salary) by Department

<table>
<thead>
<tr>
<th>Department</th>
<th>Female - Hourly*/Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suggestions Awarded</td>
</tr>
<tr>
<td>QAA</td>
<td>1</td>
</tr>
<tr>
<td>Information Systems</td>
<td></td>
</tr>
<tr>
<td>Employee Relations</td>
<td>0</td>
</tr>
<tr>
<td>Advance Core Engineering</td>
<td></td>
</tr>
<tr>
<td>NDT*</td>
<td>2</td>
</tr>
<tr>
<td>QCSI*</td>
<td></td>
</tr>
<tr>
<td>Planning, Est. &amp; Stds.</td>
<td></td>
</tr>
<tr>
<td>QCDI*</td>
<td>0</td>
</tr>
<tr>
<td>CDC</td>
<td></td>
</tr>
<tr>
<td>Materials Management*</td>
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</tr>
<tr>
<td>Core Assembly*</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
</tr>
</tbody>
</table>

Tables 6 and 7 show the number and dollar amount of suggestion to all hourly and salary employees in the division's suggestion program over the past three years.

According to the 1972 Annual Statistical Report from NASS, the average national award paid for small companies was slightly over $47. For all the companies combined in the 1972 report, the average national award paid was slightly over $69. The division's average combined award paid for 1971, 1972 and 1973 was $132, $155 and $88, respectively.

Tables 6 and 7 reveal an encouraging trend concerning the percent of suggestions awarded. In 1971, the division's combined percent of suggestions awarded was 15 percent as compared to a national average of of 24 percent. However, in 1972, the division's combined percent of suggestions awarded rose to 33 percent and easily exceeded the combined 1972 national average of 25 percent for companies of all sizes. Assuming the same combined national average for 1973, the division will again exceed NASS averages (26 percent versus 25 percent). The percent of suggestions awarded for small companies comparable in size to the division was thirty percent in 1972.

SUGGESTION CATEGORIES: There are usually two categories of suggestions: tangible, with a measurable monetary value; the other, intangible, without an assignable monetary value.

The tangible suggestions are generally based on the estimated first year's savings and pay a percent of these savings to the employee. According to the 1972 Report from NASS, 77 of the 86 small companies used first-year savings as their basis for evaluating tangible suggestions. Forty-nine out of 77 companies figured their award payment for these suggestions on the net, instead of gross.

Table 6. Number and Dollar Amount Awarded to all Hourly Employees by Department

<table>
<thead>
<tr>
<th>Department</th>
<th>Suggestions Awarded</th>
<th>Dollars Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Met Lab</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Recovery</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Photo Lab</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chem/Spec Lab</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>QCSI</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>QCDI</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>NDT</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Ind. Engineering</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Welding</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Fuel/Comp. Fab.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Handwork</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Tooling</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Core Assembly</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Nuc. Material Control</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Material Control</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Manf. Inspection</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>93</td>
</tr>
</tbody>
</table>

PERFORMANCE
amount of first-year savings. Sixty-five out of 90 companies did not include overhead or burden costs in their evaluation of tangible suggestions.

The division under study pays for tangible ideas on the basis of ten percent of the first $500 of estimated net annual savings for the first year after adoption. Suggestions generating savings beyond $500 are, in addition, awarded twenty percent of savings above $500.

The division under study calculates the net savings expected to occur from a suggestion for the first year of use after its adoption by the following formula:

\[
\text{Net Annual Savings} = \text{Total Estimated Annual Savings} - \text{Capital Expense Charges - Direct Expense Charges}
\]

The total estimated annual savings consist of savings in labor, material and/or other direct items resulting from the adoption of a suggestion. From this total, capital expense for the first year is subtracted. This is normally depreciated over a period of years according to standard accounting practices. Direct expense of implementation is also subtracted.

The 1972 NASS Report shows that 36 out of 86 small companies pay from 11 percent to 20 percent of the savings. Fifty-three of 90 companies have a minimum award of $10 and 35 out of 89 companies have no maximum award. In the study of 89 small companies kept the eligibility period open for two years, where the suggestion remains eligible.

The responsibility to keep an idea active is left to the employee; it is easier to remember to resubmit within one year. Personnel changes are frequent. The award value is $1 per point determined by the award system coordinator with the advice of the executive and others as necessary.

According to the 1972 NASS Report, awards are generally paid on approval of a suggestion. Sixty-one out of 89 small companies use this method. The division under study pays an award only after the idea has been put into actual beneficial use.

In his 1969 study, Egbert found a definite trend toward shortening the length of time ideas were eligible for awards. One hundred forty-nine of 217 companies from that study set a one-year eligibility period. Fifty-seven companies kept it open for two years or resubmitted. If a suggestion is rejected, it is easier to remember to resubmit within one year.

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In his 1969 study, Egbert found a definite trend toward shortening the length of time ideas were eligible for awards. One hundred forty-nine of 217 companies from that study set a one-year eligibility period. Fifty-seven companies kept the eligibility period open for two years, whereas only 11 companies kept it open for three years or longer.

The division's policy is that the suggestion must be adopted within two years or resubmitted. If a suggestion is rejected, but conditions change so that it is adopted within two years, and three years or longer. The division's policy is that the suggestion must be adopted within two years or resubmitted. If a suggestion is rejected, but conditions change so that it is adopted within two years, the suggestion remains eligible.

Egbert feels that a one-year period to retain eligibility is preferable because:

1. Business conditions change fast.
2. Personnel changes are frequent.
3. The responsibility to keep an idea active is left to the employee; it is easier to remember to resubmit within one year.
CHAPTER 4
Administration Of The Suggestion System

THE WRITTEN SUGGESTION: The written suggestion is a proposal to change or improve some phase of the business and should be presented with enough detail to clearly associate it with getting employees to express themselves without ambiguity, but with enough clarity to ensure that their actual ideas are communicated. No suggestion should be submitted other than on the official suggestion system form, because the form elicits all the information necessary to completely evaluate the idea's worth. The policy of the division under study is that the suggestion must be in writing on the standard suggestion form by a member of management to the author of an adopted suggestion. This practice accomplishes several things: It shows management support and interest; the public award ceremony reflects favorably on the recipient; the company's image is enhanced in this positive setting.

Attempting not to minimize this practice, Tom Troxell, manager of Employee Participation Programs for the Aerospace Electronic Systems Department of General Electric Company (Utica, New York), began over four years ago, a self-analysis of his program administration using the familiar guidelines of value analysis. One of the things he uncovered was that the above method of awarding the check resulted in additional administrative efforts in both the payroll and the suggestion offices. All of the same benefits still accrued by presenting an award certificate and having the award money added to the weekly pay check. According to Troxell, this change cut administrative cost, had no adverse effect on his program, and, as an unexpected benefit, shortened the suggestion processing time.

Egbert, on the other hand, does not favor making the award a part of the employee's paycheck. He feels this approach takes away too much from the recognition and the appropriate publicity which is so essential to any suggestion program.

The division under study pays its suggestion award recipients by check. The check usually is presented to the recipient by the division's suggestion coordinator. However, on some special occasions, depending upon the size of the award, the checks may be presented by either supervisors or sometimes even by the Division vice-president.

By the nature of their job assignment, professional employees have a responsibility for cost improvement and, usually, are expected to come up with large dollar savings. Eligible salaried suggesters usually have job assignments which do not provide opportunities for very large savings. Thus, their participation in the suggestion program generates many small dollar savings which are outside the professional's daily scope of work. According to Troxell, "An effective suggestion system will have adopted suggestions that range from intangible or small dollar savings to a small percentage with savings in the thousands. We cannot and should not discourage this type of effort — to remain competitive, an organization needs every bit of help it can get."

4. Labor and material costs, schedules, etc., increase or change to such an extent that ideas should be reviewed annually.

One of the long standing practices of suggestion programs has been the actual presentation of a suggestion check by a member of management to the author of an adopted suggestion. This practice accomplishes several things: It shows management support and interest; the public award ceremony reflects favorably on the recipient; the company's image is enhanced in this positive setting.

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NASS's Annual Statistical Report, feels that the speed of processing suggestions influences the level of participation; because employees resent delay, particularly when the idea is not adoptable. Bailey also contends that most suggestions should be acknowledged in thirty days. The average processing time for the 93 small companies reported on in the 1972 NASS Report was sixty calendar days. Twenty-four companies took thirty days or less, whereas the remaining companies required over sixty days. The average processing time for the division under study during 1973 was fifteen working days, or the equivalent of 21 calendar days. One factor that probably aided in such a low average processing time for 1973 was the change in responsibility for estimating the net annual savings for all suggestions eligible for an award. Previously, these savings were calculated by the division's Estimating Department. In 1973, that responsibility was assumed by the present suggestion coordinator.

Charles Foos, in his 1972 study, identified timely replies as one of the four current problems today in the administration of suggestion systems in America. His study reaffirmed that: Employees tend to equate management's interest and sincerity in their ideas with the amount of time that same management takes to respond and the quality in depth of the response."

Foos pointed out that when an unreasonable amount of time is taken to process suggestions, the employees conclude that management must not be very impressed with their ideas. He further explained that the long waiting periods were due primarily to the limited time investigators had to review suggestions, since most of them were often supervisors or managers directing the operation of the company in which the suggested change would occur. Because he is directly affected by either acceptance or rejection on his part, the supervisor naturally desires to carefully examine the idea before deciding; this takes time.
Wallace H. Egbert conducted a study in 1972 concerning the evaluation procedure, which included a close look at the evaluator of the suggestion system. There are usually two classes of evaluators:

1. Line or staff evaluators (supervisors).
2. Full or part-time analysts.

Of the 375 companies included in Egbert’s 1972 study, 91 companies used full or part-time evaluators. The others used supervisory. In the 1972 NASS Report, only fifteen out of 93 small companies used full-time investigators. Most of the remaining companies relied on line management. The division under study presently relies on the suggestion coordinator to coordinate the evaluation procedure. By the nature of the idea, the coordinator determines who should comment on the validity and originality of the suggestion. Generally, he solicits at least three opinions from persons he knows to be knowledgeable about the proposed suggestion.

From the above study, Egbert concluded the following:

1. Processing time lengthened when done by supervision rather than by analysts. This was proven by comparing fifty programs with full or part-time evaluators with fifty programs where supervisors did the evaluations. Also, consideration was given to similar industries, number of suggesters, number of suggestions, awards and acceptance; all were about equal.
2. In addition to reducing the processing time with full or part-time evaluators (less than 45 days as compared to over ninety days with supervisors), the acceptance rate and the participation rate were, also, slightly higher. As previously stated in Chapter 2, after a full-time suggestion coordinator was appointed in 1970, the division under study has seen a steady increase in its overall rate of participation for 1971, 1972 and 1973 (11 percent, 16 percent, and 22 percent, respectively).
3. The full or part-time evaluators were able to obtain more specific data on costs and savings, whereas supervision most often offers estimates. Supervision has a tendency to be conservative on savings and rather high on installation costs.
4. Where supervisors are used as evaluators, there still exists a certain unsettling tendency for top management to regard suggestions as obvious changes or improvements which the supervisors should have seen and implemented. This direct confrontation causes the supervisor to be a little apprehensive in revealing all the facts. On the other hand, 39 companies with full or part-time analysts claimed they had developed a better acceptance of the program with top, middle and line supervisors.
5. With full or part-time analysts, 71 reported they did not require a typewritten report. One hundred-thirty of the supervision group typed all reports. According to the division’s suggestion coordinator, he does not have his evaluation reports typed.
6. All 91 companies with full or part-time evaluators did not allow those evaluators to make the decision to accept or reject an idea. They collected data, but the management responsible for implementation made the decision.

The division’s suggestion coordinator does not make the final decision to accept or reject an idea. That decision usually is made by the supervisor of the work area affected. However, if favorable comments have been received from elsewhere, the coordinator discusses them with the supervisor. If the supervisor agrees with these comments, the coordinator then writes a letter of authorization requesting the supervisor to take whatever action is necessary to implement the suggestion. If the supervisor cannot be convinced to implement the idea, the coordinator then rejects

In summary, the success or failure of a suggestion program can usually be traced to the evaluation procedure.

**ACCEPTANCE OF A SUGGESTION:** Almost all suggestions need to be further developed, since very few are usable as submitted. Often the suggestion uncovers the obvious which management occasionally may criticize a supervisor for missing (and rightly so).

After acceptance, ideas should be implemented as soon as possible so the company can get a return on its investment.

All costs and savings data should be documented, not only for immediate award determination but, also for legal protection, should any question arise concerning the basis of the award.

Companies have become more aware of the need to have legal statements concerning:

1. Ownership of idea. The company under study considers all ideas submitted under the Award System to be company property. The company policy states: “If patent or copyright protection is considered desirable, the suggestion will be asked, at the expense of the company, to execute and deliver to the company all documents required for obtaining letters of patent or copyright in the U.S.A. and in any other country.”
2. Award payments.
3. Eligibility policies.
4. Right to use after time period elapses. The company under study requires that a suggestion must be adopted within two years or resubmitted. If an idea is not adopted, but conditions change so that it is adopted within two years, the idea remains eligible for an award.
5. Right to modify, change or even discontinue program. The company under study reserves the right to change or discontinue the award system at any time at its sole discretion.

Every accepted evaluation report should have proper management approval. Values such as the following can be derived from this type of procedure:

1. It draws top management closer to the program.
2. Any mistakes in evaluation can be corrected.
3. Management gets an opportunity to recognize employees and lower supervisors for making the improvements.

To summarize, some good procedures to follow in accepting ideas are:

1. Give answers promptly.
2. Document savings and costs.
3. Establish a fair awards policy.
4. Render credit for the improvement to those who evaluate and implement the ideas.

**DECLINING THE IDEAS:** The most vital part of a suggestion administrator’s job is to know how to decline unacceptable ideas so that employees will still continue to participate. Some valuable principles to follow are:

1. Answer the suggester promptly in writing. This is done by 82 out of 93 companies NASS surveyed in 1972.
2. Be factual, complete and document the reasons for declining a suggestion. Eight-two out of the 93 companies contacted the suggester by letter recording nonadoption. The decision under study does likewise.
3. Realize that the employee’s ideas are his most valued possessions; be kind and courteous.
4. Adopt an open-door policy so an employee may feel free to question the reply.
5. Do not give out confidential information developed during evaluation and received from the supervisor.
6. Train the suggestion evaluators to write the evaluation report so that it can be forwarded on to the suggester. In
Egbert's 1972 study, he found that too many suggestion administrators felt that all that was necessary for them to do was to tell someone to check out the suggestion. Egbert recommends that the evaluators should be trained in cost analysis, psychological approaches, good communications, knowledge of the entire suggestion program, and management's philosophy towards the program.

As previously mentioned, the evaluation of suggestions for the division under study is conducted by the suggestion coordinator. The present coordinator did not receive any formal training before assuming his new position. However, he feels that he gained valuable experience in cost analysis, psychological approaches and good communications while working in various departments (Manufacturing, Quality Control, Shipping and Receiving, Purchasing, Contracts, and Estimating) within the division for over 15-year period.

RECORDS IN A SUGGESTION SYSTEM: Records can be classified as:
1. Control records used while processing the suggestions; and,
2. Permanent and historical records.

The five basic control records are:
1. Sequential numerical record which is the control number identifying a particular suggestion.
2. Employee name card showing who participated and identifying the department or area where suggestions are originating.
3. Accepted awards record showing the number awarded, amount paid, the recipient of the award, cost and savings.
4. Evaluation form for keeping all the investigating data.
5. Document folder to keep all suggestions and related materials.

The division under study maintains a suggestion log book. It is a sequential list of numbers assigned to the suggestions received, the name of the suggester, his department and various dates (date received and acknowledged, date check was requested, date check was paid to suggester, or date not adopted, date and amount of award, and names of people reviewing the suggestion and dates reviewed). This log book, maintained by the part-time secretary, gives the status on every suggestion received by the suggestion program to date. In addition, the coordinator maintains an individual folder on each suggestion. The folders are filed as complete or in-process.

Historical records usually include monthly, quarterly and annual reports. The division's suggestion coordinator only prepares and keeps monthly and annual reports. These reports are kept in separate three-ring notebooks.

A simple rule to follow concerning record retention is to keep a suggestion in the files until there is no further need to refer to it, and the suggester no longer has a legal right to the suggestion. A company's law department should establish the retention policy. To be continued.

UPDATE
Continued from page 6

The HP-21 scientific calculator, first of a new generation of Hewlett-Packard pocket calculators, has been introduced at a price of $125. The six-ounce HP-21 is the smallest and lowest priced model in HP's line. It is designed primarily for scientists, engineers and students. Scientific calculators like the HP-21 also are finding increasing use in marine and aircraft navigation, surveying, medicine and education.

The new HP-21 has all of the trigonometric and logarithmic functions of the HP-35. In addition, the user can calculate in either degrees or radians; convert from polar to rectangular coordinates and vice versa; format and round the display in either fixed or scientific notation; and perform register arithmetic (+,-,x,/) with the contents of its single addressable memory.

The new calculator also has five fewer keys — thirty — than other HP pocket models. However, since several keys serve dual functions, the HP-21 is able to perform more functions and operations than the HP-35.

Like other HP pocket calculators, the HP-21 features the company's RPN logic system with a four-memory stack that holds intermediate answers and automatically brings them back when needed in a calculation. The HP-21 comes with an owner's handbook, soft carrying case and an AC adapter/recharger that allows the calculator to be operated on AC while its batteries are recharging. Optional accessories include a security cradle and a reserve power pack — with batteries.
Very little has been written or said about the evaluator. He is a hidden asset to any successful suggestion program. But, whenever publicity or recognition is given, the submitter and his supervisor are normally the recipients.

It is time that we give credit to the employee who has the difficult task of reviewing the suggestion, making an analysis, and deciding if it can be adopted or rejected.

If it can be adopted, he must take the necessary steps to implement and evaluate the savings so a proper award can be given to the submitter.

In either case, the evaluator’s name is not associated with the suggestion. He is a sort of phantom who is always expected to complete the evaluation on a no-delay basis and not ask for, nor receive, any recognition for his performance.

The simplified flow diagram shows the flow of a suggestion from submission to completion. It shows the evaluator as a loner, the fellow who makes the decision to accept or reject, but who is far removed from the normal activity associated with the day to day operation of a suggestion program.

IDEAS/IMPLEMENTATION

A review of many suggestion programs indicates that by far the greater part of the efforts of administrators has been to teach and/or stimulate employees to become thinking employees. That is, to cultivate their idea-generation powers and to provide an atmosphere which fosters self motivation. It is not my intention to scale down the importance of this step, because without a constant supply of new ideas being regularly submitted a suggestion program will rapidly lose its effectiveness.

Problem solving approaches are varied in format but all follow the familiar guidelines of stimulating the employee to ask these questions:

- What?
- Where?
- When?
- Who?
- How?

Why?

They come in any number of steps and sub-steps, but all are for the primary purpose of prodding the employee into an atmosphere of innovation. The following plan has been successfully used in our Work Effectiveness Program. The five-step approach to problem solving:

1. Define — pick a problem area.
2. Detail — break it down.
3. Dissect — challenge each detail.
4. Develop — design a practical solution.
5. Do — implement your improvement.

Each of these steps is important, but unless step five is completed, that of putting the idea into practice, we have lost the applied effort; but more important, we have been denied the use of an idea which could have reduced our costs and/or improved our product.

Today, we have many programs designed for cost reduction and productivity improvement. Value engineers and other professional employees are assigned these tasks and are measured on results. They can only gain credit for an improvement when the project has been carried to its logical conclusion — implementation.
A suggestion program is different. We are asking eligible employees to generate proposals for improvement and we are telling them that if they are put to use we will share the savings with them. The procedure is:

1. The suggester who conceives the idea submits it for consideration. The suggester will do steps 1, 2, and 3. He may do these by actually charting the steps, but more likely he will do them as a mental exercise. He will complete part of step 4 but need not prove it to the point of knowing that this is a better and lower cost method. He only needs to propose a suggested method of improving with reasons for the proposal.

2. The completion of step 4 and step 5 — proving that the suggested idea can or cannot be utilized — falls to the evaluator. This can be a time-consuming, demanding process, since it must be proven beyond any doubt that the suggested method is an improvement over the current practice. Next, he must sell the proposed improvement to management and then actually take the necessary steps to put it into practice.

Remember, an idea, no matter how good, has no value until it is put to use — implemented.

THE SUGGESTER-EVALUATOR TEAM

The preceding narrative points out the importance of utilizing the systems approach as another instrument to improve the flow of suggestions. This approach entails the following of an idea from conception to either acceptance or disallowance.

The inclusion of the suggester-evaluator team concept into your suggestion program can prove to be a valuable tool for gaining additional activity and more benefits for your program.

It must be remembered that the evaluator normally is not the submitter’s supervisor. Therefore, any publicity given to urge supervisors to improve the rate of submission or the benefits to be gained do not mention the evaluator.

The role of the evaluator is very difficult. The suggester is asking that the evaluator make changes to the procedures, processes, etc., that he may have spent much time developing, and as soon as it is released, every suggestion and which have a tendency to contain sufficient information.

A suggestion program administrator has direct control over each of these three items. One of his prime responsibilities is the screening of all submissions for conformity to rules, clarity and completeness. A firm program for the improvement of quality of submissions is a must for any progressive program. Extra effort applied to this task will have a beneficial effect.

An outgrowth of this screening process will be a gradual re-education of submitters and supervisors on methods and procedures of properly submitting a suggestion.

As an administrator, you will benefit from an increased acceptance yield and from faster evaluations. It will also aid in gaining the support of the evaluator. As the evaluator sees the yield increasing and as less time is devoted to rejections, he will begin to become a firm supporter of your program.

We normally consider that one out of every three submissions is adopted. This approval percentage can be increased by a minimum of five to ten percent as a result of careful screening and other action taken to improve the quality of submissions.

RECOGNITION

Everybody likes to be recognized for performance on his assigned job. This applies to all of us, whether we are hourly, salaried or professional employees. It has long been recognized that a pat on the back has more contributory results than the passe bull of the woods approach.

An excellent example of obtaining the benefits are the many Zero Defects programs in defense-related industries. The basic objective is to motivate employees to accept the challenge of Zero Defects, to do it right the first time and to recognize them for outstanding achievements.

Several years ago, we recognized that the support of the evaluator was a necessity. We have been using this philosophy to obtain the support of evaluators of suggestions in this department. Recognition has been given to them for over three years. This has been one factor in maintaining membership in the General Electric Company’s exclusive 400 Club for six consecutive years. Membership in the 400 Club is obtained by achieving 400 or more adopted suggestions per 1,000 eligible employees in one calendar year. We have and are planning to see it that:

1. Whenever we have a promotion program for suggestions, the evaluator is part of the program.

2. Issue published guidelines for evaluators. This will be continued annually.

3. Starting in 1974, this department, AESD, began giving Cost Improvement credit to evaluators of adopted suggestions with measurable...
savings. We are saying that the assignment of a suggestion to a professional employee for evaluation is the same as any other business assignment; that when completed and savings have occurred, Cost Improvement credit will be granted.

4. We are planning to honor the evaluator whenever public recognition is given to a suggester for giving us the benefit of an outstanding idea that has resulted in substantial savings.

THINGS TO DO
The responsibilities of an administrator include the collection of ideas, the attainment of a fair rate of acceptance and fast turnaround time from submission to close-out. A number of steps can be taken:

1. Many suggestion program administrators have published guidelines on how to find and develop suggestions and suggestion program guides for supervisors. Another that can be helpful is a suggestion program guideline for evaluators or a training program for evaluators.

2. A number of companies have annual awards for Suggester of Year and Manager of Year. The addition of an award for Evaluator of Year should be considered.

3. Make the evaluator a formal part of your everyday program. Enlist his support and you will be rewarded with prompt evaluations.

4. A common and effective part of many programs is: Benefits for all — submitter, supervisor, and company.

The addition of a fourth category, evaluator, can do no harm. The benefits to the evaluator, when properly stated, can be the incentive needed to make him want suggestions for evaluation; because he will then realize that it is a fast, economical method of improving his work.

The inclusion of these items into your program, and others that you will develop while making changes, may be the criteria needed to make your program the effective, progressive program that you have established as your optimum standard.

RECOMMENDATIONS
Whenever improvements are considered, we cannot lose sight of the primary objective of suggestion programs:

To contribute to the profitability and continued growth of the business by providing a means for employees to contribute cost-saving, profit-making ideas for new and improved products, procedures, services, etc.

I am proposing a total commitment to the program; the solicitation of ideas from suggestions and a non-prejudicial acceptance of these ideas by evaluators as a method of improving their procedures, services, etc.

Also, that you can reduce the average processing time and increase the adoption rate by bidding for support of the evaluator, by making and recognizing him as a key man in your program.

When you have achieved these objectives, you will have a suggestion program that is truly outstanding and you will be deriving the maximum possible benefits.

The ultimate recipient of these benefits will be you, as the administrator. You will be well on your way to achieving the maximum number of completed suggestions in a very short period of time. As a result, your workload will be lessened and you will have more time for planning future improvements. The administration of a suggestion program is the same as any other assignment; you will never reach the point where no further improvements are possible.

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PERFORMANCE
HARRY E. WILLIAMS is director of Quality Assurance, Commercial Division, for Electronic Memories & Magnetics Corporation of Hawthorne, California, with responsibility for all quality functions at the Hawthorne and Core plants. Before joining EM he was manager of Quality Field Operations with the Data Systems Division of Litton Systems, Incorporated, Van Nuys, California, and previously held managerial positions with Parker-Hanifin Corporation; Subscription TV Corporation, Hydro-Aire Electronics Division; and management consulting positions.

Williams received his technical education at West Coast University in electrical engineering and is completing studies for a MBA at California Western University. A senior member of the American Society for Quality Control, he is current chairman of section advancement in the Orange Empire Section of the ASQC.

THE THREE LEVELS OF COMMUNICATIONS

By Harry E. Williams

Communications in the Quality System

There are essentially three levels of formal communication in a fully implemented Quality Control System. These are identified by terms which actually describe the intended purpose of the document:

1) Policy Level
2) Procedure Level
3) Instruction Level

Often, in the performance of an operation, job requirements are not fully understood; however, understanding does not assure acceptable performance, but understanding is necessary if error-free performance is to occur.

An effective Quality System must include a formal communication network, since an informal system is inherently unreliable and useful only to supplement the formal information system.

The formal system of communication does not in itself guarantee success, because the strict definition of authority and responsibility is a critical element if the network is to be effective and achieve its objectives.

The strict conformance to authority and responsibility can occur only when precise definition of the functions of each department and its personnel are understood and coordinated with the key individuals involved.

Policy Level

Policy statements, issued by top management, provide the basis for all other succeeding procedures and instructions that follow as a natural sequence of the declaration of policy. These statements are the most difficult to write. Certainly they may take any format, but there are guidelines to follow if these policies are to be implemented as planned:

1) Policy must be comprehensive. Every element in the business system must be within the purview of a policy statement.
2) Policy must be unambiguous. Each statement must be clearly defined as to what is done by whom.
3) Policy must be uniquely identified. Each policy statement should have a number or letter designation for easy reference.
4) Policy must include a control element. Implementation of an audit or some positive means of control is an essential requirement.

Policy must be specific enough to assure that appropriate action will result, but general enough to allow managerial and supervisory flexibility. Policy provides the confidence for a busy president or general manager to have delegated responsibility and authority carried out along the general lines that he wishes.

It may be concluded, however, that Quality Control, by itself, cannot establish an effective quality system. The truly effective quality system is a product of distinct policy issued by top management to cover all the aspects of the business system of the organization. In short, when the policy is correct and the procedures and instructions properly implement that policy, then the Quality Control system has but one function — to verify compliance.

Procedure Level

Operating procedures are the instructions of technical and administrative personnel. The procedures define how the policy requirements are to be implemented. The procedures must be clearly understood, but general enough to allow and encourage a professional approach to the various tasks.

Guidelines for procedure writing are as follows:

1) Each policy statement must be implemented by a procedure or procedures and reference the policy statement.
2) Each procedure must indicate who is responsible for carrying out the task and the required actions at other departmental interfaces.
3) Each procedure that contains technical requirements should be expressed in nontechnical language. This provides an unmistakable understanding and allows translation into a foreign language if there is an offshore manufacturing facility.

As a general rule, procedures should be free of work instruction details. This allows sufficient freedom and flexibility for supervisory and technical employees to function in a professional environment.

Work Instructions

This is the final result of the stated policy and their procedures. These are the detailed, specific, clear-cut and
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unmistakable information and directions necessary to assure proper job execution and its control and verification.

There are guidelines for initiating and maintaining instructions also. These are:
1) The use of simple and clearly stated verbs and nontechnical terms.
2) The utilization of sketches or pictures when necessary for a complete understanding.
3) The use of a print-size suitable for reading at about four feet.
4) The control and identity of the revision level of the instruction to assure proper implementation of changes.
5) Adequate checks to provide a self-inspection of the completed operation.

Beware of the concept of freedom and flexibility at this stage. Marked-up or verbal instruction to deviate from the authorized instructions could be a disaster and should not be permitted.

Quality Control's success will ultimately be determined and evaluated by the timeless, effectiveness and durability of its efforts oriented to oppose the causes of poor product quality.

Today, true corrective action is an ever-increasing challenge for a Quality Control System. The reasons are that it is much more difficult to determine the real or underlying causes of vari- ances; the assignment of responsibility (accountability) is exceptionally complex due to the technological and human factors involved.

Even when the technological conditions are traced, the human factors are difficult to isolate. Faulty workmanship may be due to operator carelessness, incorrect instructions, supervisory interpretations, inadequate methods, improper set-up or even poor design. Blaming a supervisor, operator or engineer on a superficial basis will probably have little effect on the true problem.

Conclusion

The importance of the communication system cannot be overly emphasized. It is the basis for efficiency, effectiveness and achievement of the planned profits of the business or service.

It must be the objective of all of management and supervision to be alert to the shortcomings of informal communications and to strive to im- prove all media used to transmit and receive vital information.
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