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# DEPARTMENT OF DEFENSE



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## Guide for the Design and Implementation of Productivity Gain Sharing Programs

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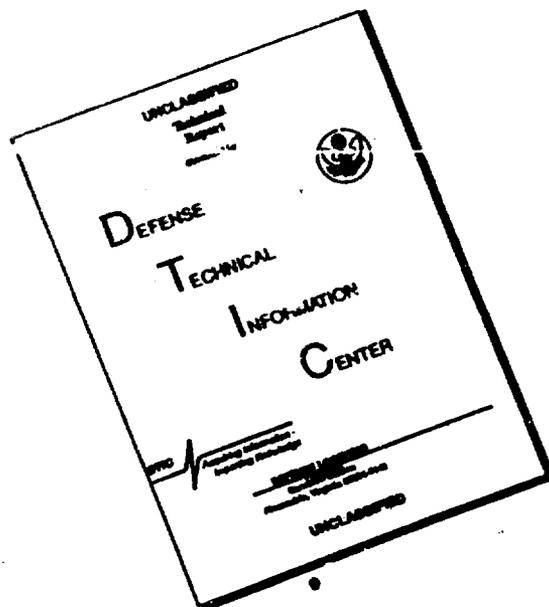
MARCH 1985

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March 12, 1985

FOREWORD

This Guide is issued under the authority of Department of Defense (DoD) Instruction 5010.39, "Work Force Motivation," November 16, 1984. Its purpose is to provide general guidelines for the design and implementation of incentive plans for blue collar activities.

This Guide applies to the Office of the Secretary of Defense, the Military Departments, the Organization of the Joint Chiefs of Staff, and the Defense Agencies (hereafter referred to collectively as "DoD Components").

This Guide is effective immediately and is mandatory for use by all DoD Components. Heads of DoD Components may issue supplementary guidelines when necessary to provide for unique requirements within their respective Components.

Forward recommended changes to this Guide through appropriate channels to:

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*Claire E. Freeman*  
For CLAIRES E. FREEMAN  
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of Defense (CPP&R)

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## GUIDE OVERVIEW

This Guide is the culmination of three related projects conducted by private consultants for the Office of the Secretary of Defense, specifically for the Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics) (OASD (MI&L)).

Research conducted in 1981 indicated that many managers of DoD blue collar employees wanted some means for rewarding employees' performance with pay apart from the traditional incentive opportunities or the existing salary system.

In response to this research finding, a study was initiated to investigate various types of incentive plans which could be implemented within the Department of Defense (DoD). This investigation was carried out through a review of the relevant literature and personal interviews with selected private sector organizations and state and local governments that had implemented different types of incentive programs. The result of this study was a comparison and description of five types of incentive programs.

During the time that this study was being conducted, DoD activities launched several different incentive plans in an attempt to test the incentive propositions for motivating worker productivity. These tests were not initiated simply for research reasons, but rather in response to very specific needs for increased productivity.

*This Guide integrates what was learned about incentive plans from the earlier research with descriptions of current DoD programs to provide specific practical information relating to the application of those programs in other DoD activities. The Guide also sets out considerations for what type of plan might be most suitable for an activity given certain organizational objectives and characteristics as well as a framework for the implementation of an incentive plan within the DoD environment.*

The Guide addresses two sets of readers. They include those who are interested in productivity gain sharing programs in general, and those who either coordinate a productivity gain sharing plan locally or who have a significant role in program coordination and implementation activities.

The primary objective of this Guide is to provide DoD managers and personnel practitioners with information that provides incentive plan prototypes together with general instructions for designing and implementing incentive plans for blue collar activities

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CHAPTER 1  
INTRODUCTION

1. In recent years, the need to increase productivity has been one of the most discussed organizational issues. The need to increase productivity has been the subject of innumerable papers, conferences, and television shows, and has led to the formation of productivity departments, councils, and centers. Initial solutions to the productivity decline seemed to place primary emphasis on the need for increased capital investment, modernization of plant and equipment, and a much higher commitment to high technology research. However, somewhere in all this debate another perspective on the problem emerged -- the need to better use our most fundamental resource -- the work force.

2. While many sound and useful techniques have been developed which aim at improving workers' performance on the job, one technique in particular has emerged or reemerged as a very powerful tool for motivating employees. This technique, which on a conservative estimate can be expected to bring about a 10 percent to 25 percent increase in productivity for organizations which use it, is called productivity gain sharing (PGS).

3. Productivity gain sharing directly benefits workers as well as the implementing organizations. PGS involves sharing gains in productivity above expected or standard levels between the organization and the workers who produce the gains. It is effective because of the very clear and direct linkage between increased productivity and increased gains. Workers' gains come in the form of monetary incentives while the organization gains in lower production costs, increased capacity, increased readiness, and, of course, increased savings of taxpayer dollars.

4. Recent experiments in Department of Defense (DoD) with PGS programs support these claims. Most of the programs which have been implemented within DoD are located within the Naval Material Command (NMC) and the Army Materiel Command (AMC). These programs were initiated to determine whether or not monetary incentives would be a useful tool for increasing productivity. Plans in NMC and AMC have been implemented in such jobs as: data entry operators, aircraft mechanics, automotive mechanics, packers, machine tool operators, and small purchase buyers. Some of the results from these applications are as follows:

a. Public Works Center, San Diego. At this location, an incentive plan for automotive mechanics was implemented. From July 1981 to January 1983, efficiency increased 27 percent, backlog was eliminated, and overtime reduced significantly. Sick leave and staffing were reduced.

b. Philadelphia Naval Shipyard, (NSY) Philadelphia. Results from an incentive program for shops involved in pump and boiler repair show that from August 1982 to January 1983, efficiency increased 25 percent and cost reductions of \$163,163 were realized. These dramatic results occurred with a total bonus payout of \$32,299 to 632 employees.

c. Long Beach NSY, Long Beach. At this installation, 17 data entry operators participating in a PGS plan saved \$10,000 through increased output in 13 weeks. Five-year cost savings from this program were estimated to be \$271,000.

d. Sacramento Army Depot, Sacramento, and New Cumberland Army Depot, New Cumberland. At these installations, PGS programs were implemented for a low technology blue-collar packaging section; a high technology blue-collar maintenance operation; and a white-collar supply area. The results show, in the same order, a 22 percent increase in productivity over standard; a 14 percent increase; and an 18 percent increase over an average of 12 months. Cumulative bonus payouts amounted to slightly more than \$100,000 with the sponsoring installations posting a matching amount in savings.

5. Overall, the Army has experienced increases in productivity efficiency from their programs of 10 percent-15 percent, while the Navy has observed increases of 10 percent-25 percent. Organizations within DoD which have implemented such plans are shown in Table 1.1.

6. In addition to these direct productivity improvements from incentive plans, the list of reported indirect benefits is quite impressive. In one location, employees fabricated a part in their operation so that time would not be lost waiting for supplies. Reductions in employees' personal time, sick leave, and overtime almost universally accompany the implementation of these plans, and employees generally take a greater interest in the overall work operation.

7. These plans have also been used with very successful results in other government agencies such as Office of Personnel Management (OPM), Department of Commerce, and Internal Revenue Service (IRS); and of course, PGS has a long and proven history in the private sector.

8. Federal sector personnel are often surprised that a PGS type option is available to them. Typical comments and skepticisms which often accompany initial interest in these plans are given below, along with responses which address these reservations.

a. ARE YOU SURE PGS IMPLEMENTATION IS LEGAL WITHIN THE GOVERNMENT?

(1) The authority for these types of programs is found in Chapter 45 of Title 5 USC and two Comptroller General decisions. Chapter 45 of Title 5 USC is the legal basis of the Government Employees' Incentive Award Program:

(a) The head of an agency may pay a cash award to, and incur necessary expense for, the honorary recognition of an employee who--(1) by his suggestion, invention, superior accomplishment, or by other personal effort, contributed to the efficiency, economy, or other improvement of government operations... [5 USC 4503]

TABLE 1.1  
DoD PGS PLANS:

<u>Service</u>	<u>Application</u>	<u>Location</u>	
Navy	Key entry	Mare Island NSY Norfolk NSY Philadelphia NSY Public Works Center San Diego Long Beach NSY North Island Naval Air Rework Facility (NARF)	
	Boiler repair	Philadelphia NSY	
	Vehicle repair	Public Works Center San Diego	
	Small purchase order from processing	Pearl Harbor NSY	
	Aircraft engine overhaul	Alameda NARF North Island NARF	
	Inside machine shop (31)	Mare Island NSY Pearl Harbor NSY	
	Army	Maintenance	Anniston Army Depot
		Maintenance	Red River Army Depot
		Maintenance Procurement	Sacramento Army Depot
		Supply Inventory Management	Tobyhanna Army Depot
Transportation Supply		New Cumberland Army Depot	
Supply		Sharpe Army Depot	
Key entry		Redstone Arsenal	
Pay examiners		Army Research and Development Command (ARDC) Office of the Comptroller	
Air Force		Key entry	McClellan Air Force Base (AFB)

(2) Two Comptroller General decisions, both under B-128082, approved monetary incentive awards based on achieving fixed production standards. These decisions are dated August 14, 1956, and July 15, 1969, and are given, in part, in Section 6.

- b. I'VE HEARD ABOUT THESE SORTS OF PROGRAMS IN THE PRIVATE SECTOR WHERE THERE IS A PROFIT ORIENTATION--BUT WE'RE GOVERNMENT AND CERTAINLY NONPROFIT.

(1) While it is true that this type of program started in the private sector, profit making per se is not a criterion for implementation. Any organization wishing to become more productive would admit that reducing labor costs, production time, or scrap and improving methods certainly contribute to increasing productivity. In other words, reduced cost per unit of output (be it product or service) may be called an increase in profit by some organizations or cost savings by others. The federal government is, of course, not in the business of profit making, but it clearly does have the responsibility to maximize use of tax dollars.

(2) In addition, the guidance given in the DoD Instruction (DoDI) 5010.37, "Efficiency Review and Resource Requirements Determination," is particularly germane to those interested in incentive plan implementation and to this section of the Guide. This DoDI sets out a process intended to determine the most efficient organization and methods of work accomplishment. To do this, all DoD activities within the next five years must:

(a) Prepare a performance work statement (PWS) which describes workload, performance standards, and performance indicators.

(b) Study methods and tasking in order to determine the most efficient way of conducting the described work.

(c) Allocate resources in accordance with the "most efficient plan" staffing patterns.

(3) PGS may tie-in with this process in several ways. For example, the PWSs will contain performance standards and indicators which can be used as measurable objectives for a PGS plan. In addition, labor standards developed within the review process could also be used to formulate a PGS plan.

- c. BUT WHY USE MONETARY INCENTIVES--AREN'T THERE A LOT OF FACTORS WHICH MOTIVATE WORKERS?

(1) Monetary incentives have proven to be extremely effective in a wide range of organizations.

(2) A study conducted by Mitchell Fein including 459 firms responding showed that average productivity (the base equaled 100 percent) for daywork output was 75.4 percent; for measured daywork, 86.4 percent; and for

incentive pay, 123.5 percent.<sup>1</sup> Hayes and Spector found that in over 54 instances where incentive strategies were tested and the results measured, an average 23.1 percent increase in productivity occurred.<sup>2</sup> Locke et al compared money, goal setting, participation, and job enrichment as methods for motivating employee productivity. The results of this study showed that monetary incentives yielded the highest median increase (30 percent), goal setting showed a median improvement of 16 percent, while goals and monetary incentives combined yielded performance improvement of over 40 percent. Participation as a technique yielded a .5 percent median improvement, while job enrichment resulted in a 17 percent median improvement.<sup>3</sup>

d. YOU MEAN EMPLOYEES GET EXTRA MONEY JUST FOR DOING A GOOD JOB?  
DON'T THEY GET THAT IN THEIR PERFORMANCE APPRAISALS?

(1) A performance appraisal can lead to a permanent change in an employee's salary level. This program provides incentives on a variable basis--if productivity is up, payments are made; but if productivity is down, then no PGS payment is made.

e. HOW DO I KNOW IF ONE COULD BE IMPLEMENTED IN MY ACTIVITY AND HOW DO I GO ABOUT GETTING ONE STARTED?

(1) First off, you should realize that PGS systems are neither a panacea for all productivity problems nor will they work in every type of situation. Managers interested in this technique must realize that a great deal of planning and preparation are necessary for successful programs. The Office of the Secretary of Defense's (OSD's) new Guide for the Design and Implementation of Productivity Gain Sharing Programs provides a good starting point for you.

9. This Guide is a tool to assist those exploring the idea of implementing PGS programs within their activities. It will provide guidance and assistance in determining whether such a program is right for them and, if so, how to go about developing and implementing such a program. The intended reader is the person(s) who will coordinate the plan locally or will have a significant role in the coordination activities. The Guide is also useful for anyone interested in the nature of PGS plans.

<sup>1</sup>Mitchell Fein, "Work Management and Wage Incentives," Industrial Engineering, Vol. 9, p.50, September 1973.

<sup>2</sup>John J. Hayes and Bertram I. Spector, Productivity Improvement Through Incentive Management, Final Report, CACI, Inc., Arlington, VA, September 28, 1979.

<sup>3</sup>Edwin A. Locke, Dena B. Feren, Vickie M. McCaleb, Karyll N. Shaw, and Anne T. Denny, The Relative Effectiveness of Four Methods of Motivating Employee Performance, presented at the NATO International Conference on Changes in the Nature and Quality of Working Life, Thessaloniki, Greece, August 1979.

10. This Guide is descriptive in nature and assumes that the reader has little knowledge of PGS programs. Since these programs are rather new to DoD and the designs which have been implemented within DoD are fairly limited, descriptions are given of plan types existing in selected federal agencies and private sector organizations, as well as in DoD. The basic theory and ingredients of PGS programs are discussed first to help the reader become familiar with them. This is followed by a description of the major dimensions and features of various plan types to provide guidance in selecting an appropriate program. A detailed set of recommendations for implementing a plan is also provided, including who should be involved in a DoD facility and what activities they should engage in. Recommendations for specific steps in the process are offered based on expert input and on what has worked in the past.

a. Specifically, the Guide is laid out as follows:

(1) CHAPTER 1: Introduction.

(2) CHAPTER 2: What Are Incentive Programs? This section gives a historical overview of monetary incentive plans and explains the motivational rationale for why incentive plans work to increase productivity. The section further describes key delineations in incentive plan conceptualization.

(3) CHAPTER 3: Distinguishing Features of Plan Types. A set of dimensions is set out in this section which represents design features present in one form or another in all incentive plan types.

(4) CHAPTER 4: Specific Designs. This section presents specific incentive designs and calculations in terms of the dimensions described in Section 3.

(5) CHAPTER 5: Installing a PGS Program. A two-part process for installing a PGS program is offered in this section. The first part discusses participants and their roles, while the second part describes actual activities to be performed.

(6) CHAPTER 6: Overview and Highlights of Pertinent Policy, Guidance, and Approval Requirements. Existing policy and guidance relevant to PGS programs from the federal, OSD, and specific-Service levels are given here, along with approval requirements.

(7) Section 7: First Steps to Take and Contacts to Make. First steps are suggested in this section for the reader interested in implementing a PGS program in his/her activity.

11. The information contained in this Guide comes from extended study of incentive programs in the public and private sectors; discussions with federal, DoD, and private sector incentive plan sponsors; and interviews with DoD on-site program coordinators. In addition, OPM, OSD, and Service guidance has been reviewed and incorporated.

CHAPTER 2  
WHAT ARE INCENTIVE PROGRAMS?

A. HISTORICAL OVERVIEW

1. As mentioned in the introduction, there is really nothing new about the concept of providing incentives to induce workers to increase their performance. For example, a formal piece-rate wage system existed for the weaving of cloth in Babylonia in 604 B.C.<sup>1</sup> Very ordinary incentives which we are all familiar with are salesmen's commissions, end-of-year bonuses, and even salary increases.

B. TRADITIONAL PLANS: INDIVIDUAL AND GROUP

1. Probably the oldest form of incentive is piecework. Piecework entails payment of a certain amount per unit of acceptable output with no guaranteed minimum wage. As such, it is a form of wage payment, as well as an incentive. Piece rate, as a form of wage payment/incentive, has been associated over the years with a very severe, heavy-handed management approach to "getting more out of employees." For this reason, it is not recommended as an incentive technique nor is any type of language which conjures up the piece rate association.

2. In this country, Frederick Taylor (1911-1967) was a key proponent of money as a motivator. Part of Taylor's scientific management was the concept of a task, an assigned amount of work to be done by workers each day, based on time and motion study.<sup>2</sup> Task-time standards were then formed and incentives paid for work above "standard." Standard hour, daywork, and measured daywork programs grew from this type of approach. These programs focus on increasing an individual's or small group's output through heightened physical output.

C. ORGANIZATIONAL PLANS

1. Incentive methodologies which focus on the entire organization or activity are the most recent incentive development. These organizational plans pay incentives based on macro performance measures. The basic rationale behind these types of plans is that the level of productivity is the result of the entire work force--not just the production worker but also the material handler and the floor sweeper. In addition, if the focus is on overall productivity, then organizational plans make it more likely that the workers' interest will broaden to aspects outside the narrow confines of his or her own job. The primary organizational plans are Scanlon, Rucker, Improshare, and profit sharing.

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<sup>1</sup>Carla O'Dell, Gainsharing: Involvement, Incentives, and Productivity, American Management Association Briefing.

<sup>2</sup>Edwin A. Locke et al., "The Relative Effectiveness of Four Methods of Motivating Employee Performance," a paper presented at the NATO. International Conference on Changes in the Nature and Quality of Working Life, Thessoloniki, Greece, August 1979, p.2.

2. A radical departure from the traditional incentive methodology occurred in the 1930s, when Joseph Scanlon began working on group incentive approaches. Joseph Scanlon was a cost accountant for Empire Steel Tin Plate Company and union president in the 1930s. Empire, in the 1930s, was a company struggling for its survival. From talks between Scanlon, the United Steel Union, and the company president, a plan arose to solicit ideas from the company's employees on ways to increase profitability and productivity such as approaches to improve quality, reduce scrap, etc. The results were so successful (the company survived) that the union made Scanlon head of a production engineering department established to save union jobs, primarily in companies experiencing severe difficulty.

3. One of the companies (The Adamson Company) Scanlon worked with was already a successful company that wanted to increase its productivity even more. To encourage the workers' participation in offering efficiency enhancing ideas, a bonus system was installed. In the first year of this plan, workers earned 41 percent of pay in bonuses, and profits were reported to be up two and one-half times. The Adamson plan came to be recognized as the prototype Scanlon plan.

4. The "Rucker Plan," developed by Allen W. Rucker of the Eddy Rucker-Nickels Company, followed as a group or organizational incentive design. Although the Scanlon and Rucker plans are very similar in concept, some see the Rucker calculations as a refinement.

5. Mitchell Fein developed the third organizational design which is in wide use today. It is called Improshare for Improved Productivity through Sharing. Improshare, uses total organizational employment in computing the value of labor input against the value of labor output. Input is then computed as the number of actual labor hours spent in production and compared to output to determine a productivity level. Productivity gains are determined from comparison of the actual productivity level to the past average productivity level. Bonuses are paid where there are productivity gains over the past average level.

6. Profit sharing is a final form of organizational incentive in wide use today. There are three basic forms of profit sharing: (1) a predetermined share of the profit is put into a pool and distributed to eligible employees in cash, usually annually; (2) profits are deferred and made a part of the retirement program; and (3) a combination of the first two forms. The belief supporting profit sharing is that by sharing profits with employees, they will work harder and attempt to use or devise more efficient work methods.

7. Although profit sharing is used widely, it is a weak motivator for two reasons: first, the length of time between performance and award is usually a year which, for most people, is too long a lag period to motivate current performance; second, since profit can be affected by so many factors beyond the control of employees,<sup>2</sup> the level of reward may be completely abstract in relation to performance.

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<sup>1</sup>Op. Cit., O'Dell

<sup>2</sup>Mitchell Fein, "Improved Productivity by Improved Productivity Sharing," The Conference Board Record, No. 7, July, 1976.

#### D. TRENDS

1. Twenty-six percent of all U.S. workers are covered by some form of incentive program designed to increase productivity.<sup>1</sup> The practice is far more common in Europe, where it is estimated that over 50 percent of all workers are covered by such plans. A New York Stock Exchange survey<sup>2</sup> found that approximately 15 percent of all U.S. companies with 500 or more employees offer some form of financial incentive--either individual or group productivity plans, profit sharing, or stock purchase.

2. It is frequently written that individual incentives are currently declining in use in favor of larger organizational plans. Hard evidence of this could not be found, however. Rather, it seems that the larger plans are so intuitively appealing that whether they are or are not taking over as the primary incentive methodology they are getting a lot of publicity. Gain sharing is a popular term used to describe a host of financial incentive programs although, literally, the term implies an explicit sharing between employees and management of the monetary gains arising from increasing productivity.

3. In the remainder of this section, we will look at the theory behind incentive programs and the concepts which are fundamental to incentive plan design.

#### E. WHY DO THEY WORK?

1. Incentive programs are founded upon certain basic principles of work motivation dealing with the relationship between performance and reward outcomes. According to these principles, workers' motivations to perform their jobs are substantially determined by the connections which they see between their performance and various work outcomes. Work outcomes range from positive factors (e.g., salary or promotion) to negative factors (e.g., loss of job or a downgrade). The stronger the relationship which a worker sees existing between how he or she performs the job and the attainment of valued outcomes, the higher will be that person's motivation to perform well.

2. Organizations in both the public and private sectors establish acceptable levels of performance for various jobs and provide their workers with a set of outcomes designed to motivate them to achieve these levels. The outcomes take the form of compensation and fringe benefit packages as well as less concrete forms like recognition from a supervisor. The performance levels required to receive these valued outcomes are established through a range of techniques including estimates, historical patterns, engineered standards, and labor-management negotiations. Essentially, what the organization is telling the individual worker is that it expects sufficient motivation on his or her part to perform certain work. In an equitable

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<sup>1</sup>D. Belcher, "Wage and Salary Administration," and D. Yoder and H. Heneman (eds), Motivation and Commitment, Washington, D.C., Bureau of National Affairs, Inc., 1975.

<sup>2</sup>New York Stock Exchange, Office of Economic Research, People and Productivity: A Challenge to Corporate America, 1982 p. 35.

exchange for performance at that level, the organization will provide specific valued outcomes for the worker, including compensation and fringe benefits. In other words, a fair day's work results in a fair day's pay.

3. Incentive programs are introduced by organizations in acknowledgment of the fact that the equitable performance levels established for basic compensation do not necessarily tap the full motivation potential of individual workers. In order to increase performance above these standard levels, more rewards must be offered to maintain an equity balance between a worker's higher motivation input and work outcomes. Incentive programs work because they highlight the performance-outcome relationship using outcomes or incentives which are clearly valued by workers. Their purpose is to motivate workers to perform at levels above those required in exchange for normal compensation. Organizations are willing to share the gains achieved through such programs because the returns are considered to be an extra bonus beyond what is expected from workers as part of their normal compensation performance levels.

4. Organizations also install probationary and dismissal procedures in recognition of the fact that not all workers will be motivated to perform at acceptable levels by standard compensation outcomes. While these threats may work to force up an individual's performance level, they generally produce negative side effects such as inconsistent productivity and lowered job satisfaction. Moreover, they do not serve as effective mechanisms to improve performance above standard levels.

5. As we noted above, an essential ingredient in an incentive program is an explicit performance-outcome relationship. Good incentive programs have clear performance measures and criteria which are understood by workers. This assures that they know what they have to do in order to receive specific incentives. Workers also need to feel that they have control over their performance in order for a strong performance-outcome relationship to exist. Otherwise, if factors beyond their control such as work scheduling or parts availability restrict their performance, they will be frustrated in their efforts to improve their performance. Finally, good incentive programs reinforce the performance outcome relationship by establishing a responsive system which assures timely provision of incentives when they are earned.

6. The other essential ingredient in an incentive program is the incentive itself. An incentive is an organizational resource valued by employees which is tied to specific performance levels. The resource must be valued by the workers in order for it to act as a strong incentive. Money has been the primary resource utilized in incentive programs because of its nearly universal value to workers both as a status symbol and for what it can provide.

7. Incentive programs work because they establish explicit performance outcome relationships for above normal performance levels, and they provide specific outcomes valued by workers such as money. This combination of factors motivates workers to perform at higher levels which benefit the organization through increased productivity and the workers through increased income.

8. Incentive programs focus on improving worker productivity through motivators which are extrinsic to the job itself. For example, money as a motivator is provided as an outcome of performance and is not a part of the work itself. Other types of programs emphasize improving worker productivity through intrinsic motivation. They focus on changing the nature of the job itself to make it more challenging and interesting to workers. A primary example of this type of program is job enrichment. In the introduction, we noted a study<sup>1</sup> which found that extrinsically based monetary incentive programs were significantly better at motivating workers to produce more than intrinsically based job enrichment programs. However, an intrinsic motivation program may be more effective in certain DoD work settings. For example, where performance is difficult to measure, a job enrichment program may be the key to increased motivation. Moreover, there may be situations where innovative programs can be built around both extrinsic and intrinsic motivators in order to take advantage of both for improving productivity.

9. Our focus in this handbook is on monetary incentive programs which have proven to be effective in and of themselves for increasing productivity in a wide range of work settings. We will now look at some of the concepts which are fundamental to incentive plan design.

#### F. BASIC DELINEATIONS

1. When starting to think about incentive plans, one could easily be overwhelmed by the broad array of incentive plan names, applications, reward calculations, etc. To simplify these considerations, some basic delineations are explained here which, in one sense or another, form a descriptive framework for all types of plans. This framework is shown below.

	<u>Purpose</u>	
	Working Harder	Working Smarter
Participants	<u>Individual</u>	<u>Individual</u>
	Group	Group

Looking at this framework, one sees that plans can be applied to a group or to an individual and can have, as their purpose, either "working harder" or "working smarter." It is also possible to have individual and group plans which accommodate working harder and smarter. These delineations are explained below.

2. Working Harder. "Working harder" plans reward increased physical effort. They are usually designed around some form of micro or macro measurement. An example of micro measurement is an engineered standard for individual hourly output, whereas a macro measure could be a group standard based on historical monthly output. The idea is simply to work physically harder and to exceed the standard.

3. Working Smarter. "Working smarter" plans reward increased productivity but, as opposed to increased physical effort causing the change, the increase is generated through employees' ideas for improved methods and processes. Ideas

<sup>1</sup> Op. Cit., Locke, p. 1-5.

include just about anything which will lead to increased efficiency in the work place. Working smarter type plans include formal structures and participatory processes for capturing employees' ideas, such as production committees, quality circles, or whatever name may be locally used for a group which meets to propose and discuss ideas for increased efficiency. Working smarter plans also (or should) imply that a work environment exists which is open and sufficiently flexible to incorporate employee ideas.

4. Individual Applications. Plans are designed to focus on either individuals or groups. Individual applications attempt to reward individual performance very closely, usually through individual standards. Generally, these programs are applied to direct workers or workers in very independent jobs.

5. Group Applications. Group applications relate group performance to group awards. Group plans may be applied to both direct and indirect workers. Usually it is difficult to formulate standards for indirect workers and, therefore, they are often excluded from the incentive opportunity. The performance measurements for group plans are often historical output estimates, forward performance goals, or aggregated task standards. The group may be the entire organization, a division, or any subset operating unit.

6. Pros, Cons, and Combinations. This subsection is included to give you an initial overview of the advantages and disadvantages of going with an individual or group plan as well as considerations for the working harder or smarter orientation. Greater detail about where and how specific plan designs have been applied is given in Section 4.

#### 7. Individual Plans

a. Advantages. Incentive plans based on individual performance provide the most direct linkage between performance and pay of all the incentive strategies. This direct linkage also means that the individual plans should be the strongest of the incentive strategies for motivation of work behaviors. If individual plans are established where the work is highly independent, that is, the workers are not overly constrained by factors outside their control, then one might say that level of performance is exactly rewarded. Another plus related to individual plans for some organizations is that since these plans are usually based on engineered standards, the organization will have the opportunity to develop or maintain a very sound work measurement program. Development or maintenance of a highly accurate work measurement program can be a costly and time consuming undertaking, however.

b. Disadvantages. The very fact that individual plans do reward individual output can, however, produce some negative effects. For example, under an individual plan, workers often place their own individual output considerations ahead of the group's output. Opposition to new methods or machinery may arise also from fears that the standards would be increased. Along this same line, peer pressure to restrict output levels that might call for an increase in standards often accompanies individual plans.

c. Inasmuch as development of reliable standards for indirect workers is difficult for many organizations, individual plans often exclude indirect labor employees from the incentive opportunity. This exclusion can lead to lack of cooperation between direct and indirect workers. Finally, since individual plans are usually geared to increasing physical output, such plans may peak out when the limits of increased physical effort are reached.

#### 8. Group Plans

a. Advantages. Since incentive awards are based on group performance, understanding by workers of organizational goals and operations may be encouraged by group plans as well as increased cooperation and communication. Group plans can also accommodate direct and indirect workers. Since macro levels of performance, such as historical average output, are often used as the basis for comparison in group plans, the expensive development and/or maintenance of individual standards for incentives purposes may be foregone.

b. Disadvantages. A lack of equity may be perceived under a group plan. High performers may not feel they should receive the same share as lower performing employees, and "freeloaders" may not feel compelled to do their best. Finally, the basis for incentive award may be difficult to understand by workers; and, therefore, a lack of trust in the plan or in management may develop.

9. Working Harder Versus Working Smarter. The working harder or smarter aspect of incentive plans stems exclusively from what it is the organization hopes to accomplish through installation of a plan. For example, if the organization wants to increase productivity through increasing physical output or perhaps the worker's time at his/her work station, and believes that physical activity or time actually working can be increased, then working harder is the objective. If, however, the organization wants to improve productivity and believes that this can best be accomplished through improved processes and methods, then working smarter becomes the objective. Another factor influencing the working harder or smarter decision is directly related to organizational climate. Most organizations which could be characterized as autocratic or very traditional probably would not be comfortable with broad employee input to operating methods and procedures issues, for this is viewed as a "management prerogative." Such organizations might, however, feel very comfortable with a carefully controlled microstandards oriented plan which strictly and exclusively relates narrow performance and cost behaviors to reward scales.

#### 10. Combinations of Working Harder/Smarter and Individual/Group

a. Taking a second look at the framework shown on page 2-5, one can see that plans can accommodate working smarter and harder. Also, working harder and/or smarter plans can be applied to groups or individuals. For example, suppose an organization designed a "working smarter" type of plan. There is nothing to preclude working harder from also occurring. The converse is not necessarily true, however, for three reasons:

(1) Working harder plans do not usually have structures for capturing employees' ideas.

(2) Working harder plans do not usually reward process or method changes suggested by the employees themselves.

(3) Employees may be reluctant to suggest ideas that could raise standards.

b. As to group and individual applications, different plan types can be set up within the same organization. For example, group performance goals can be established for a total organization plan with high individual performance concurrently recognized through special awards. Again, the ultimate design for each organization should result from careful consideration of just what the organization is trying to get from the plan. The salient point, however, is that working harder/smarter and individual/group features are intrinsic to all plans and must be considered for any plan design. They are incorporated in the next section as part of the total set of PGS plan dimensions.

## CHAPTER 3

PGS PLAN DIMENSIONS

1. So far, you have read a description of what incentive programs are, how they work, and how they have evolved over the years. As part of the evolutionary process, different plan types have emerged, yet they all tie valued rewards closely to performance. As we now begin to examine specific plan types in more detail, it will be helpful to consider a set of dimensions representing design features present in one form or another in all types. Certain of these dimensions may have similar forms or mechanisms for all plans, such as the system used to distribute incentive payouts. Other dimensions are significant differentiators among plan types. For example, the type of performance standard or criterion used to establish the baseline for incentive payouts is a major distinguishing feature among plan types.

2. The plan dimensions which we shall describe in this section are outlined in Table 3.1. Each dimension is broken out into its primary design features or elements. These features are all incorporated into the design of an incentives program in one form or another. We shall discuss what options are available in selecting and designing a PGS program for a specific work setting. We shall draw upon plan types as they are laid out in dimension format in Table 3.1 and the DoD-specific programs listed in Appendix B for examples of the design features. In the next section, we shall show the dimensions and their features which have been combined to produce unique plan types. In Section 5, we shall provide more specific detail on what must be done to structure these dimensions into an actual site specific PGS program.

## A. DIMENSION 1: PROGRAM OBJECTIVES

1. The objectives of a PGS program refer to why management is introducing the effort or what they hope to accomplish by it. At the most general level, the central objective is to increase productivity through stronger worker motivation. As stated in one DoD program, the objective is to "improve worker motivation through a PGS program sharing monetary benefits of increased productivity with those responsible for additional output." However, this objective does not provide measurable outcomes which can be used for evaluating the worth of the program.

2. Increased productivity can be linked to more specific outcomes. In the private sector, increased productivity is usually related to costs per unit of output. Greater productivity results in lower costs such as in labor and/or materials and increased profit per unit which are measurable objectives. In the public sector, where profit is not a consideration, reducing costs is still a valid PGS program objective and has been included as a goal of many DoD programs. Savings benefit the customers of maintenance, repair, and supply facilities and, ultimately, the taxpayers. Savings can also contribute to successful competition against private sector firms under the provisions of the A-76 program. Savings generated in DoD PGS programs can be measured in terms of fewer manhours required to produce a given amount of work, reduced resource costs, and decreased absenteeism and turnover costs. All of these factors have been incorporated into these programs as measurable objectives.

TABLE 3.1  
PGS PLAN DIMENSIONS AND DESIGN FEATURES

- DIMENSION 1: Program Objectives
- DIMENSION 2: Motivation Focus for Achieving Program Objectives
- DIMENSION 3: Nature of the Work
- DIMENSION 4: Program Participants
- DIMENSION 5: Performance Measurement
  - A. Units
  - B. Standards
  - C. Controls
- DIMENSION 6: Incentives
  - A. Savings Allocation
  - B. Award Calculation
  - C. Payment Schedule
  - D. Payment Mechanism
  - E. Automated Assistance

3. Greater productivity can also be related to increased efficiency as measured through such DoD PGS program objectives as reduced backlog and improved schedule adherence. Increased efficiency can mean that equipment and material delivery to users is more responsive to military readiness requirements.

4. PGS program objectives can specify an end-state which indicates when the effort will be terminated. For example, rather than stating as an objective, "reduce work backlog," the objective could read, "eliminate work backlog." When backlog is gone, the PGS program is stopped unless other objectives continue to be in effect. A manager might consider the short-term use of a PGS program where a temporary heavy workload may occur during a certain time period. One DoD activity introduced a PGS program for this purpose, not only to eliminate a work backlog but also to avoid the costs of hiring temporary personnel.

5. PGS program users in DoD activities are likely to arrive at various specific objectives which meet their own unique requirements. Objectives formulated within the PWS required by the DoDI 5010.37 are a good example. The important point is to define these objectives in clear, measurable terms. Objectives expressed this way not only serve to strengthen support for the program prior to its implementation but also facilitate evaluation of the program's impact.

#### B. DIMENSION 2: MOTIVATION FOCUS FOR ACHIEVING PROGRAM OBJECTIVES

1. In our discussion of program objectives, we talked about improving productivity through increased worker motivation as the general overall objective. While the objectives per se are not major differentiators among PGS plan types, the manner in which increased motivation yields improved productivity does vary significantly. This motivation can lead to higher productivity either through increased physical effort ("working harder") or through new, more efficient ways of getting the work done ("working smarter").

2. "Working harder" plans are usually designed around some form of engineered or historical standard for time or work output. The underlying assumption is that persons will work harder to beat the standard in order to receive a monetary incentive. Working harder may mean greater physical exertion as well as making more efficient use of time by cutting down on breaks and other unproductive activities.

3. "Working smarter" plans rely on the workers' generation of ideas for improved methods and activities for getting work done more efficiently. These plans include formal structures and participative processes for capturing workers' ideas such as production committees, quality circles, or other mechanisms which encourage group discussion of ideas for increased efficiency.

4. The majority of incentive programs involve elements of both working harder and working smarter. Where working harder is the primary emphasis, workers may also figure out shortcuts and new ways of doing their jobs on their own. A caution with working harder plans, though, is that workers probably will not suggest methods changes which would raise a standard. Where working smarter is the primary emphasis, there is nothing to preclude working harder from also occurring. However, some organizations may feel more comfortable with a program where primary emphasis is placed on working harder

within the context of controlled standards. These organizations may prefer to retain control over methods and procedure changes as a "management prerogative." Other organizations may want to encourage employee input through a structure and process for actively capturing their ideas for improved work techniques and methods.

### C. DIMENSION 3: NATURE OF THE WORK

1. PGS plans can be designed to cover all types of work so long as there is some way to obtain objective measures of productivity. DoD programs have focused on production types of blue-collar wage grade and clerical work where standards have been traditionally utilized. However, plan types which are based on macro historical standards can be applied in a wide range of blue and white collar settings as well. The PWSs required as a part of the efficiency review process are another tool for obtaining objective measures of productivity. The PWS must specify workload, performance standards, and performance indicators. As such, these standards and indicators could be used as a PGS measurement system.

2. There are several features of the nature of the work which should be addressed when considering a PGS plan or program. They include the actual work performed, workload, and work independence.

#### 3. Actual Work Performed

a. The content of the work in the site under consideration should be compared with the work performed in other facilities where programs have already been successfully implemented. For example, "maintenance of combat vehicle engines" and "ship boiler repair" are two of the work activities covered in current DoD programs. If similarities exist, then it may be possible to transfer major program elements, such as the performance measurement system, from one site to another. For example, the program developed by the Navy Personnel Research and Development Center (NPRDC)<sup>1</sup> for shipyard data transcribers has been successfully transferred to other Navy and Air Force activities.

b. Here again, the PWSs which are required prior to an efficiency review must describe output requirements for all types of activities. These output requirements can provide a basis for determining the similarity of organizational sites for PGS technology transfer.

#### 4. Workload

a. Characteristics such as workload adequacy and predictability are critical to the success of PGS programs. Without an assured substantial workload, the installation of a PGS program runs the risk of creating a situation where there is insufficient work to provide the opportunity for continued incentive earnings or even to fill the work day. In these instances, the program must be suspended or terminated.

<sup>1</sup>G. C. Shumate, S. C. Dockstader, and D. M. Nebeker, Performance Contingent Monetary Rewards for Individual Productivity: Principals and Applications (NPRDC Tech. Note 81-14), San Diego, Navy Personnel Research and Development Center, May 1981.

b. There were several instances where insufficient workload created problems in DoD PGS programs. In one location, a plan was installed where the workload was constant with no backlog. Subsequent to the plan's implementation, the workload was cut. As the activity manager put it, "Why should I increase our output this month; I'll just look bad next month."

c. Workload characteristics are often beyond anyone's individual control. Therefore, a workload which appears to be able to support a PGS program may not be able to do so once the program is implemented due to workflow redesign, the absence of necessary parts or supplies, or a change in work requirements. However, it is possible to estimate the adequacy of the current workflow using projections for possible productivity increases under a PGS program. As a function of these projections, it may be necessary to include conditions for program termination, such as elimination of work backlog or reduction in workflow in the design of a site-specific plan.

#### 5. Work Independence

a. To the extent that an activity must rely on other units to complete its work, an interdependence exists which in and of itself can restrict the workflow. Therefore, it is important to examine the extent to which the work being considered for a PGS program forms an independent unit.

b. Two DoD plans which we looked at appeared to suffer from a lack of independence. In one activity, the incentive work center was part of a continuous flow activity. The work was slow coming from other centers and the work finished by the PGS center was slow in being picked up by the next activity. The net result was a reduction in incentive opportunities for the PGS center. In another activity, the PGS coordinator indicated that not including support personnel in the program negatively influenced the type and quantity of work assigned to workers covered by the program.

c. Therefore, to the extent possible, a PGS program should be introduced into self-contained, independent units. This may require the inclusion of support staff or indirect personnel. A percentage of total incentive earnings may be established for distribution among the support personnel. Another option would be to use productivity measures which cover the entire unit so that incentive earnings could be distributed equally among all eligible workers. Broad organizational coverage, macro-measurement plan types are available for this purpose.

#### D. DIMENSION 4: PROGRAM PARTICIPANTS

1. This dimension is used to describe who is eligible to share in any incentive earnings resulting from a PGS program. Under individual incentive plans, each worker is responsible for determining his or her own incentive earnings. Under group incentive plans, group performance is related to group awards.

2. Eligibility may extend to support personnel and supervisors, as well as to the workers primarily responsible for the productivity. Under many group plans, all employees in a large group or organization, including support staff and supervisors, share equally in incentive savings. For example, in

some DoD programs implemented in the AMC, supervisors and clerical staff in the participating activities share equally in the savings distributed to employees. Under individual incentive plans and some group plans, the support staff and/or supervisors may be allocated a percentage share of the incentive savings which is less than the full share received by the primary program participants. For example, in one NMC activity, first level supervisors received the average share earned by their workers.

3. In determining PGS program participation, all workers who contribute to the productivity which is used as the basis for incentive awards should be included. Their relative shares may vary as a function of their respective contributions to assure equity. However, under current law, military personnel are not permitted to participate in monetary incentive programs.

4. Number of participants per se is not a major issue in PGS program design. Current programs in DoD facilities range from one with 403 wage grade workers, as well as supervisors and support staff, to another where 17 GS clerical employees participate. One cautionary note, however, if there are substantial numbers of support personnel or indirect labor included in a group program, the distribution of incentive earnings to all eligible participants may result in individual shares which are too small to be meaningful. In such cases, worker motivation may not increase sufficiently to produce long-term performance gains.

#### E. DIMENSION 5: PERFORMANCE MEASUREMENT

1. As we indicated earlier, the two central elements in PGS programs are the performance measurement system and the incentives themselves. Plans and programs vary in how they address each of these elements. We have isolated three features which characterize differences in program performance measurement systems including units, standards, and controls. We will describe these features of the performance measurement dimension and then address the primary aspects of the incentive dimension.

##### 2. Units

a. The performance units are the basic measures used to establish productivity levels for participants in a PGS program. They range from output measures of number of units produced as in piecework plans to productive manhours for standard hour plans to economic dollar figures for such plans as Scanlon and Rucker. Among DoD programs where primary emphasis has been placed on hours as the unit of measurement, examples include "key operation time within a job order" and "production time required to complete specific overhaul operations."

b. Units can vary in their level of specificity and in the extent to which they encompass total job performance. At a very micro level, measurement units may be limited to certain specific tasks or assignments carried out by workers under an individual incentives plan. When workers

perform those tasks, they are covered by the incentive program. Under these conditions, the supervisor must assure that workers are provided with equal opportunity to gain incentives through balanced assignment of incentive-covered work. At the next level, units encompass total individual jobs which assure that all workers have the same opportunity to achieve incentives.

c. Unit measures may also break out the work on an individual basis while being incorporated as part of a group incentives program. For example, the hours required to complete a job may involve the contributions of a group of workers. However, the incentive awards for the job are distributed to workers according to the hours each one has contributed rather than in terms of equal shares.

d. Broader-based units cover the work of groups and are not broken out in terms of individuals. The same incentive award is distributed to each group member to reflect a total group effort. However, here again, the work covered under an incentive program may be limited to specific tasks or assignments or it may be designed to cover all of the work performed by a group. As in the case of individual incentive plans, the more work that is covered by the program, the easier it is to administer.

e. At a macro level of measurement, performance units cover large groups or total organizations. At this level, the measures generally encompass all of the work performed by the group or organization. Examples of such measures include the dollar figures used in Scanlon and Rucker plans, as well as the hour units incorporated in the Improshare version of a standard hour plan. Currently, a Navy facility is considering an organization-wide plan which includes cost, schedule adherence, and quality as its macro measurement units.

f. In general, broader based measurement units facilitate the administration of a PGS program. They reduce the problem of equitable work assignment mentioned above. They also provide easier incorporation of indirect and support personnel into the program by covering their work as well. And they lessen the effect of periodic productivity fluctuations which are due to factors beyond the control of workers such as parts shortages or scheduling difficulties. On the other hand, broader measures increase the risk of incorporating significant work factors over which the worker has no control and of using invalid performance standards. Therefore, performance may not be a true reflection of worker motivation.

### 3. Standards

a. Whatever measurement units are selected, certain base levels must be defined above which incentives are awarded. These base performance levels are what the management of the facility is willing to accept as normal or standard productivity. In other words, these levels represent the workers productivity which management is saying the organization currently does or should receive in exchange for the compensation which it provides them. Technically, a standard represents how much time it should take a competent worker to perform a specific task given normal conditions. Performance above these levels is acknowledged to be extra productivity with the resulting savings to be shared between workers and the organization as part of the incentives program.

b. Performance standards in DoD installations are established through the following four methods:

(1) Engineered Standards - Industrial engineering methods (time and motion, work sampling, etc.) are used to establish estimates of how long it should take to perform specific tasks. The standards are developed and applied by each installation for its own work activities.

(2) Uniform Standards - Standards are developed using industrial engineering methods in a lead installation with input from other installations. The standards are then applied in all installations with the same work activities.

(3) Historical Standards - An installation establishes local standards based on analysis of documented historical data to derive normal task completion time requirements or other indicators of normal performance levels.

(4) Nonstandard Estimates - An installation estimates task completion time requirements or normal performance levels on an educated-guess basis. Estimated standards are usually applied in conjunction with new equipment.

c. Current DoD PGS programs rely on either engineered or historical time standards or a combination of the two. In many of the programs, standards which are considered to be adequate by management cover only a portion of the work performed by participants in the PGS program. Work coverage in DoD programs which we examined ranged from 100 percent to 30 percent. As we noted in our discussion of measurement units, the less work covered by standards, the more burden is placed on program supervisors to assign work equitably and to assure that work is properly credited.

d. Development of accurate labor standards is an integral step of the efficiency review process described in DoDI 5010.37 and, therefore, could easily be incorporated into a PGS program. Another source for standards information is the Computer Aided Time Standards (CATS) system.<sup>1</sup> CATS is designed around the Defense Work Measurement Standard Time Data as published in DoD 5010.15.1-M, Standardization of Work Measurement. A wide range of data are available to the user which includes locally developed and/or used standard time data and standards. The work measurement analyst interacts with CATS via a remote terminal to search for standard time data elements or standards to build new standards.

e. The unit of measurement and the extent to which historical or engineered standards are relied upon serve as major differentiators among plan types. However, once the units and standards have been established, the actual calculation of work which is eligible for incentive payments is fairly consistent. As an example for standard hour plans, the actual hours taken to complete a specific job or volume of work which has a standard assigned to it is compared with the standard hours. An incentive award is then based on the extent to which actual hours are less than standard hours. For the Scanlon Plan, a figure relating current total payroll dollars to total dollar sales is

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<sup>1</sup>For further information on CATS, contact the Defense Productivity Program Office (See Points of Contact, Table 7.1, Section 7).

compared with the figure representing the same relationship for an earlier base period as the standard. The incentive award is based on the extent to which more sales have been produced with the same or fewer payroll dollars than in the base or historical time period.

f. For DoD standard hour plans, the basic performance measurement formula is expressed in terms such as:

$$\frac{\text{Standard Hours Earned}}{\text{Actual Hours}} = \text{Performance Efficiency}$$

and

$$\frac{\text{Time Allowed}}{\text{Time Expended}} = \text{Performance Factor}$$

g. It is important to the success of a PGS program to have standards which accurately reflect acceptable baseline performance levels. An activity should do the best that it can to assure that valid standards are in place before any incentives are awarded. This can be done by careful sampling of time intervals as a basis for historical standards and by assuring that accepted procedures have been used to obtain site specific engineered standards. The efficiency review process, with its structured PWS and operational analysis, will aid in establishment of the baseline performance level and assure development of valid standards. In addition, the standards should be reviewed and tested under normal operating conditions during an initial trial period prior to the start of the program. Any necessary revisions should be made before incentive payouts begin.

#### 4. Controls

a. In order to safeguard against possible poor standards or runaway performance increases, an activity may wish to retain the option to modify standards once the PGS program is underway and incentives are being awarded. The conditions which may justify this option as a program design feature include:

(1) Historical standards used to establish baseline levels are imprecise or unstable.

(2) Engineered standards are not developed and validated in the specific work setting where the program is being installed.

(3) Macro unit standards are utilized where situational factors outside of the workers' control may affect future productivity gains.

(4) New equipment or work design features may be installed which alter how the job is done.

b. When any of these conditions exist at the start of a program, a control can be incorporated into the design which consists of a ceiling placed on performance above a standard. Performance at or above this ceiling level can signal one of two control options depending upon how the plan is designed.

The first option simply consists of no incentive payment for performance at or above the ceiling level. By using this option as a design feature, it is unnecessary to revise the underlying standards since an upper limit is placed on incentive award payouts. However, with the ceiling in effect, the organization essentially loses the opportunity to obtain higher performance gains which still may be possible through increased worker motivation.

c. The second option avoids this problem. It consists of continuing to pay incentive awards for performance above the ceiling level for a pre-specified period of time. During this time period, the underlying standard is reviewed and a revised standard is generated. The activity then pays the workers a predetermined amount to "buy back" the performance difference between the original standard and the new raised standard as this difference will no longer be covered by incentive awards. The ceiling/buy back option is intended to recognize the need for changing a standard to permit its rework while minimizing the effect on worker motivation.

d. While introducing a ceiling with a "buy back" provision is a control option which PGS program designers may feel is necessary, there are certain risks attached. These risks are greatest in programs which place heavy emphasis on "working harder" to increase productivity. If the "buy back" provision is not used cautiously, workers may feel that their opportunities to earn incentives are gradually being eroded by raised standard performance levels. It is possible to continue to raise standards. However, workers have a limited motivation range as expressed through effort and performance so that it is not always possible for them to continue to keep up with standards as they are raised. Frequent standards increases are known as "ratcheting."<sup>1</sup> This condition has led to the downfall of many PGS private sector programs as workers came to believe that they were being taken advantage of.

e. The risks are fewer in programs where primary emphasis is placed on "working smarter." In these programs, the "buy back" is generally for standards adjustments resulting from changes in the way the work is performed. The money received by workers in the "buy back" is a reward for unexpectedly high performance gains resulting from more efficient methods or procedures. Workers still have the opportunity to generate additional performance increases through more novel approaches for doing the work.

f. In order to minimize the risks involved if the "buy back" option is incorporated in a PGS program design, it is important to establish clear guidelines for its use. For example, the Improshare plan contains the following provisions as preset design features:<sup>2</sup>

- (1) A ceiling on increased productivity (usually at 160 percent).
- (2) A cash buy back of measurement standards when the ceiling is exceeded.

<sup>1</sup>T. H. P. Patten, Jr., Pay: Employee Compensation and Incentive Plans, New York, the Free Press, 1977.

<sup>2</sup>Mitchell Fein, Improshare: An Alternative to Traditional Managing, American Institute of Industrial Engineers, 1981, p. 49.

(3) Sharing of improvements generated by capital equipment purchase with 80 percent going to the organization and 20 percent to the employees.

g. As general guidelines, the following provisions should be included in the design of ceiling and "buy back" options. If at all possible, decisions regarding the specific elements should be made at the local activity level.

(1) The ceiling expressed as a performance percentage above a current performance level or standard.

(2) The minimum time period for performance at or above the ceiling should be established before the standard would be revised through a "buy back." We recommend a minimum of six months.

(3) The formula for figuring the dollar amount of the "buy back."

(4) The maximum percentage amount which a standard may be raised through a "buy back." The revised standard should not be raised to a level which would preclude a future incentive opportunity.

h. In addition, there should be a provision which addresses the situation where performance is consistently below standard by a specified percentage in order to provide a balanced perspective. In other words, if the design is going to include a control for raising a standard which is too low, it should also provide a control for lowering a standard which is set too high. This option not only enables adjustment of all standards to appropriate levels but it also helps to minimize worker perceptions that an underlying purpose of the program is to raise standards. Moreover, workers should not be penalized when their performance levels fail to reach standard. A PGS program is based on the demonstrated effectiveness of positive incentives. It is intended to motivate workers by rewarding performance above accepted normal levels rather than to punish workers for substandard performance.

i. Other control techniques used in many plans are smoothing techniques or moving averages. This technique basically averages earned awards on a "moving" basis for several weeks or months. For example, awards in February are paid as the average of the amounts earned in December, January, and February. March's payout is the average of January, February, and March earnings. Use of a moving average smooths out wide swings in productivity gains and losses, thereby protecting employees and the organization.

j. A reserve pool may also be taken from the employees' bonus amount each period. A fixed percent of the employees' total share, e.g., 25 percent, goes into a reserve pool. This pool may be used to "pay the organization back" for periods where a loss in productivity occurs. If funds remain in the pool at the end of the year, they may be distributed back to employees as a final bonus check. Use of a reserve pool in this manner helps protect the sponsoring organization against making payouts for net losses in productivity.

k. Finally, standards based on time values or units of output do not always clearly indicate the quality of the work performed. Therefore, it may be necessary to establish controls which monitor work quality as well as work quantity. Otherwise, high performance levels may result at the expense of quality. These controls may take the form of random spot checks of the work or merely be a part of normal quality control procedures. Whatever their form, it is essential to be able to trace output quality back to the responsible workers so that their production figures can be adjusted to account for poor quality when necessary. For example, under a time standard incentive program, this may entail having the responsible workers correct the quality defect with the time taken added into their production figures.

#### F. DIMENSION 6: INCENTIVES

1. There are four features which characterize the incentive dimension as it is incorporated into a PGS program. They include: how savings are shared, how individual incentive awards are calculated, how frequently awards are distributed, and the formal mechanisms used to actually make the award payments.

##### 2. Savings Allocations

a. Monetary savings resulting from productivity above the acceptable standard for a facility are shared between the workers responsible for the gains and the organization. Generally, a certain percentage of the savings is divided among the eligible workers with the remaining share going to the organization.

b. An important consideration in establishing the workers' share is to assure that there is the opportunity for them to receive a sufficient amount to be meaningful as an incentive. This amount is based on the percentage share and the total base dollar amount to be shared. No standard percentage share or amount have been established. For example, among plan types, the Scanlon Plan provides 75 percent of the gains defined as the difference between allowed and actual payroll dollars, while Improshare allows 50 percent of productivity improvement from the employees' bonus pool defined as the difference between actual and earned hours to go to the workers. Among DoD standard hour programs, the workers' share has ranged from 50 percent to 20 percent of the savings where savings have been defined in different ways. The majority of programs have used the 50 percent sharing rate. The dollar savings base has either been limited to the direct basic labor rate or expanded to include fringe benefits or overhead.

c. According to OSD Comptroller guidance,<sup>1</sup> the dollar savings base for DoD activities should be limited to the average direct labor rate. We also recommend a sharing rate of 50 percent of the savings for workers. However, this rate should be decided locally by each DoD facility taking into account the potential of the incentives program for providing significant awards.

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<sup>1</sup>Conversation with Nelson Toye, July 1983

### 3. Award Calculation

a. The formulas used to calculate the actual incentive awards earned by eligible workers vary to some extent across plan types and DoD programs. However, they all include a figure representing the performance gains derived from performance above the established standards and a dollar figure representing cost rates or unit costs. A figure representing cost savings resulting from performance gains is produced from this information. This figure, in turn, is multiplied by the worker share rate to yield his or her earned incentive share.

b. An example of one set of formulas used in DoD programs to calculate individual worker shares under a group plan is provided below:

- (1) Group earned (standard) hours - Group actual (expended) hours = gained hours
- (2) Gained hours x Direct basic labor rate = Total dollar performance gains
- (3) Total dollar performance gains x 50% (worker share rate) = Group's share
- (4)  $\frac{\text{Individual Actual Hours}}{\text{Group Actual Hours}} \times \text{Group \$ share} = \text{Individual's \$ share}$

### 4. Payment Schedule

a. No significant variation occurs among plan types or DoD programs for this design feature. A basic principle of incentive plans is to make payments as close to the performance which is being rewarded as possible. All plans and programs which we examined provided for distribution of shared savings at least once a month to coincide with salary or payroll schedules. Some DoD programs paid as often as every two weeks. On-site DoD program coordinators were quick to acknowledge the significance of the first incentive paycheck for providing concrete evidence to workers of the program's reality. Therefore, it is especially important to assure that there is no delay in making the initial incentive program payouts.

### 5. Payment Mechanism

a. Good payment mechanisms will minimize the administrative requirements for distributing earned incentive savings to eligible workers. Establishing minimum payout amounts of \$10 to \$25 can ease administration. In other words, workers only receive a check when the incentives which they have earned reach the established minimum. In some instances, incentive shares are included as part of the workers' paychecks. In other cases, the shares are issued in separate incentive checks. When shares are included as part of paychecks, there should be a clear indication of the incentive portion of the total amount. In DoD programs, the incentive payments are usually administered by an activity's incentive awards branch and processed by the payroll office.

b. The payment mechanisms serve to provide feedback to workers on the relationship between their earned incentives and the performance which produced the incentives. This feedback is an essential ingredient of the incentive program. In order to be effective, feedback should occur as soon after performance as possible. Therefore, incentive payments should be distributed as close as they can be to the related performance. DoD programs have established mechanisms which enable payments within a month after the eligible performance. Many of these programs have also established feedback mechanisms which enable workers to keep a daily or weekly account of the incentives which they earned through computer printouts and postings of performance data.

#### 6. Automated Data Assistance

a. This dimension describes the way in which work measurement data, incentive plan calculations, or administration can be facilitated through automation. For example, engineered standards data have been automated through the CATS system described on page 3-8. In addition, a management information system (MIS) which has been adapted to meet the requirements of an agency's PGS program can be extremely helpful. Such a system can provide automated mechanisms for collecting performance data and calculating incentive award eligibilities. Most DoD programs use their own, locally developed MIS or have borrowed a system from another similar activity. For example, Sharpe Army Depot borrowed Sacramento Army Depot's MIS; and the MIS developed for the PGS program at the Naval Air Rework Facility, Alameda is being transferred to a similar activity at North Island.

b. Interested readers can determine whether any of the DoD activities where PGS programs have been introduced, as listed in Appendix B, are similar to their own. If so, it may be possible to expedite the introduction of a PGS program by transferring the similar agency's MIS.

#### 7. SUMMARY

a. In this section, we have covered six PGS plan dimensions which incorporate the major features of various specific plan designs. These dimensions will serve as a framework for describing the major characteristics of different plan designs in Section 4. Of these dimensions, the performance measurement factors, including units, standards, and controls, are the major differentiators among designs. Program objectives, the motivation focus, the nature of the work, and the program participants help to describe different aspects of plan designs as they are spelled out in actual PGS program implementations. The incentive dimension, including features such as savings allocation and payment schedule, are not unique to any one plan design but are instead a function of program site preferences.

CHAPTER 4  
SPECIFIC PLAN DESIGNS

A. INTRODUCTION

1. In this section, specific plan designs are discussed. These designs are: Standard Hour, DoD Designs (PGS, Performance Contingent Reward System (PCRS), etc.), IRS's Plan for Data Transcribers, Improshare, Scanlon, and Rucker. The specific plan designs are discussed in terms of the dimensions described in the previous section. At the end of this section, design considerations specific to DoD are explained.

2. Standard Hour plans focus on increased output measured through micro performance indicators such as task standards. The DoD Designs (PGS, PCRS) and the IRS plan most nearly resemble the basic Standards Hour methodology and, therefore follow Standard Hour in the description of specific plan designs.

3. Improshare is a specific design applied to large groups or organizations. Micro measurement is used in relation to the hours of direct labor required for each unit of product, but the micro measurement is subsequently aggregated to total output. This aggregation allows total output to be related to the group or organization, whereas Standard Hour relates output to the individual or, in some cases, to a small group. Quantity of output is still the overriding factor in Improshare, however.

4. Scanlon, another group plan, focuses on macro performance measures of allowed payroll to actual payroll for a given period. The allowed payroll reflects the historical ratio of payroll to sales. In contrast to Improshare and Standard Hour's quantity "working harder" emphasis, Scanlon emphasizes "working smarter." The participation of employees to suggest better ways of doing things is the vehicle for earning Scanlon awards. Rucker, in the final plan presented, is very similar to Scanlon, differing not in intent but in calculation.

5. These designs are not, of course, an exhaustive list of monetary incentive plans but do represent the designs currently in use in DoD and the predominant methodologies found in the private sector. Table 4.1 compares basic features of these designs. The forms of salary increase shown in Table 4.1 are not explained in this Guide. Provisions for salary increases are already incorporated within federal pay structures.

6. The basic methodologies described here all originated in the private sector. The Standard Hour plan, the basis for many of the DoD designs, has successfully been applied in the public sector arena, however, and plans are being considered for two large group implementations. The reader should not be deterred when information is given in the succeeding pages, such as implementation in manufacturing operations or payroll to sales calculations. Many of the DoD activities, especially the industrially funded activities, are in effect businesses and must compile the same type of accounting and production data that private sector businesses do. The nomenclature may change in making the private to public adaptation, but the concepts are readily transferrable.

TABLE 4.1  
MAJOR TYPES OF MONETARY INCENTIVE PROGRAMS

Plan Type	Primary Source of Productivity Improvement	Performance Base	Employee Share	Participants
Salary Increase: Straight Day Work Measured Day Work	Increased Effort	Individual	Proportionate to individual Performance: periodically or daily	Production - direct labor
Standard Hour Army PGS Navy PCRS IRS	Increased Effort	Individual and/or Group	Proportionate to individual earned hours above a standard	Primarily production - blue collar and clerical direct labor
Improshare	Increased Effort	Group	Proportionate to group saving (hours)	Direct and indirect labor
Scanlon/Rucker	Improved Procedures	Group	Proportionate to group savings (dollars)	Direct and indirect labor

7. A final point to remember when examining this section is: there is nothing sacred about a particular plan design. Certain features of several plans may be appealing to the reader and may, in fact, be combined to design and tailor a new incentive scheme for a given activity. Once again, the major criteria for incentive plan application should be the organization's individual objectives, climate, and resources.

## B. STANDARD HOUR PLANS

1. Standard Hour plans have been widely used in this and many other countries. Standard Hour plans provide a very direct relationship between performance and award if they are based on accurate standards and are properly installed and maintained. Because the accurate setting and maintenance of standards is critical, the standard hour plan, among incentive plans, requires the greatest engineering effort with regard to methods and standards.

2. Most of the descriptive data for the standard hour plan was taken from a publication by the Bureau of National Affairs.<sup>1</sup>

### 3. Standard Hour Plan: Dimensions

#### a. Focus

Standard hour plans focus on increasing physical output, usually on an individual basis. Because the emphasis is placed on "working harder," it is very important with this type of program that performance factors be under the control of the worker. In other words, the worker's performance must not be excessively controlled by such external factors as the productivity of other workers, scheduling, or parts availability.

#### b. Nature of Work

Standard hour plans may operate where work is directly measurable, where there are standardized operations, and where there are sound production standards.

#### c. Participants

Standard hour programs are usually applied on an individual basis to direct production workers. They may also be applied to groups.

#### d. Performance Measurement

(1) Units. Units measured are actual productive hours and standard hours. Actual productive hours are simply the actual hours which an employee or group needs to produce a certain amount. The standard hour is the quantity of work the worker or group must produce in one clock hour to earn the occupational wage rate. It includes the amount of work to be performed at the pace consistent with the pace concept used plus allowances for personal need, fatigue, and delays.

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<sup>1</sup>Bureau of National Affairs, "Incentive Pay Systems, Bonuses, and Profit-Sharing Plans," 1980, pp. 321: 152.

(2) Standards. Standard hours are determined through the establishment of labor standards which, for a given organization, specify the number of standard hours required to produce an easily verifiable and recognized unit of output. A labor standard sets out the amount of time a measurable unit of work should take to produce. The standard includes incentive opportunity allowances for personal needs, fatigue, and unavoidable delays. These standards result from a preliminary study of operations and methods to determine the most efficient way they can be performed. Time studies are then conducted of the actual performance of operations as they are being done, according to the most efficient methods. Once the standards are set for use in this plan, they are usually guaranteed against change unless methods or conditions are changed or unless the organization "buys" them back. A "buy back," as a control technique against loosened standards, is described in Section 3.

e. Incentives

(1) Savings Distribution. The savings distribution is explicit for the employee and implicit for the organization. That is, for work performed above standard, the employee receives incentive earnings proportionately. The organization is saving, in effect, under the assumption that the employee is producing more, when above standard, than was expected.

(2) Award Calculation. The rate of production of each employee or group is measured by a comparison of standard hours produced (unit standard times units produced) to actual hours required, where 100 percent is the standard performance index. Thus, if 10 standard hours were earned in eight actual hours, the performance rating is 125 percent. The incentive earnings are then in direct proportion to the rate of production over standard and either paid as direct percentage of base wage or along some specified incentive. Figure 4.1, on the following page, gives an example of a standard hour calculation.

(a) Under a standard hour plan, employees' schedules are guaranteed the base wage for their occupation for the incentive period.

(3) Payment Schedule. Incentive earnings are guaranteed on a daily, weekly, or pay period basis and usually paid on the regular pay period schedule.

(4) Payment Mechanism and Automated Data Assistance. These dimensions vary by site.

C. ARMY'S PLAN: PGS

1. Army's monetary incentive efforts are limited to the AMC. AMC's PGS plans are generally similar in design and were implemented in August 1982. These plans were in a test phase through March 1984. At that time, the test was evaluated and decisions are being made concerning long-term implementation. Each site-specific PGS plan is broken out by major plan dimensions and features in Appendix B.

Figure 4.1. Example of Standard Hour Calculation

EXAMPLE OF STANDARD HOUR CALCULATION<sup>1</sup>

The number of standard hours earned is found as the product of the number of units produced by the employee divided by 100 and times the standard time established to produce 100 units. Expressed as a formula:

$$He = \frac{Pa}{100} \times Sh$$

where

He = Standard hours earned

Pa = Actual production

Sh = Standard time expressed in hours per hundred

Suppose an employee produced 212 pieces during an 8-hour day. If the standard time is 5.1 hours per hundred units produced, then the standard hours earned would be:

$$He = \frac{212}{100} \times 5.1 = 10.812 \text{ hours}$$

Then, divide the standard hour (He) earned by the clock or actual hours (Hc) worked and multiply by 100 to find the employee efficiency (E) level.

$$E = He/Hc \times 100$$

For example,  $E = \frac{10.812}{8} \times 100 = 135\%$

Incentives are earned for an E greater than 100%. If the example's employee earns a base hourly rate of \$6, then the performance efficiency found above yields the following incentive rate:

$$\text{Pay} = \$6 \times 135/100 = \$8.10 \text{ per hour for the 8 hours}$$

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<sup>1</sup>Example taken from: Patrick C. Koelling and D. Scott Sink, "Productivity Gainsharing and Incentive Plans - A Current Review," Gainsharing: A Collection of Papers, Industrial Engineering and Management Press, 1983, p. 18.

## 2. Army PGS: Dimensions

### a. Objective

The stated objective for the PGS test plan is "...to increase efficiency and effectiveness of participating civilian work force..."

### b. Focus

The PGS primary focus is on increased physical effort and is measured by the group performance efficiency factor of a work center.

### c. Nature of Work

PGS has primarily been implemented in depot operations, such as packing, shipping, key entry, and maintenance.

### d. Participants

Usually the participants are wage grade employees; however, several applications include GS supervisors and clerical employees.

### e. Performance Measurement

(1) Units. The PGS unit of measurement is productive man-hours. That is, hours at work excluding sick leave, annual leave, personal time, etc.

(2) Standards. The standards used to measure productive man-hours are usually engineered, but statistical and estimated standards are also used in some cases. These time standards are compared to actual time (to perform some work) to derive a performance efficiency ratio. That is:

$$\frac{\text{Standard Hours Earned}}{\text{Actual Hours}} = \text{Performance Efficiency}$$

Where performance in a work center (under PGS) is above 1.0 of established standards, then there are gained man-hours; that is, fewer man-hours were required to perform the work than planned. These gained man-hours are multiplied by the work center average direct labor rate to form a pool of PGS dollars available for award.

### f. Incentives

(1) Savings Distribution. The PGS dollar pool is distributed with 50 percent going back to the sponsoring organization and 50 percent distributed to the participating employees.

(2) Award Calculation. Individual award is calculated by computing each individual's productive time, i.e., all time on the job. Individual productive hours are divided by the total work center's hours. The resulting proportion is multiplied by the total (employees' up to 50 percent) of PGS dollars to derive the individual's share.

(a) Some installations have modified this computation slightly by incorporating a moving average to smooth out monthly or bi-weekly swings in the productivity gains and losses. A special feature of the test PGS design is that losses as well as gains are tracked. Losses must be "paid back" or made up before workers can again be eligible for earning incentives.

(b) The award calculation summarized is: For each work center where the Performance Efficiency (PE) exceeds 100 percent:

1. Employees'/Installation's Shares
  - Earned man-hours - actual man-hours = gained man-hours.
  - Gained man-hours x direct basic labor rate = PGS \$'s.
  - PGS \$'s x 50% = employee's share
  - PGS \$'s x 50% = depot's share
2. Individual Award
  - $\frac{\text{Individual productive hours}}{\text{Work center productive hours}} = X\%$
  - Employees' PGS \$ x (X%) = individual award

(c) Payment Schedule. PGS awards are usually paid out monthly or quarterly.

(d) Payment Mechanism. The payment mechanism routes award packets through the Directorate for Resource Management, Incentive Awards, Finance and Accounting, and finally, to the Civilian Personnel Office for distribution to individuals.

(e) Automated Data Assistance. Several of the activities under PGS have developed local computer programs which interact with the Standard Depot System to perform the PGS calculations. These programs take labor and production data (Work Center Detail Performance Report) from the Standard Depot System and calculate the Work Center's PGS gained hours. The dollar value is then calculated. The programs next break down productive hours by employee and compute individual awards. Some programs contain a smoothing technique in the calculation. The output is a list of participating employees and bonus dollars earned by each employee. Contacts for these programs are given in Appendix D.

#### D. NAVY'S PLANS

1. All of the Navy's incentive plans are installed within the NMC. Navy's incentive plan activities, however, have been less centralized than that of the Army. Several of the Navy's plans were designed by the NPRDC, while others have originated through local installation design. The NPRDC plans are known as PCRS and form the majority of NMC's incentive efforts. Although first designed for key entry work, PCRS was expanded to small purchase buyers, auto mechanics, and aircraft mechanics. In 1983, a major adaptation of the PCRS was installed at the Pearl Harbor Naval Shipyard.

2. In addition to PCRS, two very similar local designs have been implemented. Below, we will first outline the prototype PCRS along with descriptions of subsequent adaptations. The local designs will follow. Each site-specific plan is outlined in Appendix B.

### 3. PCRS: Dimensions

#### a. Objective

A threefold objective was stated:<sup>1</sup>

- (1) Improve productivity by increasing individual performance.
- (2) Reduce personnel administration problems by decreasing absenteeism, turnover, and union complaints.
- (3) Test an incentive program in government organizations.

#### b. Focus

The focus is on increased individual physical output and is measured by actual time required to perform some unit of work.

#### c. Nature of Work

The original PCRS was initially designed for key entry work. The concept has been expanded to vehicle repair, small purchase form order processing, and aircraft engine overhaul.

#### d. Participants

Wage grade and GS employees.

#### e. Performance Measurement

(1) Units. The units measured in the PCRS for the data entry application are key strokes per hour and machine time usage. The applications for small purchase buyers, automotive mechanics, and aircraft mechanics all measure productive hours required for various procedures.

(2) Standards. The basic standards for the data entry application are historical time standards for various data entry procedures weighted to accommodate variable task difficulty. Along with these historical standards are three other factors which are used in the incentive calculation. These are:

- (a) Percent efficiency = Std. Hrs. earned/actual hours

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<sup>1</sup>E. Chandler Shumate, Steven L. Dockstader, and Delbert M. Nebeker, Performance Contingent Reward System: A Field Study of Effects on Worker Productivity, Navy Personnel Research and Development Center, May 1978.

(b) Productive time = time spent working at key entry machine/time assigned to work at key entry machine

(c) Production efficiency = percent efficiency x production time

(3) The standards for the monkey entry application are engineered, engineering estimates, or in the case of vehicle repair, published industry standards.

f. Incentives

(1) Savings Distribution. Under PCRS, the savings distribution varies widely. The time saved is translated into dollars by multiplying the hours saved by either average labor rates or facility charge rates (recharge rates) to customers per hour. The sharing rate varies: 11 percent, 30 percent, 50 percent for the employees' and organization's savings distribution. Some PCRS plans may have a seemingly low employee sharing rate; however, the low sharing rates are often used in conjunction with high base rate such as the facility charge rate.

(2) Award Calculation. The actual individual award calculation for the data entry plan is then:

$$(\text{production efficiency} - 1) \times (\text{machine time}) \times (\text{recharge rate}) \times (\text{sharing rate}) = \text{award earned}$$

This formula is modified generally as follows for the remaining applications:

(a) Standard hours - actual hours = hours saved

(b) Hours saved x (recharge rate or labor rate) = total savings

(c) Total savings x (employees' sharing rate) = award earned

(3) Payment Schedule. The PCRS award is calculated every one or two weeks.

(4) Payment Mechanism. Award forms are prepared by sponsoring activities and submitted to the Incentives Award Branch for approval and, finally, to payroll for check preparation. Employees, however, must request payment prior to check issuance.

(5) Automated Assistance. With one exception, all calculations are computed automatically, usually with manual entry of work performed. See Appendix B for specific details, since each location's automated capability differs.

g. Philadelphia and Mare Island NSYs

(1) These two shipyards developed very similar plans. Philadelphia's has been in effect since July 1981 and Mare Island began their program in the summer of 1983. The Philadelphia plan is described below but, again, the Mare Island concept is very similar.

(2) Objective

The stated objective for the plan is "...Reduce costs without sacrifice of quality or timeliness."

(3) Focus

The focus of this plan is on increased physical effort and is measured by the group performance factor for a given key operation.

(4) Nature of Work

The plan has been applied to ship boiler repair and welder and rigger shops.

(5) Participants

The participants have been limited to wage grade workers, and first line supervisors.

(6) Performance Measurement

(a) Units. The unit of measurement is key operation man-hour time within a job order. A job order is the work package to be accomplished; it is made up of subset key operations (key ops). For example, a job order might be to repair two boilers, with a specific key op within the job order of "install castings."

(b) Standards. Both engineered and historical key operation time standards are used. Actual hours expended are compared (divided) to hours issued, based on standard, to derive a performance factor. Incentives under this plan are paid when the performance factor is below 1.0.

(7) Incentives

(a) Savings Distribution. Under this plan, 50 percent of the savings form the employees' bonus pool. Savings are described in the following example:

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<sup>1</sup>"A Worker Quality Cost Pilot Incentive Program at the Philadelphia Naval Shipyard," 1981-82, Progress Report, p. 39.

	<u>Performance Factor</u>	<u>Hourly Shop Rate</u>	
A	1.11	29.69	
B	1.00	26.75	---Standard
C	0.90	24.07	

Savings = (A - C) = \$5.62

Overhead = 56 percent (A - C) = \$3.14

Direct Labor = 5.62 - 3.14 = \$2.48

Award = Direct Labor/2 or 2.48/2 = \$1.24 (employee)

Cost Reduction to Fleet = Overhead + Award = 3.14 + 1.24 = \$4.38

(b) Award Calculation. The individual calculation is: 12 (hours worked on incentive key op) x (1-final key op performance factor) = share employee earned where: 12 = approximate direct labor rate for Philadelphia NSY. The shipyard share is calculated as: 12 (hours worked on incentive key op) x [(2 x starting performance factor) - (final performance factor) - 1] = shipyard savings.

(c) Payment Schedule. The awards are paid approximately 30 days after a key op is closed out.

(d) Payment Mechanism. The productivity officer submits a form showing an individual's monetary award and those tangible savings resulting from his/her effort to the Incentive Awards Group authorizing payment to each eligible employee. Comptroller makes the actual payment in the following pay period.

(e) Automated Data Assistance. Individual hours on specific key operations are recorded manually onto certification forms. Calculation of incentives from the forms is done automatically.

#### h. Pearl Harbor NSY - Inside Shop 31

(1) Pearl Harbor NSY, in addition to its program for small purchase buyers, has recently implemented an incentive program which, rather than focusing on key operation man-hours, focuses on the performance efficiency of foremen. The performance efficiency of a foreman is calculated through measuring the efficiency of all work done under his supervision, perhaps two or three key operations at once. This premise was adopted in order to avoid the potential problem of cross-charging labor hours. If manhour savings are calculated on single key ops, the opportunity exists to charge hours to one key op while actually working on another. If this should happen, incentives could be paid out for no real improvement in labor efficiency.

#### (2) Objective

The objectives of this plan are: (1) to achieve productivity increases without detrimental effects on production schedules or product quality; (2) pay for itself through dollar savings; (3) be fair and acceptable to employee and management; and (4) be consistent with incentive award policy and guidance.

(3) Focus

The primary focus is on increased physical effort and is measured by the performance factor for each foreman.

(4) Nature of Work

This program is installed in Inside Machine Shop 31, heavy metal forming and shaping.

(5) Participants

This plan applies to wage grade mechanics and their supervisors.

(6) Incentives

(a) Units. The unit for measurement is the man-hours charged to each key operation by an individual foreman.

(b) Standards. Industrially-engineered standards are used to set "allowed hours" for given key operations. These allowed hours are divided by expended hours (actual hours) to derive a performance factor. Where the performance factor is above 1.0 for an individual foreman, performance is above standard and incentives earned; and where performance is below 1.0 for an individual foreman, incentives are not earned. In this plan, the performance factor is related to all work under the supervision of a foreman rather than being related to a key operation. At Pearl Harbor, the allowed hours were multiplied by 1.10 to derive a point factor of 1.0 for incentive plan purposes. This was important because, historically, the shop's performance had been low in relation to "allowed hours"; and had the correction factor not been used, the standard performance factor could have been perceived as too difficult to attain or surpass.

(c) Savings Distribution. When the number of expended hours are less than the allowed hours, then man-hours have been "saved." These saved hours are multiplied by the employees' accelerated hour rate to reach dollar savings.<sup>1</sup> Fifty percent of the savings are distributed back to participating employees.

(d) Award Calculation. Incentives are only earned when a foreman's performance factor is higher than 1.0. A worker's share is the percentage representing the proportion of a single workers' productive hours to the total workshop's productive hours for a given incentive period and a given foreman. If a worker is assigned to more than one foreman, he/she will have a work share for each assigned. This work share is then multiplied by the man-

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<sup>1</sup>Note: An accelerated hour rate is wages plus fringe and/or proportional overhead.

hour savings accumulated by each foreman for the pay period. For example, suppose employee Smith works 100 hours for Foreman A. The total hours expended by Foreman A's workgang is 1,596 against an allocated 1,776 hours, resulting in man-hour savings of 180 hours.<sup>1</sup>

<sup>1</sup> Employee Smith's work share is then:  $100/1596 =$  six percent. Hours saved for employee Smith are: six percent x 180 = 10.8 or 11 hours rounded. To reach employee Smith's incentive award, his accelerated rate is used with a 50 percent sharing rate, as follows:

WG-10, Step 5 Accelerated	=	\$18.06
Sharing rate	x	.05
		\$ 9.03
Saved hours	x	11
Incentive award		\$99.33

If employee Smith had saved hours with more than one foreman, all saved hours would be summed and multiplied by the accelerated labor rate to reach the incentive award.

(e) Award Calculation for Foremen. The major part of the foreman's is based on the overall performance of the shop rather than on his or her work group's performance. The rationale for this is that a large portion of a foreman's job involves working with the other shop managers to ensure that all shop work is accomplished in a timely and efficient manner. Also, cooperation between foremen across different work centers was believed to be critical to the successful accomplishment of work in Shop 31.

<sup>1</sup> Historical data were analyzed to determine the average number of hours saved by the shop for every one percentage point increase in the shop performance factor over 1.0. At Pearl Harbor, this number was determined to be 653 hours. The total number of foremen (23) in the shop comprised 4 1/2 percent of the total shop work force. The foremen's share of the saved hours is then 29.38 hours ( $653 \times .045 = 29.38$ ). Each individual foreman's share is 1.278 saved hours ( $29.38 : 23 = 1.278$ ). The individual calculation for foremen, then, is: for each percentage point increase in the shop's performance factor, each foreman received credit for 1.278 saved hours. This amount is multiplied by 50 percent of his/her accelerated rate to reach the incentive award.

<sup>1</sup>In practice, Pearl Harbor Naval Shipyard compares hours expended and authorized over a 12-week period and divides by 3 to derive a monthly moving average. The 12-week period is used so that all charges associated with a key op could be reflected, e.g., late charges or new charges for reopened key ops. A second reason for using the 12-week performance period is that some key ops are more difficult than others. It is likely, however, that within 12 weeks a workgang would experience a mix of easier and more difficult key ops.

2 Finally, to also encourage work group performance under each foreman, foremen whose work group performance is above the shop average receive a larger incentive award than foremen whose performance is below the average. The actual increase and decrease in the award size for each one percent that the foreman receive above or below the average shop performance is five percent. For example, if the shop's performance level is 1.10 and the foreman's performance level is 1.12, the foreman's award would be about 10 percent above the average shop award.

(f) Payment Schedule. Although the performance period is 12 weeks, incentives are calculated and paid monthly to strengthen the relationship between performance and award. The monthly payment reflects the moving average in the 12-week period.

(g) Payment Mechanism. Award forms are submitted to the Incentive Awards group to authorize payment. The Comptroller makes the actual payment.

(h) Automated Data Assistance. All input data for the plan can be generated from current MIS files without the addition of new requirements.

#### E. IRS - DATA TRANSCRIBERS

IRS has implemented an Incentive Pay plan for data transcribers in 11 locations. Four of these were considered to be in a test mode from October 1982 through June 1983. Results from the test were to be evaluated by October 1983, along with recommendations concerning continued operation or implementation. A primary feature of the plan is a union and management committee which sets critical parameters of the plan and is charged with making periodic adjustments. IRS considers this bilateral involvement to be essential.

##### 1. IRS Data Transcribers' Incentive Plan: Dimensions

###### a. Plan Objective

The objective of the test was to determine if a monetary reward system which included the participation of IRS management, labor, and unions in the setting of targets for increasing quantity and quality of production would be effective in improving productivity within the service centers.

###### b. Focus

IRS's plan focuses on increasing individual output, while retaining quality, by encouraging increased operator machine usage.

###### c. Participants

Data transcribers.

###### d. Nature of Work

Data transcription.

e. Performance Measurement

- (1) Units. Keystrokes per hour for both original entry and key verification.
- (2) Standards. Three measures, set by the local committees, are used:
- (a) Base Rate. The average production rate or error rate over the prior year, together with relevant historical trends adjusted for procedural changes and systematic improvements.
- (b) Quantity Target. The production rate goal which an employee has to reach to earn incentive pay. The quantity target is set at a level above base where it is expected that approximately 70 percent of the employees will earn incentive pay. Adjustments are made periodically to the quantity targets if more than or less than 70 percent of the employees are reaching the quantity target.
- (c) Quality Target. The error rate goal an employee has to reach to earn incentive pay.

f. Incentives

- (1) Savings Distribution. Savings are distributed with 50 percent going to employees as awards and 50 percent retained by the organization.
- (2) Award Calculation. The award is computed by subtracting the incentive pay base from the employee's performance to determine the keystrokes saved per hour. This figure is multiplied by the hour worked on the program to determine the total number of keystrokes that the employee has saved during a bi-weekly period. The hours worked on a program include hours worked while being paid at an overtime rate of pay. Next the keystrokes saved are multiplied by one-half of the direct cost for that program during the prior calendar year. The same cost will be used regardless of the employee's grade level. This payout calculation is expressed as:

$$(\text{keystrokes increased over base}) \times (\text{hours worked}) \times (\text{center's direct cost}) \times 50 \text{ percent} = \text{award}$$

Award will only be made when the employee has achieved quality and quantity targets.

- (3) Payment Frequency. Payout distribution depends on the processing cycle of each center but usually occurs every two to four weeks.
- (4) Payment Mechanism. Incentive pay earned is distributed separately from payroll checks.
- (5) Automated Assistance. All information for the plan may be taken from each operator's machine statistics.

## F. IMPROSHARE

Improshare is a copyrighted group incentive plan developed by Mitchell Fein as an alternative to individual incentive plans. Improshare is taken from "improved productivity through sharing." Use of materials specific to Improshare require Mr. Fein's authorization.

1. Improshare: Dimensionsa. Objective

The objective of Improshare is "to produce more finished goods per hour of personal input."<sup>1</sup>

b. Focus

Improshare is a large group plan which measures productivity through quantity of finished goods output.

c. Nature of Work

Improshare has generally been installed in manufacturing organizations although Mr. Fein has commented that it can be tailored to any situation where output can be counted.<sup>2</sup>

d. Participants

"Improshare plans from 1974-1980 usually covered only hourly employees; occasionally, plant supervisors and some salaried were included. After 1980, almost all companies, union and nonunion, including hourly and salaried personnel, up to managers, excluding only those covered by a management bonus plan."<sup>3</sup> The reasoning is that productivity improvement should be a plant-wide activity.

e. Performance Measurement

(1) Units. Number of finished products that a work group produces.

(2) Standards. Under this plan, actual hours are compared to allowed hours to determine gains. Specifically, Improshare uses engineered labor standards, estimates, or historical data for a given period in time to formulate direct labor man-hours associated with unit of output. A base productivity factor (BPF) is then established which basically relates all labor to direct labor output.

<sup>1</sup>Carla, S. O'Dell Gainsharing: Involvement, Incentives, and Productivity, p. 44.

<sup>2</sup>Remark made at Third Annual Productivity Lecture Series sponsored by the Naval Material Command, Stouffers International Center, Crystal City, VA, March 17, 1983.

<sup>3</sup>Mitchell Fein, "Improved Productivity through Worker Involvement," Gainsharing: A Collection of Papers, Industrial Engineering and Management Press, 1983, pp. 72.

$$\text{Base Productivity Factor} = \frac{\text{Total Production and Nonproduction Hours}}{\text{Total Standard Value Hours}}$$

For example, in year X, a plant of 350 employees worked 2,000 hours each. Also in that year, the number of standard hours for direct labor associated with output was 367,500 hours. The base productivity factor is 1.904.<sup>1</sup>

$$\text{BPF} = \frac{350 \text{ employees} \times 2000 \text{ hours}}{367,500 \text{ standard hours}} = 1.904$$

(a) The BPF is critical in the Improshare calculations; it is the means of estimating how much total labor, direct, indirect, etc., has historically been associated with a unit or product. The BPF includes all worked hours and excludes holidays, vacation time, and nonworked time.

f. Savings Distribution. Gains are split 50/50 between employees and the organization.

g. Award Calculation. An example of the Improshare calculation is explained in Figure 4.2.<sup>2</sup>

(1) In the example given in Figure 4.2, the employee-hour standards also can be derived as follows:<sup>3</sup>

(a) Standard Costs: When standard costs are used, the accounting department invariably prepares a monthly transfer from work in process to finished goods, or to costs of goods sold, of all products that month. If the transfer is in dollars, divide the labor portion only by the average hourly rate of the employees' labor included in the transfer; this will give the standard hours transferred.

(b) Estimated Costs: If only estimated product cost data are available, this can be used. The data must be in hours, not dollars; if in dollars, divide the total direct labor cost by the average hourly rate as described above and calculate the hours total for each product. Multiply the total produced of each product by the respective product standard to obtain the total produced hours value of the completed production.

(2) If time standards already exist for each unit of product, then these may be used. Changes in the employee hour standard should only occur when new capital equipment or technology is introduced.

<sup>1</sup>Ibid., p. 116.

<sup>2</sup>Example taken from Carla O'Dell, Gainsharing: Involvement, Incentives, and Productivity, p. 45.

<sup>3</sup>Fein, op.cit., p. 115

Figure 4.2. Improshare Sample Calculation

Based on 60 production and 50 nonproduction employees working a 40-hour week:

$$\text{Employee-hour standards} = \frac{\text{Total production employee-hours}}{\text{Units produced}}$$

$$\text{Product A} = \frac{25 \times 40}{200} = 5 \text{ hours}$$

$$\text{Product B} = \frac{20 \times 40}{400} = 2 \text{ hours}$$

$$\text{Product C} = \frac{15 \times 40}{600} = 2 \text{ hours}$$

$$\text{Base productivity factor} = \frac{\text{Total production and nonprod. hours}}{\text{Total standard value (SV) hours}}$$

$$\text{Product A} = 5 \text{ hours} \times 200 \text{ units} = 1,000 \text{ SV hours}$$

$$\text{Product B} = 2 \text{ hours} \times 400 \text{ units} = 800 \text{ SV hours}$$

$$\text{Product C} = 1 \text{ hour} \times 600 \text{ units} = 600 \text{ SV hours}$$

$$\text{Total standard value hours} = 2,400$$

$$\text{BPF} = \frac{(60 + 50) \times 40}{2,400} = 4,400 = \frac{4,400}{2,400} + 1.833$$

**Bonus Calculation**

$$\text{Product A} = 5 \text{ hours} \times 400 \text{ units} \times 1.833 = 3,667$$

$$\text{Product B} = 2 \text{ hours} \times 300 \text{ units} \times 1.833 = 1,100$$

$$\text{Product C} = 1 \text{ hour} \times 400 \text{ units} \times 1.833 = 733$$

$$\text{Improshare hours} \quad \quad \quad 5,500$$

$$\text{Actual hours} \quad \quad \quad 4,400$$

$$\text{Earned hours} \quad \quad \quad 1,100$$

$$\text{Bonus hours x (50\%)} \quad \quad \quad 500$$

$$\text{Actual hours} \quad \quad \quad 4,400$$

$$\text{Bonus} = 12.5\% \text{ of earnings}$$

## (a) Other considerations related to the calculation:

1 The BPF is taken from a base period which in the organization's experience truly represents operating conditions. Once the BPF is set, it should not be changed in the future with very few exceptions.

2 Improshare gains are usually computed weekly, and incorporate a moving average to smooth out productivity gains and losses. Bonuses are paid weekly or monthly.

3 Individual awards are made by multiplying the employee's gross pay, excluding nonwork time pay (vacation, etc.) by the weekly bonus percent. Gross pay is computed at the employee's base rate including overtime.

4 Ceilings and "buy backs" of unit standards are used in Improshare. A ceiling is established on productivity gains. Gains in excess of the ceiling are moved to the next period. If productivity levels remain in excess of the ceiling for some specified period, a one-time buy back of the measurement standards may occur. In this instance, employees would receive a payment equal to 50 percent of the increase above the ceiling for a year. Standards would then be reduced by the percent above the ceiling which was bought back.

h. Payment Mechanisms and Automated Data Assistance. These dimensions would, of course, be organization-specific.

## G. SCANLON

1. The Scanlon plan is named for its developer, Joseph Scanlon. After Scanlon's death in 1956, the Scanlon program and concepts were further refined by Frederick Lesieur and Carl Frost.

a. Scanlon: Dimensions(1) Objective

To increase organizational productivity with a high degree of employee involvement.

(2) Focus

Scanlon is a large group plan which measures productivity by comparing actual required payroll dollars against a historically derived payroll allowance. Fundamental to the Scanlon plan is: (1) a philosophy which assumes that employees can, and under proper conditions will, want to make creative contributions to the efficiency of the workplace; (2) a structure which solicits workers' ideas; and (3) a system which rewards this support.

(a) The Scanlon philosophy, that employees can affect productivity significantly not only through level of work but also through their ideas for improved operating techniques, is operationalized through formal structures for employee participation. Groups of workers, often based on functional alignments, meet with supervisors regularly to discuss ways in which productivity can be enhanced. Generally, a formal suggestion system is incorporated as the vehicle for presenting improvements. Suggestions submitted by individual employees are taken up by that employee's group, and an appropriate course of action is determined for each suggestion. Should a suggestion potentially affect a group larger than the originating employee's unit, then that suggestion is passed on to a higher circle or committee. These groups also discuss operational problems outside of those affected by suggestions and act as conduits for relating organization-wide strategies, plans, and goals. In some organizations, goals are set by the group for the group's annual production level, and they determine appropriate supporting strategies.

(b) Generally, these circles or committees do not deal with such employee-related issues as pay and benefits.

(c) The potential for group bonus under Scanlon encourages increased productivity directly through employee participation and indirectly by increasing group coordination and cohesion.

### (3) Nature of Work

Scanlon has usually been applied in manufacturing or service operations.

### (4) Participants

Traditionally, a Scanlon plan provides group coverage for all or most employees (both direct and indirect labor, from the lowest-paid assembly workers through some or all management-level personnel in a location). The following cautions should be made concerning the unit to which the plan will be applied:

(a) The inclusion of workers under the plan should be drawn along meaningful lines. For example, at a given location, all workers in the same occupational category should normally be included in the same plan. It may, however, be reasonable to establish separate plans for each location. A related concern is the question of including management under the plan. Since no performance standards are required under Scanlon, an organization could cover persons such as managers or supervisors whose work is difficult to measure.

(b) The size of the work force covered under the Scanlon plan determines the amount and complexity of program administration necessary. A generally recommended size for a group<sup>1</sup> is one composed of 100 to 800 people.

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<sup>1</sup>Small Business Report, 1981

(c) Above all, it must be a meaningful economic unit for which data on costs and output can be developed.

(5) Performance Measurement

(a) Units. Total payroll is compared to net sales to measure productivity gains or losses under Scanlon.

(b) Standards. The ratio described above, that is:

$$\frac{\text{Payroll}}{\text{Net sales}}$$

is used as the Scanlon standard.

<sup>1</sup> Organizations study their historical accounting records to determine if some stable relationship exists between labor and sales. If such a relationship does exist, then a ratio for an average or representative period can be set. The ratio is then fixed for a specified period. Many organizations use a year. This ratio sets up the allowed amount of payroll as a function of net sales. If less payroll is used in a period, then a bonus has been earned. Installation of capital equipment, etc., should, if possible, occur at the end of a "Scanlon year" so that the ratio can be modified as necessary before a new cycle begins.

(6) Incentives

(a) Savings Distribution. The savings under Scanlon are usually shared with 75 percent going to the employees and 25 percent to the company. Most plans are also designed so that a percentage (usually 25 percent of the employees' share) is set aside to cover months in which required payroll exceeds the allowed payroll amount. Any funds remaining in the bonus pool at the end of the Scanlon year are distributed to the employees in a thirteenth bonus payment. Use of a reserve pool ensures that organizations only pay bonuses for net increases in productivity for the Scanlon year.

(b) Award Calculation. An example of the traditional Scanlon formula is given on the following pages. (See Figure 4.3 and 4.4).

<sup>1</sup> The bonus percentage is applied to each employee's wage. The ratio given on the following page is a "single ratio" and, as such, is the easiest to implement and understand. Split ratios are also used for situations where labor costs for different products vary widely. Under a split ratio computation, the sales value of production is computed for each product and added. Allowed payroll is calculated as a separate proportion for each product determined exactly like the single ratio. The allowed payroll for each product is summed; and from the sum, the total (all products) payroll is subtracted. The computation then continues as before, with the single ratio.

2 Multi-cost ratios also exist which, in addition to calculating allowed and actual payroll, also calculate all allowed and actual expenses. The multi-cost ratio technique, in essence, reflects total operating conditions because it incorporates all expenses, many over which the employees have absolutely no control, e.g., cost of supplies, energy, etc. But in another light, if employees can understand the computation, they will be more likely to have a deeper interest and tolerance for both internal and external circumstances affecting the productivity of the organization.

(c) Payment Schedule. Bonuses are usually calculated and paid monthly.

(d) Payment Mechanism and Automated Data Assistance. These dimensions are site specific.

Figure 4.3. Example of Traditional Scanlon Formula -  
Single Ratio Calculation

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Base Ratio Computation derived from historical data or projected performance:

$$\frac{\text{Total annual payroll}}{\text{Net sales}} = \frac{1,840,000}{9,200,000} = 20\%$$

Typical month's Scanlon calculations:

Net sales	\$800,000
Increase in inventory of finished goods	50,000
Value of production	<u>\$850,000</u>
Allowed payroll costs (20% of \$850,000)	\$170,000
Actual payroll	-145,000
Bonus pool	<u>\$ 25,000</u>
Company share (25%)	-6,250
Subtotal	<u>\$ 18,750</u>
Deficit reserve 25%	-4,688
Employee bonus pool	<u>\$ 14,062</u>
Bonus percent of actual payroll	9.7%

Figure 4.4. Example of Split Ratio Calculation

Sales	
Product A	\$400,000
Product B	400,000
	<u>\$800,000</u>
Increase in inventory of finished goods	
Product A	25,000
Product B	25,000
	<u>50,000</u>
Sales Value of production	850,000
Allowed payroll costs	
Product A (5%)	42,500
Product B (15%)	127,500
	<u>\$170,000</u>
Actual payroll	-145,000
Bonus pool	\$ 25,000
Company share (25%)	-6,250
	<u>\$ 18,750</u>
Deficit reserve (25%)	-4,688
Employee bonus pool	<u>\$ 14,062</u>
Bonus percentage	9.7%

## H. RUCKER PLAN

The Rucker Plan is a registered trademark. It was developed in the 1940s by Allen W. Rucker of the Eddy-Rucker-Nickels Company. The Rucker Plan is a group plan with calculations somewhat similar to those used in Scanlon. Many see the Rucker calculation, although more complicated, as a refinement to the Scanlon. This is because materials, supply costs, etc., "are subtracted" out of the calculation since these are factors over which the employees have no control.

### 1. Rucker: Dimensions

#### a. Objective

The objective of the Rucker Plan is to decrease labor in order to increase the value of what is produced.

#### b. Focus

The Rucker Plan is a group plan which measures productivity by comparing payroll to value added. "Value added by manufacture is the difference between sales income from goods produced and the costs of the materials, supplies, and outside services consumed in the production and delivery of that output."<sup>1</sup>

#### c. Nature of Work

The Rucker Plan has usually been applied in manufacturing operations.

#### d. Participants

The Rucker Plan is a group plan covering all employees except perhaps top management.

#### e. Performance Measurement

Key to the implementation of a Rucker plan is historical analysis of the organization's accounting data. Accounting data must be examined for at least two or three prior years to extract averaged figures for: (1) sales value of finished goods; (2) costs of raw materials, supplies, and services; and (3) payroll, including wages and fringe benefits for all employees. These data are then used as follows.

f. Units. The measure of productivity in Rucker is "value added." Value added is the difference between the sales value of finished goods and the cost of materials, supplies, and services used to produce the goods.

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<sup>1</sup>The Encyclopedia of Management, second edition, Carl, Heyel, Editor, Van Nostrand Reinhold Company, 1973, p. 895.

g. Standard. The "Rucker Standard" is shown below:

$$\text{Rucker Standard or Standard Labor} = \frac{\text{Payroll}}{\text{Cost productivity Value Added}}$$

The Rucker Standard is essentially the value added to a product for each dollar wage cost. The average payroll discerned from the historical accounting analysis is divided by the value added average to yield a proportion. This proportion is then used like the Scanlon ratio for allowed hours. The Rucker Standard is applied to the sales value of production, as in Scanlon, to determine an allowed labor cost for payroll. Actual labor costs are compared and bonuses determined.

h. Incentives

(1) Savings Distribution. The organization often gets one-third of the savings, while the other two-thirds is split 65/35, with 65 percent going to the employees and 35 percent set aside in a reserve to cover losses in months of low productivity. At the end of the year, the amount left in the reserve is divided between the employees and the company in a 2:1 ratio.<sup>1</sup> Some organizations share 50 percent/50 percent with a 20 percent reserve pool set up from the employees' share.

(2) Award Calculation. An example of the Rucker calculation is given in Figure 4.5.<sup>2</sup> This example uses the 50 percent/50 percent savings distribution.

(3) Payment Schedule. Rucker bonuses are usually paid monthly.

(4) Payment Mechanism and Automated Data Assistance. These two dimensions are, of course, site specific.

## I. SUMMARY

1. Table 4.2 summarizes some of the information given in this section by showing key differentiators of the basic methodologies: Standard Hour, Improshare, and Scanlon/Rucker. These differentiators are intended to emphasize what makes the methodologies substantively different in terms of the basic plan dimensions. Not all plan dimensions are listed as plan differentiators. In particular, the incentive dimensions and its features are omitted. Decisions about which plan type to choose for an activity should be made by considering the listed dimensions and not by referring to the more mechanical issues like how the calculations are made or whether or not reserve pools are used. These design features follow from a plan type once the appropriate plan has been selected.

<sup>1</sup>Bureau of National Affairs, "Incentive Pay Plans," Policy Guide, pp. 321: 101-152, 1980.

<sup>2</sup>Example taken from: Patrick C. Koelling and D. Scott Sink, "Productivity Gainsharing and Incentive Plans - A Current Review," Gainsharing: A Collection of Papers, Industrial Engineering and Management Press, 1983, p. 24.

Figure 4.5. Rucker Sample Calculation

1. Sales	\$1,800,000
2. Less returns, allowances	60,000
3. Net sales	\$1,740,000
4. Change in inventory	360,000
5. Value of production	\$2,100,000
6. Less materials and supplies	-950,000
Other outside purchases	-400,000
7. Non-labor costs	\$1,350,000
8. Value added	750,000
9. Allowed employee labor cost (Rucker Standard = 50.2%)	\$ 376,500
10. Actual labor cost	340,000
11. Bonus pool	\$ 36,500
12. Company's share	18,250
13. Employee's share	\$ 18,250
14. Bonus reserve = 20%	3,650
15. Immediate distribution	\$ 14,600
16. Participating payroll	220,000
17. Bonus percentage	6.6%

TABLE 4.2  
KEY DIFFERENTIATIONS FOR BASIC INCENTIVE METHODOLOGIES

<u>Objectives</u>	<u>Standard Hour</u>	<u>Improshare</u>	<u>Scanlon/Rucker</u>
1. <u>Objectives</u>			
A. Management and organization will support "working harder" objectives	X	X	
B. Management and organization will support "working smarter" objectives			X
2. <u>Nature of Work</u>			
A. Independent tasks	X	X	X
B. Interdependent tasks		X	X
3. <u>Participants</u>			
A. Individuals and Small work groups	X		
B. Large work groups and organizations		X	X
4. <u>Performance Measurement</u>			
A. Units			
1. Micro level by tasks and jobs	X	X	
2. Macro level by work centers and organizations		X	X
B. Standards			
1. Engineered	X	X	
2. Historical			X

2. The reader is reminded that these designs do not have to be taken in total. The plans presented in this guide are simply descriptions of existing predominant methodologies. They should not be viewed as placing limitations on custom-tailoring efforts or site-specific program designs.

3. We have tried to describe many features which can be used separately or in combination so that incentive plans can be made uniquely workable for your activity. Innovative thinking is, of course, encouraged.

4. In the next section, we describe a process for installing a PGS program. This process, even when meticulously conducted, cannot support a program design which does not accommodate the organizational realities of the implementing activity.

## CHAPTER 5

INSTALLING A PGS PROGRAM

1. Our description of the major PGS plan dimensions should have made clear that the implementation of an incentives program requires careful preparation of a site and continued monitoring of the program once it is in place. The activity must first select an appropriate plan type. Then it must ensure that adequate performance measures, standards, and controls are available. It must also expand current incentive mechanisms to accommodate the new plan. Finally, the activity's management and workers must be involved in the program's preparation to ensure that it is well integrated into the site and supported by the organization.

2. The installation of a PGS program is greatly facilitated through the utilization of an appropriate process which is clearly laid out ahead of time. Successful PGS programs which we have examined in both the public and private sectors have used such a process. We have broken out the process into two basic parts in order to present it here. The first part involves the participants and their roles in getting the necessary PGS program activities accomplished; it includes who should provide input to various program activities. The second part of the process involves the actual activities which must be performed. We have incorporated these activities under five steps which we have called: program planning, design, development, implementation, and evaluation. All the process activities are shown in Table 5.1, along with the pages where they are discussed. We have also provided page references to material in other sections which is directly related to each activity.

3. Before we discuss the structure and activities for installing a PGS program in a DoD activity, we would like to note that this section is geared to the reader who is considering actual implementation of a PGS program in his or her DoD facility. It is meant to provide this person with initial guidance in the requirements for systematically installing a successful PGS program. However, in order to actually install a program, it will be necessary to obtain more specific detailed information from Army, Navy, and Air Force points of contact at the headquarters level and in facilities where programs have already been successfully implemented. We list these points of contact at the end of Section 7 and in Appendix D.

## A. PARTICIPANTS

There are six participant entities, at a minimum, which must be integrated into the structure for installing an incentives program within a DoD activity. These entities are: program coordinator, steering committee, facility management, first level supervision, local union, and workers. In addition, there may be others outside of the activity which contribute to the program, including headquarters staff, experts in other activities, and consultants. However, most of their input will be channeled through the program coordinator or the steering committee.

TABLE 5.1

## PGS PROGRAM PHASES AND MAJOR ACTIVITIES

	References	
	Section 5	Other Sections
I. <u>Plan</u>		
A. Appoint on-site program coordinator	5-4, 5-8	
B. Establish framework for dealing with labor organizations	5-6, 5-8	
C. Select initial site candidates	5-8	3-4
D. Determine program objectives	5-9	3-1, 3-3
E. Establish steering committee	5-4, 5-9	
F. Review policy and guidance	5-9	Section 6
G. Formulate local policy	5-10	
H. Conduct feasibility study to select final site(s) and plan types	5-10	Section 4
I. Brief management and staff	5-5, 5-12	
II. <u>Design</u>		
A. Review program objectives	5-12	3-1, Section 4
B. Determine participants	5-12	3-5
C. Select work measurement units and standards	5-13	3-6
D. Establish work measurement controls	5-13	3-9
E. Establish incentive pay sharing features	5-13	3-12, Section 4
F. Design incentive pay distribution	5-14	3-13
G. Design performance feedback mechanisms	5-14	3-14
H. Define program evaluation criteria	5-15	3-1
I. Determine program schedule	5-15	

TABLE 5.1 (Continued)

	References	
	Section 5	Other Sections
J. Obtain design input from participant entities	5-16	3-3
K. Assign development responsibilities	5-17	
L. Define resource requirements	5-17	
M. Obtain design approvals	5-17	Section 6
<b>III. <u>Develop</u></b>		
A. Establish and validate standards from work measurement data	5-18	3-7, 3-8
B. Construct and install necessary work measurement, work reporting, and reward calculation mechanisms	5-18	3-13
C. Install incentive payout mechanisms	5-18	3-13
D. Prepare orientation and training materials	5-18	
<b>IV. <u>Implement</u></b>		
A. Hold briefings	5-19	
B. Provide training	5-19	
C. Conduct program trial run	5-20	3-9
D. Activate program	5-20	
E. Maintain program	5-20	
<b>V. <u>Evaluate</u></b>		
A. Measure results against objectives	5-20	
B. Determine impact upon participants	5-21	
C. Decide to terminate, modify, continue, or expand program	5-21	

## 1. Program Coordinator

Without exception, we found that in every DoD site where a PGS program has been successfully implemented, there existed an effective, dedicated program coordinator. This person has overall on-site responsibility for developing and introducing the program. In some of the DoD sites which we examined, the program coordinator has taken the PGS concept, sold it to the facility's management, labor organizations, and employee associations, molded it into an actual program, and implemented it. In other sites, the coordinator was selected by management to develop the program.

a. The demands made upon the program coordinator are extensive. This individual must spend considerable time and energy selling the program and coordinating plan design and installation activities. Therefore, the coordinator should be carefully selected and given sufficient work time to perform necessary program coordination functions. These responsibilities can rarely be assigned as peripheral job duties. Programs which we examined where this was the case encountered problems along the way and produced "burn out" symptoms on the part of the coordinators. The duties of the coordinator may require from 50 percent to 100 percent of the person's time especially during the initial design and development program phases.

b. The position which the coordinator formally occupies in the organization will vary from activity to activity. We found coordinators who were managers in the activity where the program was being installed, coordinators in the productivity unit of the activity, coordinators in the personnel office, coordinators in the Comptroller's shop, and military coordinators. Regardless of where they were located, the effective ones demonstrated a common commitment to and persistence in creating an effective program for their activity. The more time they had to devote to the program and the greater their influence in their organization, the more effective were their efforts.

## 2. Steering Committee

a. The coordinator must integrate the necessary resources from throughout his or her organization to design and develop the PGS program. These resources include expert input from different offices or divisions. Representatives from these units form a program steering committee directed by the coordinator. In DoD activities where PGS programs have been installed, members of this committee have typically included lead persons from personnel (e.g., incentives award and labor relations); work measurement or methods and standards; internal review; the local union officials; analysis and programming; finance and accounting; public relations; and other local areas with a role to play in ensuring successful completion of program requirements and maintaining program support.

b. The committee meets regularly to plan the program and assign responsibilities for developing specific design features. It then meets, as necessary, to review the program as it is being developed and implemented. The committee is also available to deal with problems or roadblocks as they occur along the way.

### 3. Facility Management

a. *Top management* support is obviously an essential ingredient for introducing any new program. However, because of its importance, it needs to be reemphasized here as a critical element in the PGS structure. This support must extend beyond verbal support to commitment of necessary monetary and staff resources for program development.

b. Management is likely to provide initial verbal support as a function of the productivity improvement objectives of a PGS program. However, the support necessary for adequate up-front resources frequently requires a fuller understanding of how a PGS program works. In several instances, we found that installation commanders had eagerly endorsed a program but then had failed to delegate authority to obtain resources or had simply added program coordination responsibilities to existing jobs. More substantial understanding and support from top management require initial education regarding the PGS program's performance measurement and incentive features. It is also important for the coordinator and other steering committee members to provide frequent updates to top management as the program is being developed. A top management representative should also sit on the steering committee.

### 4. First Level Supervision

a. The first level supervisors represent management to the workers in the activity center where the PGS program is being introduced. They have primary responsibility for monitoring performance and ensuring that accurate performance records are maintained once the program is implemented. They must also ensure that their subordinates are adequately trained to understand how the program works and that they are able to complete any new performance reports which the program requires. Therefore, the viability and success of the program rest heavily on how the supervisors satisfy their implementation responsibilities.

b. First level supervisors are generally brought into the PGS program installation process through representation on the coordination committee. In addition, formal training is provided dealing with major program features, as well as performance measurement and reporting requirements as they are developed. Some programs have included new management information systems which facilitate training reporting requirements and minimize the extent to which supervisors must devote time to the program once it is implemented.

c. In general, first level supervisors will support a PGS program to the extent that they see it is supported by their superiors and to the extent that it does not create significantly greater work for them in terms of monitoring and reporting workers' performance. The adequacy of their training and the opportunity they have to provide input during program design and development will also help to determine their support. Finally, as we noted earlier, additional support can be built in as a PGS program design feature by providing an incentive share for first level supervisors.

## 5. Local Union

a. Inadequate involvement of the union in the design and development of a PGS program can seriously affect the program's future. We know of three instances where programs were delayed or totally abandoned during their initial phases because of union concerns. In other instances, the unions were willing to go along with the program as an experiment for a trial period; however, they delayed their total support for the program until they saw how management actually implemented it.

b. Unions generally will support a PGS program which provides workers with an opportunity to earn additional money. However, at the same time, union representatives frequently express concerns about whether workers are provided with sufficient freedom of choice in deciding whether or not to participate in a group program. Some also express reservations regarding whether the organization will only raise performance standards under justifiable circumstances.

c. The most successful examples of PGS programs to date involving bargaining unit employees have been established through cooperative labor-management efforts that depart somewhat from the traditional collective bargaining process. The parties have worked closely in the planning, design, and implementation without strict reliance on formal negotiation tactics or inflexible schedules. In several situations, the parties have agreed to cooperative approaches which avoid negotiability disputes over questions of the extent of management rights. By providing union officials with an early and full opportunity to participate in program development, the parties have avoided disputes over such matters as management's right to establish performance standards and related issues such as savings share rates and payment mechanisms. What is clear is that meaningful labor organization participation is essential for smooth and effective functioning of any PGS program affecting unit employees. While it may be unrealistic to expect full union endorsement in all cases, management must at least obtain tacit acceptance by the unions and the employees they represent.

d. The extent of labor organization interest and participation will be influenced by various factors including the composition of the work force, extent of unit employee coverage, nature of the existing labor-management relationship, and the perceptions of the work force itself. Generally, there will be high levels of union interest in such PGS program matters as modifications of standards, savings distributions, procedures for resolving employee complaints, and sharing of information both during program implementation and future evaluation efforts.

## 6. Workers

a. Because the fundamental purpose of a PGS program is to improve worker performance through increased motivation, the workers who are targeted for participation must be provided with adequate opportunity to fully understand how the program operates. They should also be able to provide input to the steering committee as the program is designed and developed.

b. The opportunity to learn about the program comes in the form of initial orientation briefings from the program coordinator and first line supervisors when the program is being designed. These information exchange sessions are followed by detailed training sessions during the program development phase when workers are provided with instruction on how specific program mechanisms function and any changes in their work reporting requirements. Controls or safeguards to assure accurate reporting should also be emphasized. If there remain ways in which workers can misrepresent their work, they should be acknowledged and the implications of inaccurate reporting for program termination should be clearly stated. For example, in one DoD installation which we examined, the following types of reporting errors were presented to participants prior to program implementation:

- (1) Mischarging time
- (2) Authorizing work which is not necessary
- (3) Corner-cutting in completing authorized work by not adhering to existing technical requirements

c. Workers may make input to PGS program design and development through their local union representative on the steering committee. The union representative may meet periodically with the workers to inform them of progress during the program design and development phases and to obtain their input for the steering committee. Concurrently, first level supervisors may present their perspective on employee program reactions to the steering committee. If no union exists, then the workers may select their own representative to the steering committee and channel their input through this individual.

d. As we noted above, one major union concern regarding PGS programs is the degree to which they are voluntary. In one sense, they are completely voluntary, even when they are in place, since workers still have the option not to increase their productivity. However, particularly under a group plan, divisive worker conflict and competition may occur in a site where a significant percentage of workers do not support the program. Initially, therefore, workers should be given the opportunity to decide whether they want to participate in a PGS program once they clearly understand how it works. We recommend that a minimum of 75 percent of the work force which is targeted for participation should agree to the program ahead of time. However, the actual percentage should be decided locally in close cooperation with labor organizations representing elements of the work force to be included in the program. It should be emphasized that, in most cases, the work force will only be asked to decide if they wish to participate in an initial experimental PGS program which may last six months to a year. At the end of that time, management will evaluate the results of the program and decide whether or not to continue the program.

## B. ACTIVITIES

In preceding paragraphs, we described the functions performed by six participant entities during the installation of a PGS program. We covered the on-site program coordinator, the steering committee, management, first

level supervisors, the union, and the workers. Here, we will focus on the activities which the participants must carry out to ensure effective implementation of a PGS program. We will describe each phase below and indicate participant entities which have lead responsibilities for specific activities, where appropriate.

### 1. Plan Program

During the planning phase, the groundwork is laid for the incentive program. Sites are identified, an initial set of program objectives are established, and an appropriate plan type is selected. This phase provides an activity with an initial framework for custom-tailoring a plan type to meet site-specific requirements in subsequent program phases.

#### a. Appoint On-site Coordinator

Once an activity's management has made the initial decision to explore opportunities for installing a PGS program, the first step is to appoint a coordinator. This person should have some familiarity with how PGS plans operate. The individual selected should also have knowledge of the various sites being considered for the program if it is possible to make that determination at this point in time. In addition, as we noted earlier, the coordinator should be given sufficient work time to perform necessary PGS program activities and be in a position to obtain resources and get program requirements carried out.

#### b. Establish Framework for Dealing with Labor Organizations

The labor relations obligations and implications of the program should be considered at the outset of the planning phase. In order to conform to the emerging case law, the activity labor relations staff should be involved in the preliminary planning for the program. Affected labor organization officials should be contacted at an appropriate point in the planning phase to avoid later embarrassment or surprise which could result in grievances, charges, or other adversarial dealings. Procedures should be established which clearly define subsequent union involvement in the design and implementation of the program.

#### c. Select Initial Site Candidates

The first activity for the coordinator is to consider work sites for the program. This is an initial cut at site candidates and, therefore, it does not require a fine level of analysis. Questions which are asked at this stage include:

- (1) Would the workload support a PGS program as indicated by a current backlog and a likely continued overload?
- (2) Is there a real need to get more work out?
- (3) Do work measures exist which lend themselves to quantification? If not, can they be developed?

- (4) Is the work pace under the control of the workers?
- (5) Is the work performed by autonomous units? If not, can a larger group be considered which is autonomous?
- (6) Are first level supervisors and mid-level management likely to support the program?

d. Determine Program Objectives

The objectives should be specified for each site so that they address its particular productivity needs. Objectives should be clearly stated in measurable terms so that the impact of the program can be easily evaluated.

(1) One resource for objectives determination is the PWS requirement found in DoDI 5010.37 discussed earlier. This DoDI states that within each PWS, a performance requirement summary outlining all indicators, standards, and acceptable quality statements required of an activity be included. This PWS can then serve as program objectives for a PGS program.

(2) In addition, a range of specific program objectives which have been incorporated as part of DoD programs was described under "Distinguishing Plan Features" in the DoD program matrix in Appendix B. In general, the objectives have dealt with increasing productivity in order to reduce costs, improving efficiency and schedule adherence, and reducing work backlog.

e. Establish Steering Committee

The formation of the steering committee signals the start of the formal process to install a PGS program. The initial committee membership should include representatives of the activity's offices or divisions which have roles in carrying out the program. As we indicated earlier when describing its functions, the committee might include lead persons from personnel, methods and standards, internal review, analysis and programing, the local union, as well as a representative from upper-management and the program coordinator. At a later time, once the actual sites for the program have been determined, first level supervisors should be represented on the steering committee. Worker representatives may also be included at the discretion of management and the local union.

f. Review Policy and Guidance

In Section 6 of this Guide, we describe the relevant federal, DoD, and Service-specific policy and guidance material which sanctions PGS programs and provides guidelines for formal program requirements. This material should be covered by steering committee members at this time. In addition, they should thoroughly review this Guide and then discuss specific Army, Navy, or Air Force requirements and guidelines with their Service PGS program points of contact. They are listed in Section 7 and Appendix D.

g. Formulate Local Policy

(1) Using the available policy and guidance material as a frame of reference, the steering committee can draft local policy and administrative procedures to provide formal support and legitimation for a PGS program. This policy can set forth the roles and responsibilities of the steering committee, describe objectives of the program, and specify procedures which will be followed during subsequent program phases.

(2) Endorsement of this policy by the facility command establishes initial formal support for the program. It helps to ensure that adequate attention will be paid to the remaining program planning and designing activities. However, command endorsement does not signify acceptance of an actual implementation program. This step awaits the completion of the design phase when the formal program design is submitted by the steering committee to the facility command for approval.

h. Conduct Feasibility Study to Select Final Sites and Plan Types

(1) In certain cases, it may be unnecessary to conduct a detailed feasibility study. The initial site selection process which was engaged in above may have produced a site and accompanying plan type which the organization wishes to pursue. However, in other instances, there may be two or more candidates which emerge from the initial site selection process and which the organization may wish to try out a PGS program in the one most appropriate site. Moreover, there may be uncertainty as to which plan type is most suitable. In these cases, a more thorough feasibility study should be conducted at this stage in the planning phase. This analysis fulfills two purposes. First of all, the data which are collected can be used to assess site-specific characteristics which are likely to either help or hinder program implementation. This assessment should result in the final selection of a site or sites for the program. Secondly, the data assist in choosing an appropriate plan type for each site which has been selected. The steering committee must decide on the specific questions which it wants answered as part of the organizational analysis and the data which it will utilize to answer these questions.

(2) As general guidance, the characteristics which help or hinder program implementation can be broken out into two areas which include performance factors and organizational support. Questions which should be asked within each area include:

(a) Performance Factors

- 1 - Is performance under the control of workers so that their individual or group efforts can significantly affect productivity?
- 2 - Are performance measures and standards easy to obtain and monitor? Do these measures cover the majority of work performed by persons in the site, or are they representative of the output of the group?

- 3 - Can performance reporting accuracy be assured?
- 4 - Has productivity been consistent over time or is it subject to seasonal or random variations? To what extent are any variations a function of shifts in workload?
- 5 - Are all workers in the organization who have a significant impact on performance included in the site? If not, can they be easily included as participants in the program?

(b) Organizational Support

- 1 - Does top management have a history of support for productivity programs? Is it likely to pay more than lip service to such an effort by providing sufficient resources to install the program?
- 2 - Is top management trusted by the workers?
- 3 - Is the union likely to go along with a management-initiated change program?
- 4 - Is middle-level management likely to support the program?
- 5 - Will first level supervisors be committed to making the program function effectively?
- 6 - If similar programs have been introduced in the past, have the workers' experiences generally been positive?
- 7 - Do workers have positive attitudes toward their supervisor?
- 8 - Do workers have positive attitudes toward their work group?

(c) The questions listed above are not intended to cover all issues which may be addressed in order to determine the appropriateness of various sites for an incentives program. However, they indicate the range of performance factors and organizational support characteristics which can assist in site selection.

(d) Data to answer these questions can be collected through interviews with site supervisors and workers or questionnaires, if large numbers of persons are involved. Performance factors can be examined through systematic review of historical and current performance measurement data. In order to answer questions about appropriate generic plan types, emphasis should be placed on identifying the availability of the measures which the different plans call for.

(e) The second major purpose of the organizational diagnosis is to select an appropriate plan type for the chosen site or sites. The description of major plan types, provided in Section 4 of this Guide, can aid in the selection process. The determination of a generic plan type rests heavily on the units of measurement dimension. The level of aggregation of performance units determines whether an individual, group, or organization plan is appropriate. The content of performance unit output measures (e.g., production value or total standard hours produced) helps to establish the type of individual or group/organization plan. Additional guidance is provided by measures of organizational climate which indicate the extent to which management would support a "working smarter" plan. This type of plan (e.g., Scanlon) incorporates a structure which encourages group participation.

i. Brief Management and Staff

(1) Once the initial program site or sites have been selected and the general features of the PGS plan type have been determined, management should be briefed. They should be provided with clear program objectives and the rationale for site and plan selection. The design phase of the program should be described to them, accompanied by a schedule for its completion.

(2) The first level supervisors and workers in the selected sites should be given a preliminary briefing on the program. Representatives from among the first level supervisors are added to the steering committee at this time. Provisions should also be made to obtain input from the workers, either through their union representative or by selecting workers to serve on the committee. The steering committee is now set to begin work on the design phase of the program.

2. Design Program

a. In many ways, the design phase is the most critical step in the program process. During this phase, the PGS plan is custom-tailored into a site-specific PGS program. Decisions are made regarding all of the program features including various control mechanisms which affect how the program will actually operate. The specific activities included in this phase are described below.

(1) Review Program Objectives

The initial set of objectives was established during the planning phase. Now it is important for the expanded steering committee to review those objectives for the selected sites. The objectives should be considered within the context of the work unit output measures of the chosen plan types. The objectives should also be examined to ensure that they are stated as measurable program outcomes. In addition, there may be objectives to add to the list, particularly since first level supervisors and workers now have the opportunity to provide input.

(2) Determine Participants

Ideally, all workers who contribute either directly or indirectly to the productivity which is measured as part of the program should be

allowed to share in any incentive gains. Several of the generic plan types assure this participation as a design feature. Therefore, supervisors and support staff may be eligible to participate, along with direct labor workers. The earlier discussion of program participants ("Dimension 4" in Section 3) provides background for determining this design feature.

(3) Select Work Measurement Units and Standards

This selection was carried out initially during the site analyses. However, it may be necessary to ensure more thorough coverage of the work by designing additional unit measures. Moreover, requirements for reviewing and revising engineered standards or constructing historically based standards should be specified here so that adequate resources can be allocated to this activity in the development phase. As we have emphasized throughout this Guide, valid performance measurement units and standards are the keystone of a PGS program. Without them, the total system is compromised. Therefore, the selection of units and standards must be carefully thought out. (Measurement units and standards are discussed as program design features under "Dimension 5" in Section 3.)

(4) Establish Work Measurement Controls

(a) In our earlier discussion of controls as a design feature, we emphasized that such mechanisms should be used cautiously because of their potential for negatively influencing worker motivation. However, it was also acknowledged that controls may serve a useful function. This is particularly true in certain types of work settings where standards remain somewhat questionable after the program is installed or factors not directly related to worker motivation, such as capital investments in new equipment, affect productivity. Moreover, for certain plan types where "working smarter" innovations result in permanent methods changes, controls may be appropriate to establish a maximum time period when workers will be rewarded for related productivity improvements.

(b) If the steering committee decides to design controls into its PGS program, it must be certain to establish clear ground rules for when the controls will trigger actions leading to possible standards revisions or modified incentive awards. We have described work measurement control options and provided guidelines for establishing ground rules under "Dimension 5: Performance Measurement" (Section 3).

(5) Establish Incentive Pay Sharing Features

(a) Pay sharing features refer to how productivity savings will be shared between workers and the organization. Under "Savings Allocation" of Dimension 6, Section 3, we recommend that a 50-50 share rate be used. However, there is nothing magical about this amount other than its sense of equity. Individual shares may either be distributed according to hours worked on tasks eligible for incentive awards or based on an equitable sharing of incentive gains across all program participants. The basic formulas for calculating each worker's incentive share based on the share rate and the worker's contribution to productivity gains must also be established. (Formulas used in various plan types and programs are described in Section 4, Specific Plan Designs, and in the program matrices in Appendix B.)

(b) Finally, the schedule for payment distribution must be determined. As we indicated earlier, incentive shares should be distributed to eligible program participants as soon as possible after the qualifying work has been performed to ensure clear linkages between the reward and the related performance. This may result in incentive payments as often as every two weeks; however, once every month certainly is frequent enough to serve as a motivator. Some programs have also established minimum payments of \$10 to \$25 to reduce administrative costs. Workers only receive checks when their total incentive awards reach this amount. In addition, some programs distribute payments when workers request them rather than on an automatic basis. This often enables workers to accumulate larger amounts and obtain the total in one lump sum if they so desire.

(6) Design Incentive Pay Distribution Mechanisms

(a) These mechanisms involve the mechanics for determining worker eligibility for incentive awards, calculating the amount, and distributing the actual payments. Determining eligibility and calculating the amount is frequently handled through computer programs as part of an activity's management information system. Using such an automated system minimizes the burden placed on supervisors or staff to process this information. While the up-front costs to develop such a system may be substantial, they should be recovered once the PGS program is in place. These costs may be reduced by borrowing already developed programs from a similar facility, as we recommended earlier.

(b) Other mechanisms which need to be worked out include the physical processing of the paperwork through the activity's incentive awards unit and the actual distribution of the worker shares as a separate check or as part of the paycheck. Program coordinators in many of the DoD facilities which we visited mentioned the significant impact it made on the program participants when the first payout checks were distributed by the installation commander. This was a clearly visible sign of support for the program.

(7) Design Performance Feedback Mechanisms

(a) A central element in any PGS program is the performance feedback system which provides workers with information regarding how their performance has contributed to earned incentives. It is important to the effectiveness of the program that workers clearly understand how specific incentive amounts relate to their performance at various levels above standards. The performance feedback system should provide this information by clearly indicating the performance which qualifies for incentive payment and the corresponding incentive amount.

(b) The mechanisms themselves should consist of frequent notification of workers of their eligible performance and resulting incentive awards. Such feedback should be provided when actual incentive payments are distributed. In addition, more frequent feedback can help to reinforce the relationship between recent performance and resulting incentive awards. The feedback may take the form of a separate written notification provided to each worker or a posted listing for all workers which can be coded to ensure confidentiality. It may occur as often as daily or weekly, depending upon the

type of management information system which is available to track performance. However, frequent feedback should not be allowed to create an excessive administrative burden.

(8) Define Program Evaluation Criteria

(a) The primary criteria should be stated in terms of the measurable objectives which were established for the program. If these objectives were clearly stated, then the criteria should be easy to define.

(b) The steering committee may also wish to perform a cost-benefit analysis of the program as part of the evaluation. If so, it should setup a cost accounting system including program cost codes so that the data can be easily accessed later on.

(c) In preparing for a cost-benefit analysis, it is important to be able to separate out costs which are not directly attributable to the PGS program. For example, production delays caused by equipment failure or lack of parts should not be included as a program cost. On the other hand, program development and administrative requirements are appropriate costs which should be considered. These costs are compared with savings which may cover areas such as performance efficiency, manhours/production, leave usage, overtime expenditures, and defect rate/rework. The NPRDC has developed a framework for conducting cost-benefit analyses of PGS programs.<sup>1</sup> It is intended to be applicable to any program with certain modifications.

(d) It is also useful to examine the direct effects of the program on employee motivation and job satisfaction, since they contribute in many different ways to worker efficiency. For example, satisfied workers are less likely to be absent, thereby reducing the costs of hiring temporary employees to fill in. Measuring motivation and satisfaction usually requires a survey. The survey is administered prior to the start of the program and again after an established time period to determine any motivation and satisfaction changes which have occurred in the interim. The bottom line in program evaluation is to determine whether it produces outcomes which are mutually beneficial to the activity and the workers.

(9) Determine Program Schedule

(a) There are two parts to the program schedule which the steering committee needs to consider. The first part deals with the time requirements for developing the program design and for debugging it prior to the actual start of the program complete with incentive payouts. The second part addresses the length of time the program will run once activated.

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<sup>1</sup>Adam Gifford and Michael White, "Cost-Benefit Analysis of the Performance Contingent Award System at the Navy Air Rework Facility, Alameda: A Turnkey Plan," Technical Note, Navy Personnel Research and Development Center, San Diego, CA, Fall 1983.

(b) The time schedule for program start-up activities is contingent upon the extensiveness of the developmental requirements, particularly in the performance measurement and computer program areas. If substantial work is required to develop performance measures and standards or to write new computer software for the management information system, then the schedule may run from six months to a year. An adequate standards review is likely to last a minimum of six months by itself. Obviously, the start-up schedule can be shortened to the extent that the current performance measurement system is adequate and the PGS program elements can be transferred from other DoD activities.

(c) The second part of the schedule involves the time period when the program will run with full incentive payouts in effect. At one extreme, the schedule can be left open unless the program encounters serious difficulties. At the other extreme, a specific program termination date can be established. We recommend that the program be allowed to run for a minimum of a year in an experimental mode. At the end of that year, it should be evaluated and a decision made regarding its future.

(d) Some programs may have termination features built into their objectives. For example, if an objective is to eliminate a work backlog, then once the backlog is gone, the program is suspended. Other programs may require substantial periodic revisions. For example, private sector experience with programs where primary emphasis is placed on "working harder" has been that these programs eventually have to be replaced by programs with more emphasis on "working smarter." Therefore, it is wise to ensure that any PGS program continues to have built-in, periodic evaluations and contingency plans for program termination, continuation, or modification.

#### (10) Obtain Design Input from Participant Entities

(a) This activity should occur throughout the design process as the steering committee meets to discuss program requirements. It is singled out here as a separate activity to reinforce its importance. The committee needs to solicit frequent input from management, first level supervision, the union, and workers in the selected sites prior to making key design decisions. These groups should also be kept up-to-date on committee decisions as they are made.

(b) If worker participation is a design feature of the selected plan type, then the workers should also be involved in setting up the process which will be used once the program is implemented. This process will determine how the workers will work together to generate new ways of doing their jobs as part of a "working smarter" program.

(c) Where bargaining unit employees are involved, management must be careful to have a clear understanding with the affected labor organizations as to the procedures for soliciting employee input on PGS program issues that directly impact personnel policies, practices, and matters affecting working conditions.

(11) Assign Development Responsibilities

(a) Once the full custom-tailored program design has been constructed, responsibilities for developing the design must be assigned among steering committee members. In most instances, these responsibilities will be evident as a function of the specialty area represented by each member. For example, performance measurement design requirements are assigned to the methods and standards representative and management information system computer software requirements are assigned to the analysis and programming committee members. In other cases, special assignments may have to be made. For certain special requirements, it may be necessary to seek outside assistance from other activities, especially ones where programs have already been installed, or from consultants. The program coordinator has ultimate responsibility for ensuring that assignments are carried out in a timely manner which, again, emphasizes the importance of this position.

(12) Define Resource Requirements

(a) Program resource requirements may vary considerably from one site to the next. Internal staff resources which are required for specific program design and implementation activities can be projected based on the program schedule and assigned staff responsibilities. Other costs involve any external contract assistance which is needed for development of program requirements. In addition, projections of potential initial incentive payouts must be made and adequate funds must be budgeted for incentive awards to cover these projections.

(b) In DoD standard hour programs already implemented, the up-front resources have varied considerably. It should be emphasized that most of these programs have had substantial developmental requirements because they were initial prototype efforts. However, where programs have been transferred to other DoD facilities, the developmental costs have been considerably reduced. This has been demonstrated in the Navy's data transcriber program originally developed by the NPRDC and later transferred to at least eight facilities. Moreover, it may turn out that certain plan types are less costly to develop and install than others as DoD facilities gain more experience with different plans.

(13) Obtain Design Approvals

(a) Once all of the activities described above under the design phase are completed, their products should be incorporated into a final custom-tailored program design plan. The facility commander must be briefed on the plan. Once his or her approval is obtained, the plan should be submitted to offices designated by the appropriate Service for review and approval. (See Section 6 for Service-specific approval requirements.)

(b) The purpose of the upper-level approval chain is to assure that each program meets basic Service policy and procedural requirements for a PGS plan and to provide advice on features where there are potential problems. Presumably, the on-site coordinator will have been in close contact with plan experts in the upper-level offices throughout the design phase of the plan. Under these conditions, submission of the final plan basically should be a formality.

### 3. Develop Program

a. Once the program design plan has been approved, the development phase begins. During this phase of the program, the plan features and mechanisms are developed or refined as necessary in the targeted work site. All requirements for the ongoing PGS program are put into place within the context of the activities described below.

#### (1) Establish and Validate Standards from Work Measurement Data

(a) The work measurement units have been specified as part of the design plan. Now it is necessary to review and revise or "scrub" currently available standards as necessary. New standards may also be developed to include work not previously covered by standards. If historically-based standards are part of the plan, then a reliable and accurate data base and timeframe must be established. DoD's CATS system which is maintained by OSD may also provide input as benchmark reference standards.

(b) The activity's Comptroller shop would have lead responsibility for this activity. Methods and standards staff and facility accounting or internal review specialists would be included, as appropriate, based on the type of standards included in the plan design. A minimum of six months should be allocated to standards review and development. This activity can be conducted concurrently with other program development requirements.

#### (2) Construct and Install Necessary Work Measurement, Work Reporting, and Calculation Mechanisms

This activity entails the development of manual and automated performance data collection and analysis procedures called for in the plan design. These procedures may be incorporated in the site's management information or work reporting system or created as a separate support system. Lead responsibility rests with the local analysis and programming unit. As emphasized earlier, these mechanisms are designed to assure program integrity and to minimize any demands made of individual workers, supervisors, and staff to maintain the program once it is ongoing.

#### (3) Install Incentive Pay-Out Mechanisms

The actual procedures for making payouts to eligible workers must be put into place. This involves necessary paperwork, approvals, incentive check forms, accounting procedures, and schedules. The personnel office (incentive awards branch) and the Comptroller's shop (payroll) have primary responsibility for this activity.

#### (4) Prepare Orientation and Training Materials

(a) The necessary training for workers and supervisors participating in the program must be constructed. The training material covers all changes in reporting and operating procedures required once the program is implemented. Supervisory training is likely to focus on requirements for reporting and monitoring worker performance. If a new management information system has been installed, then training in its proper use must be included.

(b) Participants' training should cover any changes in work reporting requirements. Opportunities for misrepresenting reported work should be acknowledged along with safeguards and implications of inaccurate reports for program continuation. In addition, the training should include a thorough review of all program features with special emphasis placed on explaining any controls which are part of the design. If worker participation is a plan design feature, then how this participation will occur should be described. Finally, the program schedule and evaluation provisions should be laid out.

(c) The orientation and training materials preparation should be directed by the personnel office and local training staff. The PGS program coordinator should ensure that all appropriate input is made to the training developers by the staff responsible for other development activities such as the construction of work measurement and reporting mechanisms. Finalization of the training program must await the completion of these other activities.

#### 4. Implement Program

a. During this phase of the program, final preparations are made and the program is brought on-line. The steps listed below bring about this result.

##### (1) Hold Briefings

Upper and mid-level activity management are provided with full descriptions of the program in its final form by the program coordinator and other steering committee members. They are given an implementation schedule which is contingent upon a successful program trial run. Local union representations are provided with a similar briefing coordinated by their steering committee liaison.

##### (2) Provide Training

First level supervisors are provided classroom and on-the-job training addressing their program maintenance requirements. The training is provided by a training staff assisted by the program coordinator. The workers are provided training on their program responsibilities and reporting requirements. Their immediate supervisors should be actively involved in presenting this training.

##### (3) Conduct Program Trial Run

(a) The trial run involves implementing the program with all of its systems in place. By this time, all work measurement and incentive award mechanisms have been installed and all standards have been established. These mechanisms are activated for the trial run. The one exception is that program participants do not actually receive monetary incentives. Instead, they simply get feedback from their supervisors on their performance relative to baseline standards.

(b) The dry-run trial period should last a minimum of one month. During that time, the work measurement design features should be examined to assure that they are functioning as intended. Feedback should be obtained from workers and their supervisors to identify any problems they are having with the mechanisms. If any problems are uncovered, it may be necessary to extend the trial period in order to ensure that a fundamentally sound program is in place before monetary incentives are actually distributed.

(4) Activate Program

Once the steering committee is satisfied that the program mechanisms are fully in place and functioning appropriately, a date for formally activating the program is established. On that date, the only change from the dry-run condition is that performance gains above standard are then rewarded with incentive payments. It may still take until the first payments are actually distributed to eligible workers for them to fully accept the program's existence.

(5) Maintain and Fine Tune Program

(a) The ongoing program requires continued maintenance in the form of active monitoring and fine tuning of work reporting procedures and payout mechanisms to ensure their accuracy. Control mechanisms which are part of the design plan are also included in program maintenance and fine tuning. Moreover, sudden significant shifts in work assignments or the introduction of new equipment may require immediate modification of the work measurement units of standards.

(b) First level supervisors, the activity's internal review unit, and the program coordinator are likely to be involved in this activity. Methods and standards staff may also play a role if it is necessary to review performance standards under control mechanism program provisions.

5. Evaluate Program

a. The final activity involves evaluating the impact of the program. The evaluation consists of steps designed to examine short-term as well as long-term results.

(1) Measure Results Against Objectives

(a) At the completion of a predetermined time interval or experimental period, the program should be evaluated against its objectives as established in the design plan. The interval should be a minimum of six months after program activation in order to allow sufficient time for workers to adjust their performance levels to incentive conditions and to minimize any random productivity fluctuations beyond the workers' control. The evaluation measures operationalized in the program objectives are used to compare how well the work site is currently doing versus how well it was doing before the program was activated.

(b) PGS program objectives generally incorporate monetary savings as a primary outcome. Therefore, it is necessary to perform a cost-benefit analysis in order to establish program returns once developmental and administrative costs are factored out. This analysis determines current program savings.

(c) Cost-benefit analyses can also take into account projected savings over a period of time. This frequently provides a more appropriate context for considering start-up or developmental costs. While these costs may seem exorbitant relative to savings over a 6-month experimental period, they become much less of a significant factor when considered within the context of projected program savings over several years. For example, in one Navy program, the start-up costs were \$9,000. These costs were recovered within the 13-week initial program experimental phase. Projected savings amounted to \$271,000 over five years. In another program start-up costs were \$112,000. Based on short-term savings of \$36,000, the program break-even point was projected to be 17 months. The annual savings after breaking even was projected to be \$100,000.

(2) Determine Impact Upon Participants

(a) The views of workers and their supervisors toward the program should be examined through comparisons of survey data collected from them before program activation and in the current timeframe. In addition, they can be interviewed to obtain greater insight into their reasons for liking or disliking the program.

(b) Obtaining information from program participants is not only useful in evaluating the impact of the program so far, it can also provide indications of how the program will do in the future. For example, if a majority of workers state that they are currently straining to perform at their peak levels to make the experiment work but feel that they can't or won't continue at these levels, future program modifications should be considered by the steering committee. The participants themselves may, in fact, suggest certain modifications during the interviews.

(3) Decide to Terminate, Revise, Continue, or Expand Program

(a) Once a program has been evaluated, management must decide its future status, incorporating recommendations from the steering committee. Each Service, as well as each installation commander, is likely to place different weights on specific program evaluation factors in making this decision.

(b) If the evaluation results are extremely negative, the decision may be to terminate the program. In such a case, participants should be informed immediately by their supervisors and the program coordinator. They should be given a complete explanation of the basis for the decision, referring to specific program objectives which were not achieved.

(c) If the evaluation results are not convincing, either in a negative or a positive direction, then the decision may be to continue the program for another 6-month experimental period followed by another evaluation. There may also be revisions made to the program at this point based on suggestions from the steering committee and participants.

(d) Finally, positive evaluation results may lead to a decision to continue the program as long as it meets its objectives. However, this decision should not result in a total institutionalization of the program in its current form. Worker motivation is not a constant; a wide range of work-related factors combine to determine motivation at any given point in time and these factors change. Therefore, monetary incentives may assume greater or lesser importance to workers. For example, workers may simply become tired of the program and the high productivity levels which are required. There should continue to be evaluation contingencies built into the program to address possible changes in worker motivation or the work situation.

(e) As a consequence of a negative evaluation, a number of options present themselves in addition to program termination. The program might be modified to redirect its motivational target. For example, a "working harder" program is turned into a "working smarter" program. The program might change its incentives focus to include nonmonetary as well as monetary provisions. Or the program might be terminated, while at the same time another type of worker motivation program is initiated. For example, a PGS program might be followed by a job enrichment program.

(f) Positive evaluation results may also lead to program expansion into other sites. A program expansion should entail reduced start-up costs because of the opportunity to transfer already developed and tested design mechanisms. It is necessary to consider the characteristics of the contemplated new site to ensure its similarity to sites with successful programs. Once this is determined and it is also established that the PGS program will not conflict with any ongoing programs, it can be introduced into the new site.

(g) We should also note that the presence of other worker motivation programs does not necessarily mean that a PGS program is inappropriate. These other programs may be geared to a different motivation target. For example, while a PGS program focuses directly on increasing worker motivation to perform at higher levels, another program may target reducing sick leave, using belt buckles or special hats as incentives. Or while a group PGS program focuses on increasing productivity of a group or a total organization, other incentive programs may continue to reward selected superior individual worker performance. In addition, as we noted earlier, while a PGS program focuses on improving productivity through extrinsic motivation (money is external to the job itself), other motivation programs focus on intrinsic job motivation (e.g., enriching the job by making it more interesting or challenging). These two motivation programs are not necessarily in conflict and can be combined to improve productivity to a greater extent than either program could do alone.

### C. CONCLUSIONS

In this section of the Guide, we have described a process for installing a PGS program. The description is intended to provide the reader with an overview of key participants in the process and many of the activities which they should perform in order to install a program. We do not mean to imply that a program will be unsuccessful if this process is not followed completely. In fact, we may have omitted certain critical requirements for specific types of DoD activities and work sites. Rather, we have simply tried to present a description of the roles and responsibilities which we have found to characterize successful DoD programs in one form or another. We also discovered that the absence of clear-cut roles and responsibilities in many of these activities hindered the program implementation process. However, the final program installation process for your activity will certainly assume its own unique identity.

## CHAPTER 6

OVERVIEW AND HIGHLIGHTS OF PERTINENT POLICY,  
GUIDANCE, AND APPROVAL REQUIREMENTS

This section describes existing policy and guidance pertinent to PGS programs. The policy and guidance discussed here is from the federal, OSD, and Service-specific levels. Because these types of programs are relatively new to the federal sector, the federal and OSD policies have not yet been explicitly formulated. For the same reason, Service-specific policy varies considerably in level of detail.

## A. POLICY

1. Federal Policy

a. As mentioned in the introduction, the authority for these types of programs is found in Title 5 USC 4503 and two Comptroller General decisions. Chapter 45 of Title 5 USC 4503 is the legal basis for the Government Employees' Incentive Awards Program:

The head of an agency may pay a cash award to, and incur necessary expense for, the honorary recognition of an employee who--(1) by his suggestion, invention, superior accomplishment, or by other personal effort, contributed to the efficiency, economy, or other improvement of government operations....[5 USC 4503]

b. Two Comptroller General decisions, both under B-128082, approved monetary incentive awards based on achieving fixed production standards. These decisions are dated August 14, 1956, and July 15, 1969, and are given, in part, in Figures 6.1 and 6.2.

c. Chapter 451 of the Federal Personnel Manual gives policy and guidance for incentive awards. Subchapter 6 speaks to monetary recognition for performance but does not directly address PGS programs of the type described in this Guide. One paragraph, 6-3(3)c, does, however, permit agencies to develop special plans to accommodate specific needs. In a General Accounting Office (GAO) report,<sup>1</sup> entitled Ways to Improve Federal Management and Use of Productivity Based Reward Systems, PGS type programs were discussed and their use encouraged. The findings of GAO's report are summarized below:

(1) Productivity based reward systems have had positive effects on productivity in certain work situations, and there seems to be potential for greater use of the concept in the federal government.

(2) Current OPM guidance on incentive awards for federal employees does not adequately cover productivity based reward systems.

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<sup>1</sup>Report information: FPCD-81-24, dated December 31, 1980.

Figure 6.1. Extraction from Comptroller General Decision  
B-128082 of July 15, 1969

PRODUCTION INCENTIVES

We refer to your letter of June 6, 1969, requesting a decision concerning the legality of a proposal made by the Department of the Navy for the establishment of an incentive awards program for keypunch operators of the Department of the Navy. A copy of such proposal was transmitted here with your letter.

Briefly, the plan would provide for quarterly monetary awards for keypunch operators whose production substantially exceeds production standards established for each such job by the Department of the Navy. The Department explains the plan as follows:

Briefly, this plan calls for each job to be evaluated on its own merits as to level of difficulty, number of columns punched or verified, and the normal production expectations. This is done by line supervision so that regardless of who performs the job, the same standard applies. The employee's time on the job is recorded by the supervisor and his production is counted by machine. Each is then fed into the reporting system.

3. SPCC feels that it now has a basis for incentive awards for productivity which would provide:

a. Monetary awards based on the following table:

<u>Quarterly Production Rate</u>	<u>Quarterly Monetary Award</u>
115-124%	\$15
125-134%	\$20
135-144%	\$25
145-154%	\$30
155-164%	\$35
165-174%	\$40
175-184%	\$45
185-up	\$50

b. A standard which will qualify approximately 25 percent of the operators for awards, with a system to review the plan should the percentage qualifying deviate significantly from this goal.

c. That in order to qualify for an award an operator must be satisfactory in all phases of performance and conduct, and must have worked a minimum of 350 hours of measured production during the quarter for which the award is recommended.

Figure 6.1. (Continued)

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5 USC 4503 is in part as follows:

The head of an agency may pay a cash award to, and incur necessary expense for the honorary recognition of, an employee who--

(1) by his suggestion, invention, superior accomplishment, or other personal effort contributes to the efficiency, economy, or other improvement of Government operations.

The regulations of the Civil Service Commission (see section 451.101) are in part as follows:

The Government Employees' Incentive Awards Program is established to improve Government operations and to recognize civilian employees by incentive awards. Awards under this program are designed to:

(a) Encourage employees to participate in improving the efficiency and economy of Government operations;

(b) Recognize and reward employees, individually or in groups, for their suggestions, inventions, superior accomplishments, or other personal efforts that contribute to efficiency, economy; or other improvements in Government operations....

As pointed out in your letter, in our decision of August 14, 1956, B-128082, we found no legal objection to a similar incentive awards plan to be used in a pilot study to be conducted by the Bureau of the Census. In line with that decision, we see no legal basis for questioning the plan proposed by the Department of the Navy so long as there is reasonable adherence to paragraph 3B of the Department's letter of February 14, 1969.

Figure 6.2. Extraction from Comptroller General Decision  
B-128082 of August 14, 1956

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Reference is made to your letter of July 25, 1956, relative to certain proposed changes in your regulations and instructions issued pursuant to the Government Employees' Incentive Awards Act, 68 Stat. 112, which authorizes the establishment of departmental incentive award programs. You requested a decision on the legality of the proposed changes prior to instituting a pilot study to determine their effectiveness.

You say that while the present pattern of cash and honorary awards appears to be working well from an overall point of view, you find that it is quite inadequate for those persons who are on measurable production jobs. These are jobs for which specific standards of performance can be established, which result in a measurable output and which are man paced not machine paced. Such positions as card punch operator and drill press operator fall in this category.

This Commission has established a scale of cash awards for tangible benefits (Section 32.302 of the Incentive Awards Regulations). In the case of superior performance, the tangible benefits are based on the labor savings resulting from performance above the expected level (or the standard). Under this scale and present instructions a GS-2 card punch operator who produces a 25 percent over standard for six months and thereby saves the Government \$370 would receive, at the end of the six month period, a \$20 award. You say that the size of this award in relation to the lengthy sustained effort required to produce these benefits for the Government has little incentive value either for the employee who performed in this manner or to motivate other employees to improve their performance.

Under the proposed changes in your regulations and instructions, agencies would shorten the period for a sustained superior performance award for production workers to three months instead of six or twelve months as is now followed. In addition, an awards scale which would provide for larger awards in relation to benefits would be established. For example, a GS-2 card punch operator who produces 24 to 33 percent over standard for three months and thereby saves the Government \$235 would receive a \$30 award; such an operator producing 45 to 55 percent over standard, thereby saving the Government \$420, would receive a \$120 award; and an operator producing more than 75 percent over standard, thereby saving the Government \$700, would receive a \$280 award.

Since the proposed changes in your regulations and instructions would appear to contemplate the payment of "cash awards to...employees of the Government who by their...superior accomplishments...contribute to the efficiency, economy, or other improvement of Government operations" within the meaning of section 304 of the act, we perceive no legal objections thereto.

(3) Some ongoing federal agency initiatives do not include key features of well-designed productivity based reward systems, while others include features or have had experience that could be helpful to the design and operation of other agencies' systems.

d. GAO acknowledged that there are "no fixed rules" for establishing these types of programs but did recommend the following principles:

(1) Performance should be judged by objective, measurable production standards that include all important aspects of the job.

(2) The reward effort should be of value to the employee and be significant enough to stimulate effort.

(3) The connection between exceeding the production standard and receiving the reward should be clear, and the employees should understand the plan.

(4) The plan must be accepted by employees and fairly applied by management

## 2. OSD Guidance

OSD policy, like federal policy, does not explicitly set out guidance for PGS programs. Productivity gain sharing programs (called productivity based incentive systems) in the DoDI 5010.37 are referred to, however, in the context of management actions which could further the efficiency of an organization. Implicit tie-ins between this DoDI and PGS design are given in Section 3. Indirect policy is given in DoDI 5120.16 and in DoDI 5010.34. The subject of DoDI 5120.16 is "Department of Defense Incentive Awards Program: Policies and Standards." This DoDI basically restates Chapter 451 of the Federal Personnel Manual and adds certain DoD-specific awards. DoDI 5010.34, "Productivity Enhancement, Measurement, and Evaluation - Operating Guidelines and Reporting Guidelines," sets out four basic ways to increase productivity. One of these four ways is through motivation, a category clearly addressed by PGS programs.

## 3. Service-Specific Guidance

### a. Navy

Navy's Incentive Awards Program is given in Civilian Personnel Instruction (CPI) 451, which basically supplements Chapter 451 of the Federal Personnel Manual. Appendix F to CPI 451 does, however, directly concern PGS type programs. In this appendix, these programs are called Productivity Improvement Award Plans (PIAP). This appendix is given in Figure 6.3. Approval requirements are stated in paragraph E.

### b. Army

At the time this Guide was prepared, the Army had no specific policy for their PGS programs at the regulation level. Approval requirements had not been stated either.

Figure 6.3. PIAPs

APPENDIX F - PIAPs

A. Background. An activity may develop and implement a PIAP as part of its Incentive Awards Program in order to recognize employees who increase productivity. PIAPs should be developed by in-house or outside professionals who are trained in the analysis and interpretation of productivity data. Employee input, including input from labor unions representing affected employees, should be solicited.

B. Employee Eligibility. Employees who meet the definition in II.B. who are covered by an approved PIAP are eligible for awards. Employees should be in job situations where:

1. The work can be measured objectively.
2. Valid performance standards can be developed.
3. The performance is tied directly to a specific individual or group.
4. The work is recurring in nature.
5. The pace of the work is controlled by the individual.

C. Award Requirements. Employees must exceed the stated performance standards to the degree specified in the plan. If cash awards are given they should be a share of the savings generated when measured output exceeds established performance norms or standards. The maximum sharing rate will be no more than 50 percent of the savings. Payment shall take place as soon after the increased productivity occurs as is administratively possible so that the plan serves as a motivating factor.

D. Form of Award. Plans may provide for cash awards, honorary awards, excused time off, special parking places or other privileges, etc. The recognition must be significant enough to be motivating to workers.

E. Approval Level.

1. The authority to approve PIAP is delegated to the Assistant Vice Chief of Naval Operations/Director of Naval Administration (OP-09B) for those activities reporting directly to the Chief of Naval Operations (CNO); all Echelon II commanders (major claimants) under CNO; and the Chief of Naval Material. Plans will be in writing, will provide for maintenance of records on tangible and intangible costs and benefits, and will provide for periodic evaluation of the plan's effectiveness. A copy of each approved plan will be furnished to the Department of the Navy Incentive Awards Administrator (OP-143C21). Approved plans for Marine Corps activities will be furnished to the Commandant of the Marine Corps (MPC-35).

2. Once the plan is approved, individual awards will be approved in accordance with the PIAP and the activity incentive awards plans.

c. Air Force

(1) The Air Force's omnibus productivity regulation is AFR 25-3. This regulation sets out the basic Air Force productivity program and in Section 4.r. encourages the use of incentives:

...Use available incentives as much as possible and, when necessary, develop additional organizational and individual incentives to elicit participation and reward successful efforts...

(2) AFR 40-451, 9 September 1983 speaks directly to PGS type programs which are called Productivity Cash Incentive Programs (PCIP) in the Air Force. This guidance, which includes approval requirements, is shown in Figure 6.4.

B. DoD-SPECIFIC DESIGN CONSIDERATIONS

1. Below, certain design restrictions or recommendations are explained. These items are based on informal policy guidance provided by specific OSD offices and on the advice of the Guide Steering Committee Service representatives.

a. Base Rate

The base rate from which savings should be calculated or bonus percentages applied should be the direct labor rate of an employee for individually oriented plans or the group's average direct labor rate if group calculations are required. Neither accelerated rates (wages plus fringe and/or proportional overhead), nor composite facility charge rates, should be used as base rates. This is because costs incurred in the acceleration or some of the costs within the composite charge are fixed and, therefore, not affected by direct labor savings.

b. Sharing Rate

It is recommended that savings shared with employees be not more than 50 percent of the actual savings.

c. Use of Installation Savings

(1) Guidance provided in DoDD 5010.31, "DoD Productivity Program," states that, "savings should be reutilized at the lowest organizational level practical to provide an incentive for management." In consonance with this guidance, DoD Components should structure their gain sharing programs policies to permit the installation's share of the savings to be reutilized at the installation level.

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<sup>1</sup>Recommendation from OSD Comptroller's office, Nelson Toye.

Figure 6.4 Extraction from AFR 40-451, 9 September 1983

15. Productivity Cash Incentive Program (PCIP). Overall requirements and guidance for Air Force productivity programs are set forth in AFR 25-3, Air Force Productivity Enhancement Program (PEP). In accordance with that program, FPM Chapter 451, Subchapter 6, and this regulation, activities are encouraged to establish unique productivity cash incentive programs (PCIP). According to FPM Chapter 451, 6c, an activity may contact the Office of Personnel Management (OPM) for help in designing and implementing a PCIP. In addition, HQ USAF/MPKE may be contacted for advice and information regarding such programs. The following requirements and guidance apply:

a. A PCIP should be limited to production type jobs where:

- (1) The work is recurring and the tasks are repetitive.
- (2) The work can be simply and objectively measured.
- (3) Performance can be tied directly to a specific employee or group of employees.
- (4) The work pace is controlled by the employees.

b. A PCIP must be designed to augment or work in conjunction with, and not replace or be overly redundant with Job Performance Appraisal System (JPAS) work plans set up according to AFR 40-452.

c. The cash award must be sufficient for the effort expended, based on savings to the Air Force, set in advance and automatically earned if prescribed standards are met, and should be paid promptly after it is earned. The PCIP cash award amounts may be set up independently of the award scales contained in attachment 4.

d. Employee participation will be voluntary. Collective bargaining with recognized labor organizations will be accomplished as required.

e. All applicable requirements of AFR 25-3 must be complied with.

f. HQ USAF/MPKE must approve each PCIP before implementation. PCIP plans and documents will be sent to HQ USAF/MPKE, Washington, DC 20330 at least 90 days in advance of the desired implementation date.

(2) It is not the intent of this guideline to provide a definitive use of these savings, but only to offer a list of some of the uses suggested during the development period. The suggested uses are:

(a) Employee training - This may be retraining for employees displaced by enhanced operating capability or training for new jobs or to create a new capability.

(b) Lower prices to customers - This may involve either refunding a share of the installation's savings to the customer, estimating costs so that a lower price will be charged, or accomplishing additional workload at a fixed price. Where industrially funded operations are involved this may be accomplished by including the anticipated shared value as a part of the annual stabilized rate or a part of the future reapplication of excess funds in the next budgeting cycle.

(c) Quality Work Life (QWL) projects - Projects such as new recreational facilities or refurbishment of existing employee facilities are some potential uses of the installation's share which will benefit all employees.

(d) Productivity Enhancing Capital Investment - The installation's share may also be used a means of funding productivity enhancing projects.

(3) Use of the installation's savings to benefit the total installation's work force and the customer of the service are encouraged as a means of obtaining additional involvement in and support of the PGS program. In determining what uses will be made of the installation's share, caution should be exercised to assure that their application is consistent with existing accounting and fund management policies and guidelines.

## 2. Unfunded Work

a. Unfunded work has been reported as a troublesome item for incentive calculations. At times, work of a priority nature comes into an activity before charge codes have been established. The work must be done, but Comptroller policies require that all work be charged to a valid code.

b. Options which have been suggested to work with this problem are as follows:

(1) Establishment of a special code to identify hours worked on unfunded projects.

(2) Noninclusion of hours worked on unfunded projects in the calculation for incentive pay.

(3) Establishment of a reserve pool (from the installation's share) for payment of a guaranteed differential for persons assigned to unfunded work.

(4) Exploration of means for monetary recognition for hours expended on unfunded work through standard incentive award mechanisms.

## CHAPTER 7

FIRST STEPS TO TAKE AND CONTACTS TO MAKE

In this Guide, we have attempted to provide you with a basic understanding of how various types of PGS plans work and how they can be applied in DoD civilian work settings. By this time, it should be clear that the actual implementation of a program in your DoD installation will involve custom-tailoring plan features to meet unique local requirements. Assuming that you are interested in continuing to explore possible installation of a PGS program, we recommend several alternative courses of action which you may pursue next.

A. DETERMINE LOCAL SUPPORT AND EXPLORE POTENTIAL SITES

You may begin by "testing the waters" in your installation to determine support for a PGS type of program. At the same time, it is helpful if you can identify local activities where a PGS program would be likely to have an impact. Use the initial site selection feasibility questions listed on page 5-11 as guidelines. Develop several program objectives for sites you have identified. Then, when discussing possible introduction of a PGS program with management and staff, you can refer to concrete examples as well as solicit additional input on likely site candidates. If these activities are successful, they may lead directly into the program planning phase of the installation process.

B. REVIEW PRIMARY REFERENCE MATERIAL

You may wish to read more about specific plan types or DoD programs. There is a substantial volume of material available for you to review. We have included most of this literature in the bibliography. In addition, we have referenced available documentation on each specific DoD program, along with site points of contact, in Appendix D. We recommend that you start with the following sources:

1. Gainsharing - A Collection of Papers

(Industrial Engineering and Management Press, Institute of Industrial Engineers, 25 Technology Park, Atlanta, Norcross, Georgia 30093)

This volume includes a collection of papers presented at the Institute of Industrial Engineers Conference during 1981-1982. The presenters are practitioners who discuss the basics of gain sharing and gain sharing techniques.

2. Gainsharing - Involvement, Incentives, and Productivity by Carla S. O'Dell (American Management Association Management Briefing)

Ms. O'Dell provides a detailed description of the Scanlon, Rucker, and Improshare plans with practical examples of each one.

3. "Productivity Sharing Programs: Can They Contribute to Productivity Improvement?"

(U.S. General Accounting Office, Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, MD 20760 - Reference AFMD-81-22, March 1981)

The staff of the U.S. General Accounting Office report on a study of the impact of productivity sharing programs. They conclude that these programs can increase employees motivation and improve productivity at the firm level.

4. "Ways to Improve Federal Management and Use of Productivity Based Reward System"

(U.S. General Accounting Office - Reference FPCD-81-24, December 1980)

This report describes recommendations made by the General Accounting Office to the Office of Personnel Management to stimulate increased usage of appropriate productivity based reward systems.

5. "Proceedings of the Functional Workshop: Productivity Improvement Through Incentives"

(Headquarters, Naval Material Command, Office of Productivity Management, Washington, DC 20360)

This workshop, co-sponsored by the Naval Material Command and the Office of Personnel Management in January 1982, consisted of presentations by on-site program coordinators in Naval Material Command, Office of Personnel Management, and Internal Revenue Service installations. They described plan design issues and implementation strategies.

6. "Performance Contingent Monetary Rewards for Individual Productivity: Principles and Applications"

(Navy Personnel Research and Development Center, San Diego, CA 92152 - Reference NPRDC TN 81-14, May 1981)

This report provides a detailed description of the Performance Contingent Reward System developed by the Navy Personnel Research and Development Center for application in Naval Material Command civilian installations.

7. "Productivity Gain Sharing"

(Department of the Army, Headquarters U.S. Army Depot System Command, Chambersburg, PA 17201 - Reference DESCOM Circular No. 5-82-1)

This circular provides the general policy and guidelines used in the AMC as part of their pilot test of the PGS concept at selected depots. These tests occurred during FY 82-83.

### C. CONTRACT SERVICE-SPECIFIC PGS REPRESENTATIVE

1. You should get in touch with your Service headquarters point-of-contact for PGS programs as soon as you wish. This individual has extensive knowledge of PGS plan types and ongoing programs in your Service. He can be of assistance to you in the following areas:

a. Answering any basic questions you may have regarding the program installation process.

b. Delineating Service-specific PGS installation, approval, and reporting requirements.

c. Identifying sources of staff expertise for plan design issues.

d. Referring you to appropriate liaison points of contact in your command structure.

e. Describing recent in-Service PGS program activities.

f. Recommending recent write-ups or documentations of PGS programs for your review.

g. Suggesting points of contact in other similar installations with relevant hands-on program implementation experience.

2. Current principal PGS representatives for OSD and each Service are given in Table 7.1.

3. In addition to these points of contact, you may wish to discuss PGS program issues with certain of the current on-site program coordinators or points of contact who provided input to this Guide. They are listed in Appendix D. In addition, Appendix D provides relevant reference material for each program site.

### D. USING THE GUIDE

1. As you begin the process of planning a PGS program for your site, use this Guide as a basic reference to help anticipate issues and problems which are likely to arise, to help explain how and why PGS programs work to other personnel, and to find out where to go for assistance when specific plan design requirements which are unique to your activity need to be developed.

2. The Guide will not provide you with all of the answers to your questions. However, it should help you to ask the right questions of the right people. It should also provide you with a basic PGS framework for selecting and installing an effective program. From there, you can take the steps which are necessary to structure a PGS program which best meet your activity's unique objectives and requirements.

TABLE 7.1  
POINTS OF CONTACT

OSD

Anthony L. DeMarco  
Defense Productivity Program Office  
Two Skyline Place, Room 1404  
5203 Leesburg Pike  
Falls Church, VA 22401-3466  
(703) 756-2347

Services

Army:

Thomas Siciliano  
Headquarters, Office U.S. Army Materiel Command  
5001 Eisenhower Avenue  
Alexandria, VA 22333  
(703) 274-9483

Navy:

Robert Sniffin  
Headquarters, Office Naval Material Command  
MAT-01M 2-R  
Washington, D.C. 20360  
(202) 692-8635

Air Force:

Productivity Cash Incentive Program Policy  
Charlene M. Bradley  
HQ-USAF/MPKE  
Employee Relations Division  
Directorate of Civilian Personnel  
Washington, D.C. 20330  
(202) 695-9106

Labor Relations Policy  
Ronald P. Sanders  
HQ-USAF/MPKU  
Labor Relations Division  
Directorate of Civilian Personnel  
Washington, D.C. 20330  
(202) 695-7425

Table 7.1 (continued)

Defense Agencies

Defense Logistics Agency:

Elizabeth Hayward  
Headquarters, DLA (CM)  
Room 3D-495  
Cameron Station  
Alexandria, VA 22304-6100  
(703) 274-6366

Lenora Watson  
Headquarters, DLA  
Room 3A-214  
Alexandria, VA 22304-6100  
(703) 274-6428

APPENDIX A

GLOSSARY

GLOSSARY

Base Rate. The monetary rate used in an incentive award calculation to determine individual award, e.g., direct labor rate, average direct labor rate, etc.

Buy Back. A control device sometimes used in incentive programs which pays employees on a one-time basis for consistent performance over standard. The standard is then revised to reflect the new performance level.

Ceiling. A control device sometimes used in incentive programs. A ceiling limits the amount of performance over a standard for which incentives will be paid.

Daywork:

Straight Daywork. Wages or salaries paying the worker an amount of money for each unit of time spent, rather than for an amount of output.

Measured Daywork. Wages are paid according to work standards set up to measure output and worker efficiency. Increases in wage rates are given for correspondingly any high efficiency levels over relatively long periods of time.

Goal Setting. A motivational technique formed by Locke. The propositions of this theory include: (1) specific goals increase performance more than generalized goals, and (2) difficult (but attainable) goals result in higher performance than easy goals.

Incentive. A reward provided to individuals or groups that meet or exceed an established standard of quality or quantity produced.

Job Enrichment. A technique based on studies conducted by Herzberg which is intended to increase the responsibility as well as autonomy and freedom of control of workers.

Key Operation. Navy terminology for subset activities which, taken together, form the work to be accomplished within a job order. For example, a job order might be to repair two boilers, with a specific key operation of "install castings."

Macro Performance Measures. Macro performance measures are generally used with organizational or large group incentive plans. Examples of macro performance measures are historical output levels, forward performance goals, aggregated engineered standards.

Micro Performance. Micro performance measures are generally used with individual incentive plans. Usually engineered standards are used as micro performance measures.

Participation. Participation as a motivational technique usually refers to participation by employees in decision making. Participation may be on a formal or informal basis.

Performance. Some absolute level of accomplishment, regardless of any production goals or work standards established.

Productivity. The state of being productive, usually measured by the relationship of inputs to outputs.

Productivity Gain Sharing. Incentive programs wherein financial gains accrued from increased productivity are shared between employees and their organization.

Quality Circle. A small group of people from the same work area voluntarily meeting on a regular basis (usually weekly) to receive training, identify productivity related problems within their work environment, analyze potential solutions, recommend potential problem solutions to management, and when appropriate, implement solutions after management approval.

Standards:

Engineered Time Standard (ETS). The time a trained worker or a group of trained workers, working at a normal pace, should take to produce a described unit of work of an acceptable quality according to a specified method under specific working conditions. It is derived from a complete, objective analysis, and measurement of the task by recognized operational measurement techniques with a stated degree of statistical reliability. It includes allowance for personal needs, fatigue, and delay (PF&D).

Job Standard. The time, as established by recognized work measurement techniques required to complete a specified quantity of work. It indicates skills, equipment, and procedures to be utilized and including all appropriate allowances. In this glossary, this definition includes both labor and staffing standards.

Labor Standard. The time allowed to produce a particular end product or service or group of products or services (see Standard Time).

Nonengineered Time Standard. A standard computed by using one or more of the techniques of resources determination which do not meet the requirements of an engineered time standard.

Performance Standard. A description of the minimum level of accomplishment necessary for satisfactory performance. The establishment of a standard may be based on statistical data or historical experience and should address such factors as quality, quantity, and timeliness.

Sharing Rate. The rate applied to the dollar savings pool in some incentive programs which specifies the percentage of savings to be distributed to workers and to the sponsoring organization, i.e., 50 percent/50 percent 75 percent/25 percent, etc.

Time:

Normal Time. The time required by a qualified worker to perform a task at a normal pace using a prescribed method. No allowances are included.

Standard Time. Amount of time required to accomplish a task as determined by the proper application of appropriate operational measurement techniques. Generally established by applying appropriate personal, fatigue, and delay allowances to normal time.

APPENDIX B  
MONETARY INCENTIVE PLAN  
DIMENSIONS

## MONETARY INCENTIVES PLAN DIMENSIONS - AMC ACTIVITIES

Activity	Plan Objectives	II. Focus	III. Nature of Work	IV. Participants
1. Annniston Army Depot	Increase efficiency and effectiveness of participating civilian work force	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Subassembly Branch Shop Div.: Maintenance of combat vehicle engines, transmissions, final drives, electrical harnesses, related components.	403 wage grade employees All persons regularly assigned or detailed to Subassembly Branch.
2. Red River Army Depot	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Maintenance effort involved with unpacking, inspecting, delinking, relinking, and packing .50 cal. ammunition.	Indirect labor - supervisors and clericals 40 wage grade employees (includes WS, WL, WQI (? supervisors and 2 inspectors); all permanent and temporarily assigned employees
3. Sacramento Army Depot	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Repair and overhaul of AN/GRC-106 AM - SSB ground radio and subassemblies; overhaul and repair of flight navigational instruments.	52 wage grade employees Supervisors Chief of procurement
4. Tobyhanna Army Depot	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Box and Crate: Manufacture of wooden boxes, crates dunnage. Inventory Management System: Manage Inventories, location surveys, location audit matches, inventory quality control programs, associated research.	13 wage grade employees (including supervisor). 31 GS employees (including supervisor). Indirect labor - supervisors.

## MONETARY INCENTIVES PLAN DIMENSIONS - AMC ACTIVITIES (continued)

Activity	Plan Objectives	II. Focus	III. Nature of Work	IV. Participants
5. New Cumberland Army Depot	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Small Pack Section: Determines rating and routing of small packages in accordance with weight, destination, and priority.	17 GS 11 WG
	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Tire Operation: Receives, off-loads, stores, maintains, and selects tires for issue. Packs marks, checks, and loads tires for shipment.	31 WG 1 GS 1 (indirect QA inspector)
	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Light Pack Section: Operates packing and marking of parcel post and light freight shipments.	111 WG 4 GS
6. Sharpe Army Depot	Increase efficiency and effectiveness of participating civilian work force.	Individual award based on productive number of hours employee worked in period where group performance exceeded standard.	Shipping Branch-Packing Section: performs the packing, consolidating, and marking duties for freight and parcel post/UPS shipments. Includes hazardous and special projects packing.	74 WG 9 GS Indirect: clerical support; supervisors

MONETARY INCENTIVES PLAN DIMENSIONS - MICOM ACTIVITIES

Activity	Plan Objectives	I. Focus	III. Nature of work	IV. Participants
1. Redstone Arsenal	Reduce high employee turnover caused by low pay and shift work.	Individual award based on productive number of hours employee worked in a period where group performance exceeded standard.	Quality Control Section: Key entry operations.	50 GS employees (supervisors and leaders receive 20% of profit).

MONETARY INCENTIVES PLAN DIMENSIONS - MICOM ACTIVITIES

<u>Activity</u>	<u>Plan Objectives</u>	<u>Focus</u>	<u>III.</u>	<u>Nature of Work</u>	<u>IV.</u>	<u>Participants</u>
1. Office of the Comptroller (ARDC)	To reduce high workload and high turnover.	Individual award based on productive number of hours employee worked in a period where group performance exceeded standard.	III.	Pay Examination Branch: Travel and Military Pay Section.	17 GS employees	

V. MEASUREMENT

Activity	A. Units	B. Standards or Criteria	C. Control
1. Anniston Army Depot	Productive man-hours	Engineered, statistical, and estimated standards used to derive performance of efficiency ratio for work center.  $\frac{\text{Standard time}}{\text{Actual time}} =$ Performance efficiency  Incentives paid when performance efficiency exceeds 100%  Engineered standards used to derive performance efficiency rates for work center. All Cat. 1 standards.	
2. Red River Army Depot	Productive man-hours	$\frac{\text{Standard time}}{\text{Actual time}} =$ Performance efficiency  Incentive paid when performance efficiency exceeds 100%.	

## V. MEASUREMENT (Continued)

Activity	A. Units	B. Standards or Criteria	C. Control
3. Sacramento Army Depot	Productive man-hours	Engineered, statistical, and estimated standards used to derive performance of efficiency ratio for work center.  Standard time = $\frac{\text{Actual time}}{\text{Performance efficiency}}$ Incentives paid when performance efficiency exceeds 100%	Plan design incorporates moving average.
4. Tobyhanna Army Depot	Productive man-hours	Engineered, statistical, and estimated standards used to derive performance of efficiency ratio for work center.  Standard time = $\frac{\text{Actual time}}{\text{Performance efficiency}}$ Incentives paid when performance efficiency exceeds 100%	

V. MEASUREMENT (Continued)

Activity	A. Units	B. Standards or Criteria	C. Control
5. New Cumberland Army Depot	Productive man-hours	Engineered, statistical, and estimated standards used to derive performance of efficiency ratio for work center.  $\frac{\text{Standard time}}{\text{Actual time}} =$ Performance efficiency Incentives paid when performance efficiency exceeds 100%	
6. Sharpe Army Depot	Productive man-hours	Engineered, statistical, and estimated standards used to derive performance of efficiency ratio for work center.  $\frac{\text{Standard time}}{\text{Actual time}} =$ Performance efficiency Incentives paid when performance efficiency exceeds 100%	Plan incorporates moving averages.

V. MEASUREMENT - MICOM ACTIVITIES

Activity	A. Units	B. Standards or Criteria	C. Control
1. Redstone Arsenal	Records processed per hour	Historical unit average for records processed per hour; grade standard for number of records processed; incentive paid when employee surpasses unit average or grade standard.	

V. MEASUREMENT - MICOM ACTIVITIES

C. Control

Standards or Criteria

B.

A.

Units

Activity

1. Office of the Comptroller (ARDC)  
Each travel voucher, travel advance voucher, and cash collection voucher processed  
USAFAC standard developed through examination of FAOs worldwide. Standard covers all advance, settlement, and collection vouchers forwarded to Disbursement Branch for disposition. Standard includes a personal fatigue and delay allowance. A learning curve is also applied to the standard on a monthly basis to accommodate the high degree of personnel turnover experienced in test section.

VI. INCENTIVES

Activity	A. Savings Allocation	B. Award Calculation	C. Payment Schedule	D. Payment Mechanism
1. Anniston Army Depot	50% of savings to employees	a. For each work center where the PE exceeds 100%: Earned man-hours - Actual man-hours = Gained man-hours Gained man-hours x Direct basic labor rate = \$ (PGS) \$(PGS x 50% = \$ ) (Employee's share) \$(PGS x 50% = Depot's share)	Quarterly*	a. PGS Award Nomination and approval form packet assembled by PGS point of contact in appropriate functional directorate. b. PGS point of contact in Directorate for Resources Management validates packet. c. Incentive Awards Administrator reviews packet for compliance with PGS award policy. d. Finance and Accounting Office (F&AG) processes and prepares award checks. e. Checks forwarded to CFO and distributed to individuals.
2. Red River Army Depot	50% of savings to employees	Same	Quarterly	Same

\*Anniston's payout includes a reserve of \$50 per employee.

VI. INCENTIVES

Activity  
1. Anniston  
Army Depot

E. Automated Assistance  
Standard Depot System, Standard Army  
Civilian Pay Systems (STARSIPS):  
Used together with eligible  
personnel entered; to generate all  
award calculations, etc.; uses a  
bulk (vs. individual) reporting  
system.

2. Red River  
Army Depot

Local form devised similar to a  
time card to determine number of  
hours spent on the job by each  
employee.

## VI. INCENTIVES (Continued)

<u>Activity</u>	<u>A. Savings Allocation</u>	<u>B. Award Calculation</u>	<u>C. Payment Schedule</u>	<u>D. Payment Mechanism</u>
3. Sacramento Army Depot	50% of savings to employees	Same*	Monthly	Same
4. Tobyhanna Army Depot	50% of savings to employees	Same**	Monthly	Same
5. New Cumberland Army Depot	50% of savings to employees	Same	Quarterly	Same
6. Sharpe Army Depot	50% of savings to employees	Same*	Monthly	Same

F 13

\*Sacramento's and Sharpe's determination and frequency of gains to be distributed are predicted on a 3-month averaging technique.

\*\*Tobyhanna's supervisory hours (indirect) do not contribute to gained man-hours in calculation; however, indirect share based on actual hours.

VI. INCENTIVES

- | <u>Activity</u>              | <u>E. Automated Assistance</u>  |
|------------------------------|---|
| 3. Sacramento Army Depot     | Unique system which is fed by Standard Depot System; to generate all award calculations. Individual Labor and Production (L&P) reporting.   |
| 4. Tobyhanna Army Depot      | Unique system developed to: (1) tabulate productive and non-productive hours by individual; (2) shows total hours earned, actual, gained; (3) amount worker will receive periodically (and shows cumulative award). FGS personnel manually maintain their own I and P reporting Accesses - STARSIPS and Standard Depot Systems (SDS). |
| 5. New Cumberland Army Depot | Uses Tobyhanna's system: Individual employees report their I and P data daily.  |
| 6. Sharpe Army Depot         | Uses Sacramento's program for eligible hours report.  |

VI. INCENTIVES - MICOM ACTIVITIES

<u>Activity</u>	<u>A. Savings Allocation</u>	<u>B. Award Calculation</u>	<u>C. Payment Schedule</u>	<u>D. Payment Mechanism</u>
1. Redstone Arsenal	50% of savings to employees	Profit will be earned after historically estimated standard numbers of records are processed: - 60% of employees' share to personnel who exceed unit average of 238 records per hour. - 20% of employees' share to personnel exceeding grade production standards. - 20% of employees' share to supervisory and lead-personnel	Upon completion of test	Profit distribution to employees through Incentive Awards Program under auspices of Special Act Award.
		Hourly rate for award calculation is the saleable service rate. (Rate billed to customers.)		

VI. INCENTIVES - MICOM ACTIVITIES

E. Automated Assistance  
None

Activity  
1. Redstone  
Arsenal

VI. INCENTIVES - ARDC ACTIVITIES

<u>Activity</u>	<u>A. Savings Allocation</u>	<u>B. Award Calculation</u>	<u>C. Payment Schedule</u>	<u>D. Payment Mechanism</u>
1. Office of the Comptroller (ARDC)	50% of savings to employees	Standard time x vouchers processed + indirect man-hour allowance = earned hours  Earned hours - actual productive hours = hours gained  Hours gained x \$ value/hour = \$ gained  \$ gained x 50% = work center payout  Individual actual productive hours work center actual productive hours  x work center payout = individual share	Monthly	Payout distribution to employees through Incentive Awards program. Approval of PCS awards must be obtained from: Chief of Test Section, Chief and Comptroller, Management Review Analysis; and Incentive Awards Administrator.

VI. INCENTIVES - ARDC ACTIVITIES

E. Automated Assistance

Activity

1. Office of the Comptroller (ARDC)  
Uses standard time cards to feed system.

## MONETARY INCENTIVES PLAN DIMENSIONS - NAVMAT ACTIVITIES

<u>Activity</u>	<u>I. Plan Objectives</u>	<u>II. Focus</u>	<u>III. Nature of Work</u>	<u>IV. Participants</u>
1. Philadelphia Naval Shipyard	Reduce costs without sacrifice of quality or timeliness	Gain sharing group plan (Performance factor derived from group effort but payout depends on individual hours expended)	Ship boiler repair	346 mechanics
2. Long Beach Naval Shipyard	<ul style="list-style-type: none"> <li>a. Improve productivity by increasing individual performance.</li> <li>b. Reduce personnel administration problems by decreasing unplanned absenteeism, turnover, and union complaints.</li> <li>c. Test on incentive program in government organizations.</li> </ul>	Individual performance contingent reward system	Key entry operations	17 data transcribers
3. Public Works Center San Diego	<ul style="list-style-type: none"> <li>a. Eliminate backlog</li> <li>b. Reduce overtime</li> <li>c. Improve morale</li> </ul>	Individual performance contingent reward system	Vehicle repair	150 automotive mechanics

<sup>1</sup>Similar key entry operations programs conducted in at least six other shipyards and at McClellan AFB.

## MONETARY INCENTIVES PLAN DIMENSIONS - NAVMAT ACTIVITIES (Continued)

Activity	1. Plan Objectives	II. Focus	III. Nature of Work	IV. Participants
4. Supply Department Pearl Harbor Naval Shipyard	Improve worker motivation through a performance contingent reward system sharing monetary benefits of increased productivity with those responsible for additional output.	Individual performance contingent reward system	Small purchase order form processing	22 small purchase buyers and clerks
5. NARF - 1 Alameda <sup>1</sup>	Study to determine the impact of an incentive program on wage grade employees.	Individual performance contingent reward system	Aircraft engine overhaul	85 engine and pneumatic mechanics in 4 production shops; all direct, no supervisors included
6. Mare Island Naval Shipyard (Proposed Plan)	a. Reduce costs b. Maintain product quality c. Increase availability of machine tools d. Improve schedule adherence	Group incentives system (performance factor derived from group effort but payout depends on individual hours expended)	Inside machine shop (Shops 31)- Heavy metal form/shaping	500 machinists, machine tool operators, and their supervisors; also includes temporary workers

<sup>1</sup>Project suspended in February due to loss of workload.

MONETARY INCENTIVES PLAN DIMENSIONS - NAVMAT ACTIVITIES (Continued)

Activity	1. Plan Objectives	II. Focus	III. Nature of Work	IV. Participants
7. Pearl Harbor Naval Shipyard	a. Achieve productivity increases without detrimental effects on production schedules or product quality. b. Pay for itself through dollar savings. c. Be fair and acceptable to employee and management. d. Be consistent with incentive award policy and guidance.	Group incentives system	Inside machine shop (shop 31)	Mechanics and their supervisors
8. NARE - North Island (Proposed Plan)	Evaluate four types and phases of motivation: 1) Performance tracking 2) Goal setting 3) Performance appraisal 4) Monetary incentive	Individual system for non-monetary and monetary incentives	Aircraft engine overhaul	108 engine and pneudraulics mechanics

## V. MEASUREMENT

Activity	A. Units	B.	Standards or Criteria	C.	Control
1. Philadelphia Naval Shipyard	Key Operation man-hour time within a job order	a.	Both engineered and historical key operation time standards.	Ceiling on bonus payouts.	
		b.	Performance factor defined as the ratio of hours expended to hours authorized based on key operating standards. Incentives paid when performance factor is below 1.0.		
2. Long Beach Naval Shipyard	Keystrokes per hour; machine time usage	a.	Historical time standards for various procedures used to adjust actual time rates for task difficulty.		
		b.	Percent efficiency = actual time/standard time.		
		c.	Productive time = time spent working at the keypunch machine/time assigned to work at it.		
		d.	Production efficiency = (percent efficiency) x (productive time).		
3. Public Works Center San Diego	Time required for different procedures	b.	Engineered automotive industry standards.		
4. Supply Department Pearl Harbor Naval Shipyard	Time required for various actions to complete a small purchase form in order to effect a "buy."	a.	The appropriateness of historical and previous time standards determined based upon supervisor estimates and the criterion that 30% of the buyers could reach standard.		
		b.	Incentives based on earned standard hours compared to actual hours compared to actual hours expended completing the product or output.		

V. MEASUREMENT (continued)

Activity	A. Units	B. Standards or Criteria	C. Control
5. NARF - Alameda	Production time to complete various overhaul operations	a. Engineered standards and engineering estimates. b. Ratio of total standard time earned to total standard time spent on tasks multiplied by 100. Scores above 100 meant eligibility for incentives.	A buyback plan for standards which are consistently exceeded is now incorporated in plan design.
6. Mare Island Naval Shipyard	Key task operation time in man-hours	Engineered key operation time standards (cover approximately 29% of the ship's work).  Performance factor defined as:  time allowed by the standard time used to complete the key operation	
7. Pearl Harbor Naval Shipyard	Key task operation time in man-hours for performance related to each foreman	Performance factor defined as:  time allowed time expended	
8. North Island (Proposed)	Production time to complete various operations	Performance factor is tracked to foreman, not individual employees; foreman's performance factor must be over 1.0 to have savings.  Currently tracking performance data to determine measures	

VI. INCENTIVES

<u>Activity</u>	<u>A. Savings Allocation</u>	<u>B. Award Calculation</u>	<u>C. Payment Schedule</u>	<u>D. Payment Mechanism</u>
1. Philadelphia Naval Shipyard	50% of savings to employees	12 (hours worked on incentive key op) x (1 - final key op performance factor) = award earned	Form is completed by Productivity Office approximately 30 days after formal key operations close out.	<ul style="list-style-type: none"> <li>a. Productivity Office submits form to Incentives Awards group authorizing payment to each eligible employee.</li> <li>b. Comptroller makes actual payment in next pay period.</li> </ul>
2. Long Beach Naval Shipyard	11% of savings to employees (sharing rate)	$(\text{Production Efficiency} - 1) \times (\text{Machine time}) \times (\text{Recharge Rate}) \times (\text{Sharing Rate}) = \text{award earned}$	Computer incentives program was run at the end of each week. When incentives reached \$25, the employee could withdraw it or continue to let it accrue.	<ul style="list-style-type: none"> <li>a. Employee informed supervisor of desire to receive payment.</li> <li>b. Memo sent by the Branch Head to the Incentive Award Officer.</li> <li>c. Incentives Award Branch forwards the necessary form to the payroll office for payment as a separate check in the next payroll cycle.</li> </ul>
3. Public Works Center - San Diego	30% of savings to employees	Standard hours - actual hours = hours saved Hours saved x (hourly rate + .25% fringe) = total savings Total savings x 30% = award earned	Incentive awards are calculated every two weeks.	<ul style="list-style-type: none"> <li>a. Form submitted to Incentive Awards Branch.</li> <li>b. Forms sent on to payroll where separate checks are issued.</li> </ul>

VI. INCENTIVES (Continued)

E. Automated Assistance

Activity

1. Philadelphia Naval Shipyard  
Manual recording of key operations hours onto certification forms.  
Automatic calculation of incentives from form entries.
2. Long Beach Naval Shipyard  
Automatic computer processing of calculations for incentives using a modified version of the Operator Analysis Reporting System.
3. Public Works Center - San Diego  
Shop repair orders maintained by supervisors.

VI. INCENTIVES (Continued)

<u>Activity</u>	<u>I. Savings Allocation</u>	<u>II. Award Calculation</u>	<u>III. Payment Schedule</u>	<u>IV. Payment Mechanism</u>
4. Supply Dept. Pearl Harbor Naval Shipyard	30% of savings to employees	(Earned hours - expended hours) x incentive rate = award earned	Incentive awards calculated every two weeks.  Incentives are paid as special achievement awards in amounts of \$25.99 or more once a month. Lesser amounts were carried forward to the next report period.	Names of persons qualifying and their awards forwarded to Incentive Awards Branch for processing and payment in checks issued with regular pay checks.
5. NARF - Alameda	50% of savings to employees	(Earned hours - expended hours - rework hours) x 50% of base rate = award earned		Form routed to Incentive Awards Branch.
6. Mare Island (Proposed)	a. 18% of savings to employees  b. 2% of savings to first level supervisors	Performance factor for key operation x total manhours worked x shop composite hourly rate x incentive rate = an employee's incentive award	As soon as possible after the completion of a qualifying key operation.	a. Shop receives management information system report after the closure of a qualifying key operation.  b. General Foreman completes Payment Certificate for eligible employees.  c. Shop Superintendent approves certificate.  d. Certificate submitted to the Incentive Awards Officer.  e. Payment request submitted to Comptroller.

VI. INCENTIVES (Continued)

- | <u>Activity</u>                                   | <u>E. Automated Assistance</u>  |
|---|---|
| 4. Supply Dept.<br>Pearl Harbor<br>Naval Shipyard | Automated production efficiency report was computer generated weekly providing supervisors with incentive awards earned by each employee.   |
| 5. NARF -<br>Alameda                              | Manual transactor entry of work performed transmitted to central computer where an MIS record is made identifying the employee, task, time spent, and time standard. Actual program used is OPTS which is an extraction from the MIS for Industrial Naval Air-Stations (MIS for INS). |
| 6. Mare Island<br>Naval Shipyard                  | Manual entry of man-hours expended. Two programs used in computation of incentives. One report flags the engineered standards, and one report provides each individual and associated time worked on each closed key op.  |

VI. INCENTIVES

Activity	A. Savings Allocation	B. Award Calculation	C. Payment Schedule	D. Payment Mechanism
7. Pearl Harbor Naval Shipyard (Under Study)	<p><u>Employee</u> 50% of savings to employees based on foreman's calculated performance factor</p>	<p><u>Employee</u> Sum of saved hours worked for each foreman x 50% of accelerated hourly wage = employee incentive award</p>	<p>Payment is monthly but reflects a 12 week moving average.</p>	
	<u>Foreman</u>	<u>Foreman</u>		
	<p>If entire shop performance is over 1.00 then: 50% of accelerated rate for WS-10</p>	<p>If entire shop is over 1.0, then: for each 1 point over 1.0 each foreman makes approximately \$14.00</p>		
8. NARF - North Island (Proposed)	To be determined	To be determined	To be determined	To be determined

VI. INCENTIVES (Continued)

E. Automated Assistance

Activity

7. Pearl Harbor  
Naval Shipyard  
(Under Study)

8. NARF - Future monetary incentives phase  
North can use computer programs developed  
Island for Alameda's monetary plan.  
(Proposed) Accesses MIS for INS.

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APPENDIX D  
POINTS OF CONTACT

## SITE-SPECIFIC POINTS OF CONTACT

<u>Service</u>	<u>Activity</u>	<u>Point of Contact</u>	<u>Reference</u>
NAVY	1. Philadelphia Naval Shipyard	Stan Wirtschafter	A Worker Quality/Cost Pilot Incentive Program
	2. Long Beach Naval Shipyard	Robert Sniffin HQ NAVMAT Autovon 222-6287	Performance Contingent* Reward System: A Field Study of Worker Productivity
	3. Public Work Center San Diego	Dave Stratton	
	4. Pearl Harbor Naval Shipyard		
	- Supply Dept.	Art Flores	
	- Inside Machine Shop 31	Cdr. Mike Morgan Lt. Cdr. Soric	PIAP - Shop 31 Pearl Harbor Naval Shipyard
5. Naval Air Re-work Facility	Andy Kwiecen		
6. Mare Island Naval Shipyard	Bob Sheridan	PIAP Shop 31 - Mare Island Naval Shipyard	
ARMY	1. Anniston Army Depot		DESCOM Cir. No. 5-82-1; ANAD Cir. No. 5-1, Test of Profit Sharing at Anniston Army Depot, July 1980-31 December 1980
	2. Red River Army Depot		DESCOM Cir. No. 5-82-1
	3. Sacramento Army Depot		DESCOM Cir. No. 5-82-1; SAAD Cir. No. 5-2

\*Methodology applies for all data entry plans within the Naval Material Command and the Air Force Logistics Command at McClellan AFB.

## SITE-SPECIFIC POINTS OF CONTACT

<u>Service</u>	<u>Activity</u>	<u>Point of Contact</u>	<u>Reference</u>
ARMY	4. Tobyhanna Army Depot	Thomas Siciliano Army Material Command (703) 274-9483 Autovon 284-9483	DESCOM Cir. No. 5-82-1
	5. New Cumberland Army Depot	James Wilson U.S. Army Depot Systems Command Autovon 242-7161	NCAD Cir. No. 5-1
	6. Redstone Arsenal		US Army Missile Command, Final Report: The Profit Sharing Experiment
	7. Sharpe Army Depot		SHAD Cir. No. 5-1; Operating Memo. No. 725-17
	8. ARDC		Prod. Gain Shar. Plan, Office of Comp., USA, ARDC
AIR FORCE	1. McClellan AFB	Charles Berger Autovon 633-2711	Data Transcribers: Productivity Based Incentive System

NOTE: See Table 7.1 for principal PGS points of contact for OSD and DoD Components.

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