MANAGEMENT USE OF FINANCIAL STANDARDS IN
THE UNITED STATES AIR FORCE

DISSERTATION
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CHAPTER I

INTRODUCTION

NATURE OF THE STUDY

In recent years one segment of the executive branch of the Government of the United States, the Department of Defense, has become increasingly important as a capital consuming agency. As many of the activities of this department are similar to those found in industry, greater attention has been given to improving control over resources by employing managerial techniques used in industry.

Pursuant to recent legislation passed by Congress, the Department of Defense adopted an accrual type double-entry bookkeeping system. Through the medium of the dollar as a "common denominator" the costs of labor, materials and contractual services were to be added together to reveal total resources consumed in performing functions. By means of this costing practice, commonly employed in industry, the military branch of the Government sought to improve control over the utilization of resources.
This study is concerned with the use of this newly adopted control technique by the United States Air Force. In this branch of the Department of Defense, dollar controls have been employed for a number of years for allocating resources at higher managerial levels. At the air base level, however, where the bulk of resources are consumed, control over the utilization of resources has rarely been exercised through measurement of performance in monetary terms. The Air Force has relied, to a much greater extent, on a system of preventive and punitive regulations for exercising control over resource utilization.

The usefulness of this new control program, referred to in the Air Force as the Financial Management Plan, will depend largely on the superiority of monetary standards over traditional qualitative and non-monetary quantitative standards.

**STATEMENT OF THE PROBLEM**

**Major objective.** It is the major purpose of this study to answer the question: How, if at all, can monetary standards be employed by the Air Force management at the air base level to improve control over the utilization of resources?

**Minor objectives.** Three minor objectives logically follow: (1) to determine to what extent monetary standards
can be usefully employed to establish personal accountability and measure performance at lower managerial levels; (2) to determine how, if they are potentially useful, monetary standards as "tools" of control, can be "sold" to line management; and (3) to determine how a system of monetary standards can be made to fit into an integrated system of overall control in which all components contribute toward the common objective.

**Significant limitations.** It is not the purpose of this study to determine specific monetary standards which might be employed for measuring managerial performance in various functional areas in the operation of a typical air base. Furthermore, no effort is made to evaluate the usefulness of monetary standard for the solution of resource allocation problems of top Air Force management. The emphasis in this study is on the use of monetary standards for establishing accountability and measuring performance by base level management in order to improve effectiveness in the utilization of those resources made available to it.

Attention is devoted chiefly to "supporting" activities at base level rather than "tactical" activities. The purely accounting aspects of the problem of Financial Management implementation are minimized; emphasis is placed instead on management use of financial standards.
METHODS OF ATTACK AND NATURE OF THE DATA

In general the answers to questions posed in this study are sought through: (1) examination of empirical evidence revealed in connection with the Lockbourne Air Force Base Test operation; and (2) study of applicable Government publications and literature in the field of management and business.

The Lockbourne Air Force Base Test operation. It was apparent at the inception of the new program that activation of this new approach to control over operations would require a great deal of work. To help solve problems of implementation through a simulated pilot operation, three test teams were set up about the middle of 1954: one at Langley Air Force Base under the administrative control of the Tactical Air Command, one at Mc Chord Air Force Base under the Air Defense Command, and one at Lockbourne Air Force Base under the Strategic Air Command.

The Lockbourne Test Team was composed of three sections, all working out of the office of the Comptroller, Strategic Air Command Headquarters: an Accounting Section, a Machine Processing Section, and a Management Analysis Section. While a close working relationship was to be maintained between these various sections, it was expected that the Management Analysis Section would deal specifically with the analysis of operations through examination of cost
information which the other two sections would make available.

Much of the evidence upon which conclusions are based is derived from interviews with managerial personnel at Lockbourne and at higher Air Force Command levels during that portion of the Lockbourne Test operation from February to September, 1955.

**Government publications and management literature.** Reference has also been made to a variety of published materials. First, determination of the intention of Congress in directing that industry control practices be adopted by the military branch of the Government is based on Government documents published in connection with the introduction of the Financial Management Program. In addition considerable reliance has been placed on the interpretation of amendments to the National Security Act of 1947, provided by the **United States Code Congressional Services, Vol. 2, 81st Congress, First Session, 1949**, pages 1771 through 1303.

Literature in the field of business and management of pertinence in establishing the nature of control practices employed by profit-seeking enterprises has also been examined.

**Limitations.** Information derived from these sources
has not always been as complete as might have been desired. Yet it was sufficiently complete to reveal pertinent trends and forces. Moreover, particular caution has been exercised to avoid placing undue reliance on attitudes manifest in individual interviews.

It is further recognized that the applicability to other air bases of conclusions reached at Lockbourne is subject to question. Considering the degree of standardization which prevails throughout the Air Force, however, it is believed that conclusions reached through experience at Lockbourne will be useful to staff management charged with the responsibility for implementing the Financial Management Plan at other bases throughout Air Force.

Order of presentation. The basic plan of study combines the descriptive and the analytical methods. In Chapter II the legislative history which led to the introduction of the Financial Management Plan in the Air Force is surveyed in an effort to determine the intent of Congress and of the authors of the Financial Management Plan. In Chapter III operations in the Air Force and in profit-seeking institutions are compared in an effort to discover whether or not the Air Force possesses characteristics which might preclude the applicability of monetary measures of performance. Chapters IV and V are devoted to a somewhat detailed examination of air base operations with a view toward
discovering how, if at all, monetary standards might be usefully employed to improve control over resource utilization. In Chapter VI present Air Force control practices are appraised in the light of this new control system in an effort to determine how various Air Force control programs might be tied together in a cohesive and integrated overall control system. In the final chapter findings of the study are summarized, and such conclusions and recommendations as are warranted on the basis of the evidence are presented.
CHAPTER II

THE BACKGROUND OF FINANCIAL MANAGEMENT IN THE AIR FORCE

INTRODUCTION

The Air Force Financial Management Plan is described in a document titled *A Financial Control Plan for the USAF*, published in 1953 by the Department of the Air Force. The description set forth is very brief and very general, leaving much room for interpretation by base level management in implementing the plan. To profit better by the experience of those advisers to the Government who helped develop the plan and whose recommendations are cursorily embodied in the plan, it is well to examine in some detail the legislative background of the act which inspired the Financial Management Plan, and testimony subsequent to that act. Following this inquiry:

(1) The nature of the so-called Performance Budget will be established;

(2) The Cooper Committee findings regarding the progress being made will be examined;
(3) The scheme and purpose of the Financial Management Plan will be examined in some detail.

LEGISLATIVE BACKGROUND

In 1947 Congress passed the National Security Act by which the Armed Forces of the United States were unified and the position of Secretary of Defense created.¹


A more comprehensive program for future security was to be provided through integration of land, naval and air forces into an efficient team under unified direction and control. The act was amended in 1949 by Public Law 216.

Of chief interest in this study is Title IV of Public Law 216, which became an addition to the Security Act of 1947. Most of Title IV contains provisions designed to centralize and increase the authority of the Secretary of Defense over the budget of the military services.

Prior to Title IV almost every project or program undertaken by the Federal Government required financing from a number of appropriations which were administered by scattered and frequently unrelated divisions. The situation was comparable to having a business financed from sources within the firm which have varying degrees of operational responsibility over use of the funds, or no
authority at all. A sort of absentee administration existed which hindered the establishment of accountability for results. Furthermore, this practice made it extremely difficult to estimate with any degree of accuracy the cost of performance in various activities, and hence the determination of budget requirements. Reliable data were almost impossible to obtain from such a system of cost accounting.

Recognizing this shortcoming, the Committee on Organization of the Executive Branch of the Government had unanimously recommended that all sections of the executive branch adopt a budget based on functions, activities and projects. The committee designated such a


budget a "Performance Budget." The budget recommended was designated in this fashion in Title IV, wherein Congress complied with the committee's recommendations.

A good deal of the efforts of the military to comply with the Act have had to do with interpretation of the meaning of Performance Budgeting.

THE PERFORMANCE BUDGET

In its recording of the legislative history of Title IV, the U.S. Code Congressional Service identifies a
performance budget by its point of emphasis. A performance

budget focuses attention upon the general character and
relative importance of work to be done and services
rendered rather than upon resources to be acquired in order
to render these services. Thus the emphasis is placed
upon performance of specific work projects, rather than on
the means whereby they are accomplished.

Under the performance budget the difficulty encountered
by financing a single project from several sources - one
for supplies, one for equipment, one for personnel - would
be eliminated. Each separately identifiable project would
be financed from a single source, management responsibility
would be clearly fixed and the opportunity for effective
performance evaluation would be greatly improved.

The performance budget contemplates:

(1) That all costs relating to a logical and identi-
ifiable program be included as a project or a budget program
for presentation and justification by the department con-
cerned to the Bureau of the Budget, the President and the
Congress, and for administration and reporting after the
appropriation of moneys;

(2) That there be a logical and, so far as practical,
uniform group of projects or budgetary programs by the
primary functions of the military departments, with this grouping paralleling, so far as possible, the organization structure;

(3) That there be a segregation between capital expenditures and current operating expenditures.

These recommendations were not entirely new. As the size of the military establishment had increased and operations had become progressively more mechanized, the commercial and industrial phases of military activities,\(^4\)

\(^4\)Including the provision of supplies, depot level maintenance of equipment, etc.

as distinguished from purely administrative and military functions, had grown in importance. Studies have been made at various times to determine the susceptibility of these commercial and industrial activities to control through management practices employed by profit-seeking industries.\(^5\) Many of these studies pointed up the lack

\(^5\)Thus the work of the Johnson Subcommittee of the Committee on Naval Affairs of the House of Representatives in 1945.

of adequate cost accounting. They stressed the need for some means of determining the cost of work performed rather than the cost of resources authorized. The performance budget appeared to be the best answer.

Industrial and commercial type functions could be
identified and separated from purely administrative and military functions. An operating or working capital fund would be made available to those who actually administer an industrial or commercial type activity, and these officials would be made personally accountable for their use of these funds.

Under such an operation it was hoped that it would be possible to compare costs and to develop a healthy spirit of cost competition between activities of a similar nature.

Thus the military was being called upon to activate control practices employed by profit-seeking industries to the greatest extent practicable.

THE COOPER COMMITTEE

On August 18, 1953, the Secretary of National Defense established the Advisory Committee on Fiscal Organization and Procedure, commonly known as the Cooper Committee, for the purpose of reviewing the accounting and financial methods of the department.  


By now the armed forces had been engaged in implementing the dictates of Public Law 216 for four years. The Cooper Committee, composed of responsible representatives
of industry and educational institutions, was organized specifically for:

(1) Evaluating the effectiveness of existing procedures;

(2) Expediting and refining procedures now installed or in process of installation;

(3) Developing and scheduling new fiscal and accounting procedures which should be adopted.7

It was hoped that the recommendations of the Committee would result at an early date in a more complete realization of the objectives of Title IV.

The Cooper Committee was only mildly impressed by the progress it found being made, as may be seen in the following excerpt from one of their reports:

Encouraging as the progress in putting Title IV into operation has been in a few cases, it must be realized that the record of the past four years is not a satisfactory one. . . . We shall follow closely . . . the progress of the responsible Defense officials in correcting the administrative defects which have obstructed the full use of Title IV. We shall carefully watch the work . . . and look with hope and confidence for their recommendation . . . . We shall examine more minutely reported resistance to Title IV in the military establishments. We shall return to the Hearing Room to follow up on it. We urge that a detailed master schedule for Title IV implementation in the services be developed by the Office of Secretary of Defense. We urge the departmental
leaders to take immediate progressive action to
effect the installation and operation of Title IV
machinery and then to establish a system whereby
all those involved in the vital work of comptroller-
ship will be supported and encouraged and their affirmative achievements recognized and rewarded.

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THE FINANCIAL MANAGEMENT PLAN

Although all agencies of the Government had been instructed to adopt the performance budget, each department was left relatively free to work out that system which would best serve its particular needs. At the end of 1954 the Comptroller General of the United States surveyed the field and reported in his 6th Annual Report on the Joint Program to Improve Accounting in the Federal Government that the results achieved during 1954 showed splendid progress.9

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The efforts of the Air Force by now had crystalized in the form of the Financial Management Plan, whose broad purpose was to provide management with a device for planning and controlling Air Force Operations in economic terms. A new position, Assistant Secretary of the Air
Force for Financial Management, was created.

Programs had been established for monitoring progress in the implementation of the system. Some sixty special projects were conducted as phases of the process of activation of the overall plan.

Much of this work dealt with financial management above the base level. Yet a major accomplishment was the installation at base level of a commercial-type, accrual accounting system at all Air Force bases. All assets began to be segregated by major types (i.e., real property, inventories, equipment in use, etc.) with inventories expressed in terms of dollars.

The Financial Management Plan represents an ambitious recasting of command control. It identifies as a basic management objective the most effective utilization of all resources with which Congress provides the Air Force.

Financial controls would focus attention on the consumption and use of resources "with the heterogeneous elements of materials and services being reduced to the common denominator of the dollar."¹⁰

¹⁰ A Financial Control Plan for the USAF, p. 3.

The basic objective of the proposed Financial Management Plan is to aid management by providing various controls, such as:
(1) Full disclosure of financial results which are to be compared with operating budgets. This procedure will permit the manager to appraise his organizational performance by providing a medium for comparing actual results against planned objectives. Further, the performance of a particular manager can be compared with the performance of others charged with similar missions.

(2) Financial information required by management in terms of resources consumed. The manager will be charged with costs as they are incurred, rather than as they are paid for. Material will be charged to expense as it is consumed. This procedure will permit a direct evaluation of missions performed in terms of cost.

(3) Financial information necessary in the preparation and support of operating budgets and requests for appropriations. With historical financial data available, preparation of reasonably accurate forecasts of expenses for contemplated missions will be facilitated. By the accumulation of current financial data, the cost of alternative programs can be used in the formulation of operating, as well as budget policy. Appropriation requests, under this system, will be prepared on the basis of functional costs rather than largely in terms of cost of resource to be purchased for future use. This is the method used by business and understood by businessmen, and therefore appropriation requests will be more readily comprehended. The task of preparing appropriation requests will be greatly facilitated.

(4) Means of relating "resources on hand" to past, present and future programs. Inventory levels by class of material will be currently available as the result of placing monetary values on all materials. The need for increasing or decreasing inventory levels will be indicated by relating rates of material usage to amounts on hand and on order. The dollar volume, together with the source and destination, of inventory movements will be helpful in appraising procurement, fiscal and management policies.

(5) Effective control over and accountability for all funds, property, and other assets. All funds appropriated for operating expense will be accounted for in terms of cost by organizational units, as well as by various functions within
organizational units. This will show each commander and operating manager the costs for which he is personally responsible or over which he has supervisory responsibility. Present type of control over the obligation and expenditure of funds provided for materiel acquisition will be retained. Establishing monetary values for all property and inventory classes will permit effective management of assets acquired.\footnote{loc. cit., pp. 3, 4.}

The Financial Management Plan (also referred to in Air Force literature as the Financial Control System) was the Air Force's means of complying with Title IV. It contemplated a comprehensive and integrated system of cost reporting which would include an Air Force-wide budget system and an Air Force-wide accounting system, each made up of control statements with supporting statements increasing in detail as base level is approached.

The Air Force was aware of the management control advantages to be derived from modern industrial cost accounting. It also recognized the magnitude of the job of implementation. Target date for complete implementation of the system was set for late 1957. The immediate future was to be looked upon as a transition period, during which efforts would be made to: (1) obtain technicians to maintain the system; (2) train Air Force executives in the use of financial controls; (3) develop, test and install the details of the system, and lay the foundations
which would ease the problem of transition.

It is apparent that nothing radically new is being introduced. The result of the plan will be perhaps only a shifting of emphasis, a sort of decentralization, under which operating managers of all levels will be informed of the monetary value of the property with which they have been provided, and will be supplied with periodic cost reports which, in combination, will enable them to manage their own affairs better and to compose their annual budgets more proficiently.

During the period of operation of the Lockbourne test team the statement has been made repeatedly by operating managers with whom the test team has come into contact, "The Air Force is not a profit-seeking institution; the consequences of being caught unprepared are so serious that success in the various phases of the military program cannot be evaluated in terms of dollars." A further question presents itself: "Even if the dollar is a valid unit of measure of performance, to what extent can accountability be profitably established at the various levels of management; why should existing non-monetary, quantitative and qualitative controls not be used as they have traditionally been used in the military establishment?"

Since the usefulness of financial standards as management tools in industry is firmly established,
perhaps we would do well to compare the Air Force with industry with a view towards discovering in what respects, if any, the nature of Air Force operations precludes the use of monetary measures for evaluating managerial performance.
CHAPTER III

AIR FORCE OPERATIONS AND THE OPERATIONS OF A
PROFIT-SEEKING INSTITUTION

INTRODUCTION

Although Congress has clearly called for, and Air Force top management has accepted, business cost control practices in principle, the applicability of business control techniques to this non-profit institution is worthy of further evaluation. This will be done by examining both in the Air Force and in industry:

(1) Objectives and the measures of success;
(2) The means by which operative management performance is evaluated;
(3) The function of control;
(4) Size and scope of operations;
(5) Motivation.

OBJECTIVES AND THE MEASURES OF SUCCESS

No single combination of words seems to be universally acceptable for defining the objective of the Air Force. But neither is there a universal consensus among students
of economics regarding the objective of our so-called "profit-seeking institutions."

Some suggest that the objective of a business enterprise is to maximize profit, and that the measure of success is the ratio of profit to the value of the investment, compared to similar institutions.

Professor R. C. Davis suggests that the primary objective of the business organization is one of service, in the creation, acquisition, preservation or distribution of values.¹


Chester Barnard says that while "... hope of profit is the mainspring of industrial enterprise, it is not the dominating economic motive in the conduct of business."²


To some, profit is the objective; to others, it is the measure of success; perhaps profit is only the means by which personal aggrandizement, the real objective, is achieved.

However the objective of a going business organization be defined, that objective will not be achieved unless the business can continue in operation, and generally
it will not continue in operation unless the value of the wealth it creates exceeds the cost of its creation by a margin sufficiently large to cause the capital necessary for growth to be forthcoming. The relationship between value created and its cost, therefore, can be a quantitative measure of the proficiency with which management has allocated and utilized its resources.

In the military field, the broad over-all objective is variously defined in terms that cannot be so readily quantified; such as national security, military preparedness, defense potential, and combat readiness. If the objective is defined in any of these terms, how is success to be measured? In a business organization there is a continual appraisal of the values created as the firm's product is placed on the market, and performance is susceptible to appraisal by comparison to a numerical standard. But absolute success in the military is less susceptible to quantification. It is suggested frequently in military publications that the performance of the military is proven when the battle is fought. If the battle is won, the objective was achieved.

This doctrine might be tenable if wars were continuously fought so that performance could be frequently evaluated. But during its history our country has been engaged in war only about 1/4 per cent of the time. Funds
spent during the remaining years for military preparedness were presumably a sort of insurance premium which provided protection commensurate with the seriousness of the risk and the cost of the premiums. For is it not true that regardless of the extent of military preparedness, national security could never be absolutely guaranteed? Is it not conceivable that an enemy might, through technological progress, develop a weapon so sinister as to make our entire military establishment obsolete, and furthermore make the expenditure of future funds for any purposes other than weapons research a total waste? And by this same token, is it not true that the consequences of failure to make any military preparations whatsoever are something short of complete doom?

It is not proper to say, as it is frequently said in military circles, that a certain predetermined level of military preparedness must be achieved so long as it does not cost more than the productive capacity of the nation can bear. Military preparedness is not man's only want over and above subsistence. Is it not true that the American people do, through a somewhat devious and perhaps sometimes ineffective procedure, seek to achieve, like the "economic man," that optimum level of military preparedness where the cost of preparedness is commensurate with the risk involved?
In the broad picture success in the military establishment is dependent upon the extent to which this optimum level of preparedness prevails.

The means by which operative management performance is evaluated

The optimum level of military preparedness is, of course, a vague and illusive thing. Similarly, the optimum amount of life insurance protection for an individual is difficult to determine. But just as the insured, having settled upon a predetermined level of protection whose cost appears to be commensurate with the seriousness of the consequences of an untimely death, then endeavors to get the most for his premium dollar, so also is the American taxpayer justified in demanding that he be provided with the most protection in the form of combat readiness for each dollar he channels into the military. That is, he will evaluate the performance of his military leaders not only by reference to wars won, but by the value this performance provides in preparedness compared to its cost in dollars.

The nation has a ready measure for the degree of success of its profit-seeking institutions: cost and value are compared in their financial statements. In the Air Force the success of military management between wars traditionally has been evaluated by comparing costs of those
military operations which are comparable to the cost of similar operations performed by business organizations. Mismanagement is evidenced when it is discovered that ridiculously large inventories exist in one area in the face of costly shortages in another, or where industry performs a particular function at a fraction of the cost which the military incurs. On the basis of these spotty bits of evidence the relation between the value being created and its cost has been indignantly questioned. In the face of criticism for mismanagement, military leaders frequently plead that military operations are so complex and they involved factors so difficult to control that their performance cannot be fairly evaluated by comparison to business operations.

In particular the following objections are posed when a critic draws a damaging comparison between the costs of military and business operations:

(1) The Air Force is not a profit-seeking institution;

(2) Between wars Air Force activities are directed toward training to create a combat ready team. Training proficiency is not an output product which can be evaluated by monetary measures;

(3) Air Force operations are more subject to obsolescence than those of private business;

(4) Utilization of manpower is vastly more difficult
in the military where, in the intermediate to long-run, labor costs are fixed costs.

**Profitability as a measure of operative management performance.** At least one American observer denies emphatically the applicability of monetary measures to any publicly administered organization:

The objectives of public administration cannot be measured in monetary terms and cannot be checked by accountancy methods. Take a nationwide police system like the FBI. There is no yardstick available that could establish whether the expenses incurred by one of its regional or local branches were not excessive.

In public administration there is no market price for achievements. This makes it indispensible to operate public offices according to principles entirely different from those applied under the profit motive.²

²Ludwig von Mises, Bureaucracy, Yale University Press, New Haven, Conn., 1944, p. 46.

Dr. von Mises does not suggest that the efforts of a publicly administered organization have no value, but rather that the absence of a market mechanism to quantify that value precludes the use of pricing practices employed in business to evaluate the reasonableness of their cost.

Thus he concludes:

It is in vain to advocate a bureaucratic reform through the appointment of businessmen as heads of various departments. . . . It is a widespread illusion that the efficiency of government bureaus could be
improved by management engineers and their methods of scientific management.\(^5\)

\(^5\)Ibid., p. 49.

To illustrate his point, Dr. Von Mises suggests:

Let us finally consider an instance in which neither problems of "higher" politics nor those of the correct application of the law are involved. A bureau is in charge of buying all the supplies needed for the technical conduct of office work. This is a comparatively simple job. But it is by no means a mechanical job. The best clerk is not he who fills out the greatest number of orders in an hour. The most satisfactory performance is to buy the most appropriate materials at the cheapest price.

It is therefore, as far as the management of government is concerned, not correct to assert that time study, motion study, and other tools of scientific management show with reasonable accuracy how much time and effort are required for each of the available methods and that they therefore can show which of the possible methods and procedures require the least time and effort. All such things are quite useless because they cannot be coordinated to the quality of the work done. Speed alone is not a measure of intellectual work. You cannot measure a doctor according to the time he employs in examining one case. And you cannot measure a judge according to the time he needs to adjudicate one case.

\(^6\)Ibid., p. 51.

The fallacy of Von Mises' premise regarding the constantly available yardstick by which to evaluate success is demonstrated by his treatment of cost accounting in a multiplant, profit-seeking organization:

The managers of the various sections can have
a free hand in the administration of their sections' "internal" affairs. The only directive that the general manager gives to the men whom he entrusts with the management of the various sections, departments, and branches is: Make as much profit as possible. And an examination of the accounts shows him how successful or unsuccessful they were in executing the directive.

In a large-scale enterprise many sections produce only parts or half-finished products which are not directly sold but are used by other sections in manufacturing the final product. This fact does not alter the conditions described (above). The general manager compares the costs incurred by the production of such parts and half-finished products with the prices he would have to pay for them if he had to buy them from other plants. He is always confronted by the question: Does it pay to produce these things in our own workshops? Would it not be more satisfactory to buy them from other plants specializing in their production?

Ibid., p. 33.

We have many examples of successful multiplant firms whose plant managers never know what their profit position is, in terms of net income to either sales or investment. Furthermore many firms would be hard pressed to find a ready source for many of the products of their various departments, by reference to which the relative cost and value of the contributions of these departments could be determined.

Where, then, is the yardstick to which top management, in Von Mises' example, refers for evaluating the performance of its department supervisor? If the firm manufactures a very special product for which no really comparable
substitute exists, top management might be content to evaluate the department's performance by reference to past experience. If its costs do not rise unreasonably the assumption might be made that its resources are being efficiently employed. If the value of the end product of the parent company (as revealed by customer acceptance) exceeds its total cost by a satisfactory margin, it is quite likely this reference to historical costs by departments for evaluation and control purposes will be deemed satisfactory.

But if, on the other hand, competition spurs management to extreme cost consciousness, a more searching analysis is likely to be initiated. This might take the form of a detailed analysis of costs of specific functions which, taken separately, can be compared to those experienced by allied firms, or a methods study may be undertaken to reveal inefficiencies.

And yet in spite of his ignorance of the actual profitability of his operation, the department manager is induced to manage efficiently the resources with which he is provided. The mechanism by which this is accomplished is quite simple. Top management, which has the necessary perspective to see what must be done at the department level if a profit is to be achieved, established accountability for performance at its department level in
terms which are appropriate. Thus a branch manager may be urged to increase production during the coming year by 10 per cent, while maintaining the quality product which the home office has specified without increasing costs proportionately. No reference is made to profits. Indeed, if the sales function is removed from the branch manager level the branch manager may never know his profit position.

Nevertheless the absence of the profit measure does not deter the branch manager from exercising his resourcefulness and ingenuity in achieving maximum effectiveness in the utilization of his resources. He recognizes the increased output he is being called upon to deliver means increased capacity through working longer hours, by overtime or extra shifts, through expanded facilities, faster operation of equipment, or more efficient operations.

But quantity, quality, time, and cost are not independent variables. The branch manager seeks that judicious compromise which so relates these parameters that his own objective, increased output without a proportionate increase in unit cost, will be achieved.

Nor is it likely that the branch manager will urge his purchasing department to increase its rate of purchase order processing beyond the point where the gain effected
through reduced procurement overhead is balanced by the losses sustained through careless negotiation.

If no reference is made to profit, how is it possible for the branch manager to achieve this judicious compromise? He does it through cost analysis, by comparing costs which would be incurred via one technique with those which would be incurred by another. Reference is made to historical cost experience, and to the cost of specific functions performed by his fellow manufacturers.

Quality, to the operative manager, becomes a fixed specification. The significant difference arising out of the absence of profitability as a yardstick at the plant level is the quality of the product. Since the branch manager is not given the information necessary to determine profitability he is in a poor position to appraise for himself the value added by improved quality in comparison to its cost. So quality becomes, for him, a fixed specification. His objective becomes one of so managing his resources as to achieve the maximum output of his quality product at a minimum cost. He exercises control over his operations by reference to historical cost experience and costs of functions performed by allied manufacturers.

Thus, commonly, a product committee, made up of
representatives of the engineering, production, sales, finance and purchasing departments endeavors to determine that quality of product which will so satisfy the consumers' wants that its value will exceed its cost by the maximum.

The process by which this is done is in most cases by no means a precise one. It is probably most often approached in this fashion: The sales department has carefully surveyed the market. It knows the approximate portion of that market which the firm could reasonably hope to capture, with a reasonably priced commodity designed to perform the function our product contemplates serving. Because its estimates are based on very general estimates of the probable ability of the prospective product to perform the function for which it will be designed, the sales department has a general impression of its required quality.

On the basis of its experience and acquaintance with substitute products which are already on the market and which can, to a greater or less extent, accomplish the same function, the sales department estimates the value of the output of the proposed product.

The engineering and production departments then estimate, by reference to their experience in the manufacture of comparable products or common component parts, the probable cost of manufacturing the quantity
which the sales department believes could be disposed of.

If it appears, at this stage, that the value would exceed the total cost by a satisfactory margin, development of the product gets further consideration. A paramount question becomes: What degree of quality would maximize profits? Higher quality has higher value (to a point), but it costs more. Very poor quality can be manufactured at low cost, but may have an even lower value.

This relationship between cost and value of quality can be shown graphically. (See Chart I).

In theory our product committee seeks to establish that level of quality where value exceeds cost by the maximum. In practice this determination is by no means a precise science. Prognostication and judgment based on experience yield the answer. The committee's judgment is then evaluated at the market. But how perfect a test is the market?

Dr. Von Mises seems to suggest that the firm has only to try manufacturing different batches of the product at various levels of quality, thrusting each batch on the market at prices which will maximize gross income, and thus by trial and error establish that level of quality where value exceeds cost by the maximum.

In practice, however, the market is no such convenient an experimental laboratory. Our economic system is dynamic;
The optimum level of quality is that point at which the value of quality (A plus B) exceeds its cost (B) by the maximum amount.
except in unusual cases the product begins to become obsolete as soon as it is developed. Too many changes occur from time to time to permit a precise conclusion as a result of the experiment. Furthermore, by thrusting its product on the market at one price (for many products) the manufacturer "spoils" the market (and hence destroys the conditions of his controlled experiment) for future price changes.

In addition it would be unrealistic to deny that the value placed on the output as manifested by the price paid for it may be more a response to promotional effort (and hence a "service" feature perhaps) than an expression of satisfaction with material quality.

In spite of the fact that our market system is, compared to other systems, eminently successful in giving the consumer an opportunity to manifest, and the entrepreneur the incentive to discover, his relative desire for alternative goods, it is important to see, for the purposes to follow in this discussion, that in a substantial portion of our manufacturing firms the quality becomes, in the short-run operating period, a fixed specification.

Thus our product committee adopts, through a more or less judicious compromise, a desired quality level. The engineering department designs the product and sets forth
the process by which it will be manufactured to conform to this quality standard.

Department managers are not, then, told to operate so as to achieve that optimum relationship between quality and cost which will maximize profits. Rather they are told (that is, accountability is established thus): Use the productive resources at your disposal to produce, in conformance with your capacity capabilities, this level of quality output at the lowest possible price. You will be evaluated in quantitative terms: by reference to the costs you sustain to achieve this quality and quantity output.

The branch manager then makes plans to discover the best means by which this end might be achieved: He organizes his resources, human and material, establishes proper functional relationships and responsibilities, and when his plan of action has been implemented, controls his operations largely by a process of comparison to standards.

It might be argued at this point that, imperfect though it may be, the profit-seeking institution has a market, an experimental laboratory, at its disposal. But what about the non-profit institution?

In a sense the non-profit institution has a sort of market place wherein its primary objective can be evaluated.
In the government, for example, funds will not be forthcoming indefinitely to support an activity which performs a valueless function. Money spent by the taxpayer for government is money foregone for alternatives. The inability of the bureaucrat or the taxpayer to express his evaluation of the bureau's service in numerical terms by no means prevents his value-judgment from dictating the bureau's performance.

But aside from this feature of the non-profit organization, is it not just as valid to expect that once a "quality of product" is determined upon, in whatever terms, the problem becomes the same as that faced by the department manager in the multiplant manufacturing establishment? To achieve this level of quality various functions must be performed. To the extent that these functions can be compared to similar functions being performed by other organizations, an excellent criterion exists for evaluating the effectiveness with which the department manager utilizes his resources to accomplish those functions for which he is being held accountable.

But even when no comparable functions are being performed, the department manager in the non-profit organization faces a problem no different than that frequently faced in industry. He breaks the function down into parts which can be compared to some industry
criterion (such as time and motion standards), or perhaps he compares today's performance with yesterday's.

Few personnel directors would endeavor to place a dollar value on their company-financed recreation program, nevertheless few would deny for that reason that sub-functions of the program can be subjected to control and performance evaluation by reference to economic measures.

Is it not logical to assume, then, that the Air Force might also control its affairs in this fashion? By June 30th each year the American people have, through Congress, allocated a certain claim on the wealth of the country to the Air Force, reasoning by a devious fashion that this amount is commensurate with the risk involved and the sacrifice it represents. By so doing they have selected a level of military preparedness, or quality, which that amount of funds is presumed to buy. It then becomes incumbent on top Air Force management to so control the use of these resources that maximum effectiveness in their utilization will be achieved. And to the extent that many of the functions which must be performed are capable of being measured in economic terms, they will be so measured by a populace which demands that it be given the greatest value in defense potential (however it might be measured) per unit of cost (which will be measured in dollars).
In practice it can hardly be denied that top Air Force management exercises some control over its operations by referring to criteria of industry. There is an element of "tapered integration" in the Air Force which manifests a recognition by management of the substitutability of private industry for many Air Force performed functions.

For example, experience has shown that the price the Air Force has to pay on the open market for certain construction and rehabilitation work on air base structures is low enough that the Air Force economizes by contracting this work out. The Air Force has personnel, mixing and rolling equipment to lay black-top paving and painting equipment to spray or brush paint on a fairly substantial scale; it maintains line equipment to string overhead power cables, and metal machining tools for accomplishing all but major overhauls on equipment. Yet when a fairly large job is required it is found that Air Force capabilities fall short of what is required in any of these areas. Under these circumstances regulations authorize the use of local funds to hire civilian contractors to do the job.

Thus top Air Force management has purposely allocated skills and equipment with a view toward maintaining capabilities for only part of its anticipated needs. The extent to which this capability should be carried could
not have been sensibly determined without comparing Air
Force costs of doing a job with industry's cost of doing
the same job.

THE FUNCTION OF CONTROL

Control is variously defined in such specific terms
as to exclude all control activities except cost control,
and again in such broad terms as to make it synonymous with
management. To cite any one document out of the myriad of
Air Force publications as reflecting its general concept
of this function of management might be unfair. By virtue
of its recency, however, we are justified in assuming that
the definition set forth in "The Management Process,"
published by the Department of the Air Force,\(^3\) is at least

\(^3\)The Management Process, Dept. of the Air Force, Air Force

officially accepted by the Air Force: "Controlling is the
process of determining whether or not actual operation is
proceeding as desired and of taking appropriate action as
required." Unfortunately this definition does not appear
consonant with the Air Force's use of the term in many
cases. A better definition - for both Air Force and
profit-seeking institution purposes - might be: Control
embraces those activities which serve to insure that
programmed results are achieved. Once the desired results
have been defined, they become standards by reference to which the "state of control" can be determined.

Experience shows that in order to achieve results in any group activity, accountability for results must be established. Single accountability for results is not always easy to establish, but when it can be so established the maximum of individual initiative can be harnessed to further a group objective.

Results are achieved by people and things, human and material resources. Management employs these resources to achieve desired results. Top management's job becomes largely a matter of allocating these resources, whereas operative management emphasizes the utilization of resources.

As in all economic institutions there is an "opportunity cost" in Air Force operations. Funds spent for troop comfort are funds foregone for high octane fuel; funds spent for armor plate for protection from enemy fire power are funds foregone for weapons research. To a great extent top Air Force management's job becomes, as in industry, a matter of so allocating its capital as to achieve that combination of men, skills, equipment and supplies which will insure the maximum in value of output per dollar spent.

To the base level manager, as to the plant manager in a multiplant industry, the emphasis is on the
utilization of resources.

In both industry and Air Force operations, results desired are normally expressed in terms of quantity, quality, time and cost. It becomes incumbent on the operative manager to utilize the resources which have been allocated to him so as to maximize the value of his contribution toward the overall objective in terms of quality, quantity, and time over the cost of that value.

Management in both industry and the Air Force engage in many activities in order to ascertain that this value will be maximized commensurate with its cost.

Responsibility for specific functions is delegated; authority is established in a somewhat formal fashion and compliance with command is insured to a greater or less extent by disciplinary and incentive measures.

In addition to much informal precedent to which members of the group can be expected to conform, policies and rules are established which, by specifying courses of action which should be taken under specific situations, serve to control the utilization of resources.

Sometimes these measures are preventive, limiting the use of resources; sometimes punitive, setting forth penalties for abuse of authority.

In broad general terms, control is exercised in both the Air Force and industry in the same fashion. But the
emphasis differs considerably. In the profit-seeking institution the dollar standard is much more widely employed. In theory there is for each and every business concern a best possible allocation of resources. If this allocation can be achieved and maximum efficiency in the utilization of resources can be realized, profitability will be assured. Since both the objective of a business concern and the value of resources and rates of change in resources can be expressed in monetary terms, the fashion in which resources are allocated and utilized can also be expressed in monetary terms.

No two business concerns are exactly alike, but sufficient comparability exists between many firms to permit the determination of industry-wide standard ratios which reflect the fashion in which the typical member firm allocates and utilizes its resources.

Dun and Bradstreet publishes periodically, and makes available in special reports on demand, financial ratios which reveal this information. In *Behind the Scenes of Business* (three revisions since 1935) Mr. Roy A. Foulke of Dun and Bradstreet presents seven financial ratios which reflect capital allocation, and seven which reflect the rate of change of capital, or utilization, for sixty-three types of manufacturing and merchandising concerns.

The Accounting Corporation of America publishes
quarterly and summarizes yearly as a "barometer" financial ratios for fifty different types of small businesses which reveal typical patterns in the allocation and utilization of resources. To improve comparability these ratios are grouped according to the size of the firm and its geographical location.\footnote{1953 Yearbook, Vol. 4, no. 4., Accounting Corp. of America, San Diego, California.}

Literally hundreds of similar publications sponsored by trade associations, bureaus of business research of colleges and universities and foundations reveal financial ratios of this sort.

Although the universality of a financial ratio does not mean that it necessarily represents the best possible allocation or utilization of resources, it does serve as a standard by reference to which management of a given firm can evaluate its performance as compared to the industry of which it is a part.

Performance evaluation by reference to monetary standards is not limited to top management. By using financial standards a few firms have created circumstances quite similar to the pursuit of profit in shops which perform no finance or sales functions as such. Thus in July of 1953 at the close of a contract negotiation,
Minneapolis Honeywell found it could not pass increased labor costs on to the customer in the face of rising competition. Greater economy in production had to be achieved. Control over the utilization of resources was improved by creating a "factory profit and loss statement."\textsuperscript{10}


Under this system each foreman got a weekly tally which indicated whether his department was losing money or "making a profit." A standard value was placed on each of the various units of output. By comparing the value created to its cost the profitability by departments could be determined. As time progressed it became possible for the foreman to test, by reference to profitability, the value of his improvement efforts. Partial accountability was established and managerial performance was measured in monetary terms.

Even where such a "profit" condition does not prevail there is little doubt that in most business organizations cost accounting has advanced to such a stage that control over the allocation and utilization of resources is exercised by reference to monetary standards.

It would be extremely useful for the purposes of this study if it could be determined to what precise extent
industry uses such standards to exercise control by establishing personal accountability and measuring the performance of supervisors. We know that it is a common practice in chain retailing operations for top management to establish accountability for its branch manager by reference to goals expressed in monetary as well as purely qualitative terms. Similarly, in manufacturing concerns accountability for the production supervisor may be expressed in both monetary terms (direct materials costs should not exceed $X per unit output), and non-monetary terms (production should be increased next period by X per cent). However, there appears to be no ready measure which would reflect the extent to which accountability in industry is established at the operative level in monetary terms.

We are justified in believing that with the increased emphasis on professional management and the relating of the cost of specific functions to influence on profit, as in the frequently quoted Du Pont formula for financial control,¹¹ that the tendency toward relating performance directly to value and cost and the establishment of accountability in financial terms is increasing.

But regardless of the extent to which this is being done in industry, we can state that accountability in monetary terms has only rarely been employed in Air Force operations at base level. This has not always been due to lack of cost information. For some years in the Installation Engineering Section alone a fairly comprehensive work order system which made possible the allocation of costs to functional areas has been employed. These costs have been reported to higher headquarters in a so-called "Real Estate Facilities Report." Quite likely regulations which specify procedures to be followed and resources to be used by this section have been composed by reference to cost information revealed by this report. There is no evidence at Lockbourne Air Force Base, however, that higher level management ever used this information for individual performance evaluation purposes. At base level the rate of utilization of resources has been expressed mostly in terms of units of "line items" of supply and numbers of men by skill level, rather than dollar value of resources. Manpower manning documents, which specify the authorized number of men for a particular type of function, limit, to a certain extent, wasteful use of human resources. Equipment is issued in specific quantities on the basis of functions to be performed, and performance has been traditionally
evaluated by reference to the frequency with which regulations have been violated.

Several reasons are given for the Air Force's emphasis on non-monetary standards for control purposes. In the Air Force labor is more nearly a fixed cost. Men cannot be sent home without pay when a temporary overage is discovered. Furthermore, exigencies of the military operation make a rapid turnover of military personnel unavoidable. Operating managers seldom stay in the same job at the same location more than a few years, and the experience which is required for properly wielding greater managerial discretion and authority cannot be developed in so short a period. Then too the nature of Air Force operations makes universal knowledge of the mission impracticable. Hence top management feels that the allocation of labor should not be left to the operating official.

Industry shares these problems. Industry also uses many non-monetary standards. But the difference in emphasis which is placed on the dollar as the final arbiter in any question involving operations is quite pronounced. The efforts of the military to establish single accountability for performance in terms of dollars are extremely spotty. Indeed where dollar standards have been employed, or where
standards which relate resource consumption to functions performed have been employed, pains have been taken to emphasize the fact that individual performance was not being measured.\footnote{In reference to the scoring system employed to rate one repair depot to another for performance evaluation purposes under the Air Materiel Command's Management Evaluation System, the stipulation is made: "It should be noted that this system is not intended to cover all functions or activities at an installation. Rather it is selective and covers only those major activities (such as aircraft maintenance) which serve as barometers of overall installation performance, and such other items (e.g., the Ground Accident Rate) which appear to require the attention of top management. "A low score does not necessarily mean that an installation had generally poor performance, but rather that it had poor performance in the selected functions scored. In addition, a low score in any function does not necessarily mean poor performance on the part of the installation component which is responsible for that function (e.g., lags in maintenance completions may be due to a shortage of spare parts or reparable carcasses). In other words a low score indicates in what function or activity an installation fell down, but does not necessarily indicate which Air Materiel Command component was responsible for the situation. However, the low score does point up a deficiency which can be remedied at some echelon of the command." Methods of Computation Used in the Management Evaluation System, Management Analysis Div., Comptroller, Hdq., Air Materiel Command, 15 June, 1955, p. 1.}

The Financial Management Plan dictates a change in emphasis. In discussing the use of financial data in the Air Force the Directorate of Management Analysis, United States Air Force, said:

Management Analysis is ... responsible for
seeing that cost standards are developed and presented for the commander's use as a yardstick of accomplishment. We expect that as the costs are generated and utilized by field commanders we will be able to better select those areas where there is a demand and use for Air Force-wide standards.

... (management analysis also) is responsible for analysing financial statements provided by the Division of Accounting along with other operational data to provide top management with an over-all evaluation of the operation and condition of each system and to highlight areas in which corrective action appears necessary.

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It would be well to mention at this point that studies which relate resource consumption, dollar-wise, to functions performed are not new in the Air Force by any means. Presumably the enormous collection of Air Force literature which sets forth the procedures which will be followed in any functional area are so composed that if they had been followed to the letter, maximum economy in the utilization of resources, dollar-wise, would have been achieved. The question before us then is, "To what extent can greater effectiveness in the utilization of resources be achieved by expressing desired results in terms of dollar standards?"

SIZE AND SCOPE OF OPERATIONS

At the present time the Air Force is the biggest "business" in the United States. Its total tangible assets
are estimated at seventy five billion dollars, making it
roughly six times as large as the nation's largest
corporation. It employs some 255,000 military personnel
and 300,000 civilians. It has over 2,000 installations
spread around the world and a fleet of aircraft in excess
of 25,000. 15

15 All above facts estimated by the Dept. of the Air Force,

During the fiscal year ending June 30th, 1956 the
Air Force is expected to expend some 15.6 billion dollars,
the largest single portion of the federal budget. 16

16 The budget of the United States Government for the
Fiscal Year Ending June 30, 1956, U.S. Government Printing
Office, Wash., 25, D.C.

Although by far the greater part of Air Force
expenditures is for aircraft and costs incurred directly
in their operation, the many non-tactical activities
involving logistical support of men and equipment
constitute a tremendous operation by any standard.

By virtue of the magnitude of this complex operating
mechanism the value to the nation whose productive effort
makes it possible of any system which would improve
effectiveness in the utilization of resources cannot be
denied.

MOTIVATION
Earlier in this study it was mentioned that, in response to suggestions that control practices employed in industry could be effectively employed in the Air Force, Air Force officials are quick to point out that the Air Force is not a profit-seeking institution.

Since the profit incentive is absent in the military perhaps much of the monetary accountability employed in business would be inapplicable in the military. Yet one might ask, how is the profit motive manifest in a typical private industry characterized by absentee ownership? Who is the entrepreneur for whom the prospective receipt of a profit creates this powerful incentive? The stockholders? Management? Operating employees? There is no real evidence in many industries that greater profit accrues, in a reasonable period of time directly to management or labor's benefit.

What then is the motive? Is it a motive which could be (or presently is) harnessed also in the Air Force?

Undoubtedly there are many motives. But is not personal aggrandizement in both the Air Force and in profit-seeking institutions the primary motive? The branch manager in our multiplant example, though unaware of the profit his operation is bringing to his company, is motivated to exercise his resourcefulness and ingenuity to manage his affairs efficiently, primarily because it is
to his personal advantage to do so.

Is it not possible that this same incentive to economize could be harnessed in the military if economizing were tied to personal aggrandizement? At the present time almost no effort is expended to direct the attention of the base level supervisor toward this objective. No real reward is held forth for the economical employment of resources. It is doubtful that the intensity of effort toward economy of the entrepreneur could be generated in the Air Force since a man cannot be so easily discharged in the Air Force as he can in industry and many did not come voluntarily anyway. However, the opportunity for improvement in resource utilization through positive motivation cannot be denied.

If economy in the utilization of resources can be related to individual responsibility and rewarded so that personal aggrandizement will be the result, there is no reason to believe that any less enthusiasm will be generated in this area than has been generated so effectively in the military for outstanding performance in other areas.

In general then, the non-profit characteristic of the Air Force operation does not appear to preclude the usefulness of the dollar as a unit of measure by means of which resource utilization might be evaluated.
It is now appropriate to examine the potential uses of financial standards under present conditions of Air Force organization.
CHAPTER IV

THE INTRODUCTION OF FINANCIAL MANAGEMENT AT
LOCKBOURNE AIR FORCE BASE AND THE USE OF
FINANCIAL STANDARDS UNDER PRESENT
CONDITIONS OF CENTRALIZED CONTROL

INTRODUCTION

In May of 1955, the Assistant Secretary of the Air
Force for Financial Management, Mr. Lyle Garlock, visited
Lockbourne. He sought an answer to the question: In what
way is Lockbourne using Financial Management to improve
its operations?

In anticipation of his visit, base level management at
Lockbourne engaged in some serious self-examination to
find evidence of the productive use of Financial Management.
This reaction has typified the Financial Management
conferences conducted monthly following the publication of
the Financial Statement. Base level management is keenly
aware of the emphasis which the United States Air Force
places on Financial Management. Lockbourne is a test
base. To fail to improve operations through the use of
this much touted tool of management would be an admission of failure in a project which "must not fail!" Yet base level management is understandably skeptical toward the value of Financial Management.

To understand some of the resistance and occasional antagonism toward Financial Management by line management at Lockbourne, and indeed, to evaluate precisely how, if at all it can be useful, we must examine:

(1) The base level organization;
(2) Present control over resources;
(3) The Financial Statement;
(4) Specific objections to financial standards.

The fashion in which financial standards can be designed and employed usefully under present conditions of centralized control can then be examined in some detail.

THE BASE LEVEL ORGANIZATION

All air bases are not alike. It is believed, however, that sufficient comparability exists that conclusions concerning the use of standards drawn as a result of experience at Lockbourne can be applied to other bases.

That the Air Force officially shares this view is demonstrated by the following statement taken from Air Force Manual 25-1, dealing with the setting of labor standards in the Work Measurement System:
Since the operations of different bases are carried out according to common Air Force patterns, one would expect that the selection and determination of work units of the different bases will be closely similar, if not identical.

Broadly speaking, all Lockbourne activities lead toward the accomplishment of the tactical mission of the 801st Air Division. The primary objective is to maintain two strategic reconnaissance wings in a state of combat readiness. Two collateral missions should be considered in justifying resource consumption: (1) training of personnel in all areas, tactical and support, for the larger Air Force requirement; (2) providing support for other Air Force components, personnel and aircraft which, in pursuit of the larger Air Force mission, have occasion to require temporary support at this base.

At Lockbourne each of the two strategic reconnaissance wings is made up of: (1) tactical squadrons whose members man the aircraft or provide administrative support for those who do, and (2) support squadrons whose members provide direct support to the tactical squadrons through servicing and maintenance of their aircraft and equipment.

While the specific missions of the tactical units vary among cases, all bases within the Strategic Air Command have an Air Base Group whose mission is consistently the same: to provide "housekeeping support" both for the tactical units and for its own members. ¹
Interviews with Management Analysis Officers, Strategic Air Command Headquarters.

In examining the base level organization attention will be turned to the Air Base Group, many of whose functions closely resemble those performed in industry. It should be recognized that about one-third of the operating costs incurred at Lockbourne (as reported by the present cost reporting system) are incurred by each of the two wings and about one-third by the Air Base Group, although the Air Base Group has approximately 42 per cent of base personnel assigned to it. In order to see the function of the Air Base Group in true perspective perhaps a word about cost reporting in advance would be appropriate.

Depreciation on equipment is ignored. Under the present cost reporting system only labor and so-called "expendable" or "consumable" materials are charged to individual base level units. When it is observed that depreciation on aircraft alone is as great as all other costs of operating Lockbourne taken together, it is apparent that less than one-sixth of total costs are expended by the Air Base Group.  

All reference to cost, unless otherwise specified are taken from the monthly financial statements.

Eight squadrons and five other sections make up the
Air Base Group. These are:

1. The Supply Squadron
2. The Food Service Squadron
3. The Reconnaissance Technical Squadron
4. The Motor Vehicle Squadron
5. The Installations Squadron
6. The Operations Squadron
7. The Air Police Squadron
8. The Headquarters Squadron
9. The Base Hospital
10. The Director of Personnel
11. The Director of Material
12. The Director of Comptroller
13. The Commander and Special Staff section.3


Chart II shows the organization of Lockbourne Air Force Base with the Air Base Group alone broken down by squadrons.

The Supply Squadron.4 This organization is responsible for performing base supply services, except medical, for all components at Lockbourne. It is under the operational surveillance of the Director of Material. It is divided into subsections of Consolidated Base Supply, Unit Supply, Salvage and Disposal, Material Service and Unit Administration.

During April, 1955, 475 men (15 per cent of the Air Base Group population) were assigned to this
Chart II
ORGANIZATION CHART FOR LOCKBOURNE AIR FORCE BASE

Department of the Air Force

COMMAND LEVEL
Air Material Command  Strategic Air Command  Tactical Air Command

AIR FORCE LEVEL
8th Air Force  2nd Air Force  15th Air Force

DIVISION LEVEL
806th Air Division  61st Air Division

LOCKBOURNE AIR FORCE BASE

WING LEVEL
91st Strategic Reconnaissance Wing  26th Strategic Reconnaissance Wing

GROUP LEVEL
801st Air Base Group  Headquarters Squadron

SQUADRON & SECTION LEVEL
Commander & Special Staff  Director of Personnel  Director of Material  Director of Comptroller  Base Hospital
Air Police Squadron  Operations Squadron  Installations Squadron  Motor Vehicle Squadron  Rec. Tech. Squadron  Food Service Squadron  Supply Squadron
organization. Total operating costs for this section during April were $120,540, or about 12 per cent of Air Base Group costs. The Supply organization maintained an average inventory during the month of approximately $16,000,000, issuing a total of $3,250,000.

The Food Service Squadron. This organization

supervises the food service program for all military personnel authorized to eat in Air Force dining halls. It is under the operational surveillance of the Director of Materiel.

The squadron is divided broadly into sections of unit Administration, Operations and Supply which maintain records and operate the dining halls, meat plant, pastry shop, and an "in-flight kitchen."

During April, 1955, 215 men (9 per cent of the Air Base Group population) were assigned to this organization. Operating costs reported by the Financial Statement were $126,100, or about 12 per cent of total Air Base Group costs. In contrast to other Air Base Group organizations, materials costs (almost entirely food) exceed labor costs.

The Reconnaissance Technical Squadron. This
organization is responsible for processing aerial and radar-scope film, photo interpretation and submission of all resulting materials to higher headquarters. The squadron is divided into sections of Administration, Operations, Supply, Maintenance, and Photo Intelligence.

During April, 1955, 24 men were assigned to this Reconnaissance Technical Squadron. Total operating costs were $92,405, or 3 per cent of the Air Base Group costs.

The Motor Vehicle Squadron. This organization provides automotive and commercial transportation for organizations and personnel assigned or attached to Lockbourne Air Force Base. It is under the operational surveillance of the Director of Materiel. The squadron is divided into units of Motorized Ground Equipment Maintenance and a Motor Pool.

During April, 242 personnel were assigned to this Motor Vehicle Squadron. Total costs were $73,202, or approximately 7 per cent of the Air Base Group total.

The Installations Squadron. This organization
supervises and coordinates real estate management, fire prevention, rehabilitation, repairs, maintenance and alterations of buildings and grounds. The Installations Squadron also operates and maintains fuel, water, electric, heating and sewage systems, and other services required in the operation of the base. It is divided into subsections of Administration, Supply, Utility Operations, Real Estate and Engineering, Management, and Fire Protection and Crash Rescue.

During April 1955, 516 personnel were assigned to the Installations Squadron. Total operating costs were £210,000 (almost 20 per cent of Air Base Group costs) for this organization which maintained 2,410,000 square feet of building space, the utility services attendant thereto, roads and grounds and runways, and provided fire fighting protection.

The Operations Squadron. This organization aids in

the accomplishment of tactical missions, proficiency flying, administrative and transient flying by furnishing accurate weather information, complete flight planning
materiel, briefing on the use of emergency equipment, the accurate weight and balance status of all flights, and recording and reporting of flight time. It is divided into subsections of Communications, Maintenance, Flight Simulators, Administration and Supply.

During April, 366 personnel were assigned and costs amounted to $123,063, or 12 per cent of total Air Base Group.

The Air Police Squadron.\(^{10}\) This organization is designed to enforce and maintain standards of conduct and discipline, to provide for interior security and protection against sabotage and to accomplish the confinement, transportation and rehabilitation of military prisoners.

During April, 264 men were assigned to the Air Police Squadron; total operating costs were $50,652, or approximately 5 per cent of Air Base Group costs.

The Headquarters Squadron.\(^{11}\) This organization maintains records of those personnel assigned to the Air Base Group headquarters itself, including line and staff
management. During April 3 personnel were assigned to the Headquarters Squadron, and total operating costs were 89,219, or 0.3 per cent of total Air Base Group operating costs.

The Base Hospital. This organization provides

medical and dental care for military personnel and their dependents, and endeavors to hold disease to a minimum through continuous sanitary inspections and other preventive measures. It is divided into subsections of Base Surgery, Veterinary Service, Administration Service, Dental Service, Aero Medical Division, Professional Services and Preventive Medicine.

During April, 299 personnel were assigned to the Base Hospital; operating expenses were $103,205, or 10 per cent of Air Base Group total.

The Air Base Group Headquarters organization. This

organization is composed of the Commander and Special Staff Section including Director of Personnel, Director of Material, and Director of Comptroller. As the top management and administrative section of the Air Base Group
it serves to coordinate, direct and supervise Air Base Group activities in accordance with Air Force policy so as to provide maximum support to the tactical units on the base.

During April, 336 personnel were assigned to the Air Base Group headquarters organization; operation costs were $137,916, or approximately 12 per cent of total Air Base Group costs.

Each squadron has a squadron commander who reports directly to the Air Base Group Commander or that member of his top command organization which exercises surveillance over his activities. The responsibilities of each organization are set forth fairly precisely in regulations applicable to the various squadrons. A comprehensive system of regulations specifies procedures which should be followed in accomplishing the delegated functions.

In every organization a Command and Administration Section accomplishes record keeping, correspondence processing and general administrative duties, in addition to serving as the headquarters section of the squadron commander.

The functions which must be performed in these administrative agencies are, except for specific procedure, comparable to clerical functions performed in industry: typing, filing, taking dictation, record keeping, etc.

The Motor Vehicle Squadron, Air Installations Squadron,
Food Service Squadron and Base Hospital perform functions virtually synonymous with those performed in industry. Automotive equipment is serviced, maintained and operated; buildings, utility systems and plants are operated; roads, grounds and runways are maintained; meals are prepared and served; and medical services are rendered.

In the Operations and Air Police Squadrons, a group of functions more or less comparable to industry are performed. In the Supply Squadron a service is rendered which is so comparable to that performed in industry that distinction is difficult.

PRESENT CONTROL OVER RESOURCES

Control over manpower. Standards for functional analysis are not new in the Air Force. A Work Measurement Program has been conducted by the United States Air Force for some years. At the time of this writing, Work Measurement personnel, who are under the jurisdiction of the Directorate of Manpower and Organization and are represented on each base, have developed standard work measurement units for the Food Service Squadron, the Supply Squadron and the Air Police Squadron. By reference to these standards two primary objectives are supposed to be achieved:

(1) The responsible supervisor is enabled, by
referring to standard man-hour requirements of functions to be performed, to ascertain the effectiveness of his own people.

(2) The most productive allocation of manpower can be achieved through realistically relating capabilities to functions to be performed.\textsuperscript{14}


In anticipation of the introduction of work measurement units into other squadrons at base level, the Work Measurement Group has published a list of units which are recommended as a guide to the establishment of a uniform system of work units. For example, the following are recommended in the Air Police Squadron as units of work performed:

A fire-arm cleaned
A guard post manned an hour
A mile of on-base patrol completed
A criminal warrant issued;

In Food Service:

A pound of meat processed
A pound of fat rendered
A meal issued;

In Base Supply:

A line item processed
A line item issued
A line item packed
A voucher processed;

In administrative offices:

A piece of correspondence filed
A lineal foot of files retired
A stencil cut.\textsuperscript{15}
By reference to the amount of labor required for each of the above functions, as determined by time study, a supervisor can evaluate the performance of his own subordinates and the equitability of his distribution of labor, and he can plan for future requirements.

In the Food Service Squadron where work measurement has been conducted somewhat extensively it was found that meat cutting normally requires .015 man hours of labor per pound of meat, poultry processing .007 man hours per pound, and pastry serving .010 man hours per serving; other functions excluding administration, require 0.077 man hours per meal served.16

16 Interview with the Manpower Section personnel, Lockbourne Air Force Base.

During April, 1955, 13,007 pounds of meat were cut, 7,373 pounds of poultry, fish and cold-cuts processed, and 212,127 pastry servings served, and some 212,000 meals were served.17 With this information a Food Service supervisor

17 Interview with the Food Service Officer, Lockbourne Air Force Base.

could determine how many man-hours of labor his organization
"earned" and the efficiency of performance of his organization could be determined.

Thus by reference to quantitative (but non-monetary) standards performance could be evaluated, accountability for performance of subordinate supervisors within the Food Service Squadron might be established and control over the utilization of labor improved.

Just as the introduction of financial standards has not been well received at Lockbourne, operating supervisors have made practically no use of work measurement time standards. Long before the introduction of these work measurement standards a somewhat comprehensive system of control over the allocation of labor has existed. This system has been the traditional labor control mechanism. It represents a high degree of centralization. It results in eliminating, to a large degree, the responsible squadron supervisor's control over the cost of labor which his organization will sustain, whether this cost be expressed in man-hours or in dollars. The mechanism by which control over labor allocation is exercised is the Table of Organization, or Manning Document.

For every squadron at base level there is a manpower authorization. Past experience has shown the Air Force
how many men of specified grades (rank) and skills should normally be required to perform the Food Service function, the Air Installations function, the Motor Vehicle function, etc. As a result an upper control limit has been placed on the number of men by skills to which each squadron commander is entitled in support of his mission. This is published in the Table of Organization, or Manning Document, as part of regulations.

Unless the squadron commander can demonstrate that his particular organization is unique, and that it performs functions unlike those contemplated by the Table of Organization, he will not be entitled to an authorization above that specified by the Table of Organization.

If by the presentation of factual information or persuasion the squadron supervisor can convince a manpower board that more men are required for his organization an augmentation over and above the Table of Organization can be authorized. Once a Table of Organization or Table of Organization augmented has been established it constitutes, in theory, an upper control limit on the amount of manpower which can be employed to perform the function under question.

Chart III shows a section of the manpower authorization for the Air Installations Squadron at Lockbourne Air Force Base as of 1 June, 19__.
Chart III

**TABLE OF ORGANIZATION 1-8159P**

LOCKBOURNE AIR FORCE BASE 1955

-AIR INSTALLATIONS SQUADRON-

(Excerpts)

**COMMAND AND ADMINISTRATION SECTION:**

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<td>Civilian</td>
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*Air Force Specialty Code - indicates the skill area and level.*
ROADS AND GROUNDS SECTION:

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</thead>
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<tr>
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</tr>
</tbody>
</table>

*Air Force Specialty Code - indicates the skill area and level
While economy is always advocated in Air Force documents dealing with resource consumption, and the squadron supervisor is encouraged to get along with fewer men if practicable, the Table of Organization as an upper control limit is the dominant control device employed in the Air Force for control over labor.  

19 Interviews with Lockbourne Management.

In theory, under "normal" circumstances we might be justified in saying that the measure of a squadron commander's performance is to be found by reference to his actual labor force and his authorized labor force. If the authorized force was a valid standard, the extent to which the responsible supervisor could accomplish his mission with less labor than that authorized would be a reflection of his managerial skill. Thus a sort of quantitative standard could be used as a means of establishing accountability and measuring performance over the utilization of labor.

In practice, no such convenient standard has been employed at Lockbourne during the period of the test.  

20 Interviews with Lockbourne Management.

The authorized strength is known, but the exigencies of the service have built in a factor which has precluded
its use as a standard for establishing personal accountability.

Practically speaking, there has never been a time at Lockbourne when all organizations were manned at exactly the strength and with the rank and skills which the Manning Document would imply was standard. When the magnitude of the personnel allocation problem of the Air Force is considered, and it is remembered that the "ideal" is seldom achieved in any control system, this fact is not surprising. Men come and go and they must be trained for jobs. At Lockbourne Air Force Base there have been temporary dislocations with as many as 100 per cent overages in organizations. Furthermore, the squadron commander may find himself supplied with the number of personnel he requires, but only part of the skills he requires. Our standard by which performance could be evaluated would still be valid, though perhaps not so precisely, unless the disadvantage of a man with the wrong skill versus no man at all could be quantitatively expressed.

Even more destructive to the Table of Organization as a standard for establishing personnel accountability and measuring performance, however, is the fact that overages, arising out of temporary dislocations of personnel, plague the Director of Personnel, who exercises surveillance over manpower allocation. The result is that
he assigns temporary overages to organizations which may already be up to authorized strength or over authorized strength. If the overages lack the desired skills the squadron commander may find that he has more men than are authorized to do the job, and more in terms of numbers than he feels he needs, but still be short of labor because of a shortage of skills.

The problem of what to do with overages is a serious one. The Air Force must frequently be called to task for asking for more men in the face of overages. But even without being criticized by Congress for such a situation, the Air Force already has a strong incentive to minimize overages. A man temporarily displaced out of his skill specialty is not only a cost which yields less than value, but he becomes a morale factor. Various methods of handling overages have been tried. At one time overages may be placed in a pool of labor from which operating managers at base level can draw when special work requires additional help in the short run. Inevitably these men, who owe their identity as a group to the fact that they are "unemployed," become a serious problem. If idle, they soon become restless, and disciplinary action most likely will result. If employed part time, their efforts are likely to seem spotty and unrelated to an objective in which they can take pride.
The alternative, and the course most commonly followed where possible, is to transfer them to operating organizations for "permanent" assignment during their status as dislocations. During this period it is incumbent upon the squadron commander to keep them busy. If they lack the capacity required of people in his organization, he must make work for them. If he requests that they be withdrawn and a general overage exists, his request is likely to be denied until the situation is corrected in the normal course of events.

On the other hand, the squadron commander is often authorized more men than are actually assigned to him; he wants more, and the Personnel Director and the squadron commander's superior would like to provide him with more men. But the larger Air Force requirement determines that other organizations with higher priority be provided with the men he needs, so that he must do the best he can with what he has. The result is that considerable disparity may exist within an organization between standard and actual human resources on hand. During the period under study at Lockbourne, at no time did any squadron have the number of men authorized in the skill categories authorized. In April, 1955, 153 personnel in the Air Base Group were declared by various squadron commanders as being in excess of needs. At the same time 153 authorized positions
The Lockbourne Financial Statement, April, 1955.

were declared to be unfilled.

Had the 153 possessed the proper skills, of course, they would have been placed in the positions where 153 were short. Since they did not, they might be regarded as contributing nothing toward the objective of the organization to which they were being charged. To the extent that they were temporarily dislocated they represented a charge of some $45,000 to the Air Base Group for which value was not received. To the extent that they were in training, they represented a sort of insurance premium whose cost may be justified in the perspective of the larger Air Force mission.

But most significant to the purposes of our investigation is the fact that these factors reduce the squadron commander's control over his labor cost. The authorized strength cannot sensibly be used as a standard by which the squadron commander's performance could be evaluated if he has no control over labor.

At Lockbourne an officer to whom more personnel are assigned than he requires is urged to let this fact be known. This information is incorporated in the monthly
Financial Statement in which the officer indicates the number of men authorized, the number assigned, and the number he regards as required. The supervisor himself is deemed to have done what he should have done when he let it be known that he had more or less than required. It then becomes incumbent on his superiors to take the necessary action to remedy the situation.23

23Interviews with Lockbourne Management.

Thus it is apparent that command (top management at base level in the Air Force) exercises control over the allocation of human resources in theory by reference to a standard which is quantitative (and qualitative in skill requirements), but non-monetary. It is further apparent that the extent to which any base level manager can control the fluctuation in labor assigned to him is limited.

Control over the utilization of materials. A comprehensive system of control exists over the procurement and distribution of materials through enforcement of "regulations." Controls for many of the consumable items presently costed under the Financial Management System appear to be unreasonably tight. One of the by-products of a recent examination into base level inventory management was the development of a "retail store" in conjunction with regular base supply merchandising activities. It had
been found that some 30 per cent of the Supply Squadron's administrative work in issuing supplies involved items whose total value made up only 2 per cent of total dollar value of issues.\(^2\) Savings which might have been made by interviewing with Lockbourne Management.

\(^2\)Interviews with Lockbourne Management.

preventing abuse of government property through tight controls could not justify the cost per dollar of issues. Many of these small, low cost items were, therefore, placed in an area set aside within base supply store-rooms and designated as the "Retail Store." Any authorized representative of any organization on the base can visit the "Retail Store" and load a super-market shopping basket with selections he makes from the shelves. As he leaves a clerk totals the dollar value of his "purchases" by reference to standard cost schedules. No record is made of the number and type of items drawn but only the dollar value is recorded.

The Retail Store issued only about 37,000 or 0.2 per cent of base supply issues at Lockbourne during April.\(^2\)\(^5\)

\(^2\)The Lockbourne Financial Statement, April, 1955.

At this time the store is operated on a test basis. If seemed successful it will be enlarged to include a greater portion of base supply's low cost, high demand, expendable
Retail Store "sales" are all in materials which are centrally procured, i.e., which are obtained from Government owned and operated supply depots. Another venture of this type, designed to provide expendable materials procured on the open market, is called the "Local Purchase" store. It is operated in much the same fashion as the Retail Store, but deals more or less in office, automotive, and plumbing supplies, which are relatively low price, high demand items. The Local Purchase Store is also in the experimental stage.

Both these operations present a departure from the traditionally tight system of control over issues. When it is considered that both the Retail and Local Purchase Stores account for less than 1.0 per cent of monthly materials consumption (in expendables) it is apparent that this loosening of control is not extensive.

Once supplies have been issued from Base Supply and are placed in the hands of using personnel on a routine issue or Work Order basis, punitive controls predominate.

There is little real personal incentive in most cases for a man to utilize materials economically.\(^{26}\) In the absence of evidence of abuse of Government property his

\(^{26}\) Interviews with Rockbourne Management.
personal career would hardly be affected. Indeed since cost of materials is a secondary consideration he might, on occasion, further his own personal career by practices which are wasteful in materials, but improve his appearance in those areas where his performance is being measured.

It is apparent that controls over the utilization of expendable materials are largely punitive. If evidence of abuse of property is discovered, disciplinary action will likely result. The fear of punishment acts as a deterrent.

Since 1947, some years before the introduction of financial management, cost information which revealed material consumption by squadrons has been regularly collected. Although this cost information was not

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27 Interviews with Lockbourne Management.

regularly reported to the responsible supervisors who exercised jurisdiction over the organizations consuming resources, cost analysts in the control section of the Comptroller branch reviewed materials consumption data monthly. If costs appeared unreasonably high in an operating section, the appropriate line supervisor could be called to account for his performance.23 The extent

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23 Interviews with Lockbourne Management.
to which this system was successfully employed to improve effectiveness in the utilization of resources is not known. No evidence can be found, at Lockbourne, of materials cost standards to which reference presumably was made when cost analysis was conducted.

Control over expendable materials in one particular organization is unique. In the Food Service Squadron an effective upper control limit has existed on the amount of food which could be utilized. Outside this organization, however, there is no control limit to the quantity of materials which might be drawn by a using organization except the supply on hand and the punitive measures already discussed.

We are primarily concerned with control over the utilization of materials through financial standards. Although the machinery necessary for the use of financial standards has been in operation since 1947, no set of financial standards for controlling resource utilization is in evidence at Lockbourne.

When control over labor is contrasted with control over materials, it is apparent that labor controls are largely preventive - limiting the amount of labor which the responsible supervisor can employ - and materials controls are largely punitive - bringing into play disciplinary measures when abuse of property is in evidence. In neither
case is personal accountability established for performance evaluation purposes to any great extent.

THE FINANCIAL STATEMENT

In a sense the phrase Financial Management is inappropriate as it is employed at Lockbourne. Financial Management suggests to the comptroller of an industrial organization the procurement and allocation of capital. In the Air Force capital is procured by grant from Congress. It is allocated in somewhat the same fashion as that employed in industry, top management endeavoring, like the industrial comptroller, to so distribute the capital available as to maximize the value of its employment.

At Lockbourne, after a year of reporting costs which would presumably point the way toward greater effectiveness in the utilization of resources, Financial Management is used by line management almost synonymously with The Financial Statement.

Lockbourne's first Financial Statement was published in July of 1954. It has varied in size from a fifty-eight page document to a hundred and five page book. With the initial publication of the Financial Statement the costs of operations have been brought together in a single consolidated statement. 29 For the first time the value of

29 It should be remembered that costs of this sort have been available for some years, but never before have they been
brought together in one document with labor and materials costs for all operating components summarized for base level management review.

Inventories and other capital assets has been expressed in terms of dollars.

The statement is composed of four sections, displaying operating cost or asset value information for:

1. The 501st Air Division, which includes those which follow,
2. The 26th Strategic Reconnaissance Wing,
3. The 31st Strategic Reconnaissance Wing,
4. The Air Base Group.

The format and definition of accounts is specified by United States Air Force Headquarters.

The two wings and the Air Base Group are further broken down into squadrons. Chart IV shows a page of the April 1955 Statement devoted to the Supply Squadron.

Since depreciation is ignored, all operating costs are included in one or more of three categories: 31

If the useful life of the average aircraft were assumed to be seven years (not an unrealistic period when obsolescence is considered), depreciation of aircraft would be greater than all operating costs incurred at Lockbourne. At this stage, however, the Air Force has committed itself to a policy of ignoring depreciation on physical equipment, preferring to cost all capital equipment when it is scrapped. No charge appears in the monthly financial statement for depreciation.

(1) Labor
(2) Materials
(3) Other costs.
## Chart IV

**SAMPLE PAGE FROM THE LOCKBOURNE FINANCIAL STATEMENT**

**SOLDIERS SUPPLY SQUADRON**

*Operating Expense Statement*

Month Ended 30 April 1995

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<td></td>
<td><strong>516</strong></td>
<td><strong>571</strong></td>
<td><strong>14.9</strong></td>
</tr>
</tbody>
</table>

|          |                              | **$120,540** | **$771** | **14.9**               |

**Proposed Operating Data**

(In thousands of dollars)

<table>
<thead>
<tr>
<th>Military</th>
<th>Civilian</th>
<th>Material</th>
<th>Other</th>
<th>Total Expense</th>
<th>Prod Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>84.7</td>
<td>4.7</td>
<td>25.8</td>
<td>(24)</td>
<td>1.2</td>
</tr>
<tr>
<td>Dec</td>
<td>89.0</td>
<td>4.9</td>
<td>28.5</td>
<td>31.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Jan</td>
<td>80.6</td>
<td>(4.4)</td>
<td>19.1</td>
<td>25.7</td>
<td>(1.2)</td>
</tr>
<tr>
<td>Feb</td>
<td>76.0</td>
<td>(9.1)</td>
<td>21.5</td>
<td>24.8</td>
<td>(2.0)</td>
</tr>
<tr>
<td>Mar</td>
<td>77.0</td>
<td>(8.1)</td>
<td>13.1</td>
<td>28.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Apr</td>
<td>84.0</td>
<td>(2.9)</td>
<td>18.0</td>
<td>26.9</td>
<td>(1.9)</td>
</tr>
</tbody>
</table>

**Avg** 81.9 (3.2) 20.0 27.1 (.3) 9.8 5.1 (1.4) 2.3 (1.0) 116.2 (5.9)

*Indicates actual expense over or (under) forecast.*
Military labor is charged at predetermined standard rates for all personnel by rank; civilian labor is charged at actual cost. All labor costs are charged to the organization to which the airman or civilian aid was assigned during a given month, regardless of whether he was present for duty.

Materials costs charged in the statement to using organizations include only that broad class referred to as consumable, non-recoverables or briefly, expendables. This includes such items as food, fuel, small parts, office supplies, ammunition, etc. Aircraft parts which are of some value and durability are not costed to the using organization. Similarly larger pieces of equipment and aircraft themselves are costed only when salvaged and are not charged to the using organization. This practice deserves comment. For the time being, however, we will accept the current cost reporting practice as a given condition and design our control standards accordingly.

"Other costs" are almost entirely contractual services. Those arise when a base level component, on specific authorization, contracts for civilian service on some special project the painting of structures, for example, repair of utilities, or special machining of parts beyond the capabilities of the local component.

Overhead costs, what industry would refer to as
administrative costs, etc., are segregated in each functional organization under Command and Administration.

In spite of the fact that the Financial Statement has been published for some months, it is not yet entirely accurate or revealing. Recurring bookkeeping adjustments necessitated by changes in the manner of reporting or format of presentation have invalidated comparisons which otherwise appeared to indicate significant trends.

In view of this shortcoming the reader should be alert to the concepts and techniques employed rather than on precision in cost reporting. The objective here is to develop a methodology by which the type of information available in the Financial Statement can be employed by base level management to improve control over the utilization of resources.

The April statement will serve as a starting point for our inquiry. At the end of April, 1942, 7,501 civilian and military personnel were assigned to Lockbourne. Assets (reported at standard costs, undepreciated) were evaluated at $29,000,996, seventy-three per cent of which was aircraft, 19 per cent plant, property and equipment, and the remainder inventories and other miscellaneous resources.

Total operating costs for the month came to $33,412,300, fifty-eight per cent of which was for labor, 11 per cent
for aircraft fuel, and the remainder for materials other than fuel and miscellaneous costs.\(^{32}\)

\(^{32}\)Thus it is apparent that if aircraft fuel costs are ignored, 70 per cent of base level operating costs reported in the Financial Statement are labor costs.

**SPECIFIC OBJECTIONS TO THE INTRODUCTION ON FINANCIAL STANDARDS**

Control is exercised by reference to standards. To be effective standards must be realistic, attainable, and involve factors for which personal accountability can be established if at all possible. Recognizing this requirement the United States Air Force dictated, in the format which the accounting section of the Locksorne Test Team employed in designing its Financial Statement, that a standard cost be included in cost areas. This cost would represent what unit costs would have been had resources been economically employed. Since completely valid standards did not seem to be available, the next best thing was substituted: a unit standard based on expected costs and expected units of output. Thus the standard cost voucher processed by which performance would be evaluated in the salvage section of the Supply Squadron was established by dividing the squadron commander's own estimate of what his April costs would be by what he estimated
his volume of vouchers during April would be. Both estimates were made two months prior to April.

Since proximity to this standard would indicate only the accuracy with which the squadron commander could predict what his costs and volume of operations were to be, to the Management Analysis division they fell far short of a standard by which accountability could be established and control over resource consumption exercised.  

An examination of Chart IV reveals that the operating statement emphasizes heavily the comparison between actual costs versus forecast costs and program, i.e., the volume of operations which the organization predicted it would experience. The Financial Statement has not been employed to draw attention to actual costs versus what costs would have been had economy been exercised in the utilization of resources.

Hence in an effort to usefully interpret the information which the Financial Statement revealed, Management Analysis began to compare actual costs to other standards. What are costs this month versus those of last month? What relation exists historically between costs and units of output for comparable organizations at other air bases where units of output are readily identifiable? Inevitably when Management Analysis asked itself these questions and costs appeared beyond standard to be out of control,  

That is, actual costs exceeded standard costs by a greater than normal deviation.
the question arose: Which is responsible, labor or materials? If material costs appeared to be too high, it was generally argued that in the absence of evidence of abuse of property, the high material cost was a temporary fluctuation which would be ironed out in the long run. If labor appeared to be responsible it was quickly pointed out that the supervisor whose performance was being measured had no control over labor assigned to him in the short run, and, furthermore, labor is already controlled by a comprehensive manpower allocation system to which nothing is added by the introduction of the dollar.

But by direction from Strategic Air Command Headquarters, it became incumbent upon the Lockbourne Management Analysis office, during the period of the test, to "sell" Financial Management to base level management. The job of showing command how financial management could be useful was a difficult one. Generally it was approached in an empirical fashion. As the Financial Statement was published each month the Lockbourne Management Analysis Section would study it in some detail. Areas where resource consumption seemed to vary significantly from whatever provisional performance standards could be found were marked for highlighting in a summary statement for top management briefing.

The Financial Statement was placed in the hands of
both top base level management and operating supervisors whose performance seemed to warrant investigation. After several days, during which time management would presumably study the statement, a Financial Management Conference was held during which the statement was discussed. "Flip-charts" were used to facilitate presentation of information and to slow significant comparisons. Top management openly questioned its Management Analysis staff representative as to the value of all this. "How does this help me," was the common top management question. "I cannot control these costs," was the common operative management defense.

At no time during the writer’s experience with the Lockbourne test was a comparison drawn between actual performance and a standard but what the responsible supervisor most vitally concerned rejected the conclusions reached as a result of the comparison on the ground that "We are different," or "We cannot control these costs." Seldom did the responsible supervisor’s superior fail to concur in his subordinate’s defense. So long as exact comparability did not exist, the conclusions were rejected.

This might seem curious when it is remembered that management in industry eagerly compares itself to other organizations. The popularity of Dun and Bradstreet financial ratios and of Trade Association and Government statistical ratios attests to the value industry places
on such comparisons. When an independent grocer refers to the ratio between labor and total costs in the industry of which he is a part, he knows full well that no other grocery in the United States is precisely the same as his. But recognition of this difference does not preclude his making use of this sort of information concerning his operations. By reference to such standards as these he knows he might be able to discover either discrepancies in his operations, or opportunities for management improvement.

Why in the Air Force, wherein standardization is employed with such consistency as to have no parallel in industry, is the lack of perfect comparability allowed to obstruct the introduction of a system of standards which might yield real results in economy and effectiveness?

The answer lies in the nature of the organization and the factors which motivate the military manager.

At base level the magnitude of the centralization of control is quite apparent. The extent to which the manager has control over his own costs is relatively minor. He may have virtually no control over his "volume of business." His performance is complicated by the fact that the turnover of his personnel is high, that he himself is likely to be only a temporary member of the organization, and that he has a mediocre perspective of the demands which might be made on him in the future.
For these reasons he tends to resist being evaluated by comparison to his associates.

But the most significant reason that the base level manager opposes such comparisons and finds solace in his superior's concurrence is the lack of emphasis which top Air Force management places on cost responsibility. In no case was there to be found any evidence that accountability for resource utilization had been established with much diligence. The organizational environment has not been favorable to it, and no serious effort has been made to implement it.

Instead, as a natural consequence of centralized control, emphasis is placed on "indirect" performance factors. A good manager is one whose paper work is accurately prepared and submitted on time; one whose physical property is kept in an orderly fashion. These are factors which, theoretically, cannot be well done without a corresponding degree of success in the organization's primary mission.

Yet these performance factors are indirect. Conflicts arise when the manager must choose between pursuing his primary mission and behavior so as to appear best in those areas where his performance is being measured, and upon which his personal success depends.
It is not likely that an operating supervisor will profit personally by exercising anything less than extraordinary economy.

Conditions may even arise wherein to exercise economy would be to divert time from areas where personnel "profit" opportunities exist. The common consequence of this condition is adoption of a policy of exercising economy only where "all other things are equal."

Except in isolated cases where an Air Force manager harbors a natural aversion to waste it cannot be expected that the required incentive to economize will emerge from the bottom of Air Force hierarchy. Rather it must come from above. Under present conditions effective pressure to economize does not come from above. Implications that costs are too high tend to come from outside agencies or staff management within the Air Force hierarchy. Coming from these sources it tends to become an accusation reflecting both on the member of line management directly affected and his superior, whose overall performance is indirectly criticized. The result is that they both become allies against a common critic. Instead of seeking out a standard by reference to which their own shortcomings in resource utilization can be discovered, as their
managerial parallel in industry would do, they resist
the comparison.

The objection is not really to financial standards
but to precise standards in general. Traditionally a
very "loose" non-quantitative standard, the Air Force
regulation, has been employed. For virtually any
situation there is, supposedly, a regulation which specifies
what course of action should be taken.37 Thus regulations

37 Interviews with Lockbourne Management.

are a sort of standard, and performance is measured by
the extent to which regulations are complied with.

But a regulation is a different sort of standard.
Regulations usually state what procedure will be followed
— what can and cannot be done — and are theoretically so
composed that if followed properly, desired results will
be achieved.38

38 Ibid.

Financial standards do not state what procedure should
be followed but are more direct and precise. They state
what results should be achieved. Thus preventive
regulations which control material utilization say: the
Air Installation Squadron is authorized X pieces of road
equipment of type Y. Presumably, if no more of this
equipment is supplied to the Installations Squadron, it will get the job done with that equipment normally required, and economy will result. In contrast financial standards say: if it costs only $Z to perform the Installation function, economy is being exercised.

Regulations are easier standards to measure up to. They provide a less precise, a qualitative rather than quantitative, criterion by reference to which performance can be evaluated.

This is the environment within which base level management functions. For the moment let us assume this environment will not be changed.

THE VALUE OF FINANCIAL STANDARDS UNDER PRESENT CONDITIONS OF CENTRALIZED CONTROL

Since the consumption of materials has been expressed for some years in terms of dollars and the opportunity to improve control over material resources through the introduction of dollar standards is not new, what, in itself, has been added by the introduction of Financial Management?

Since a comprehensive manpower control already prevailed, a system which set limits on the amount of labor a supervisor was entitled to and should require, what good has been added by the introduction of the dollar?

One popular defense to the charge by skeptical
supervisors that Financial Management is not useful to line management is that expressing resource consumption in dollars points up the magnitude of the supervisor's responsibility. To tell the Food Service officer that his operation had cost the Air Force $128,000 for one month would make him cost-conscious and enlist his sympathy toward the cause of economy.

A second defense of Financial Management has been that by expressing, for the first time, base supply inventories in terms of dollars, the magnitude of the Government's investment in inventories is emphasized. Thus if the Base Supply inventory exceeded the level of inventories which regulations specified as desirable, expressing this supply overage as eight million dollars would illustrate more persuasively the seriousness of the overage than describing overages in terms of numbers of items, or pounds, or cubic feet.

The validity of these defenses is questionable. Interviews with base level supervisors reveal a general disagreement on the question. Some reason that every Air Force supervisor is also a taxpayer. Like any taxpayer the Air Force officer deprecates waste, and if shown where opportunities for economizing are great, will display determination to economize. Others, claiming to be realistic, point out that the magnitude of the Air Force operation
has so distorted the dollar as a measure of value that the average officer is little moved by advice that he, for example, is in charge of a ten million dollar airplane.

One point was generally agreed upon: few men will manifest much concern over the magnitude of the cost of their resource consumption unless their personal success in the Air Force is dependent upon cost performance. And under the present Air Force practice of performance evaluation no real premium is placed on a propensity to economize. Indeed "empire building" the opposite practice, may pay dividends in personal aggrandizement.

If we assume that the present system of highly centralized control over resource allocation in the case of labor, and negative control through regulations in the case of materials is to be continued, then we must accept it as a given condition. How under these conditions, could financial standards be usefully employed?

Two ways in which financial standards could be productively employed under these conditions present themselves: (1) by placing supply overages in proper perspective through expressing inventory holding as an operating cost; (2) by facilitating budget requirement determination through further use of the dollar as a common denominator.

Placing supply overages in proper perspective by
expressing inventory holding as an operating cost. The seriousness of shortages in critical supplies and equipment needs no elaboration here. To minimize the incidence of inoperative aircraft due to unavailable parts the Air Force has established and employed for some time a comprehensive system of regulations which govern base supply activities. Provision is made for maintaining supply records which reveal the state of supply on hand at any time, the rate of consumption by items, the pipeline time between requests for replenishment and receipt of items, and the cost of the item.

Base supply management's inventory maintenance policies and minimum balance and reorder points are dictated by regulations. Given the dollar value of the item, its rate of consumption and pipeline time, base supply management simply refers to regulations to determine reorder points and minimum balances. The ideal inventory level for any item regularly consumed is referred to in supply literature as the "stockage objective." It is normally expressed in number of items, or number of day's supply.

Procurement and issue of equipment and supplies from base supply are fairly closely controlled at the present
time by regulations which specify in some detail authority to act and procedures to follow. With the introduction of the Financial Management program and the dollar valuation of Base Supply inventories on a perpetual basis, however, the opportunity to improve control over inventory management presents itself. If control is to be improved it will begin largely through comparing, for performance evaluation purposes, the cost of rendering the supply function actually incurred to that which would be incurred if supply were managed most efficiently, and by taking corrective action where poor performance is in evidence.

The present cost reporting system does not charge operating organizations for the building space they occupy, or for their utilities, depreciation on equipment, etc. If an organization occupies more than necessary space, wastes utility services, and abuses equipment it will be utilizing more resources than the Financial Statement will reveal. In the absence of a monetary control in this area top Air Force management is forced to rely on traditional Air Force techniques to prevent inefficient resource utilization.

Top Air Force management has manifested a desire, however, to highlight the seriousness of these presently unreported costs in one area: Base Supply. Under the
One page of the Financial Statement is devoted to a breakdown of supply inventories, and lists overages, shortages and rates of issue.

Financial management program the magnitude of base supply inventories as well as squadron operating costs are examined. The magnitude of supply inventories is of concern because any variation from the ideal inventory level (which is dependent on the rate of issue, value of the item, etc.) increases costs. If the actual inventory level maintained is allowed to fall below this ideal level, total costs to the government will increase through sacrifice of better transportation terms and quantity discounts arising out of a necessity of reordering more frequently and in smaller quantities; through the costs of being caught short and interrupting operations of using organizations, etc. If actual inventory level maintained is allowed to rise above this ideal level, total costs to the government will rise due to increased storage costs, greater deterioration and obsolescence of stocks as a result of low turnover through interest charge on the investment, etc.

The ideal inventory level is that level at which the disadvantages of holding too small an, too large an inventory are minimized.

At base level it must be assured that the ideal inventory level is the stockage objective. Presumably
higher headquarters has based stockage objectives, which regulations specify, on an evaluation of all those factors upon which maximum efficiency in supply management depends. This aspect of supply management performance, therefore, should be evaluated by reference to the stockage objective.

In industry, turnover rate is commonly employed to facilitate the comparison between actual and ideal. Turnover rate might be used for this purpose in the Air Force by comparing actual inventory turnover to the turnover rate which would have been experienced had inventories been maintained at stockage objective level.

However, inventory turnover is expressed in percentage. We are dealing with some twenty thousand different types of items in base supply, for each of which a different desirable turnover rate might prevail. Since percentages cannot be averaged, the difficulty of arriving at a single measure for all categories of supply is apparent.

It might be argued that since almost all base supply categories are in excess of stockage objective an approximate turnover rate could be established which, though not necessarily representing the ideal rate precisely, would be useful as a goal toward which the base Supply officer might be inspired to strive. A further inquiry into information available indicates that this sort of approximation is not necessary, however, and that a more
valid standard exists.

In April, 1955, Lockbourne's actual serviceable inventory exceeded the stockage objective by $8,009,500.\textsuperscript{41}

\textsuperscript{41}The Lockbourne Financial Statement, April, 1955.

The cost of the $8,000,000 overage represents excessive resources "consumed." For evaluation purposes the magnitude of this cost must be determined.

In a special study for the United States Air Force, Harbridge House, Inc. suggested formulae by means of which the costs of holding inventory might be determined.\textsuperscript{42}

\textsuperscript{42}Correspondence from Mr. A. F. Lane, Deputy Chief, Procedures and Field Operations, Division, Directorate of Supply, USAF, Air Materiel Command, Wright-Patterson Air Force Base, Ohio, June 13, 1955.

Although the study applied to two Air Materiel Command depots and may have only partial validity applied to base level, it is useful here to illustrate the fashion in which holding costs for supply overages might be determined.

Table I shows the dollar value of Lockbourne's April excesses over stockage objective by twenty two inventory categories. Costs per month of holding these overages due to value and weight-space characteristics are believed to be a valid adaption of Harbridge House formulae to Lockbourne's inventories.
### Table I

<table>
<thead>
<tr>
<th>Inventory Category</th>
<th>Excess over Stockage Objective</th>
<th>Monthly Cost of Holding Inventory(1) Cost per Total Dollar</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOC Kits</td>
<td>$333,000</td>
<td>$0.00749</td>
<td>$2,532</td>
</tr>
<tr>
<td>Airframe Spares</td>
<td>1,670,600</td>
<td>$0.00609</td>
<td>6,520</td>
</tr>
<tr>
<td>Engines</td>
<td>71,400</td>
<td>$0.00749</td>
<td>17,417</td>
</tr>
<tr>
<td>Engines Spare Parts</td>
<td>727,000</td>
<td>$0.00609</td>
<td>4,329</td>
</tr>
<tr>
<td>Avionics Instruments, Assemblies &amp; Comp.</td>
<td>752,600</td>
<td>$0.00609</td>
<td>4,513</td>
</tr>
<tr>
<td>Electronics &amp; Comm. Equip. &amp; Spares</td>
<td>54,100</td>
<td>$0.00122</td>
<td>2,735</td>
</tr>
<tr>
<td>Vehicles, Marine Equip., Holding Equip., Constr. Machinery &amp; Spares</td>
<td>153,900</td>
<td>$0.00614</td>
<td>900</td>
</tr>
<tr>
<td>Tools, Hand Specialized</td>
<td>27,000</td>
<td>$0.00711</td>
<td>197</td>
</tr>
<tr>
<td>Shop Machinery &amp; Lab. Equip.</td>
<td>165,200</td>
<td>$0.01771</td>
<td>2,226</td>
</tr>
<tr>
<td>Fuels &amp; Fuel Holding Equip. &amp; Supplies</td>
<td>19,300</td>
<td>$0.00711</td>
<td>137</td>
</tr>
<tr>
<td>Ammunition</td>
<td>-0-</td>
<td>$0.01771</td>
<td>-0-</td>
</tr>
<tr>
<td>Armament, Photo Equip. &amp; Supplies</td>
<td>520,300</td>
<td>$0.00122</td>
<td>2,191</td>
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<tr>
<td>Training Aids</td>
<td>67,200</td>
<td>$0.01103</td>
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<tr>
<td>Food Sv., Heat, Air Cond. Equip. &amp; Supplies</td>
<td>55,700</td>
<td>$0.03376</td>
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</tr>
<tr>
<td>Clothing, Survival Equip. &amp; Parachutes</td>
<td>156,600</td>
<td>$0.03127</td>
<td>1,794</td>
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<tr>
<td>Furniture, Office &amp; Print Equip.</td>
<td>62,400</td>
<td>$0.03396</td>
<td>1,793</td>
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<tr>
<td>Misc. Hdw., Gen. Purpose Equip.</td>
<td>12,300</td>
<td>$0.03396</td>
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<tr>
<td>Flying Field, Hangar &amp; Night Lighting Equip.</td>
<td>123,200</td>
<td>$0.03326</td>
<td>6,521</td>
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<tr>
<td>Technical Services</td>
<td>92,600</td>
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<td>10,693</td>
</tr>
<tr>
<td>All Other</td>
<td>22,600</td>
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<td>1,569</td>
</tr>
<tr>
<td>Stock in Retail Store</td>
<td>23,100</td>
<td>$0.00645</td>
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<tr>
<td>Stock in Service Store</td>
<td>130,600</td>
<td>$0.00913</td>
<td>1,219</td>
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<tr>
<td>Totals</td>
<td>$8,009,500</td>
<td></td>
<td>75,624</td>
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</tbody>
</table>

(1) Includes building depreciation, labor, material and services fixture depreciation, inventory deterioration, obsolescence, and interest on investment.
Reference to the Table shows the cost of maintaining this excessive inventory was $7,634 during April, 1955.

A supply overage is of concern only because it requires excess resource utilization. By expressing the excess as an operating expense we place it in proper perspective. Only by quantitatively measuring in this fashion the disadvantage of carrying excess inventories can the relative seriousness of, say, an $3,000,000 supply overage compared to a $50,000 excessive monthly administrative and operations cost be evaluated.

A total evaluation of the resources consumed in the performance of the base supply function might well be designed thus:

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4 Traditional controls over inventory management are not as loose as this evaluation might imply. Some of Lockbourne's $3,000,000 overage was excess equipment for which disposition instructions had been requested from higher headquarters. By leaving these particular excesses at Lockbourne until they could be shipped directly to a consuming agency rather than taking them into depot level inventory for further relocation later, the Air Force might economize in the long run. To the extent then that these excesses are depot level's inventory being stored at Lockbourne, they cannot be realistically viewed as a Lockbourne overage, and should not be allowed to reflect on the Supply Squadron Commander's managerial ability.

The difficulty lies in the definition of stockage objective, which does not, but which should, include these particular excesses.

The precise portion of the $3,000,000 which fell into this category in April was not known either by the Supply Squadron Commander or the test team.
Operating Costs:

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Labor</td>
<td>$110,900</td>
</tr>
<tr>
<td>Materials</td>
<td>6,900</td>
</tr>
<tr>
<td>Other</td>
<td>2,700</td>
</tr>
<tr>
<td><strong>Total Operating Costs</strong></td>
<td><strong>$120,500</strong></td>
</tr>
</tbody>
</table>

Excess Inventory Holding Costs (less $243,436)...... 75,136

Total Costs................................... 195,936

Volume of Operations:

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line items processed</td>
<td>39,230</td>
</tr>
<tr>
<td>Issues</td>
<td>3,256,473</td>
</tr>
</tbody>
</table>

Cost per line item processed 31.97 33.06 62

Cost per dollar issues 0.06 0.037 62

*For labor, materials and services which are already charged to the squadron under operating costs.

**Costs Lockbourne would have incurred had all categories been maintained at the stockage objective level, labor costs had been those which would have been incurred had the squadron been manned at authorized strength, and materials and other costs had been the average for the past six months.

In this analysis only one inventory category was below stockage objective. A shortage cannot, of course, be employed to offset an overage since both are undesirable. We have assumed that the base Supply Officer has a substantial measure of control over overages and therefore should be evaluated by reference to their magnitude, cost-wise. It is further assumed that if he has reordered items
in which he is in short supply in accordance with regulations his responsibility for the shortage ceases.

It should be observed that by this development we are charging the Supply Squadron, for performance evaluation purposes, for the space they occupy, for depreciation and for interest on the investment value of their assets. At this time no other operating unit is being charged for these factors. However the magnitude of the investment in supply inventories appears to justify this approach to the supply function.

Traditionally maintenance of inventories at the ideal level has been controlled through a system of regulations which specify stockage objective. Prior to the introduction of Financial Management the maintenance of inventories at the stockage objective level was ostensibly enforced by a sampling inspection. If fifteen different items out of a sample of one hundred (taken at random from the 20,000 old "universe") were found to exceed their respective stockage objectives, the inspector might conclude that the inventory in all classes was excessive. This method has obvious shortcomings. The introduction of the dollar as a measuring device makes it possible for management to:

(1) Summarize the total deviation from stockage objective of thousands of different items;
(2) Place inventory overages in proper perspective for evaluation purposes.
 Both these steps promote management by exception.

**Facilitating the determination of budget requirements.**

The usefulness of the financial management system under present conditions is evident in another area and once again this usefulness arises out of the capacity of the dollar to summarize resource consumption.

With the dollar as a unit of measure different types of materials can be added together to reveal total materials consumed. Since 1947, cost information summarizing materials consumption by squadrons has been reported regularly. Where unusually high materials costs appeared cost analysts would presumably seek a further breakdown of materials by classes and items. Thus an element of management by exception prevailed: a squadron's material resource consumption being investigated in detail only if total materials costs appeared out of control.

Applying the dollar as a unit of measure to labor extends the usefulness of the dollar as a common denomination. Now management can examine total (measured) resource consumption by reference to one figure - a composite labor and materials cost. This is obviously advantageous for budgetary and planning purposes.

At this time only a small portion of the resources
consumed by the 301st Air Division at Lockbourne are
procured with funds allotted to Lockbourne. Only "Other
Costs" and those materials which are procured on the open
market and issued through the Local Purchase Store are
paid for out of Lockbourne funds.

At this time only those funds allotted to Lockbourne
are budgeted. This budget is composed at Group
Headquarters level; the squadron commanders whose forecasts
appear in the Financial Statement (Chart IV) make no
contribution to the real budget's determination.

At this time no use is made of the budget estimates
compiled by the squadron commanders and presented in the
Financial Statement. The motions of forecasting future
operations and future costs are gone through only to make
the manager cost conscious and to educate him in the
budgeting process, looking forward to the day when base
funds will directly finance a greater proportion of base
resources.

To the squadron commander, who is required to compose
this unused budget, the Financial Statement has one useful
purpose: it facilitates his budgeting job. Each commander
has only to refer to his historical experience as revealed
by the Financial Statements, and then relate his past
costs to future expected load in order to establish his
future probable costs.
For the commander who harbors a sense of financial responsibility and abhors waste it cannot be denied that the introduction of this new management tool will be useful. Title IV of Public Law 21 urged improved budgetary practices. Although Congress probably had in mind budget determination changes at higher management levels, the dependence of budgetary accuracy on forecasts at the resource consumption level suggests that this may be a worthwhile move at base level.

We have seen two areas in which Financial Management, as the term is used in the Air Force, can be usefully employed at base level. It has been estimated that about $15,000 is spent each month at Lockbourne to publish the Financial Statement. Considering the fact that traditional controls over resources have not been wholly ineffective, and the gains we have identified are slight, the introduction of Financial Management and financial standards would hardly seem to justify their cost.

What then of the claims for Financial Management made by its enthusiastic supporters? Air Force publications which have treated the Financial Management program have emphasized repeatedly one anticipated result of its introduction into the Air Force control mechanism:
greater effectiveness in the utilization of resources.

The introduction of Financial Management at Lockbourne approximately one year ago, however, has brought about no measurable improvement in the utilization of resources. If Financial Management is to prove worthy of its name, some missing ingredient must be added. The missing ingredient is to be found in a few fundamental principles of management which underlie a decentralized control system.
INTRODUCTION

It seems curious that in the literature which accompanied the introduction of Financial Management virtually nothing was said regarding decentralization. Yet the usefulness of Financial Management as a means of achieving greater effectiveness in the utilization of resources depends to a tremendous extent on the relinquishment by top Air Force management of a small measure of authority to base level management - a step toward decentralization.

In order to see how financial standards can be designed and introduced most palatably and usefully to base level management, it would be well to examine:

1. Applicable principles of management relating to decentralized control;
2. How labor might be made a controllable cost at
(3) How labor could most conveniently be costed for performance evaluation purposes.

Attention will then be turned to examining:

(1) The designing of financial standards;

(2) The extent to which financial standards can be employed;

(3) The applicability of Financial Management to tactical organizations;

(4) The introduction of costs, for performance evaluation purposes, other than labor and expendable materials;

(5) The validity of standards presently employed;

(6) The problem of "selling" financial standards to base level management.

**PRINCIPLES OF DECENTRALIZED CONTROL**

Leadership is the dominant characteristic in any group activity. Management is the function of leadership. Management PLANS in order to determine means to achieve the group objective; it ORGANIZES a controllable structure of relationships, and it delegates responsibility for performance. At the same time it establishes accountability for performance, and it CONTROLS by reference to the extent to which actual performance conforms to that standard performance for which accountability was established.
When the authority to act and the procedure to follow are largely dictated by a central management agency, we have a centralized control system. When this authority to act and procedure to follow are left to lower level operating managers, a decentralized control system prevails.

In either case the functions performed by an operating unit are likely to be the same. The power to decide is what is "centralized" in a centralized control system.

To the extent that responsibility is synonymous with functions to be performed, it is apparent that responsibility in both a centralized and a decentralized control system is much the same. Two factors inherent in the managerial environment have changed, however: the amount of authority and the nature of accountability.¹

¹Responsibility is delegated by designating functions to be performed. Accountability is established by indicating the fashion in which performance will be evaluated.

When the authority is highly centralized, accountability has, of necessity, to be established in somewhat indirect terms; i.e., management must establish accountability in terms which are not of themselves the ultimate objective of the organization, but which are more or less means by which the objective might be achieved.

When authority is highly decentralized, accountability is established in more direct terms; i.e., management
establishes accountability more nearly in terms of the end objective to be achieved.

Thus the production manager in a highly centralized control system might be told by higher level management to produce "x" number of "y" products according to specifications provided him. He may be allowed to obligate the firm in market transactions up to only $z per month. He may procure raw materials from suppliers and at prices dictated to him. Personnel policies may be dictated more or less from above and equipment utilization practices may also be controlled from above.

Since a man cannot be held accountable for something over which he has no control, a manager under centralized control cannot be held entirely accountable for profit realized (the end objective). Quite likely accountability for his personal performance will be established in more indirect terms; he will be evaluated by reference to his compliance with company rules and dictates. His personal managerial performance will be evaluated by reference to "indicators" such as labor grievances, production interruptions due to poor maintenance practices, labor turnover, production per man hour, ratio of indirect to direct labor costs, etc.

A manager in a highly decentralized organization, (a "profit center" operation, for example) one to whom much
authority has been granted, is likely to be told he can obligate the firm up to a much higher figure, that he can establish, within broad limits, his own personnel policies, and that he can buy from whom he chooses and determine his own equipment utilization practices. He is likely to be held accountable for achieving the ultimate objective for which the functions of his organization were established: his performance may be evaluated in terms of his profit.

For any group there is a desirable degree of decentralization. If authority is too highly centralized, a manager may inadvertently, or on occasion willfully, subvert the end objective in his eagerness to appear well in those areas for which he is being held personally accountable. This can be prevented by establishing accountability in terms which relate directly to the end objective. But this also can be carried too far, for with this sort of accountability must go fuller authority. When authority is granted the opportunity for abuse is established.

In the Air Force authority is highly centralized. The dangers of over-centralization of authority and an overly indirect establishment of accountability are apparent. To "look good" in submission of reports, a performance area in which top management places much emphasis, the commander may do well to forego his primary function of economical maintenance of base facilities, maintenance of base
security, provision of nutritious food service, etc.

If accountability is established in too indirect terms and emphasis is thus placed on something other than the organization's objective, the real purpose of the organization may suffer.

Recognizing that no manager can be held accountable for something over which he has no control, and being indisposed to relinquish the authority which establishing accountability in terms of the end objective would require, top management has had to establish accountability in indirect terms.

Thus in the Food Service Squadron, the squadron commander is not held accountable for resources utilized in rendering the Food Service function. Rather control over the size of the labor force is withheld, he is told what and how much materials he can have, and then his performance is measured in terms of the timeliness of his paper work, his AWOL (Absence With Out Leave) rate, success in meeting schedules, etc.

The result is that he seldom hesitates to request and hold as large a labor force as he can get, and he draws maximum allowable rations for every meal.

If in a centralized control system accountability could be established in terms which, if achieved, would lead to economy in the utilization of resources, and the
end objective would of course be achieved as a by-product. But the more remote from the objective - the more indirect from the ultimate goal - the more susceptible to misplaced emphasis a performance evaluation factor becomes. Ignoring for the moment the disadvantages of decentralization in the Air Force, let us examine how financial standards might be used to exercise control over resource utilization at base level under a system of decentralized control.

Under decentralized control the performance of the manager might be evaluated by the extent to which his resource consumption conforms to that which would have been experienced if economy and effectiveness had been exercised in their utilization. His personal success would be geared to success in pursuing the ultimate objective of his organization.

Under a decentralized control system, Financial Management would be indispensable. Since resource consumption economy would be a motivating goal of the supervisor, he would require cost information. Higher levels of management at base level would find financial information indispensable to management by exception. A "profit center" operation might be approached, wherein the responsible supervisor's performance would be measured by the extent to which his "value created" compared favorably with his cost of creating it.
MAKING LABOR A CONTROLLABLE COST AT BASE LEVEL

The process of decentralization in the Air Force at base level would be most significant as it relates to labor. We find few cases wherein an operating supervisor has been instructed to take more materials than he feels he needs to perform his job. But this is not so with labor.

Furthermore if aircraft fuel is excluded, approximately 70 per cent of Lockbourne's costs charged under the present cost reporting system are labor costs. If greater economy in the utilization of resources is to be achieved, human resources offer the greatest potential cost saving opportunities.

The question is: Is labor to be considered a controllable cost at base level? It is not enough to say that since a commander can recommend through channels that he needs fewer or more personnel, labor is already a variable cost. All costs are variable and controllable at some management level in the long run. We are concerned with the use of financial standards at base level. If financial standards are to be useful to improve utilization of resources at base level, personal success must be made to depend on the effectiveness of their utilization. If accountability is to be so established, the accountable supervisor must be given control over the factors upon which effectiveness in resource utilization depends.
At this point those responsible members of Lockbourne management with whom the problem has been discussed have manifest considerable skepticism about the desirability of granting the necessary control to base level management. They have been even more skeptical concerning the probability that Air Force top management above base level would ever grant such authority.

The most valid objections to granting this control appear to be:

(1) That the base level manager occupies too restricted a position to see the larger Air Force mission in that perspective necessary to exercise such authority judiciously;

(2) That the unavoidable turnover of military personnel precludes the continuity that this sort of authority requires;

(3) That unavoidable dislocation of personnel and skills, even cut to the irreducible minimum, and the inability of the Air Force to lay men off when short run changes eliminate the need for their services, would make any system other than the traditional one impractical.

Management's limited perspective at base level. The Air Force operates as a team. Its various functions are highly interrelated and interdependent. Total Air Force combat readiness dictates that each functional unit must
be prepared to perform on moment's notice in conformance with the total "weapons system" of which it is a part. The scope of the operation and security requirements, it is argued, preclude the practicability of granting to a base level operative manager (squadron commander) the authority to employ just that quantity of labor he sees fit.

If an operating supervisor is allowed to separate from his organization labor which he finds surplus to his immediate needs, then when he is called upon for increased support he will lack the desired capability. The result would be a reallocation of personnel at the last minute which might be more costly than maintaining an excess or reserve in a more or less standby capacity during the interim.

Perhaps even more persuasive is the argument that between wars the Air Force produces nothing but the training of men to operate and support equipment in a state of readiness. Hence no man is surplus; wherever he may be he is in training, and it is unrealistic to deny that his cost justifies the value in defense potential which it creates.

Regarding the first argument: reallocation of personnel to accommodate new requirements is part of the programming of projects and missions. The Air Force enjoys an advantage over industry here; it can move its people
around virtually at will. Carried to extreme, morale may suffer, but the Air Force enjoys a position of control over labor mobility without parallel in industry. Therefore, the same agency which increases the demand on the organization in question can also program resource requirements, and can implement the program so as to preclude being caught with too little, too late.

Regarding the second argument: training is indeed a continuing requirement. But most functions in the Air Base Group require so-called soft skills, those which require little training, or which are functions for which support could be quickly solicited from civilian organizations. Thus in the Air Base Group we have food serving, utility system operation, building, roads and grounds maintenance, and a good deal of pure paper work in all Air Base Group organizations.

It is difficult to see how extra reserve personnel can be justified by the margin with which they appear to increase combat readiness. This is particularly difficult to see when the organization defending its overages usually seems to have more manpower on hand than the Air Force's own Table of Organization regards as required to do the job.

Much speculation has been indulged in in recent years on the nature of the next world war. An ever increasing
group of military leaders subscribes to the notion that the next war will be over in a matter of several days. If this is true, how would a reserve of food serving personnel, motor vehicle repair men, sewage disposal plant operators and office workers be employed so profitably that their unproductive support in a standby capacity for some 86 per cent of the time would be justified?²

²Our country has been at war 1¼ per cent of the time of its national history.

In tactical units a reserve over and above immediate requirements to accomplish the day to day training mission may be justifiable. In the Air Base Group, having more than enough manpower on hand to accomplish the day to day mission can hardly be justified on these grounds.

Turnover of Air Force personnel. The turnover rate in squadron commanders within the Air Base Group at Lockbourne during the past three years has averaged 70 per cent per year. This compares with the rate of turnover for operative employees in the typical American foundry, which is notorious for poor labor stability. In three years, the Air Installations Squadron had sixteen different squadron commanders. Most bases have a chief engineer, a civilian whose presence contributes to continuity in this squadron. But Food Service, which has
no civilian employees, has had five commanders during the past three years. The most conservative estimate of turnover of all airmen seems to be 200 per cent per year.  

^Interviews with Lockbourne Management.

Frequently squadron commanders in the Air Base Group are old timers in the Air Force but newcomers to their current job, men chosen because in terms of rank and availability they appeared best capable of assuming the required responsibility.

Frequently, a squadron commander in the Air Base Group has begun to accumulate the experience upon which wise decisions regarding labor requirement could be based just about the time that he is transferred to another job.

In the face of this instability and lack of experience, how can a squadron commander, much less his subordinate managers, be granted the authority necessary to make labor a truly controllable factor?

This is indeed a valid complaint. Much could be done profitably to further minimize turnover. Certainly much could be done to further continuity in type of work. Even if an officer moves from one job to another, the loss is not so great if he remains in the same line of work.

Considering the fact that an Air Force Squadron Commander draws total compensation comparable to middle
management in industry,\(^4\) and that he is chosen with due
\(^4\)A Major with twelve years seniority approaches $10,000
per year in total value received.

consideration to leadership capacity and growth potential, he could be expected to assume a larger measure of
authority than he now exercises. He has much staff help
at his disposal; he has a growing complex of Work Measure­
ment standards by reference to which performance of his own
subordinate managers can be evaluated.\(^5\) He is provided
\(^5\)An additional work improvement tool is Air Force Pamphlet
1954.

with a comprehensive system of guides, manuals and
management texts provided by the Air Force to improve his
managerial skill.

Any system of decentralized control would have as
its foundation a positive motivation through personal
reward for success. This implies the establishment of
personal accountability and performance evaluation. If
turnover is too high, personal performance evaluation in
the short run may be somewhat inaccurate. It is clear that
a high turnover compounds an already difficult managerial
problem. It does not appear, however, to completely
invalidate a greater degree of decentralization for base
management.
Military Labor as a fixed cost. It may be argued that a labor overage in some areas is inevitable, and that there is a minimum dislocation any further reduction of which would increase total operating costs. Since this dislocation is a larger Air Force problem the Air Force must deal with it above base level. At times it will require assigning personnel to temporary overage positions at operating levels where their services are not needed for the immediate mission of the organization. In this position they can be productively employed, good discipline can be more nearly guaranteed, and their future value more nearly guaranteed by the training they experience on the job.

The validity of this approach cannot be denied. But the paramount question is: Should the existence of an irreducible minimum be allowed to preclude labor's being regarded as a controllable cost to the responsible supervisor?

If higher Air Force management could be allowed to allocate temporary overages where it saw fit, yet the base level manager could be allowed to control his labor charge, perhaps his incentive to exercise economy could be harnessed, and the larger Air Force dislocation problem could still be minimized.
COSTING LABOR AS A CONTROLLABLE FACTOR

The necessary control over labor can be readily granted by the expedient of cost segregation. The responsible supervisor can be invited to declare as excess to his needs any amount of labor. He will make the declaration with full knowledge that those personnel so identified will immediately become eligible for withdrawal from his command. As long as they remain under his command these men will be costed to his organization for cost summarizing purposes. For performance evaluation purposes, however, they will be shown as a separate labor cost. They will be regarded as "labor designated surplus," or "training costs," or "non-mission labor," and their cost will not be considered as part of the operating expenses of accomplishing the unit's primary mission.

To the extent that these men are in training in pursuit of the larger Air Force requirement their cost may be justified. To the extent that they represent the minimum of dislocated personnel, their cost might be unavoidable. But these are costs which have no direct relationship to the primary function of their organizations. Rather they are part of the cost of "running an Air Force," costs which deserve attention and possibly suggest planning shortcomings at some Air Force level.

Industry shares this problem of temporary
mal-assignment to a degree. But, Air Force management hastens to point out, men can be laid off with somewhat greater ease in industry.\(^6\) It is interesting to speculate on the fashion in which labor costs would be handled in a shop with a Guaranteed Annual Wage. Men could be laid off but their wages would be continued. Is it likely that management in a "guaranteed annual wage" shop would continue to charge this labor cost to the functional department to which the laid-off workers had been assigned without identifying it separately? Would cost control be facilitated by charging an operation costs which bore so indirect a relationship to that operation? Obviously not. The emphasis which cost accountants place on handling indirect costs separately from direct costs in determining unit costs testifies to industry's recognition of the importance of this control concept.

At this time the idea of accounting for the cost of this excess labor separately has not been "sold" to Lockbourne management. There are two outstanding arguments against it:

(1) The using organization enjoys the benefits, however slight, of this "unrequired" labor, and hence it should be charged with it like any other cost;
(2) Designating any labor as "surplus" in the face of pleas to Congress for more manpower would be intolerable.

The first objection is not tenable. Referring once again to the opportunity cost characteristic of Air Force operations the level of quality in performance which Air Force policy dictates as being required is, in theory at least, that level which represents optimum allocation of funds. In the short run the quality of supporting services becomes a fixed specification in the Air Force. It becomes incumbent on management to achieve this required level of quality with the greatest economy in resource utilization. Any expenditure for higher quality cannot be justified since it represents funds which could be more "profitably" employed in an alternate fashion.

Presumably by being provided with more personnel than he requires to do his job properly, the supervisory officer either provides service above that required or spreads the work so as to make it unnecessary for each man to put in a full day's work. Neither of these courses yields a value toward the overall base mission commensurate with its cost.

The fact that the organization to which this surplus labor was attached enjoyed their services suggests that the surplus labor cost should be charged to that organization for cost summarizing purposes. However, this fact should
not be allowed to preclude segregating their cost, which represents resources "consumed" in accomplishing something other than the primary mission of the organization, for performance evaluation purposes.

In measuring performance it is necessary to know to what extent each manager effectively utilized those resources over which he had substantial control in accomplishing the functions for which he is being held responsible. By segregating surplus labor cost it is possible:

(1) To make labor a controllable cost;

(2) To determine precisely the extent to which each of several managers is responsible for excessive labor costs. The squadron commander is responsible for that portion which he declared required; the personnel officer, and/or higher echelons, are responsible for the excess.

Segregating costs in this fashion facilitates the establishment of single accountability for results.

The second objection reflects a concept of the part played by labor which is not appropriate in most Air Force operations. Perhaps in the infantry, where strength is more nearly reflected by numbers of men, declaring a man surplus would be self contradictory. In the Air Force strength is reflected by properly manned combat equipment. Most of this equipment is highly complex. A temporarily
dislocated man whose skill is not in demand may be worth less on the job to which he is surplus than he would be if furloughed. In Food Service, a soft skill area, the likelihood of this being true is admittedly fairly remote. But not so in the Base Hospital, or in Aircraft Maintenance.

Air Force management should come to regard this as one of the "costs of doing business," and recognize the usefulness of designating such costs as unproductive to the using organization.7

7 Actually that portion of a squadron commander's labor force which he regards as excess to his needs is already being declared surplus. The first item on each page of the Financial Statement which presents operating costs for a squadron provides the following information: personnel authorized, personnel assigned, and personnel required. The first figure is taken from the Manning Document; the second from the "morning report," which gives actual strength; and the third is the squadron commander's own declaration of his requirements. This information is called for in the format of the Financial Statement which is dictated by United States Air Force Headquarters.

Those opposed to designating labor as surplus contend that if these surpluses are costed as proposed here, and accumulated, a summary Financial Statement covering Commands, or the entire Air Force would present a shocking (and allegedly unrealistic) picture. Their objection is thus largely political and does not deny the managerial wisdom of designating labor surplus.

The secret to selling line management on this method of making labor a controllable cost to the responsible supervisor whose performance is to be evaluated might lie in principles of semantics. Perhaps separating this "surplus" labor could be made palatable by a better
selection of terms. Thus it might be called "non-mission" labor (although this term has already been appropriated for another purpose), or "indirect labor," or "training costs."

For the purposes of examining the fashion in which financial standards can be usefully employed at base level we will refer to this labor cost, which the responsible supervisor declares excess to his needs, as "Labor Designated Surplus," and account for it separately.

**DESIGNING FINANCIAL STANDARDS AND MEASURING PERFORMANCE**

Where functions performed are repetitious and units of output are readily identifiable, unit costs standards should be employed. By so doing we can establish most directly and in the least controversial quantitative terms the end results we want to achieve. By so doing we minimize the possibility of a manager defeating the real objective while pursuing good performance in indirect areas which theoretically should, but sometimes do not, lead toward optimum performance in the unit mission.

Thus in Food Service cost standards can be set for meals served, pounds of meat cut, and pastry servings served. In the Motor Vehicle Squadron standards can be set for vehicles maintained and miles driven; in Base Supply, for vouchers processed and line items issued.

Where a unit of output is not readily identifiable we will not gain by trying to relate costs to some arbitrary
unit to which resource consumption bears only a remote relationship. But this does not imply that no standard is needed. On the contrary there is a cost for every function which represents the magnitude of the resources which would have been consumed had that function been performed with economy and effectiveness.

Under a system of decentralized control we must have such standards, by reference to which the state of control can be determined with a minimum of detailed analysis.

Wherever both labor and materials are employed a composite (and of necessity a monetary) standard will best promote management by exception. Where many different types of materials are involved a monetary standard will also be most effective.

Since the usefulness of the dollar lies chiefly in its summarizing capabilities, Financial Management can best be promoted by dramatizing this characteristic. This means evaluating the resource consumption of whole organizational areas by reference to one standard. But this one standard must, where different functions are being performed, be made up of many individual standards.

Considering the resistance to standards offered by the responsible supervisor whose performance is to be evaluated, we would do well to employ wherever possible existing standards which have already experienced some acceptance in
the Air Force. The proponent of Financial Management would do well to confine his contribution to the maximum extent possible to the introduction of the dollar as a measuring unit, substituting it for existing units. By so doing he can draw attention to the contribution of the dollar without his listeners' attention being diverted to a questioning of the validity of the standard. Scientific management is not so new in the Air Force that reasonably valid standards of some sort cannot be found.

At this time that standard which would lend itself most readily to implementation into the Financial Management system is being overlooked in the Financial Statement: the Table of Organization.

The Table of Organization is a time honored standard in the Air Force. No supervisor in the Air Force could have reached the management level without being at least moderately conversant with a Table of Organization.

Unfortunately, we have no such familiar standard for materials, except in the case of food. But since 70 per cent of base operating costs, excluding aviation fuel, are labor costs, the want of complete standards should not preclude the usefulness of financial standards for immediate implementation.

At Lockbourne the 2nd Air Force Manning List, 31 May, 1955, for the 301st Air Division gives the most recent
Table of Organization for the Air Base Group. For each squadron a fixed labor authorization prevails. Thus 299 personnel are authorized for the Base Hospital, 335 for the Air Police Squadron, and 186 for the Motor Vehicle Squadron.

The 2nd Air Force Manning List is therefore an organizational standard for labor rather than a functional and unit standard.

This "fixed" standard could be translated into dollars, a materials standard added where applicable and the usefulness of the dollar as a summarizing device thereby demonstrated. Presumably this manning list is based on the average load that each squadron supports. If the demand on the Air Police Squadron increases substantially the manning list would, ostensibly, be revised and a new normal labor requirement established. So it might be reasoned that the Lockbourne authorization is, at any given time, the labor force which the best Air Force thinking regards as normal, and hence it is the best standard for performance evaluation.8

8The inadequacy of the "machinery" by means of which this fixed labor standard is changed is indicated by Lockbourne's Food Service Squadron manning. Since February, 1955, Work Measurement standards have shown that fewer personnel were required than assigned in the Food Service Squadron by virtue of the volume of its operations. Since February the volume of operations has not changed appreciably, nor had a change been contemplated.
by June. Since February the 2nd Air Force Manning List, Lockbourne's "fixed" Table of Organization labor standard, has authorized more personnel than the Work Measurement system found necessary. Yet in May, 1955, an overage of seventy two additional personnel was authorized by the 2nd Air Force Manning List. If variable labor standards were used here, and control decentralized, the magnitude of this excess would be more forcefully and more frequently demonstrated.

But we have seen that wherever units of output are readily identifiable a variable standard provides the best basis for control. A supervisor who is being held personally accountable for resource consumption would possess more useful information if he were told how much labor he was employing to cut each pound of meat than if he were told only how much labor he employed to man his meat cutting department. Knowing the actual and standard cost per unit of functions performed will facilitate his identification of areas with the greatest cost saving potential and help him identify his best subordinate managers.

Wherever possible, therefore, a unit standard should be established. At this time, in those areas where units of output are easily identifiable and a unit standard is most desirable, a valid unit standard prevails; Air Force Manual 150-1, Air Force Manual of Standard Air Force Manning Requirements by Function, dated 1 April, 1953, presumably has formed the basis for the design of Lockbourne's 2nd Air Force Manning List. This manual was designed to assist
There are many Tables of Organization employed in the Air Force. All supposedly are based on this United States Air Force Manual with adjustments made to compensate for local conditions. As we move from the original United States Air Force Manual to the specific base level Table of Organization we find changes which should make the Table of Organization standard more valid for the base operation. At the same time the salesmanship of the manager who wants more people exerts greater influence. Which document provides the best standard is open to question. An examination of the 2nd Air Force standard as it applies to Food Service suggests it is less accurate than the United States Air Force Manual. (See Appendix A). The United States Air Force Manual, on the other hand is somewhat dated by Air Force measures. We are advised a revision is in process; lacking any more recent document which relates personnel authorized to volume of operations, we are forced to use the United States Air Force Manual.

personnel in manpower planning and control; specifically it helps them:

(1) To compute personnel requirements for the accomplishment of a task at a given volume of operations;

(2) To prepare Air Force manning and programming documents;

(3) To distribute bulk personnel allocations.\(^\text{10}\)

\(^{10}\)Air Force Manual 150-1, p. IV.

Wherever a unit of output is readily identifiable the number of personnel authorized, by rank and skill, is related to volume of operations. Wherever no such output unit is identifiable the number of personnel authorized is shown to be independent of volume of operations. Thus
in Food Service: for a squadron serving from 14,090 to 688,500 meals per month, one commanding officer and one first sergeant are authorized. Between 144,000 and 688,500 meals per month, however, the number of cooks authorized varies from seventeen to seventy three; the number of bakers varies from two to seven; the number of meat cutters from two to five; etc.

If we compose complete authorizations for Food Service Squadrons with each of the different volumes of operations shown in Air Force Manual 150-1, and then translate these manpower authorizations into dollars of labor cost, we have a variable standard for labor cost based on units of output.

Chart V shows graphically this relationship between labor cost and meals served.\(^\text{11}\)

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\(^{11}\)Air Force Manual 150-1 was designed for Food Service organizations in all commands. The Strategic Air Command is unique in that it has only permanent "Kitchen Police" duty. Thus whereas in non-Strategic Air Command bases other squadrons on the base contribute men on a rotation basis to help the permanent Food Service staff prepare and serve meals, in the Strategic Air Command all Food Service attendants are permanently assigned to the Food Service Squadron. To compensate for the higher labor charge which Strategic Air Command bases would sustain, Air Force Manual 150-1's Food Service attendant authorization has been increased by 22.8 per cent. The curve in Chart V reflects this augmentation which was the Strategic Air Command's authorization in attendants over and above the Air Force Manual standard.

Except at the extremes the curve is an almost perfectly straight line. If we select that middle portion
STANDARD COST DETERMINATION FOR THE FOOD SERVICE SQUADRON
of the curve which falls between 150,000 meals per month and 300,000 meals per month we have a graphic representation which is applicable to Lockbourne.

To find the fixed labor component we might project that straight portion of the curve applicable to Lockbourne until it crosses the vertical axis. Or, to be more accurate, solve for it algebraically thus:

\[ Y = mx + b \]

is the formula for any straight line; by reference to our curve we see that when \( Y = 20,836 \), then \( X = 150,000 \); also when \( Y = 37,711 \) then \( X = 300,000 \); hence we can write:

\[ 20,336 = m(150,000) + b, \]

\[ 37,711 = m(300,000) + b. \]

We have two equations which, solved simultaneously, reveal that:

\[ m = 0.1125 \quad \text{and} \]

\[ b = 3,961. \]

Therefore \$3,961 is the fixed labor cost component and \$0.1125 per meal served the variable labor cost component.

If we assume, as we must, lacking the facilities to completely survey the Air Base Group function and set our own standards, that Air Force Manual 150-1 represents the best Air Force labor standard, then we should encounter a minimum of difficulty in promoting a financial standard
derived from that document.

To exploit the usefulness of the dollar to the maximum materials must be included in a composite labor and materials standard. The uniqueness of Food Service has been discussed. If it is assumed that maximum allowable rations drawn is a valid standard, then 98 per cent of the material consumption is related to meals served by a valid standard. The remaining 2 per cent, made up of office supplies and miscellaneous consumables whose rate of consumption is more or less independent of volume of operations, has averaged about $2,000 per month during the past ten months.

Ration costs in April were $73,245. The Financial Statement shows that total costs during April were:

<table>
<thead>
<tr>
<th>Labor</th>
<th>$52,930</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>$75,230</td>
</tr>
</tbody>
</table>

Performance of the Food Service organization during April might well be evaluated thus:

<table>
<thead>
<tr>
<th>FOOD SERVICE SQUADRON PERFORMANCE EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 1955</td>
</tr>
<tr>
<td>Actual Less Labor</td>
</tr>
<tr>
<td>Labor Standard Material Standard Cost</td>
</tr>
<tr>
<td>$52,930 $4,512 $43,413 $27,904 $75,230 $75,245</td>
</tr>
<tr>
<td>Total Standard Cost Total Cost Variance from Standard</td>
</tr>
<tr>
<td>$103,149 $123,643 $19.9% ± 15%</td>
</tr>
</tbody>
</table>
The Food Service Officer designated twenty eight men assigned as surplus to his needs in April. To make labor a controllable cost we do not charge the cost of these personnel against him, for performance evaluation purposes. It is apparent that, in spite of this adjustment, labor costs are still too high. A further investigation reveals why and tends to substantiate the validity of our standard. See Appendix A.

\[ ^{12} \text{Indirect Labor} \quad \text{\textdollar}3,961 \]
\[ ^{13} \text{Direct Labor:} \]  
\[ 212,327 \text{ meals @ \textdollar}.1125/\text{meal} \quad \text{\textdollar}23,243 \]
\[ \text{Standard Labor Cost} \quad \text{\textdollar}27,904 \]

\[ ^{14} \text{Food Cost} \quad \text{\textdollar}73,245 \]
\[ \text{Non-food materials} \quad \text{\textdollar}2,000 \]
\[ \text{Standard Material Cost} \quad \text{\textdollar}75,245 \]

The discrepancies between what the United States Air Force Table of Organization regards as normal labor cost and actual cost could have been determined without financial standards. Lockbourne's Food Service organization is overmanned. A count of noses would have revealed this discrepancy. Furthermore the old Air Force cost accounting system would have told us of any material cost discrepancy. But by summarizing both labor and material resources in one figure the opportunity for cost improvement is displayed in one figure, so that its relative seriousness can be observed in proper perspective to other discrepancies which deserve attention.

If this approach be extended to other squadrons we can develop a complete set of financial standards for the Air
In the Headquarters Squadron, authorized strength is independent of any "unit of output." Headquarters Squadron is a purely administrative organization; it is authorized fifteen personnel at a standard labor cost of $4,910. Thus the Headquarters Squadron represents an extreme opposite to that of the Food Service Squadron where almost all labor cost is variable.

The Motor Vehicle Squadron is more nearly typical of the average squadron in the Air Base Group. It has several "units of output" and it has substantial fixed and variable labor cost components.

The Motor Vehicle Squadron can most conveniently be broken down into three sections for functional analysis:

(1) Command and Administration;
(2) Maintenance;
(3) Motor Pool.

Command and Administration is all indirect or fixed labor. There are fixed components in Maintenance and in the Motor Pool. But in the Maintenance Section most labor is variable and is dependent on the number of "vehicle equivalents" maintained. In the Motor Pool variable

15 A bulldozer, requiring more maintenance effort, is "worth" several staff cars; a vehicle equivalent is the unit of measure of maintenance load.
labor is dependent on miles driven on administrative type vehicles, hours of operation of general and special purpose vehicles, and vehicles dispatched per twenty four hours operation.

16 Since most vehicles are operated by Motor Vehicle Squadron drivers.

Applying the same approach to the Motor Vehicle Squadron as we did to the Food Service Squadron we establish the following as a complete labor standard for that squadron:

Indirect Labor.................................................................$13,223,000

Direct Labor:
- per vehicle equivalent maintained............... 19.502
- per thousand miles operation of administrative vehicles................. 112.201
- per hundred hours operation of general and special purpose vehicles........... 40.030
- per vehicle dispatched per 24 hours operation.......................... 4.361

Performance evaluation of the Motor Vehicle Squadron then follows:

**MOTOR VEHICLE SQUADRON PERFORMANCE EVALUATION**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Standard Cost</td>
<td>$73,023</td>
<td>$73,203</td>
<td>+ 1.6%</td>
<td></td>
<td>+ 15%</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$73,676</td>
<td>$73,203</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Motor Vehicle Squadron Commander in April declared that 254 personnel were needed, while 242 men were assigned and 176 authorized under the 2nd Air Force Manning List.

Determined thus:

<table>
<thead>
<tr>
<th>Labor Type</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect</td>
<td></td>
<td>$13,223</td>
</tr>
<tr>
<td>Direct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>912 vehicle equivalents maintained</td>
<td>$17,786</td>
</tr>
<tr>
<td></td>
<td>@ $19.502</td>
<td></td>
</tr>
<tr>
<td></td>
<td>126.4 thousand miles operation of administrative vehicles</td>
<td>$14,182</td>
</tr>
<tr>
<td></td>
<td>@ $112.201</td>
<td></td>
</tr>
<tr>
<td></td>
<td>63 hundred hours of general and special purpose vehicle operation</td>
<td>$2,522</td>
</tr>
<tr>
<td></td>
<td>@ $0.361</td>
<td></td>
</tr>
<tr>
<td></td>
<td>506 vehicles dispatched per 2½ hours</td>
<td>$2,207</td>
</tr>
<tr>
<td></td>
<td>operation @ $4.361</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total standard Labor Cost</td>
<td>$49,920</td>
</tr>
</tbody>
</table>

In this example we have used total average material consumption per month during the past six months as the Materials and Other Costs Standard.

There is no general controversy over the degree of control which the Air Force manager has over his material costs. Except for the fact that a minimum of material is an absolute requirement for most operations, nothing in the Air Force logistical system forces a manager to consume more expendable supplies than he needs. It would appear, therefore, that valid standard material costs per unit could be related to units of output wherever labor is so treated, and in many cases where labor cannot be so treated effectively.

In spite of the fact that material costs by functional areas, squadrons and sections, have been known for some
years in the Air Force, there is no evidence that material cost standards of this sort have been employed at Lockbourne for performance evaluation, except for food in the Food Service Squadron, and fuel costs in the Motor Vehicle Squadron.

Ultimately if cost accountability is to be established at base level, the Table of Organization as a standard should be reevaluated. Work Measurement should be extended into other areas besides Food Service, Air Police, and Base Supply, and defensible material cost standards should be established in all areas.

For the design of a complete standard we must go a step further. Labor is not so mobile that it can be controlled without some ridgities creeping in. The Food Service Squadron cannot predict precisely how many meals it will be called upon to serve. If, in the short run, its load drops, and then rises to a new high within several months, the interests of the Food Service organization dictate that the labor force should not be varied in direct proportion to meals served in the short run interim. Maximum economy would be achieved if Food Service were allowed to man itself for the average load and shifted its work force only when trends indicated a new average load.

Therefore, we include in our standard an allowable normal variance from standard to show us when cost control
is being maintained. During the ten months ending in April, the Lockbourne Food Service load fluctuated between 155,000 and 295,000 meals per month. Had Lockbourne's Food Service Squadron been manned according to Air Force Manual 150-1 for this average load, and had its non-food material costs never exceeded $2,000 in any month, its actual monthly total costs would never have deviated from standard total costs by more than 15 per cent.

If we assume that Lockbourne's 1955 experience was typical of the average yearly fluctuation we might set our normal variance from standard at 15 per cent. Since total actual costs would not have exceeded this normal variance from standard had Lockbourne been properly manned, we would have regarded the Food Service function as being under control cost-wise during the year.

It is apparent that, by this approach, we are using standards somewhat as they are used in statistical quality control. We recognize that the standard will probably never be achieved exactly, but a normal variance from standard should not be exceeded.

Several points deserve discussion here:

(1) What is to keep the Food Service officer from reporting as surplus each month exactly the amount of labor necessary to bring his measured cost down to the point necessary to correspond to standard?
(2) What is gained by comparing total actual costs to total standard cost rather than total unit costs (per meal) to standard unit costs?

(3) What if Food Service labor is in short supply rather than over supply?

(4) Since the extent to which the Food Service Squadron is manned with the required skills is not considered, how can costs be fairly evaluated by this approach?

Reporting as surplus labor which is required. If Lockbourne's experience during the fiscal year 1955, is typical, the Food Service officer would gain nothing by reporting as surplus to his needs more than that quantity which is surplus to his long run needs. Seeing that his volume of operations does not fluctuate violently (30 per cent in 1955) he would choose to man at the strength necessary to handle his average volume of operations. If meals served dropped in the short run by 30 per cent, and the Food Service Squadron were properly manned, the actual costs would not exceed normal variance anyway. Recognizing that when he declares a certain number of men surplus he invites higher headquarters to withdraw them, he would risk being caught short in the future if he declared as required less than enough personnel to handle his average volume of operations.

By separating the cost of that quantity of labor
which the Food Service Officer declares as surplus to his needs, we preclude the excuse which is always forthcoming when the responsible supervisor is advised his labor costs are too high, namely: "I can't control my labor cost."

In our April analysis of Food Service, actual labor cost exceeded standard labor cost by 39 per cent. Without attacking overages in this fashion how could the Food Service supervisor be prevented from excusing away an 89 per cent overage with an 3.2 per cent explanation? In April the Food Service Officer pleaded innocent to high labor costs by saying he had 8.2 per cent more personnel than he required. Command, realizing that he is being charged for people he does not want - hence that he cannot control his labor cost - tends to excuse his being over standard by 89 per cent.

In order to establish accountability in the fashion necessary if desired results are to be achieved, labor must be made a controllable cost. This approach makes it possible.

Inviting the responsible supervisor to designate as surplus any quantity of labor he does not immediately require is a far cry from decentralization of authority by industry standards. However, judging by the resistance which has been offered to making such an invitation, on the ground that such authority cannot be granted to base
level supervisors, it would appear to be a substantial step toward decentralization in the Air Force.

This step toward decentralization might be followed some day by a degree of decentralization heretofore unheard of in military operations. Literature dealing with the Financial Management program hints occasionally at the possibility of a real "lump sum allotment" operation at base level. Under such an operation line management, as low as the squadron level, would be provided a fund of money during a period of time, and invited to spend it more or less as management saw fit, buying materials from Government logistics depots, the General Services Administration, or on the open market, and employing just that quantity of labor it chose. Accountability under these circumstances would be established in terms of two things: the quality of performance (output), and the cost of operations (input).

Although this degree of decentralization seems somewhat unlikely at the moment, the fact that it is possible to conceive of such a recasting of authority in the Air Force leads one to wonder why such a conservative but necessary step as is proposed here could be opposed.

Comparing total costs rather than unit costs. The failure of the Food Service Squadron to measure up to standard in the preceding example could have been portrayed
by comparing actual unit costs of meals served (60 cents per meal) to standard unit costs (45.6 cents per meal). Disadvantages, however, appear.

In the first place some sections and squadrons do not have an easily identifiable unit of "output." Fire Protection and Aircraft Crash Rescue are examples. Yet there is a standard cost which would have been incurred had resources in these organizations been economically employed.

The present method is superior for another valid reason: it promotes management by exception.

At the end of each month, when cost reports are composed, the Air Base Group Commander wants to know: (1) was my entire group operation under control cost-wise? (2) where are the problem areas?

An example will show the inferiority of a unit cost comparison as a means of answering these questions. Under a unit cost evaluation, total Air Base Group costs might be portrayed thus:

<table>
<thead>
<tr>
<th>Squadron</th>
<th>Actual cost per unit output</th>
<th>Standard Unit Cost</th>
<th>Variance from Standard</th>
<th>-Actual-</th>
<th>-Normal-</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$ .60</td>
<td>$.58</td>
<td>+ 3.5%</td>
<td>+ or - 10%</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>4.30</td>
<td>4.91</td>
<td>-12.4%</td>
<td>+ or - 15%</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>.03</td>
<td>.03</td>
<td>0%</td>
<td>+ or - 5%</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>.18</td>
<td>.13</td>
<td>+33.5%</td>
<td>+ or - 20%</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>6.29</td>
<td>5.19</td>
<td>+21.2%</td>
<td>+ or - 20%</td>
<td></td>
</tr>
</tbody>
</table>

To determine if the entire group is under control, by virtue of its volume of operations, we must add up the
"values" of the contributions of each organization and compare this to total actual costs for the group. We can only do this in total absolute quantities since units of output are different. In addition, how can the relative seriousness of the excessive variances from standard in squadrons A and D, for example, be determined without reference to total absolute costs? The inferiority of the unit cost comparison is apparent.

In order to portray most graphically the usefulness of the dollar this performance evaluation technique should be carried to all organizations within the Air Base Group. Table II shows cost performance evaluation for the Air Base Group. Only in Food Service and Motor Vehicle Squadrons has labor evaluation been based on a variable standard in this example. This is not meant to deny labor's variability in other squadrons. But for purposes of illustration these two examples should point the way toward the design of a complete set of cost standards for the Air Base Group.

By comparing actual costs to standard costs in absolute terms we employ the practice used in industry; in industry the success of a multi-product operation is measured by comparing the values of the individual contributions of all departments (income from sales) to the costs of all operations. The values of different operations vary and their
Table II

-AIR BASE GROUP COST PERFORMANCE EVALUATION-
April 1955

<table>
<thead>
<tr>
<th></th>
<th>Labor Actual</th>
<th>Labor Designated</th>
<th>Labor Surplus</th>
<th>Total Standard</th>
<th>Standard Material &amp; Other</th>
<th>Total Other</th>
<th>Total Standard Material &amp; Other</th>
<th>Total Cost Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Hospital</td>
<td>$86,600</td>
<td>$0</td>
<td>$86,600</td>
<td>$11,600</td>
<td>$11,600</td>
<td>$98,200</td>
<td>$111,816</td>
<td>$-13,616</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headquarters Sqdn.</td>
<td>117,127</td>
<td>9,690</td>
<td>107,437</td>
<td>130,313</td>
<td>16,035</td>
<td>123,426</td>
<td>123,472</td>
<td>$113,639</td>
</tr>
<tr>
<td>Air Police Sqdn.</td>
<td>60,317</td>
<td>0</td>
<td>60,317</td>
<td>70,185</td>
<td>335</td>
<td>672</td>
<td>60,652</td>
<td>$-10,205</td>
</tr>
<tr>
<td>Operations Sqdn.</td>
<td>85,400</td>
<td>12,744</td>
<td>72,656</td>
<td>94,211</td>
<td>35,600</td>
<td>31,900</td>
<td>126,111</td>
<td>$-17,855</td>
</tr>
<tr>
<td>Installations Sqdn.</td>
<td>128,600</td>
<td>8,283</td>
<td>120,317</td>
<td>117,792</td>
<td>83,500</td>
<td>76,100</td>
<td>193,602</td>
<td>$+9,925</td>
</tr>
<tr>
<td>Motor Vehicle Sqdn.</td>
<td>50,376</td>
<td>0</td>
<td>50,376</td>
<td>49,920</td>
<td>22,532</td>
<td>22,108</td>
<td>74,028</td>
<td>$+1,180</td>
</tr>
<tr>
<td>Rech. Tech. Sqdn.</td>
<td>64,451</td>
<td>10,164</td>
<td>54,287</td>
<td>65,993</td>
<td>28,014</td>
<td>16,812</td>
<td>82,826</td>
<td>$-404</td>
</tr>
<tr>
<td>Food Service Sqdn.</td>
<td>52,930</td>
<td>4,512</td>
<td>48,418</td>
<td>27,904</td>
<td>75,230</td>
<td>75,245</td>
<td>150,475</td>
<td>$+26,797</td>
</tr>
<tr>
<td>Supply Sqdn.</td>
<td>110,500</td>
<td>0</td>
<td>110,500</td>
<td>124,332</td>
<td>9,600</td>
<td>7,600</td>
<td>122,332</td>
<td>$-11,812</td>
</tr>
<tr>
<td>Total</td>
<td>757,001</td>
<td>45,393</td>
<td>711,608</td>
<td>772,166</td>
<td>282,446</td>
<td>259,523</td>
<td>$994,984</td>
<td>$31,036</td>
</tr>
</tbody>
</table>

1 As indicated in the April Financial Statement under 'Personnel Authorized, Assigned, and Required'.
2 Labor costs which would have been incurred had all organizations been manned in accordance with the 2nd Air Force Manning List, 1955, except Food Service and Motor Vehicle Squadrons whose standard labor cost is that 'earned' by virtue of their volume of operations; USAF T/O shown in AFM 150-1.
3 Average material and other costs reported in the Financial Statement during the past 6 months.
4 Normal variance is set at ±15% (excess deviations circled) on the basis of the degree of fluctuation in costs actually manifest during the past year.
costs vary. We are interested first in the extent to which total control was maintained; i.e., the extent to which hoped for profit (excess of income over costs) was realized. Then we ask, "Where are improvement opportunities greatest?"

By relating total costs by squadrons to total standard costs by squadrons we discover most readily those areas which offer greatest cost saving opportunities: Food Service in Table II.20 We thereby help prevent spending thousands

20. We also point up the magnitude of the labor dislocation problem: $45,393, for "Labor Designated Surplus" in the Air Base Group. Although we have absolved the squadron commander of responsibility for this overage, it is a significant problem for some managerial level.

in determining how to save hundreds. For broad area-wide performance evaluation purposes there is no substitute for the dollar as a summarizing medium by use of which resource utilization in diverse areas can be placed in proper perspective.

Regarding shortages of labor. We have dealt at some length with overages in labor in the preceding discussion. Shortages are, of course, also a problem. The problem of shortages does not, however, assume any great importance so far as the usefulness of Financial Management is concerned. The prevalence of overages and centralized labor control has in the past made labor an uncontrollable cost. Accountability for labor cost could not be effectively established so
long as its cost was uncontrollable by the responsible supervisor whose performance was being evaluated. Until such accountability could be established and performance could be evaluated there was no reason for the responsible supervisor to exert much effort to utilize his labor effectively. Instead of relying on managerial skill to increase labor productivity, the manager might resort to accomplishing the job by sheer force of numbers of personnel, thereby creating a shortage of labor where none might otherwise exist.

If that accountability which must be established if desired results are to be achieved is established, we have reason to believe labor productivity will increase, and many present "shortages" will disappear.

Regarding a shortage of skills. A shortage of another sort must be shown in our cost performance evaluation, however, if the commander is to be in a position to evaluate his subordinate managers properly: a shortage of skills.

The Table of Organization which has been used in Food Service as a labor standard specifies skills as well as numbers of men and their rank. The Food Service organization could show an overage in personnel and sustain an excessive labor cost, yet be short of required skills. Since like organizations are being compared throughout the Air Force, in the final analysis, and since we are justified
In assuming available skills can be equitably distributed, this should not invalidate our performance valuation. This is particularly true in the Air Base Group where most jobs are "soft skill" jobs, requiring relatively little training.

It would be desirable, however, to advise the Air Base Group Commander in our evaluation the extent to which his organizations are properly manned in terms of skills. This can be done by showing a measure already common to Air Force operations: "Manning in Required Specialties." This measures manning, in terms of skills, quantitatively. An MIRS of 85 per cent means that the organization in question, has 85 per cent of the positions authorized to it filled with personnel possessing those skill levels authorized or higher levels.

If measured labor costs are high, the reviewing commander would regard a low MIRS rating as a partial explanation, and would temper his subordinate's performance evaluation accordingly.

To make this performance evaluation complete, concern must also be manifest when costs are less than standard. Sub-standard costs are not of themselves bad; indeed, they may be evidence of excellent resource management. But attention should be called to them (by highlighting costs which deviate both above and below standard) so that quality of performance might be examined in greater detail. Short
run savings may result in long run losses; thus maintenance of facilities may be foregone to save on resources in the short run. Thus the complete cost standard becomes:

(1) An ideal ($103,149 in Food Service for 212,327 meals served in April), plus

(2) A normal variance from standard (± 15 per cent). Both components are necessary for control, and for management by exception.

**EXTENT TO WHICH FINANCIAL STANDARDS CAN BE USEFULLY EMPLOYED**

The value of the dollar as a summarizing device has been treated fully. Under traditional Air Force control techniques the dollar was used as a summarizing device to an extent. Materials consumption under the old costing system used dollars to summarize different material resources. Two changes are contemplated under Financial Management to further exploit the summarizing capabilities of the dollar:

(1) Under Financial Management both human and material resources will be summarized to reveal total resource consumption;

(2) Total resource consumption will be related to functions performed rather than to organizational groups, with the dollar serving as common denominator summarizing multiple functions in order to reveal resource utilization in broad functional areas.
This means that financial standards will have to be set up for lower levels in the organizations. Formerly it was common to relate resources to organizations; thus 299 persons were required to man a base hospital the size of Lockbourne's. Similarly $15,000 would be required for drugs and other consummables each month for such an organization. Under Financial Management we would concern ourselves with resources consumed in performing functions. Thus the emphasis would be on resources "consumed" per in-patient bed day at the hospital.

To summarize resource utilization by functions it will obviously be found useful to employ the dollar. It will be found useful to establish financial standards for evaluating the effectiveness with which resources were utilized in performing these functions.

Yet there is a limit beyond which it is not profitable to go in using financial standards. In motor vehicle operations, for example, we are concerned about gasoline consumption because it costs money. The cost of fuel per mile driven is useful information. But as we go deeper into an examination of those factors upon which fuel consumption depends it becomes desirable to know gallons of fuel consumed per mile driven. By abandoning the dollar at some level we exclude the troublesome variable of price variations.
In general the lower we go toward the operative level the less we concern ourselves with dollars and the more we concern ourselves with numbers of man-hours of labor, pounds of materials, etc. Top command, on the other hand, must be spared the maze of detail that the absence of the dollar would require.

It is impossible to say precisely at what level the dollar standard ceases to be sufficiently useful to justify its application. One general rule, however, can be observed: wherever a function is repetitive and a fairly homogeneous "unit of output" can be identified - one which involves one or more different materials - materials and labor in substantial quantities - the dollar standard will be useful.

To a lesser degree financial standards are useful for control where no unit of output can be readily identified, but where both labor and materials are involved.

If the Air Force ever adopts the business practice of allocating space, utilities and depreciation charges to functional areas, the summarizing capabilities of the dollar will become more nearly indispensable.

If cost accountability is established effectively, the responsible supervisor will be given a positive incentive to discover that point at which non-financial standards begin to improve his own control over resource utilization. For,
if cost accountability is established, the responsible supervisor will concern himself most diligently with those areas where the opportunities for largest cost saving exist. Cost saving opportunities are in evidence when actual costs appear to exceed standard costs; hence an incentive is created to design and employ financial standards to the extent that they are useful.

THE APPLICABILITY OF FINANCIAL MANAGEMENT TO TACTICAL ORGANIZATIONS

Thus far we have dealt exclusively with the Air Base Group and support functions, which constitute only about one third of Lockbourne's operating costs reported under the present cost system, but whose functions most resemble those performed in industry.

The framers of the Financial Management program did not suggest that Financial Management was for support activities alone. However, considering the nature of tactical activities in peacetime - practice take-offs and landings, air-refueling hook-ups, radar rendezvous, and celestial navigation flights - it appears that the arguments against Financial Management are more valid in this area. Perhaps the dynamic nature of tactical operations would preclude the type of control over resource utilization which Financial Management contemplates. Experience alone can tell. It would behoove management to introduce Financial Management
in the tactical organizations - first in those areas most comparable to industry\textsuperscript{21} - then in other areas, in order to
discover empirically the extent to which financial standards can be usefully employed. A thorough exploration of this sort is beyond the scope of this study.

\textbf{REGARDING COSTS OTHER THAN BASE LEVEL LABOR AND CONSUMABLE MATERIALS}

Only a part of the cost of maintaining Lockbourne's tactical wings in a state of combat readiness is presently charged to Lockbourne's various functional organizations under the present cost reporting system. Furthermore, charges are presently levied on a "responsibility costing" basis. Thus the cost of providing ground transportation for all units on the base is charged to the Motor Vehicle Squadron rather than to the organizations using that transportation; the cost of building maintenance and utility consumption is charged to the Installation Squadron rather than to the organizations which use these facilities; and the cost of handling and issuing supplies and equipment is charged to the Supply Squadron rather than to the organizations which enjoy its logistical support.

Costs could be allocated in such a way as to relate all costs to a final output product, if one or a very few
output products could be identified. This identification is presently being approached when, in the Financial Statement, total costs are related to hours flown. Here it is assumed that "effective training hours flown" is the final output product toward which all Lockbourne effort is directed. During April, 1955, 3,885 training hours were flown at a total (base reported costs) of $3,442,300, yielding a unit cost of $836.04 per flying hour.

Since a great number of Lockbourne operations costs presently reported are independent of hours flown, the cost per flying hour may fluctuate violently when, as a result of poor weather or interruptions of various sorts, flying hours drop.

Actually training hours flown is not the sole end product of Lockbourne's productive machine. Training hours flown are a means to an end - combat readiness. To the extent that combat readiness is dependent on a state of training proficiency in other areas, such as aircraft maintenance, intelligence, maintenance of a state of discipline and good morale, and funds which are expended to maintain this state of proficiency are justified, these are also output products.

Little appears to be gained by relating all costs of supporting organizations to any one unit of output. Yet it appears that, if Financial Management comes into its own,
an intermediate degree of cost allocating might be worthwhile. The criterion in deciding to what extent costs should be allocated to the operations which they support should be: how would cost allocation improve effectiveness in resource utilization?

The Motor Vehicle Squadron performs a function whose costs might be profitably charged to units which enjoy its services. The Motor Vehicle Squadron is presently charged for automotive fuel consumed, expendable parts used, maintenance labor and some chauffering of military vehicles.

The magnitude of these costs depends to a considerable degree on the fashion in which using organizations outside the Motor Vehicle Squadron care for the vehicles made available to them. If vehicles are abused, if unnecessary trips are taken, or if vehicles are ordered on a standby basis without being utilized, an excessive cost is sustained by the Motor Vehicle Squadron under the present cost reporting system.

If greater effectiveness in resource utilization is to be achieved, personal accountability for results must be established. Since the Motor Vehicle Commander cannot be held accountable for something over which he has little control, a change is in order if Financial Management is to bring maximum benefits.
If using organizations were charged, for performance evaluation purposes, for their transportation, personal accountability for economic resource utilization could be better established. Furthermore, under these circumstances a squadron commander would lose any incentive to substitute "free" transportation for other facilities or resources which he must "pay" for. The Air Force manager would become more nearly an entrepreneur, using automotive transportation for communication purposes, for example, only so long as this means is cheaper than labor employed to hand carry messages.

This allocation of costs could be carried to extremes. For example Food Service provides subsistence to military personnel so that they might perform other functions more directly allied with the total mission. It would not, however, be practicable to allocate Food Service costs to the organizations whose employees receive its subsistence.

Somewhere between the present practice of almost pure "responsibility costing," (charging costs to the service rendering organization rather than the service receiving organization), and the present practice of relating all costs to one end product (training hours flown), is an optimum which should be sought. Certainly the cost of the Motor Vehicle Squadron, perhaps the costs of the depots which render maintenance and repair service for base level
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aircraft equipment,\(^{22}\) and perhaps some Installations

\(^{22}\)Thereby creating an incentive for the base level manager to accomplish certain levels of maintenance rather than sending his equipment to the depot, if he could do it cheaper.

Squadron costs should be charged to the using organization. When Financial Management becomes operative, levying a depreciation charge\(^{23}\) on some facilities might even be

\(^{23}\)Not to account for the decreasing value of assets, but to improve effectiveness in the utilization of resources through the establishment of personal accountability for consumption of resources.

useful in order to more nearly guarantee economy in resource utilization.

REAPPRAISAL OF STANDARDS PRESENTLY EMPLOYED

The concept of control by standards is by no means consciously subscribed to by line management throughout the Air Force. On one occasion, during a discussion with line management at Lockbourne, concerning the usefulness of Financial Management, one officer, of Wing Commander level, remarked that he did not understand "all this talk about standards." All he wanted was to get a full forty hours work out of every man each week. Unconsciously he must have used standards - to determine if he was getting his full forty hours work.

To the extent that this sort of unfamiliarity with
use of standards prevails in the Air Force the introduction of financial standards will have to be preceded by or accompanied by an indoctrination program. Line management will have to be shown that it has always employed standards for control. Financial Management simply reduces to a single quantitative measure many factors over which management has always exercised some measure of control by reference to standards of some sort.

In introducing financial standards one danger must be guarded against: line management must be supplied with only valid standards. Standards which are unattainable, but which are defended by the observation that they are simply a goal to strive for, not necessarily to be achieved, generate more indifference than incentive to improve.

At this time the Strategic Air Command, in its "Management Control System" (about which more is said in Chapter VI), rates its various air bases by means of a scoring system. Points are awarded in accordance with the proximity to which the base measures up to certain Strategic Air Command command-wide standards. In April, 1955, to have achieved the maximum score in its "Food Service Management" measure, Lockbourne would have had to reduce the cost of the meals it served to 35 cents each. Actual cost during April was 60 cents per meal. Since food costs, a factor over which the Food Service Squadron is
expected to have no control under the present system of control, were 31.3 cents per meal, labor and non-food materials costs would have had to be reduced to 3.7 cents per meal to achieve the maximum score. At an average cost of $186.00 per man per month (Lockbourne's present Food Service wage) this would mean labor productivity would have had to rise to around 5,000 meals served per man assigned to Food Service per month.

During April, Great Falls Air Force Base, another unit of the Strategic Air Command, had the highest labor productivity in its Food Service Squadron of all Strategic Air Command bases. Since Great Falls Food Service organization served only, 1,930 meals per man assigned, the invalidity of this Strategic Air Command standard as it might apply to Lockbourne is apparent.

The Management Analysis staff of the Strategic Air Command has argued that its Food Service management standard is simply a goal, and so long as all bases are measured by reference to the same standard it makes little difference that some of them or all of them, cannot achieve it.\(^{25}\)

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\(^{25}\)Interview with Strategic Air Command Management Analysis personnel.

As a means of establishing accountability and measuring performance this is a poor standard. Lockbourne's
Food Service Squadron will never have the satisfaction of achieving "success" under this measuring system. Since what, supposedly, represents good managerial performance in Food Service is unattainable - Food Service management is given slight attention, and whatever incentive might otherwise be harnessed is lost.

In one other respect Financial Standards are being abused at this time. The Financial Statement presently being published at Lockbourne and supplied to line management down to the level of squadron commander allocates all costs, with a few exceptions, to what is called a "production unit" or "measurement unit." Thus after the item "Total Costs" incurred by functions in each squadron, the number of production or measurement units is shown and their cost per unit compared to a standard unit cost.

The shortcoming of the standards presently shown in the Financial Statement has already been discussed. A further shortcoming exists in the measurement unit. Where no actual output unit could be identified, the designers of the Financial Statement, in their eagerness to evaluate performance on a cost per unit basis, have devised units upon which costs are dependent, but often only extremely remotely. Thus the total cost of operating the 301st Air Division Headquarters organization, for which twenty personnel were authorized during April, was $10,251. For
performance evaluation this cost has been related to total training hours flown by the two tactical wings. At 3,885 training hours this results in a unit cost of $2.63. In the Motor Vehicle Squadron, whose job it is to maintain, service and operate military vehicles, total costs in April were $73,203. This is related, for budgetary and performance evaluation purpose, to base population. With 7,652 personnel assigned to Lockbourne during April, the Motor Vehicle cost was $9.56 per man assigned to Lockbourne.

Although there is, in the long, long run, some relationship between training hours flown and the cost of running a Headquarters Section, and between base population and the maintaining and operating of military vehicles, in the short run the relationship is too remote to be useful. By trying to relate all costs to some unit of output we deny the prevalence of fixed costs which characterize some functions. 26

26 Harold O. Davidson, in his book Functions and Bases of Time Standard, suggests, "... there must be a knowable and quantitatively predictable relationship between any given cost and some other variable in terms of which it is to be expressed for purposes of control." p. 225, 1952.

A valid labor standard has been employed for years in the Air Force: the Table of Organization. It recognizes the fixed cost nature of certain functions and authorizes personnel not by reference to training hours flown for the
Headquarters Section, or by base population for the Motor Vehicle Squadron, but by reference to the number of wings which will be operated in the Division for Headquarters, and to the number of vehicles maintained, etc., for the Motor Vehicle Squadron.

These standards are somewhat time-honored in the Air Force. They are reasonably valid standards. Financial Management can best be introduced by employing these respected standards wherever possible. It can be safely said that had financial standards, established by translating the manpower authorization into dollars, been employed when the Financial Statement was first published and supplied to line management, it would have been much more hospitably received.

At this time such standards are not being used. The standard unit cost to which actual costs are referred under the present practice, which is dictated by United States Air Force Headquarters, are simply the unit costs which were predicted by the squadron commanders themselves.

**SELLING FINANCIAL MANAGEMENT**

After a year of publication of the Financial Statement there is virtually no evidence that top base level management at Lockbourne accepts Financial Management as a useful addition to its control system.

Efforts to sell the usefulness of the dollar as a
common denominator under existing conditions of centralized control have been only mildly successful. While it has been recognized that the dollar could be thus employed, it has been generally felt that existing control techniques were satisfactory, or that what works in business will not necessarily work in the Air Force.

Had Assistant Secretary of the Air Force Garlock visited Lockbourne again in July, 1955, and had he asked again the question, "How does Lockbourne usefully employ Financial Management?", there is little question that top line management would have had difficulty in demonstrating the usefulness of Financial Management.27

27This impression, concurred in by the members of the test team, has been substantiated repeatedly at the monthly Financial Management conferences where the question is asked repeatedly by line management from the Division Commander to the Squadron commander, "How can we usefully employ Financial Management?"

Top Air Force management has committed itself to trying Financial Management. Experience at Lockbourne reveals the fashion in which the program will have to be sold to base level management. Base level management must be shown how Financial Management can be useful to it. If the base commander can be shown that it is possible, through perusal of financial data, to improve his operations in an area where his personal performance is being evaluated, he will welcome it.
To do this he must be granted more authority, and then accountability must be established and his performance measured in monetary terms.

If top Air Force management advises the base commander that his input costs came to $40,000,000 in 1954 and that, considering the volume and nature of his operations, this could be improved upon, and that he will be held accountable for keeping costs within specified limits during the next year, the base commander will seek financial information. He will ask: What determines my operating costs? Which are the most significant resource consuming units? What is the relationship between resources consumed and functions performed by functional areas? Where are cost improvement opportunities greatest? What should it cost to perform specific functions?

In short he will ask: What financial standards represent "controlled operations" in each functional area?

A change in authority and accountability must come from higher headquarters. When this is done Management Analysis will have a relatively easy job of selling Financial Management to base level commanders.

It may well be that the framers of Financial Management contemplated a "selling from the bottom" rather than the type of compulsive approach recommended here. But in reality the base level manager has always been
responsible for conserving resources. By holding him accountable for it in monetary terms we simply create the need for Financial Management on his part and stimulate him to seek it voluntarily.

This granting of authority and "selling from above" is the missing ingredient whose absence excludes Financial Management.

Establishing the required degree of cost accountability does not require drastic measures. Accountability for performance in those areas measured under the Strategic Air Command Management Control System has been quite effectively established at Lockbourne without higher headquarters formally announcing its intentions to do so. Indeed Strategic Air Command Headquarters has even gone out of its way to let it be known that personal accountability for performance was not being intentionally established in the Management Control System. Yet the publicity this system has received has caused Lockbourne management to recognize the propriety of endeavoring to improve its performance in those areas measured under the Management Control System.23

23 Chapter VI treats the Strategic Air Command Management Control System in some detail.

The handwriting is on the wall. Warning his fellow conferees at the Special Conference for Comptrollers, "r.
R. D. Benson, Deputy for Accounting and Financial Management, Office of the Assistant Secretary of the Air Force, stated:

During the next couple of days you will hear a great deal about principles and concepts. You will hear our Financial Control Plan concepts referred to by such terms as the concept of personal responsibility for cost incurrence, the concept of costing by responsibility centers, and the concept of decentralized responsibility. In the final analysis, we believe that the system which we must develop to comply with the provisions of the Federal Property and Administrative Service Act of 1949 and the Hoover Commission - is a system of RESPONSIBILITY AND ACTIVITY ACCOUNTING, and that might well be the term which we should use in referring to our Financial Control Plan. Responsibility and activity accounting is the classification and accumulation of transactions by organizational units, further segregated according to the various lines of work carried on by the organizational units. The basic principles of financial control and the basic principles of responsibility and activity accounting are: first, organizational responsibility, which involves the fixing or responsibility for action and results; and second, forward planning, which includes estimating, programming and budgeting; third, a uniform classification of accounts, for planning, budgeting and reporting; fourth, an accounting system, coordinated with the planning and budgeting system, and fifth, an effective reporting system.29


And again in Air Force Pamphlet 170-1-1, The USAF Financial Management System the Air Force observes:

The day is past when an Air Force Officer can gain popularity by belittling the trend toward conscious and professional management of Air Force affairs.
The modern commander is confronted with so many facts and interpretations of facts that he must select only the most important for his personal action. He is beginning to realize that one method of getting the most significant facts is through properly digested financial data which will be produced by the Financial Management System.
CHAPTER VI

RELATING VARIOUS CONTROL PROGRAMS PRESENTLY EMPLOYED
TO AN INTEGRATED CONTROL SYSTEM

INTRODUCTION

In Chapter IV the fashion in which control over the utilization of labor and materials is exercised was discussed. Under present conditions of centralized control, regulations form the core of the Air Force Control system.

Yet there are, within the complex of regulations, several separately identifiable programs which exercise varying degrees of control over the utilization of resources at Lockbourne. The Work Measurement System is one. Another program, the Strategic Air Command Management Control System, has been mentioned. In addition a statistical control section serves as part of the office of the base comptroller.

Now the United States Air Force is moving to adopt a program of Financial Management which portends to be a comprehensive new control program.

To place these various control programs in proper
perspective, and to see how they fit together into an integrated control system, if at all, it would be well to examine them briefly. Then by re-examining the function of control it will be possible to see how an integrated and cohesive control system could best be designed. This will be done by:

(1) Examining Air Force regulations in general;
(2) Examining the Work Measurement System;
(3) Analyzing the Strategic Air Command Management Control System;
(4) Appraising the Comptroller function at base level;
(5) Examining the control function of management and the relationship between the various control programs prevailing and proposed, and by indicating the perspective which the commander might take with regard to these various control programs to exercise control over all operations most effectively.

Once again attention will be confined to the Air Base Group.

REGULATIONS

By "regulations" is meant that complex of regulations published by United States Air Force, by the various commands, by the Air Forces, Wings and Groups, and Air Force letters, Manuals, Bulletins, Pamphlets, Technical Orders,
Directives and Instructions which make up the complete regulations file.

United States Air Force regulations are the primary administrative regulations for the government of the Air Force and contain policies, directives and administrative instructions that are permanent in nature. Command, Air Force and lower level regulations serve a comparable purpose, but are of less permanence. Air Force Manuals are used for publishing a compilation of material to simplify the presentation of diverse matters or voluminous material relating to a particular subject or field of operation essential to the functioning of the Air Force.¹


Regulations are, of necessity, a partial substitute for managerial skill. Turnover in the Air Force is high. The experience which good management requires is difficult to obtain. Regulations, by specifying in some detail what should and should not be done, more nearly guarantee consistency of action. By setting forth standing policy to govern most situations they promote management by exception. They can, however, become too restrictive.

Regulations provide an excellent example of the "static" concept of management described in the Department of the Air Force publication: The Management Process.
According to this document the manager who subscribes to static management applies consistently a preconceived ideal pattern of managerial principles and techniques. He assumes that, if these principles are applied logically, they will invariably produce the best results. "The principle of straight-line flow of work illustrates an example of this approach. Arrange for it (this principle implies) and the best and most efficient flow of work will be achieved."  

The Management Process describes an alternate process:

The "operational" approach, on the other hand, rest on the premise that the end-product or goal to be achieved is the paramount consideration in designing an organization, developing procedures, or directing operations. Managerial action is geared to the nature of the objective rather than oriented toward ideal patterns which may or may not fit. It further presupposes that each problem or situation has some elements that are unique and that each, therefore, must be evaluated in its own setting.

And further:

The static approach looks pretty on paper with all odds and ends neatly tucked in. It appeals to our sense of orderliness. Unfortunately, however, it does not help us much in solving problems. The dynamic approach (operational approach), on the other hand, is not neat; it is often messy looking. The odds and ends stick out. But it helps us to see our problems as they really are.
Although a regulation can be found to indicate the action which should be taken under most circumstances, regulations are not entirely inclusive. It is not expected that all regulations will be followed to the letter under all circumstances. When it is apparent that in following a regulation the real objective would be partially defeated, the Air Force manager is instructed, by regulations, to deviate. But after deviating he must at once submit to his superiors an "Unsatisfactory Report" which substantiates his belief that the deviation was justified. Provision is made for modifying regulations when unsatisfactory reports or other influences indicate a change is in order.\footnote{Interviews with Lockbourne Management.}

Control is exercised by the enforcement of regulations. Regulations are enforced by line management. Management determines the need for corrective action by inspection. Inspection is centralized in the office of the Inspector General, whose job it is to advise management regarding the extent to which regulations are being complied with.\footnote{Interviews with Lockbourne Management.}

When a program such as the Strategic Air Command Management Control System is introduced, it is customarily given the status which compliance requires by being
established as a regulation. 6

6 Interviews with Lockbourne Management.

THE WORK MEASUREMENT SYSTEM

This control program is in the developmental stage. Three squadrons at Lockbourne presently report regularly the total man-hours "earned" by virtue of the volume of their operations, and the man-hours actually expended. The time standards by reference to which man-hours "earned" are determined are base level rather than Air Force-wide standards. At this time these reports are being sent to higher headquarters, where they presumably influence Table of Organization determination. 7

7 Interviews with Lockbourne Management.

Although the Work Measurement System provides the means whereby accountability might be established, performance evaluated and control over labor thereby exercised at base level, it is not being so used at this time. The concept of Work Measurement has been endorsed by top Air Force management, however, and it is being expanded to include other squadrons at base level. At this time Air Force-wide standards are being designed. 8

8 Interviews with Lockbourne Management.
Hence the Work Measurement System must be included as part of the various control programs of the Air Force.

THE STRATEGIC AIR COMMAND MANAGEMENT CONTROL SYSTEM

The Strategic Air Command has devised and employed its Management Control System for over two years. This program consists of a group of performance measurement factors by which bases in the Strategic Air Command can evaluate their state of control in various areas.9

9The objective, according to Strategic Air Command Technical Pamphlet 170-3, is: "To provide a procedure by which the Air Base Group Commander and staff will be aided in determining effectiveness in reaching and maintaining prescribed and implied goals and the effectiveness with which available resources are utilized:" and further: "To provide information on individual factors affecting the performance of the Air Base Groups so that corrective action can be instituted. This action may be the responsibility of the Air Base Group, Wing, Air Force, Command, or other outside agencies as determined by a complete analysis of the data." Thus little effort is made under the Management Control System to establish single accountability for results.

Although Strategic Air Command bases are advised that the Management Control System is not meant to be a basis for comparing bases for performance evaluation purposes, the Strategic Air Command Headquarters publishes the performance of all its bases so that each can see where it stands with respect to its fellow bases.

Under the Management Control System each base can earn points for its performance in various scoring areas. The
total points, compared to the Strategic Air Command average, show base management how it compares to management at other bases.

From time to time the performance factors on which bases are scored are changed. As of April, 1965, Lockbourne was rated in accordance with its performance in the following areas (which pertain to the Air Base Group):

(1) Manning: Which measures the extent to which the Group is manned with the skills authorized. (The "Manning in Required Specialties" referred to previously);

(2) AWOL Rate: Which measures the military personnel rate of unauthorized absences;

(3) Ground Safety: Which measures the military injury rate;

(4) Reenlistment Rate: Which measures the extent to which airmen reenlist immediately upon termination of their current tour of duty;

(5) Officer and Non Commissioned Officer Vesses: Which measures the profitability of these privately financed clubs for military personnel;

(6) Supply Management: Which measures performance in several areas:
   a. Percent of inventory taken each month,
   b. Line items processed per man-hour of personnel on duty (labor productivity),
c. Average time for processing on-base issues,
d. Number of vouchers out of file over 5 days,
e. The Local Purchase Store cost per dollar sales, etc;

(7) **Installations costs incident to maintenance:** Which measures the extent to which the Installations Squadron confines itself to maintenance, its primary function, rather than other activities;

(3) **Base Exchange Management:** Which measures profitability and financial condition of the base exchange;

(9) **Medical and Dental Stock Fund:** Which measures inventory turnover and cost per dollar of issues from the base hospital supply inventory;

(10) **Food Service Management:** Which measures man-hours expended per meal served and the cost per meal served;

(11) **Local Purchase Pipeline:** Which measures the pipeline time for local purchase;

(12) **Commissary Management:** Which measures sales per customer, etc., in the base grocery (operated for military personnel and their dependents);

(13) **Reports of Survey:** Which measures the number and dollar cost of reports of survey (executed when equipment is lost) per man assigned.

It is apparent that some of these factors pertain to personnel, some to material, and some to operations in
general. Some of the Management Control System standards, which are Strategic Air Command-wide, are admittedly invalid for Lockbourne. Maximum allowable score would be impossible to achieve in some areas, while in other areas a perfect score can be achieved without good management necessarily being manifest. It is argued, however, that as goals toward which all bases might strive all Management Control System standards are good control "devices."\(^{10}\)

\(^{10}\)Interviews with Strategic Air Command Management Analysis personnel.

**THE BASE COMPTROLLER**

The statistical Control Section of the office of the base Comptroller is largely an inspection agency. It exercises surveillance over various reports which regulations require base operating organizations to forward to higher headquarters. Its control is limited to control over reporting, although by participating in the information gathering activities of the office of the Comptroller it is referred to as a control agency.

Within the office of the base Comptroller the Management Analysis section interprets the information which the Statistical Control Section gathers. As staff advisor to line management it is incumbent on Management Analysis to present to management evidence of problem areas, which
statistical information points up, and to recommend corrective action. The Air Force has carefully avoided adopting the industrial spelling of the word "comptroller" (without the "p") to preclude the implication that that agency performs those functions of control which are line management functions. Rather, it is stated, it acts in a staff capacity advising command, which actually does the controlling.11

11 Interviews with Lockbourne Management.

Thus the base Comptroller functions as a part of the base level control system.

THE CONTROL FUNCTION AND THE RELATION BETWEEN THESE VARIOUS CONTROL ACTIVITIES

Management engages in many functions in order to accomplish an objective. Control is only one of these functions.12 Control is the activity in which management engages in order to make certain that programmed results will be achieved. Desired results are defined in terms of quality, quantity, time, place and cost. As a support organization the Air Base Group performs a service function.

In a service organization it is useful to think of quantity, time and place as part of the "quality of service" rendered; desired results can then be identified in terms of:

1. The quality of performance (output);
2. The cost of that quality of performance (input).

In engineering, the relationship between output and input reflects the efficiency of a machine; in a group activity the relationship between output and input reflects its performance proficiency.

In an industrial organization, as in the machine, this relationship between output (income from sales) and input (cost of operations) can be evaluated by reference to one quantity: profit. But in the Air Force, a non-profit institution, the output cannot be quantitatively measured in monetary terms as it can in industry. Although input can be measured in dollars, it cannot be compared to output which is measured in non-monetary terms, in one quantitative measurement. In the Air Force both input and output must be considered simultaneously but separately, in order to evaluate total performance.

Recalling the opportunity cost characteristic of Air Force funds allocation we find that, at base level, quality of performance is a relatively fixed specification which the Air Force regards as required. Thus in the Food Service function menus are prescribed for the Food Service
Squadron by higher headquarters to a considerable extent. The Base Commissary, which performs a "wholesaling function," stocks food in anticipation of supplying what the menu prescribes. The quality of food which the Commissary procures is specified by higher headquarters. The fashion in which it is refrigerated, stored, and handled is fairly precisely specified by regulations.¹³

¹³ Interviews with Lockbourne Management.

Thus the quality of its raw material is out of the Food Service Squadron's control. Between the Commissary and the dining hall tables, of course, a great deal of change can occur influencing the quality of food service rendered by the squadron. Quality control during this transition from raw material to prepared food is sought by a number of means: Food Service personnel skills required are specified, and the manner in which meat, poultry, and fish are cut and prepared is specified by regulations. Periodic inspections by the base veterinary officer, the Inspector General and line management are designed to insure that quality regulations are adhered to. At least one officer is supposed to eat in each mess hall each day to see to it that the food has been properly prepared, is presented in an appetizing fashion, and that the dining halls are maintained in a clean and sanitary
state. This type of inspection involves purely
interviews with Lockbourne Management.

Qualitative judgment, but it appears to be the only practical way quality can be controlled in this activity.

Financial Management does not contemplate a change in quality control. Financial Management is useful in improving control over resource utilization, that is, over the cost of achieving the required quality performance. Since quality of performance and the cost of that performance are not completely independent of each other, the control activity in which management engages in order to achieve programmed results should give consideration to both factors simultaneously.

If desired results are thought of in these terms, and controlling is thought of as the activity in which management engages to achieve these results, the various control programs presently employed at Lockbourne can be re-examined and placed in proper perspective.

Regulations, as previously discussed, are designed to control both quality of performance and its cost. If Financial Management is to be adopted it should be possible to abandon some of those regulations which limit resource utilization as a means of cost control, and to substitute the more positive approach of incentive management.
Maintenance of quality through enforcing regulations by inspection and taking corrective action would, of course, still be necessary.

The Work Measurement System is a "cost control" program. It is designed to facilitate manpower requirement determination and to help the responsible manager in evaluating the performance of his own subordinates.

The present Strategic Air Command Management Control System, like the Financial Management System, is a positive approach to control. This system exercises control in three ways. First there are factors in the Management Control System which endeavor to measure quantitatively the quality of performance:

(1) Officer and Non Commissioned Officer Messes;
(2) Supply Management (part of this measure);
(3) Local purchase store pipeline.

Others concern the cost of the input:

(1) Supply Management (part of this measure);
(2) Base Exchange Management;
(3) Food Service Management.

A third group measures neither quality of performance nor cost of that quality. Rather this group indicates relationships between factors which are only indirectly concerned with quality and cost. They include:

(1) Manning;
(2) AWOL Rate;
(3) Ground Safety;
(4) Re-enlistment Rate;
(5) Installations Costs incident to Maintenance.

These factors are simply indicators which help identify the causes of poor quality or cost performance. Thus a high AWOL rate might indicate poor morale, which is of concern because it results in deterioration of quality performance and an expenditure of funds for which no value was received. Manning In Required Specialties is a measure of neither quality performance nor its costs, but is rather a possible explanation of why desired quality is not being achieved, or why costs are higher than standard.

Controls like those incorporated in the Management Control System can be quite useful. Yet they can be self-defeating. Lockbourne's AWOL score has improved since Lockbourne began to be rated for its AWOL rate under the Management Control System. Some Lockbourne management believes, however, that the improvement arises out of a relaxing of discipline. Thus to get a better AWOL score squadron commanders simply overlook AWOL's and deny that they had any. Punishment, of course, is foregone.
The end result may be a deterioration of both quality performance and of the cost of performance in the long run.

In May, 1955, Lockbourne's Medical Dental Stock Fund score rose substantially. Labor costs per dollar of issues from the Medical Dental Supply inventory were cut when the Base Hospital declared its Supply Officer and two airmen to be assigned (for labor costing purposes) to another department, within the hospital, whose costs were not being measured. Although opportunities for the manager to improve his appearance, in the short run, without improving his performance exist under any control system they become greater as the factor measured becomes more remote from the end results which control is designed to achieve.

Those measures presently employed in the Management Control System create the incentive for the Air Force manager to do more than just comply with regulations. The Inspector General says to the operating manager, "You have conducted your activities in strict conformance with all applicable regulations; therefore you have managed well." The Management Control System on the other hand, informally establishes accountability more directly in terms of the end objective pursued, and says to the successful manager, "You have, by comparison to your fellow managers throughout the Strategic Air Command, achieved desired results effectively; therefore, you have managed
well." Thus regulations urge a manager to proceed in the right fashion; Management Control System measures urge a manager to achieve the right results. The Management Control System approach is a more positive one; it is a dynamic or operational approach.

No quarrel can be found with those Management Control System measures which evaluate quality of performance, or provide indirect "indicators of trouble." But with the introduction of the Financial Management program it is possible to make a great improvement in controlling the cost of performance. Total costs can be measured. If total costs are measured it will not be "profitable" for the base level manager to improve his cost performance appearance without actually improving his cost performance.

The Management Control System provides the logical medium for the establishment of that degree of cost responsibility which Financial Management contemplates. In order to give cost performance (effectiveness in the utilization of resources) the emphasis it deserves as a result which, like quality of performance, is of great importance, at least half of the points capable of being earned under the Management Control System should be awarded on the basis of total cost performance. If total costs actually incurred in performing the many base level functions compare favorably with what costs would have
been had each of these functions been performed with economy and effectiveness, management should be well rewarded.

With these various control programs in proper perspective the base level manager might examine his total operation, looking at a complete operating performance statement. On one side he finds his cost of performance, with problem areas highlighted (as in the Air Base Group Cost Performance Evaluation statement, Table II). On the other side he finds the results of Inspector General inspection reports, some of the present Management Control System measures, and recorded results of his own inspections which reveal the quality of performance of his various subordinate managers. Additional indicators, such as some of those presently employed in the Management Control System would serve to highlight those causes of which poor quality and/or cost of performance are effects. With this total picture before him the manager would, where costs were found to be exceedingly low, hasten to examine quality of performance before concluding excellent management was being manifest.16

16 At this time the Inspector General, the Manpower Section (which operates the Work Measurement System) and the office of base comptroller are three widely separated organizations at Lockbourne. Yet each is performing a control function which is intimately associated with the others. It would appear that base level line management could be given a better picture of the control function and the state of control at any given time if closer working relationship
were established between these agencies. To preclude a conflict of interests and a misapplication of emphasis these three staff agencies might well be combined into one centralized staff control agency which could be placed logically under the base Comptroller.

Thus the emphasis would not be on cutting quality to lower costs but rather on achieving the required level of quality performance for less cost, thereby making possible more Air Force per dollar expended.
CHAPTER VII

SUMMARY AND CONCLUSIONS

THE OBJECTIVES OF THE STUDY

The principal objective of this study has been to determine how, if at all, monetary standards can be employed by Air Force management at the air base level in the United States Air Force to improve control over the utilization of resources. Three minor objectives have been:

(1) To determine to what extent monetary standards can be usefully employed to establish personal accountability and measure performance at lower managerial levels;

(2) To determine how, if they are potentially useful, financial standards can be "sold" to line management at base level;

(3) To discover how a system of monetary standards can be made to fit into an integrated system of operational control in which all components contribute to the common objective.

METHODS OF STUDY

Answers to these questions have been sought by:
(1) Surveying the background of the Financial Management program in the Air Force;
(2) Investigating the use of financial standards in industry;
(3) Examining the air base operation itself;
(4) Evaluating present Air Force control practices.

Considerable reliance has been placed on government documents and Air Force manuals, regulations and miscellaneous publications to establish the objectives of financial management as they apply at base level, and the nature of the present Air Force control system. Interviews with base level management at Lockbourne Air Force Base have provided much of the information upon which conclusions are based regarding the usefulness of financial standards, and the fashion in which they can be "sold" to line management.

SUMMARY OF FINDINGS

Conditions found. As United States Air Force activities have grown in scope and complexity, operations have become increasingly difficult to control. Both United States Air Force management and the Congress of the United States have become less satisfied with traditional methods of control over operations. Top Air Force management has become less capable of guaranteeing that desired results will be achieved, and specifically that those resources
made available to it are being effectively employed. Moreover, top Air Force management has found it more difficult to substantiate its request for funds.

The Air Force formally adopted a so-called Financial Management plan in 1953 as a method of complying with those provisions of Public Law 216 which pertain to control over resources. Since the bulk of Air Force resources is expended at the air base level, "pilot" operations had been set up at three air bases to test a number of methods. Conclusions reached as a result of these "trial runs," it was believed, would be applicable to other bases throughout the Air Force. This study is particularly concerned with Lockbourne Air Force Base, one of the three test bases.

A double-entry, accrual type bookkeeping system was introduced at Lockbourne. Costs of labor and expendable materials were charged to using organizations at the squadron and section level. Although costs of this sort had been available before, several significant changes were made with the introduction of Financial Management. Among these changes were the following:

(1) Inventories in Base Supply were measured in terms of dollars rather than items alone;

(2) Costs were summarized by and reported regularly to using organizations in a monthly Financial Statement;

(3) Squadron commanders (operative management in the
Air Force) were required to budget their expenses, if only as a training maneuver.

In the hands of managers whose organizations consumed resources this financial information would be of no value without financial standards by reference to which the state of control over resource utilization in their organizations could be determined. The "test team," the staff group at Lockbourne concerned with implementation of the Financial Management system, posed provisional financial standards which, it was hoped, would provide these much needed criteria. Invariably, when such standards were proposed to line management, vigorous resistance was offered to their use. If a standard were based on the historical experience of comparable organizations throughout the Air Force, the objection raised was: "We are different." If the standard involved labor costs, it was argued: "We cannot control our labor costs." Finally base level management countered with the query: "These resources for which we are being charged are already being controlled by qualitative and quantitative (but non-monetary) standards; what is added by introduction of the dollar?"

It was found that after a full year of experimentation at Lockbourne, the Financial Management Program enjoyed almost no acceptance by line management. No evidence existed that improvement in the utilization of resources
had been brought about by the introduction of Financial Management.

**Conclusions.** In spite of the conditions found, it is concluded that financial standards can be usefully employed to improve effectiveness in the utilization of resources at base level. More specifically the following conclusions have been reached:

1. The "non-profit" characteristics of Air Force operations do not preclude the usefulness of the Financial Management program. The "dollar" standard need not have reference only to profit measurement. Its usefulness arises out of its summarizing capabilities by means of which the state of control over entire operations can be appraised while avoiding the perplexity of details. Furthermore the relative seriousness of uneconomic utilization of resources in different areas can be determined, and control effort properly allocated by reference to financial standards. By this means the base level manager can identify most readily his problem areas and reward manifestations of good management.

2. These contributions of financial standards promote management by exception and free the base level manager's time for more productive activities.

3. It is recognized, however, that a limit exists beyond which financial standards cease to offer advantages
over quantitative but non-monetary standards. At the squadron level financial standards can be quite useful. At the section level financial standards can be useful wherever the resources consumed in performing a function involve both labor and materials in substantial quantities or where an operation is repetitive and a unit of "output" can be fairly easily identified.

Below these levels time standards for labor and non-monetary standards for materials appear to be more revealing and hence more useful for control purposes.

The resistance offered to the introduction of financial standards in the face of these benefits was found to be due to the absence of two ingredients: (a) the base level manager's control over his resource costs; and (b) the lack of motivation.

Improvement in the utilization of resources can be brought about by establishing personal accountability for resource utilization. Without Financial Management and the resource summarizing capabilities of the dollar, personal accountability for resource utilization could not be effectively established. Yet with cost information personal accountability cannot be established unless the responsible supervisor can be given substantial control over those factors upon which his cost performance depends.

Under the present system of control over labor, which
constitutes 70 per cent of Lockbourne's operating cost excluding aircraft fuel, the operative manager has little control over the quantity of labor which is charged against him.

Granting the responsible supervisor sufficient control over labor so that he could be held personally accountable for its cost will require a degree of decentralization of authority.

However, if operative management were to be granted the necessary control so that that degree of accountability which must be established if results are to be achieved could be established, greater effectiveness in resource utilization would not follow without the necessary motivation.

Although the Air Force is not a profit institution, the military manager is motivated by much the same desire as his industrial counterpart.

At the present time controls over resource utilization are largely "negative:" limiting resources available (preventive controls), and exacting disciplinary action when abuse of government property is in evidence (punitive controls). There is no real evidence at Lockbourne that a manager's personal career can be furthered by his displaying greater than average economy in resource utilization. Under some circumstances it appears that the manager's personal
interest might be served by employing more than enough resources to perform his stated mission. This condition arises out of the emphasis which higher command places on performance in areas other than resource utilization.

Financial Management can be "sold" to base level management only by a reallocation of emphasis. If the necessary motivation is to be generated it must come from above; top Air Force management must give cost control emphasis and status in the Air Force Control System. This can be done by establishing individual cost accountability at higher management levels and by rewarding good performance. If the base commander is held accountable for costs, he will hold his subordinate commanders accountable for costs. If he is not, it is not likely that he will divert his attention to cost control at the expense of other performance areas for which he is being held accountable.

(5) It was found during the course of this study that the system of rules and directives referred to broadly as "regulations" is the core of the Air Force control system at the present time. Within this complex of rules there are several separately identifiable control programs. Placing these various programs, which are monitored by widely separated staff agencies, in proper perspective was facilitated by thinking of the results which the Air Force
seeks to achieve as they relate to: (a) the quality of performance of base level functional organizations, and (b) the cost of achieving this level of quality performance.

Whereas regulations, enforced by inspection, were found to be the best means of controlling quality of performance, financial standards and the Financial Management program were found to offer improvement in control over costs. Other control devices such as those measured in the present Strategic Air Command Management Control System, are most useful as quality control standards and indirect performance measurements which point to trouble spots which are not of themselves bad, but which can lead to loss of control over quality of performance or costs if their cause is not corrected.

(6) High turnover of Air Force managers and operative personnel, the compulsion under which some personnel are present in the Air Force, and other factors tend to make the control practices which Financial Management contemplates less applicable in the Air Force than in industry. Financial Management is not, however, inappropriate in the Air Force.

(7) While maximum attention has been devoted to "support" activities it has been concluded that the usefulness of financial standards does not appear to be confined to these areas, but may find applicability to "tactical"
functions also.

RECOMMENDATIONS

For the immediate future. The usefulness of the dollar employed in the fashion contemplated by the Air Force Financial Management program has been established. The ingredients necessary to exploit its capabilities have been set forth. In order to begin to exploit the capabilities of the dollar at the earliest possible date the following steps are recommended:

(1) To provide criteria by reference to which resource utilization can be evaluated, two steps should be taken:
   (a) Air Force Manual 150-1, or a more recent Table of Organization guide, should be translated into dollar standards which relate labor costs to functions performed. By basing labor cost standards on manpower standard most widely understood in the Air Force, their acceptance will be most nearly guaranteed. (b) Historical experience should provide the basis for the design of material cost standards relating, wherever possible, materials cost to functions performed.

(2) As labor and material costs are reported monthly under the Financial Management program, line management at base level should be provided with a complete cost performance evaluation report which will indicate the state of control over total resource utilization and will place
problem areas in proper perspective.

(3) For performance evaluation purposes control over labor costs should be granted to the operating manager by segregating cost; i.e., wherever an overage exists the squadron commander should be charged only for that labor he regards as required, and the responsibility for surplus labor cost, if any, should be placed at that managerial level which exercises most control over the problem of labor dislocation.

(4) Air Force management above base level should begin to hold base level management accountable for resource utilization in terms of dollars, thereby motivating base level management to exercise that degree of diligence in controlling resource utilization which cost information makes possible and which the Financial Management program contemplates. This could best be done at bases within the Strategic Air Command by emphasizing heavily in its Management Control System an overall measure of cost performance which would include all costs presently charged.

For the longer range future. In order to exploit the maximum capabilities of Financial Management additional study should be conducted. Specifically:

(1) It is recommended that the extent of the usefulness of the dollar for improving control over resource utilization in tactical activities at base level should be further
explored.

(2) Monetary standards should be continually refined with a view toward establishing the most valid standards possible. In addition, non-monetary standards, such as those employed in the Work Measurement system, should be developed in all areas at base level to supplement financial standards.

(3) Further study should be devoted to the problems of "responsibility costing," optimum cost allocation, and the feasibility of charging organizations for utility services and for depreciation on equipment and facilities.

(4) Finally a great deal of study is needed to determine ways in which personnel turnover in the Air Force can be reduced so that that experience upon which good management is considerably dependent can be more readily acquired by Air Force managers.

Financial management and the use of financial standards offer real opportunities for improvement in the effectiveness with which resources are utilized in the Air Force. If these recommendations are followed it is believed that the Financial Management program, which to date has yielded no concrete results, will begin to yield the results which were contemplated by provisions of Public Law 216, namely: more Air Force per dollar expended.
APPENDIX A

DETAILED ANALYSIS OF FOOD SERVICE MANAGEMENT AT LOCKBOURNE AIR FORCE BASE

APRIL, 1955

During April it cost $52,930 to man the Food Service Squadron. Since twenty eight men were assigned in excess of requirements, according to the squadron's own declaration, it might be assumed that the Food Service Squadron could have been manned for $47,720 at the average cost per man.

To determine if this represents what labor costs would have been had human resources been economically employed the question might be asked: How much should it have cost, in labor, to perform the Food Service function during April?

Several criteria exist by reference to which the reasonableness of Lockbourne's cost might be evaluated. In particular the following criteria might be employed:

(1) Costs which would have been incurred had strength authorized by 2nd Air Force Manning List been employed;

(2) Labor employed at other Strategic Air Command bases to perform the Food Service function;

(3) Labor "earned" under the Work Measurement system;
Labor costs incurred by food serving organizations in "industry."

**Lockbourne compared to the 2nd Air Force Manning List.** Had the Food Service Squadron been manned at that strength which the most recent 2nd Air Force authorization for Lockbourne specifies, labor costs would have been $52,345.

**Lockbourne compared to other Strategic Air Command bases.** Labor cost figures which would enable us to compare Lockbourne with other bases cost-wise are not available. Considering the standardization of the functions performed and service rendered in the Air Force it would appear that meals served per man assigned might be a valid measure for comparison.

In the Strategic Air Command man-hours expended by the Food Service Squadron per meal served ranged from 0.06 at Great Falls Air Force Base to 0.26 at Castle Air Force Base during March 1952, the most recent month for which Strategic Air Command-wide information is available. At thirty six hours per man per week (10 per cent off for non-mission time), Great Falls labor productivity would have been 1,930 meals per man per month, Castle Air Force Base 593 meals per month, and Lockbourne 243 meals per month by

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1. Non-mission time is sick-leave, furlough time, etc.
Lockbourne evaluated by reference to the Work Measurement System. During April the following operating functions were performed by the Food Service Squadron:

- 64,632 pounds of meat were cut;
- 7,010 pounds of poultry, fish and cold cuts were processed;
- 162,077 pastry servings were prepared;
- 212,327 meals were served.

Under the United States Air Force Work Measurement System the following time standards have been established as being representative of good Food Service work performance:

- Meat cutting: .015 man hours per pound
- Poultry processing: .007 man hours per pound
- Pastry serving: .010 man hours per serving
- Other labor: .087 man hours per meal served.

Applying these unit standards to our volume of operations and adding twenty personnel for Command and Administration it appears Lockbourne "earned" under the Work Measurement System some 24,249 man hours or the time of 153 men on the job thirty six hours per week (allowing 10 percent for non-mission time).

During April, 235 men were assigned to the Food Service Squadron; 275 were declared to be required by the Food Service Squadron.

Lockbourne compared to "industry." Translating ratios
of labor to materials costs for restaurants in the United States as a whole and Ohio in particular into meals served per man we find that the typical restaurant, doing a $100,000 gross annual business, serves around 1,000 meals per month.\(^2\)

\(^2\)Barometer of Small business, the Accounting Corp. of America, Vol. 6, No. 4, 1953, and "Operating Ratios for Twenty Nine Lines of Retail Trade," Dun and Bradstreet, Inc., 29 Church St., N.Y., Oct., 1953.

It appears that Lockbourne's present Food Service labor productivity compares favorably only with the 2nd Air Force standard. Since the productivity at some Strategic Air Command bases is so much higher than that of Lockbourne we might be justified in questioning the validity of the 2nd Air Force manpower authorization.

The 2nd Air Force authorization is built around Part IIIs of United States Air Force Table of Organization 1-3020. By augmenting Part IIIs with seventy two Food Service attendents, 2nd Air Force has adapted Part IIIs for the Strategic Air Command policy of permanent Kitchen Police duty. However Part IIIs without augmentation shows United States Air Force strength authorization for a Food Service Squadron serving from 373,590 to 412,500 meals per month, or 1,520 per man per month. During the past year Lockbourne's Food Service Squadron has averaged about 225,000 meals per month, and has never exceeded 222,974.
It is possible that something unique in the Lockbourne Food Service function requires three times as many men as some other Strategic Air Command bases per meal served. If so it would appear that some alterations in its organization physical set-up, or operating procedure might yield real savings.
BIBLIOGRAPHY

Books


Pamphlets


"Analysis-Management Engineering," Comptroller Staff Officer Course, Air Command and Staff School, Air University, Maxwell Air Force Base, Alabama, 10 May, 1951.


"Manpower Management Audit Guide," Airways and Air Communications Service Headquarters, 1800th AACS Wing, Tinker Air Force Base, Oklahoma City, Okla., 1 August, 1952.


"Proposed USAF Uniform Work Unit List," Organization and Management Division, Directorate of Manpower and Organization, DCS/0, Headquarters, USAF, 1 May 1953.

"Organizational and Functional Charts with Authorized Manning," Lockbourne Air Force Base, Columbus, Ohio, 1 March, 1955.


Miscellaneous

"Directive, the Department of Defense Management Improvement Program," Memorandum from the Secretary of Defense, 20 April 1951.


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