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BY THE COMPTROLLER GENERAL

Report To The Congress

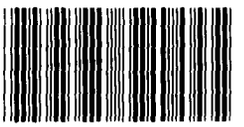
OF THE UNITED STATES

The Alternative Work Schedules Experiment: Congressional Oversight Needed To Avoid Likely Failure

Can the Federal Government successfully use flexible and compressed work schedules as alternatives to the traditional 8-hour day, 40-hour workweek? More than 250,000 Federal employees Nation-wide are participating in a 3-year voluntary experiment to find out.

If the experiment is a success, the Congress may modify laws to allow permanent use of alternative work schedules. Because the results of the experiment may significantly affect the work habits and patterns of all Federal employees, it is essential that the Congress have valid and reliable information on which to base its decision.

GAO believes that the experiment and evaluation, which OPM is currently conducting, will not yield the data the Congress needs. As a result, the experiment will fail to achieve its intended objectives. GAO makes a number of recommendations to OPM and the Congress to increase the likelihood that the experiment and evaluation will produce the results needed.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report assesses the progress made in implementing and evaluating alternative work schedules experiments as permitted by the Federal Employees Flexible and Compressed Work Schedules Act of 1978. It gives the status of the project during the first 18 months of the 3-year experiment and identifies problems which need to be addressed immediately. It also discusses the need for congressional oversight and an improved experiment and evaluation to insure the intended objectives are achieved.

We are sending copies of this report to the Directors, Office of Management and Budget and Office of Personnel Management; the Chairmen, Senate Committees on Labor and Human Resources and Governmental Affairs; and the Chairman, House Committee on Post Office and Civil Service.

Comptroller General
of the United States

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ABBREVIATIONS

AWS	alternative work schedule
GAO	General Accounting Office
OPM	Office of Personnel Management

CHAPTER 1

INTRODUCTION

The 5-day, 40-hour workweek with fixed starting and quitting times has been the traditional and dominant work schedule for the last 40 years. Only in the last 13 years have organizations begun experimenting extensively with alternatives to the traditional work schedule. These alternatives have, in some cases, only allowed employees flexibility in selecting starting and quitting times; in other cases, they have compressed the workweek into some period less than the traditional 5 days.

Although flexible work hours were first introduced by a German aerospace company in 1967, the concept was not introduced in the United States until 1971. Since then, alternative work schedules have become increasingly popular. By 1977 about 2.5 to 3.5 million U.S. workers were using some form of flexible work schedule and about 2.1 million others were using some form of a compressed workweek.

The reasons for using alternative work schedules in the private sector vary. They are believed to be beneficial because they:

--Reduce traffic congestion by shifting commuting patterns from peak rush periods.

--Reduce energy consumption.

--Decrease urban air pollution caused by idling cars during rush-hour traffic jams.

--Increase the use of public mass transit facilities and car pools.

--Increase employee morale and productivity.

--Allow employees more leisure time.

Despite these advantages, alternative work schedules may also have some drawbacks and present problems and challenges for managers and supervisors. For example, alternative work schedules may:

--Make scheduling and planning the workflow more difficult.

--Create timekeeping problems.

--Increase energy consumption for heating and cooling buildings during additional hours of operation.

--Make the workday too long and strenuous, which could result in decreased productivity and family scheduling problems.

--Cause problems concerning office coverage, supervision, interdepartmental coordination, and customer service.

Federal Government organizations began using flexible work schedules in 1972. By 1977 an estimated 200,000 employees (about 7% of the Federal work force) were using some simplified form of a flexible work schedule. Although use of these schedules generally proved beneficial to both organizations and employees, work hours and overtime pay requirements imposed by title 5 of the United States Code and the Fair Labor Standards Act impeded experimentation with compressed and flexible work schedules of more than 8 hours a day or 40 hours a week. 1/

AUTHORIZING LEGISLATION

In response to our recommendations and those of the Office of Personnel Management (OPM), both Houses of the Congress introduced several bills in the early 1970s suggesting that the Federal Government experiment more with using alternative work schedules. Experimentation was necessary to determine whether, and in what situations, the Federal Government can successfully use alternative work schedules on a permanent basis.

The President signed Public Law 95-390, "The Federal Employees Flexible and Compressed Work Schedules Act of 1978," calling for a 3-year controlled experiment with Federal executive agencies 2/ and military departments using alternative work schedules. The Public Law is based on the finding that new trends in the use of 4-day workweeks, flexible work hours, and other variations in work schedules in the private sector

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1/"Benefits from Flexible Work Schedules--Legal Limitations Remain" (FPCD-77-62, Sept. 26, 1977).

2/"Executive agencies" means executive departments, Government corporations, and independent establishments (excluding the U.S. Postal Service and the Postal Rate Commission).

appear to show sufficient promise to warrant carefully designed, controlled, and evaluated Federal experimentation. The President also noted in signing the act that:

> "While the advantages appear to be substantial, these schedules have not yet been tested within the full range of environments that characterize Federal employment. Therefore, before making a decision to amend Federal law permanently this legislation wisely establishes an experimental period of 3 years during which we can evaluate various innovations in a large number of agencies."

The purpose of the act is to assess the positive and negative effects of alternative work schedules on

--the efficiency of Government operations;

--mass transit facilities and traffic;

--levels of energy consumption;

--service to the public;

--opportunities for full-time and part-time employment; and

--employees' morale, welfare, and family life.

The experiment is made possible by the temporary suspension of certain premium pay and work scheduling provisions of title 5, United States Code, and the Fair Labor Standards Act. This suspension applies only to agencies or work units participating in an approved alternative work schedule experiment.

OPM's ROLE

The act requires OPM to (1) establish and manage a program for conducting experiments with alternative work schedules in Federal agencies during the 3-year period that began March 29, 1979, and (2) develop and execute a master plan for evaluating the experiment. OPM is to issue a report to the President and the Congress no later than September 1981 recommending any actions needed and stating whether title 5 of the United States Code and the Fair Labor Standards Act should be modified to allow the continued use of both flexible and compressed work schedules.

OPM must also issue a final report, no later than March 29, 1982, on the overall results of the 3-year experiment.

ALTERNATIVE WORK SCHEDULES DEFINED

For purposes of this report, "alternative work schedules" (AWS) refers to both flexible and compressed work schedules. Flexible work schedules (often referred to as flexitime) contain two types of time--core time and flexible time. Core time is the specified period of a workday during which all employees must be present or accounted for through use of official authorized leave. Flexible time is the time during which employees select their arrival and departure times according to constraints management prescribes. The only other requirement of flexible schedules is that employees must account for the basic work requirement--the number of hours they are required to work during a specified period.

Compressed work schedules allow employees to complete the basic biweekly work requirement of 80 hours in less than 10 full workdays.

Flexible work schedules

Although some Federal agencies have been using certain types of flexible schedules since 1972, the 1978 act has made the use of more sophisticated and innovative types of flexible schedules possible by introducing the concept of "credit hours." Credit hours are hours employees choose to work beyond the specified basic work requirement to shorten the length of other workdays or workweeks. At the discretion of each agency, employees working flexible schedules may be permitted to earn and carry over a maximum of 10 credit hours. The following flexible schedules are being used in the experiment:

> Flexitour--employees work 8 hours each day but may vary their arrival and departure times only with prior notification and approval. 1/
>
> Gliding--employees work 8 hours each day but may vary their arrival and departure times daily without prior approval. 1/

1/Although the act permits agencies to allow employees to earn and accumulate credit hours for all types of flexible schedules, this is an uncommon practice under this type of schedule.

Variable day--employees may vary the length of the workday as long as they are present for prescribed daily core times and account for the basic work requirement (40 hours per week).

Variable week--employees may vary the length of the workday and the workweek as long as they are present for prescribed daily core times and account for the basic work requirement (80 hours per pay period).

Maxiflex--employees may elect to work fewer than 10 workdays during a biweekly pay period since core time bands are established on fewer than 10 workdays. This is the most liberal of the work schedules and has the characteristics of both flexible and compressed schedules. For instance, individuals participating in a maxiflex experiment may actually be working some type of flexible or compressed schedule or a combination of both. (See app. I.)

Compressed work schedules

Like flexible schedules, compressed work schedules may also take a variety of forms, but provisions for earning and accumulating credit hours do not apply. Basically, two types of compressed schedules are being used in the experiment:

4-day week--employees work 10 hours per day, 40 hours each week. Employees have both a daily and weekly basic work requirement.

5-4/9--although there are variations of this plan, the most common approach is where employees are scheduled to work 9 hours a day during 8 days of a biweekly pay period and 8 hours on the 9th day. Employees have both a daily and biweekly work requirement. (See app. I.)

SIZE OF THE EXPERIMENTAL PROGRAM

The AWS experiment has been strictly a voluntary program. Agencies wishing to experiment were permitted to implement one or more schedules. As of May 1980, OPM's AWS Research Director estimated that approximately 251,000 Federal employees in about 1,100 work units were participating

in the voluntary experimental program. 1/ Of the individuals participating, about 71,000 are using flexible work schedules, 130,000 are using compressed schedules, and 50,000 are using both types. 2/ The estimated number of employees experimenting with each type of work schedule follows.

Type of schedule	Number of employees	Percent of all employees
Flexible:		
Flexitour	18,000	7.2
Gliding	6,000	2.4
Variable day	7,000	2.8
Variable week	5,000	2.0
Maxiflex	35,000	13.9
Total	71,000	28.3
Compressed:		
4-day week	90,000	35.9
5-4/9	40,000	15.9
Total	130,000	51.8
Mixed:	50,000	19.9
Total	251,000	100.0

OBJECTIVES, SCOPE, AND METHODOLOGY

The use of work schedules which allow employees to alter the number of hours in a workday or the number of workdays in a workweek represents a significant change in Federal employees' work patterns. Both the President and the Congress believed that carefully controlled AWS experimentation was needed before permanently modifying and adopting laws to use such schedules.

1/OPM estimated that more than 251,000 employees from about 1,400 units may actually be participating in the AWS experiment; however, the actual number of employees and the types of schedules were not available for the 1,400 units.

2/The act permits agencies to conduct one or more AWS experiments. Some work units are experimenting with more than one type of schedule simultaneously.

Our objectives were to (1) identify the progress made and problems experienced by both OPM and selected Federal work units in implementing alternative work schedules and (2) assess the adequacy of OPM's master plan for evaluating the experiment.

Our work included extensive reviews of OPM's AWS program regulations and documents and discussions with both present and former members of OPM's experimental program staff. We interviewed managers, supervisors, employees, and union representatives from work units within 12 Federal agencies and military departments in Washington, D.C., and the metropolitan areas of Atlanta and Denver. (See app. II.) We selected these locations according to the number of agencies and employees experimenting with different types of AWS and to obtain headquarters and regional views about the experiment. Denver was selected because of the coordinated efforts of Federal agencies in using AWS, under the direction of the Denver Federal Executive Board's Clean Air Committee, to deal with problems of traffic congestion, air pollution, and gasoline shortages.

We also contacted numerous private sector companies which have both successfully and unsuccessfully implemented AWS. We discussed their evaluation techniques and findings and reviewed their evaluation reports.

In making our assessment, we reviewed each component of OPM's evaluation in detail and applied generally accepted principles of program evaluation from several sources, including "The Design and Conduct of Quasi-Experiments and True Experiments in Field Settings." 1/

1/T. D. Cook and D. T. Campbell, "Handbook of Industrial and Organizational Psychology" (Rand McNally, 1976), pp. 223-326.

CHAPTER 2

DEVELOPMENT AND IMPLEMENTATION OF THE EXPERIMENTAL PROGRAM

OPM officials told us that from the time the legislation was enacted, OPM has lacked sufficient resources to effectively administer the AWS experiment. Rather than allocate additional resources, OPM reduced the scope of the experiment's evaluation. As a result, we believe OPM will not accomplish its legislated responsibilities.

OPM's IMPLEMENTATION RESPONSIBILITIES

In assigning OPM responsibility for establishing and managing the AWS experiment, the Congress indicated that the experiment should be carefully designed, conducted, and controlled to adequately test a range of flexible and compressed work schedules within agencies performing diverse functions. OPM believes that its AWS program gives agencies the flexibility to design and test varied work schedules most appropriate to their individual needs. At the same time, OPM believes that the experiment is sufficiently structured to provide the minimum information needed to evaluate AWS effects.

The 1978 act authorized OPM to issue program regulations for agencies' use in designing and implementing their experiments. In exercising this authority, OPM developed broad, general regulations which primarily restate the provisions of the act. The regulations do, however, prescribe certain requirements which must be addressed in agencies' AWS plans. These include coverage, time accounting methods, limitations on the number of compensatory hours which employees may choose to earn instead of payment for overtime hours worked, holidays for part-time employees using flexible work schedules, and required participation in AWS experiments.

In addition, as required by the act, OPM has developed and provided educational materials, technical aids, and other assistance to agencies participating in the experiment.

OPM's RESOURCES

The AWS Program Office, which is a component of OPM's Office of Compensation and Program Development, was established to develop, administer, and evaluate the AWS experiment. AWS officials said that, since the legislation was enacted, the office has been hampered by insufficient funds.

As a result, the program office has not had a sufficient staff with the necessary skills to effectively perform its legislated responsibilities. Although OPM originally estimated that 11 full-time and 3 part-time employees were needed to effectively carry out its responsibilities, the size of the staff to date has not exceeded 6 full-time employees and 1 part-time employee at any one time.

In fiscal years 1979 and 1980, OPM did not receive the requested budget funds for the AWS program. Because the act was passed only 2 days before the start of fiscal year 1979, funds for the AWS program were not included in OPM's fiscal year 1979 budget request. Therefore, OPM reallocated $160,000 from within its approved budget to the AWS program. In May 1979 OPM asked the Congress to provide a supplemental appropriation of $200,000, which was to include the $160,000 to replace the amount reallocated to the AWS program, plus an additional $40,000. The Congress denied OPM's request and stated that OPM should fund the project through reallocation of its approved fiscal year 1979 budget.

For fiscal year 1980, OPM included in its budget a request for $360,000 for the AWS program, but was only granted $160,000. The Congress denied OPM the additional $200,000 and indicated, as it had previously, that OPM had ample flexibility to fund the AWS program by reallocating approved budgeted funds. At the time of our review, OPM had not reallocated the additional $200,000 to the AWS program. Consequently, the AWS Program Office's fiscal year 1980 operating budget of $160,000 is less than half the amount OPM said it needed to effectively develop, manage, and evaluate the experiment.

Effects of resource deficiencies

According to OPM officials, limited resources have prevented OPM from obtaining the number and types of employees necessary to effectively design, manage, and evaluate the experimental program. As a result, staff members often perform multiple duties for which they have had no prior training or experience. For example, at the time of our review the staff of five included only two individuals who were trained and experienced in designing and conducting research and program evaluation.

An OPM official told us that more employees with expertise in designing and conducting program evaluation would enhance OPM's ability to effectively evaluate the experiment. He also said that, if additional funds were available, OPM could possibly hire one or more contractors to conduct or assist in analyzing portions of the evaluation.

According to OPM officials, the lack of funds and personnel has forced OPM to place priorities on its tasks, reduce the scope of certain tasks, and eliminate others. It has also resulted in OPM not

--accurately determining the number of AWS participants,

--reviewing agencies' work schedule plans to insure compliance with the provisions of the act and program regulations,

--issuing program regulations and guidance timely, and

--providing sufficient training to OPM and agency AWS coordinators.

Agency notification forms contain errors

Initial OPM guidance indicated that agencies were required to begin experiments between March 29, 1979, and October 1, 1979. Those agencies or work units wanting to participate were required to submit an AWS Notice of Intent to Experiment form. On the basis of those forms, OPM allowed agencies to initiate desired work schedules.

OPM has relied on the notification forms as its primary source of statistics regarding the number of AWS experiments and the total number of employees participating in the program. These forms have also been used to select agencies and work units for various parts of the evaluation.

Our review of the forms disclosed that some did not contain all of the requested information, and many contained errors and discrepancies. We found instances where employees participating in an experiment were counted more than once because both an agency and work unit submitted a notification form. In addition, some agencies indicated the number of employees within the organization rather than the number actually participating in the experiment, and some work units submitted more than one notification form which resulted in multiple counting of the experiment and number of employees.

OPM officials said they were aware of inconsistencies, and during our review they initiated a program to verify the information. OPM hopes to identify and correct all errors and discrepancies before the end of the experiment. Consequently, it can only estimate at this point the number of employees and work units participating and the number and types of different work schedules being used. We believe

that these inconsistencies must be corrected now so that the experiment can be evaluated effectively to produce valid, reliable, and representative data.

We believe there is also a technical error in OPM's methodology for determining the number of employees using flexible work schedules. OPM considers all employees within a unit using a flexible work schedule as experimental participants. In our opinion, this is inaccurate for purposes of evaluation because many of those individuals may still be actually working a traditional 8-hour day, 40-hour workweek. For example, although one agency's Notice of Intent to Experiment form indicated that approximately 5,500 employees would participate in a flexible (maxiflex) schedule, about 50 percent of them are still working the traditional work schedule.

Individual work schedule plans contain errors

Agencies and work units were not required to submit their individual work schedule plans to OPM for approval. OPM officials indicated that, although review and approval of the work plans would have been best, they simply did not have sufficient resources to do so. They also indicated that they were aware that some of the plans may not conform to the provisions of the act or to their regulations. For example, they cited a few instances where work units, even though not required to do so, actually submitted their work schedule plans. In reviewing those plans, OPM found that some contained incorrect information and did not conform with OPM regulations. In those instances, OPM notified the units that their plans should be corrected.

OPM admitted that many plans may contain errors and discrepancies which could go undetected throughout the experiment. Thus, in executing its master plan, OPM may be analyzing and evaluating the results of experiments which have not been properly designed or implemented. This raises serious questions about the experimental results.

OPM guidelines have not been timely

OPM's regulations and many of its written guidelines were issued well after most agencies began their AWS experiments. An OPM official admitted that the regulations and guidelines should have been issued by March 29, 1979, the date agencies were allowed to begin their experiments, or

as soon after that date as possible. The final regulations were not issued, however, until November 30, 1979, and other guidance was not provided until even later.

As of July 1, 1980, OPM had still not issued Book 620 to the Federal Personnel Manual Supplement 990-2. The book gives information on issues such as pay, leave, holidays, and work hours--information that agencies should have had when they first designed and implemented their AWS experiments. OPM officials said that primarily internal delays in reviewing and approving regulations and guidelines have delayed their issuance.

Many work units we reviewed did not have a complete set of OPM's guidance materials. Many officials had no idea which, if any, documents they had not received. For example, at the time of our review, officials at several work units were unaware that OPM's final AWS regulations had been issued.

The lack of written guidelines caused confusion among agencies in implementing their AWS. As a result, some either chose not to participate in the experiment or to delay beginning their experiments until OPM's regulations and guidelines were issued. Most agencies began their experiments even though they did not have all the necessary information.

Lack of sufficient AWS training

Individuals designated by agencies to serve as AWS coordinators are the focal points for agencies' and work units' AWS programs. They serve as liaisons between OPM and agencies and are the main source of information for questions pertaining to AWS.

The AWS coordinators we contacted had varying amounts of knowledge and previous experience with varied work schedules. OPM originally planned to provide extensive training to insure that such individuals were knowledgeable about the mechanics of the experiment. However, the training actually provided was very limited. The OPM coordinators only received two briefings on the experimental program, of which 1 day was spent on the provisions of the act and half a day on data collection. Agency coordinators did not receive any training. Therefore, for the most part, coordinators had to learn about the mechanics of the experiment on their own. They told us they learned this by primarily reviewing and referring to the law and to OPM's written guidelines. But,

as discussed previously, these individuals may not have received all of OPM's guidelines. Therefore, they were not always prepared to provide necessary and accurate assistance.

CONCLUSIONS

OPM has not carried out its legislated implementation responsibilities in the most desirable manner and is not exercising the degree of control needed to effectively implement, manage, and evaluate the experiment. OPM does not (1) have accurate information on the number of employees and work units participating in the experiment and the types of schedules being used and (2) know whether experiments have been developed and are being implemented according to the provisions of the act and OPM's regulations and guidelines. OPM must correct these problems if it intends to evaluate the AWS experiment effectively and if the experiment is to meet the intended objectives.

RECOMMENDATIONS TO DIRECTOR, OPM

We recommend that OPM make a concentrated effort now to correct the deficiencies affecting the AWS experiment. It is essential that accurate information be developed on such things as the actual number of employees using alternative work schedules (that is, other than the traditional 8-hour day, 40-hour workweek), the number of experiments being conducted, the number of different types of work schedules being used, and the number of employees using each type of schedule.

We also recommend that OPM review a representative sample of work schedule plans to detect errors and to identify different design and implementation methods and variables which affect AWS results.

If additional funds and personnel are needed to perform these functions, we recommend that OPM reassess its priorities and, to the extent possible, reallocate internal budgeted funds to the AWS Program Office.

CHAPTER 3

DEVELOPMENT AND IMPLEMENTATION OF AGENCIES' WORK SCHEDULES VARIED

At the time the legislation was enacted, both the Congress and OPM were concerned that the number of executive agencies volunteering to experiment with AWS may not include enough positions and types of work schedules to allow a controlled experiment and evaluation. Testing a variety of work schedule innovations within the full range of environments that characterize Federal employment is critical before drawing conclusions about the effects of AWS and about the desirability of using it permanently. As it turned out, about 250,000 employees from approximately 1,100 work units volunteered and implemented a variety of AWS experiments. These work units represent a diversity of types and sizes of organizations, geographic locations, functions, and activities.

Recognizing the uniqueness and differences of agencies and work units, both the act and OPM's regulations made them responsible for assessing the feasibility of AWS, selecting the type of AWS, and designing and implementing AWS. The purpose was to allow agencies and work units to tailor their experiments to their particular work environment and objectives. The only requirement was that the experiment be developed and administered according to the act and OPM's regulations and guidelines.

The methods used to assess the feasibility of AWS and to design and implement it varied widely. We agree that allowing agencies and work units the flexibility to assess, design, and implement AWS is desirable. Such an approach allows organizations to tailor AWS to their specific needs and objectives. However, the procedures used in carrying out these responsibilities must, in our opinion, be considered in evaluating AWS. The success or failure of AWS can be affected by the extent of, and the methods used in, planning it. The same AWS may yield different results if the methods used to assess, design, and implement it differ.

METHODS OF ASSESSING WORK SCHEDULE FEASIBILITY VARIED

To assist organizations in assessing the feasibility of using AWS and in designing and implementing it, OPM developed the Alternative Work Schedules Implementation Guide. This guide was issued in March of 1979 and was to be provided to

all AWS coordinators and individuals requesting a copy. It emphasizes careful planning as the key for successfully designing and implementing AWS which meets the needs of both employees and the organization. The guide further stresses that whether or not an organization establishes a committee to assess the feasibility of using AWS, "communications with and input from managers, supervisors, employee unions and employee groups is imperative. A lack of communication can only lead to serious problems once the project is implemented." We agree with OPM, and our research of successfully implemented AWS by private sector companies supports this contention. Almost invariably the successful private sector AWS experiments we reviewed were characterized by employees' involvement in assessing the feasibility of, designing, and implementing AWS.

This involvement is important as an aid in eliminating employees' perceptions that the specific AWS was designed by management to meet its own needs. If not viewed as being beneficial to the employee and organization, AWS may be destined for failure. In this regard, we agree with OPM's view that it is also important for firstline supervisors to be included in assessing the feasibility of and designing AWS because their support is essential to successful implementation.

We found that the methods of assessing the feasibility of AWS varied markedly. Officials at most agencies and work units we visited indicated that they had either never received the implementation guide or received it too late to be useful. Others were not even aware that the implementation guide existed, and some who did receive the guide never used it. OPM officials said that, although the guide was to be provided to all agencies, they were not certain whether all agencies had actually received it and whether the guides were distributed throughout organizations.

Most agencies delegated the responsibilities for assessing, designing, and implementing AWS to individual work units. The methods used to carry out these responsibilities included:

--Unilateral decisions by agency headquarters management.

--Unilateral decisions by management of individual work units within agencies.

--Supervisor preference votes.

--Employee preference votes.

--Planning committees or task forces with management, supervisor, employee, and union representation, if applicable.

We believe it essential that OPM take steps to consider them in evaluating the overall AWS experiment. The degree of planning and employee involvement may affect the success or failure of AWS.

PROCEDURES TO DESIGN AND ADMINISTER WORK SCHEDULES ALSO DIFFER

In issuing its regulations and guidelines, OPM recognized that one specific AWS with the same requirements would probably not work for all individuals and units within an agency. Therefore, it encouraged agencies to establish general policies and procedures for AWS and to make work units responsible for designing and implementing it to suit their own needs.

While most agencies allowed work units to decide whether to participate in the experiment, the degree of work unit participation in designing and implementing AWS varied. At one extreme, agencies (headquarters level) designed AWS and simply gave work units specific requirements to follow. Other agencies gave field offices and work units the responsibility for developing the entire program, including policies and procedures.

Within these two extremes, we found instances where:

--Agencies' headquarters were involved initially in assessing the feasibility of experimenting with AWS, identifying the work units interested in experimenting, and determining which type of AWS would be used. The design and implementation of AWS was then assigned to the work unit, and headquarters only became involved if a major policy question or problem arose.

--Agencies' headquarters completely designed AWS but allowed work units to make slight procedural modifications to suit their individual work unit or employee needs.

The degree of flexibility in designing and implementing AWS also varied within individual work units. We found instances where individual branches, offices, or even supervisors within work units were allowed to design plans and regulations to meet their own needs. Such situations generally

occurred when the unit was physically isolated from the rest of the organization and had little or no interunit communications.

Agencies and work units also had different philosophies on what should be included in their AWS plans. Some prepared very detailed AWS plans and regulations, while others developed general plans which only restated the provisions of the act and OPM regulations. In some instances written plans were not developed so that supervisors and employees within individual work units could tailor AWS to their particular needs.

PROGRAM REQUIREMENTS VARY BY AGENCY AND WORK UNIT

Because of the degree of discretion allowed in designing and implementing AWS, employees from different agencies or work units using the same type of AWS have different requirements to follow and varying degrees of flexibility. For instance, the act stipulates that, subject to OPM or agency regulations, individuals using flexible work schedules can carry over as many as 10 credit hours from one biweekly pay period to another. However, the act also allows agencies to restrict the use of credit hours if the agency is being disrupted in carrying out its functions or is incurring additional costs. Consequently, some employees using the same AWS may be prohibited from earning credit hours; restricted on the number of credit hours they can earn; and restricted on when, within what time frames, and how earned credit hours can be used. In our opinion, each of these variables could affect AWS results.

As indicated in OPM's draft of Book 620 ("Alternative Work Schedules") to the Federal Personnel Manual Supplement 990-2, agency guidelines, groundrules, and limitations for AWS comprise an important part of the experimental program; thus, supervisor and employee understanding of them is vital to the program's success. Other policy matters agencies could incorporate, which might affect evaluation of AWS, include decisions on whether to:

--Exclude certain employees from the experiment because of the nature of their positions, unusual demands, or personal hardships.

--Require employees who are participating in the experiment to work specific hours during flexible time bands on a temporary or irregular basis.

--Permit employees freedom to choose starting and quitting times within the tour of duty established by the agency, with or without prior supervisory approval; require employees to select one of several predetermined tours; or require employees to submit a schedule in advance for approval.

--Require employees to inform their supervisors, in advance, of intent to earn or apply credit hours to their basic work requirement.

--Permit employees to occasionally apply credit hours to core time bands with a supervisor's prior approval, although such hours would normally be applied only to flexible time bands.

--Permit employees to change their approved work schedules at various time intervals throughout the experiment; a specific number of times per year; or daily, weekly, or monthly.

CONCLUSIONS

We believe that numerous variables can affect AWS results. These include the:

--Methods used to assess the feasibility of experimenting with AWS.

--Manner in which a specific AWS is selected, planned, and implemented.

--Degree of employee and union involvement in planning, selecting, designing, and implementing AWS.

--Specific objectives of AWS.

--Degree of flexibility provided employees.

--Degree of management and supervisor support of AWS.

Each variable must, in our opinion, be considered in assessing AWS effects and is essential in a controlled experiment and evaluation.

Because OPM did not monitor agencies and work units in selecting, planning, and implementing AWS, it does not know whether AWS programs have been designed and implemented according to the 1978 act and OPM regulations. Additionally, because agencies did not use uniform procedures in assessing,

designing, and implementing AWS, it is likely that these differences will affect the experiment and evaluation results. Consequently, we believe that OPM will not be able to validly and reliably assess the effects of AWS since it will not know whether the experimental results have been caused by the types of schedules or the methods by which they were designed and implemented.

CHAPTER 4

OPM's EVALUATION OF THE AWS EXPERIMENT--

STATUS AND PROBLEMS

The most important aspect of the 3-year AWS experiment is OPM's overall evaluation. The evaluation must be conducted in a manner that will produce valid and reliable information. Otherwise, the experiment will end and the Congress will know no more about the effects of AWS and the desirability of permanently adopting it than when the experiment began.

OPM has developed and is currently implementing a master plan for evaluating the AWS experiment, which will result in the collection of a large quantity of data. However, OPM must overcome inherent weaknesses (see pp. 24-27) in the way the data is being gathered and analyzed before it can provide the kind of information the Congress needs. If the evaluation is not modified, the intended objectives of the experiment will not be achieved.

In developing and enacting the 1978 act, the Congress recognized that the potential advantages of AWS probably cannot all coexist. For instance, while spreading out rush hour may lead to some energy savings through reduced traffic congestion, keeping Federal buildings open for longer hours may actually increase energy consumption. Because competing benefits and costs must be assessed, the act wisely mandated a closely monitored and evaluated 3-year experiment. However, this is not presently being accomplished.

A particular type of flexible or compressed work schedule might be a resounding success in one agency or work unit and a dismal failure in another. Numerous variables can and do influence the effects of AWS, such as the manner in which it is implemented, the degree of employee and union participation, the degree of flexibility afforded employees, timekeeping procedures, geographic setting, organizational size, type of work performed, availability of transportation facilities, and the goal of the experiment itself. In evaluating the effects of various AWS, OPM is not identifying, measuring, and adjusting for such variables.

To be successful, OPM's evaluation and reports to the Congress must provide, to the extent possible, concrete evidence which will help decide the Federal Government's future approach to alternative work schedules. The evaluation needs to be valid and reliable to minimize the public's

perception of AWS as just another boon for Federal employees, with a negative effect on taxpayers. The evaluation is also of particular importance to the private sector since the results may well determine whether Federal labor laws will be modified to allow companies to use more complex forms of flexible and compressed work schedules.

OPM's LEGISLATED ROLE

Section 4(b) of the Federal Employees Flexible and Compressed Work Schedules Act of 1978 required OPM to establish by June 27, 1979, a master plan for studying and evaluating AWS experiments conducted under the act. The master plan is to provide for the study and evaluation of AWS experiments within a sample of organizations of different sizes, geographic locations, and functions. It is also to include procedures for evaluating a sample of experiments sufficient to (1) gauge the effects of flexible and compressed work schedules on the six impact areas identified in the law (see p. 3) and (2) determine whether, and in what situations, the Federal Government can successfully use AWS.

The Congress has recognized the need to test and evaluate different types of AWS in diverse work environments. The joint report of the Senate Committees on Governmental Affairs and Human Resources stated that

> "* * * the Committees envision a broad-based experiment touching several hundred units of the Federal Government in order to derive some useful data about flexible (i.e., alternative) work schedules. * * * experiments with units performing diverse functions are essential * * * and a limited experiment could produce results that were seriously skewed."

OPM's MASTER PLAN

Although OPM was to have developed its master plan by June 27, 1979, the plan was not ready until April 14, 1980. According to an OPM official, this delay was caused by a lack of sufficient resources and the extensive OPM and labor union review processes and approvals which were required. Although the final master plan is similar to an interim plan which was published for comment in the Federal Register on July 20, 1979, key differences exist which, in our opinion, will seriously affect the evaluation.

OPM's current evaluation approach differs in both concept and scope from the approach that was outlined in the interim master plan published in the Federal Register in July 1979. The revisions to the master plan primarily focus on the types of data to be collected, the extent of data collection, and the methods of analyzing the collected data. The result of these changes is collection of data which may not be representative and the failure to consider the impacts and interrelationships of variables which affect AWS.

These changes were made primarily for two reasons. First, because the number of work units participating in the AWS experiment was much larger than originally expected, OPM no longer felt it necessary to include all units in the longitudinal and cross-sectional study. Second, OPM modified the evaluation approach to make it more manageable given the resources available. In addition, because the size of the longitudinal study was reduced, OPM determined that it would be necessary to alter one of the methods of analyzing the collected data. Since it is too early to assess the validity and accuracy of the actual effects of AWS, we concentrated on assessing the strengths and weaknesses of OPM's evaluation approach.

The current master plan (see apps. III and IV) provides for evaluating AWS through four types of studies:

--A longitudinal and cross-sectional study of a sample of experimenting work units.

--Onsite studies conducted by the OPM staff which focus on AWS effects on the six impact areas.

--A special study on the net energy impact of AWS.

--Narrative evaluation reports which will be prepared by each experimenting work unit not included in the longitudinal, onsite, and energy studies.

Number and types of studies

The original master plan provided for evaluating AWS effects through a broad-based, longitudinal and cross-sectional study, and intensive special case studies. The longitudinal study, which was essentially the same in structure and concept as the current version, differed in that it encompassed all organizations participating in the AWS experiment rather than the 70 which are currently included. The 70 were judgmentally selected.

The original study included a design for segmenting the overall sample using a combination of variables. These variables included three levels of organizational size, three categories of functions and activities, two levels of geographic region, two levels of locale, and four types of work schedules. The result was a complex factorial design which would have considered 144 possible combinations of variables and their effects on AWS. The present design is a simple one-way classification using four categories of schedules. (See pp. 58 and 59.)

OPM originally proposed to conduct intensive special case studies which would have involved 50 to 75 work units. The scope of these studies differed from the present onsite studies mainly in the kind and extensiveness of data that would be collected. Each of the studies would have entailed collecting extensive data on the effects of AWS used by the organization on one particular impact area. Some of the present onsite studies, while not as extensive as the special studies, are designed to evaluate the effects of AWS on more than one impact area. Also, some of the present studies include control groups which are not participating in the experiment. We believe these are particularly desirable features since there may be tradeoffs in using AWS, and control groups allow AWS effects to be identified more definitively.

In addition to the extensiveness of the data collected, the special studies also differed from the present onsite studies in that OPM would have been greatly involved in the actual development and implementation of the work units' AWS experiments. Such an approach may have provided the opportunity, under a controlled situation, to show that AWS should be designed and implemented to achieve certain desired goals or benefits (e.g., increased service to the public). Under the current onsite studies, OPM will focus on identifying problems and benefits in planning, implementing, and functioning under AWS. The manner in which AWS was implemented, the specific AWS objectives, and the parameters within which AWS is administered are not presently a focus of either the onsite or longitudinal studies.

The current requirement--that all work units not participating in the longitudinal, onsite, and the special energy studies must prepare narrative reports evaluating their AWS--was not included in the original master plan. We believe these reports have potential for generating much evidence concerning the effects of AWS, but only if OPM provides enough guidance on how evaluations should be conducted and reports prepared. The focus needs to be on obtaining comparable data which allows aggregation and comparative analysis.

Analytical methods

The analytic process of the present master plan differs from the original plan primarily in one respect. While both plans provide for the use of descriptive statistics and trend analysis, the present master plan also provides for analysis of variance, whereas the former plan provided for multiple regression, including analysis of variance. Multiple regression would allow OPM to determine the importance and interrelationships of various factors which influence the success or failure of an organization's AWS. The analysis of variance is not an appropriate technique for assessing the effects of variables which influence AWS as envisioned in the original master plan design.

In short, in evaluating AWS it is necessary to identify, analyze, and adjust for variables before measuring the effects of AWS. Regression analysis allows the effects of these variables to be considered jointly, in various combinations, and individually; however, regression analysis, in this case, requires a fairly large sample to obtain reliable results. 1/

OPM is currently using analysis of variance because it is only sampling enough cases to make inferences about the effects of four types of AWS. This approach will not allow OPM to determine the effects of multiple variables on AWS. Consequently, OPM will not be able to validly and reliably identify the positive and negative effects of AWS and the situations under which it may be successfully used.

SPECIFIC ISSUES AND CONCERNS

As recognized by OPM in the master plan, the data collected in the AWS experiment must be analyzed and condensed in a manner which aids its comprehension and interpretation. This is particularly critical to the AWS project, since the purpose of the experiment and the evaluation is to provide

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1/Various "rules of thumb" have been proposed for relating sample size to the number of variables in a multivariate analysis. A former president of the Royal Statistical Society, Sir Maurice Kendall, prefers 10 cases for each variable; others allow as few as 5, and still others set the minimum at 25. Adopting Kendall's rule, 1,440 cases would be needed to satisfy OPM's original factorial design of 144 combinations of variables.

concrete evidence on which to base policy decisions and legislative action. It is especially important, in our opinion, to assess the impacts and interrelationships of as many environmental and organizational variables as possible, so that the true effects of AWS can be measured.

We are specifically concerned with each of the following individual aspects of OPM's current master plan.

Overall approach

We believe OPM's current master plan lacks important experimental control. The lack of control will flaw the validity and reliability of the experimental results. The most fundamental area in which this lack of control can be seen is in the basic design of the AWS experiment itself. Had OPM conducted a "true" scientific experiment, it would have exercised tight control over the design of the AWS programs; randomly assigned units to various types of program formats, including a no-program control condition; developed standardized measures and instruments for assessing program outcomes; and established controls to insure that the measures and instruments were uniformly applied, both before and during the program. Each of these elements of a true experiment is designed to control factors which have consistently created ambiguity, controversy, and errors in the interpretation of research results.

Instead of controls such as these, we found that:

--Only in a few instances has OPM reviewed work units' AWS plans. Therefore, in evaluating AWS effects, OPM will not know whether the plans comply with the provisions of the 1978 act and OPM's program regulations. Additionally, by not reviewing the plans and their administration, OPM may be overlooking key variables in assessing AWS effects. For example, the degree of flexibility afforded individuals may affect their views toward AWS. Also, certain AWS may be successful from employees' views, but a failure from management's view if the organization's intended objectives are not being met.

--Comparison groups, composed of work units not participating in the AWS experiment, are not being used enough. By carefully selecting work units which are operating under the same or similar environmental and organizational variables, OPM would be in a better situation to attribute specific results to AWS. Additionally, nonparticipants' views are extremely

important since they may be adversely affected by other individuals and work units using AWS.

--OPM is not considering the public's views in assessing the effect of AWS on quality of service to the public.

--OPM has not used any specific scientific procedures for selecting work units to be incorporated in the longitudinal, onsite, and special energy studies. OPM subjectively selected units which met certain predetermined criteria and variables. Consequently, it is gathering and analyzing information which may not be representative of the Federal work force.

--OPM lacks reliable information on the types of AWS being used and the number of work units and employees using them. In reviewing OPM's master lists of participants and individual work unit's notifications of intent to participate in the experiment (see ch. 2), we found some listings contained the same work units more than once, wrong listings of the types of AWS being used, incorrect numbers of employees actually using AWS, and some cases where a unit or even an agency participating in the experiment was not included on the master listing.

--OPM, on several occasions, extended the deadline for participating in the experiment. Although October 1, 1979, was the initial deadline, OPM still was allowing work units to begin experiments as late as April 1980. Consequently, the total number of work units and employees participating in the experiment continuously changed. This complicates sampling procedures because the population is not a fixed number.

--In conducting its evaluation, OPM, for the most part, is not considering and compensating for certain variables which need to be considered. These include the reasons for implementing a specific AWS; the degree of employee and union participation in selecting, designing, and implementing AWS; the degree of employee flexibility; the impact of varied timekeeping procedures; restrictions on earning and using credit hours for those using flexible schedules; child care availability; and modes and availability of transportation for commuting to and from work. Additionally, OPM is not considering or compensating for the possible effects of work units beginning experiments at different times. Work units which began experiments after others may have benefited from other units' experiences.

Longitudinal and cross-sectional study

If developed and administered properly, we believe an employee survey which is both longitudinal and cross-sectional would have been an excellent vehicle for measuring employees' and supervisors' reactions to AWS. OPM's study is not truly "longitudinal," however, because no attempt is being made to identify respondents (e.g., through the use of code numbers). OPM is not considering the fact that the makeup of Federal work units is not static. Therefore, even though the same number of respondents may complete an employee questionnaire at all four points in the administration process, the changes in attitudes of the same respondents will not be known. OPM's approach does not consider or compensate for those individuals who leave a work unit and are replaced by others with opposing views concerning AWS. Other weaknesses include the following:

--Because agencies were permitted to begin AWS experiments before the master plan was finalized, OPM was unable to obtain pre-experimental responses from most individuals who are included in the "longitudinal" study. Consequently, OPM will not be able to reliably assess how attitudes about the six impact areas changed as a result of implementing AWS.

--The AWS questionnaire was designed with the intention of collecting pre-experimental data. After missing the opportunity for collecting this data, OPM did not redesign the questionnaire. We believe this is essential because the questionnaire uses indirect questions and in many cases does not address specifics which resulted solely from implementing AWS.

--For the questionnaires which have been administered thus far, OPM has not identified which responses are those of individuals not using AWS. OPM selected work units to participate in the study and not all employees within the units are necessarily using AWS.

In summary, because, for the most part, (1) comparison groups were not established, (2) pre-experimental data was not obtained, and (3) the methods being used do not analyze the interrelationships of variables and their effects on AWS, OPM will not be able to differentiate and assess the effects of AWS and the effects of variables.

Onsite studies

Although OPM states in its master plan that the onsite studies will supplement the longitudinal and cross-sectional study and the narrative reports, the OPM Research Director told us at the conclusion of our review that the onsite studies will probably yield the most reliable data. As currently structured, he believes the studies will allow OPM to make more specific conclusions about AWS effects and to develop a better understanding of the effects and interrelationships of variables on a particular AWS.

We agree that onsite studies could be useful in assessing AWS effects, especially when comparison groups are used. However, we believe at least three additional essential elements must be considered. First, the 9 or 10 onsite studies which are presently planned include agencies and work units which were judgmentally selected. These sites were chosen primarily because of the availability of certain kinds of data and a willingness to cooperate--not because they are statistically representative of any major segment of the Federal work force. The problem with this approach is that OPM is gathering and analyzing extensive amounts of data which may not be typical of the Federal work force. It is likely, therefore, that the onsite studies will result in OPM's presenting facts and conclusions only about the work units included in the studies.

Second, while some of the onsite studies will assess the effects of AWS on more than one of the six impact areas, we believe it is necessary to consider them all because there may be offsetting effects.

Third, the onsite studies need to be more formal and structured. Currently, the format for each study is different and is tailored to each specific agency or work unit. This approach makes it less likely that OPM will be able to validly compare the onsite results. Additionally, there is a need to include a structured set of questions for interviewing employees, supervisors, and managers so that OPM is assured of obtaining at least the minimum amount of information it needs.

Narrative reports

While the use of narrative reports is noteworthy because it represents an attempt by OPM to obtain information from all experimenting work units, we believe the reports will generate more data than OPM is equipped to interpret

and analyze. Also of concern is the fact that OPM has provided only general information on what should be included in the reports and has not provided guidance on how the information should be obtained or developed. Additionally, OPM has not developed a procedure for collating and interpreting the information which will be included in these reports. OPM will, at the conclusion of the AWS experiment, have as many as 1,300 narrative reports of varying lengths and formats which it will not be equipped to analyze. We believe that the methods for analyzing and evaluating the data and variables must be specified in advance.

Special energy study

As is the case with other aspects of OPM's evaluation, the specific number and types of work units and their locations were selected judgmentally. Consequently, OPM will not know whether the data obtained and the conclusions drawn are representative. In addition, we do not believe that the method of analyzing the results will meet the objective of assessing the effects of AWS on mass transit facilities.

The transportation survey is geared toward gathering data on commuting habits of individuals working varied schedules, including the standard 8-hour day. OPM plans to analyze the differences in commuting habits of individuals working different AWS and to compare the commuting patterns of AWS users with nonusers. While this information will be both useful and interesting, we believe that the approach must also address how AWS affects individuals' commuting habits and how the availability of transportation modes affects individuals' opportunities to use AWS and the degree of flexibility permitted.

We also believe that, because the transportation survey is being administered on a specific day, the questionnaire should be revised to insure that the particular commuting mode listed is actually the one the individual normally uses.

CONCLUSIONS

The Federal Employees Flexible and Compressed Work Schedules Act of 1978 wisely provides for a period of experimentation and evaluation before a decision is made regarding the desirability of allowing permanent use of AWS. The ongoing experiment is, in our view, a large and important endeavor in the Federal Government. We believe it is essential that the experiment's evaluation provide valid and reliable

conclusions on the effects of AWS in the Federal environment. It is also very important to determine whether, and in what situations, AWS is feasible.

If the advantages which have been realized as a result of using AWS in the private sector also apply to the Federal sector, AWS may improve the efficiency of Government operations and the quality of work and home life, increase employee morale, and reduce operating costs. AWS may also result in reduced energy consumption and better use of mass transit facilities. If these advantages are applicable to the Federal Government, we believe the potential exists for considerable cost savings. In addition, it is essential that the disadvantages be identified and assessed in light of the competing benefits so an actual evaluation of the desirability of using AWS can be accomplished.

OPM's current master plan for evaluating the AWS experiment will not generate the information needed to assess the various positive and negative effects. We believe that, at the conclusion of the 3-year experiment, OPM will have a massive amount of data, but will not be in a position to present valid and reliable information on the effects of AWS, and the experiment's intended objectives will not be achieved. The principal reason for this was a decision by OPM not to conduct a true scientific experiment, but rather to let agencies design their own AWS programs, to provide them with only broad guidance on how to evaluate those programs, and to cut back on its own factorially complex design which would have allowed the assessment of a number of variables which affect AWS results.

As more questions and criticisms are raised concerning the evaluation approach and analytical methods, the evaluation results will become less credible. The result will be the completion of a 3-year experiment with little additional knowledge about AWS and whether, and in what situations, it can be successfully and permanently used by the Federal Government. The consequence of this effort could be permanent adoption of AWS in environments where it is not in the best interest of the Government to do so. Conversely, the Congress could decide not to allow the permanent use of AWS when in fact its use might be beneficial from both a cost and efficiency standpoint.

We believe that, given the present state of the AWS experiment and evaluation, at least four options exist:

--Continue the current experiment and evaluation without change, accepting its weaknesses and limitations.

--Modify the existing experiment and evaluation to improve the quality of the evaluation results, realizing that the data may not be representative.

--Develop a new evaluation approach to maximize the opportunity for providing the Congress with the needed data.

--Completely stop the AWS experiment.

We believe the first and last options are not desirable. If the existing experiment and evaluation are continued, the data will be questionable, the experiment's intended objectives will not be achieved, and the Congress will not have valid and reliable information to decide the desirability of permanently using AWS. Stopping the experiment is also not desirable because no one will know whether the benefits derived in the private sector also apply to the Federal Government. This would be especially crucial if AWS can reduce operating costs and increase productivity.

We believe that modifying the existing evaluation approach or developing a new one are the best options. However, the experiment may have to be extended beyond 3 years to allow the master plan to be redesigned and executed if the experiment's objectives are to be achieved. Rather than gathering massive amounts of information from which broad generalizations will undoubtedly be made, we believe OPM should place greater emphasis on collecting and analyzing quality data from which reliable and valid conclusions can be drawn. In our opinion, the effects and interrelationships of variables should be analyzed and some form of experimental approach with comparison groups should be used. This approach could include the development of tightly controlled demonstration projects and the random assignment of units to those projects, as well as to a delayed implementation control group.

RECOMMENDATIONS TO THE CONGRESS

In view of the importance of the AWS experiment and the fact that the Congress will eventually have to decide whether to allow permanent use of AWS in the Federal Government, we recommend that oversight hearings be held on the status and adequacy of AWS implementation and evaluation. In conducting this oversight, we recommend that the Congress consider the

--need for, and costs and benefits associated with, modifying the existing master plan or developing a new one;

--necessity for extending the 3-year experiment, and

--desirability of establishing a joint executive agency task force to redesign and execute the master plan and to provide the needed experimental control.

RECOMMENDATIONS TO DIRECTOR, OPM, AND THE CONGRESS

We do not believe that OPM's master plan will provide the information the Congress needs to assess the effects of AWS and to determine whether, and in what situations, it may be permanently used in the Federal Government. For this reason, we recommend that OPM work with the Congress to assess the current master plan and the type and quality of information it will yield. As a minimum, we believe OPM and the Congress must agree on the

--specific evaluation objectives,

--criteria for measuring attainment of those objectives,

--costs and benefits of various experimental designs and analytical approaches; and

--desired levels of precision and confidence.

In making this joint assessment, we recommend that OPM and the Congress consider the desirability and need for:

--Using scientific sampling procedures which would allow findings and conclusions to be projected to the overall Federal work force.

--Analyzing multiple variables which may affect AWS impact and adjusting for variables which affect the results.

--Gathering public views about AWS and its effects on the degree and quality of the Federal Government's service to the public. Such consideration should include comparing public views with those using and not using AWS.

--Establishing a "true" scientific experiment in which program design is carefully controlled, units are randomly assigned to program formats and to a control condition, and standardized data is collected on the effectiveness of the program.

To the extent that features of OPM's current evaluation approach are incorporated in any new plan, we have the following specific recommendations.

Longitudinal and cross-sectional study

--Eliminate the current employee and supervisor questionnaire which is being administered four times during the experiment.

--Design a new questionnaire which would specifically address the AWS experiences of employees, supervisors, and managers; individual reactions to AWS; and self-reported changes in individual behavior which resulted from AWS. The questionnaire could be administered only once, toward the end of the 3-year experiment, to a sample of individuals which would be representative of the Federal work force.

--Incorporate two open-ended questions in the questionnaire. The first would ask respondents to describe the most positive specific things that happened to them as a result of using AWS. The second would ask them to describe the most negative aspects. This approach will identify the specific things individuals actually experienced as opposed to strictly subjective responses which might be affected by perceived notions of what the individual should have experienced.

--Obtain responses from both users and nonusers of AWS. In an organization where AWS is being used, the individuals not participating in the experiment may be those who are most adversely affected.

Onsite studies

--Include agencies or work units which are more representative of some of the larger segments of the Federal work force.

--Standardize the format for the case studies to a degree so that the results can be compared. A standard procedure should be developed for interviewing a specified number of personnel within each organization, and a standardized document should be used for reporting productivity changes. This latter document should provide for assessing the degree to which productivity measure is under employees' control. It should also

provide for a description of the processes or mechanisms by which AWS influenced productivity. For example, if productivity increased, was it because the building was open more hours, more projects were being held over, or more uninterrupted time was available?

--Consider using outside contractors to conduct some of the case studies to determine how AWS was implemented; the reactions of employees and management; and the changes in operations, employee routines, and unit output. In-house assessments and independent outside assessments could be compared. This approach might be particularly useful since OPM has been charged with both implementing and evaluating the AWS experiment.

Narrative reports

--Require a sample of work units to prepare their narrative reports about 1 year after they begin their AWS experiments. This approach could serve as a pretest to determine the major difficulties encountered in evaluating AWS and to develop a more structured and useful reporting format for the remainder of the units to use. By specifying more precisely what information is required and how it should be obtained, OPM should be able to minimize the probability of biased and incorrect reporting. Such an approach would also help to eliminate the possibilities of OPM being inundated with a mass of data which varies widely in quality and content and for which there is no explicit analysis plan.

--Monitor the work units' data collection. There is too little control to insure that the information which will be included in the reports is carefully and systematically compiled in an unbiased manner. OPM should provide information to individuals who are charged with preparing the narrative reports.

--Determine the approach for reviewing and analyzing the reports as soon as possible.

Special energy study

--Include in the study an assessment of (1) how AWS has affected individuals' modes of transportation, vehicle usage, and ability to use public mass transit and (2) how the availability of mass transit affects individuals' abilities to use AWS or to exercise maximum AWS flexibility.

Additionally, we recommend that, to the degree possible, OPM reallocate internal funds to the AWS Program Office so additional experienced staff with the necessary qualifications can assist in redesigning and executing the master plan.

CHAPTER 5

NEED FOR CONGRESSIONAL OVERSIGHT

The Federal Employees Flexible and Compressed Work Schedules Act of 1978 is significant and important legislation which we support. The results of the 3-year experiment, which was mandated by the act, may ultimately affect the work habits and patterns of all Federal employees. Additionally, if a decision is made to allow permanent use of all types of alternative work schedules in the Federal sector, we believe that the private sector may expand its use of more sophisticated work schedules.

In our view, the importance of the 3-year experiment cannot be overstated. We believe it is essential that the overall experiment and individual agencies'and work units' work schedules be carefully planned, designed, implemented, and evaluated. The experiment must be controlled as much as possible. Control is essential for determining and assessing the actual AWS effects; whether the maximum benefits to both the organization and employees have been achieved; and whether the results of an AWS experiment are caused by the work schedule itself or by the manner in which it was planned, designed, implemented, or evaluated.

Because of the importance of this legislation and the potential benefits which both the Government and employees may derive from using AWS, the evaluation of the experiment must be closely controlled and monitored. In retrospect, it is unfortunate that the implementing legislation did not include an oversight requirement and specify a desired oversight procedure. The act simply required OPM to establish an experimental program; develop and execute a master plan for evaluating the program; and prepare two reports at the conclusion of the experiment, recommending needed legislative and administrative changes or actions and addressing the results of the overall experiment.

An oversight framework should have included extensive discussions and communications between OPM and the Congress concerning the:

--Specific objectives and expectations of both the overall experiment and the evaluation.

--Development of evaluation criteria for measuring AWS impact and for providing the necessary information.

--Methods for collecting and analyzing the required information.

--Procedures for preparing the final analysis and reports.

For each of these steps, various alternatives should have been considered and all parties should have been informed of the potential advantages and disadvantages of each approach and the cost involved. We believe that before the evaluation began, the Congress and OPM should have determined jointly what specific evaluation approach should have been used in light of the advantages and costs involved. Most importantly, the evaluation approach agreed upon should have been one which would provide the type of valid, reliable, and conclusive evidence the Congress needs.

SUGGESTED OVERSIGHT PROCEDURE

In prior testimony before the Congress, we have recognized "a growing consensus on the need to improve congressional oversight." We have stated that oversight is the process by which the Congress learns about the implementation, results, effectiveness, and adequacy of the laws it has enacted and the programs it has authorized and funded.

We have indicated that oversight requires the Congress to "acquire knowledge about the operation and results of laws and programs" and to "provide for the collection and reporting of information on programs and their results." We support the need for clear statements of program objectives to enable systematic monitoring and evaluation of programs.

In our report, "Finding Out How Programs Are Working: Suggestions for Congressional Oversight" (PAD-78-3, Nov. 22, 1977), we suggested that a disciplined process be established for agencies to follow in monitoring, evaluating, and reporting on their programs to answer congressional oversight questions. We further indicated the importance of the committee and agency agreement on the oversight questions which are most important and on the evaluation measures which can satisfactorily answer those questions.

The report presented a framework for an oversight procedure which included

--setting up oversight requirements,

--reporting agency progress in implementing programs, and

--reporting planned evaluation measures and results.

We believe the oversight planning framework discussed in that report is an excellent tool for assisting the Congress in planning and structuring effective oversight procedures, and it should have been incorporated in the AWS legislation. While oversight was not provided for in the legislation, we strongly believe it is needed now and should be initiated through congressional hearings.

APPENDIX I

MODELS OF FLEXIBLE AND COMPRESSED WORK SCHEDULES

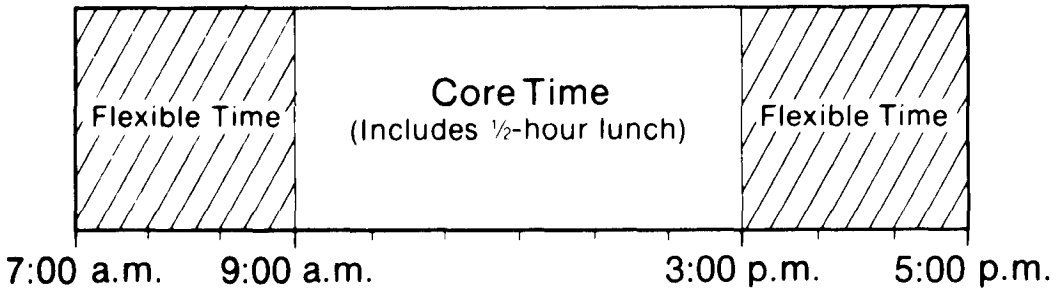
FLEXIBLE SCHEDULES

The following models, which OPM prepared, illustrate examples of typical flexitime configurations being used in the AWS experiment. The flexitour and gliding schedules have been used in the Federal Government since 1972.

(1) Flexitour/Modified Flexitour

In the following example 7:00 a.m. and 5:00 p.m. represent the earliest time an employee may begin work and the latest time an employee may end work under this program. The employee may select a starting time between 7:00 a.m. and 9:00 a.m.; however, all employees must be present between 9:00 a.m. and 3:00 p.m.

Flexitour/Modified Flexitour



Flexitour

-employee preselects starting time

-may select new schedule at time intervals provided by program

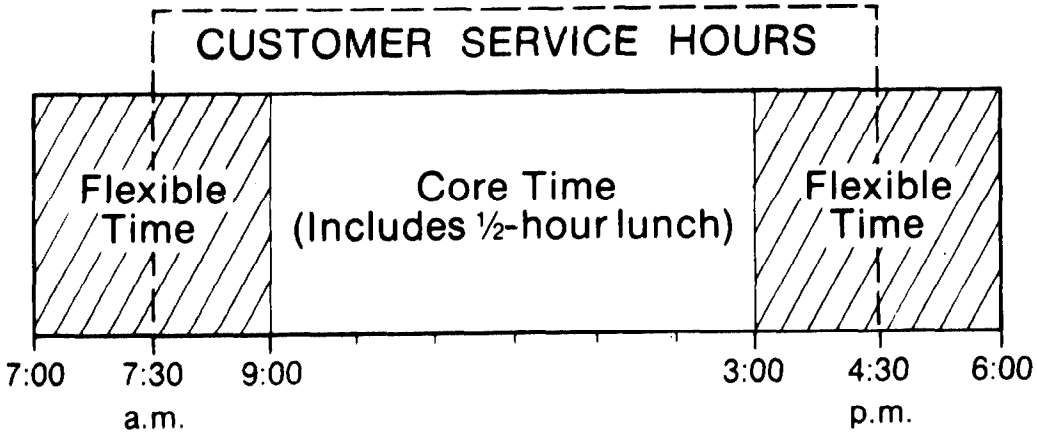
Modified Flexitour

-same as above but schedule may be modified with prior notification and approval of supervisor

APPENDIX I

(2) Gliding Schedule/Modified Gliding Schedule

Gliding/Modified Gliding



Gliding Schedule

-within flexible bands, employees may vary starting time without prior notification or approval of the supervisor

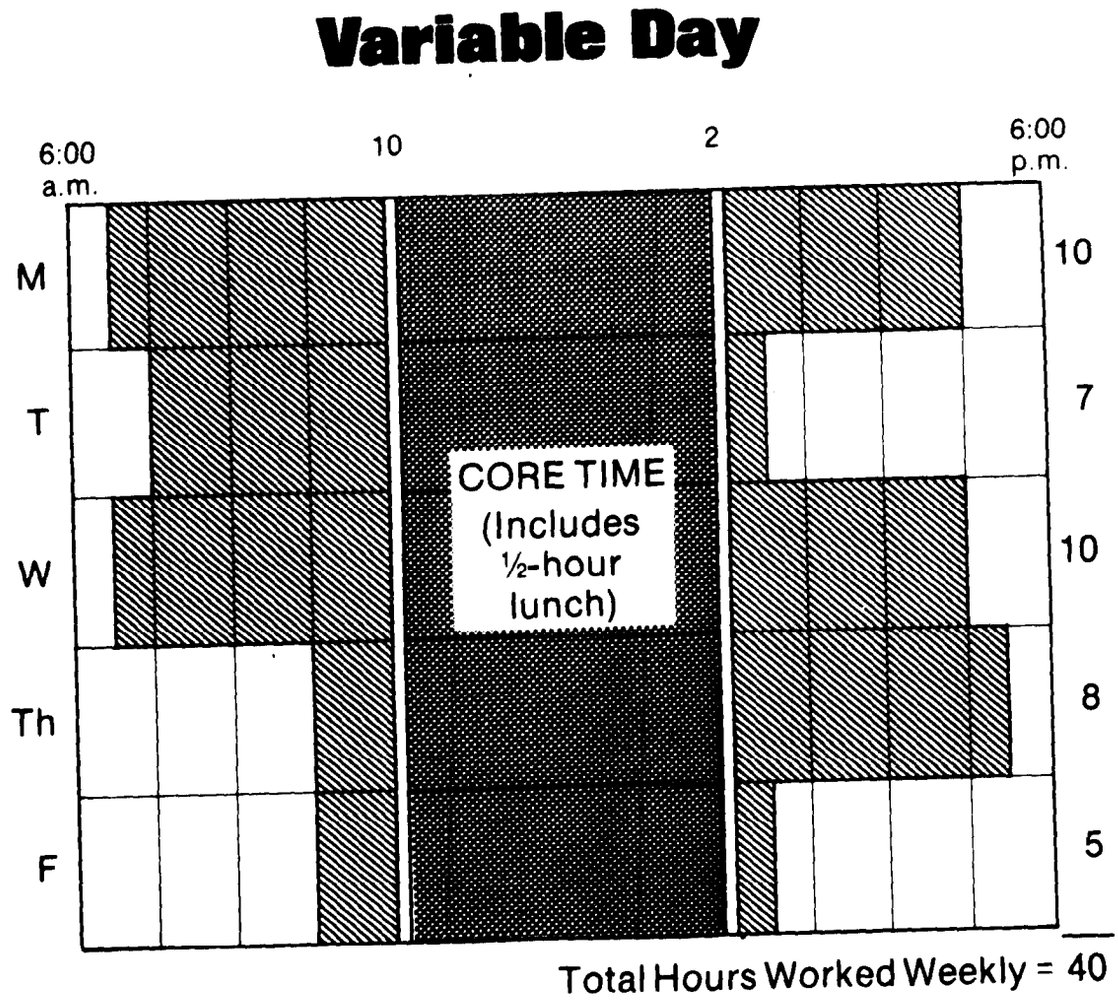
Modified Gliding Schedule

-9-hour customer service band established

-employees may vary starting time but must insure minimum coverage level is maintained during customer service hours

APPENDIX I

(3) Variable Day



-employee may vary the length of the workday as long as he/she is present for core time within limits established by organization

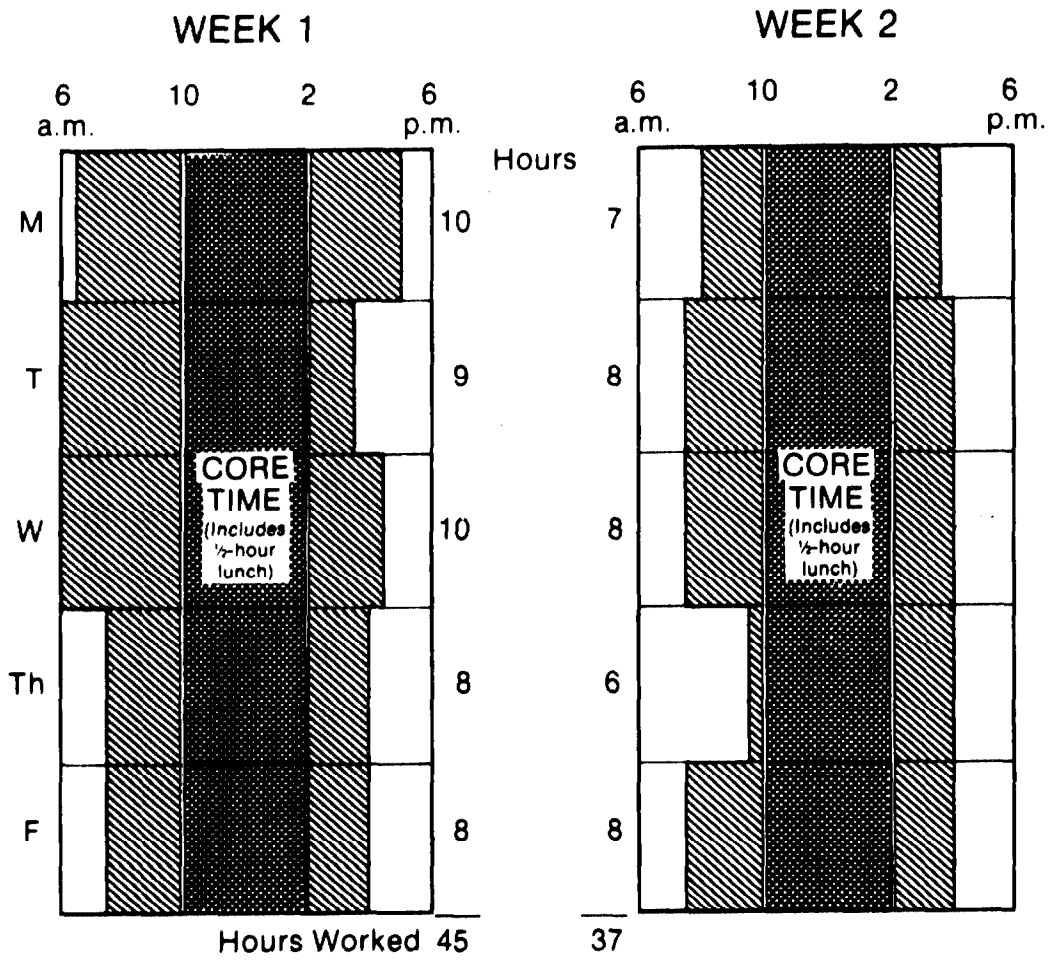
-must work or account for the basic work requirement, e.g., 40 hours for a full-time employee

-credit hour accumulation is limited to a maximum of 10 hours

APPENDIX I

(4) Variable Week

Variable Week



Total Hours Worked Biweekly = 45 + 37 = 82
Basic Work Requirement = 80
2 credit hours remaining

-employee may vary the length of the day and the workweek as long as he/she is present for core time

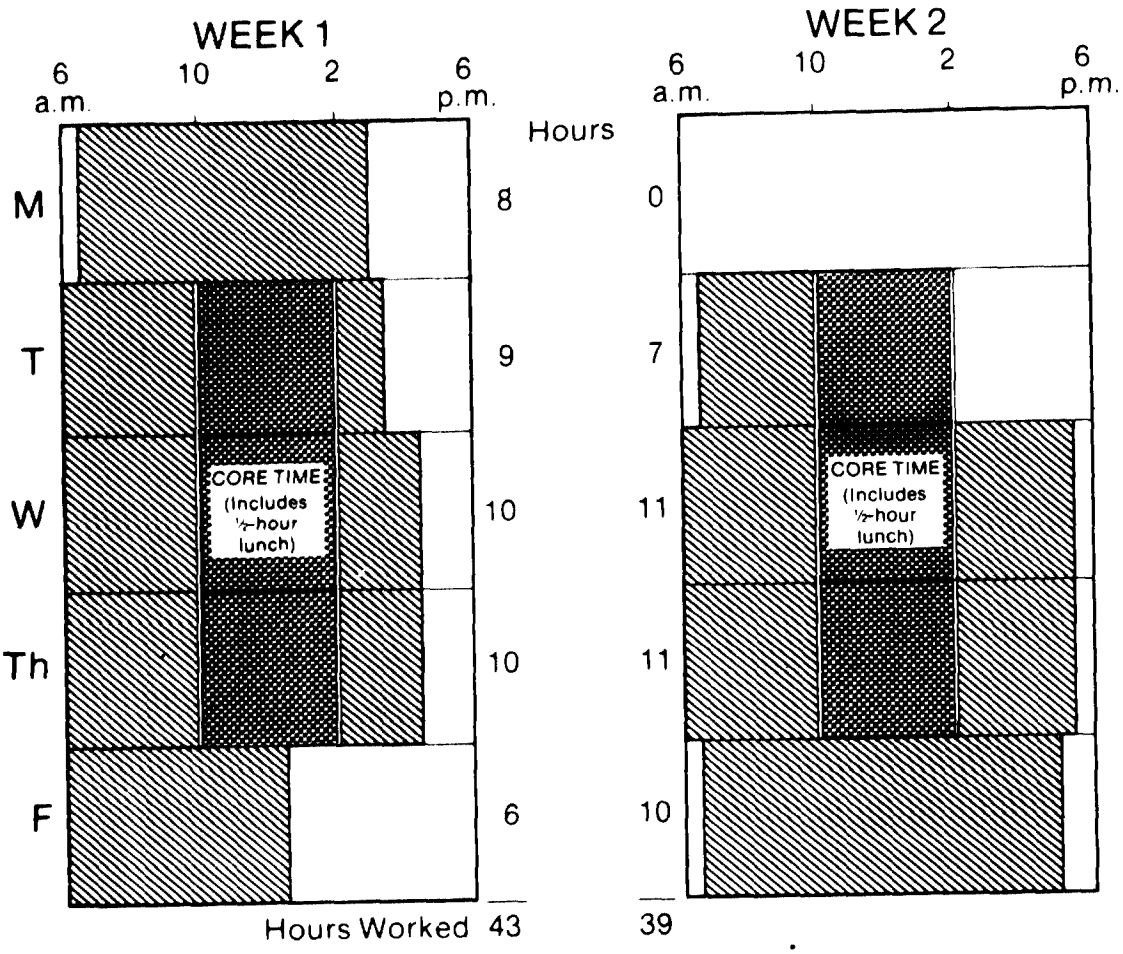
-must work or account for the basic work requirement, e.g., 80 hours each biweekly pay period for a full-time employee

-credit hour accumulation for carryover to a succeeding pay period is limited to a maximum of 10 hours by the Act, or to such lesser amount as determined by the organization

APPENDIX I

(5) Maxiflex

Maxiflex



Total Hours Worked Biweekly = 82
Basic Work Requirement = 80
2 credit hours remaining

-employees must be present for core days as well as core hours

-basic work requirement is 80 hours each biweekly pay period

-credit hour accumulation is limited to a maximum of 10 hours

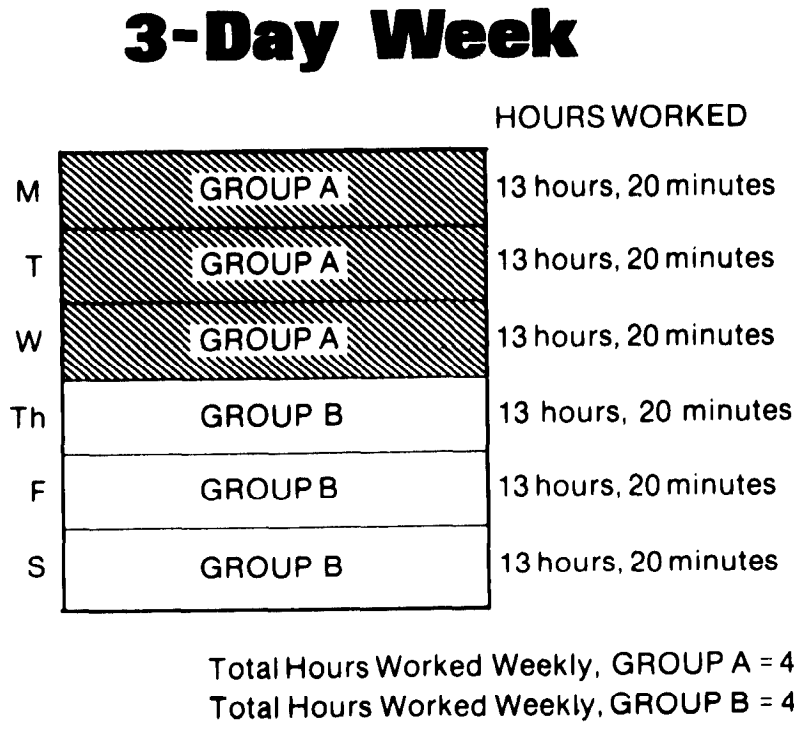
APPENDIX I

COMPRESSED SCHEDULES

The following models of compressed work schedules were also prepared by OPM. While the 3-day workweek is illustrated, its use has been limited under the experiment. The 4-day workweek is presently the most popular compressed schedule.

APPENDIX I

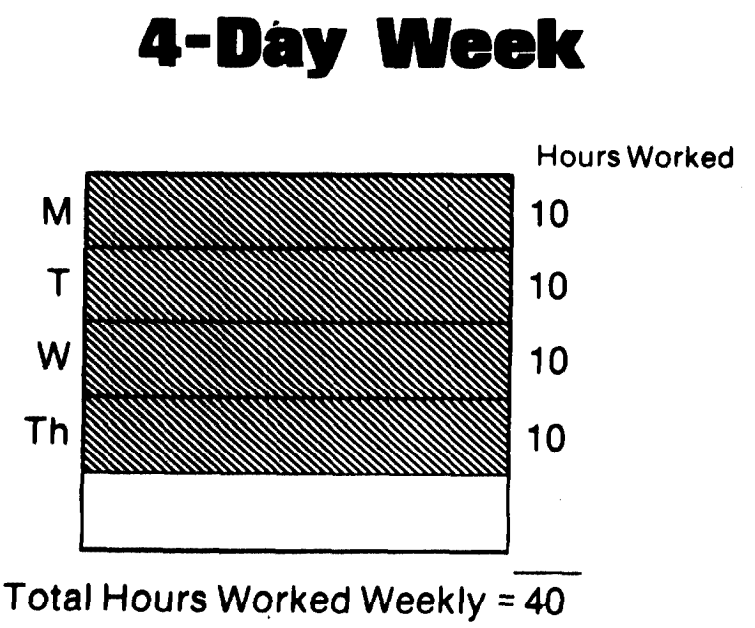
(1) Three-Day Compressed Schedule



-full-time employees work 40 hours, 3 days each week

-basic work requirement is 13 hours, 20 minutes each day and 40 hours each week

(2) Four-Day Compressed Schedule



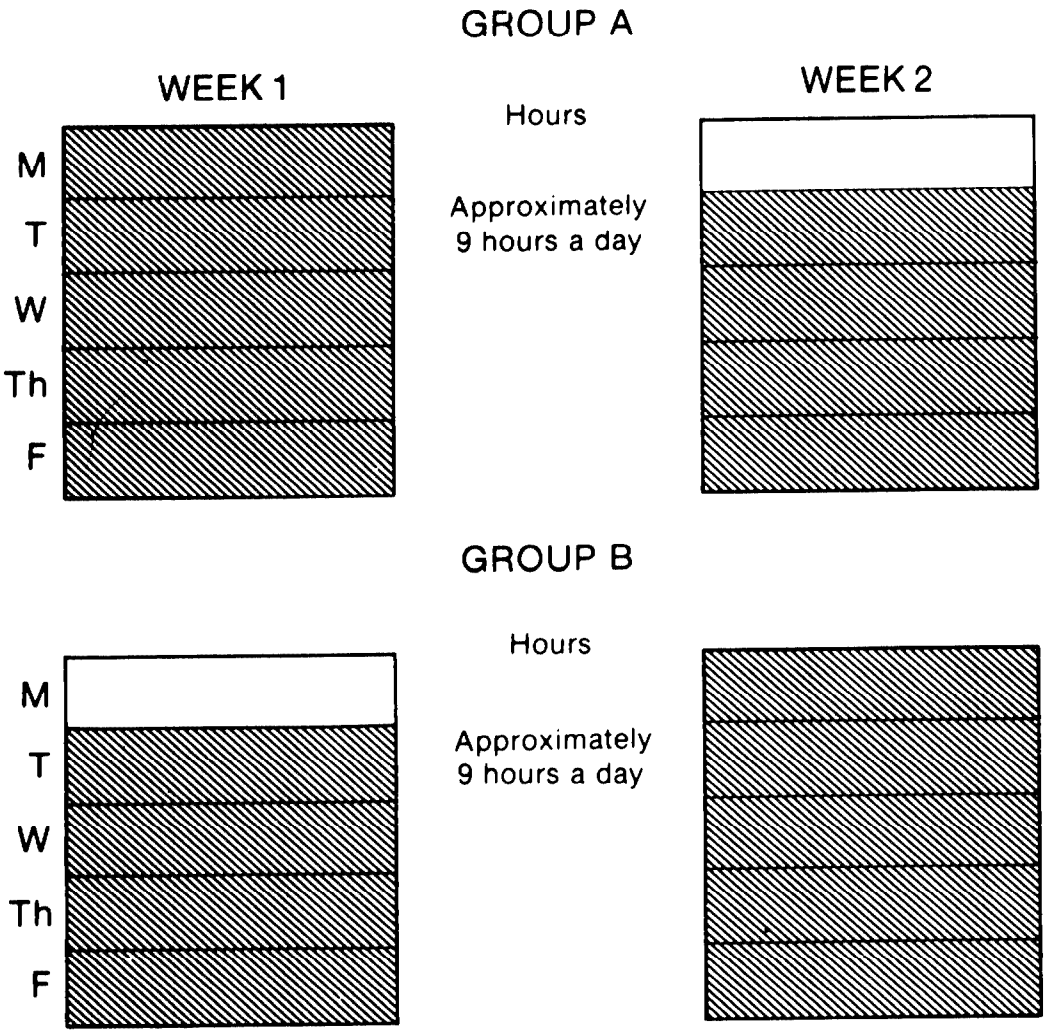
-full-time employees work 40 hours, 4 days each week

-basic work requirement is 10 hours each day and 40 hours each week

APPENDIX I

(3) 5-4/9 Plan

5-4/9 Plan



Total Hours Worked Biweekly, Group A = 80

Total Hours Worked Biweekly, Group B = 80

-full-time employee works 80 hours for the biweekly pay period
5 days one week and 4 days the next week

-basic work requirement is 80 hours every two weeks.

AGENCIES AND WORK UNITS CONTACTED

Office of Personnel Management
- Regional Offices
  - Atlanta, Georgia
  - Denver, Colorado

Department of Agriculture
- Headquarters, Washington, DC
- Food Safety and Quality Service, Eastern Laboratory, Athens, Georgia
- Food and Nutrition Service
  - Atlanta, Georgia
  - Denver, Colorado
- Soil Conservation Service
  - Atlanta, Georgia
  - Davis, California
  - Denver, Colorado

Department of the Air Force
- Lowry Air Force Base, Denver, Colorado

Department of the Army
- Army Audit Agency
  - Headquarters, Washington, DC
  - Atlanta, Georgia

Department of Commerce
- Headquarters, Washington, DC
- Bureau of the Census
  - Atlanta, Georgia
  - Lakewood, Colorado

Department of Defense
- Defense Contract Audit Agency, Marietta, Georgia
- OCHAMPUS, Aurora, Colorado

Department of Energy
- Regional Office, Lakewood, Colorado

Department of Interior
- National Park Service, Rocky Mountain Regional Office, Denver, Colorado

Department of Transportation
- Coast Guard, Headquarters, Washington, DC
- Research and Special Programs Administration, College Park, Georgia

APPENDIX II

Environmental Protection Agency
- Headquarters, Washington, DC
- Environmental Research Laboratory
  - Athens, Georgia
  - Gulf Breeze, Florida
  - Las Vegas, Nevada
- Regional Offices
  - Atlanta, Georgia
  - Denver, Colorado
- National Enforcement Investigation Center, Denver, Colorado
- Office of the Assistant Inspector General for Audit
  - Atlanta, Georgia
  - Chicago, Illinois

General Services Administration
- Regional Offices
  - Atlanta, Georgia
  - Denver, Colorado

Veterans Administration
- Regional Office, Denver, Colorado

APPENDIX III

Rules and Regulations

Federal Register
Vol. 45, No. 52
Friday, March 14, 1980

OFFICE OF PERSONNEL MANAGEMENT

5 CFR Part 213

Excepted Service; Entire Executive Civil Service

AGENCY: Office of Personnel Management.

ACTION: Final rule.

SUMMARY: Positions when filled for up 2 years by individuals who (1) are placed at a severe disadvantage in obtaining employment because of a psychiatric disability evidenced by hospitalization or outpatient treatment and have had a significant period of substantially disrupted employment because of the disability, and (2) are certified to a specific position by a State vocational rehabilitation counselor or a VA counseling psychologist are excepted under Schedule B because it is impracticable to examine competitively for such positions.

EFFECTIVE DATE: February 27, 1980.

FOR FURTHER INFORMATION CONTACT:
On position authority: William Bohling, Office of Personnel Management, 202-632-6000.
On position content: Hedwig Oswald, Office of Personnel Management, 202-632-6867.
Office of Personnel Management
Beverly M. Jones,
Issuance System Manager.

PART 213—EXCEPTED SERVICE

Accordingly, 5 CFR 213.3202(k) is added as set out below:

§ 213.3202 Entire executive civil service.

* * * * *

(k) Positions at grades GS-15 and below when filled by individuals who: (1) are placed at severe disadvantage in obtaining employment because of a psychiatric disability evidenced by hospitalization or outpatient treatment and have had a significant period of substantially disrupted employment because of the disability; and (2) are certified to a specific position by a State vocational rehabilitation counselor or a Veterans Administration counseling psychologist who indicates that they meet the severe disadvantage criteria stated above, that they are capable of functioning in the positions to which they will be appointed, and that any residual disability is not job-related. Employment of any individual under this authority may not exceed 2 years.

(5 U.S.C. 3301, 3302; EO 10577, 3 CFR 1954-1958 Comp. p. 218)

[FR Doc. 80-7479 Filed 3-13-80; 8:45 am]
BILLING CODE 6325-01-M

5 CFR Part 620

Alternative Work Schedules Experiment; Master Plan Removed From 5 CFR

AGENCY: Office of Personnel Management.

ACTION: Final Master Plan for the Alternative Work Schedules Experimental Program (AWS).

SUMMARY: The Federal Employees Flexible and Compressed Work Schedules Act of 1978 requires the Office of Personnel Management (OPM) to establish a Master Plan containing the guidelines and criteria by which alternative work schedule experiments in the Federal Government will be evaluated. This document revokes the Master Plan from the OPM regulations, and adopts a new final Master Plan to be incorporated into the Federal Personnel Manual.

EFFECTIVE DATE: April 14, 1980.

FOR FURTHER INFORMATION CONTACT:
Dr. Raymond J. Kirk, Office of Personnel Management, Office of Program Planning and Development, 1900 E Street, NW.—Room 3353, Washington, D.C. 20415, (202) 632-5604.

SUPPLEMENTARY INFORMATION: The Master Plan was published on July 20, 1979, (44 FR 42661), on an interim basis with comments invited for final rulemaking. Section 620.107 of OPM's regulations (5 CFR 620.107) was reserved for the Master Plan. That reserved section is being revoked and the Master Plan will appear as Appendix A, Book 620, Federal Personnel Manual Supplement 990-2. For the information of the user, analysis of comments on the interim Master Plan and the revised Master Plan are printed below.

Three comments were received. One offered an organization's continued support for the experimental program. The other two suggested that the magnitude of the proposed data collection would create significant administrative problems. The large number of organizations that have indicated that they plan to experiment has resulted in a reduction in the magnitude of data collection.

The revision of the Master Plan focuses on the types of data to be collected and the extent of the data collection. The major changes are: to reduce the sample size of the longitudinal study; to replace the special intensive studies (except the energy study which will be retained) with a small number of on-site studies; and to require all experimenting organizations not selected for the longitudinal, on-site, or energy studies to submit a narrative evaluation report on their experiment near the conclusion of the experimental period.

Section Analysis

Section I. Background—No changes.
Section II. Research Questions—The scope of questions A4, E6, and F5 was reduced due to the revised design matrix.
Section III. Conduct of the Evaluation
III-A. Design—Section replaced to reflect the new design outlined above.
III-B. Sample—The discussion of the original design matrix is eliminated. Discussion of the new design matrix for the longitudinal study is in III-E.
III-C. Experimental Control—Reference to control groups in the intensive special studies has been eliminated since those studies have been eliminated.
III-D. Implementation—Reference to local project and research coordinator training has been deleted since it will not be conducted. The "Implementation Guide" and "Supervisors Guide" referred to have been consolidated and are referred to in the section "Educational Materials".
III-E. Data Collection—The heading has been changed to "Data

Collection and Reporting" to reflect the change in approach. The section has been revised to include information on the narrative evaluation reports, the reduced design matrix for the longitudinal study, the on-site studies, and the energy study. The section on "Intensive Special Studies" has been eliminated.

III–F. Analytic Methodology—References to the analysis of the narrative reports and on-site studies have been added. Analysis of variance has replaced regression analysis as the third type of statistical procedure. Analysis of variance is a more appropriate statistical procedure to use with the reduced longitudinal study. References to special studies have been eliminated.

III–G. Reports—No changes have been made.

Master Plan for the Alternative Work Schedules (AWS) Experimental Program: Table of Contents

Master Plan for the Alternative Work Schedules Experimental Program

The Federal Employees Flexible and Compressed Work Schedules Act of 1978 requires the Office of Personnel Management to establish a program to provide an adequate basis on which to evaluate the effectiveness of alternative work schedules. This Master Plan outlines the research questions, the experimental design, the data collection procedures, and the analytic techniques which will be used for evaluating the impact of alternative work schedules on the Federal work force.

I. Background

A. General Information

The 5-day, 40-hour workweek with fixed starting and ending times has remained the dominant work schedule for the past 40 years. It is only in the past 12 years that organizations have begun to experiment with alternative work schedules, that is, work schedules which allow some flexibility in selection of starting times or which compress the workweek into some period shorter than the traditional 5 days.

The two general categories of alternative work schedules are flexible and compressed workweeks. A flexible schedule allows an employee to vary, within constraints set by the organization, the times he or she reports for duty and departs from work. A compressed workweek is one which compresses the 40-hour workweek into less than 5 days, or alternatively the 80-hour biweekly pay period into less than 10 working days. The most common compressed workweek has four, 10-hour days.

In 1967, Messerschmitt-Boelkow-Blohm, an aerospace company in Munich, West Germany, became the first major industrial plant in the world to adopt a flexible working hours arrangement for its 2,000 employees. The impetus behind this first experiment with flexitime was the severe traffic bottleneck around the factory, caused by several thousand workers all starting and leaving work at the same time.

Within 15 months the experiment was judged a success, and flexitime was made permanent. At first slowly, and then later at an increasing pace, other European business firms began trying a variety of scheduling arrangements involving flexible hours.

Although first introduced in the United States in 1971, by 1977 there were an estimated 2.5 to 3.5 million employees (approximately 6 percent of the working population) on flexible schedules, not counting those professionals, managers, salespeople, and self-employed workers who had long set their own work schedules. Additionally, there were 2.1 million American workers on compressed workweeks in 1977.

In a recent review of the empirical literature on flexible hours, Golembiewski and Proehl [Robert I. Golembiewski and Carl W. Proehl, Jr., "A Survey of the Empirical Literature on Flexible Workhours: Character and Consequences of a Major Innovation," *Academy of Management Review*, October 1978, pp. 837–853] found that there is widespread interest in and enthusiasm for these schedules *even though* an empirical basis for adopting them is, for the most part, lacking. Hitherto, there has not been sufficient study, either in numbers or in rigor, to attribute specific differences in results to various ways of structuring or administering such schedules. Few studies used control or comparison groups; few provided a longitudinal perspective or any sort of statistical treatment. Another deficiency of previous studies is that most of these studies were conducted in clerical, white-collar contexts. Furthermore, these studies tended to overlook the impact of alternative work schedules on performance and productivity. Finally, past studies have not been sophisticated enough to take into account the variability that may result from the differences between union and non-union settings.

In summary, previous studies on alternative work schedules have been narrow and limited. In addition to the deficiencies discussed above, they have tended to focus largely on employees' attitudes about such schedules and on macro-behavioral variables, such as effects on the use of vacation time and on tardiness. Conversely, they have paid little attention to managers' attitudes and changes in these attitudes as affected by such schedules.

B. Pub. L. 95–390

The President and the Congress have found the evidence on alternative work schedules to be sufficiently encouraging to warrant the enactment of the Federal Employees Flexible and Compressed Work Schedules Act of 1978. Pub. L. 95–390 mandates a 3-year period of controlled experimentation with the use of flexible and compressed work schedules for employees of agencies in the executive branch of the United States Government. The purpose of the experimentation is to determine the impacts—both positive and negative—which these alternatives to traditional work schedules may have on: (1) Efficiency of Government operations; (2) service to the public; (3) mass transit facilities; (4) energy consumption; (5) increased job opportunities; and (6) the quality of life for individuals and families.

The experimentation is made possible by the temporary modification of certain premium pay and scheduling provisions of: (1) Title 5, United States Code, and (2) the overtime pay provisions of the Fair Labor Standards Act (FLSA). These modifications are applicable only to those agencies or work units participating in a test program; all permanent provisions of Title 5 and the FLSA remain in effect for nonparticipating agency activities and employees.

Pub. L. 95–390 further requires that the OPM develop and conduct an experimental program of sufficient depth and diversity to:

APPENDIX III

* * * provide an adequate basis on which to evaluate the effectiveness and desirability of permanently maintaining flexible or compressed work schedules within the executive branch. (Section 4(a)(1) of Pub. L. 95-390).

II. Research Questions

This section presents the research questions which the program will address in order to carry out the required evaluation of the impact of alternative work schedules on the Federal work force.

While few previous studies have systematically examined the effects of alternative work schedules, there have been a sufficient number of studies, and the pattern of results has been consistent enough to suggest a set of variables for the present research project.

General systems theory provides a heuristic model for examining the interrelationships among the variables. Variables may be classified into one of three types: input, process, and output. A model for the present project is shown in Figure 1. Input variables are those factors which are outside the direct control of the work unit, i.e., they are inputs to the work unit. In the present project, such variables as mission, location and work schedule are examples of inputs. Process variables are those variables which are internal to the work unit and affect the functioning of the work unit, i.e., the organizational climate, the implementation of the alternative work schedule, and the supervisor's behavior. The outputs are the end products, the results of the work unit's activities. In the model presented in Figure 1, the six impact areas specified in Pub. L. 95-390 are conceptualized as the outputs.

Figure 1

Input

Alternative Work Schedule
  Flextime
  Compressed workweek
Organizational Characteristics
  Geographic location
  Size of work unit
  Function and technology of work unit
  Presence or absence of bargaining unit
Transportation facilities
Workers' characteristics
Labor market conditions

Process

Organizational Climate
Supervisor Behavior
Job Satisfaction
Implementation of AWS
Abuses of System
Scheduling

Output

Efficiency of Government Operations
Mass Transit and Traffic
Energy Consumption
Service to Public
Employment Opportunities
Quality of Life

The general systems model suggests that there is no simple single answer to the question, "What is the effect of alternative work schedule *X*?" The variables are all highly interactive, and the effects of a given schedule will be influenced, or moderated, by the specific inputs and processes operating in the system. For this reason, a series of research questions has been formulated for the present evaluation of alternative work schedules in Federal agencies. The specific research questions intended to address the six impact areas are listed below.

A. Efficiency of Government Operations

1. What changes occur in mission accomplishment and work unit costs?
2. How are management tasks affected? What problems develop and how are they solved?
3. What are the effects on organizational climate resulting from AWS?
4. Are efficiency and productivity affected by the type of AWS used?

B. Mass Transit Facilities and Traffic

1. Is there a transportation advantage from AWS for either individuals or public transit authorities?
2. What effects do AWS have on the choice of commuters' transportation and on commuting time?
3. What are the effects on car pools and van pool programs?
4. What is the effect on rush hour congestion?
5. Is there a change in recreational travel?

C. Levels of Energy Consumption

1. Do energy savings result from the effects of AWS on transportation?
2. Is there an increase in energy consumption from building and equipment use as a result of AWS?
3. What is the net energy impact of AWS from transportation and building consumption effects?

D. Service to the Public

1. Is service to the public increased or decreased in quality or quantity?
2. To what extent is the change in service affected by the AWS, work unit's function, size or location?

E. Opportunities for Full-time and Part-time Employment

1. What are the labor supply effects of AWS?
2. Will there be new labor force entrants?
3. Is there a shift from part-time to full-time employment?
4. Does moonlighting increase?
5. What types of jobs are best suited for AWS?
6. How do AWS affect the employment opportunities for women and for the handicapped?

F. Quality of Life for Individuals and Families

1. How is the quality of work life affected?
2. How is the quality of personal and non-work life affected?
3. Do social, educational, or civic activities change?
4. Do family relationships and child care change?
5. Do the effects on quality of life vary with the AWS used?

III. Conduct of the Evaluation

A. Design

The effects of the alternative work schedules on the impact areas will be evaluated by four types of studies. These are: (1) Narrative evaluation reports from each experimenting organizations; (2) a longitudinal and cross-sectional study of a sample of experimenting work units; (3) on-site studies of experimenting organizations; and (4) a special study on the net energy impact of alternative work schedules.

The narrative evaluation reports from each experimenting organization will provide an overview of the effects of AWS. Experimenting organizations will be required to provide basic information about their AWS experiment and report to OPM at the end of the experimental period providing their evaluation in the six impact areas. These reports will not be required for organizations selected to participate in the longitudinal cross-sectional, on-site or energy (see E2, E3, and E4) studies.

The longitudinal cross-sectional study will collect both objective data on the functioning of the work unit and subjective attitudes of employees on their reactions to the AWS. It will be longitudinal in that data will be collected at specified times in the same work units throughout the duration of each experiment. Data will be cross-sectional in that it will encompass a variety of AWS operating in a diverse sampling of Federal activities.

The longitudinal cross-sectional study will collect information in four general areas: (1) Agency characteristics (2) diary of major organizational events (3) additional surveys of employees in experimental work units and (4) objective archival data. The effects upon the various impact areas, as determined

—Number of authorized overtime hours
—Part-time/full-time employee ratio
—Accident rates

(c) *Employee Survey.* Some attitudinal data and information can be collected only from surveys of employees in the experimental work units (e.g., commuting habits). Four surveys of employees will be conducted. These surveys will take approximately 45 minutes to complete and will be collected at the start of the experimental period, and 3 months, 12 months, and 18 months into the experimental period. The surveys will collect data on the following areas:

—Organizational climate and quality of working life
—Commuting habits
—Impact on family and personal life
—Job performance
—Job satisfaction
—Time utilization
—AWS utilization
—Perceived abuses of system
—Supervisor's functions
—Scheduling
—Recreational travel habits

(d) *Diary of Significant Events.* The local Project Director will be required to keep a diary of significant events within the organization which might have an impact on the effects of AWS. Examples of such events might include a move to a new building, a flu epidemic, a change in supervisors (including top level management), changes in work flow, major snow storms, reorganization, or a critical energy shortage.

3. *On-site Studies.* Because certain, limited types of data may be difficult to obtain on an overall, cross-sectional basis, and because some results may be manifest only in the presence of special factors, some effects of the use of alternative work schedules can be determined only through on-site studies. The on-site studies will serve to supplement the narrative reports and the longitudinal cross-sectional study and provide additional explanatory detail in the final report. They will have more intensive data collection, and/or they will utilize controlled experimental or quasi-experimental designs. OPM will select 6–10 experimenting organizations for on-site studies. These organizations will not be required to submit the narrative evaluation report. The on-site studies will be conducted by the AWS research staff and will be tailored to the specified organization to provide information on the six impact areas of Pub. L. 95–390 as well as to identify the problems and benefits involved in planning, implementing, and functioning under an AWS. The purpose of the on-site studies is to obtain information on AWS and not to evaluate the effectiveness of a specific organization in conducting its AWS experiment.

Data collection methods for the on-site studies will include interviews of employees, supervisors, and managers; surveys of samples of employees; and collection of some organizational data such as productivity measures, type and number of public service contacts, etc. An initial planning meeting will be held of OPM staff and management of the selected organizations to discuss specific plans for the on-site study. OPM staff will then make three or four on-site visits to conduct interviews and collect data during the 18-month experimental period.

4. *Energy Study.* A special study will be conducted on the net energy impact of AWS. This study will examine changes in usage of public and private transportation for commuting as well as for recreational travel. This will be accomplished by using a survey and travel diary from a sample of employees in experimenting organizations. In addition, data on changes in building energy consumption will be collected using data from specific buildings as well as computer models of building energy utilization. The net energy impact will then be analyzed from data obtained from these two sources—buildings and transportation. Organizations selected for the building and/or transportation segments of the energy study will be notified by OPM.

F. Analytic Methodology

This section provides an overview of the strategies and techniques which will be used for statistical analysis of the data collected. The purpose of any process of data analysis is to condense information contained in the body of data into a form which can be comprehended and interpreted. This is particularly critical to the AWS project, since the purpose of the research is to provide a basis for policy decisions and legislative action.

Sometimes this analytic process is simply used to describe a body of empirical data. In the present project, it is important to go beyond that and search for meaningful patterns of relationships among sets of variables, that is, to build a comprehensive picture of the impact of AWS on the Federal work force.

The narrative evaluation reports and on-site studies will be analyzed to identify general trends in the results of a wide variety of experimenting organizations. While this analysis will not be quantitative in nature, it will allow general conclusions and provide enriching detail to the quantitative analysis of the longitudinal cross-sectional study.

Three types of statistical procedures will be used to analyze the data collected in the longitudinal, cross-sectional study. They are descriptive statistics, trend analysis, and analysis of variance.

The descriptive analysis of the data will examine the characteristics of the distribution of each of the independent and dependent variables under investigation. This will be accomplished by using measures of central tendency (e.g., mean, median) and distributions and frequencies, such as the cross-tabulation of two variables. Proportions will be used to describe the data for discrete category variables.

A second type of analysis, trend analysis, will consist of plotting the data points of relevant variables over the time period of the experiment and identifying patterns in the data. Patterns which might be revealed are effects of experience with AWS, patterns of use which vary by the season of the year, and so on.

The third type of statistical procedure to be used is analysis of variance. Analysis of variance allows the researcher to make inferences about the effects of independent variables on dependent variables. Using analysis of variance, it will be possible to detect differences in the various dependent variables as a result of the different types of schedules.

The analytic method and independent and dependent variables are given below for each of the research questions.

For most analyses, the level of analysis is the work unit, i.e., data will be aggregated within a work unit and that score will be used to represent the work unit. A different level of analysis will be used in dealing with the areas indicated below.

1. *Efficiency of Government Operations.* (a) What changes occur in mission accomplishment and work unit costs?

—Descriptive statistics and trend analysis of productivity measures, turnover rates, leave usage, accident rates and cost data.

(b) How are management tasks affected? What problems develop and how are they solved?

—Descriptive statistics and trend analysis of survey data, analysis of diaries.

(c) What are the effects on organizational climate resulting from AWS?

—Analysis of variance of change scores for organizational climate and job satisfaction.

APPENDIX III

emphasizes joint labor-management planning for the experiment and employee participation in analyzing work requirements in their own units so that they may have input into the process by which systems, designed to ensure the adequacy of the work force at any given time, are formulated.

3. *Regulations and Guidance.* Regulations for the Alternative Work Schedules Experimental Program are in Part 620 of the OPM's regulations (title 5, Code of Federal Regulations). These regulations must be used in conjunction with Pub. L. 95-390. The regulations and additional guidance for the administration of alternative work schedule experimental programs are provided in Book 620 of Federal Personnel Manual Supplement 990-2.

E. Data Collection and Reporting.

1. *Narrative Evaluation Reports.* Organizations not selected to participate in the longitudinal cross-sectional, on-site, or energy studies must conduct an evaluation of their experiments and report the result directly to OPM after 18 months of experimentation, or by May 1, 1981, whichever date occurs first. The narrative evaluation report must include information on the six impact areas identified in Pub. L. 95-390. An outline of the areas to be addressed in this report and the types of information to be covered in the report is furnished below. This outline will be followed in preparing the report to provide maximum compatibility between reports from different organizations. The report will be a nontechnical summary assessment of the experiment. The summary assessment should include the results of any internal evaluation efforts. Both management and local labor unions involved in the experiment should provide input to the development and preparation of the report. More detailed guidance will be provided on the preparation of the narrative reports through the issuance of a Federal Personnel Manual bulletin.

a. *Organizational characteristics.* The number of employees in the experiment; the pre-experimental and alternative work schedules; bargaining unit status; carpool, van pool, and parking facilities; availability of public transportation; description of the major activities or services of the experimenting units (e.g., clerical, produce goods, public service contact, administrative office, or staff function).

b. *Efficiency of Government operations.* Conclusions about changes in productivity, sick leave, annual leave and leave without pay usage, conclusions about changes in employee turnover, number of overtime hours, job satisfaction, and morale.

c. *Mass transit facilities, and traffic.* Any conclusions on changes in commuting habits such as use of mass transit, carpools, and private automobiles.

d. *Levels of energy consumption.* Where available, note changes in the amount of energy used in the building as a function of changed operating hours that may result from changes in work schedules.

e. *Service to the public.* Evaluation of the level and amount of service to the public if the experimenting organization provides direct public service.

f. *Increased opportunities for full-time and part-time employment.* Discerned changes in the number of applicants for jobs, and levels of part-time employees.

g. *Individuals and families generally.* Received effects of AWS on family scheduling of child care and household activities and employee recreational activities.

h. *Special problems.* Special problems which developed during the experiment such as a large number of requests for exclusions due to hardship difficulties administering pay and leave, overtime or manpower problems during peak work load periods, etc.

2. *Longitudinal Cross-Sectional Study.* A sample of 60 work units will be selected by OPM to be part of the longitudinal cross-sectional study. Organizations which have work units selected for this study will not be required to submit the narrative evaluation report.

The selected work units must have a reasonably homogeneous work technology and a single focus of function and activity. Typically, such a work unit will be headed by a supervisor authorized to certify time and attendance cards. For example, a work unit for purposes of this project might be a mail room, a printing plant, a data processing center, a claims group, or a policy group; however, all employees in a work unit must be on the same type of schedule, with the exception of those employees excluded because of personal hardship.

The experimental design for the longitudinal cross-sectional study is a simple one-way classification with four types of schedules.

The four types of schedules are 5-4/9 and 4-day week compressed schedules, flexible schedules that allow variability in the numbers of hours worked per day, and flexible schedules which require employees to work 8 hours per day (i.e., flexitime as allowed under permanent provisions of title 5). Within each of the four types, 15 work units will be selected representing a variety of sizes, locations, and functions. However, for purposes of analysis, these variables will not be included since there will be too few cases to create a complete factorial design.

Data will be collected by each organization, using the forms and surveys provided by OPM. OPM will also provide guidance and advice on establishing data collection procedures. The raw unanalyzed data will be forwarded to OPM for all data reduction and analysis. All data collected will be treated in a confidential manner; no individuals will be identified. The results of the experiment will be reported as scores aggregated across work units and organizations. Organizations which terminate the experiment prior to the end of the experimental period will provide OPM with data on the reasons for termination as well as other data which may be required.

The following types of data will be collected from work units selected for the longitudinal cross-sectional study.

(a) *Organizational/Work Unit Characteristics.* Descriptive information to be collected prior to the onset of an experiment will include:

—Number of employees in experimental work unit by age, sex, grade

—Location of work unit

—Preexperimental work schedule and alternative work schedule planned

—Major activities or services of experimental work units (e.g., clerical, produce goods, customer contact, office or plant function)

—Work technology (e.g., machine-paced vs. worker-paced jobs, autonomous vs. interdependent job, nature of supervision and communication)

—Bargaining unit status

—Car pool programs, van pool programs, parking facilities, availability of public transportation to organization

(b) *Longitudinal Archival Data.* Organizations should obtain as much of the longitudinal data as possible retrospectively from existing records for the 12-month period preceding the start of the experiment. Data collection procedures should be established to record required information during the 18-month experimental period which is not routinely maintained. Data collected will include the following:

—Productivity measures, if any, currently utilized by the organization

—Turnover

—Sick leave, annual leave, and leave without pay usage (total number of hours per month and number of incidents of leave use per month)

APPENDIX III

by statistical analysis of the data, will be correlated with the various alternative work schedules used. Some effects may be detectable soon after the onset of the experiment (e.g., job satisfaction, commuting time, leave usage); others may take longer to appear (e.g., turnover, changes in family roles). Some effects may initially appear and then fade away (e.g., increased morale and supervision problems). The longitudinal nature of the study will permit the tracking of these various possibilities.

The on-site studies will focus upon the six impact areas listed under "Output" in Figure 1. They will attempt to determine, in a detailed way, the effects of alternative work schedules upon organizations which are considered representative of certain types of Federal work environments. In addition to gathering information on the six impact areas, these on-site studies will gather information that is pertinent to the successful introduction and administration of an AWS program such as the degree of employee involvement and necessary changes in time and attendance recordkeeping required for a work schedule change.

These studies will be tailored to fit the structure and function of the particular organizations selected and to provide data necessary to answer particular research questions.

The special study on the net energy impact of AWS will provide data both on the effects on transportation and on building operating costs.

The four types of studies will provide a comprehensive evaluation of the AWS program. The narrative reports will provide a comprehensive overview. The longitudinal cross-sectional study will allow a systematic analysis of AWS. The on-site studies will enrich the conclusions of the analytic and narrative studies and provide detail on the major issues in implementing an AWS. Finally, the energy study will provide data in an area of increasing importance. While AWS appear to hold much promise for energy conservation, little is currently known about the specific net impact on energy consumption as a result of their application in the workplace.

Specific details on the four types of studies are provided in the Data Collection and Analytic Methodology sections.

The OPM will provide data collection instruments, assistance to organizations implementing alternative work schedules, and perform data analysis. Each participating organization will be responsible for both the day-to-day management of the experimental program and the collection of required data. Organizations should expect to designate one or more individuals to: (1) Serve as the principal point of contact between the organization and OPM; (2) carry out the coordination, planning, and implementation of the organization's alternative work schedules experiment; and (3) in work units selected for the longitudinal study, distribute OPM data collection forms and instruments, assure adequate collection of baseline and followup data from the organization's records and from employee surveys, and forward the raw data to OPM's research staff for analysis. Ordinarily, one person would have responsibility for all three tasks and functions, but in larger organizations these functions might be accomplished by two or more people.

B. Sample

Any agency that wishes to test an alternative work schedule may do so, as long as it abides by the regulations prescribed by OPM to guide the experimental program. Thus, the sample will essentially be self-selected. However, a sufficient number of diverse organizations must participate in the alternative work schedules experimental program for the report to have any validity. For this reason, Public Law 95-390 gives OPM authority to require selected agencies to experiment with certain work schedules. However, it is not anticipated that this provision will need to be invoked.

C. Experimental Control

Due to the diversity and complexity of organizations that will be part of the research project, it is not possible to conduct a perfectly controlled experiment. However, several procedures will be used to increase confidence in inferences made from the data.

Control will be provided by data from two of the evaluation studies of the Civil Service Reform Act being conducted by the OPM. The first of these is a study of productivity in the Federal sector. The productivity data will be collected on an aggregated basis across organizations. While these data will not allow specific comparisons with the experimental organizations, they will provide a trend line against which changes in productivity in the experimental organizations can be compared. In addition, an attitude survey of 20,000 Federal employees will be conducted annually during the time period of the Alternative Work Schedules Experimental Program. This survey contains organizational climate scales in common with the employee survey which will be used in the Alternative Work Schedules Experimental Program. As with the productivity data, these common scales will provide a trend line of Federal employees' attitudes toward the work place for comparison with the attitudes of employees participating in the experiment. The nature of the longitudinal design makes possible additional control; each work unit will serve as its own control to determine changes over time.

D. Implementation

1. *Technical Assistance*—(a) *Orientation sessions.* The AWS program staff will conduct a series of orientation meetings. The purposes of these meetings will be to confer with agency headquarters officials, as well as others, on plans to implement Pub. L. 95-390; to brief local agency and union representatives on opportunities provided by the legislation and requirements for participation in the experimental program; and to hold planning sessions with representatives of agencies and unions that express an early interest in an AWS experiment.

(b) *Consulting services.* The AWS research and implementation staff will be available throughout the life of the program to provide telephone consulting services and some on-site consultation, if necessary. OPM regional program staff will also be available to provide advice and consulting services.

(c) *Public information services.* Central office staff will be available to speak before national professional gatherings, union meetings, conferences, or similar groups which desire information about the experimental program. They will also contribute to Government or other publications and respond to inquiries from the press, researchers, and others interested in the program.

2. *Educational Materials.* A number of educational materials are available from the OPM.

These include:

(a) A booklet that briefly describes the Alternative Work Schedules Program. It covers the legislative mandate, the research plan, and the steps to be taken to implement the non-research aspects of this mandate.

(b) A slide presentation that explains the requirements of Pub. L. 95-390, the various forms of flexible and compressed work schedules that may be tested under the law and outlines experimental agencies' data collection responsibilities.

(c) An implementation guide that describes a process agencies may follow in planning and implementing an alternative work schedule. This guide

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* * * provide an adequate basis on which to evaluate the effectiveness and desirability of permanently maintaining flexible or compressed work schedules within the executive branch. (Section 4(a)(1) of Pub. L. 95-390).

II. Research Questions

This section presents the research questions which the program will address in order to carry out the required evaluation of the impact of alternative work schedules on the Federal work force.

While few previous studies have systematically examined the effects of alternative work schedules, there have been a sufficient number of studies, and the pattern of results has been consistent enough to suggest a set of variables for the present research project.

General systems theory provides a heuristic model for examining the interrelationships among the variables. Variables may be classified into one of three types: input, process, and output. A model for the present project is shown in Figure 1. Input variables are those factors which are outside the direct control of the work unit, i.e., they are inputs to the work unit. In the present project, such variables as mission, location and work schedule are examples of inputs. Process variables are those variables which are internal to the work unit and affect the functioning of the work unit, i.e., the organizational climate, the implementation of the alternative work schedule, and the supervisor's behavior. The outputs are the end products, the results of the work unit's activities. In the model presented in Figure 1, the six impact areas specified in Pub. L. 95-390 are conceptualized as the outputs.

Figure 1

Input

Alternative Work Schedule
- Flextime
- Compressed workweek

Organizational Characteristics
- Geographic location
- Size of work unit
- Function and technology of work unit
- Presence or absence of bargaining unit

Transportation facilities
Workers' characteristics
Labor market conditions

Process

Organizational Climate
Supervisor Behavior
Job Satisfaction
Implementation of AWS
Abuses of System
Scheduling

Output

Efficiency of Government Operations
Mass Transit and Traffic
Energy Consumption
Service to Public
Employment Opportunities
Quality of Life

The general systems model suggests that there is no simple single answer to the question, "What is the effect of alternative work schedule *X*?" The variables are all highly interactive, and the effects of a given schedule will be influenced, or moderated, by the specific inputs and processes operating in the system. For this reason, a series of research questions has been formulated for the present evaluation of alternative work schedules in Federal agencies. The specific research questions intended to address the six impact areas are listed below.

A. Efficiency of Government Operations

1. What changes occur in mission accomplishment and work unit costs?
2. How are management tasks affected? What problems develop and how are they solved?
3. What are the effects on organizational climate resulting from AWS?
4. Are efficiency and productivity affected by the type of AWS used?

B. Mass Transit Facilities and Traffic

1. Is there a transportation advantage from AWS for either individuals or public transit authorities?
2. What effects do AWS have on the choice of commuters' transportation and on commuting time?
3. What are the effects on car pools and van pool programs?
4. What is the effect on rush hour congestion?
5. Is there a change in recreational travel?

C. Levels of Energy Consumption

1. Do energy savings result from the effects of AWS on transportation?
2. Is there an increase in energy consumption from building and equipment use as a result of AWS?
3. What is the net energy impact of AWS from transportation and building consumption effects?

D. Service to the Public

1. Is service to the public increased or decreased in quality or quantity?
2. To what extent is the change in service affected by the AWS, work unit's function, size or location?

E. Opportunities for Full-time and Part-time Employment

1. What are the labor supply effects of AWS?
2. Will there be new labor force entrants?
3. Is there a shift from part-time to full-time employment?
4. Does moonlighting increase?
5. What types of jobs are best suited for AWS?
6. How do AWS affect the employment opportunities for women and for the handicapped?

F. Quality of Life for Individuals and Families

1. How is the quality of work life affected?
2. How is the quality of personal and non-work life affected?
3. Do social, educational, or civic activities change?
4. Do family relationships and child care change?
5. Do the effects on quality of life vary with the AWS used?

III. Conduct of the Evaluation

A. Design

The effects of the alternative work schedules on the impact areas will be evaluated by four types of studies. These are: (1) Narrative evaluation reports from each experimenting organizations; (2) a longitudinal and cross-sectional study of a sample of experimenting work units; (3) on-site studies of experimenting organizations; and (4) a special study on the net energy impact of alternative work schedules.

The narrative evaluation reports from each experimenting organization will provide an overview of the effects of AWS. Experimenting organizations will be required to provide basic information about their AWS experiment and report to OPM at the end of the experimental period providing their evaluation in the six impact areas. These reports will not be required for organizations selected to participate in the longitudinal cross-sectional, on-site or energy (see E2, E3, and E4) studies.

The longitudinal cross-sectional study will collect both objective data on the functioning of the work unit and subjective attitudes of employees on their reactions to the AWS. It will be longitudinal in that data will be collected at specified times in the same work units throughout the duration of each experiment. Data will be cross-sectional in that it will encompass a variety of AWS operating in a diverse sampling of Federal activities.

The longitudinal cross-sectional study will collect information in four general areas: (1) Agency characteristics (2) diary of major organizational events (3) additional surveys of employees in experimental work units and (4) objective archival data. The effects upon the various impact areas, as determined

COMPONENTS OF OPM'S MASTER PLAN

LONGITUDINAL AND CROSS-SECTIONAL STUDY

The longitudinal and cross-sectional study constitutes a major element in OPM's evaluation. The study is directed at collecting both objective data on the functions and characteristics of work units and subjective attitudes of employees on their impressions and reactions to AWS. According to OPM, the study is longitudinal in that data will be collected at specified times throughout the experiment; it is cross-sectional in that it encompasses a variety of AWS operating in a diverse sampling of Federal activities.

The longitudinal study will collect information on:

--Organizational and work unit characteristics.

--Significant events which might affect AWS results within an organization.

--Longitudinal archival data on productivity measures, turnover rates, leave usage, overtime, employment opportunities, and accident rates.

--Employees' and supervisors' attitudes about AWS.

Employee survey

OPM's master plan calls for administering a questionnaire to all employees and supervisors in certain work units participating in the longitudinal study. The questionnaire is to be administered 4 times during the experimental period--at the start of the experiment and 3, 12, and 18 months after AWS is implemented.

At the time of our review, 70 work units employing about 2,000 employees were participating in this phase of the evaluation and had been administered the first two questionnaires. OPM judgmentally selected these work units on the basis of a number of considerations which included the function, activity, and technology of the work units; their size and location; and their willingness to participate in the study.

In selecting its sample and conducting the study, OPM is using an experimental design consisting of four types of AWS--the 5-4/9 compressed schedule, the 4-day week compressed schedule, flexible schedules that allow variability in the number of hours worked per day, and schedules which require

APPENDIX III

—Descriptive statistics and trend analysis of organizational climate.

(d) Are efficiency and productivity affected by the type of AWS used?

—Descriptive statistics of efficiency and productivity measures as a function of (1) work schedule, (2) work unit technology, and (3) work force characteristics.

—Analysis of variance of outcome measures by work schedule.

2. *Mass Transit Facilities and Traffic.* (a) Is there a transportation advantage from AWS for either individuals or public transit authorities?

—Analysis of special study on energy.

—Descriptive statistics of survey data on commuting habits (Level of analysis: Individual)

(b) What effects do AWS have on choice of commuting transportation and on commuting time?

—Descriptive statistics of survey data on commuting habits as a function of AWS and organizational characteristics. (Level of analysis: Individual)

3. *Levels of Energy Consumption.* (a) Are there energy savings from transportation effects of AWS?

—Analysis of variance on amount and frequency of automobile usage.

(b) Is there an increase in energy consumption from building and equipment use as a result of AWS?

—Analysis of special study on energy consumption.

(c) What is the net energy impact of AWS from transportation (a. above) and building (b. above) effects?

—Projections of the energy costs and savings as a function of a particular AWS, and organization characteristics (particularly geographic location and technology).

4. *Service to the Public.* (a) Is service to the public increased or decreased in quality or quantity? How much is the gain or loss worth?

—Analysis of on-site study data on quality of customer service.

(b) How much is the change in service affected by the AWS, work unit's function, size, or location?

—Descriptive statistics of level of customer service as a function of AWS, work unit function, size, and location.

5. *Opportunities for Full-time and Part-time Employment.* (a) What are the labor supply effects of AWS?

—Descriptives statistics of secondary data from Bureau of Labor Statistics.

(b) Will there be new labor force entrants?

—Descriptive statistics of secondary data from Bureau of Labor Statistics.

(c) Is there a shift from part-time to full-time employment?

—Trend analysis of part-time/full-time employee ratio as a function of AWS.

(d) Does moonlighting increase?

—Descriptive statistics of survey data on moonlighting. (Level of analysis: Individual)

—Trend analysis of survey data as a function of AWS.

(e) What types of jobs are best suited for AWS?

—Descriptive statistics of job characteristics by AWS, where outcome measures (e.g., productivity, leave usage, etc.) and employee satisfaction are chief variables.

(f) How do AWS affect the employment opportunities for women and the handicapped?

—Descriptive statistics of employment and turnover rates by sex and by physical and mental handicap.

—Descriptive statistics of survey data on utilization of AWS, and attitudes toward AWS by sex and by physical and mental handicap.

6. *Quality of Life for Individuals and Families.* (a) How is the quality of work life affected? What features of work life are affected?

—Descriptive statistics and trend analysis of survey data on organizational climate, job satisfaction and performance. (Level of analysis: Individual)

(b) How is the quality of personal and non-work life affected?

—Descriptive statistics and trend analysis of survey data on impact on family and personal life.

(c) Do social, educational, or civic activities change?

—Descriptive statistics and trend analysis of survey data on impact on family and personal life.

(d) Do family relationships and child care patterns change?

—Descriptive statistics and trend analysis of survey data on impact on family and personal life.

(e) Do the effects on quality of life vary with the AWS used?

—Analysis of variance with quality of life factors as dependent variables.

G. Reports

As required by Pub. L. 95-390, an interim report containing recommendations pertaining to the legislative or administrative action, if any, which should be taken as a result of the AWS Experimental Program will be completed by September 28, 1981. A final report summarizing the results of the AWS Experimental Program will be prepared by the OPM and submitted to the President, the Speaker of the House, and the President pro tempore of the Senate by March 28, 1982.

Office of Personnel Management.

Beverly M. Jones,

Issuance System Manager.

Accordingly, OPM is amending 5 CFR Part 820 as follows:

(1) The reserved Appendix A is revoked.

(2) The interim Master Plan is revoked.

(Pub. L. 95-390, Titles I and II and Reorganization Plan No. 2 of 1978, Sec. 102)

[FR Doc. 80-7581 Filed 3-13-80; 8:45 am]

BILLING CODE 6325-01-M

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Part 910

[Lemon Regulation 243]

Lemons Grown in California and Arizona; Limitation of Handling

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Final rule.

SUMMARY: This regulation establishes the quantity of fresh California-Arizona lemons that may be shipped to market during the period March 16–22, 1980. Such action is needed to provide for orderly marketing of fresh lemons for this period due to the marketing situation confronting the lemon industry.

EFFECTIVE DATE: March 16, 1980.

FOR FURTHER INFORMATION CONTACT: Malvin E. McGaha, 202–447–5975.

SUPPLEMENTARY INFORMATION: *Findings.* This regulation is issued under the marketing agreement, as amended, and Order No. 910, as amended (7 CFR Part 910), regulating the handling of lemons grown in California and Arizona. The agreement and order are effective under the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674). The action is based upon the recommendations and information submitted by the Lemon Administrative Committee, and upon other information. It is hereby found that this action will tend to effectuate the declared policy of the act.

This action is consistent with the marketing policy for 1979–80 which was designated significant under the procedures of Executive Order 12044. The marketing policy was recommended by the committee following discussion at a public meeting on July 31, 1979. A final impact analysis on the marketing policy is available from Malvin E. McGaha, Chief, Fruit Branch, F&V, AMS, USDA, Washington, D.C. 20250, telephone 202–447–5975.

Distinguishing features of the organizations, such as availability of historical productivity data and adoption of a specific AWS to meet a unique organizational objective, were also used as criteria.

Technical approach

No one research design or approach is being used for all onsite studies. OPM is custom designing each study on the basis of objectives, characteristics of the organizations, and availability of needed data. The data collection techniques for each study include:

--Administration of the longitudinal employee survey.

--Interviews with key managers and AWS project managers or coordinators.

--Collection of needed data from organization records.

NARRATIVE REPORTS

OPM's master plan requires each work unit experimenting with AWS, which is not participating in the longitudinal and cross-sectional, onsite, or special energy studies, to prepare a narrative report by May 1, 1981, detailing its experiences with, and the effects of, AWS. The reports are to be prepared as nontechnical summary assessments. The master plan stipulates that the reports must include information on the effects of AWS on the six impact areas identified in the act. The plan further provides that both management and local labor unions involved in the individual experiments should provide input in developing and preparing the narrative reports. Additionally, the results of any formal internal evaluations which organizations conduct are to be included in the reports.

Although OPM has provided no specific guidance on how the individual assessments should be conducted, it has provided a general outline of information to make reports from different organizations uniform.

In addition to information relating to the six impact areas, the reports are to include information on organizational characteristics and special problems which developed during the experiment, such as a large number of requests for exclusions due to hardships, difficulties experienced in administering pay and leave, and overtime or manpower problems during peak workload periods.

employees to work 8 hours per day but allow flexibility in starting and quitting times. Within each of these 4 types, OPM selected between 15 and 19 work units. The prime consideration in the overall number of units selected was the amount of information which the OPM staff felt it could effectively handle while executing the other components of the master plan.

ONSITE STUDIES

Believing that certain types of data may be difficult to obtain on an overall, cross-sectional basis, and that some results may be manifest only in the presence of special factors, OPM decided to include onsite studies as a segment of the evaluation. The objectives of these studies are to provide detailed data on AWS effects and to identify problems and benefits associated with planning, implementing, and functioning under AWS. At the time of our review OPM had initiated several of these studies and had plans to conduct at least nine onsite studies in total. These studies will supplement the longitudinal and cross-sectional study and narrative reports and provide additional explanatory detail for OPM's final report.

The results of these studies will differ from the other components of the evaluation because they will focus on collecting information on the effects of AWS which manifest themselves in larger organizational units, rather than the work unit or only under some special conditions. Additionally, in an attempt to isolate the effects that result from specific AWS, OPM is using some comparison groups consisting of units not participating in the AWS experiment.

OPM plans to conduct most of the onsite studies at multiple locations for each organization. OPM believes these studies will allow it to collect data in greater detail and to focus on problems encountered, management issues, and the methods by which both organizations and individuals cope with the changes and problems resulting from AWS implementation.

Selection criteria

The organizations and locations included in the onsite studies were selected judgmentally by OPM using a combination of criteria. Selection criteria included a variety of AWS types, types of activities, geographic locations, and expression of willingness to participate in the onsite studies.

APPENDIX V

United States of America
Office of
Personnel Management Washington, D.C. 20415

AUG 25 1980

In Reply Refer To

Your Reference

Mr. H. L. Krieger
Director, Federal Personnel
and Compensation Division
U.S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Krieger:

We have reviewed your report on the Alternative Work Schedules Experiment and offer the following comments and observations.

We generally agree with your finding that limitations on resources have made more difficult the job of implementing and evaluating an experiment of this size. However, for the reasons outlined below, we do not agree with GAO that "the current study will fail to provide the degree of valid and reliable information necessary for the Congress to make a knowledgeable decision on permanent legislation" and we certainly do not understand why GAO would recommend that OPM take money from activities funded by the Congress to increase the resources for AWS when the Congress specifically reduced the funds for that project. [See GAO note 1, p. 64.]

Within the resources assigned to the project, we have attempted to deal with the problems you have identified. For example, OPM is verifying the data files containing information on each experiment as rapidly as possible with the available staff. Several variables identified as necessary such as the goals of the experiments, timekeeping procedures, use of credit hours, and the degree of employee flexibility in using the AWS will be incorporated in future guidance regarding preparation of the narrative reports. The addition of these variables to the information being requested in the narrative reports will provide much of the valid information you have suggested as necessary for informed decision-making.

OPM also fully intends to employ multivariate analysis when we analyze these narrative reports. Since these reports will be from all organizations experimenting (except those in one of the other AWS studies), they will be representative of the population of AWS users in the Federal Government. [See GAO note 2, p. 64.]
Control groups are being utilized to the maximum extent possible within the constraints of available resources. The effects of AWS on service to the public is being addressed in those experimental sites which deal directly with the public. In addition, the employee survey is being revised to include items on employee reactions to and experiences with AWS.

On the basis of the number of work units presently experimenting, OPM should receive approximately 1,300 narrative reports. Using these reports, OPM hopes to draw conclusions about the effects of AWS, special problems encountered in using it, and the variations of AWS used. At the time of our review the procedure for analyzing the reports had not been developed.

ENERGY STUDY

The special study on net energy impact will provide data on the AWS effects on transportation and on building operating costs. The study will examine the changes in using public and private transportation for commuting as well as recreational travel.

The study will be accomplished by administering a questionnaire on commuting practices to between 1,300 and 1,500 employees. The same individuals are also being requested to maintain a 1-week diary, or trip log, which details the amount and purpose of individual vehicle usage.

The questionnaire will be administered and the trip log prepared three times during the experimental period. Although approximately the same number of individuals from the same work units will be requested to complete the questionnaire and trip log, the exact same individuals will not necessarily be the respondents all three times. At the time of our review, the questionnaire and trip log had been completed once.

Information on changes in building energy consumption will be collected using data from specific buildings. OPM plans to use the building and transportation energy consumption data to assess the net energy effect of AWS.

AGENCY COMMENTS

GAO note 1.

This recommendation is consistent with the views of the House and Senate Appropriations Committees. In denying OPM its supplemental request for fiscal year 1979 and in reducing the fiscal year 1980 request, the committees indicated that OPM should be able to fund the alternative work schedules project with moneys already appropriated. In considering the fiscal year 1979 supplemental request, the House Committee also stated that OPM should be able to fund the project with funds already appropriated "if the program is of sufficiently high priority."

At no time was there any indication that the scope or quality of the experiment and evaluation should be reduced--only that OPM should fund the project internally. If after assessing its priorities, OPM could not reallocate the needed budgeted funds, it should have worked with the respective congressional committees to discuss its priorities and to inform them of the tradeoffs in quality and reliability which would result from an altered evaluation.

GAO note 2.

An OPM official indicated that the decision to gather the additional information for the narrative reports and to use multivariate analysis resulted from our suggestions during the review. While OPM's action is a positive effort to improve its evaluation, we believe serious problems still exist with the narrative reports. While work units have been instructed on the format and content of the reports, the method of analysis is being left to their discretion. Also, OPM has not specified the evaluation criteria (i.e., what constitutes a positive or negative effect) or the importance of the criteria.

If implemented, many of the other recommendations included in chapter 4 could improve the usefulness of the narrative reports. As with other components of the evaluation, OPM's highest priority should be to reassess the entire narrative report. It is especially crucial that OPM specify, in advance, the objectives and how the information will be analyzed and interpreted. Otherwise, OPM will gather additional information which it is not equipped to review and analyze adequately.

APPENDIX V

Based on the above changes, we believe the current AWS evaluation being conducted by OPM will provide sufficient minimum valid information on the effects of AWS in Federal agencies for the Congress to make an informed decision on modification of current work hours legislation. We certainly sympathize with the arguments for a more comprehensive study but, as the GAO report notes, we funded such an effort in the President's Fiscal Year 1980 budget, and the funding was reduced by the Congress.

With respect to your comments on the sampling procedure we employed in the longitudinal and cross-sectional study, it must be noted that the sampling plan which we used was selected for pragmatic reasons. These reasons included our recognition of the funding limitations for the project and the reporting requirements burden to the agencies. Because of the voluntary nature of the program, any sampling technique will only reflect the effects of AWS in that portion of the Federal workforce which adopts an AWS experiment. We do not share GAO's concern about broadening the base to include agencies or units not desiring AWS, since it is our view that AWS should not be a Government-wide mandatory program, but rather an option available to the agencies when they and their employees both agree that AWS makes sense for them. In our view the current evaluation will present a representative picture of the effects of AWS on the affected workforce. [See GAO note 3, p. 65.]

We also disagree with your report in describing OPM's methodology for determining the number of employees on a flexible schedule as a "technical error." A flexible schedule allows an employee to select his/her starting time. Because someone happens to choose the same starting time as the organization might have had under fixed hours does not negate the employee's option of later choosing a different starting time. To follow the GAO suggestion of not considering employees who choose the "traditional work schedule" as under the experiment would create several administrative problems. For example, the number of people in the experiment would vary on a daily, weekly, etc., basis depending on the number who chose the "traditional schedule." The premium pay rules to be used would be confusing; either the permanent provision of title 5 for those working "traditional hours" or those provisions of Public Law 95-390 for employees who vary their schedule by any amount from the "traditional hours." The result could be inconsistent data. [See GAO note 4, p. 65.]

In summary, although current funding does not allow us to conduct and evaluate the experiment as extensively as we had originally planned, we believe our updated evaluation plan will provide meaningful decision-making information. [See GAO note 5, p. 65.]

Sincerely yours,

Gary R. Nelson
Associate Director
for Compensation

of all Federal employees, we believe it is essential that a quality experiment and evaluation be conducted, which will result in the valid and reliable information the Congress needs to make an informed decision. The decision will ultimately have far-reaching and long-term effects on the Federal Government and may dictate the future for increased experimentation in the private sector. If there are substantial cost benefits which can be realized from using AWS, the evaluation must be a quality one and must yield valid and reliable results to minimize criticism from AWS opponents.

(964156)

* U.S. GOVERNMENT PRINTING OFFICE : 1980 - 341-843/343

GAO note 3.

We agree with OPM that AWS should not be a Government-wide mandatory program. OPM fails to recognize, however, that individuals who are not experimenting with AWS, whether by choice or not, may be affected by it. For example, while employees using a compressed or flexible schedule might indicate that their productivity and morale have increased, individuals within the same or another unit not using an alternative schedule may be adversely affected by decreased communication possibilities or by having to perform other individuals' functions when they are absent. Therefore, we believe that using control (i.e., comparison) groups to the maximum degree possible is desirable.

In administering the employee questionnaires, OPM has not differentiated between those respondents who are, and who are not, using an alternative work schedule. This represents just one of the many variables which we believe must be considered and adjusted for in evaluating the experiment.

GAO note 4

In describing OPM's method for determining the number of employees using a flexible schedule as a "technical error," we were referring only to evaluation. While by definition, employees within a unit using a flexible work schedule are considered participants for purposes of administering the provisions of the act and OPM's regulations, OPM must, in our view, determine whether individuals have actually altered their work schedules for purposes of evaluation. The reactions of these individuals and the potential biases must be considered in assessing the evaluation results. An attempt should also be made to determine why these individuals have not altered their schedules. For example, individuals who, because of personal preference, choose not to alter their work schedule may react differently to AWS than individuals who cannot alter their schedule for reasons beyond their control (e.g., mass transit schedules and availability).

GAO note 5.

While OPM's evaluation will result in the collection of a mass of data, we have little confidence in the validity and reliability of the ultimate results. We believe that the emphasis should be placed on executing a well-planned and designed evaluation which maximizes experimental control and produces quality results rather than simply quantity. Because the results of this experiment may have substantial cost implications for the Government and on the work habits

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