BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

The Marine Corps Military Pay System: Too Many Errors And Inefficiencies

The Marine Corps Joint Uniform Military Pay System/Manpower Management System was authorized in 1966 and implemented in 1973. Although millions of dollars have been spent on the system, as a central system to compute Marine Corps members' pay accurately and on time, it is still unreliable and inefficient. For example, about 19 percent of the pay accounts audited were in error by an average of $103 and disbursing personnel salaries and benefits cost over $7 million more each year under the automated system than under the prior manual system. A significant factor in the increased cost is that many manual procedures have been retained to correct errors the automated system makes.

The Marine Corps plans to spend additional millions of dollars to replace the current system with a more sophisticated one in the 1985-90 time frame. But unless the current system is improved and Department of Defense monitoring of the Marine Corps' system development and implementation is improved, many deficiencies in the current system will be carried over to the new one.

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

This report discusses serious deficiencies in the Marine
Corps military pay system. Defense must take corrective ac-
tion to reduce the number of pay errors and make the system
more efficient. This job was undertaken as part of our effort
in determining whether executive departments and agencies have
adequate accounting control over payroll systems.

We are sending copies of this report to the Director,
Office of Management and Budget, the Secretary of Defense,
and the Commandant of the Marine Corps.

Comptroller General
of the United States

D I G E S T

Neither the Marine Corps nor the Department
of Defense knows how many millions of dollars
have been spent in developing, implementing,
and operating the central automated Marine Corps
Joint Uniform Military Pay System/Manpower
Management System since it was authorized in
1966 or since it was implemented in 1973. Nor
do they know whether or to what extent system
goals and objectives relating to efficiency,
reliability, and effectiveness have been met.

The system does not compute pay accurately.
As a result, extensive manual procedures have
always operated in parallel with the automated
system to improve system integrity. In fact,
the real system for determining the accuracy
and integrity of pay is, and always has been,
manual records kept in field disbursing offices
located around the world rather than the auto-
mated system at the Marine Corps Finance Center
in Kansas City, Missouri. The system is still
unreliable and inefficient, long after it was
authorized and implemented.

The Marine Corps plans to replace the current
automated system in the 1985-90 time frame with
a more sophisticated one. But unless the cur-
rent system is improved and Department of De-
fense monitoring of the Marine Corps' system
development and implementation is improved,
many deficiencies in the current system will
be carried over to the new one.

THE SYSTEM IS UNRELIABLE

Errors ran as high as 19 percent in the auto-
mated records for active duty members GAO
reviewed, even after manual corrections had
been made. Based on Marine Corps auditors'
figures, GAO determined that the system con-
tains over $5 million in monetary errors at
any one time. Dollar errors over a period of
a year were substantially higher. Although
various audit organizations have, over the

years, reported high error rates in pay, their followup reviews have shown that only limited progress is being made in reducing errors.

On the average, centrally produced pay data is about 77 percent acceptable. Each payday, disbursing officers must change about 10,900 (8 percent) of the pay data due to overpayments and underpayments and about 20,200 (15 percent) due to adding members to payrolls or deleting members. Still, as noted above, 19 percent of the accounts GAO audited contained significant errors after these changes had been made.

Errors in computer programs or program logic cause erroneous pay computations. For example, a deficient computer program caused the system to produce 27,700 erroneous wage and tax statements (Internal Revenue Service W-2 forms) for taxable year 1978. The statements were corrected after GAO informed the Marine Corps of the deficiency, but many had been mailed out to separated members, including some showing zero amounts of taxes withheld.

During fiscal 1978, over $1.3 million in separation pay overpayments were written off, and the uncollected balance at the end of the fiscal year was $5.1 million. This balance has increased by about $3 million over the past 5 years.

Many users of the system do not rely on its output, or must rely on output from a system containing substantial ongoing errors. Manual procedures are needed to verify centrally computed pay, and when a conflict exists, the manual computation is used.

THE SYSTEM IS INEFFICIENT

Every payday disbursing personnel must open the manually kept personal financial record of each marine to verify the accuracy of the centrally computed pay. And every payday disbursing officers make numerous corrections in the automated pay data. Disbursing officers do this because they want to provide better service to members and because of their potential pecuniary liability for

erroneous payments, even though they are
computed centrally. In addition, they check
the accuracy of computer-prepared wage and
tax statements against manual records. Fin-
ance Center personnel continually audit or
screen a high percentage of reenlistment,
extension of enlistment, and final separa-
tion payments because they consistently find
many pay errors during this effort. The sys-
tem's unreliability has caused certain appro-
priation managers to supplement system fin-
ancial reports with manual records.

More disbursing personnel are needed now than
under the prior manual system. Using staffing
levels in effect at the time of the review,
GAO computed the cost of salaries and benefits
for these additional personnel at over $7
million annually.

IMPROVEMENTS ARE NEEDED IN THE SYSTEM

The causes most often identified by the Marine
Corps for the system's unreliability and in-
efficiency are the untimely or erroneous re-
porting and recording of events affecting pay
and the lack of correction or untimely correc-
tion of entries rejected by the system. These
causes relate directly to pay computation,
and they do need to be corrected. But they
are only symptomatic of more basic weaknesses
inherent in the system. The most significant
weaknesses are management's failures to:

--Establish adequate effectiveness measurement
  procedures, which involve defining measurable
  goals and objectives, identifying performance
  indicators to be measured, and developing
  performance measurement standards. (After
  GAO inquired into the lack of an adequate
  effectiveness measurement system, management
  took the first steps toward developing meas-
  urable goals and objectives.)

--Establish one position with the authority
  and responsibility to manage the integrated
  system, and be clearly accountable for total
  system performance, in lieu of the divided
  responsibilities between pay, manpower man-
  agement, and computer support.

--Identify and correct causes of computer
  system deficiencies, including known pro-
  gramming deficiencies.

--Establish adequate internal audit proce-
  dures for review and evaluation of organiza-
  tional efforts and progress toward meeting
  system goals and objectives as outlined by
  management.

--Establish a realistic timetable for making
  the system reliable enough to eliminate the
  inefficient manual procedures.

Contributing to the system weaknesses are the
inadequate monitoring by the Assistant Secre-
tary of Defense (Comptroller) of system devel-
opment and implementation and failure to
require compliance with Department of Defense
directives, instructions, and memorandums.

Because the above system improvements have been
lacking, problems and weaknesses have not been
systematically brought to the attention of
management with related causes so defined as
to clearly indicate the action needed. Under
the present cooperative management concept,
a mandate to make changes, particularly in the
software area, does not clearly rest with one
person, making accountability difficult to
pinpoint.

RECOMMENDATIONS

GAO is making several recommendations to the
Secretary of Defense to improve the manage-
ment and operation of the pay system, to
assure improved administration of the system
being planned, and to improve Defense monitor-
ing of Marine Corps compliance with its in-
structions.

AGENCY COMMENTS

GAO did not receive official Defense comments
in time to include them in the report. GAO,
however, met informally with Defense repre-
sentatives and was told that Defense substan-
tially concurred with all of the report's
recommendations except the one recommending
establishment of a single manager for the
system.

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GAO believes that in order to pinpoint
responsibility for assuring the effective-
ness and efficiency of the system, one
person should be designated as responsible
for the system.

C o n t e n t s

CHAPTER 1

INTRODUCTION

The Department of Defense had difficulty in past years in determining accurately the current availability of military personnel funds and in projecting future fund requirements and, as a result, incurred deficiencies and surpluses in the military personnel appropriations.

As a result of this difficulty and numerous reports to the Congress and to the Department of Defense on weaknesses in military pay systems, a Joint Uniform Military Pay System Project Group was established. It identified weaknesses in the administration of the military pay systems that had caused significant overpayments and underpayments.

THE JOINT UNIFORM MILITARY PAY SYSTEM

In November 1966, Department of Defense Directive 7330.3 and Department of Defense Instruction 7330.4 were issued directing the military services to undertake a program to develop, test, install, and maintain a Joint Uniform Military Pay System. Instruction 7330.4 was revised in July 1971. The directive and the instruction provide the policies, goals and objectives, the principles and standards, and system specifications for guidance of the services.

The program's primary goal was applying the best and most efficient management and operating techniques in a military pay system based on

--adequate service to members;

--maximum practicable uniformity between the services;

--centralized and computerized pay account maintenance; and

--optimum support of planning, programming, and budgeting systems by producing and effectively using comprehensive, accurate, and timely accounting reports and other end products.

Related goals were (1) to eliminate or reduce erroneous or illegal payments and (2) to produce, from the pay data bank, data and reports now available only through special statistical and reporting methods outside the pay system.

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Central maintenance of the master pay accounts is designed to insure that the records for all members of a service are accounted for each month and that all pertinent information is available promptly for paying them. Central maintenance is also to provide for accounting and reporting of earned entitlement obligations and payments in the classifications needed for managing the military personnel programs and appropriations.

Directive 7330.3 requires that each service, at a single operating site for each service, establish a master military pay account for each active duty member. These accounts are to be maintained by computers. Actions and members' status changes affecting pay accounts are to be put into the pay system at base, installation, or other levels by machine-sensible media, wherever practicable, as close to the true source of input as practicable. Communication methods, including the Automatic Digital Network, appropriate for the data involved are to be used between disbursement and input sites and the centralized operation.

Instruction 7330.4 states that the master pay account

--is to contain all items of entitlements, deduction, and payments;

--is to include a record of wages earned, taxes withheld, taxable wages paid, bonuses paid and recouped, and leave accounting;

--is to include information needed to compute the member's net pay and allowances for routine central payments; and

--is to be the principal record used for producing accounting and statistical reports and for leave and earnings statements.

BACKGROUND ON MARINE CORPS PAY

The Marine Corps combined the Marine Corps Joint Uniform Military Pay System and the Manpower Management System into a system called the Joint Uniform Military Pay System/ Manpower Management System. It was developed and implemented to comply with Department of Defense Directive 7330.3 and Instruction 7330.4. The Marine Corps is the only service combining the pay and personnel systems into a single integrated system. In its opinion, this has provided benefits by eliminating inconsistencies between pay and personnel data files.

The Marine Corps keeps an automated record at the central site, Kansas City, Missouri, for each active duty member. A condensed automated record is maintained for each member at one of eight satellite data processing installations. In addition, disbursing offices manually maintain a personal financial record for each member and they are responsible for paying members.

Four organizations enter information into the automated system once a record has been established for a member. They are Headquarters Marine Corps, reporting units, disbursing offices, and the Finance Center. Reporting units, normally company or battalion organizations, and Headquarters enter pay and personnel information. Disbursing offices and the Finance Center enter pay information. About 70 to 80 percent of all pay information is entered by reporting units.

The Corps paid about $1.8 billion to about 186,000 active duty marines for the 12 months ended September 1979.

ORGANIZATIONAL RESPONSIBILITIES

The Assistant Secretary of Defense (Comptroller) is responsible for (1) issuing instructions providing specifications for the Joint Uniform Military Pay System and criteria and requirements for the plans of the services throughout the development and installation of the system, (2) serving as the Department of Defense focal point for reviewing and approving services' plans and for reviewing and evaluating their implementation, and (3) coordinating the plans with interested and affected staffs within the Department and with external agencies.

The services are responsible for developing and implementing the plans to carry out the objectives and specifications prescribed in the Defense directive and instruction.

According to the Personnel Reporting Instruction Manual, the Deputy Chief of Staff for Manpower is responsible for policy development of the integrated system and is the functional manager of the Manpower Management portion of the system. The Fiscal Director is responsible for the functional management of the Joint Uniform Military Pay portion of the system. The Director, Command, Control, Communications and Computer Systems Division, is the technical manager of the integrated system and is responsible for data processing operation in support of the integrated system.

ACCOUNTING SYSTEMS APPROVAL

Each executive agency head is responsible for establishing and maintaining systems of accounting and internal

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control which conform to the principles, standards, and
requirements prescribed by the Comptroller General.

We have established a two-phased procedure for examin-
ing agency accounting systems submitted to the Comptroller
General for approval. Approval is an agreement between the
submitting agency and us that the proposed systems conform
to our prescribed principles and standards. Under the two-
phased procedure, we first examine the agency's accounting
principles and standards. After the principles and standards
are approved, we examine the design--procedures that will be
followed to perform the agency's accounting--to determine
whether it conforms to the approved principles and standards.

In January 1970, we advised the Secretary of Defense
that the principles and standards in the Department of De-
fense directive and instruction for developing and install-
ing the Joint Uniform Military Pay System conformed to the
principles and standards for accounting established by the
Comptroller General. In June 1973, we advised the Secretary
that the design of the Marine Corps Joint Uniform Military
Pay System was approved, pointing out that our review of the
automated data processing aspects of the system design had
been limited to a determination of the adequacy of the in-
ternal controls and audit trails. In August 1973, we
informed the Commandant of the Marine Corps of the approval,
making suggestions for strengthening controls. Our ap-
proval was of the design documentation, not of the imple-
mented system. Chapters 2 and 3 show the problems the Corps
has had in effectively implementing the approved system.

In addition, section 112(c) of the Accounting and
Auditing Act of 1950 requires us to review both approved and
unapproved accounting systems of executive agencies from
time to time. In these reviews we determine whether the
accounting and financial management operations were carried
out efficiently, effectively, and economically. We evaluate
the usefulness and accuracy of information provided to
management and to the Department of the Treasury by the sys-
tems. We also evaluate the effectiveness of internal con-
trols (including internal audit) over receipts and expendi-
tures, assets and liabilities, and obligations of appropria-
tions. This report discusses our review of the Marine Corps
Joint Uniform Military Pay System/Manpower Management System.

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CHAPTER 2

THE SYSTEM IS UNRELIABLE AND INEFFICIENT

The automated Marine Corps pay system, in place for over 6 years, is unreliable because of the large number of errors generated. Because users cannot rely on the data, extensive and costly manual procedures are followed to back it up. Even with this backup, 19 percent of the pay accounts we reviewed were in error. The dollar error is over $5 million at any one time. The dollar error over a year's time was significantly higher. Disbursing personnel spend much of their time manually verifying transactions; computing pay for comparison against the centrally computed payroll; verifying wage and tax statements; and auditing reenlistment, extensions of enlistment, and final separation payment vouchers. As a result, more disbursing personnel are needed to support the system now than under the prior manual system. Using staffing levels in effect at the time of our review, we computed the cost of salaries and benefits for these additional personnel at over $7 million annually.

The causes of these problems most often pointed to by the Marine Corps are the incorrect or untimely reporting of events affecting pay and inadequate correction of entries rejected by the system. These causes relate directly to the accuracy of pay computation, but they are only symptomatic of more basic weaknesses inherent in the system. These are management failure to (1) establish adequate procedures to measure system effectiveness, (2) establish one manager accountable for total system performance, (3) identify and correct causes of computer-related deficiencies, (4) establish adequate internal audit procedures, and (5) establish a timetable for eliminating the inefficient manual procedures.

A new Marine Corps pay and manpower management system, planned for the 1985-90 time frame, will also be adversely affected by the above causes unless vigorous corrective actions are taken. These problems are discussed in more detail in chapter 3.

The rest of this chapter deals with errors in the system, users' inability to rely totally on its output, and the manual procedures that back it up.

AUTOMATED RECORDS CONTAIN
TOO MANY PAY ERRORS

Pay errors ran as high as 19 percent in automated records we reviewed for active duty members, even after manual corrections had been made. Based on Marine Corps auditors' figures,

we determined that the system contains over $5 million in
monetary errors at any one time. The aggregate dollar error·
over a period of a year is substantially higher. Although
various audit organizations have, over the years, reported
high error rates in pay, their followup reviews have shown
that only limited progress is being made in reducing pay
errors.

Error rates we found

We audited a random sample of pay accounts in 1975,
1976, and again in 1979 and found a substantial percentage
of accounts in error by significant amounts.

Our sample in 1979 showed that over 19 percent of the
automated records at one disbursing office contained monetary
errors. For the payday of March 31, 1979, we randomly se-
lected 109 records and found 21 records with various monetary
errors. The dollar amount for each record in error averaged
$103. Two examples of errors follow.

--A member continued to receive a cost-of-living al-
   lowance after being transferred from an overseas
   station. This entitlement is supposed to be stopped
   upon transfer. The member was overpaid about $166.

--Another member was charged an incorrect amount for
   clothing. A later transaction to correct the initial
   charge resulted in the member being charged for both
   the incorrect and the correct amounts. The member
   was overcharged about $38.

Leave errors were not included in the error rate because
they may not result in erroneous payments. If leave errors
had been included, the percent of error would have been
higher.

In our work during 1975 and 1976, we found over 16 per-
cent of the pay records contained monetary errors. We randomly
selected 1,303 from about 212,500 records and found 212 had
monetary errors. The dollar amount for each record in error
averaged about $317. We reported these findings to the Com-
mander of the Finance Center by memorandum dated March 21,
1977. Again leave errors were not counted in the error rate.

Error rates found by Marine Corps

Based on examinations by the Marine Corps Disbursing
On-Site Examination Teams, we estimated the dollar value
of actual and potential monetary errors is over $5 million
at any given time. Each monetary error averages about $88.

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These recurring examinations are performed at the field level using personal financial records kept by disbursing offices and the service record books and officer qualification records kept by administrative offices. Shown below are the results of consolidated examinations for 1978.

| Office | Records examined | Errors | | Dollar value (actual and potential for monetary errors) |
		Monetary	Advisory	
Adminis- trative	27,821	6,552	11,834	$ 590,639
Disbursing	27,713	2,147	2,502	178,081
Total	55,534	8,699	14,336	$ 768,720

The advisory errors frequently involve potential values equal to or greater than the values of monetary errors at the time of the examination. The advisory category is used because sufficient information is not available to determine the actual dollar value of the discrepancies.

In addition, the Corps regularly audits the personal financial records of separated members and the vouchers for reenlistment, extension of enlistment, and combat arms enlistment payments. The audits find a high incidence of errors in both areas, and little progress is being made to reduce them. (See pp. 14 to 16.)

Error rates found by Naval Audit Service

In 1976 and 1978, the Naval Audit Service reported an excessive number of differences between pay entitlements on central records and pay computed centrally. No significant progress in reducing errors was noted in the 1978 report.

In 1976, the Service selected 990 pay accounts that, on the surface, indicated underpaid and overpaid amounts exceeding $1,000 or more for more than 3 months. Of the 990 accounts, 868 (87 percent) were actually in an overpaid or underpaid status. Only 122 accurately reflected the status of the members' pay. The Service recommended that the Commandant of the Marine Corps intensify efforts to insure that reporting units and disbursing offices comply with procedures manual and instruction manual requirements, to include timeliness of submitting required documents and taking corrective action. The Commandant concurred, indicating that these procedures would receive special attention during conferences,

Headquarters staff visits, and Marine Corps Inspector General inspections and in advisory notices and Disbursing On-Site Examination Team reports.

In 1978, the Naval Audit Service again pointed out an excessive number of differences between pay entitlements on central records and pay computed by the central system and said that the differences were more than should be expected under a centralized pay system. It reported that although some differences were unavoidable, others might have been caused by errors in pay entitlements or by errors in recording payments made to marines. The Service recommended that the Marine Corps Finance Center "intensify management reviews of the * * * master file to ensure the accuracy of each Marine's pay record." The Finance Center concurred, stating that the Quality Assurance Division had been tasked with performing a statistical sampling of active duty pay accounts as well as individual pay transactions associated with the accounts, reviewing the accounts for accuracy and compliance with current laws and regulations, and furnishing each disbursing officer statistics and evaluations to appraise the performance of his office. The Commandant concurred with the recommendation and the local management response.

The Quality Assurance Division was performing the recommended tasks, but was not doing them adequately. (See pp. 28 to 29.)

DISBURSING OFFICERS MUST RELY ON MANUAL PROCEDURES

Since the central pay system is unreliable, disbursing officers must manually verify computer-produced payments. If there is a material disagreement, the manual records rule. Disbursing officers do this because they want to provide better service to members and because of their potential pecuniary liability for erroneous payments, even though they are centrally computed.

Study on disbursing and certifying officers' liability

With the advent of automation and the tremendous increase in payments handled centrally, the role of the certifying officer and the disbursing officer has changed drastically. In "New Methods Needed for Checking Payments Made by Computers" (FGMSD-76-82, Nov. 7, 1977), we reported on the problems these officers face in making payments using computerized payroll systems. We recommended that the Director, Office of Management and Budget, issue guidelines requiring each agency head to designate an official to (1)

determine whether the automated system and controls were
operating effectively, (2) if so, notify certifying and
disbursing officers so they could certify and disburse auto-
mated payments, and (3) if not, indicate corrective action
needed and planned and assume responsibility for certification
and disbursement until he/she informed the agency head in
writing that the system was operating effectively.

Reaction to our report
and recommendations

The Office of Management and Budget and the Departments
of Agriculture; Commerce; Defense; Health, Education, and
Welfare; and the Treasury generally agreed that automated
payment systems should be reviewed periodically to assure
their reliability, but many disagreed on how this should be
done.

The Office of Management and Budget stated:

"This report also raises serious questions as
to whether or not the concept of the certifying of-
ficer is outdated as a result of technological ad-
vances. We believe that it is time to review and
update this concept to be consistent with modern
management techniques."

The Office also stated:

"We understand that the Treasury Department
has in the past suggested a study of the laws and
procedures governing the personal financial respon-
sibility of certifying officers by the Joint Finan-
cial Management Improvement Program. We believe
this suggestion has merit, and we would support such
a study."

Because of the concern by responding agencies and the
recommendations of the Office of Management and Budget and
Treasury, staff from the Joint Financial Management Improve-
ment Program and other Federal agencies are studying the
problem.

APPROPRIATION MANAGERS CANNOT COMPLETELY
RELY ON SYSTEM REPORTS

Users of financial reports from the automated system
seemed satisfied with them but felt improvements were needed,
including improvements in timeliness and accuracy of data on
some reports. They indicated that some further correction,
identification, or analysis was needed on the reports and

that they kept manual records to supplement them. Changes
are being made in these reports, according to the users, that
should improve them.

     Problems relating to (1) system software programming
deficiencies (see pp. 23 to 28), (2) high error rates in the
central file (see pp. 5 to 8), and (3) errors and delays in
posting events to the central files (see pp. 17 to 19) still
make the system's reports suspect in regard to accuracy.
Users, however, generally agree that regardless of the prob-
lems with current reporting, the information obtained from
them is much better and more timely than what was available
under the previous system.

EXTENSIVE AND INEFFICIENT MANUAL
PROCEDURES SUPPORT AUTOMATED SYSTEM

     The Marine Corps Joint Uniform Military Pay System/Man-
power Management System is not reliable to centrally com-
pute pay accurately. As a result, extensive and inefficient
manual procedures are used to correct centrally computed pay
at disbursing offices and at the Finance Center. These pro-
cedures have existed since system implementation, they are
involved in several system functions, and many could be
eliminated if the central system were reliable.

Inefficient manual procedures have existed
since system implementation

     Defense guidance called for a central automated system
to replace the manual pay system. This has not been done.

     On January 1, 1973, a parallel phase of the Marine Corps
Joint Uniform Military Pay System/Manpower Management System
began. The parallel phase was to end with the successful
implementation of the automated system. Under the parallel
phase, centrally produced payrolls were sent to the field
disbursing offices for comparison with pay computed man-
ually. In substance, this process has never changed. Al-
though the manual pay card has been eliminated, using the
personal financial records in conjunction with payday proce-
dures in effect constitutes a continuation of the parallel
manual procedures.

Inefficient manual procedures are
involved in several system functions

     Disbursing personnel spend much of their time verifying
individual transactions reported by reporting units, and
every payday disbursing personnel must open the manually
kept personal financial record of each marine to verify the

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accuracy of the centrally computed pay. And every payday
disbursing officers make numerous corrections in the auto-
mated pay data. They do this because they want to provide
better service to members and because of their potential
pecuniary liability for erroneous payments, even though they
are computed centrally. In addition, they manually check
the computer-prepared wage and tax statements for accuracy.
Finance Center personnel continually audit or screen a high
percentage of reenlistment, extension of enlistment, and
final separation payments because they consistently find
many pay errors during this effort. Finally, the system's
unreliability has caused certain appropriation managers to
supplement system financial reports with manual records.

Many inefficient manual procedures could be eliminated if the central system were reliable

Many of the manual procedures involved in the follow-
ing system functions could be eliminated if the central
system were reliable.

--Maintenance of personal financial records.

--The rough roll/smooth roll payday procedure.

--Verification of wage and tax statements.

--Audit of reenlistment and extension of enlistment
  payment vouchers.

--Audit of final separation payments.

Maintenance of personal financial records

Most of the processes involved in keeping a personal
financial record for each marine could be eliminated if the
central system were reliable. Department of Defense Instruc-
tion 7330.4, dated July 1, 1971, requires that a personal
financial record be kept for local administration of pay
and leave operations, including use as a temporary pay ac-
count when the central site may be incapable of continuing
operations. This could be done by use of current leave and
earnings statements, from a reliable central system, and a
blank DD 113 pay record, both of which the disbursing of-
ficers have.

Disbursing officers must manually insure that all pay
transactions are processed and properly posted to the

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automated record. For each member, a personal financial record with a control sheet is maintained of all pay transactions submitted by reporting units to the central computer site. Since reporting units enter about 70 to 80 percent of the transactions into the computer, the task of manually transcribing all pay-related transactions is time-consuming.

Monthly, disbursing personnel also manually compare leave and earnings statements with control sheets in personal financial records. This is done to insure that transactions reported into the automated system have been processed and have been properly recorded.

Rough roll/smooth roll payday procedure

Marine Corps management recognized the need for manual verification of the automated output by instituting 100 percent manual verification of each payroll each payday. This procedure could be eliminated if the central system were reliable.

Using the personal financial record and control sheet, disbursing personnel compare manually kept pay information with the computer-produced data. We found no criteria for disbursing officers to follow in changing centrally produced data. However, the minimum changes made by disbursing officers on pay data reviewed ranged from $5 to $30. If the difference between the automated computation and the manual record exceeded this amount the member's pay was based on the manual record. If no pay data was received from the automated system for a member, the payment was based on the manual record. For the decentralized pay process, this procedure is known as the rough roll/smooth roll payday procedure.

On an average, centrally produced payrolls are about 77 percent acceptable. Disbursing officers must change about 10,900 (8 percent) of the pay forecasts and checks due to overpayments and underpayments and about 20,200 (15 percent) due to adding members to payrolls or deleting members.

Differences in forecasted amounts and checks are caused mostly by incorrect or incomplete data in the automated record at the central site. The rough roll/smooth roll procedure could be eliminated if the central system were reliable.

Verifying wage
and tax statements

The process of manually comparing the amounts on centrally produced wage and tax statements (Internal Revenue Service W-2 forms) with those on the manual personal financial records before they are distributed to active duty members could be substantially eliminated if the central system were reliable.

Active duty members' wage and tax statements are forwarded to the disbursing officers for manual verification. When errors are detected, disbursing officers issue corrected statements and send copies to the Financial Center. The Center reports the corrected wage and tax information to taxing authorities.

After informing Marine Corps personnel of our findings on faulty computer programming which was producing inaccurate wage and tax statements, the Corps identified and corrected about 27,700 statements prepared for separated members for 1978. Before correcting these statements, however, the Finance Center had mailed some to separated members showing amounts that did not agree with the amounts of taxes actually withheld, including some statements showing zero amounts. Finance Center personnel told us they did not know how many wage and tax statements with zero amounts had been mailed or to whom they had been mailed, but they believed the separated members would request corrected statements. These erroneous amounts were included in amounts reported to taxing authorities and in management reports. We advised the Commanding Officer of the Finance Center, by letter dated January 10, 1979, of some circumstances when the automated system was producing inaccurate wage and tax statements. Action was taken to correct the 27,700 statements, and the Corps said it planned to correct faulty computer programming which had caused the problems.

Subsequently, Finance Center management began procedures to compare separated members' leave and earnings statements produced by the automated system with the manual personal financial records, and adjust where indicated, the automated record.

Before this change in procedures, management reports generated from the automated system were incorrect to the extent of the errors in individual automated records. Therefore, the automated system, even with the aid of the manual procedures, produced incorrect wage and tax statements for separated members and inaccurate reports to management.

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We did not assess the reliability of the new procedures begun during our review. However, the need for manually comparing centrally produced leave and earnings statements with all separated members' records monthly and wage and tax statements with all active duty members' records annually would not exist if the automated system were reliable.

Audit of reenlistment and extension of enlistment payment vouchers

The Voucher Review Section at the Finance Center could reduce its workload if the central system could be relied upon to produce proper and accurate pay information concerning reenlistments and extensions. Since it cannot, Corps personnel manually audit all such vouchers. They do not, however, categorize errors found by type and number, thereby limiting information management needs to identify and correct the causes of many of the errors identified.

Reporting units process military pay orders to disbursing officers when members reenlist or extend their enlistment. Disbursing officers manually compute the reenlistment bonuses and lump-sum leave payments, enter the data into the computerized system, and forward the vouchers to the Finance Center. Reporting units submit separately to the computerized system the number of leave-days for which the member elected to be paid and for those instances when advanced leave balances are to be carried forward. The Voucher Review Section audits the vouchers against transactions posted to the automated records. For 9 months ended March 1979, they audited 10,267 vouchers which required 1,140 pay adjustments for a gross dollar amount of $370,847. They also had to input 4,810 transactions to correct items such as erroneous leave accounting.

The section was auditing all vouchers and making corrections on about 40 percent of them. However, beginning in November 1978, it began auditing about 60 percent of the vouchers because it did not have enough personnel to audit them all. It had a staff of 20 persons as of June 1979. During this time, an estimated 425 vouchers per month were not audited. In July 1979, the section again began auditing all vouchers.

The section did not categorize errors by type and number. Nor did it keep a record of leave-days adjusted or try to identify units which had failed to forward vouchers or had sent them too late. Therefore, management lacked information needed to identify and correct the causes of many of the errors identified.

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Audit of final separation payments

All final separation payments must be screened for obvious errors because the automated system cannot be relied upon to produce proper and accurate pay information. If the central system were reliable, activities in the Final Separations Branch could be substantially curtailed.

At the beginning of fiscal year 1979, accounts receivable from separated members totaled $5.1 million. This is an increase of over $3 million during the past 5 years. During fiscal 1978 over $1.3 million in separation overpayments was written off. 1/

When marines are separated, their final payments are manually computed by disbursing officers in the field and they enter the necessary data into the automated system. A reasonable time is allowed for the input to be processed before the system produces wage and tax statements. The statements are mailed directly to separated members from the Finance Center. Theoretically, the automated records should show zero balances (no amounts due the members or the Government) after all the separation input has been processed, except in cases of actual overpayments or underpayments.

Personnel at the Finance Center screen about 4,500 personal financial records monthly to identify records of separated members which appear to need auditing. For the first 6 months of 1979, they found 2,610 records in error (11 percent) using the criteria of $10 or more for underpayments and $25 or more for overpayments. The audits disclosed that $779,708 was either overpaid or underpaid during this period.

The review procedures followed by the Separation Section changed during our review. Initially, the section was reviewing the manually kept personal financial records of separated members. This review generally consisted of reviewing manual computations of disbursing officers, and automated records were not made to agree with the personal financial records. Later the section began comparing the leave and earnings statements produced by the automated system with the personal financial records to identify and correct erroneous information in the automated record. This procedure was added

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1/The procedures regarding payments to members being separated, the number and amount of accounts receivable from them, and the rate of success in collecting these receivables are the subject of another GAO review.

because we had reported to the Commanding Officer of the Finance Center programming errors which were causing the automated system to produce incorrect wage and tax statements for separated members.

As of August 1978, we had identified 32,855 automated records of separated members showing over $6 million either overpaid or underpaid. Since wage and tax statements for separated members are produced from the automated record, these statistics suggest that, as of August 1978, erroneous amounts of over $6 million were shown on wage and tax statements sent to 32,855 separated members. Some members may have been sent corrected wage and tax statements later as a result of audit activity.

MORE DISBURSING PERSONNEL USED NOW
THAN UNDER THE MANUAL SYSTEM

The automated system required an estimated 439 more disbursing personnel to pay the number of people in the Marine Corps during our review than the prior manual system would have required. The estimated cost of these personnel is over $7 million annually. They are needed to perform the extensive manual procedures being followed until a more effective automated system is obtained.

A July 1, 1976, revision to the Marine Corps Personnel Requirements Criteria Manual stated the need for more disbursing personnel and stated why they were needed. Chapter 12, paragraph 12001(4)b., states:

> "Staffing increases reflected in tables 12-1, 12-2, 12-3 and 12-4 which authorized a temporary increase of 36% in PFR clerk billets, the addition of mail, file and fiscal clerks and one additional SNCO supervisor for every ten personnel supervised are temporary increases designed to provide timely pay service while JUMPS system problems are being resolved. The temporary staffing increases will be eliminated at the earliest possible date when a more effective JUMPS system is obtained."

We estimated the added disbursing personnel required by using the staffing guides in effect under the prior manual system and the guides governing the current automated system. At the disbursing office level, about 256 more personnel are required now than under the manual system. Their salaries and benefits cost an estimated $4.6 million annually. At the Finance Center, about 183 more personnel are required now than under the manual system. Their salaries and benefits cost an estimated $2.8 million annually.

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CHAPTER 3

IMPROVEMENTS ARE NEEDED IN THE SYSTEM

The causes for pay system problems most often pointed to by the Marine Corps are the inability of local units to input accurate data on time and a failure to adequately correct data that has been rejected. These causes relate directly to the accuracy of pay computations and they do need to be corrected, but they are only symptomatic of more basic weaknesses inherent in the system. The most significant weaknesses are management failure to:

--Establish adequate procedures to measure system performance.

--Establish one position with the authority and responsibility to manage the integrated system, and be clearly accountable for total system performance.

--Identify and correct causes of system deficiencies, including known programming deficiencies.

--Establish adequate internal audit procedures.

--Establish a timetable for making the system reliable enough to eliminate the inefficient manual procedures.

A new pay and manpower management system is planned for the 1985-90 time frame. The above weaknesses could be carried over to the new system unless they are corrected.

Contributing to these weaknesses is inadequate monitoring by the Department of Defense to require compliance with its directives, instructions, and memorandums. (See ch. 4.)

TIMELINESS OF REPORTING AND CORRECTING
TRANSACTIONS AFFECTING PAY NEEDS IMPROVEMENT

Several audits and studies by the Marine Corps and Navy have identified late or incorrect reporting of transactions and late correction or failure to correct rejected transactions as major causes for errors in pay. Although these problems have existed for some time, the Corps has not devised an effective way to correct them. More timely and accurate pay could result if the Corps improved the procedures used to identify and assist those units reporting transactions late or not properly correcting rejected transactions. These procedures, however, should be part of the overall procedures used to measure system effectiveness. (See p. 19.)

Audits and studies show
reasons for inaccurate pay

Various audits and studies have identified delays in submitting transactions, control weaknesses over resubmitting rejected transactions, and failure to submit transactions affecting pay as ongoing problems in the automated system. Reporting units and disbursing offices have been identified as the major contributors to this problem.

In 1976, the Naval Audit Service reported that the major cause for incorrect balances in automated records was deficiencies in manual processing. These deficiencies included (1) delays or failure by reporting units and disbursing offices to submit transactions whenever reportable events occurred and (2) weaknesses in internal control over transactions rejected and requiring resubmission. The Service recommended that the Marine Corps intensify its effort to insure that reporting units and disbursing offices comply with requirements on submitting and correcting transactions on time. The Corps concurred with the recommendation.

In 1978, the Service again reported that too many automated records contained incorrect balances. The causes reported were similar to those reported in the 1976 report.

The Center for Naval Analyses found similar problems in 1975 and 1978 when it analyzed the data flow in the automated system. These studies documented data losses and processing delays. Between 1975 and 1978, little improvement was made by reporting units in reporting and correcting transactions on time. The 1975 study showed that the time between the occurrence of a reportable event affecting pay, such as a promotion, and its posting to the automated record averaged 18.9 days. The 1978 study showed that the time averaged 18 days. The 1978 report concluded that substantial losses and delays still existed.

Inadequate report used
to evaluate reporting units

The Marine Corps has been using the Statistical Transaction Analysis Report to evaluate unit performance in reporting and correcting transactions affecting pay. This report contains inadequate rating factors. These factors are still in the report though it was revised in October 1979. Factors we consider inadequate are the acceptance, timeliness, and correction response rates, as follows.

--The acceptance rate considers a pay or personnel
  data entry as accepted once it passes the field
  preedit process, but it does not consider whether
  it has been accepted by the central computer at
  Kansas City.

--The timeliness rate measures only 39 of about 400
  groups of diary entries. Most of the entries which
  affect pay are not being measured.

--The correction rate is computed in such a way that
  even if a reporting unit never corrects a rejected
  entry on time, the unit obtains a minimum score of
  8 points from a possible 10 points.

We discussed these deficiencies with Marine Corps of-
ficials, and they accepted the validity of our objections.
Officials said that adding to the report a measure of the
acceptance rate at the central computer site would require
a formal modification to the recently revised report. They
believed that such a change should be held in abeyance until
the planned revision in field processing was carried out.
Regarding the timeliness rate, officials agreed to review
the diary entries for the purpose of including more of them,
especially promotions, in the rate. They also said they
would review the formula for computing the correction rate
and make necessary changes in a later revision.

We believe that the actions indicated by the Corps for
the timeliness and correction rates will result in a better
measurement if (1) enough pay-related transactions are in-
cluded in the timeliness rate and (2) the formula for the
correction rate is revised to better identify inadequate re-
porting units. However, unless the planned revision in field
processing is carried out soon, it is not reasonable to wait
for such action before including a measure of central system
acceptance of input by unit.

PROCEDURES TO MEASURE SYSTEM
EFFECTIVENESS NEED IMPROVEMENT

The Marine Corps' progress toward system goals and
objectives is not known. Management has not defined system
goals and objectives in quantifiable terms, although required
by a Department of Defense memorandum. As a result, a means
to adequately measure system effectiveness has never been
established, and management has lacked information showing
the action needed to correct many system problems.

In a December 1970 document, management developed system objectives in very general terms, such as "improve accuracy in amounts paid individuals" and "improve timeliness in updating pay accounts." Objectives stated in such terms clearly did not meet instructions on developing objectives included in an October 1971 memorandum from the Assistant Secretary of Defense (Comptroller). These instructions required objectives to contain explicit criteria for measuring the effectiveness with which problems were to be solved and to specify the time frame in which the objectives were to be met. The memorandum provided some examples of such objectives, which included specific amounts, percentages, or time frames.

The Marine Corps did not revise the objectives defined in its December 1970 document, although the October 1971 memorandum stated that the efforts it outlined were directed particularly to systems which were in various stages of development at the "present time." This included the Marine Corps system since it was not implemented until July 1973.

After we contacted Corps officials concerning the lack of objectives expressed in quantifiable terms, they took the first steps toward developing them. In an April 16, 1979, memorandum, the Commandant tasked the Commanding Officer of the Marine Corps Finance Center to adapt some new general objectives to precise, measurable objectives, including performance standards (where applicable), defining specific actions to help achieve each objective.

The task had not been completed in October 1979 when we closed out our review at the Finance Center. The completion date had been extended from June 30 to July 15, 1979, and later was extended to November 15, 1979. The Head, Disbursing Branch, Fiscal Division, Marine Corps Headquarters, said (1) the branch was working on the task but that several conflicts in time priorities had interrupted its efforts, (2) the task was very difficult to do correctly, and (3) the task was taking more time than anticipated.

Once the basis for an adequate effectiveness measurement system, i.e., quantifiable expressions of system objectives, is developed, the remaining elements of an effectiveness measurement system can be established. For example, goals and objectives can be stated in general terms, such as "Provide an acceptable level of accuracy in the pay accounts." But they must be accompanied by performance indicator(s) which are quantifiable expressions of the objectives, such as (1) an acceptable percentage of accounts not in error, (2) a dollar range defining what is an error, and

(3) the time frame or cutoff dates to be used in defining
error. A data source and collection process must be identi-
fied, such as:

"Select a random sample of accounts for audit
from various units on a rotating basis so as to
accomplish a scientifically defensible measure
of overall accuracy each year."

Finally, standards must be set, which are the outer limits
of what the activity is expected to accomplish, such as:

"Accuracy is defined as a situation in which 95
percent of the account balances or payments are
within $10 of the audited figure on any selected
date, considering all applicable events occurring
10 calendar days or more before the selected date."

Then actual performance can be compared with standards to
determine the extent of activity or system effectiveness.
Similar comparisons should alert management to when and where
action is needed and should help management define the spe-
cific action needed, to meet many measurable objectives such
as:

--Achieve a specific accuracy in the central pay
   accounts by a certain date.

--Reduce payroll changes by disbursing officers to a
   specific level.

--Meet milestones for curtailing manual efforts in
   specific areas.

--Meet time frames for entering transactions into the
   system (by certain groups of type transaction codes).

The specific objectives and the types of standards will vary
greatly with the organization and the activities within it
that management perceives as important to total system
effectiveness.

MANAGEMENT STRUCTURE NEEDS IMPROVEMENT

Authority and responsibility in the integrated Joint
Uniform Military Pay System/Manpower Management System do
not clearly rest with one person. Instead, there are two
functional managers and one technical manager. This setup
is considered by some system users as less effective than
a single manager setup, and it could adversely affect the
real time finance and manpower management system now planned

to replace the current integrated system in the 1985-90 time frame.

Current management structure

The integrated system is cooperatively managed by a functional manager from the Fiscal Division; a functional manager from the Manpower Department; and a technical manager from the Command, Control, Communications and Computer Systems Division. They are all located at Marine Corps Headquarters in Washington, D.C. Only the manpower representative has the indepth knowledge and the supporting staff for his area of interest at that location. The other two must rely on their representatives and staff at the Marine Corps Finance and Automated Services Centers in Kansas City. Each of the three managers is responsible for distinctly different aspects of the system rather than for overall system performance.

The divided management has contributed to system problems by omitting certain management actions needed to improve system effectiveness. Examples discussed elsewhere in this report are failure to (1) develop adequate procedures to measure system effectiveness (see pp. 19 to 21), (2) make needed programming changes (see pp. 23 to 28), (3) develop system cost and benefit data as required (see p. 32), and (4) establish a timetable for eliminating inefficient manual procedures (see pp. 29 and 30).

Naval Audit Service suggested
a single system manager

In a September 3, 1976, report, the Service recommended that the Commandant of the Marine Corps designate a single management command and establish combined pay/personnel offices to improve management of the integrated system. The recommendation was predicated on the observation that (1) the integrated system was managed by two managers each responsible for separate functions and each issuing separate instructions regarding his functions and (2) a third manager was responsible for computer operations and for developing and enhancing computer programs.

The Commandant did not concur, stating that a major strength of the integrated system was the series of checks and balances among functional and technical managers which led to objective decisions.

Most Finance Center officials
want a single manager

Finance Center officials interviewed generally wanted a single manager only. The then Commander of the Finance Center said that the "checks and balances" argument was meaningless and that the present system just produced arguments and inefficiencies and wasted time, energy, and money. The Head of the Systems Management Division, as well as Design Branch personnel, also wanted one manager only.

Divided management is unsatisfactory
in system development

The Marine Corps Headquarters contracted with a research organization to define problems in the current integrated system, in order to support development of a real time finance and manpower management information system to replace the current system. The contractor's December 29, 1978, report (vol. 1) defined one problem as follows:

"The triumvirate concept of three equal partners (Manpower, Fiscal and Technical) has not proven satisfactory in system development."

The concept of the new system was approved March 30, 1978. Implementation is planned for the 1985-90 time frame. Fiscal and manpower management functions will still be integrated, and there is no indication that the divided management concept will be changed.

The new system is being developed by the Manpower Department and the Fiscal Division. However, at the time of our review, no project officer or person in a similar position from the Fiscal Division had been assigned to the project.

The Manpower Department and the Fiscal Division are accountable for distinctly different functions of the system. It seems logical that the Fiscal managers would want to be fully represented in developing the new system, if it is to be developed by "equal" partners.

COMPUTER PROCESSING NEEDS IMPROVEMENT

The Systems Management Division and the Design and Programming Division do not have enough experienced personnel to make important system improvements. This situation is complicated by (1) poor system documentation, which prevents obtaining contract programming support, (2) outdated programming language, which requires retraining of new programmers, and (3) lack of a formally documented backlog of

known programming problems needing corrective action. These problems have adversely affected computer program maintenance and consequently the pay system, in that system personnel have been unable to correct certain known programming deficiencies or increase the use of certain programming applications designed to reduce human error in the system.

Lack of experienced personnel

In 1976, the Naval Audit Service reported that (1) the Marine Corps Finance and Automated Services Centers were not adequately staffed, (2) important tasks were not being done and significant backlogs had developed, (3) the large backlogs and the delay in implementing computer programs could not be continued, and (4) performance of the system was marginal at best, requiring a considerable manual backup.

In June 1978, a manpower survey team completed a comprehensive review of personnel and recommended only minimal changes for the Systems Management Division and the Design and Programming Division. These Divisions are responsible for the design and programming of the system. The Commanding Officer of the Finance Center concurred with the recommendations for the Systems Management Division. But regarding the Design and Programming Division, he remarked that the review had recognized only current workload and that as additional requirements materialized, more personnel would be required.

Marine Corps Finance and Automated Services Centers officials told us that deficiencies existed in the automated system because only certain personnel were qualified to work in the pay area which was constantly being changed and involved very complicated design and programming requirements.

A Design and Programming Division official said:

--Inexperienced programmers were causing the Division to spend too much time correcting errors caused by programming changes. When the Division ran a test cycle, correcting errors in the programs being tested took 6 to 8 weeks. This condition was due to inexperienced programmers, inability to test all possible conditions, downtime of equipment, and rerun requirements.

--The Marine Corps had a multimillion dollar computer system but not enough qualified and experienced people to run it.

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--The Corps was constantly changing the computer
  programming; about 25 to 30 percent of the programming
  modules were changed each test cycle. The Corps
  should stop making changes in the system until it
  corrects existing deficiencies.

Poor system documentation

A 1978 study by the Potomac General Research Group
stated that the programming problem was complicated by the
fact that detailed documentation for the computer system did
not exist. We asked if the current system was documented
well enough to contract out programming projects. The Design
and Programming Division official said it was not.

Outdated programming language

The study also pointed out that the pay systems were
programmed in different languages; a significant portion were
written in the Assembly Language Coding. However, the Marine
Corps no longer trains Assembly Language Coding programmers
at its Computer Science School, and military programmers must
be retrained at the Automated Services Center when they are
assigned. This further reduces their span of usefulness.

Lack of formal problem
documentation procedures

The Systems Management Division has no formal procedures
to document all known problems in the pay portion of the auto-
mated system. Selected problems are developed into project
proposals, but other problems, such as those affecting wage
and tax statements discussed in chapter 2, although known by
key persons, are not fully documented.

The Systems Management Division should record all known
problems and their potential effects so that management can
evaluate them. At a minimum, problems should be logged by
type, number, date determined, date disposed, and pending.

Apparently the manpower team members, who concluded
that no additional personnel were needed, had some problem
identifying the actual backlog of work in the Systems Manage-
ment Division. The lack of workload information relating to
known problems probably made it very difficult to assess
how many personnel might be needed for this activity.

Known programming problems
are not corrected

Many known programming problems are not corrected. The
head of the Systems Management Division said it had only
limited resources to work on systems enhancement because a
large share of its time was spent on congressional require-
ments and requirements desired by functional managers. To
effectively correct known problems, he said at least three
more full-time systems analysts who could prepare project
proposals on the pay portion of the automated system would
be needed.

Some examples of known programming problems not corrected
follow.

--The system produced about 27,700 incorrect wage and tax
statements for taxable year 1978. Causes include pro-
gramming which (1) pays on a 30-day basis rather than
the required day-to-day basis for members who serve
less than 30 days and (2) pays for 30 days rather than
reducing pay for members on unauthorized absence
status on the 31st day of the month. These two prob-
lems have been known to exist since the system was
implemented.

--The system has several programming problems in the
leave area. For example, a member in advance leave
status (one who has taken more leave than accrued)
changing to sick leave status is charged excess leave
and his pay is reduced by the computer. A member
should not be charged excess leave for sick leave and
his pay should not be reduced. We do not know the
extent of the problems in the leave area. However,
a Marine Corps official told us that a complete re-
design of the leave module was necessary to correct
the leave problems.

Need for more use of certain
programming applications

More use of single source reporting and automatic update
in computer processing could lessen the opportunity of human
error by reducing input requirements.

Single source reporting

Single source reporting of input by either the disburse-
ing offices or reporting units could reduce errors in the
automated system. In some instances, pay, leave, and person-
nel actions must be determined and reported by both a

reporting unit and a disbursing office. When either one fails to input necessary data or inputs incorrect data, an error is made.

For example, we reviewed 246 records involving bonuses, reenlistments, and extensions of enlistment that had been examined and corrected by the Finance Center in December 1978. In 95 records, the settlement of lump-sum leave upon reenlistment or first extension was the major category of error. Marines may elect to receive a lump-sum payment for all or part of the leave they have accrued at time of reenlistment or extension. Corps procedures require the disbursing office to report the lump-sum leave dollars paid and the reporting unit to report the reduction to leave. In many instances, the reporting units did not report the leave entries or reported amounts different from those the disbursing office used to pay the members. In such situations, the computer programming could be modified to require that the field report only the number of lump-sum leave days for which members want to be paid. From this entry, the computer, using data already available, could compute the amount of payment and reduce the leave balance.

Automatic update in computer processing

By increasing the usage of automatic update in the automated system, the number of input entries required from reporting units would be fewer and the opportunity for errors to occur could be reduced.

For example, when a member reenlists or extends his enlistment and he desires to carry a leave balance forward, no computer entry is required. However, if he has an advanced leave balance to be carried forward (has taken more leave than he has earned), the unit must report this by unit diary entry or the computer will carry forward a zero leave balance. Eleven of 246 reenlistments and extensions of enlistment reviewed in December 1978 contained advance leave balances not reported by the units. These erroneous records can be detected and corrected only by manual audit. Computer programming could be modified to carry advance leave balances forward upon reenlistment or extension of enlistment without additional field input.

Department of Defense specifications for the automated system envisioned that changes in status, which could affect pay entitlements, would be recorded to a member's pay record and pay entitlements would be adjusted automatically.

We believe that most problems in the system computer programming have been known by the Marine Corps for years.

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Management claims that it has insufficient time and resources to correct them or that the problems are not significant enough to warrant corrective action. However, the aggregate of known programming problems, and to some extent programming applications which increase chances of human error, are in part the cause of high error rates in pay.

QUALITY ASSURANCE NEEDS IMPROVEMENT

The Quality Assurance Division concentrated its review efforts on identifying and correcting errors made by individual disbursing offices rather than on identifying and correcting system weaknesses and assuring that the system was operating as intended, as required by Defense instruction. The Division was seriously hampered, however, by the fact that it was not organized until almost 4 years after the system had been implemented and management had not developed criteria needed by internal auditors to determine if the system was operating as intended. (See pp. 19 to 21.)

Defense Instruction 7330.4, dated July 1, 1971, required that internal and administrative examination procedures be followed to insure that the system was operating as intended, to disclose and correct any system weaknesses, and to detect and adjust overpayments and underpayments. The system was implemented in July 1973. However, the Quality Assurance Division was not established until May 1977 and was not fully staffed until about July 1978. The Naval Audit Service recommended in its 1976 report that the Marine Corps establish an internal review group at the Finance Center. The report stated that the review group should work in conjunction with existing Marine Corps On-Site Examination Teams to insure the accuracy of the automated system and report directly to the Corps' Fiscal Director.

The Commandant of the Marine Corps concurred with the intent of the recommendation. He stated that the objectives proposed would be achieved through a proposed reorganization of the Quality Assurance Division of the Finance Center. The Division's function would be to evaluate and report on the overall quality and accuracy of the Corps' disbursing system.

The requirements of Defense Instruction 7330.4 for the most part have not been met by the Division. The head of the Division told us that initially the Division had gotten off to a slow start due to lack of staffing and, more recently, to lack of training of the new staff. However, he believed that in the long term the Division would be able to perform its function.

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During our review, the Division's major effort to monitor the accuracy of the automated system consisted of auditing transactions processed against the automated record. When a potential error was found, the Division sent a discrepancy notice to the appropriate disbursing office for corrective action and a report covering these matters was provided to management.

We reviewed a selected number of the discrepancy notices returned by disbursing offices; a significant number of reported errors were not actual errors. For example, we reviewed 98 of 528 discrepancy notices with a monetary effect reported by the Quality Assurance Division for the period December 1977 to June 1978. Thirty notices were not in error.

We questioned the usefulness of the quality assurance reports because the results did not consider any correction or adjustment in the error data. In response, the head of the Division said the report to management was not designed to be a decisionmaking tool, but was intended to identify disbursing offices needing additional audit. The Division planned to concentrate more of its future audit effort on disbursing offices having high error rates.

We believe the Division should adjust its statistics to consider responses from disbursing offices. Otherwise, corrective action could be taken based on incorrect data in the quality assurance reports.

In a broader sense, however, we believe the Division should place more emphasis on identifying causes for errors and recommending actions to correct system weaknesses. This effort would be significantly enhanced by development of adequate effectiveness measurement procedures which should define those areas of system performance considered most important to management and should provide the needed performance measurement criteria.

TIMETABLE NEEDED FOR ELIMINATING
INEFFICIENT MANUAL PROCEDURES

A timetable is needed for eliminating the inefficient manual procedures resulting from system unreliability, and for reducing the number of disbursing personnel required to carry them out.

More than 3 years ago, the Marine Corps approved a 36 percent "temporary" increase in finance clerks and stated that the increases would be eliminated as soon as possible when a more effective pay system was obtained. The increases were still in effect during our review in 1979, and

we did not find a timetable indicating what steps would be taken or when to either obtain a more effective system or eliminate the increase in personnel. Unless a timetable is established, the manual procedures and the increase in personnel will remain part of the system.

CHAPTER 4

DEPARTMENT OF DEFENSE MONITORING IS INADEQUATE

Throughout the development, testing, and operation of the Marine Corps Joint Uniform Military Pay System/Manpower Management System, Department of Defense oversight has been inadequate. Although the Assistant Secretary of Defense (Comptroller) was set up as the focal point for reviewing, approving, and evaluating the system, and Defense guidance was not complied with in developing, implementing, and operating the system, the Department took no effective action to require the Corps to comply. Defense oversight needs considerable improvement to insure that similar shortcomings will not persist in a new system being planned to replace the current one.

DEFENSE HAS NOT ACTED TO OBTAIN
COMPLIANCE WITH DEFENSE GUIDANCE

Although the Defense Comptroller was the focal point to review, approve, and evaluate departmental execution of system plans and programs and although personnel in his office knew the Marine Corps was not complying with several Defense requirements, effective action was not taken to see that the Corps complied.

Defense Directive 7330.3 states that the Assistant Secretary of Defense (Comptroller) will:

"Serve as the Department of Defense focal point to review and approve military department plans and programs, and to review and evaluate departmental execution of these plans and programs."

Several examples of noncompliance with Defense guidance follow.

1. Defense Instruction 7330.4 required that a reliable central system of accounts be the basis for detailed computation of amounts due. Instead, the Marine Corps central system was not reliable, and the basis for determining amounts due was the personal financial record kept by disbursing personnel.

2. Defense Instruction 7330.4 required a system aimed at reducing the manual and clerical workload of military units and organizations, substituting centralized and computerized processing, where feasible. Also, Defense Directive 7330.3 stated that the system program, among other things, should be oriented

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toward continuous increases in efficiency. Instead, more disbursing personnel are needed now than were required under the old manual system.

3. Defense Directive 7330.3 required the services to give the Defense Comptroller initial and adjusted cost effectiveness forecasts throughout system development, including cost of the new system. Several other Defense policy statements required that development of systems supported by automatic data processing be predicated on a careful assessment of their projected costs and benefits. Detailed cost and benefit figures were not available at the Marine Corps Finance Center, Marine Corps Headquarters, or the Office of the Assistant Secretary of Defense (Comptroller).

4. Defense guidance requiring system objectives to contain explicit criteria for measuring effectiveness was not complied with.

We discussed some of these examples with an official in the Office of the Assistant Secretary of Defense (Comptroller), who said that the Office knew of these shortcomings but that it relied on the services to manage their systems.

We found no record of action taken by this Office to direct the Corps to comply with any provisions discussed above. Defense representatives did visit the Finance Center in May 1976. As a result, they prepared a "Memorandum to File" dated June 21, 1976, noting several problems in the pay system. For example, the memorandum stated:

"Disbursing Offices, each pay day, manually recalculate a high percentage of all military personnel entitlements based on locally maintained, hard copy records. This requires a considerable number of clerical personnel."

The memorandum discussed other problems and some proposed solutions. However, we found no indications that the Assistant Secretary of Defense (Comptroller) had reported these findings or directed the Corps to take corrective action.

NEW SYSTEM WILL REQUIRE DEFENSE OVERSIGHT

The Marine Corps plans to replace the current system with a real time finance and manpower management information system in the 1985-90 time frame. This will involve significant changes at substantial costs. Thus, there is a need for the

Assistant Secretary of Defense (Comptroller) to provide
necessary oversight from the onset to insure compliance with
Defense guidance calling for a reliable central system, in-
creases in system efficiency, cost and benefit analyses,
and other system enhancements considered important in the
system justification.

CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS

CONCLUSIONS

The Marine Corps spent millions of dollars in developing, implementing, and operating the Joint Uniform Military Pay System/Manpower Management System. But records of these costs were not kept, and procedures for measuring system effectiveness were never established. Therefore, Marine Corps and Defense management do not know how much has been spent, what economic benefits have been gained, or to what extent system goals and objectives have been met.

The integrated system is not reliable to centrally compute pay accurately. As a result, extensive and inefficient manual procedures are followed to verify the accuracy of centrally computed pay and the manual procedures, not the automated system, constitute the real pay system.

The most often identified causes for the unreliable central system are the incorrect or untimely reporting of events affecting pay and the lack of correction or untimely correction of entries rejected from the system. These causes need to be corrected. But they are only symptomatic of more basic system weaknesses. They are management's failure to (1) establish adequate effectiveness measurement procedures, (2) establish one position with the authority and responsibility to manage the integrated system, and be clearly accountable for total system performance, (3) identify and correct causes of computer-related deficiencies, including known programming deficiencies, (4) establish adequate internal audit procedures for review and evaluation of organizational efforts and progress toward meeting goals and objectives as outlined by management, and (5) establish a timetable for making the system reliable enough to eliminate the inefficient manual procedures.

Because of a lack of an adequate effectiveness measurement system and adequate internal audit procedures, system problems and weaknesses have not been systematically brought to the management's attention or causes so defined as to clearly indicate the corrective actions needed.

Under the present cooperative management concept, a mandate to make changes does not clearly rest with one person, making accountability difficult to pinpoint.

Also, the Assistant Secretary of Defense (Comptroller) has not adequately monitored the system or required compliance with Department of Defense directives, instructions, and memorandums.

The Marine Corps plans to replace the current automated system in the 1985-90 time frame with a more sophisticated one, but unless the current system is improved and the Department improves its monitoring of the Marine Corps' system development and implementation, many deficiencies in the current system will be carried over to the new one.

RECOMMENDATIONS

We recommend that the Secretary of Defense, to improve the reliability, accuracy, and efficiency of the pay system, direct the Commandant of the Marine Corps to:

--Establish a single manager, who will be clearly responsible for the system's performance.

--Establish measurable goals and objectives for improving timeliness and accuracy of the system.

--Require that internal auditors periodically report to top management on the progress being made toward meeting system goals and objectives.

--Identify, through improvement of reporting procedures, those organizations which submit untimely and erroneous pay data and take corrective action.

--Identify, document, and correct software deficiencies.

--Establish a task force to determine how best to improve (1) staffing of the system's computer processing activities, (2) system documentation, (3) programming language and logic, and (4) testing for and correction of computer errors.

--Establish a realistic timetable for eliminating the redundant and inefficient manual procedures.

--Direct that the problems in the existing pay system be carefully considered in the design, development, and implementation of the new one.

We further recommend that the Secretary direct the Assistant Secretary of Defense (Comptroller) to:

--Monitor the progress of the Marine Corps in complying
with Department memorandums, directives, and instruc-
tions calling for (1) development and implementation
of a reliable central pay system, (2) goals and ob-
jectives expressed in measurable terms, and (3) an
analysis of costs versus benefits of system develop-
ment.

--Require compliance with this guidance.

AGENCY COMMENTS AND
OUR EVALUATION

We did not receive official Department of Defense com-
ments on our findings and recommendations in time to include
them as part of this report. However, we met informally with
representatives of the Department of Defense, the Marine Corps
and the Navy to obtain their verbal comments. These represent-
atives substantially concurred with all of our recommenda-
tions, except the one recommending that a single manager be
established for the integrated Marine Corps pay and manpower
management system. The Marine Corps representatives said
the current management concept should be retained, and that
our other recommendations could be adequately carried out
under the current management organization. The Department
of Defense representative said that Defense agreed with our
recommendations and indicated that Defense might request the
Marine Corps to designate a single official responsible for
the system.

We believe that in order to pinpoint responsibility for
assuring the effectiveness and efficiency of the system, one
person should be designated as responsible for the system.

CHAPTER 6

SCOPE OF REVIEW

We reviewed the pay accuracy of the Marine Corps Joint Uniform Military Pay System/Manpower Management System. Due to the integrated nature of the data base, some aspects of our work related to Manpower Management System functions. But our review was limited to the efficiency, reliability, and effectiveness of the central system designed to pay active duty marines. The review did not include an evaluation of the Manpower Management System.

We interviewed system managers and users at Marine Corps Headquarters, the Marine Corps Finance Center, the Marine Corps Automated Services Center, and field installations. We reviewed documents concerning the development, implementation, and operation of the system. Opinions of certain users on the usefulness of system reports were obtained by questionnaires. We audited a random sample of master military pay accounts for accuracy of pay entitlements and payments made. We reviewed reports of other audit and review organizations as they related to the system.

Our review was performed primarily at the Finance Center and the Automated Services Center in Kansas City. Visits were made to the Office of the Assistant Secretary of Defense (Comptroller); Marine Corps Headquarters, Washington, D.C.; and Marine Corps units and disbursing offices at Camp LeJuene, North Carolina.

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