

UNITED STATES MARINE CORPS  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

COMP/LRM/lm  
7500  
15 Mar 1983

From: Commanding General  
To: Assistant Chief of Staff, Facilities

Subj: Audit Report S40172 - Audit of the Cost, Quality and  
Responsiveness of Public Works Services Provided to Navy  
and Marine Corps Activities

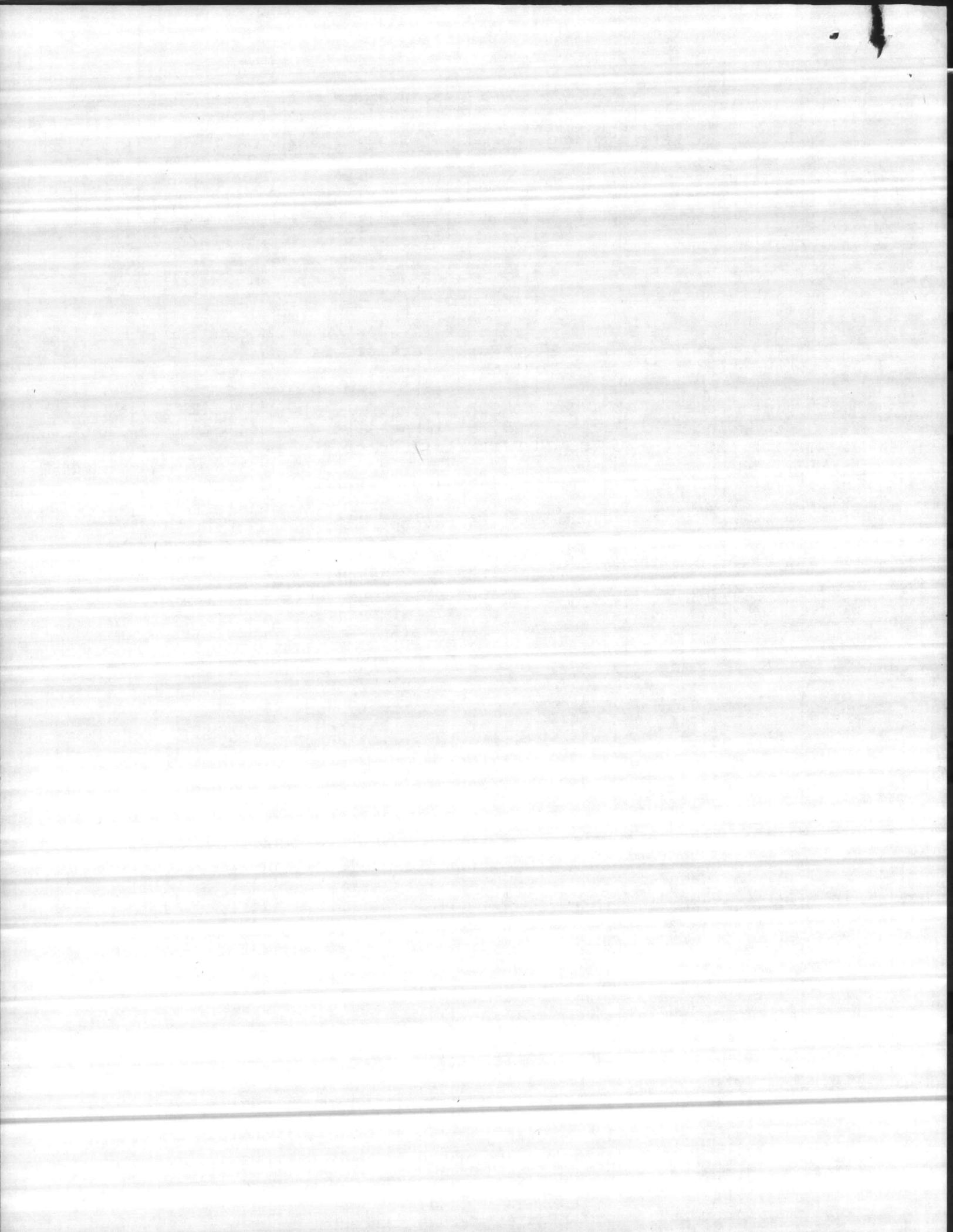
Ref: (a) FoneCon btwn Mr. KASSEL, CMC (FDR), and L. R. MIZE,  
Internal Review, MCB, of 1 Mar 1983  
(b) AC/S Compt ltr COMP/LRM/lm 7500 of 10 Jan 1983

Encl: (1) CMC ltr FDR-41:vdr S40172 of 17 Feb 1983

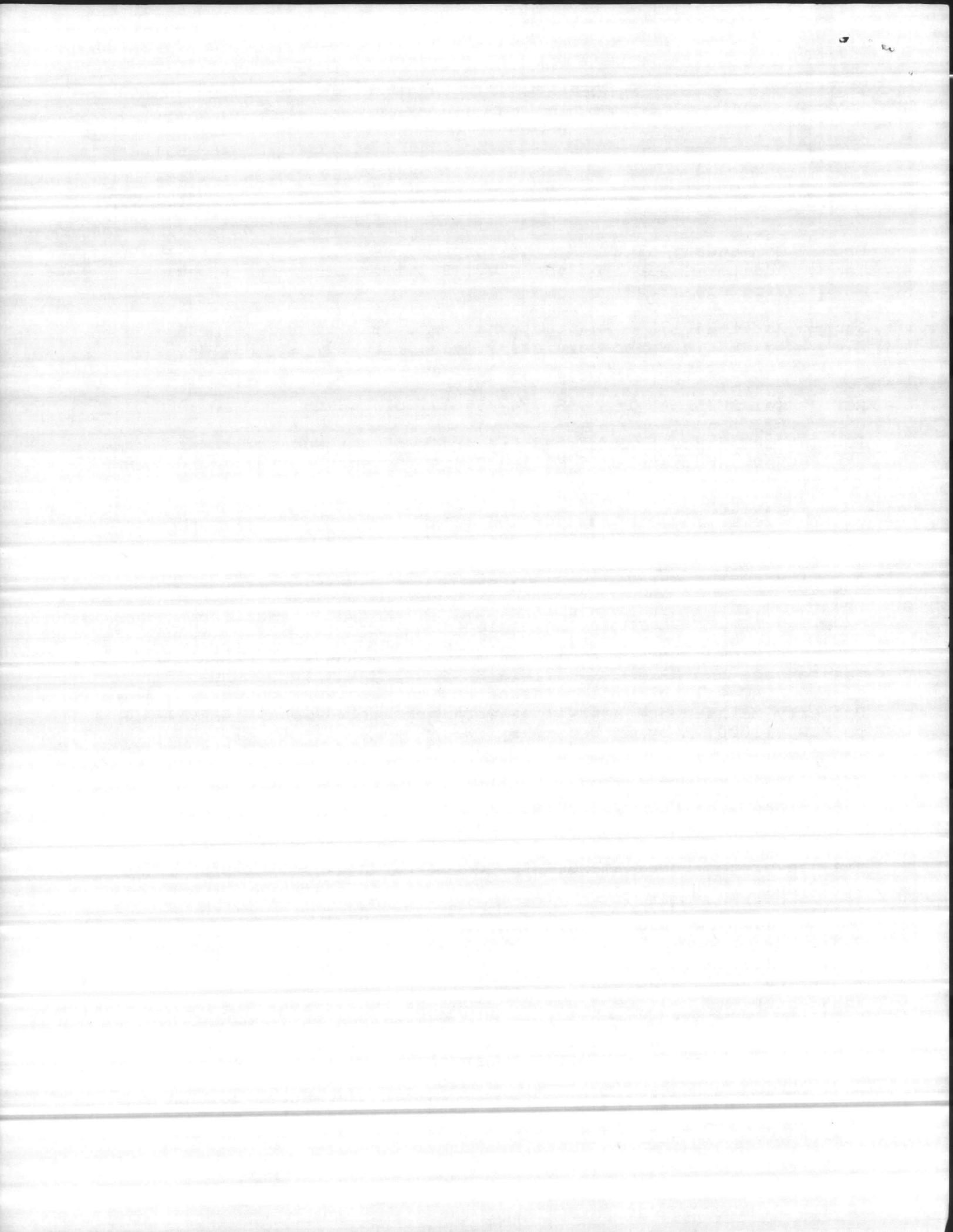
1. Reference (a) indicated CMC has revised its comments on the  
subject audit. The revised comments are contained in enclosure  
(1) and supersede those previously forwarded by reference (b).

A. K. MAREADY  
By direction

Copy to:  
3Maint







Subj: Audit of the Cost, Quality and Responsiveness of Public Work Services Provided to Navy and Marine Corps Activities

(1) The Marine Corps concurs in the recommendation.

(2) Variances need to be investigated on emergency/service work on a simple basis. By reviewing these variances, the activity can identify trends and problem areas. This will be incorporated into the upcoming revision of MCO P11000.7B, which is scheduled to be completed by 31 December 1983.

d. Recommendation 46. "CMC review roofing maintenance and repair, and repair of electrical motors at Camp Pendleton and Camp Lejeune, respectively, and determine if provided services are performed in the most effective and efficient manner."

(1) The Marine Corps concurs in the recommendation.

(2) Cost comparisons of in-house versus contract costs need to be reviewed locally and will be performed on all aspects of base maintenance by 30 September 1983.

e. Recommendation 47. "CMC take corrective action to improve BMD responsiveness to specific jobs of maintenance and repair work to Marine Corps facilities."

(1) The Marine Corps concurs in the recommendation.

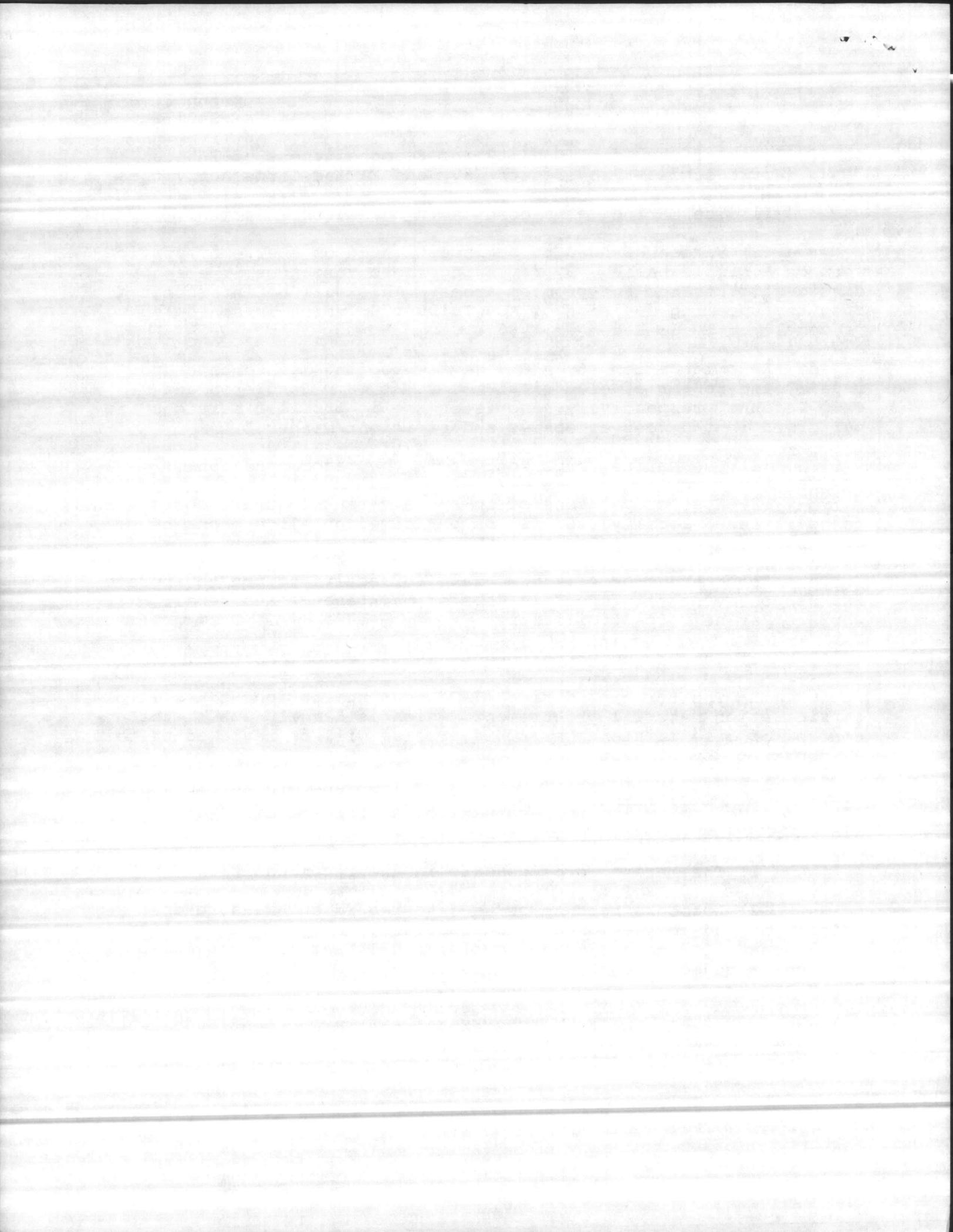
(2) The turnaround time (TAT) on specific jobs takes into consideration material procurement, which is largely out of the control of base maintenance. This problem will be reviewed at this Headquarters by 30 September 1983.

f. Recommendation 48. "CMC ensure that BMDs establish a method of recording, measuring and evaluating TAT for specific jobs to aid in recognizing work process inefficiencies."

(1) The Marine Corps concurs in the recommendation.

(2) Logbooks need to be used to record and measure the initiation and completion of the specific jobs by the activities. Requirements for measuring and evaluating TAT at all activities will be provided in the upcoming revision of MCO P11000.7B by 31 December 1983.

g. Recommendation 49. "CMC ensure that BMDs identify, investigate, and record maintenance rework hours."



Subj: Audit of the Cost, Quality and Responsiveness of Public  
Work Services Provided to Navy and Marine Corps Activities

(1) The Marine Corps concurs in the recommendation.

(2) Starting 28 February 1983, HQMC will place more emphasis on identifying and reporting rework during IG inspections, Maintenance Management Surveys, and Engineered Performance Standards Utilization Visits at all Marine Corps activities.

h. Recommendation 50. "CMC provide guidance to BMDs relative to customer feedback and on alternatives for improving customer perceptions."

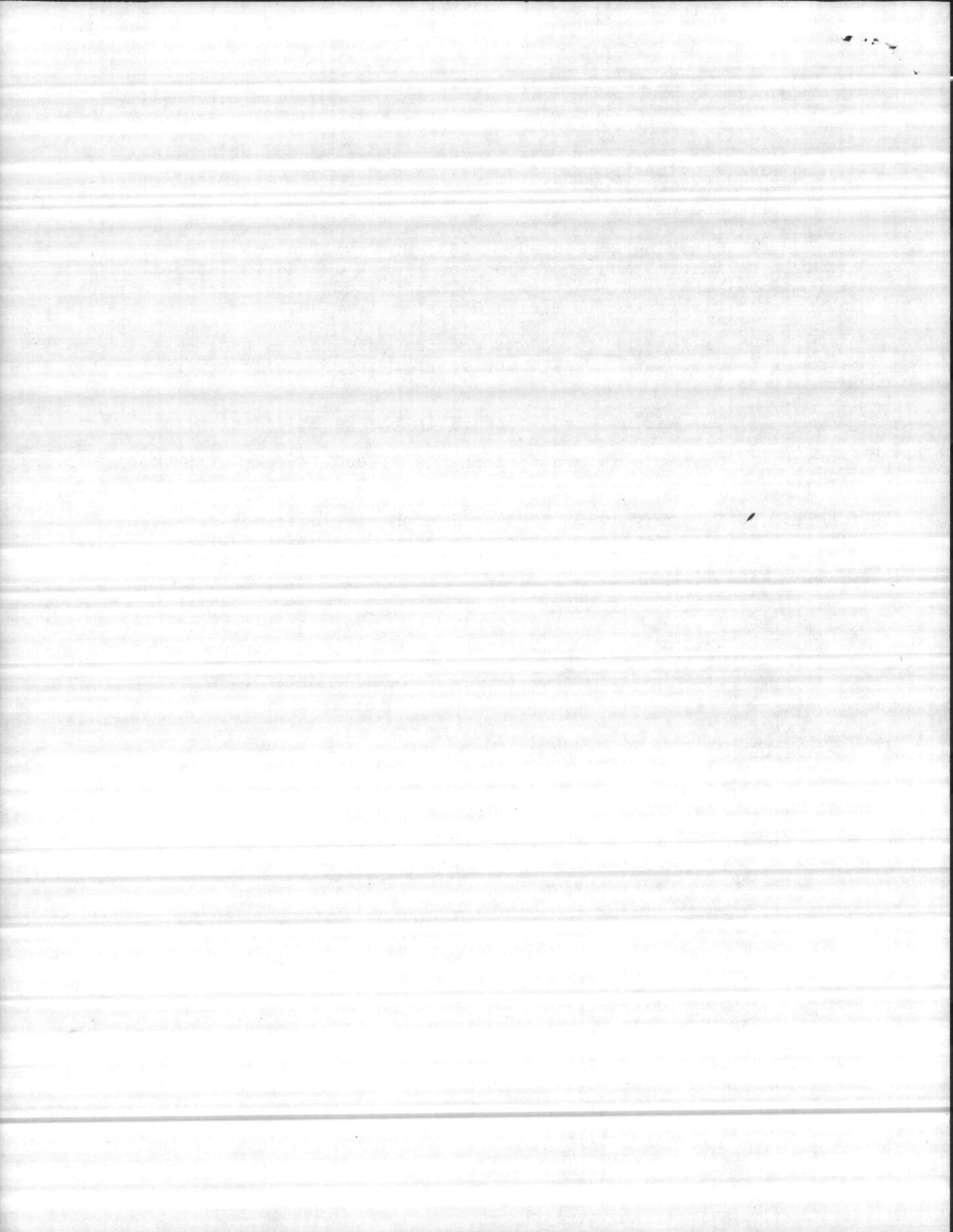
(1) The Marine Corps concurs in the recommendation.

(2) Guidance is provided in MCO P11000.7B, paragraph 4001.3d, requiring monthly reports be provided to the customer. However, complaints must be handled at the activity level. Therefore, starting 28 February 1983, HQMC will emphasize customer satisfaction during all IG inspections and Maintenance Management Surveys. Guidance and alternatives will be provided to the activities during these visits.



G. N. ROBILLARD, JR.  
By direction

Copy to:  
DIRNAVAUDSVCSE  
CG, MCB Camp Pendleton  
→ CG, MCB Camp Lejeune



UNITED STATES MARINE CORPS  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

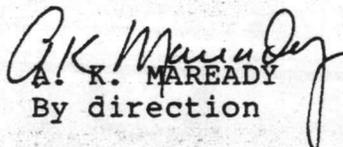
COMP/LRM/lm  
7500  
30 Nov 1982

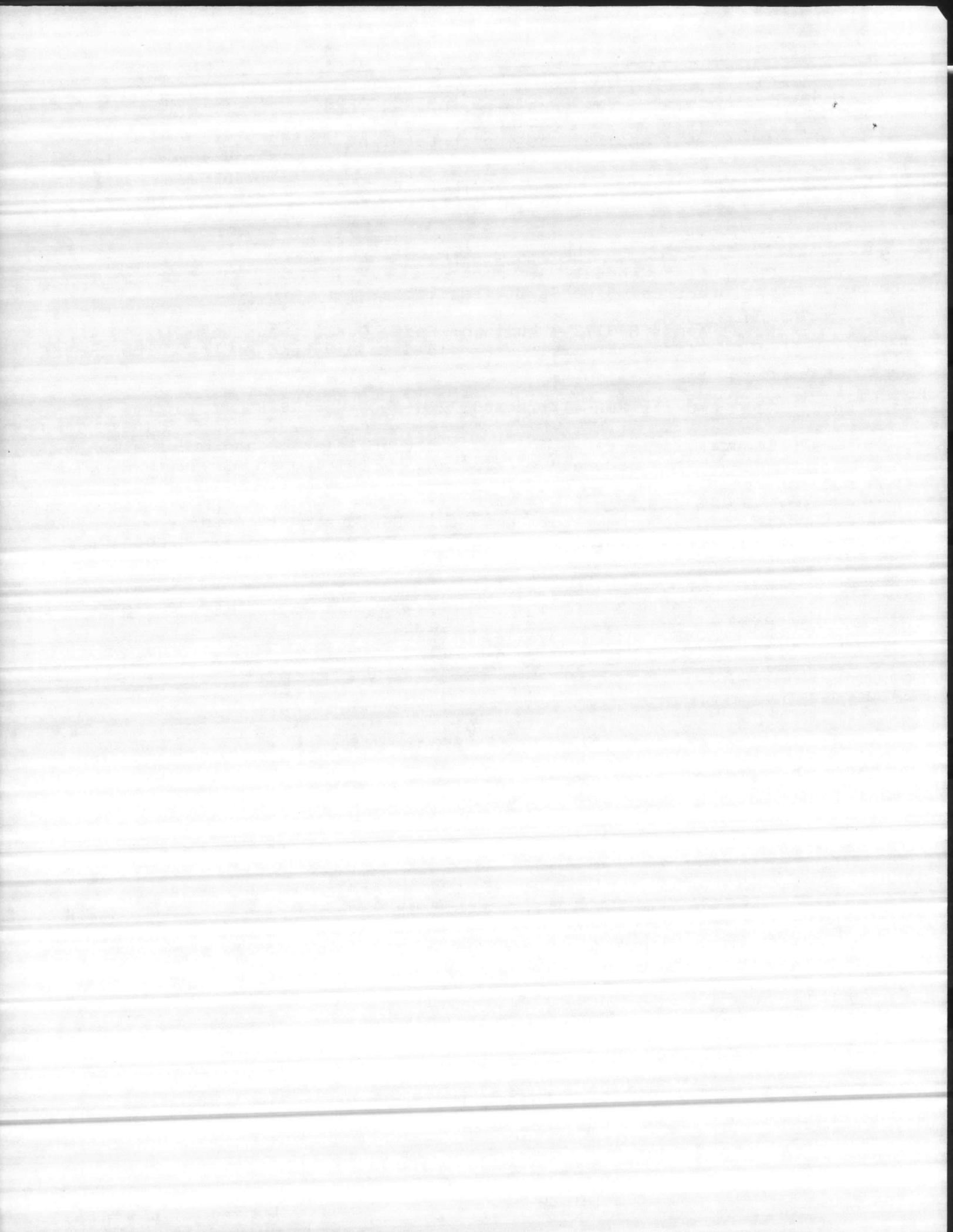
From: Commanding General  
To: Assistant Chief of Staff, Facilities  
Subj: Naval Audit S40172 - Audit of Cost, Quality and Responsiveness  
of Public Works Services Provided to Navy and Marine Corps  
Activities

Encl: (1) CMC ltr FDR-41/rfk S40172 dtd 23 Nov 1982

1. Enclosure (1) is forwarded for audit utilization and preparation of comments on the accuracy of findings pertaining to MCB in the subject audit.

2. Comments should be returned to this Headquarters (Attn: Assistant Chief of Staff, Comptroller) by 7 December 1982 in message format.

  
A. R. MAREADY  
By direction





DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO

FDR-41/rfk  
S40172

23 NOV 1982

From: Commandant of the Marine Corps  
To: Commanding General, Marine Corps Base, Camp Pendleton  
Commanding General, Marine Corps Base, Camp Lejeune ←

Subj: Naval Audit S40172 - Audit of the Cost, Quality, and  
Responsiveness of Public Works Services Provided to  
Navy and Marine Corps Activities

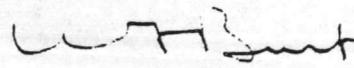
Encl: (1) DIRNAVAUDSVCSE ltr A-1:so 7546/S40172 of 27Oct82

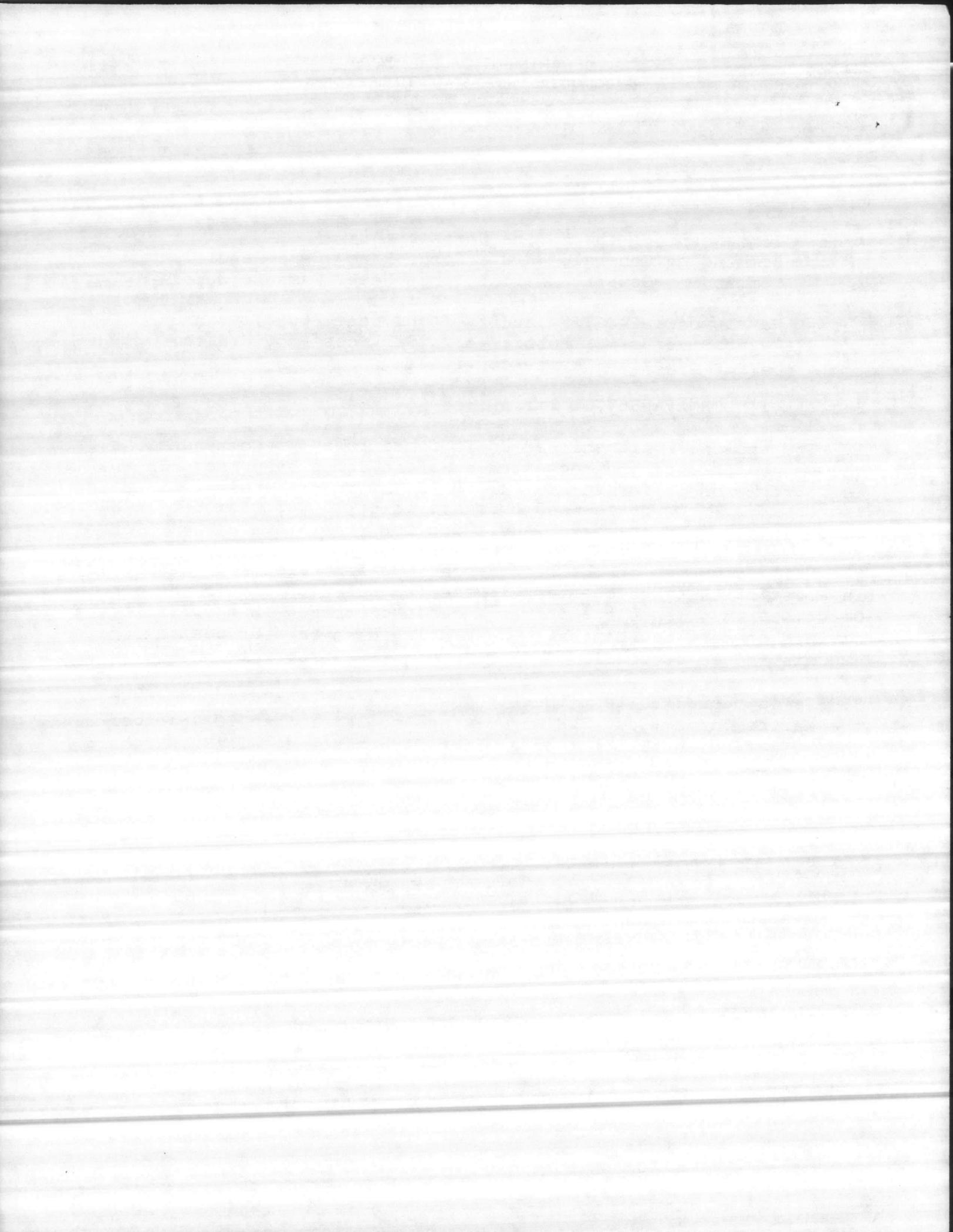
1. The enclosure transmitted draft findings and recommendations from the subject report and requested a Marine Corps response. In that the audit work was performed at your commands, these findings are being provided for your review and comments prior to submission of a Marine Corps response to the Naval Audit Service.

2. While comments on the recommendations are welcomed, the primary interest of this Headquarters is the factual accuracy of the findings. Of utmost importance are dollar amounts discussed in the findings as savings or cost avoidances. These alleged savings or cost avoidance amounts should be confirmed or refuted, as appropriate.

3. It is requested that these comments be provided to Commandant of the Marine Corps (Code FDR) by message no later than 10 December 1982. The HQMC functional point of contact for this audit is Mr. Richard Lee (LFF-2) AUTOVON 224-3188.

Copy to:  
AUDGENAV  
DIRNAVAUDSVCSE

  
W. F. BURT  
By direction





DEPARTMENT OF THE NAVY  
NAVAL AUDIT SERVICE SOUTHEAST REGION  
5701 THURSTON AVENUE  
VIRGINIA BEACH, VIRGINIA 23455

IN REPLY REFER TO:  
A-1:30  
7546/S40172  
27 Oct 1982

From: Director, Naval Audit Service Southeast Region  
To: Commandant of the Marine Corps (FDR)

Subj: Audit Report S40172 - Audit of the Cost, Quality, and  
Responsiveness of Public Works Services provided to Navy and  
Marine Corps Activities

Ref: (a) SECNAVINST 7510.7A of 28 Dec 1978; Subj: Department of the  
Navy Audit Manual for Management

Encl: (1) Utilization drafts of audit findings  
(2) Information copy of audit finding

1. The Naval Audit Service Southeast Region has completed the subject audit. Enclosure (1) is drafts of the audit findings developed during the course of the audit applicable to your command. Enclosure (2) is provided for your information only.

2. Reference (a) requires preparation and submission of management responses not later than 30 days after submission of audit findings to the audited command. Recommendations 42 through 50 and Recommendations 60 through 66 of the audit are addressed to your command for comment. Management responses should include target completion dates for planned action. Accordingly, responses should be submitted no later than 26 November 1982.

3. If satisfactory responses are received by the above date, further utilization will be unnecessary and a final report will be published. If, however, there are unresolved issues, a utilization draft will be provided to the immediate superior in command or other commands as appropriate for further utilization and resolution of the issues.

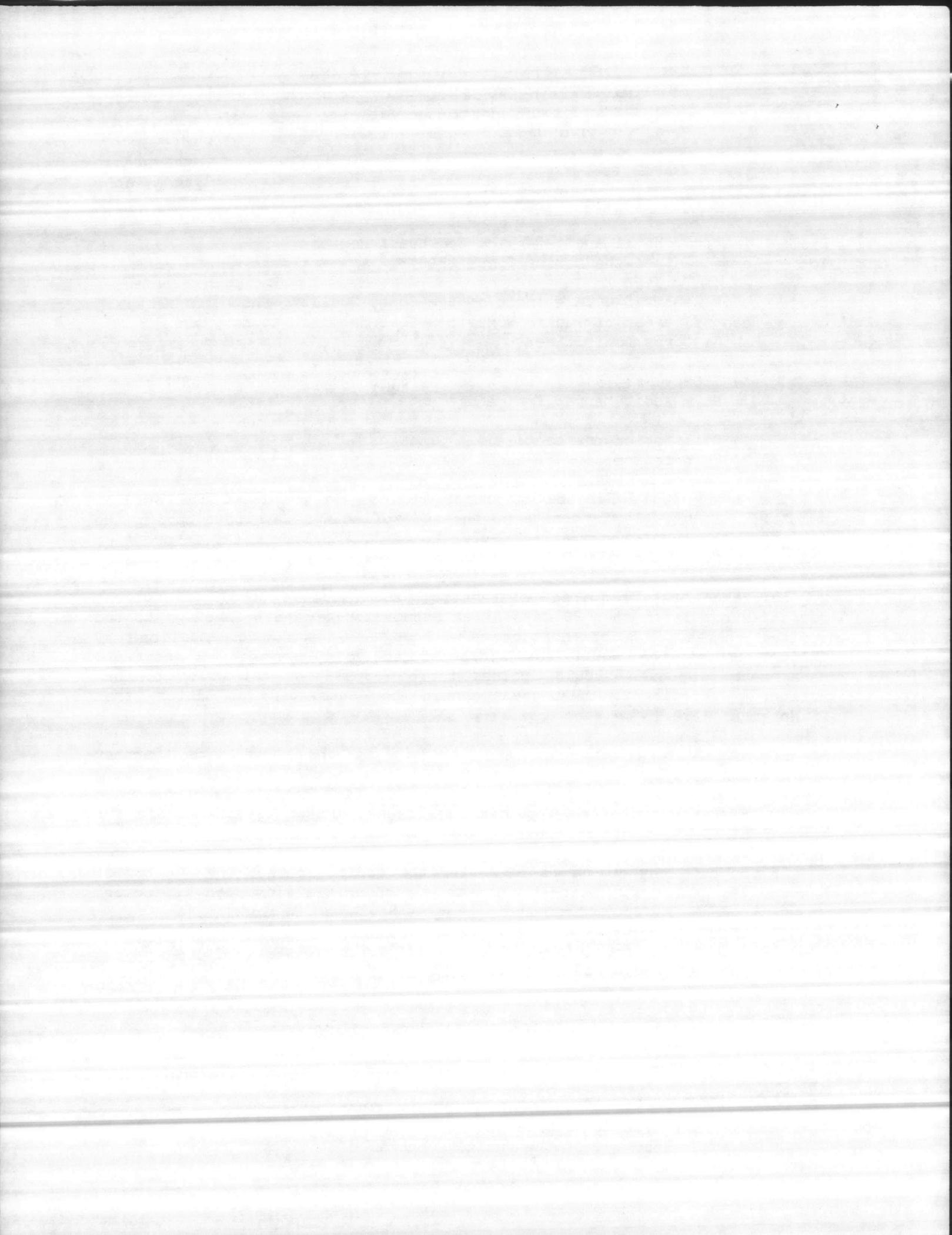
4. If you have any questions regarding the audit, contact the Auditor in Charge, Mr. K. L. George, or the responsible Division Director, Mr. C. R. Johnson, Jr., Naval Audit Service Southeast Region.

Telephone: (804) 464-8286  
AUTOVON: 680-8286

  
DAVID H. DOTTER  
Acting

Copy to:  
AUDGENAV

"Releasable outside the Department of Navy only on  
approval of the Auditor General of the Navy"



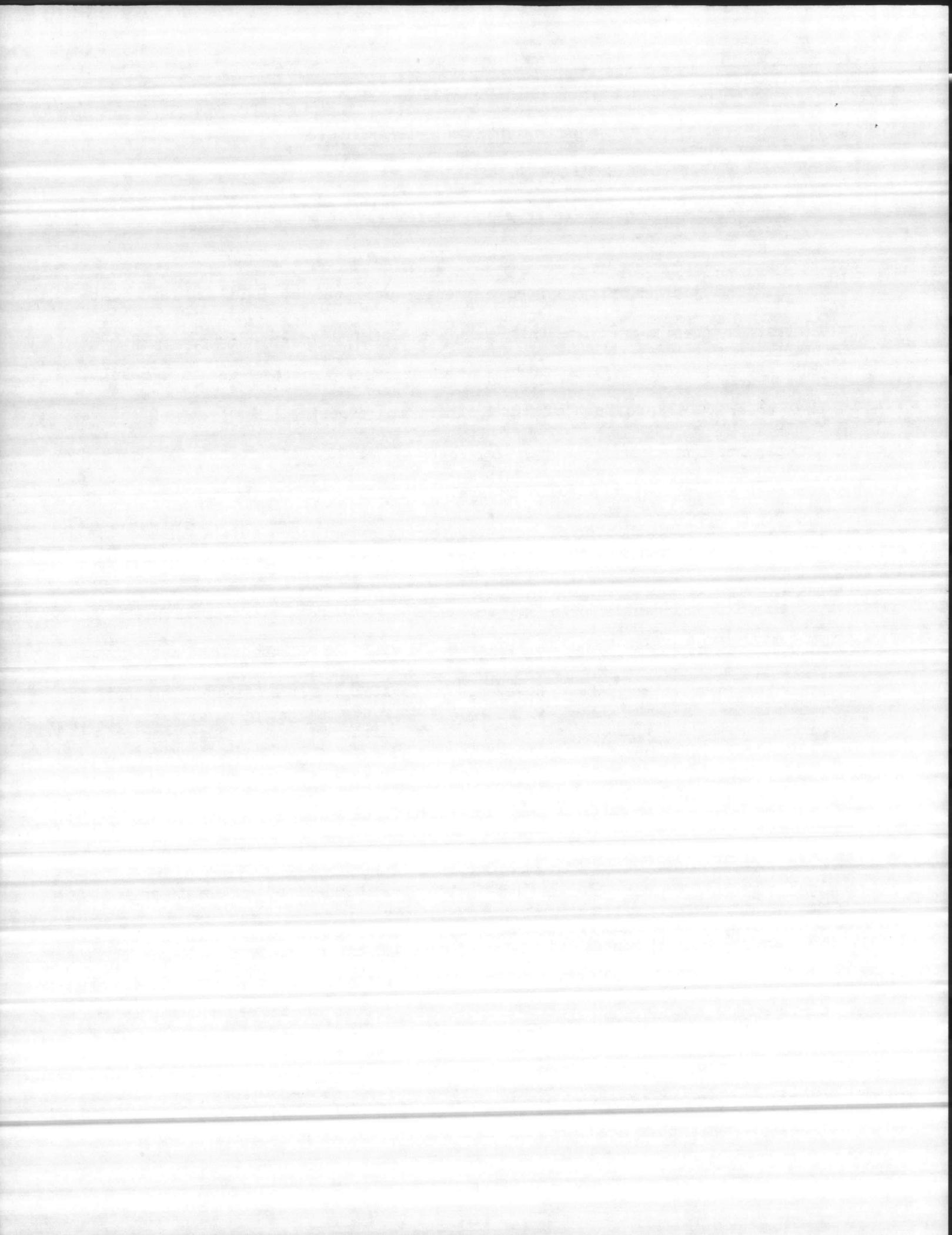
## BASE MAINTENANCE DEPARTMENTS

### 32. Implementing and utilizing a job priority system

a. The job priority system currently utilized by BMDs is inadequate in that it does not ensure that jobs are assigned valid priorities or that jobs are scheduled and worked in the sequency of importance. As a result, the orderly scheduling of work that is essential for an effective maintenance management program has been adversely effected. CMC should consider establishing a priority system, similar to the system identified in NAVFAC MO-321, chapter 6, par. 18, for implementation at all BMDs.

b. BMDs currently plan and schedule job orders for accomplishment in a routine manner. Jobs designated "crash" or "expedite" are given priority over other jobs. However, the system has been abused in that a disporportinate number of jobs were assigned the high priority designator. Review of the BMDs showed the following:

Camp Lejeune. Of 204 specific and minor jobs scheduled in May 1982, 47 or 23 percent were designated as "expedite" or high priority jobs. Job orders designated "expedite" should be essential and urgently required. However, review showed that job orders were being "expedited" for reasons such as (1) short notice from requestor to perform work, (2) poor planning of seasonal work, (3) testing of new products, (4) replenishing fabricated stocks that had deminished, and (5), command interest. Examples are:

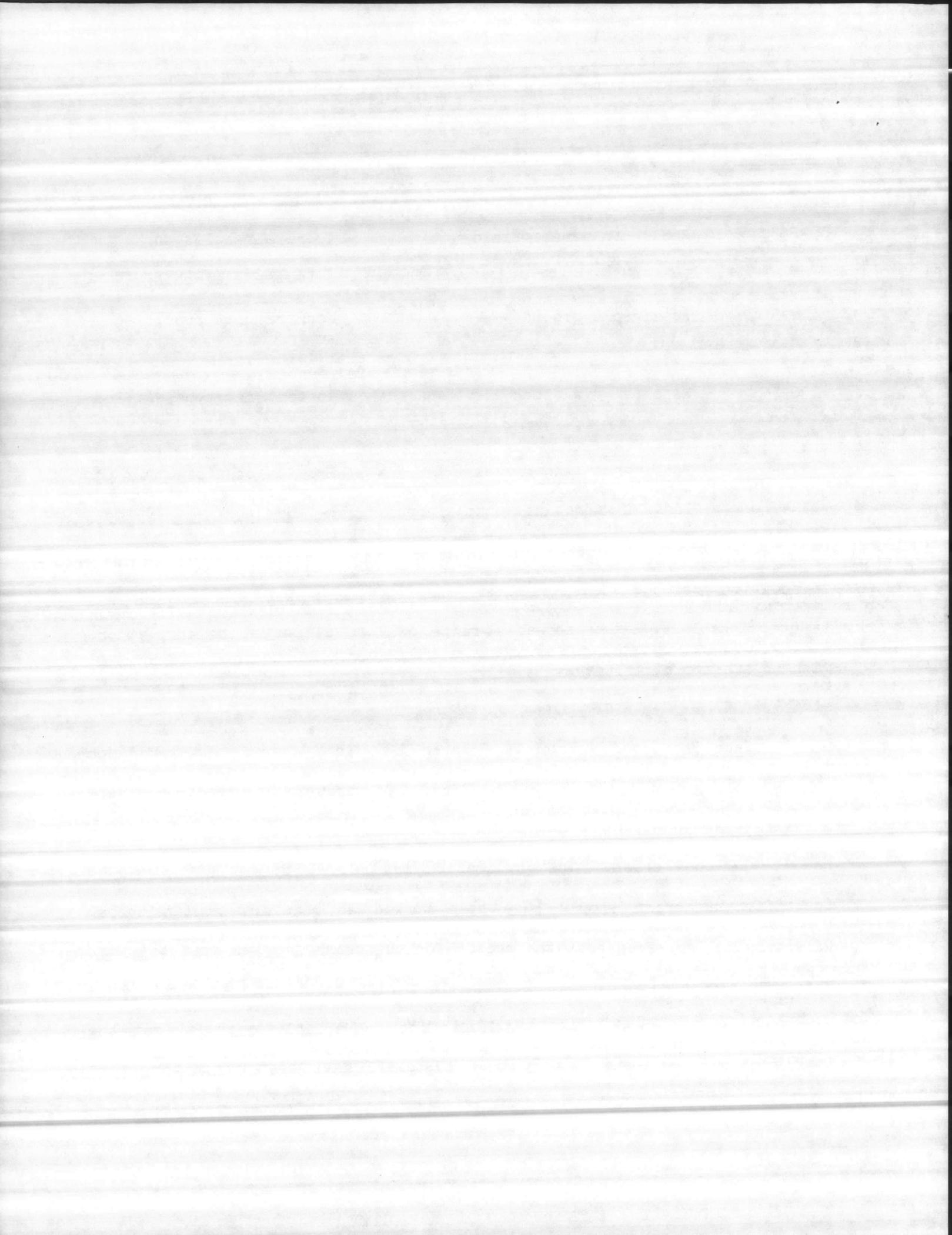


## Job order

<u>number</u>	<u>Job description</u>	<u>Reason for expediting</u>
3808	Repair to parade field	CI To repair holes and ruts for safe marching
1813	Repair playground	SN Work request submitted late
3617	Refinish gym floor	T To test new type of floor finish
3759	Repair road and gravel	PT Erosion control
1347	Install window air-conditioner	R-1 new work

In addition, based on TAT for items "expedited," the urgency of such jobs is questionable. Review showed a range of 3 to 610 days for completion, with an average of 117 days.

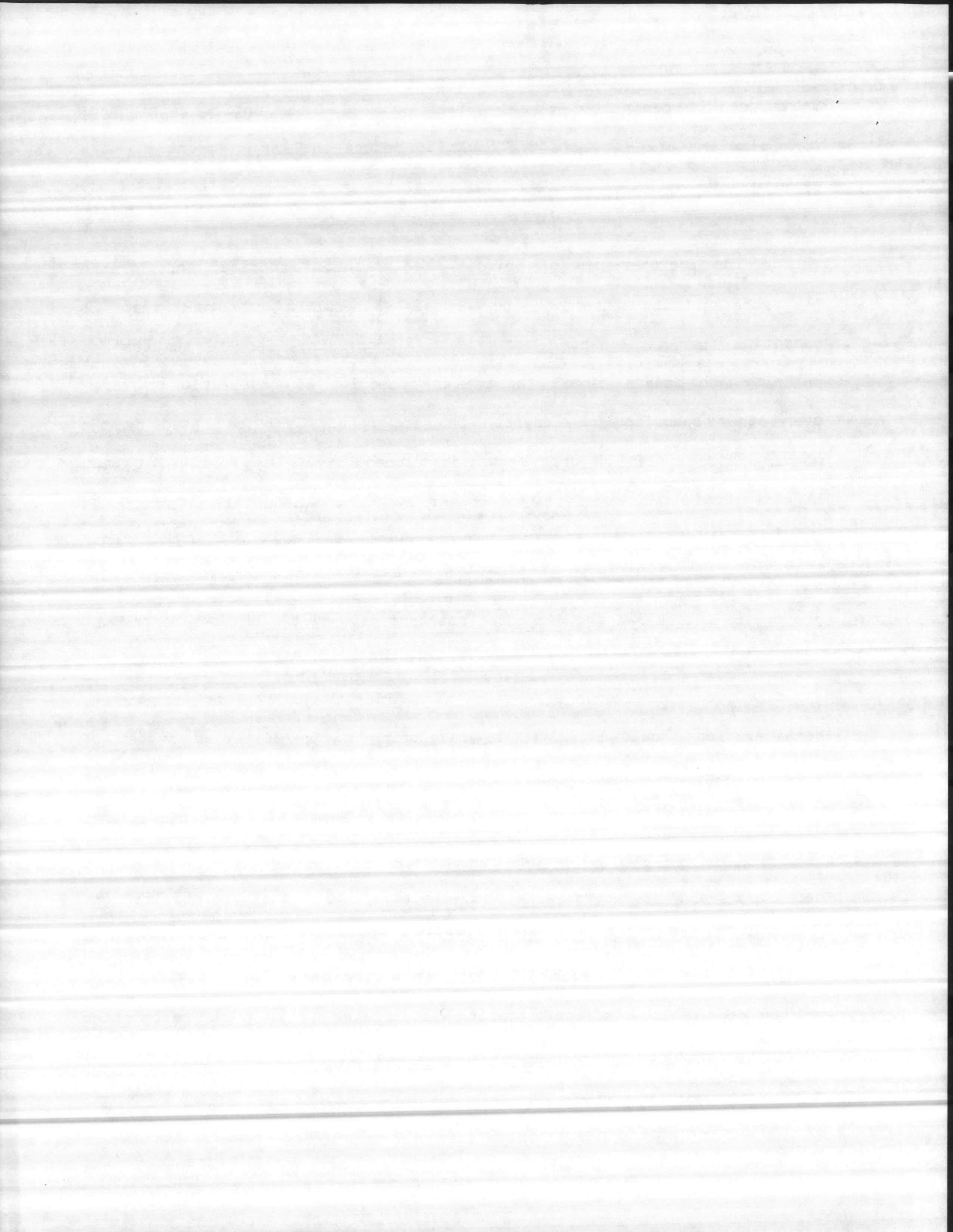
Camp Pendleton. From 19 October 1981 to 19 April 1982, 277 job orders were identified as crash jobs. Of these, at least 50 were identified by cognizant BMD personnel as being questionable as to their need to be done crash. The implication is that 20 percent of the jobs identified as crash should have been worked as regular, routine jobs. Oftentimes it appeared that the reason for the crash job was that the work was the immediate concern of someone in a high position. At first there were only a few crash jobs, which did not appreciably detract from the work routine. However, lately more customers have been requesting that



their jobs be designated crash. Crash jobs slow the entire maintenance work plan and make it more difficult to reduce the large amount of work backlog.

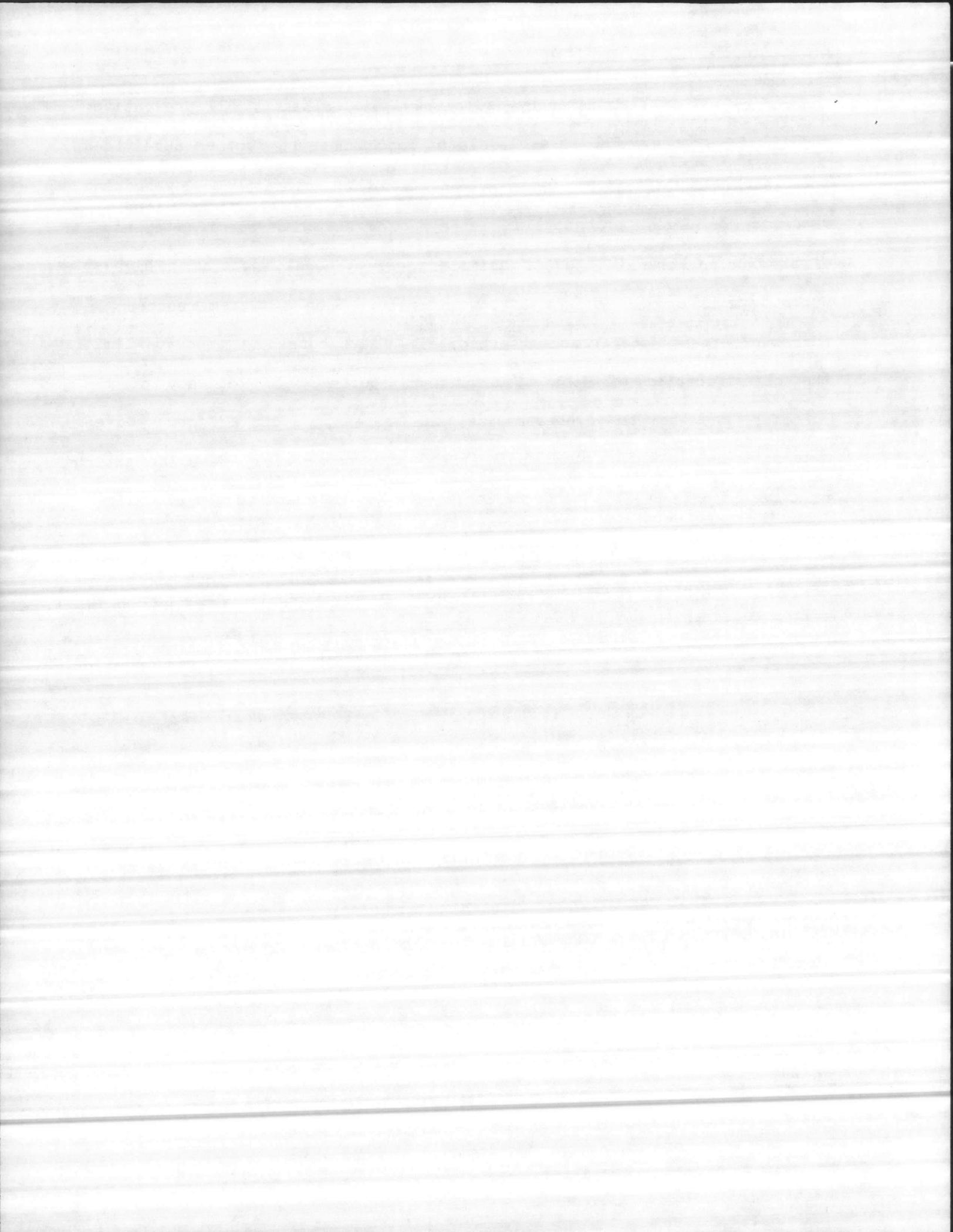
c. The improper use of priority designators "expedite" and "crash" has substantially effected the orderly scheduling of work that is essential to maintenance management. Processing larger numbers of priority job orders causes the master scheduler to reschedule or carry over other specific job orders. The end results can be noted by the number of specific job orders awaiting scheduling. Our review, at Camp Lejeune showed 115 specific job orders awaiting scheduling, of which 44 were specific job orders or projects, totaling 11,051 labor hours, that had passed the projected starting date. Twenty-three of the 44 specific job orders had passed the projected starting date by two or more months.

d. Given the adverse effects of high priority jobs on work schedules, consideration should be given to developing a more detailed system of prioritizing maintenance work. The priority system as outlined in NAVFAC MO-321 is provided as an example. MO-321, chapter 6, recognizes that manpower and funding limitations will not permit the accomplishment of all necessary and desired work immediately upon its identification. Consequently, job priority assignments are essential in determining the relative importance of each job within the work schedule. Provided is a recommended method for prioritizing maintenance work. The recommended system prioritizes work into four categories with three levels of



importance within each category as follows: (1) mission, (2) preventive, and (3) appearance. The three levels of importance are further subdivided into high, routine, or low. In addition, a Priority 1 (overriding emergency or urgent priority) is reserved for use with specific approval of the Public Works Officer or assistant. In general, jobs with highest priority will precede others of low priority. Such a system reduces the number of urgent jobs (crash or expedite). Since current procedures limit the classification of jobs to urgent or routine, the tendency of the customer may be to overemphasize the necessity of a job. Given alternatives, that is, other priorities which more fairly describe their relative importance, the tendency to label a job as crash should diminish.

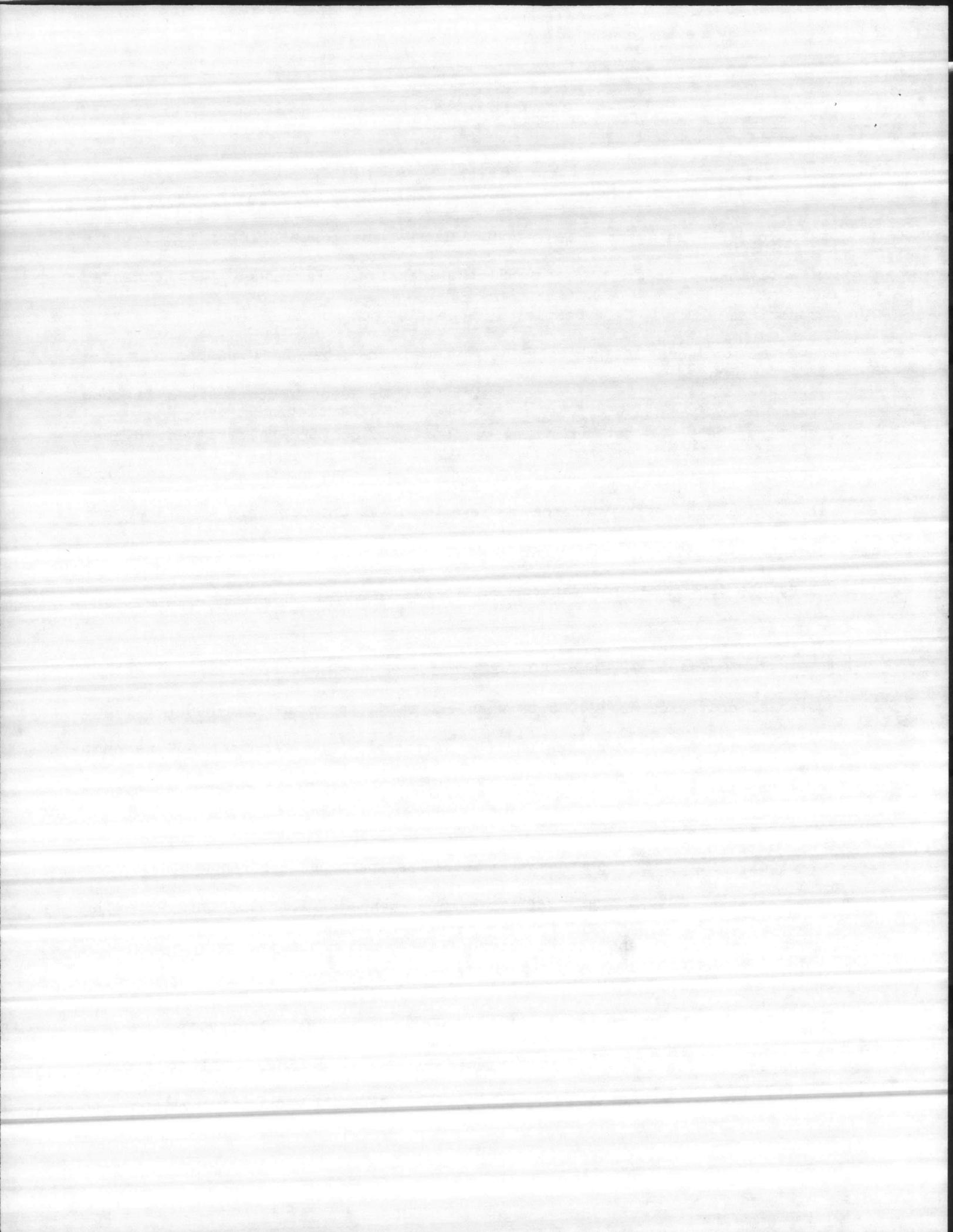
Recommendation 42. CMC consider utilizing the work priority system outlined in NAVFAC MO-321 at all BMDs.



### 33. Reviewing specific job order variances

a. Job order variance analysis which, if properly utilized, assists maintenance managers in controlling and measuring maintenance effectiveness, needs to be more comprehensive. Variances that exceeded authorized limits for completed specific job orders were not always reviewed or were not thoroughly reviewed to determine reasons for the variance. Also, files were not maintained to support conclusions reached and management was not analyzing variances on job orders reviewed. These problems were caused by inadequate estimates, inadequate performance, and inadequate job order variance reviews. Unless unacceptable variances are thoroughly reviewed and supporting files maintained, causes and trends, cannot be determined nor can corrective action be implemented.

b. MCO P11000.7B, par. 5030.2C, requires variance reports when actual material cost exceeds \$2,000 or when estimated or actual man-hours exceeds 80 hours for any work center and the variance is greater than 109 percent or less than 91 percent. Reasons for variances shall be determined by the operations officer and the director of the maintenance and repair division, and the report shall become a permanent attachment to the completed job order. The facilities maintenance officer together with the operations officer and the director of the maintenance and repair division shall meet monthly to review all variance reports, analyze trends, and initiate corrective action. Camp Pendleton variance reports were not prepared, variances were not reviewed nor were meetings held to analyze trends and initiate corrective action. Camp Lejeune did attempt to

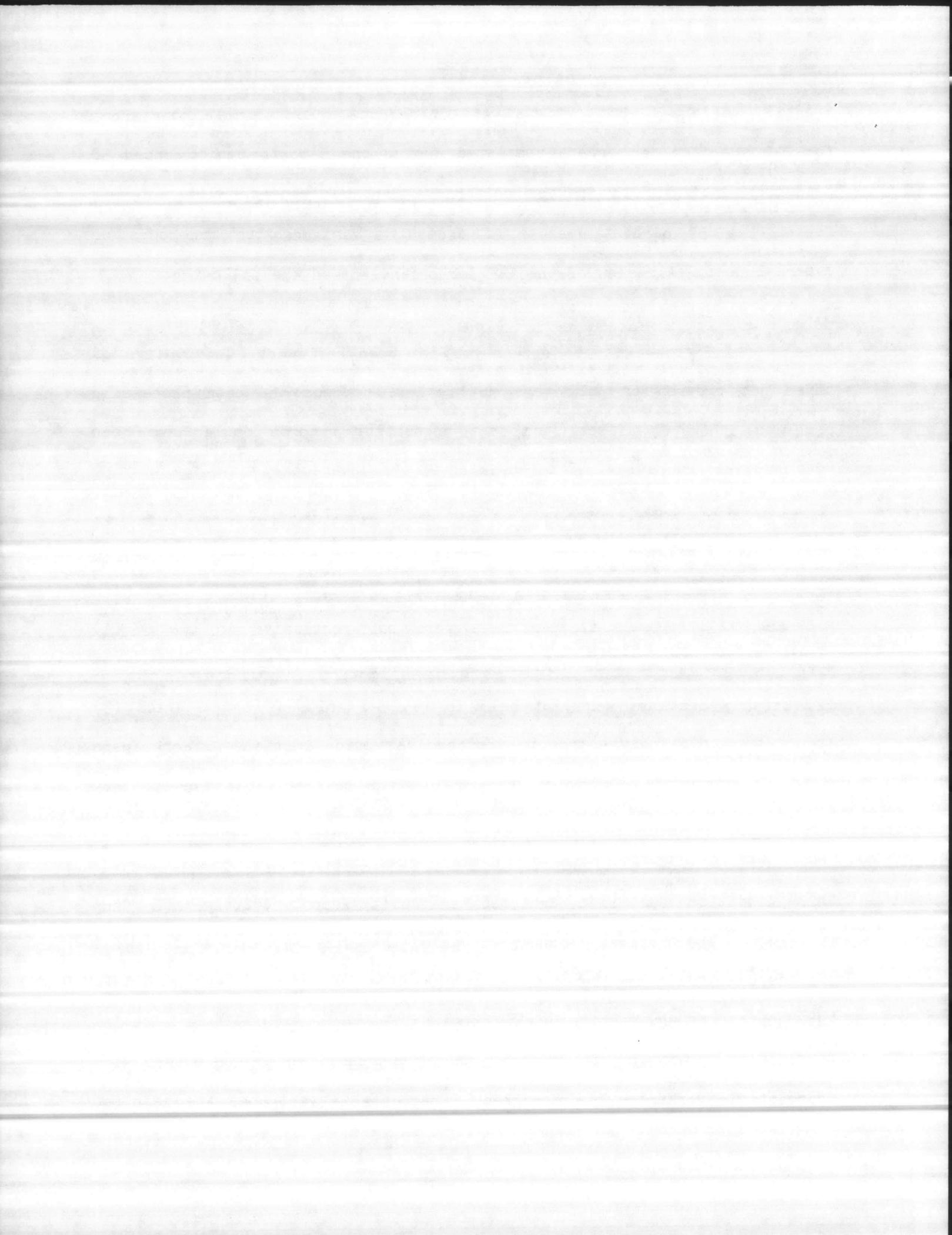


identify variances, but reviews were inadequate. For example, variances for 210 specific job orders completed during the 5-month period ended 30 September 1981 met the review criteria. Variance reports were required for 124 or 59 percent because of excessive variances in man-hours or material cost. A review of the 124 job orders showed the following:

(1) Fifty-eight job orders had not been reviewed. Thirty-five of these job orders for July were not reviewed because of data processing problems. However, fiscal and cost accounting records could have been used to make the review. The remaining 23 were overlooked.

(2) Sixty-six of the 124 job orders with unacceptable variances were reviewed. An analysis of the eight variance reports made for September 1981 showed that reviews were not conclusive in that: (1) workpapers or files were not maintained to support conclusions reached, (2) monthly meetings were not held to review variance reports, and (3) trends were not analyzed nor was corrective action initiated. Workpapers or files supporting variance reports should be available for use by management during monthly meetings.

This condition was also included in Audit Report C42862 (MCB Camp Lejeune). The activity concurred with the finding and stated that increased emphasis and attention had been directed to this area on 6 June 1982 and that such action would continue. However, our current review showed that a decrease in emphasis and attention given to job orders with unacceptable variances has occurred. Unacceptable variances are required



to be reviewed to determine causes and trends, and implement corrective action.

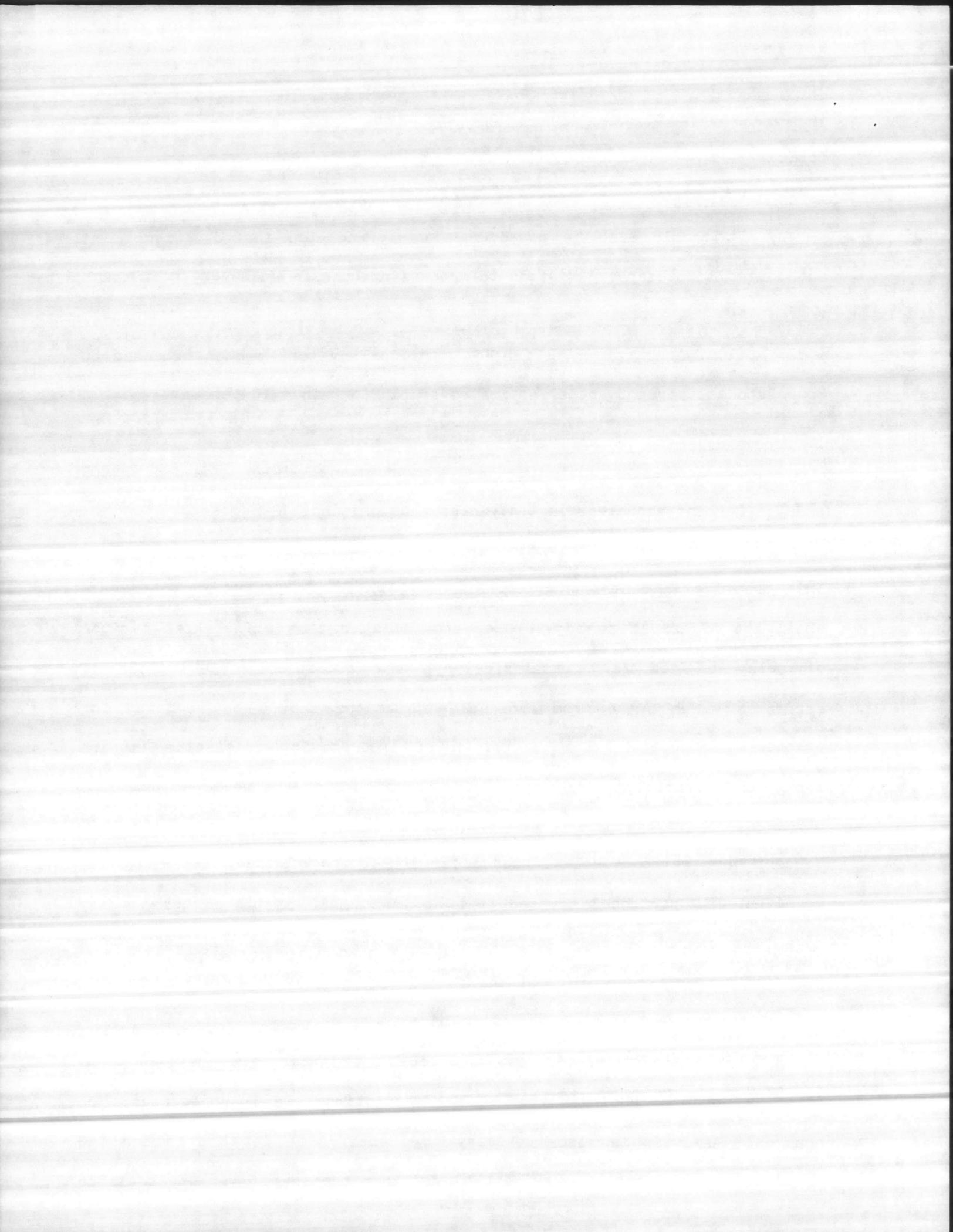
c. It should also be noted that Camp Pendleton issued a memo that authorized maintenance divisions to process amendments whenever:

(1) The actual or estimated hours for any work center exceeded 80 hours and the percent actual/estimated by plus or minus 10 percent.

(2) The actual material cost for any work center exceeded \$2,000 and the percent actual/estimated varies plus or minus 10 percent.

This practice is contrary to MCO P11000.7B which provides that amendments shall not be issued to adjust poor estimates or time differences because of delay or temporary unsatisfactory work conditions. Deviations of estimates which arise from avoidable situations should be reviewed for possible correction. The distortion of productivity statistics impairs managements' ability to track and compare cost between actual and standard. A review of 40 FY 1982 job order amendments showed that 10 percent were retroactively issued after completion of the work. However, cognizant MBD personnel advised that at least half of the amendments may have been caused by poor estimating while the remainder may indicate a need for better productivity at the shop level.

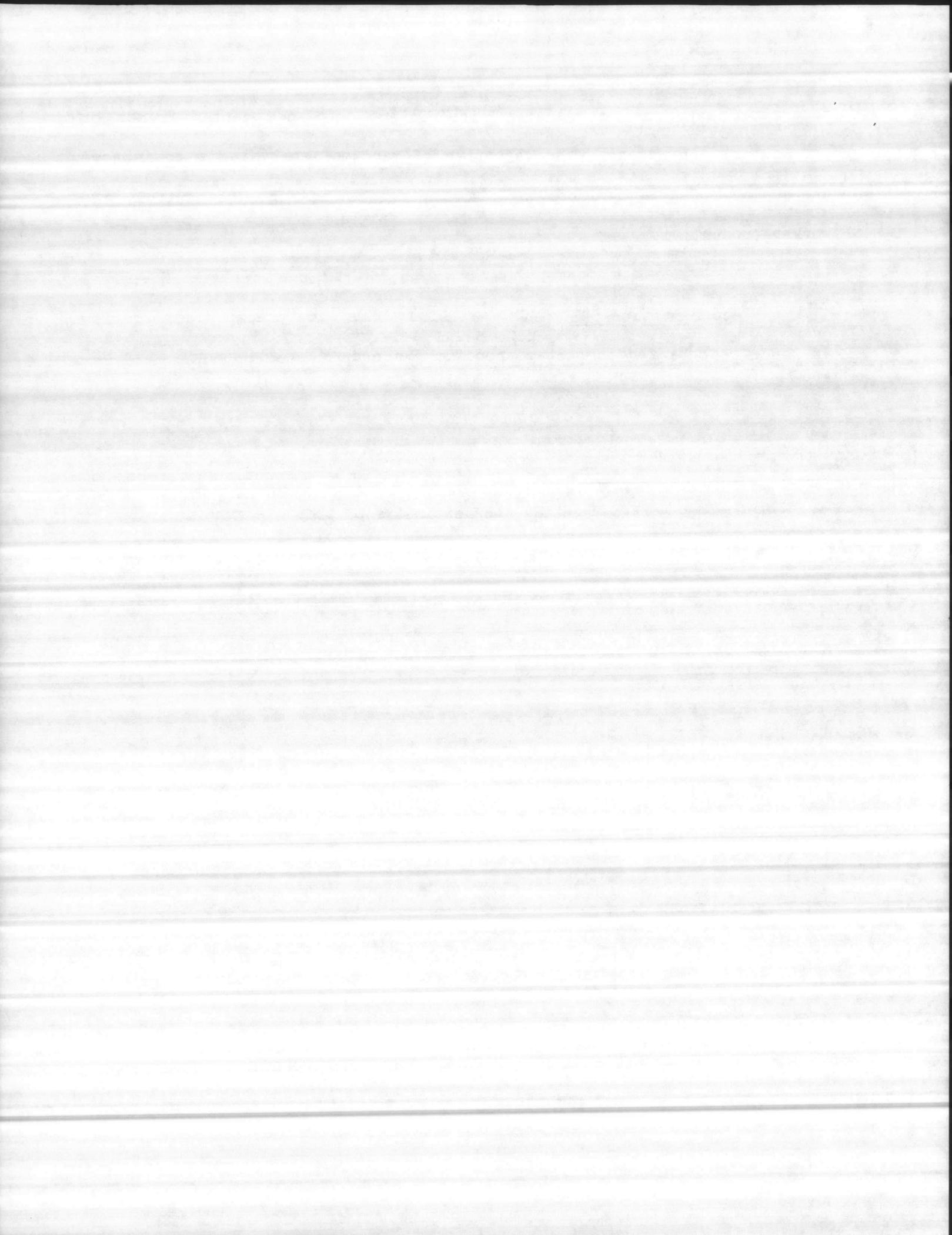
d. Analysis of significant job cost variances are necessary to identify poor planning, poor job descriptions, and unrecorded job changes. Analysis is also necessary to identify the level at which the variance occurs (shop or work center) and to determine if variances at the



determined level are a result of inefficient shop/work center trends or procedures. In essence, the objective of variance analysis is to improve the quality of jobs by improving planning and estimating, job control, and worker productivity.

Recommendation 43. CMC require BMDs to prepare and review variance reports for completed specific job orders in accordance with MCO P11000.7B.

Recommendation 44. CMC require that BMDs discontinue the use of job order amendments to rectify poor estimates or shop overruns.

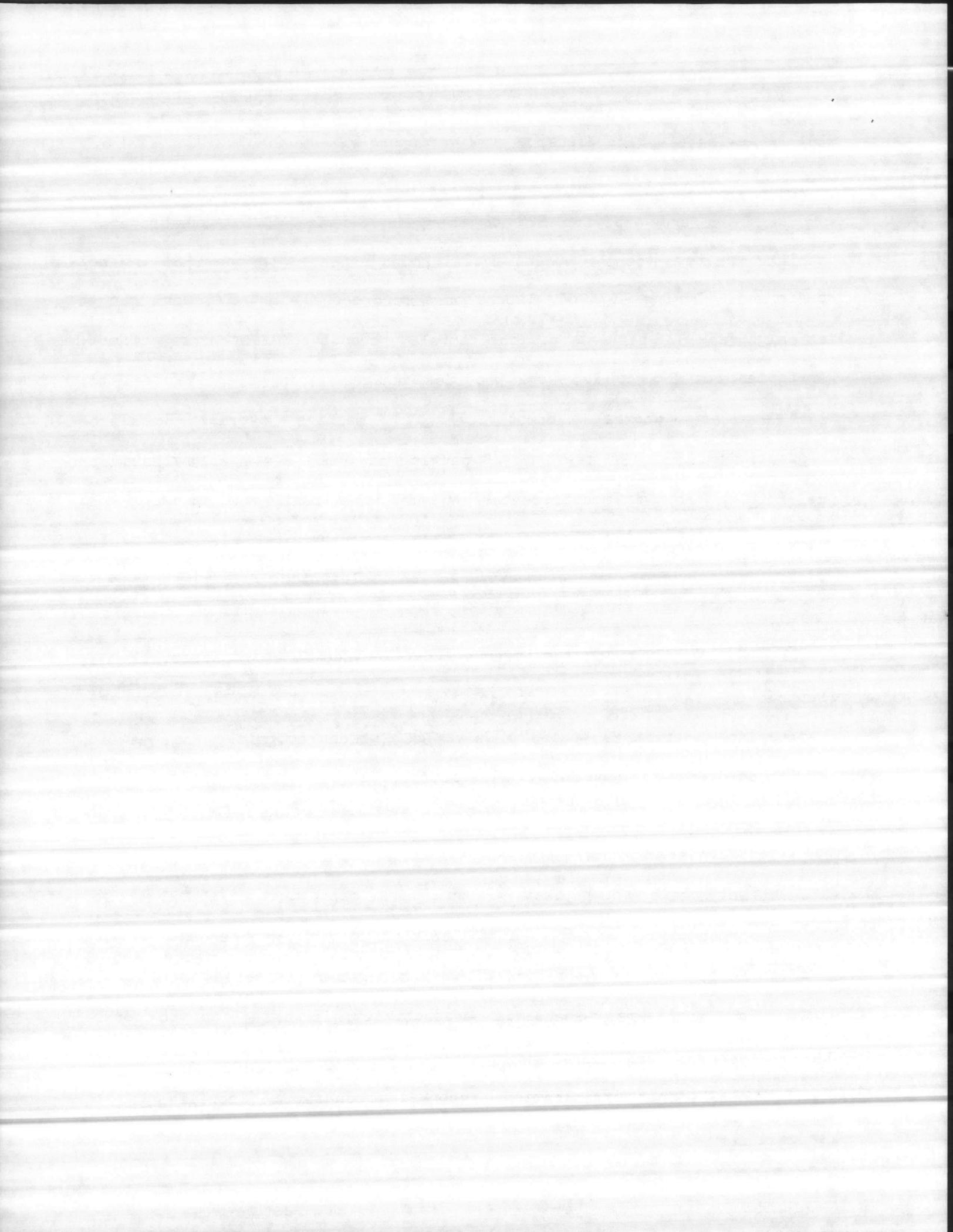


34. Reviewing emergency/service work variances

a. BMDs are applying EPS to Emergency/Service (E/S) work however, variance reviews (comparison of actual hours expended to the EPS) are not performed. During FY 1981, labor hours recorded against E/S work ranged as high as 32 percent of the total productive maintenance effort. Assignment of EPS to E/S work provides management an effective tool to: (1) evaluate worker productivity, (2) measure overall workforce productivity, and (3) measure E/S backlog and thus serve as a basis for determining manpower requirements. On the other hand, assignment of EPS are of little value unless variances are investigated, causes for variances determined, and corrective action implemented.

b. During our audit the Defense Audit Service released Report 82-119, Report on the Audit of Productivity Measurement in Real Property Maintenance Activities, dated 1 July 1982, which recognized the benefits of EPS on overall productivity. The report stated, in part, that:

"Studies by both professional consulting firms and the Navy have shown that without work management systems, productivity ranges from about 30 to 50 percent. Following implementation of work management systems based on engineered standards productivity increased to 80 percent and more..... A GAO report indicated that non-Federal organizations reported productivity increases



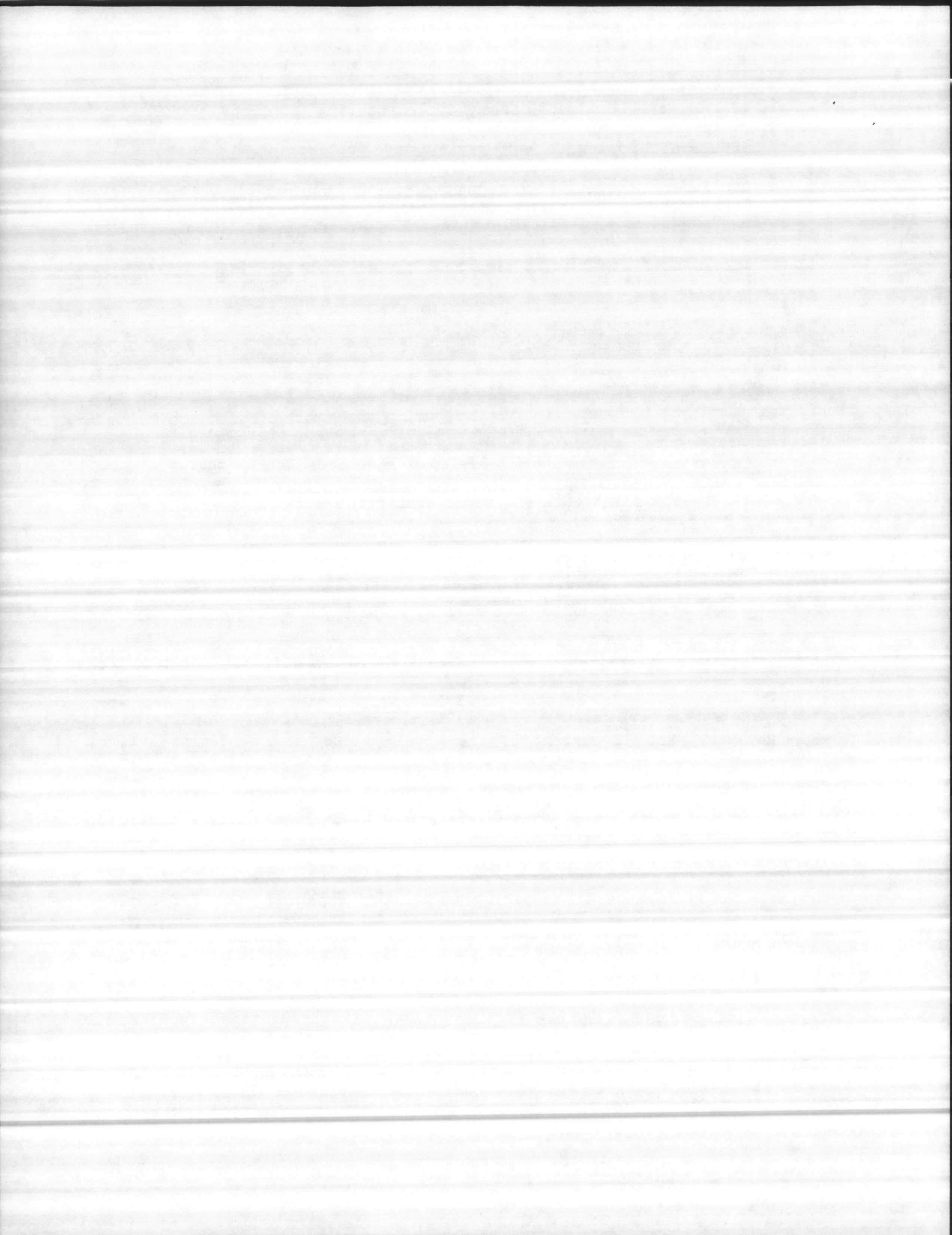
of 10 to 45 percent after implementating adequate work management systems. Our review and contacts with seven non-Federal organizations supported the GAO conclusions. One company contacted said that its performance efficiency increased from 40 to 68 percent after it adopted EPS."

The report further stated that:

"Our discussions with non-Government organizations indicated that the Navy developed standards are probably the best available, even in the commercial sector."

In addition, various reports released by the Naval Audit Service have shown that the benefits of increased productivity are lost when EPS are not effectively utilized. As indicated, a significant portion of productive manpower is devoted to E/S work. During FY 1981, E/S work represented 23 and 32 percent of the total productive maintenance effort at the two BMDs, respectively. Considering the benefits of increased productivity and the significant amount of E/S labor hours expended, variance reviews are necessary. At the two BMDs, standards were applied but no effort was made to compare actual hours expended with EPS applied as follows:

Camp Lejeune. Review of 50 service calls completed between April 1982 and August 1982 showed that variances occurred on 44 or 88 percent. Variances ranged as high as 13.5 hours yet causes for variances had not been reviewed or investigated.

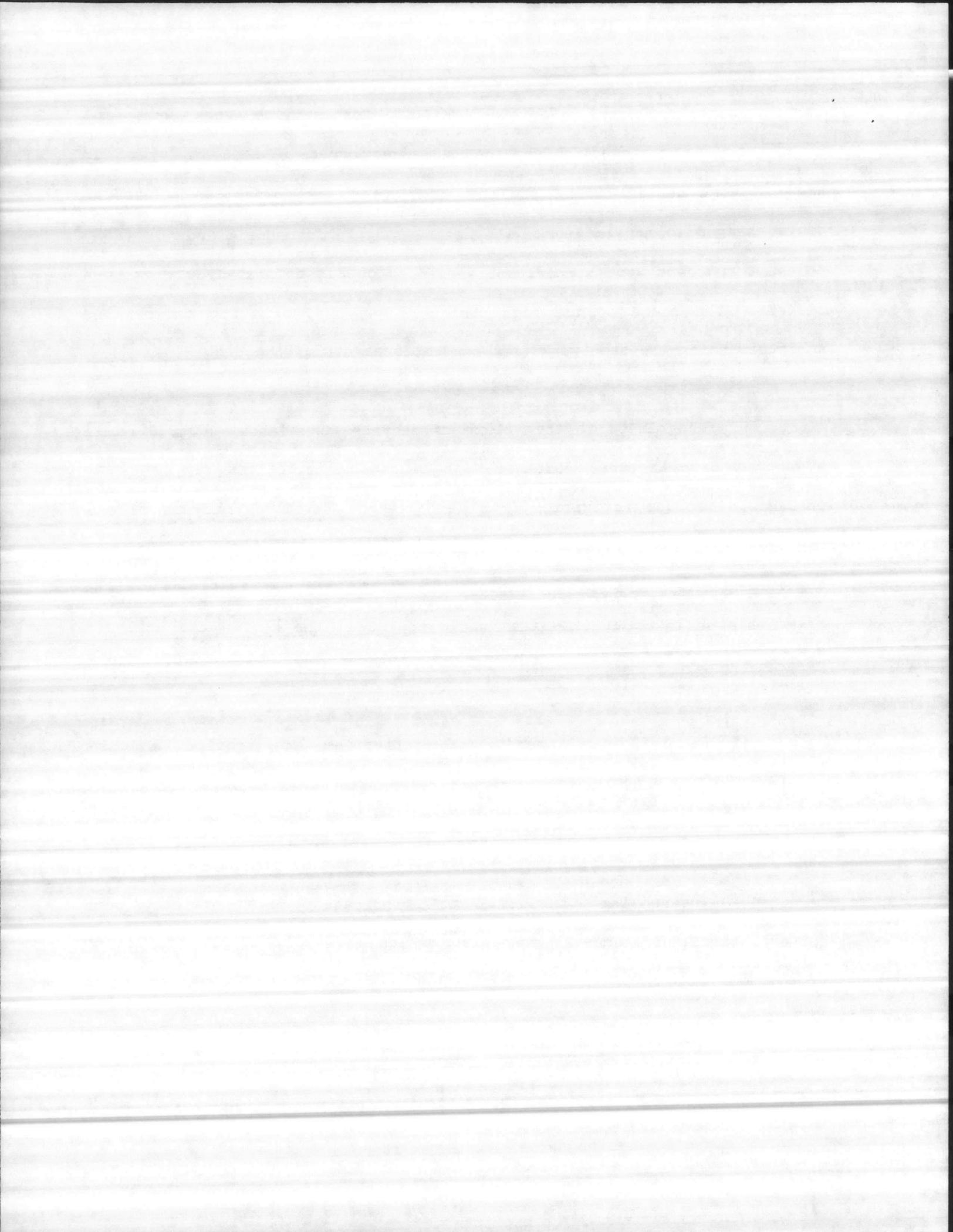


Camp Pendleton. Variance reviews for service work were not performed. We reviewed 22 service calls performed by nine employees in the E/S work center during one day. We noted, by comparison of actual hours charged to service work with Engineering Performance Standards (EPS) hours, that there were significant variances on six completed service work tickets. The cause of the high variances was due to having two skilled employees doing the same work that one employee could have done.

c. We recognize that the volume of service work (about 100,000 calls a year at Camp Lejeune) combined with manpower limitations may, in some instance, preclude activities from performing a detailed analysis of all E/S work variances. However, an alternative is to identify and evaluate significant variances on a sample or periodic basis. Additional steps that could be taken by BMDs that would assist in the review and analysis of E/S work are:

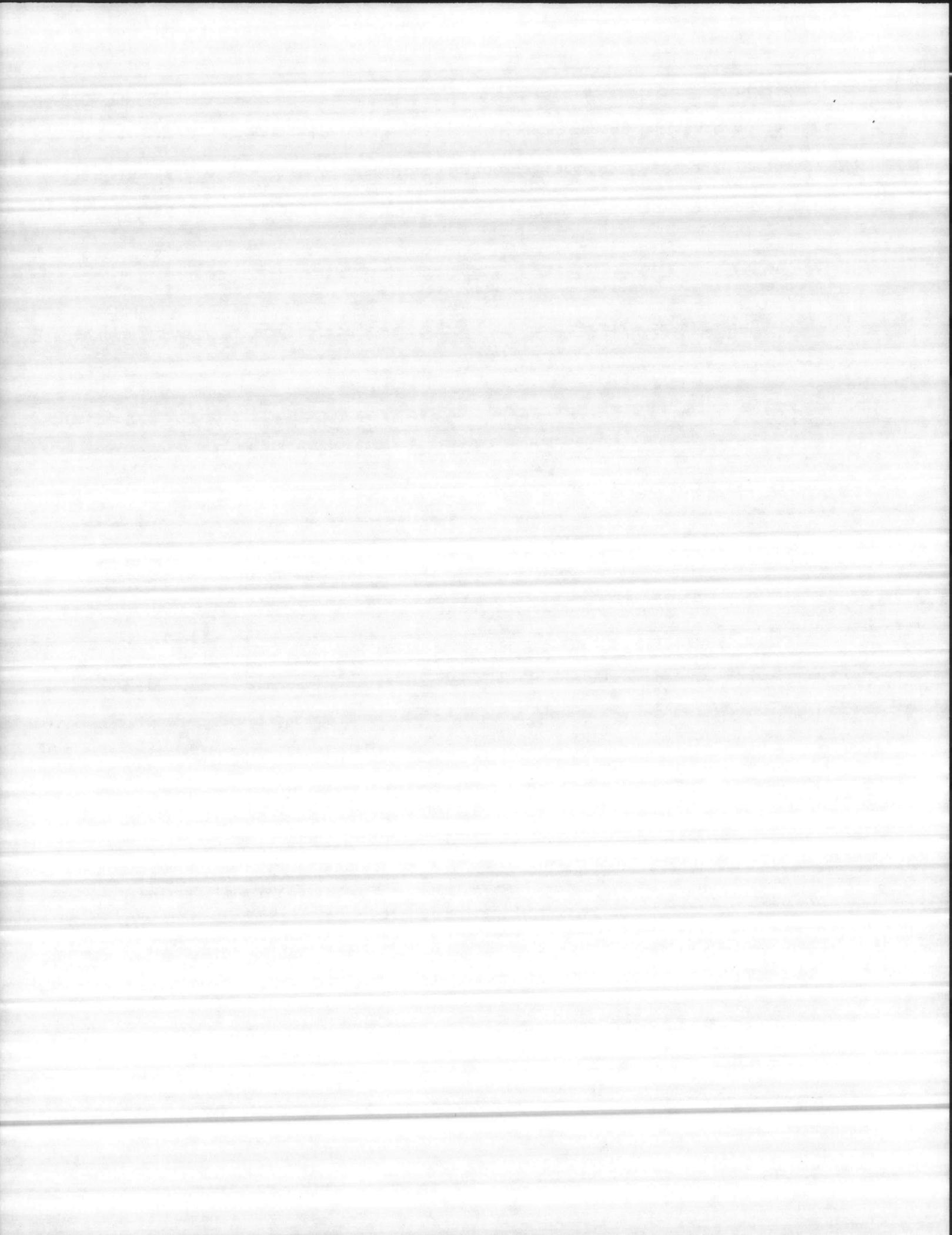
(1) Requiring customer/tenant activities to provide a more complete and thorough work requirement description when E/S work is called in to the work reception desk.

(2) Instructing workers to indicate on service work authorizations, any unusual conditions which adversely affect completion of the job.



d. Evaluating actual work performance in relationship to EPS is an essential process within an effective maintenance management system. The completed cycle of estimating, executing and analysis provides management a basis to effectively manage and control resources, in that, shop problems, craft expertise, and work methods or habits can be identified and, if necessary, corrected. All of these factors are a primary source of increased productivity.

Recommendation 45. CMC establish procedures to ensure that BMDs review and investigate variances applicable to E/S work.

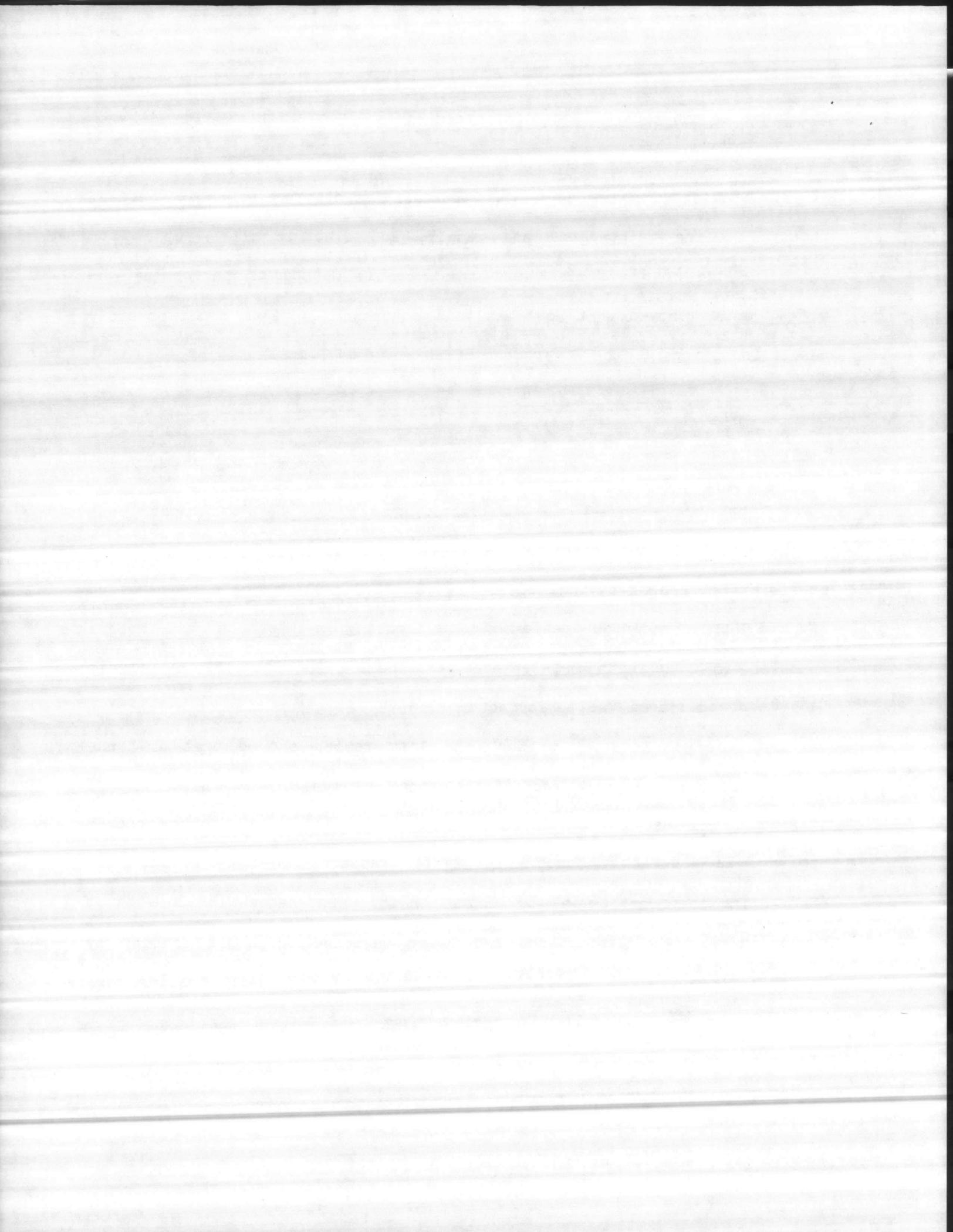


35. Reducing and controlling maintenance costs

a. Studies are needed within certain maintenance function areas, namely, roofing maintenance and repair, and electric motor repair, to determine the most efficient and least costly method of performing the work. Review showed that cost analysis of these functions could possibly result in savings to the Government of at least \$4.9 million.

b. Our review showed the following:

(1) Camp Pendleton. Contracting may not be the most cost effective method to accomplish roofing maintenance and repair. It is possible that a cost savings of as much as \$4.9 million could be realized if MCB Camp Pendleton performed the roofing maintenance and repair function in-house with maintenance personnel. The last review (Audit C12548) of this area was performed in FY 1979, at which time, the function was performed in-house. Further, the last review showed that in-house performance was the most economical method of performing the work. FY 1982 data provided by BMD indicates this is still the case even though roofing is currently under contract. Apparently the reason for contracting the function was to accomplish the maintenance mission without exceeding manpower limitations and other personnel ceilings imposed by higher authority. MCB has initiated CA reviews for 3 of 11 smaller work centers, and has scheduled CA reviews for 9 of 11 service maintenance



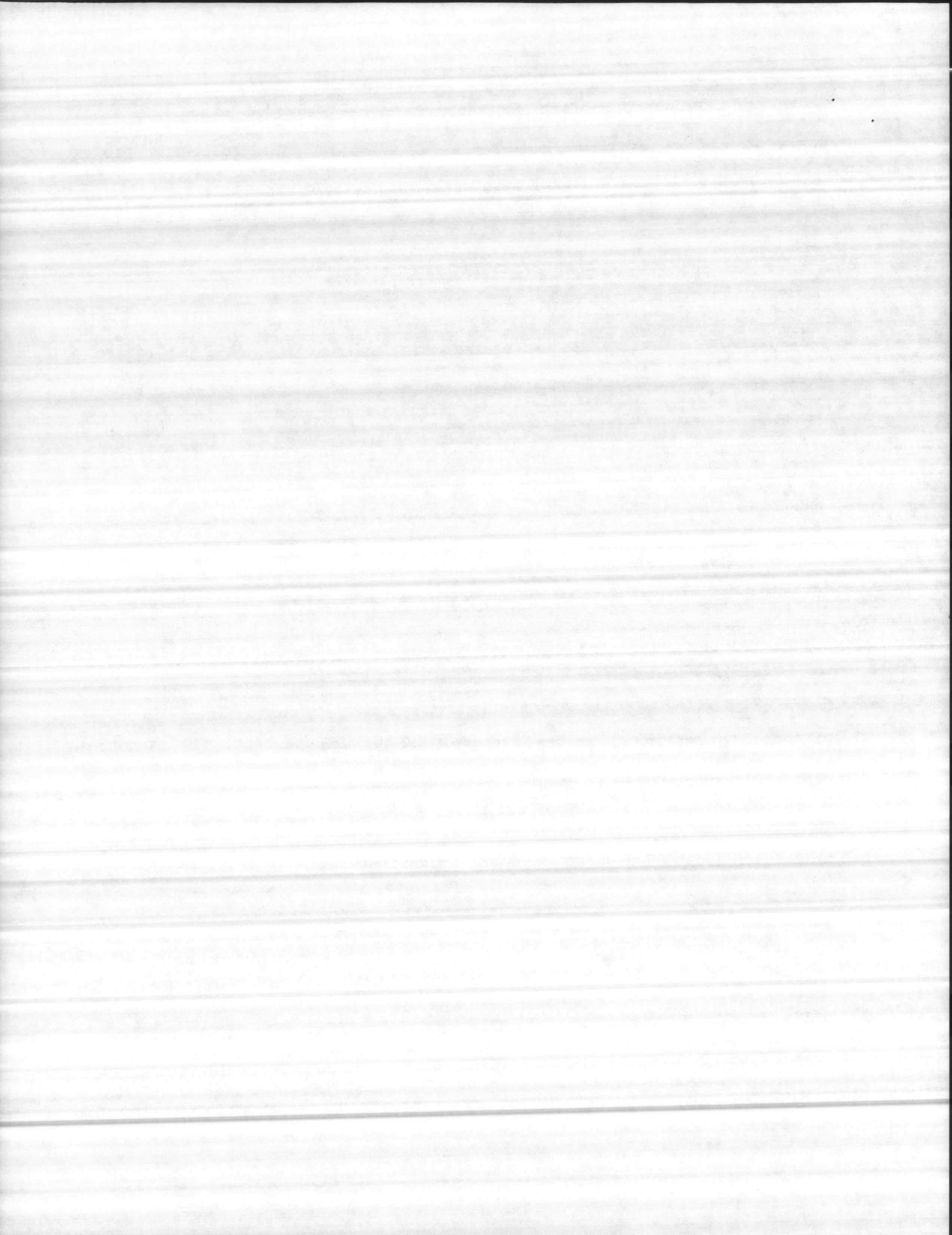
contracts. However, roofing contracts have been awarded since the last audit review in 1979 without formal CA review. The following table compares in-house and contract cost data for FYs 1979 and 1982:

	<u>FY 1979</u>	<u>FY 1982</u>
In-house	\$55 per square	\$92 per square
Contract	\$100-\$200 per square	\$133 per square

Note: a square is 100 square feet.

As indicated above, roofing maintenance and repair needs to be subjected to a CA review.

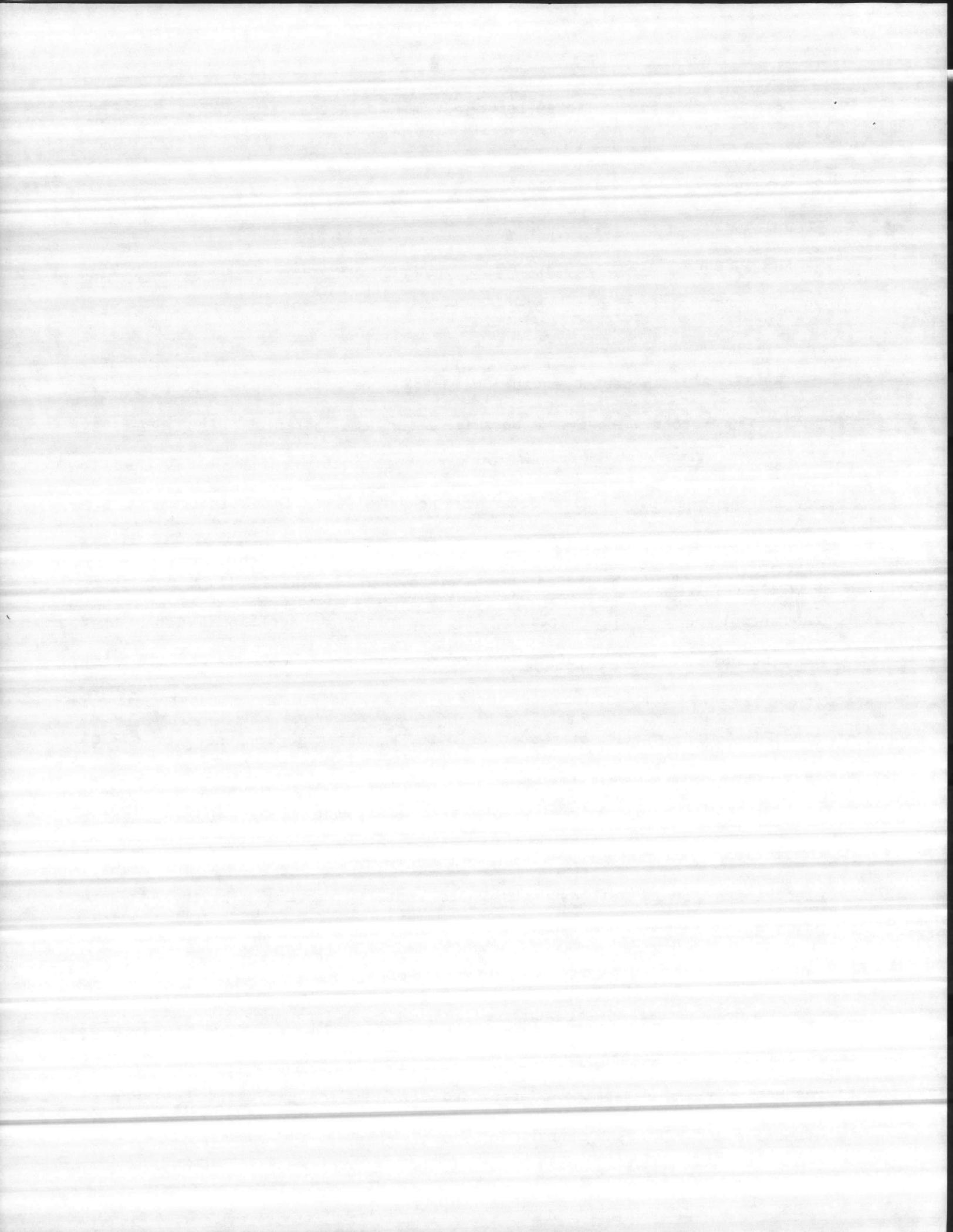
(2) Camp Lejeune. Labor hours expended by personnel to repair electrical motors are excessive. Review showed that total actual time expended to repair 23 motors exceeded EPS by 254 percent. Maintenance personnel expended 110 hours repairing the motors while the total EPS time applied was 31.1 hours. Review of applicable maintenance tickets showed that 15 or about 65 percent exceeded assigned standards. Examples are:



<u>Date</u>	<u>Ticket number</u>	<u>Actual time</u>	<u>EPS</u>
27 Jul 1982	34439	6	1
30 Jul 1982	48215	8	1
4 Aug 1982	47798	10	2
10 Aug 1982	47767	19	2.2

During the 7-month period ending July 1982, the motor repair shop repaired about 145 motors. However, because labor and material were generally charged to standing job orders we were unable to identify total cost to repair the motors. We did determine however, that total labor cost for the electrical equipment repairer who was assigned full time to the repair shop for the 7-month period was \$17,308. This equates to a per motor labor cost of \$119.37, excluding any materials or additional labor that were necessary. Review of an active BPA for motor repairs for the same 7-month period showed that 114 motors were repaired at a total cost of \$12,124.24, for a per motor cost of \$106.34, material included, or \$13.03 less per unit. At time of our review, the Electrical Shop was experiencing a large ticket backlog, in that, 339 tickets were awaiting completion. Increased use of the BPA would free a WG-09 and WG-05 electrician for ticket work and would result in overall savings to the Government.

Recommendation 46. CMC review roofing maintenance and repair, and repair of electrical motors at Camp Pendleton and Camp Lejeune, respectively and determine if provided services are performed in the most effective and efficient manner.

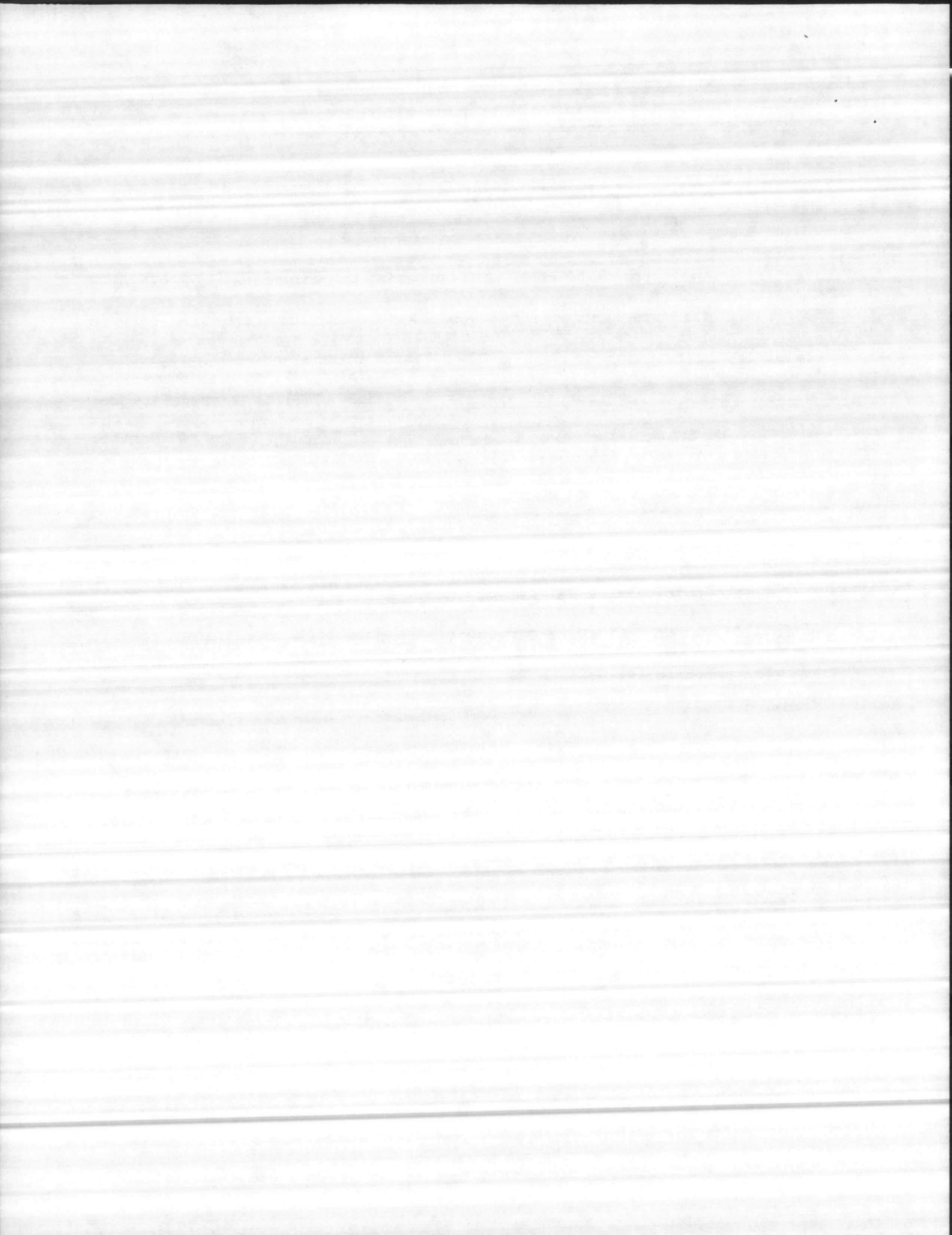


36. Establishing procedures to monitor and reduce turnaround time on specific jobs

a. BMDs need to establish procedures to record, review, and investigate each phase of the work process to ensure that processing inefficiencies are recognized and steps taken to minimize the time between receipt of the request for work and completion of the job. Although there are no firm goals for acceptable turnaround time (TAT) on a specific job, the average TAT at the two BMDs reviewed of about 8 and 9 months, respectively, appears to be excessive.

b. From a random selection of 100 specific jobs completed in FY 1982, we were able to determine TAT for 62 jobs. TAT for the jobs ranged from 1 day to 1,068 days. About 23 percent of the jobs took more than 1 year to complete. Details follow:

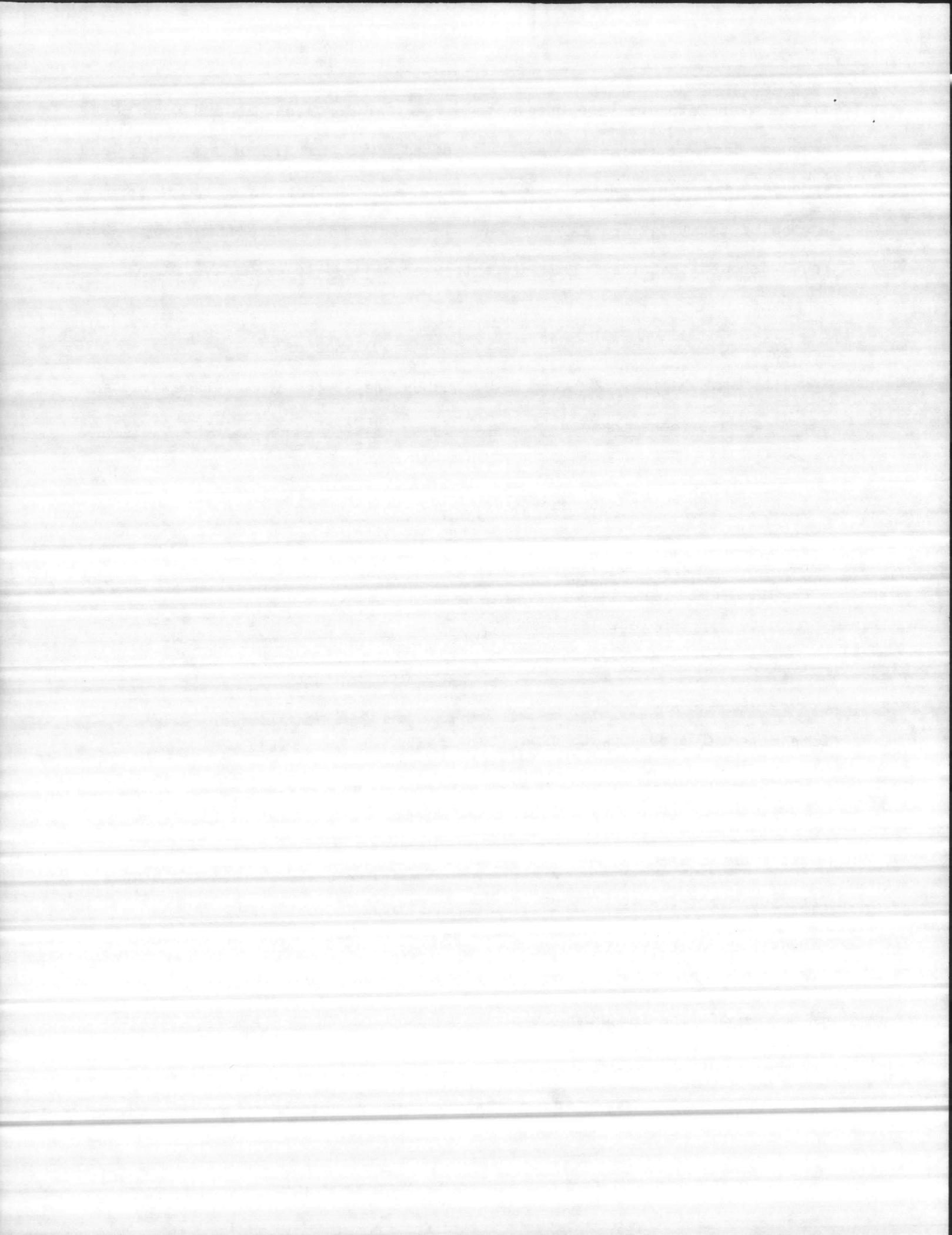
<u>Elapsed</u> <u>time</u> <u>(days)</u>	<u>Number</u> <u>of</u> <u>jobs</u>	<u>Percent</u> <u>of</u> <u>total</u>	<u>Average</u> <u>elapsed time</u> <u>(days)</u>
1 - 30	10	16	19
31 - 360	38	61	201
Over 360	<u>14</u>	<u>23</u>	<u>611</u>
Total	<u>62</u>	100	<u>265</u>



At Camp Pendleton we were unable to review TAT for each job and work phase because data, such as in and out dates, was not recorded. At Camp Lejeune, some information was available and we were able to perform a review of total TAT and TAT for each work phase for 24 specific jobs. Our review showed that the following factors attributed to excessive TAT:

<u>Work process phase</u>	<u>1/ Number of jobs</u>	<u>Range of days work in process</u>	<u>Average elapsed time (days)</u>
Date of work request - to date work submitted to P&E	22	0 - 73	14
Date work submitted to P&E - to date P&E completed estimate	22	0 - 168	21
Date P&E completed estimate - to date material ordered	17	9 - 54	24
Date material ordered - to date material received	18	26 - 365	148
Date material received - to date job started	18	1 - 238	63
Date job started - to completion of job	22	1 - 67	10

1/ Number of jobs for which complete information and dates were available.

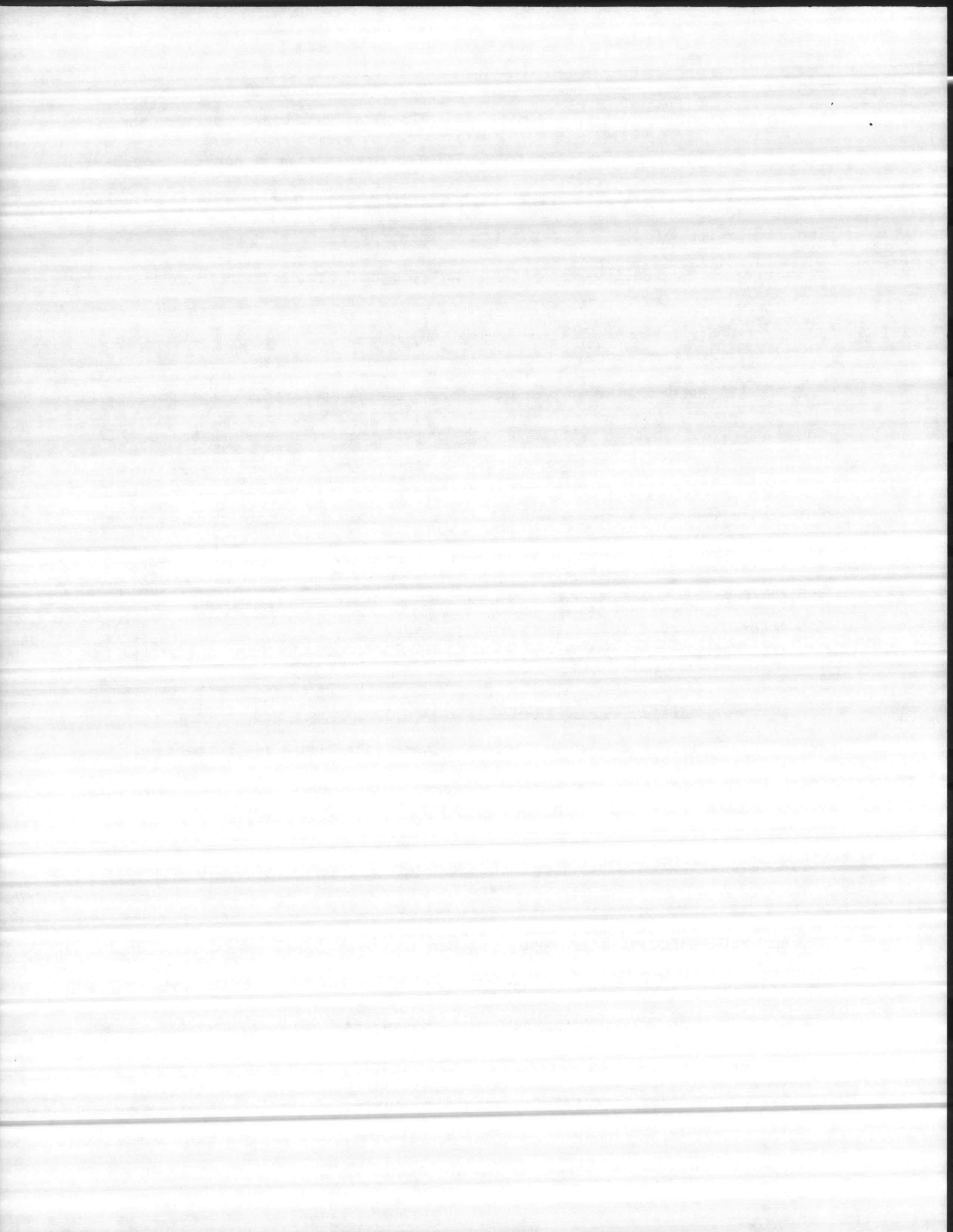


c. Currently, BMDs do not have locally developed procedures to record, monitor, and evaluate total TAT for specific jobs nor do they have procedures to evaluate each phase of the work flow process. Implementation of the following would identify inefficiencies in the work flow process and allow management to recognize and correct unfavorable trends:

(1) Record. Work processes are readily defined. Therefore, TAT for each work process within a job can be recorded and measured. One method would be an "in and out" log attached to the job order. Upon receipt of the job order each work process (e.g., work reception, planning and estimating, scheduling) would record the "in" date on the log. When the work process was completed the "out" date would be recorded and the job order forwarded to the next work process.

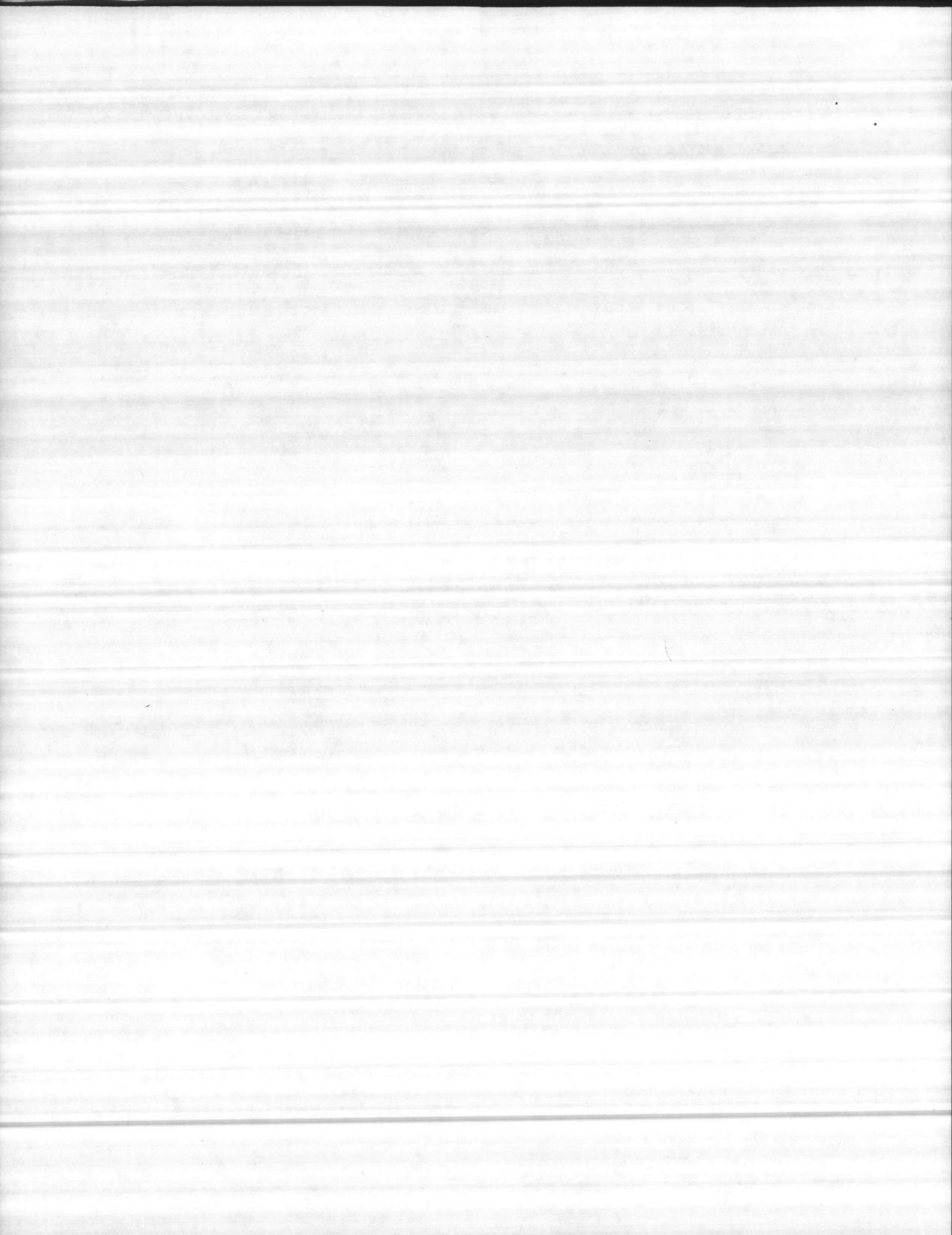
(2) Review and investigate. Once a system is implemented to record TAT for each work process, the data can be summarized for management review. This summarization could be used to identify inefficiencies in each work flow process, determine causes, and take corrective action.

e. MCO P11000.16, par. 4000, states that all functions, for effective management, should have pre-established work controls or standards, a means of measuring standards against achievement, and a systematic method of evaluation. In this regard, BMDs should establish procedures to measurement and evaluate TAT for specific jobs.



Recommendation 47. CMC take corrective action to improve BMD responsiveness to specific jobs of maintenance and repair work.

Recommendation 48. CMC ensure that BMDs establish a method of recording, measuring and evaluating TAT for specific jobs to identify work process inefficiencies.

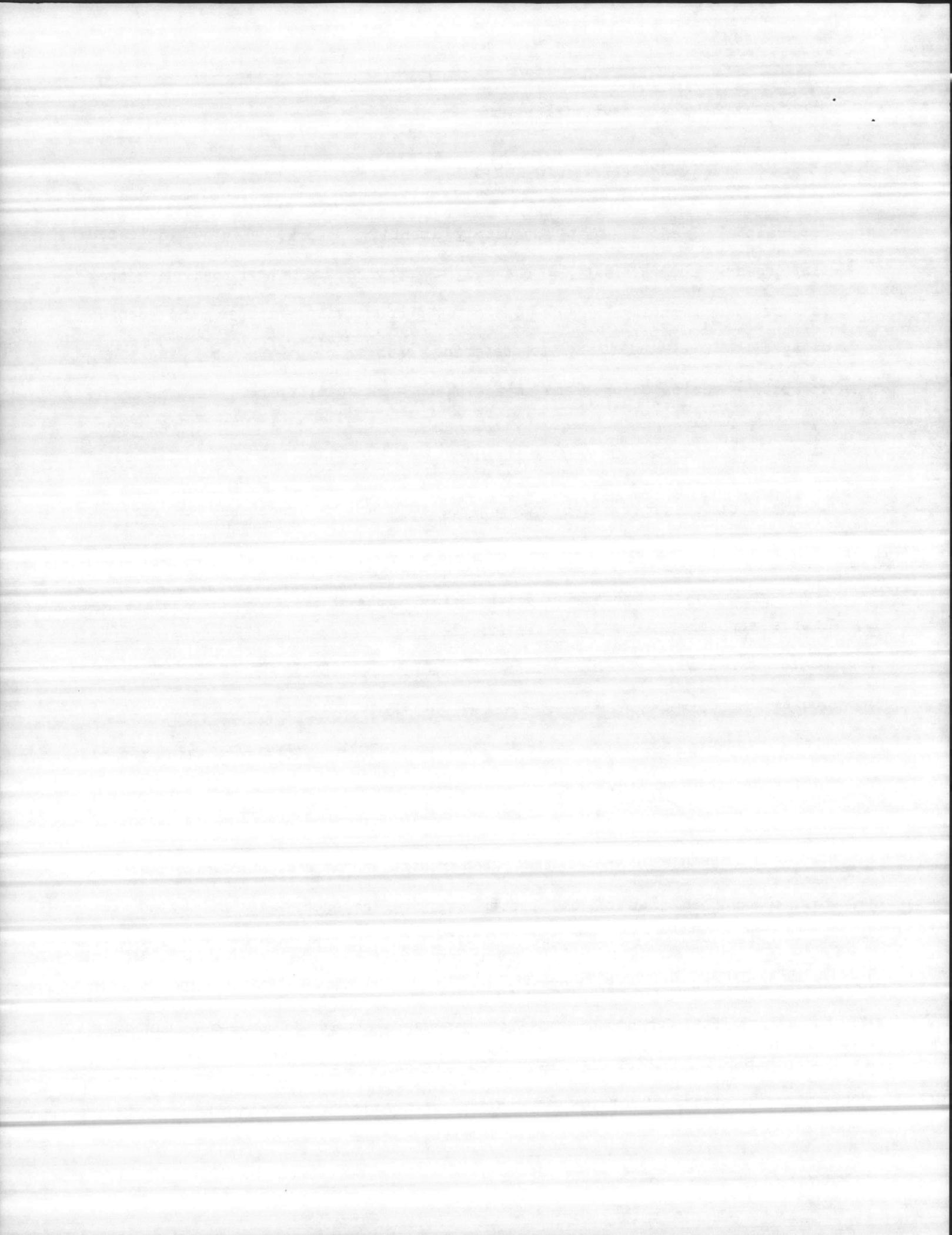


37. Identifying and reviewing rework

a. The extent of actual rework effort is undeterminable since BMDs do not maintain records that adequately identify rework. Review indicated that rework occurs, but is charged to service calls or specific jobs. Failure to identify rework distorts productivity figures and denies management the visibility to determine causes of rework and implement corrective action on problems impacting on work quality.

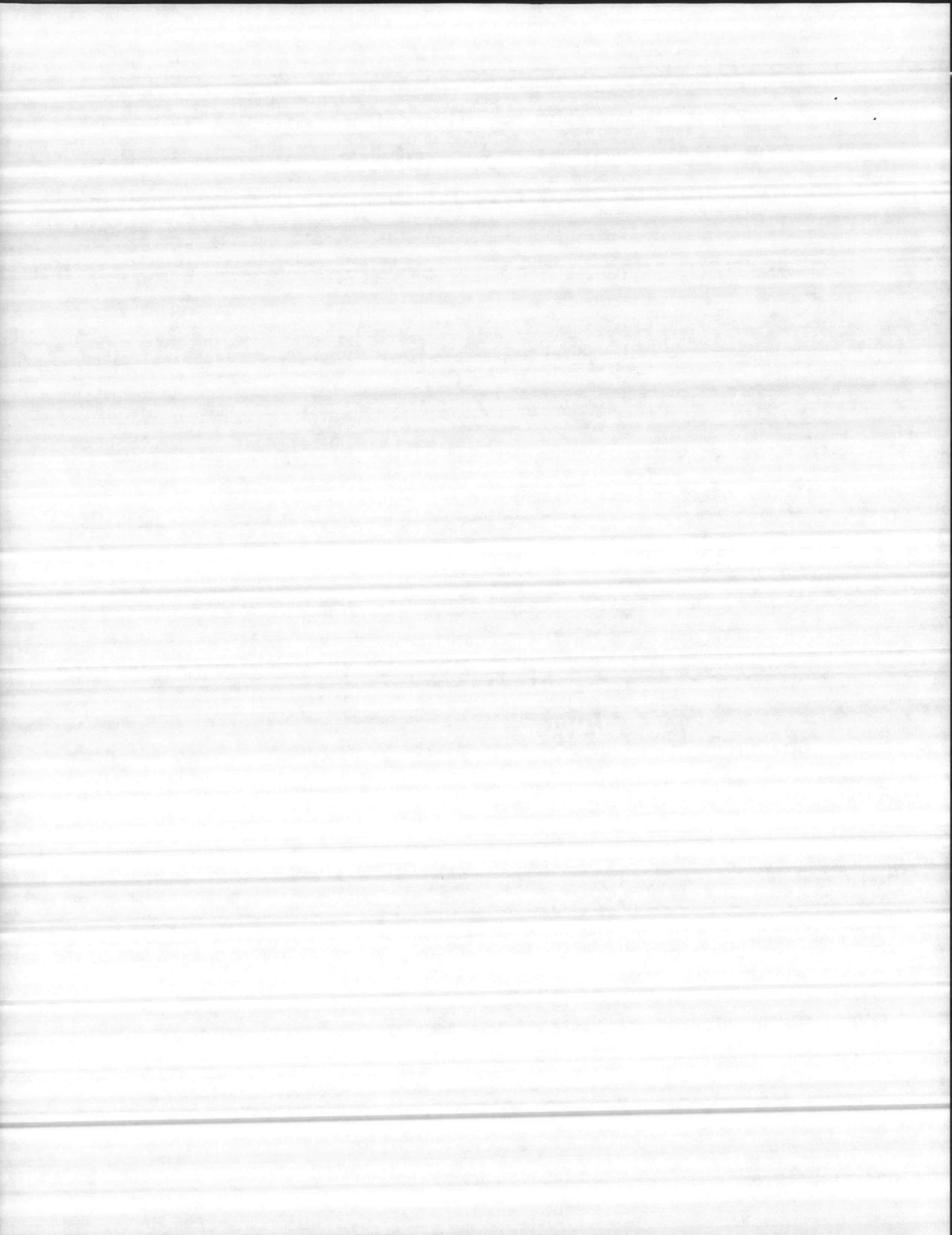
b. MCO P11000.7B, volume III, defines rework as work which, in the judgment of the facilities maintenance officer, is necessary to correct faulty work. The order further requires that rework hours be charged to the applicable overhead job, Work Code 14. However, it appears that little emphasis, if any, is placed on identifying and reporting rework. At the two BMDs reviewed, no rework hours were logged during the first 9 months of FY 1982. However, based on survey questionnaires, 70 percent of the customers indicated that rework was sometimes required to correct faulty original work.

c. It should be noted that when rework hours are improperly charged to new work in lieu of the proper overhead category, visibility of the rework is lost. As a result, audit and identification of improperly charged rework hours is extremely difficult. However, it is unreasonable to assume that about 1.2 million man-hours could be expended during a 9-month period without any rework hours being logged.



d. Proper identification and analysis of rework provides management a valuable tool to assess the effectiveness of the maintenance operation. It also provides managers a means to detect and investigate causes of faulty workmanship which, in turn, improves overall quality of provided services.

Recommendation 49. CMC ensure that BMDs identify, investigate, and record maintenance rework hours.



38. Improving customer relations

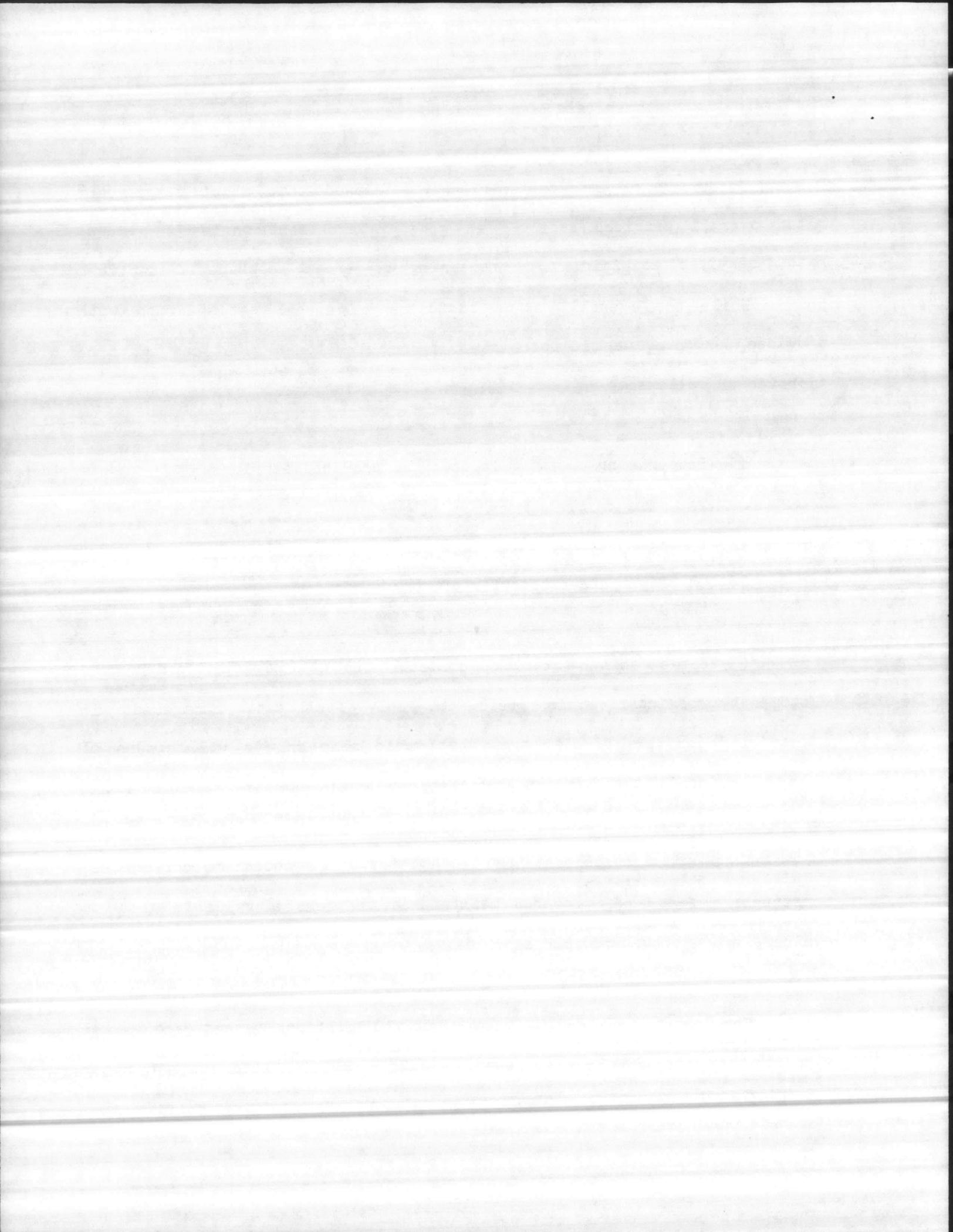
a. A survey of BMD customer/tenants showed that about 62 percent rated overall provided services as good to excellent while 31 percent rated services as fair. The remaining 8 percent considered services poor. While the overall rating indicates a general satisfaction with provided services, we did note areas in which customer relations could be improved as follows:

(1) Encouraging customer feedback on provided services.

(2) Educating customers regarding turnaround time (TAT) required for completion of various categories of work.

(3) Establishing a central contact point to register and record customer complaints. This would not only facilitate management in identifying possible problem areas but would also show a willingness of BMDs to maintain the best of relations with all customers. Image and perception are key elements in maintaining an effective working relationship with customer/tenant activities. In addition continuous, constructive feedback, provides maintenance managers a valuable tool to evaluate and improve provided services.

b. The audit included a survey of 30 customer/tenant activities supported by the two BMDs reviewed. Of 26 responses received, 16 rated



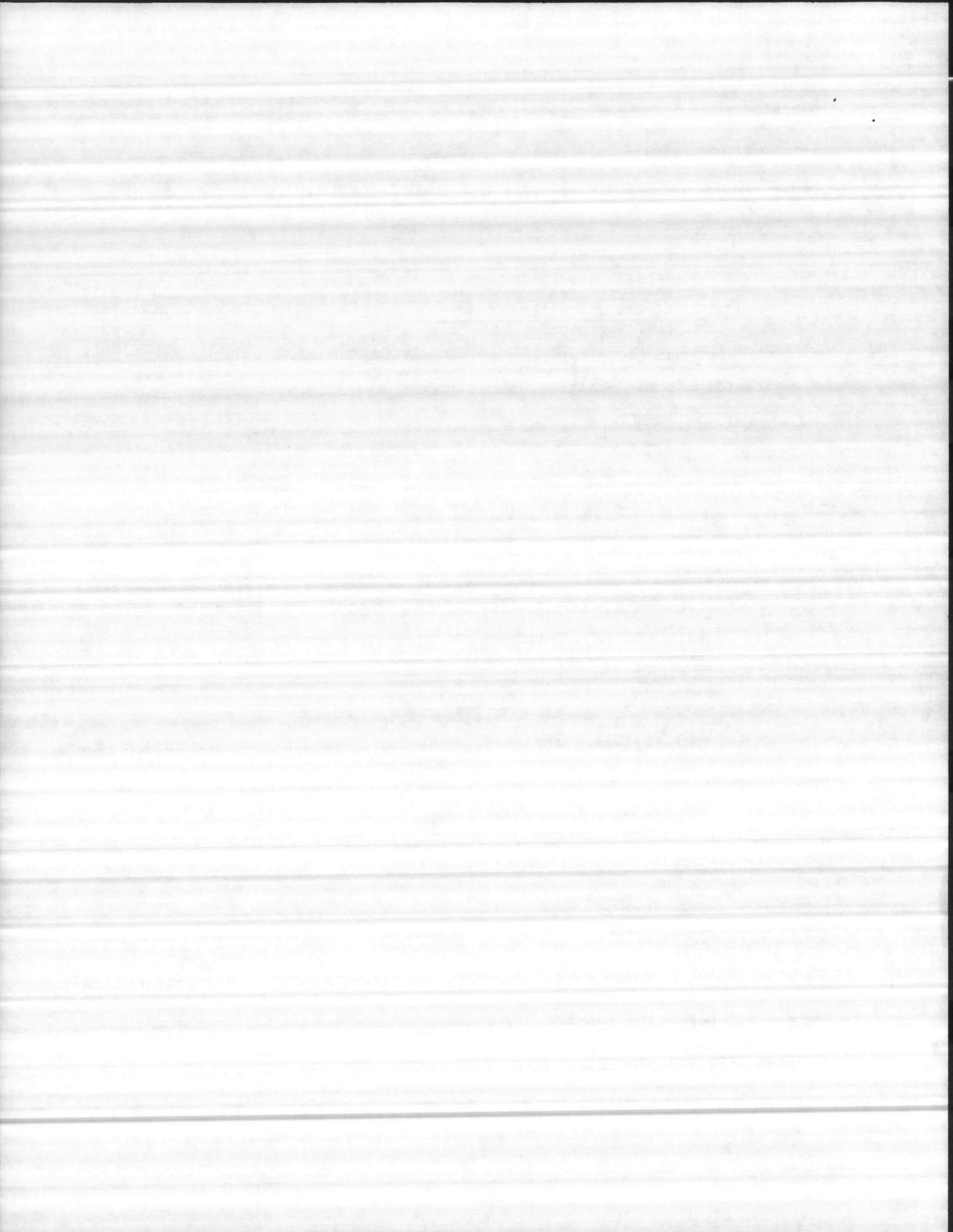
overall services provided by BMDs as good to excellent while 8 rated services as fair. Only two activities rated overall services poor. A review of responses to specific questions contained in the survey showed that improvements in customer relations could be made as follows:

(1) Encouraging customer feedback. Over half of the activities indicated that BMDs did not encourage feedback on provided services. We did identify some positive steps taken by BMDs to improve customer feedback as follows:

(a) At Camp Lejeune, when work involved 80 or more hours and two or more shops, a Quality Control/Job Coordination Form was prepared whereby the customer was given the opportunity to register a written complaint. However, customers receiving work or service of 79 or less hours were not provided the same opportunity.

(b) At Camp Pendleton, customer feedback was encouraged at quarterly meetings that BMD held with area commanders. However, records were not maintained and problem areas were not readily identified.

(2) TAT. Customers were not familiar with BMD procedures concerning work backlog nor were they fully aware of TAT required to complete various categories of work. For example, TAT for specific work ranged between 8 and 9 months, yet many customers expected a response time ranging from 2 weeks to 2 months.



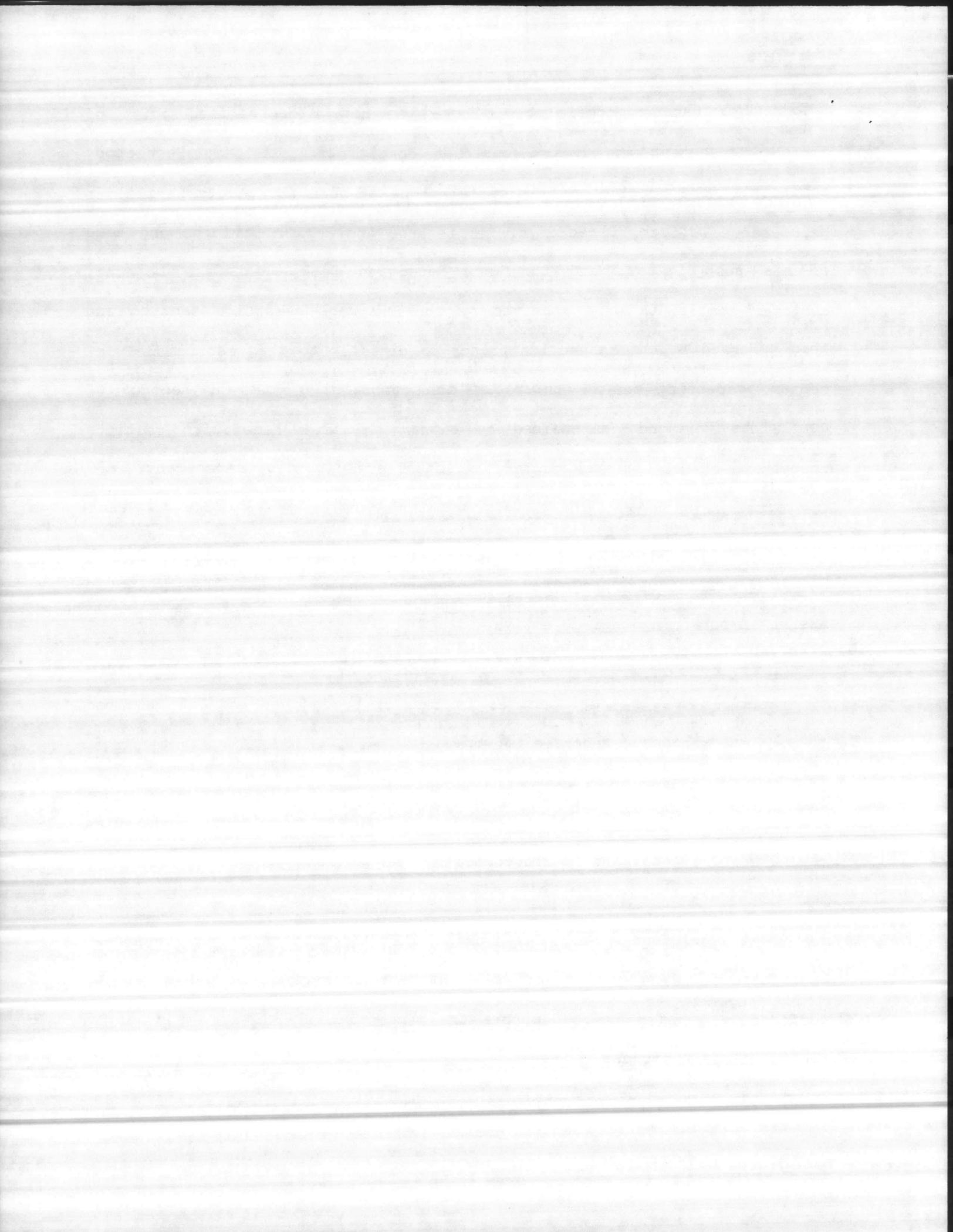
(3) Customer complaints. There was not a centralized point of contact to accept and record customer complaints. At Camp Pendleton, complaints were received mainly by telephone through the Deputy Facilities Maintenance Officer, Director of Maintenance and Repair Division and some of his subordinates, and the Work Reception Desk. At Camp Lejeune, customer complaints were received by the BMD work reception section and then referred to the inspection branch or directly to the responsible work center, depending on the nature of the complaint. However, records of complaints were not maintained by either the work reception section, inspection branch, or work center for future evaluation by management.

c. In summary, the BMDs commitment to customer satisfaction needs to be more effectively projected. Implementation of the following would assist in obtaining this objective.

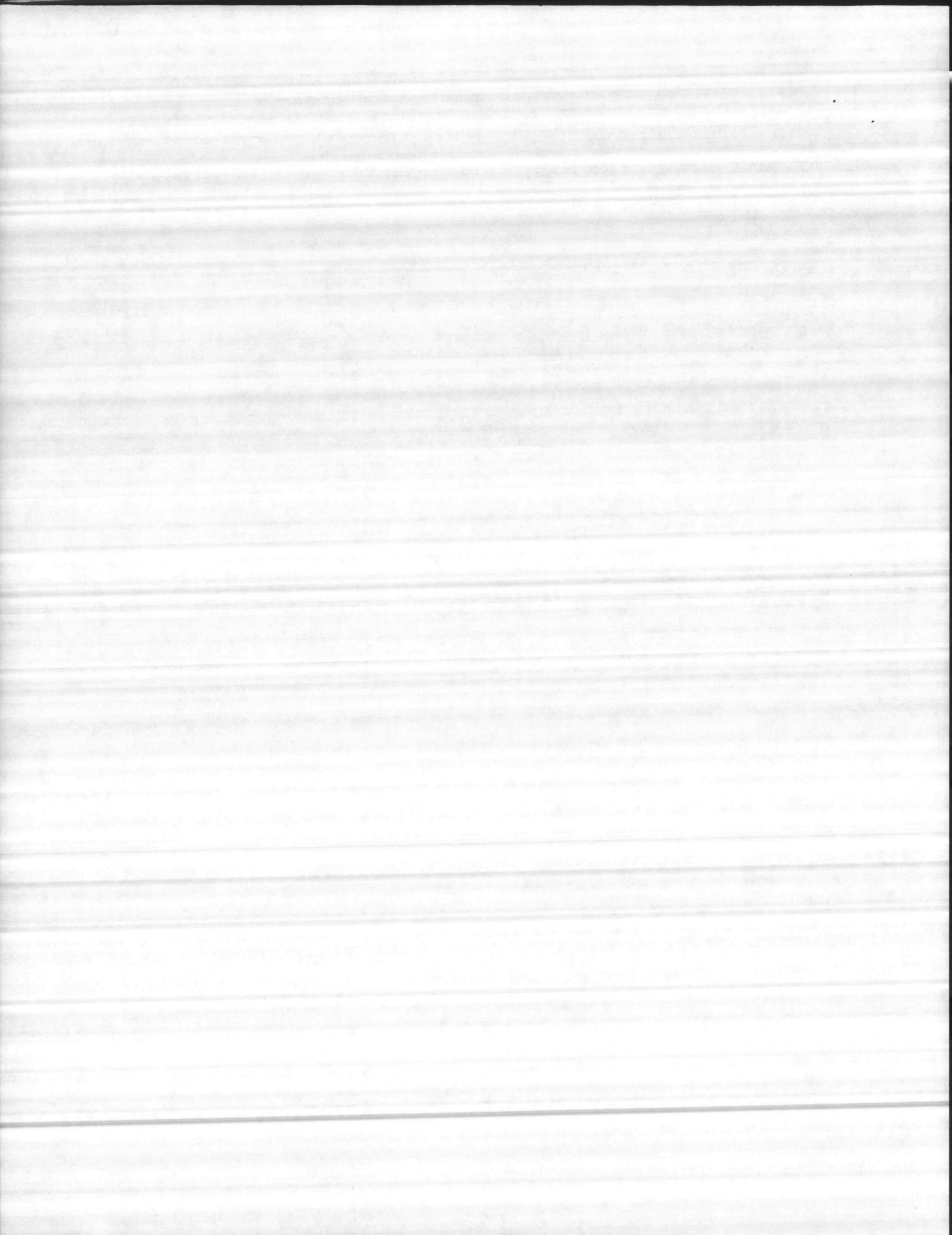
(1) Educating customers as to backlog procedures and TAT required to complete various categories of work.

(2) Establish formal procedures to process complaints, including rework requirements, and record complaints and actions taken.

(3) Reinforce to customers, BMDs commitment to customer satisfaction. Periodic surveys of customers to request comments on job performance would serve to improve the perception of BMD as a partner in the maintenance process.



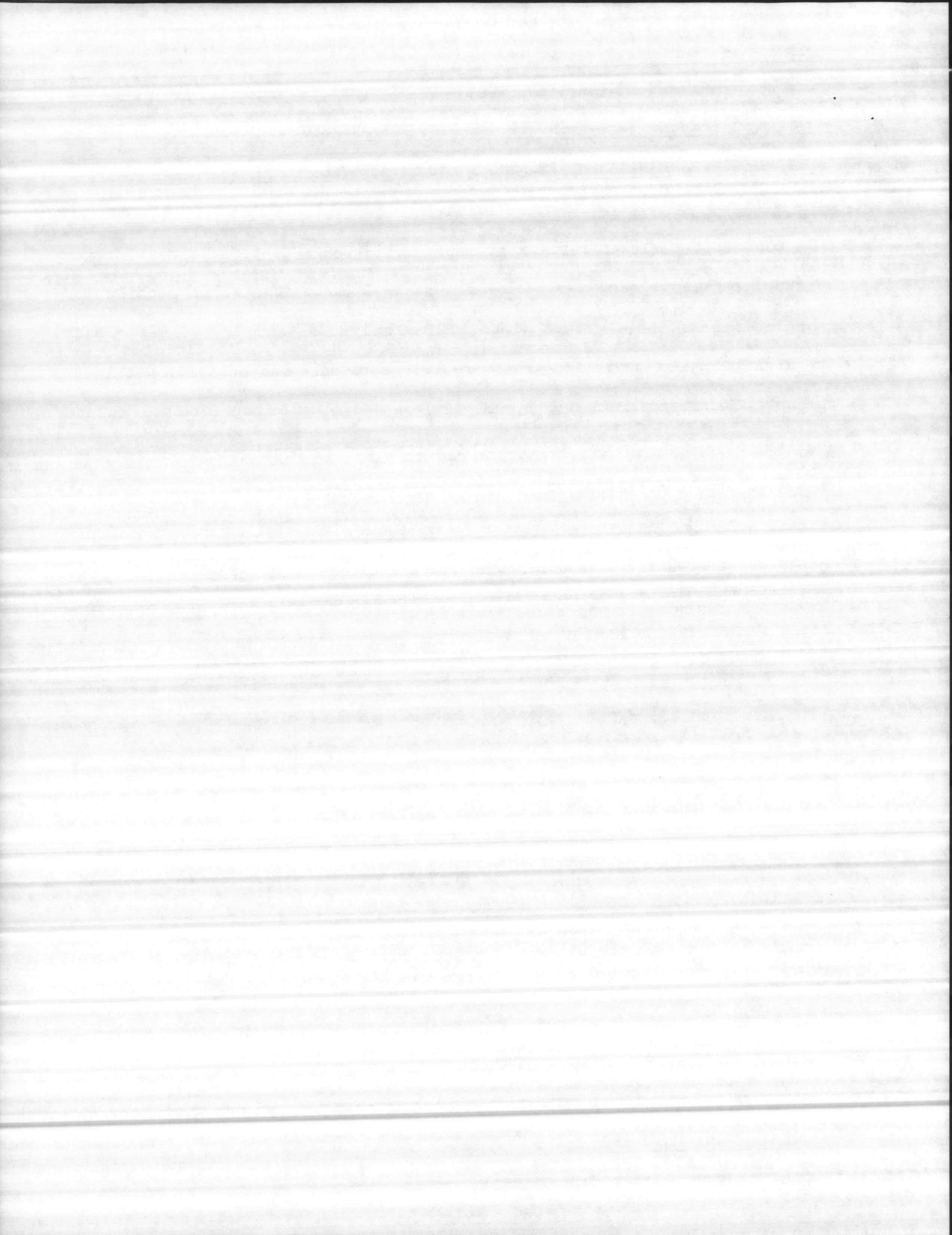
Recommendation 50. CMC provide guidance to BMDs relative to customer feedback and on alternatives for improving customer perceptions.



SECTION B-1 - INDIVIDUAL FINDINGS AND RECOMMENDATIONS.

MANAGEMENT RESPONSES AND NAVAUDSVCSE COMMENTS

Our audit included reviews at four Public Works Centers, three Public Works Departments, and two Base Maintenance Departments. This section is separated into three groups (PWCs, PWDs, and BMDs) and identifies areas requiring corrective action that were unique to only one activity within a group. Recommendations which, if implemented, would correct the cited deficiencies and improve the cost, quality, and responsiveness of service are also provided. Since the audit included 9 activities and there are in excess of 150 similar activities service-wide, the following conditions could exist at activities other than those included in our review.



BASE MAINTENANCE DEPARTMENTS

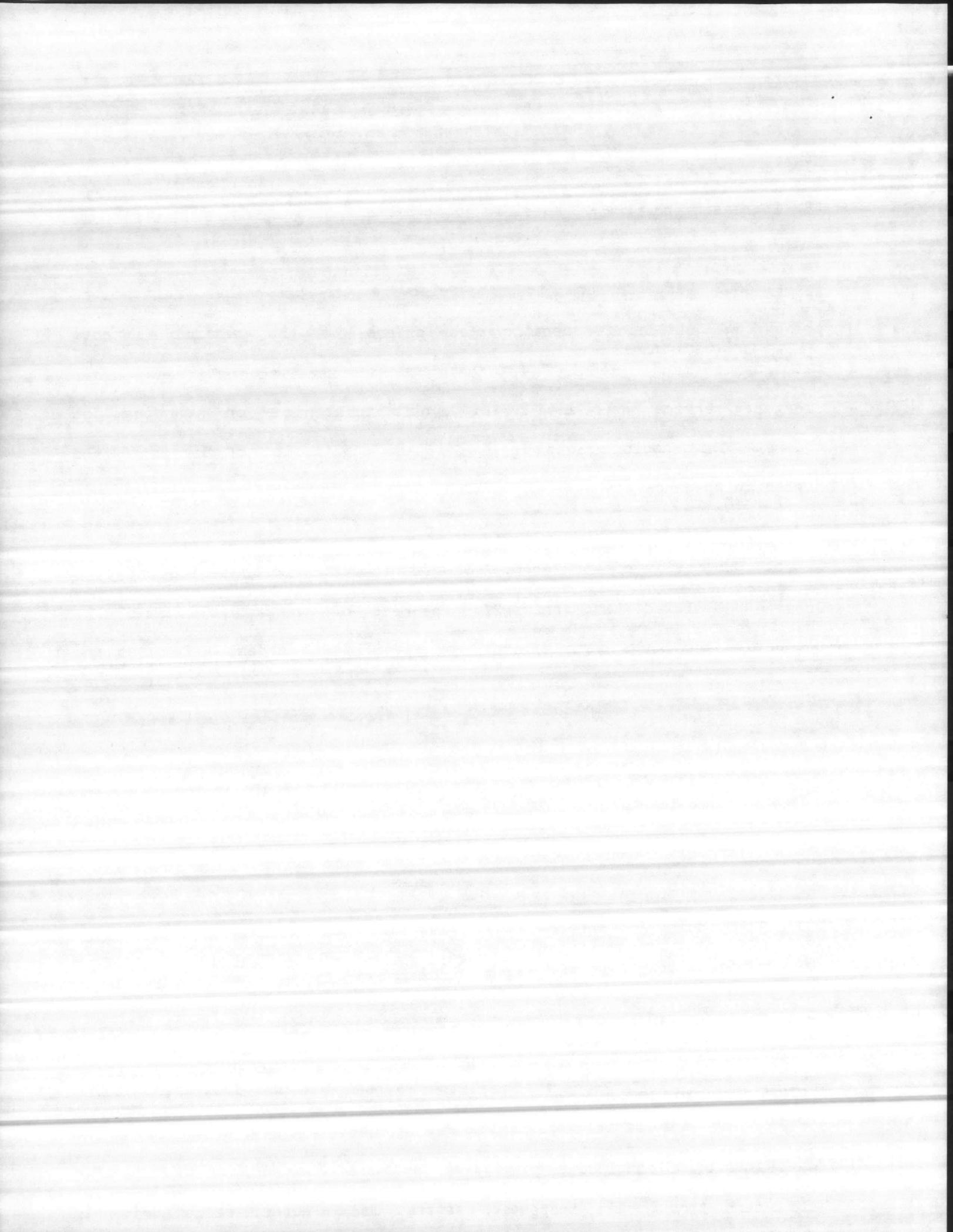
48. Increasing the use of specific job orders

a. MCB Camp Lejeune is not following the prescribed maintenance policy of utilizing specific job orders to the maximum extent. Maintenance and repair is being primarily accomplished under emergency/service work and during cyclic maintenance on standing job orders. This could result in inefficient utilization of personnel and higher maintenance costs.

b. Our review of work accomplished during the 9-month period ended 30 June 1982 showed that only 27.5 percent of the 629,434 available productive man-hours were expended on specific job orders. Results are shown below:

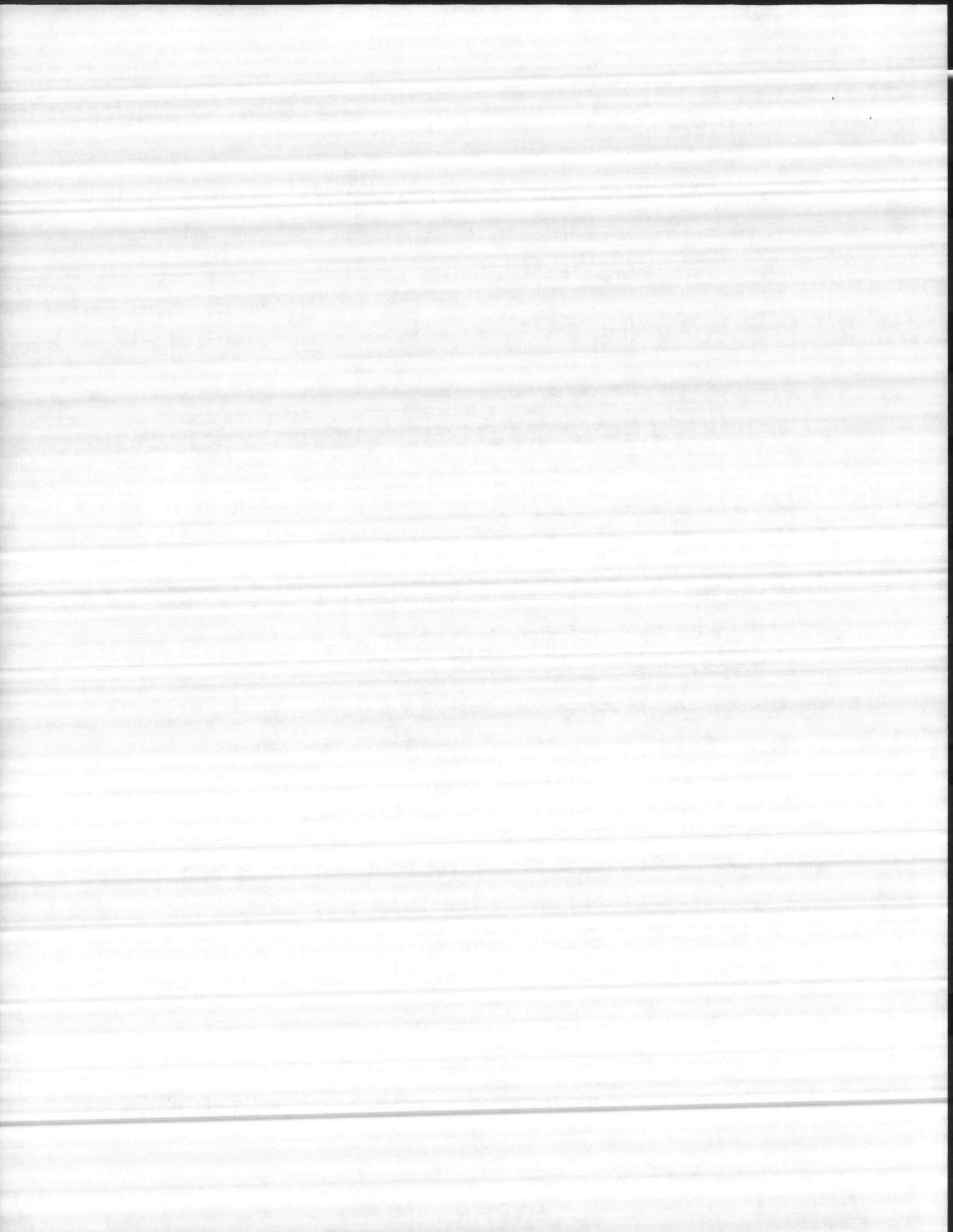
<u>Work category</u>	<u>Man-hours</u>	<u>Percentage</u>
Emergency	35,201	5.6
Service	175,275	28.0
Standing job orders	244,536	38.9
Specific job orders	<u>173,222</u>	<u>27.5</u>
Total	<u>629,434</u>	100.0

MCO P11000.7B, Real Property Facilities Manual, volume III, par. 3003, states that the basic work unit is the specific job order which is identified by a continuous inspection program. The purpose of specific job orders through the inspection program is to detect deficiencies in



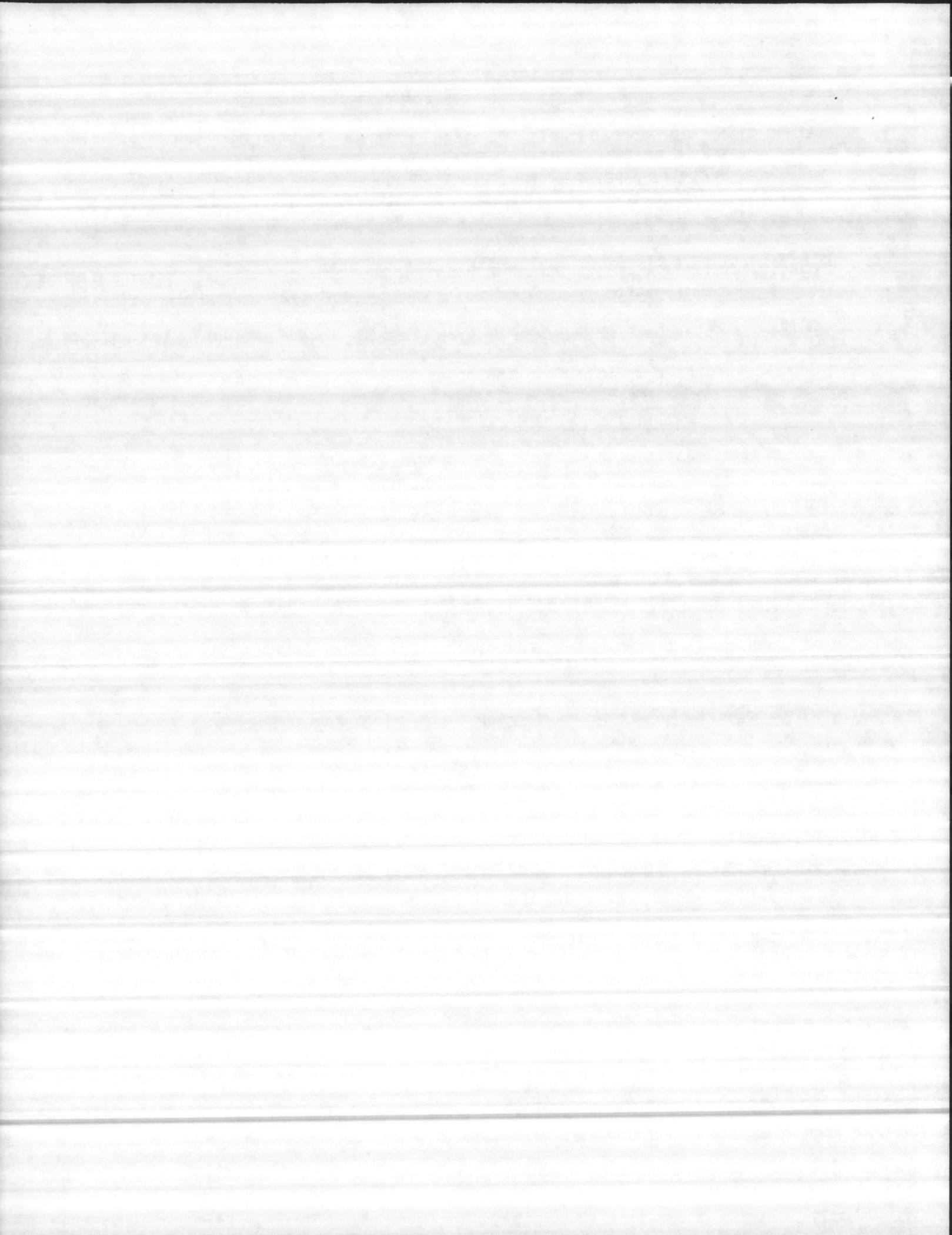
early stages, reduce breakdown and cost of repairs and plan for efficient utilization of labor. Any work other than the specific job order must be minimized and performed only when fully justified on a cost-effective basis, because it is essential to the mission of the shore activity, or because it is an emergency. This category includes: (1) emergency work, (2) service work, (3) work request, (4) preventive maintenance, (5) cyclic maintenance, (6) other standing job order work, and (7) minor construction. Maximum use should be made of specific type work in order to best utilize personnel and keep maintenance cost to a minimum.

c. We also reviewed 50 specific job orders, consisting of 17,825 estimated man-hours, which were started and completed during FY 1982. We compared these jobs and man-hours with work requirements shown on the continuous inspection program. Our analysis of these 50 job orders showed that 26 jobs consisting of 7,452 man-hours, or about 42 percent, originated from the continuous inspection program. During the first 9 months of FY 1982 the activity expended 173,222 man-hours on specific job orders. If the result of our sample of 50 specific job orders is representative, then BMD expended during the first 9 months of FY 1982 about 72,407, of the total 629,434 available man-hours on specific work that had originated through the continuous inspection program. This equates to 11.5 percent of the total productive man-hours being expended for specific work that originated through the continuous inspection program. The full benefits of the controlled maintenance management program are realized when the maximum amount of work results from the continuous inspection program. Work generated primarily from sources



other than the continuous inspection program results in much of the maintenance being accomplished on an intermittent, break-down basis and negates much of the time and effort expended on continuous inspections.

Recommendation 60. CMC ensure that BMDs realize the full benefits of the continuous maintenance program through increased use of specific job orders that originate from the program.



49. Exceeding the desired range for service work

a. The desired range of 10 to 15 percent of the total labor hours for service work was exceeded by 87 to 113 percent during the period 1 October 1979 through 30 June 1982 by BMD Camp Lejeune. This indicates that a large portion of the maintenance effort is directed towards work that is relatively minor in scope. These variances were reported monthly in the Facilities Maintenance Management Report No. 6, but comments or recommendations were not received from Headquarters, Marine Corps.

b. Our review of service work performed by all work centers, including housing, for FY 1980, FY 1981, and the first 3 quarters of 1982 showed the following:

<u>Time period</u>	<u>Total hours service work</u>	<u>Percentage to total productive labor hours</u>
FY 1980	261,048	31.6
FY 1981	253,934	31.9
YTD June 1982	176,275	28

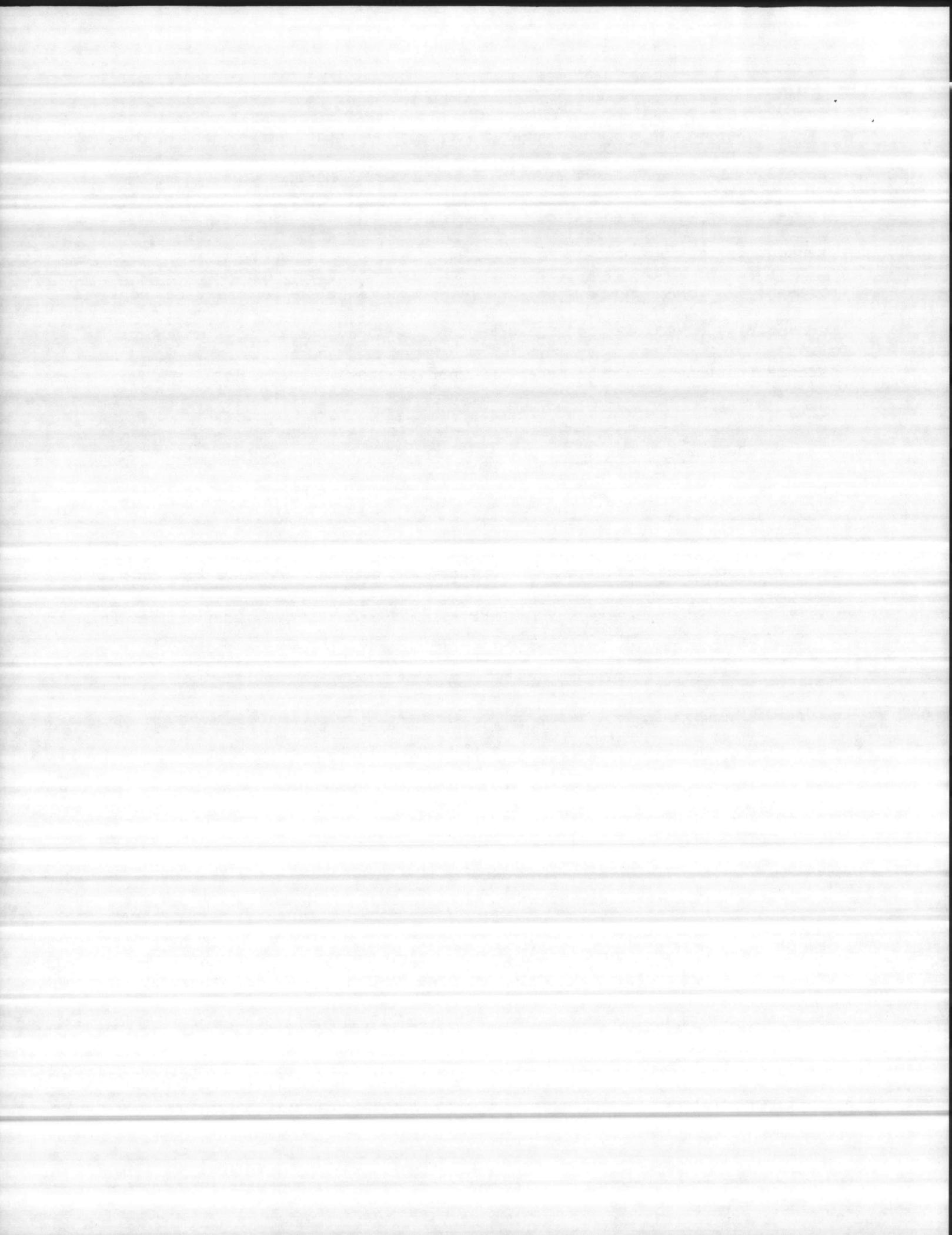
The large amount of service work could be reduced through controlled maintenance inspections and more work translated into specific jobs and scheduled for performance during the year.



c. Report No. 6 is prepared monthly as required by MCO P1100.7B, appendix C-7, and forwarded to Headquarters, Marine Corps for review. Comments or recommendations concerning excessive service work as a percentage of the total labor effort have not been received. If the present 28 to 32 percent of total productive labor for service work is acceptable, MCO P11000.7B should be revised; if unacceptable, recommendations should be made for improvements.

Recommendation 61. CMC review the Maintenance Management Report No. 6 and comment or make recommendations for improvement.

Recommendation 62. CMC ensure that service work is reduced to a level in accordance with MCO P11000.7B, appendix C-7.



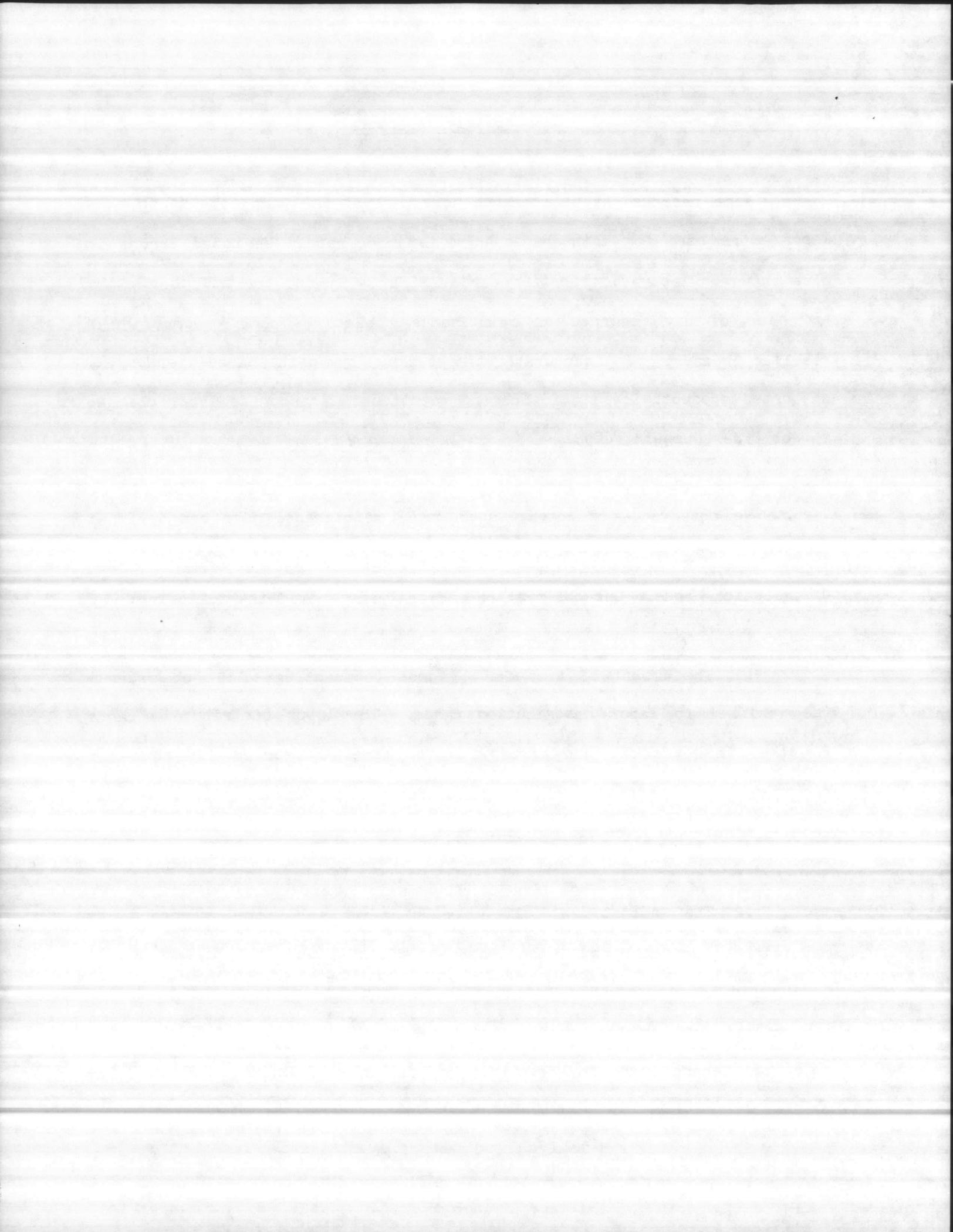
50. Maintenance labor is not accurately reported

a. Time recorded by maintenance personnel at BMD Camp Lejeune to show labor hours used for maintenance work is inaccurate. We noted errors in time shown on labor distribution cards, MCBL 7410, and the amount of time and time of day recorded on maintenance tickets. These errors, which resulted because of inaccurate timekeeping by maintenance personnel, distorted productivity statistics and resulted in inaccurate labor charges to Job Order Numbers (JONs).

b. We observed work accomplished on 33 maintenance jobs and verified actual time expended to time recorded on maintenance tickets and labor distribution cards. Our observation and analysis showed the following:

(1) The amount of time for 17 jobs (consisting of 9 job orders) was verified to labor distribution cards. The labor distribution cards for the nine JONs did not agree with the time we recorded or the time recorded on maintenance tickets by maintenance personnel. Errors varied from 15 minutes to 8 hours per job.

(2) The amount of time including travel time recorded by maintenance personnel on 11 maintenance tickets varied from 15 minutes to 1 hour and 55 minutes when compared to the actual time required to do the job as observed by the auditor. We observed nine additional jobs for which maintenance personnel recorded no time on maintenance tickets. The

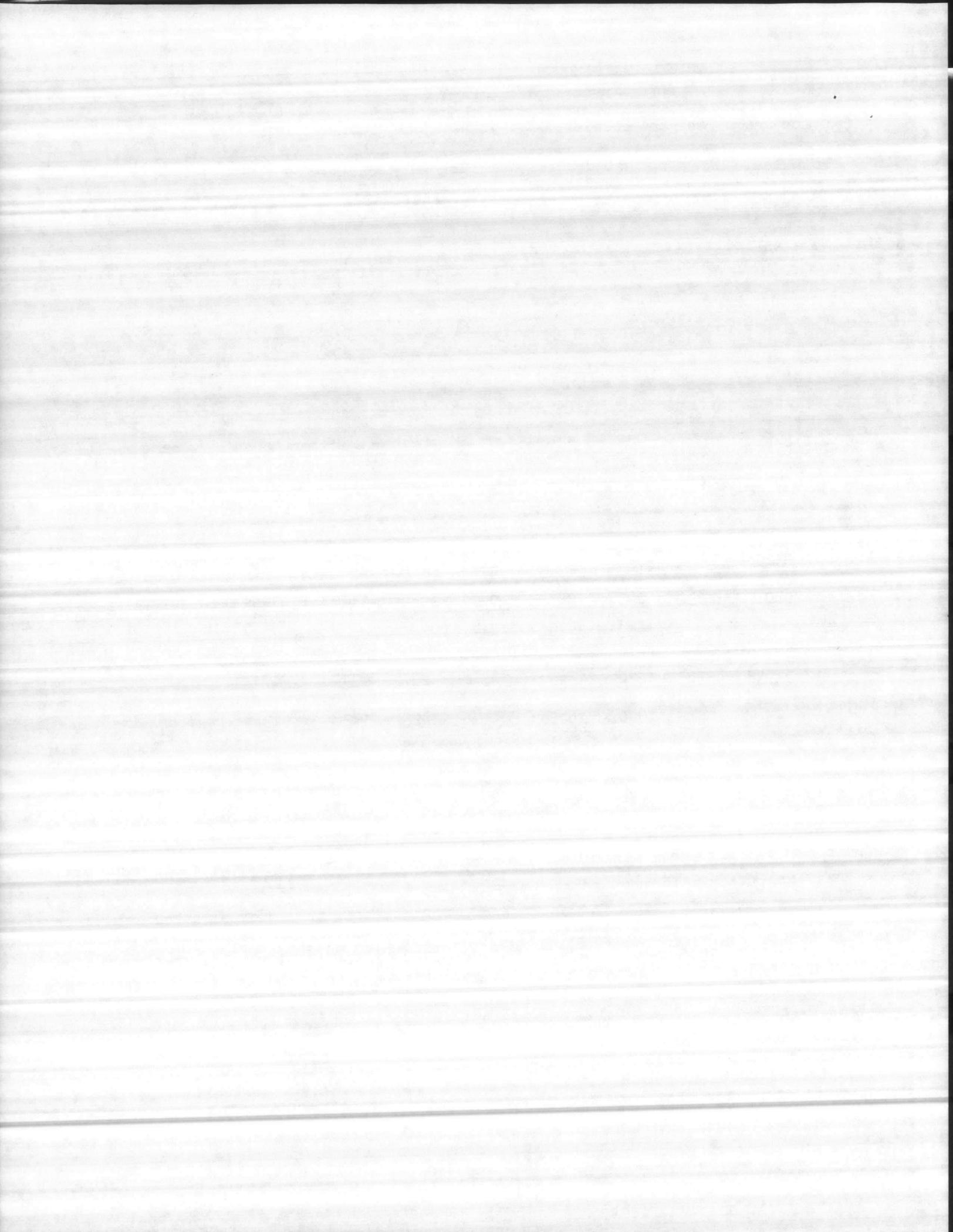


time required to complete the nine jobs ranged from 7 minutes to 40 minutes. We also noted that the time of day recorded on 16 maintenance tickets was not the same time we observed the work accomplished. Examples are as follows:

Ticket number	JON	Time recorded on ticket			Time observed by auditor			Time on labor distribution card
		Start	Stop	Minutes	Start	Stop	Minutes	Minutes
<u>1/</u> H32588	Y632	-0-	-0-	-0-	0952	0959	7	
<u>1/</u> 080777	Y632	-0-	-0-	<u>-0-</u>	1050	1100	<u>10</u>	
				-0-			<u>17</u>	60
<u>1/</u> 21735	P365	1230	1315	45	1257	1344	47	
		1600	1615	<u>15</u>	1425	1438	<u>13</u>	
				<u>60</u>			<u>60</u>	-0-
<u>1/</u> H21584	Y513	1030	1300	120	1045	1200	75	
				—	1230	1510	<u>160</u>	
				<u>120</u>			<u>235</u>	150
<u>2/</u> 1202	0800	1630	960	0800	1200	480	960	
<u>2/</u> 3546	-0-	-0-	-0-	0900	1630	420	-0-	

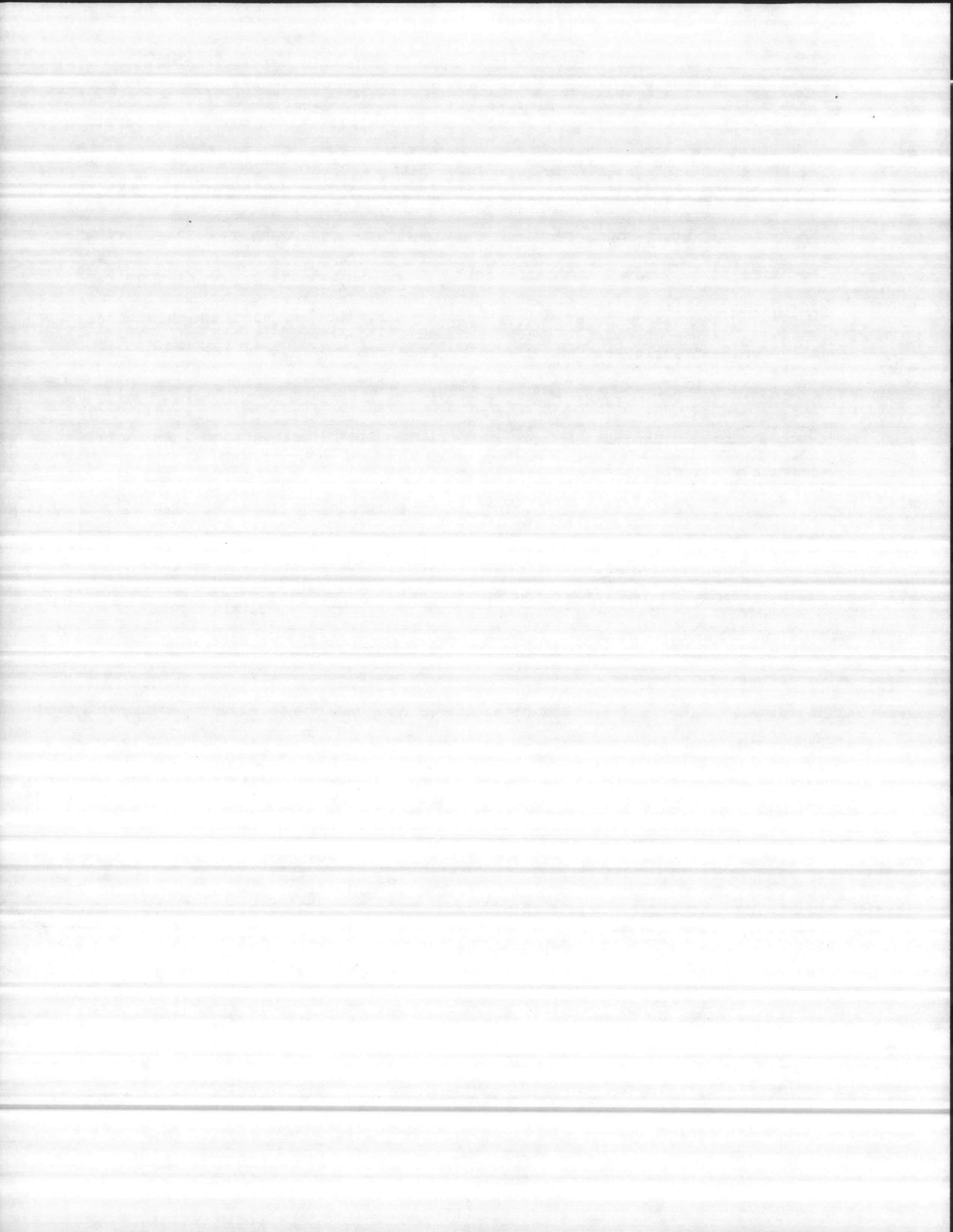
1/ Family housing maintenance.

2/ Excludes 30 minutes for lunch.



c. The validity of the MCB cost account system depends on accurate and complete recording of hours for each job order. The job order is the basis of reports submitted to higher authority, provides an analysis of labor cost and man-hours required for local planning, and also determines the funds to be charged to labor cost. Work center heads are responsible for ensuring that a time card and labor distribution card is maintained daily for each employee.

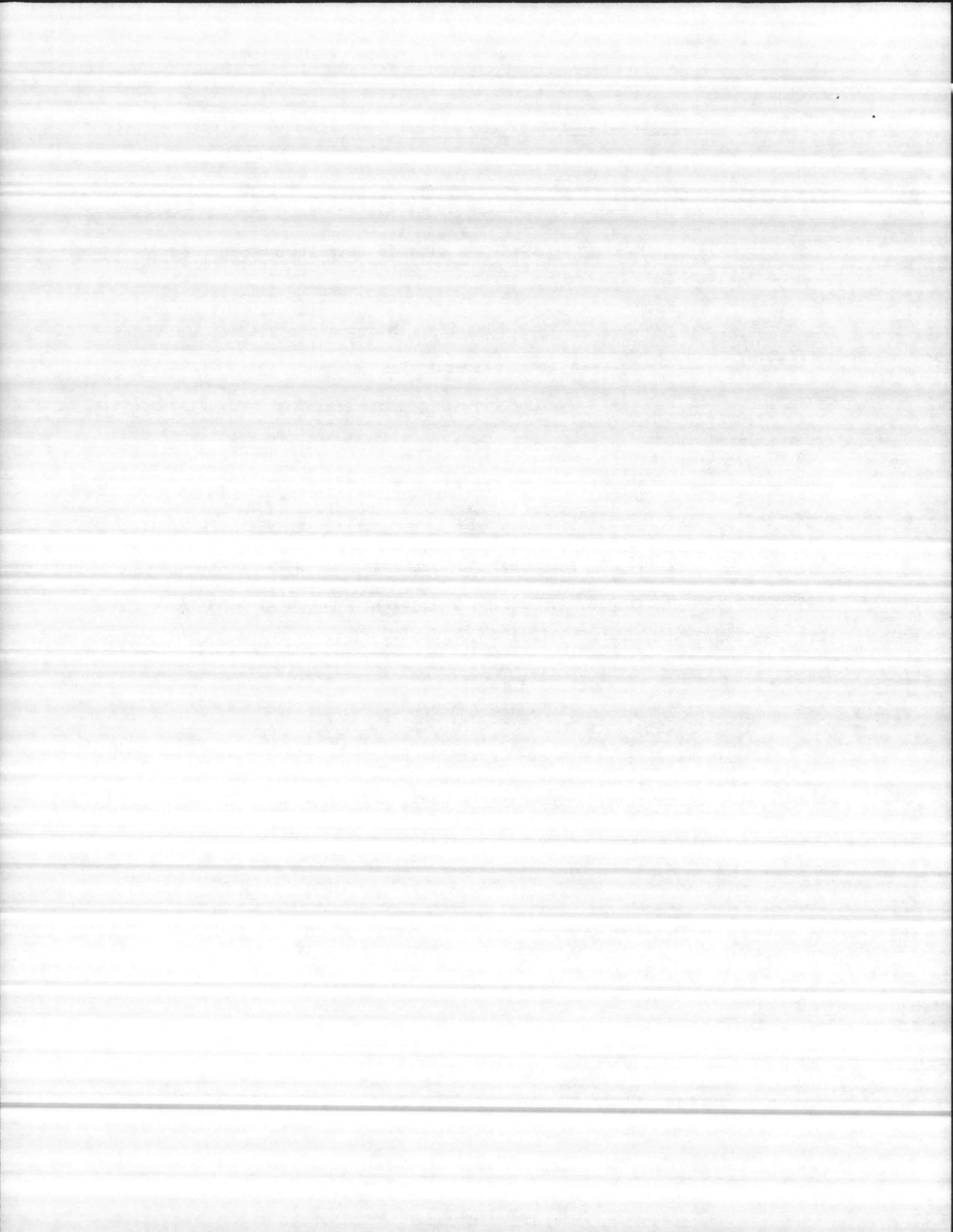
Recommendation 63. CMC require that maintenance personnel accurately report labor hours expended.



51. Improving the Labor Distribution Report

The job order number/work center labor distribution report shows total labor charged to a job, but does not provide details by employee or work center within the job order number. As a result, its usefulness to management as a tool to quickly identify distorted productivity statistics or improper labor charges is impaired. The current system is such that management has no way to quickly review labor charges in detail by job order number (JON). Consequently, an employee could charge a valid JON and never work on the job. The reporting system report should be sequenced by work center and employee badge number within each individual JON. This would allow management to quickly scan JONs for improper or inaccurate labor charged. MCB Camp Pendleton identified this problem in 1979, however, corrective action had not been implemented at time of our review.

Recommendation 64. CMC revise the Job Order Number/Work Center Labor Distribution Report to sequence badge number within work center and work center within each individual job order number.

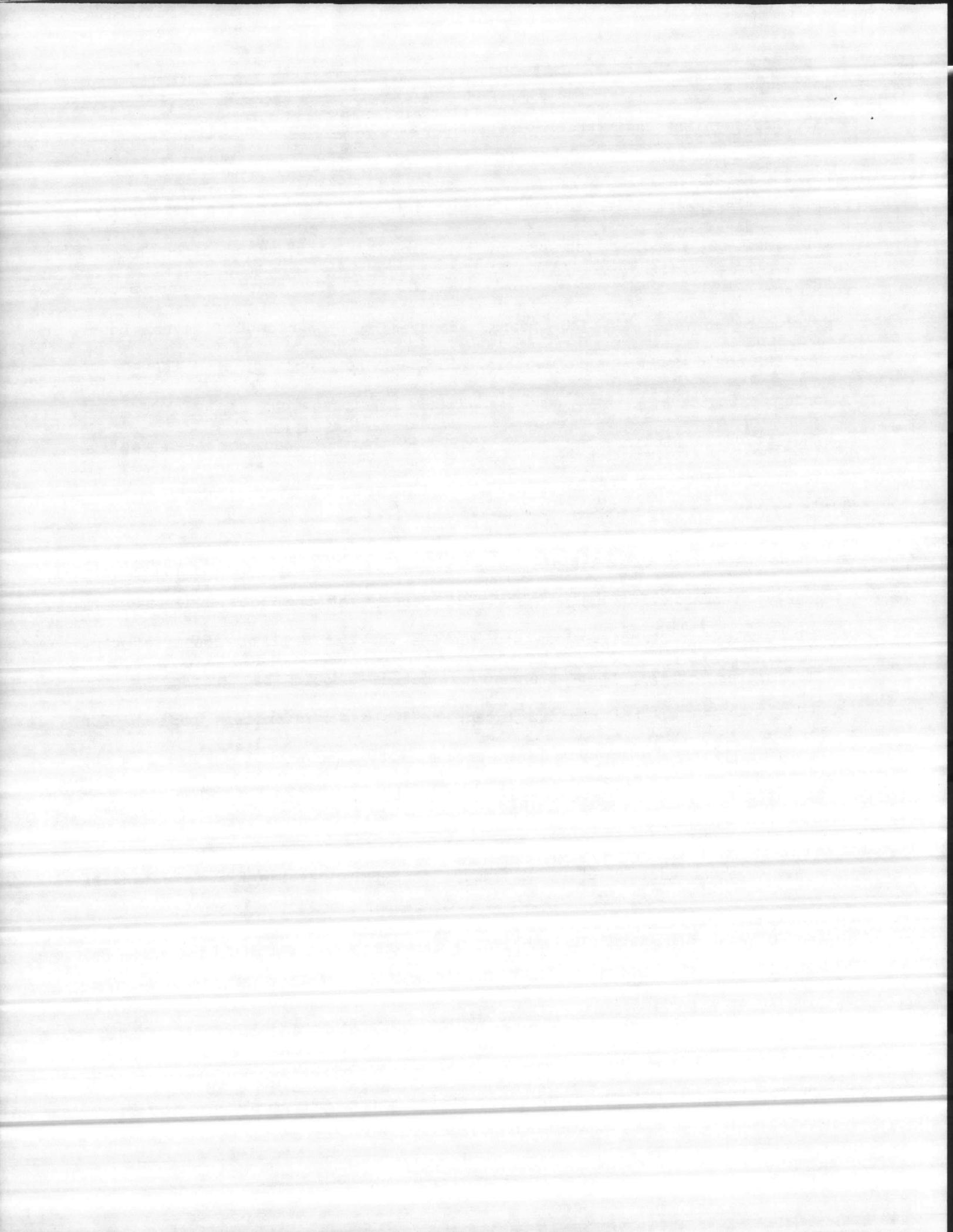


52. Implementing engineering performance standards for standing job orders

a. Engineering Performance Standards (EPS) have not been assigned or utilized on standing job orders at Camp Pendleton as required by MCO P11000.7B. At time of review, the BMD had 123 standing job orders excluding service call job orders. However, a comparison of actual hours and EPS could not be performed since EPS were not applied, even though job orders indicated they were utilized. Discussions with cognizant facilities maintenance personnel confirmed that EPS had not been applied to any standing job orders.

b. MCO P11000.7B states, in part, that NAVFAC P-700 series provides hourly standards for approximately 80 percent of the jobs undertaken by BMD, including standing jobs and service work as well as specific jobs. It further states that planners/estimators should be guided by the available EPS to the maximum extent possible for standing jobs and for specific jobs. To improve labor productivity measurement, EPS should be utilized on standing job orders.

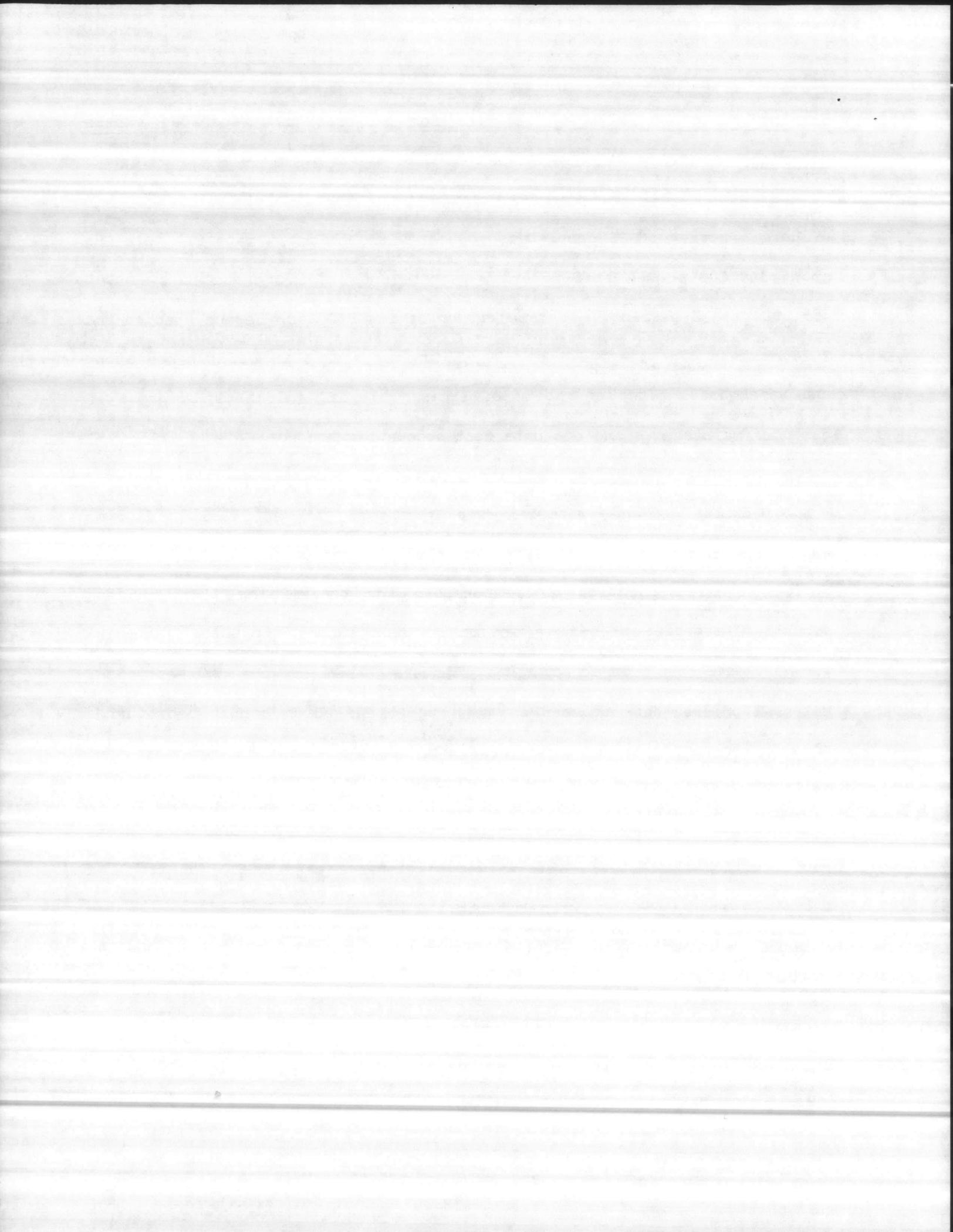
Recommendation 65. CMC ensure that BMDs utilize EPS for standing job orders.



53. Inadequate estimates of material for projects has generated excess material

a. A review of 20 completed projects with estimated material totaling about \$95,000 showed that material requirements were overstated by about \$55,000, or 58 percent. At time of our review BMD Camp Lejeune had onhand 2,241 excess line items (about 100,300 units) stored in maintenance shops and warehouses. The generation of excess material increases the cost of customer maintenance and distorts cost accounting records.

b. Excess onhand material was generated as a result of over estimating material requirements for specific job orders. The Planning Estimating (P/E) Section is responsible for determining the type and amount of material needed to accomplish maintenance projects. Material for projects is ordered by shop planners based on the P/E estimate. Material ordered but not used on the project and which cannot be returned to shop stores for credit is stored in maintenance shops or warehouses and used on future jobs. To determine the adequacy of material estimates, we reviewed 20 completed projects with known excesses. We made a physical review of the facilities, interviewed maintenance personnel, and compared materials actually used with materials shown on work orders. Estimated material requirements totaled \$95,409; however, material used was \$40,334, or 42 percent, of the estimate. We found that material estimated and ordered for periodic preventive maintenance (PM) of facilities were the same for each PM, but material used varied significantly from the



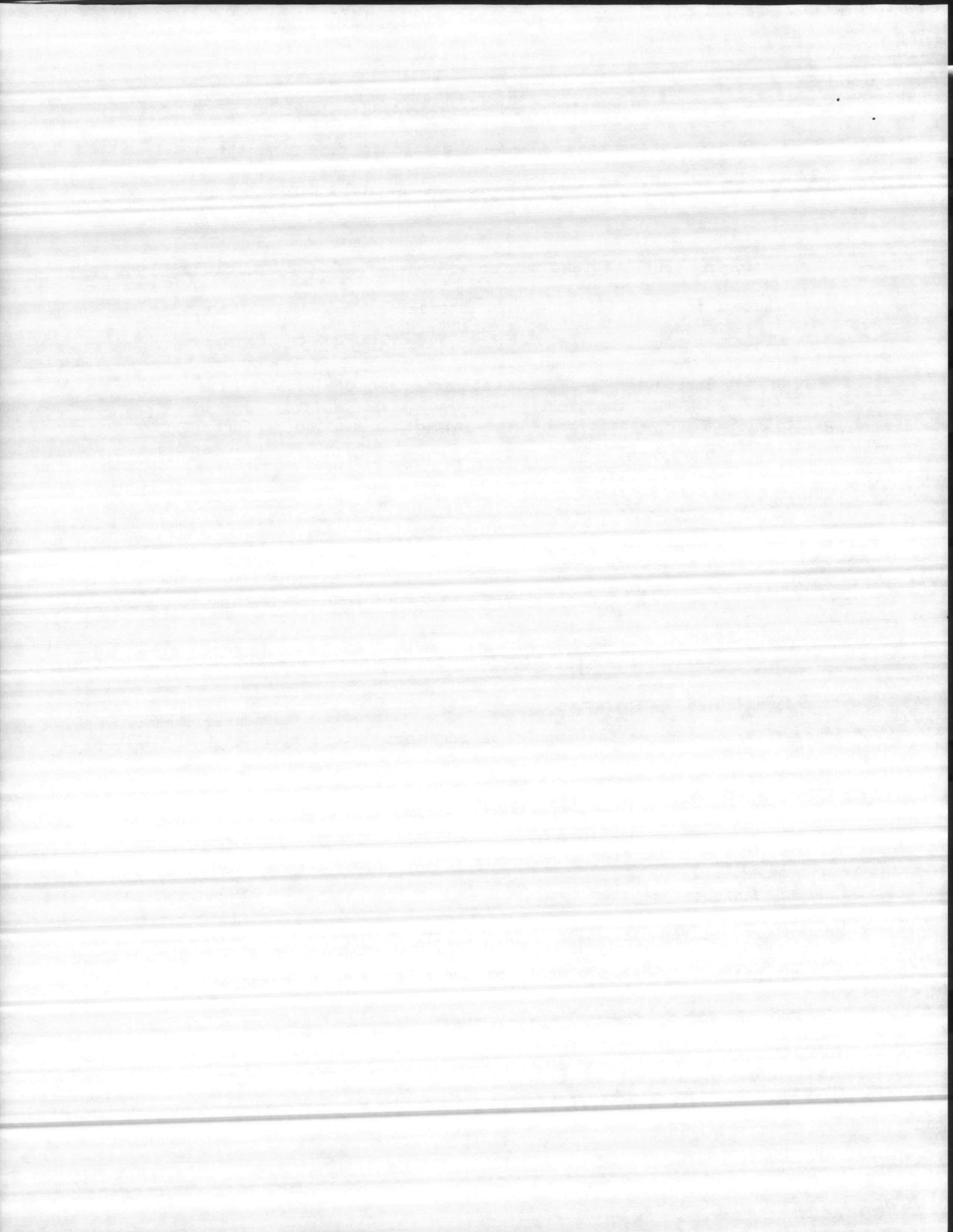
estimate. As of 3 March 1982, BMD had 2,241 line items with 100,294 units of excess material on hand. We were unable to determine the total value of material since unit prices were not on inventory cards.

c. During our review we noted the following conditions which contributed, in part, to inadequate material estimates:

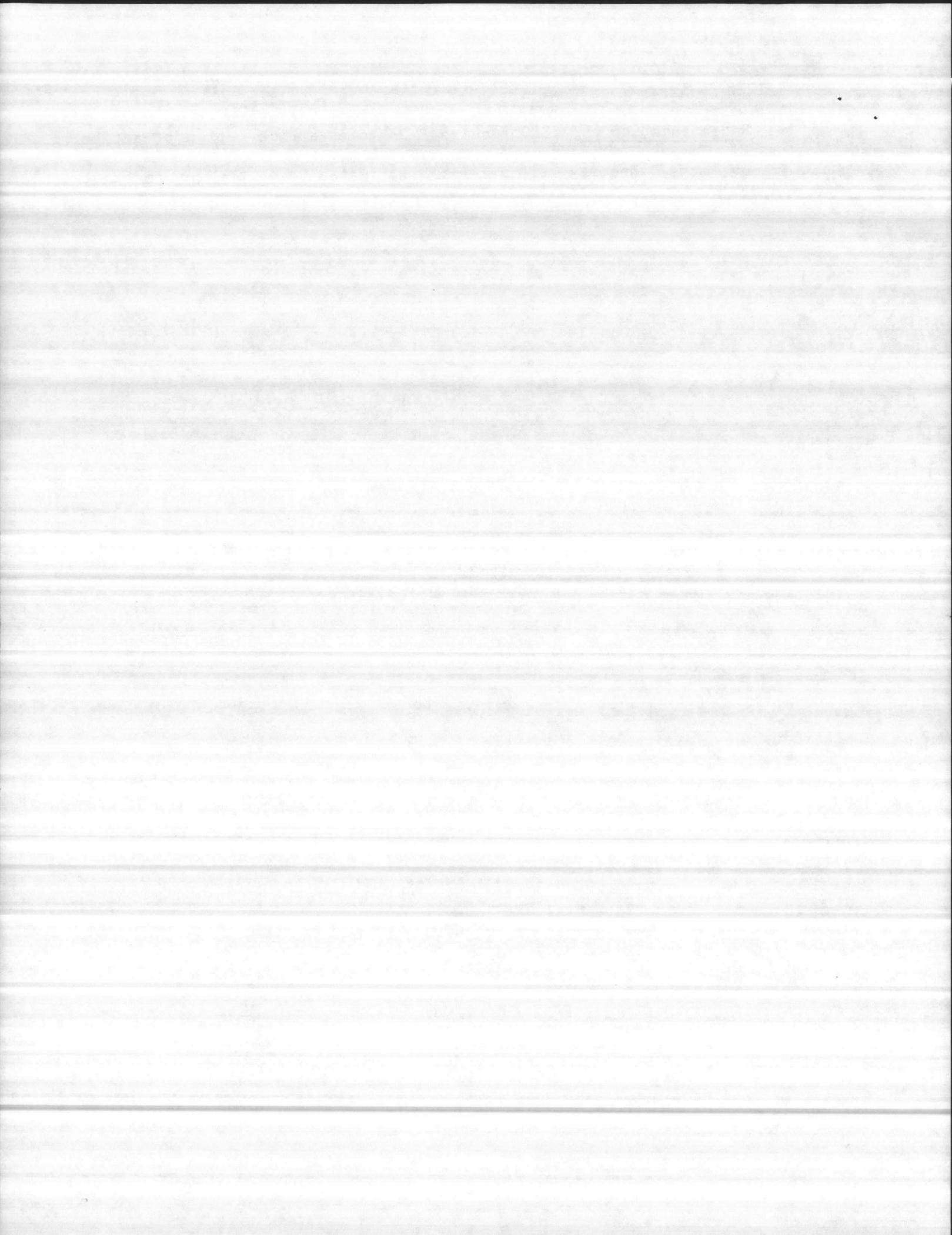
(1) Inspection and cost estimating of projects are performed by separate sections within BMD. The inspection section performs facilities inspections for maintenance and repair. The P/E Section prepares the cost estimate from a written inspection report. Having the same individual who made the inspection make the cost estimate could improve material estimates.

(2) Estimates were prepared based on old inspection reports. In many instances work had been accomplished on Emergency Service work tickets. A reinspection should be made prior to preparing the estimate and ordering material.

(3) Material for PMS should be drawn from shop stores on an as needed basis rather than ordering based on an estimate. Overstatement of material requirements which subsequently becomes excess, and failure to return material to shop stores for credit reduces available funds in the current operating budget.



Recommendation 65. CMC require EMDs to establish a plan of action to improve the adequacy of material estimates and to ensure that appropriate actions are taken to reduce excesses.



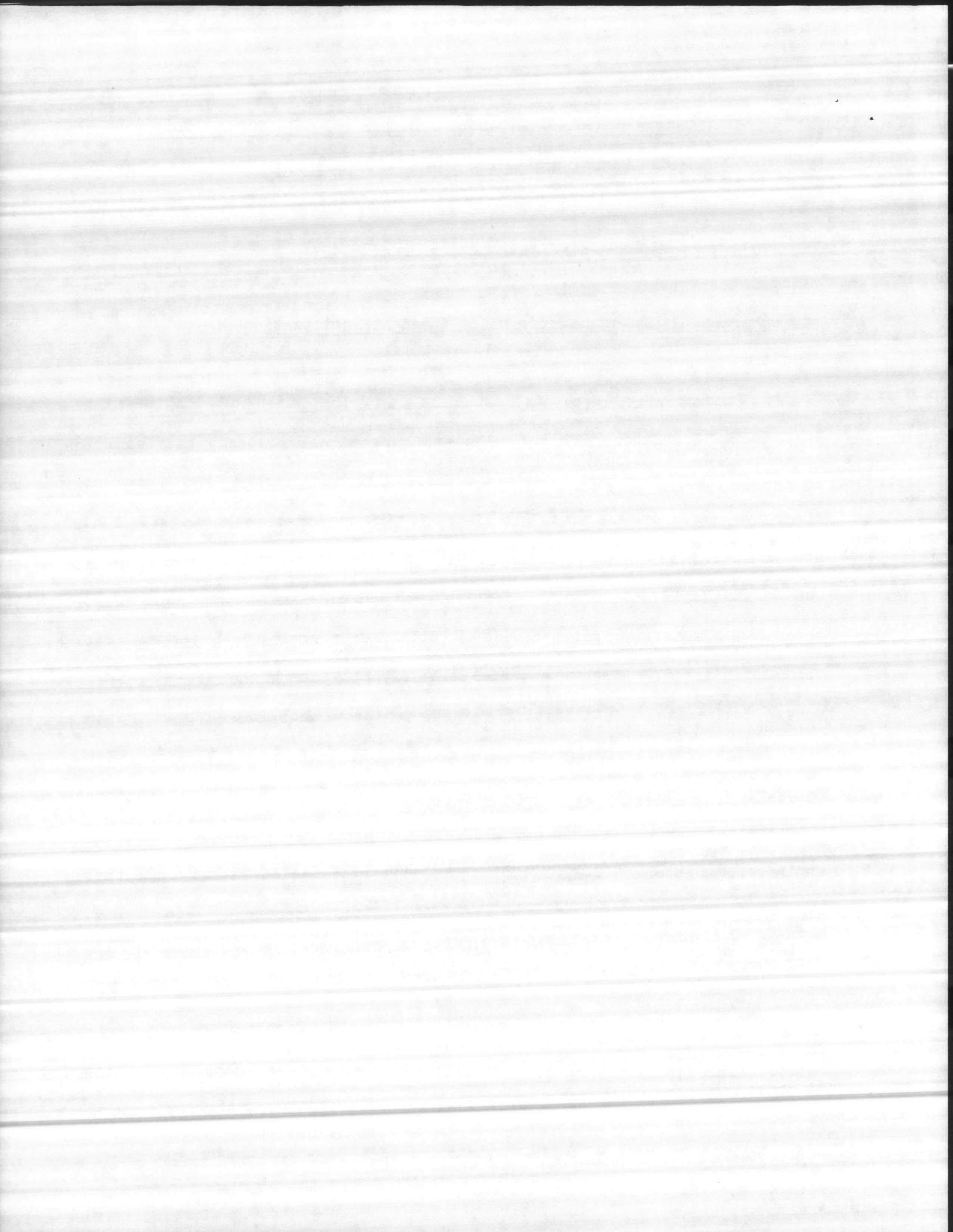
SECTION B - CONSOLIDATED AUDIT FINDINGS AND RECOMMENDATIONS,  
MANAGEMENT RESPONSES AND NAVAUDSVCSE COMMENTS

PUBLIC WORKS CENTERS

1\* Promoting Engineering Performance Standards utilization

a. Productivity benefits inherent in the use of Engineering Performance Standards (EPS) to plan and manage real property maintenance have not been realized because of low EPS utilization and lack of effective variance analysis. Reviews of EPS utilization during FY 1981 show that EPS were only used about 38 and 45 percent of the time at Navy and Marine Corps activities respectively to estimate man-hours required to accomplish facilities maintenance. A utilization goal of 75 percent has been established. Also, use varies significantly among the categories of work. For example, utilization reviews at Navy activities for FY 1981 show weighted utilization percentages of 55, 29, and 20 for work categories A (specific and minor), B (standing and preventive maintenance), and C (service work), respectively. NAVFACENGCOM Industrial Engineering Center (NIEC) FY 1981 annual EPS utilization report show that even when EPS were used variance analysis was the exception. Accordingly, there is no assurance that the need for improved planning, improved work practices or procedures will be identified.

b. Since implementing EPS utilization reviews in FY 1979, 73 of 119 Navy activities and 15 of 15 Marine Corps activities have been visited by EPS utilization review teams. These reviews show that the activities visited used EPS to estimate maintenance man-hours as follows:

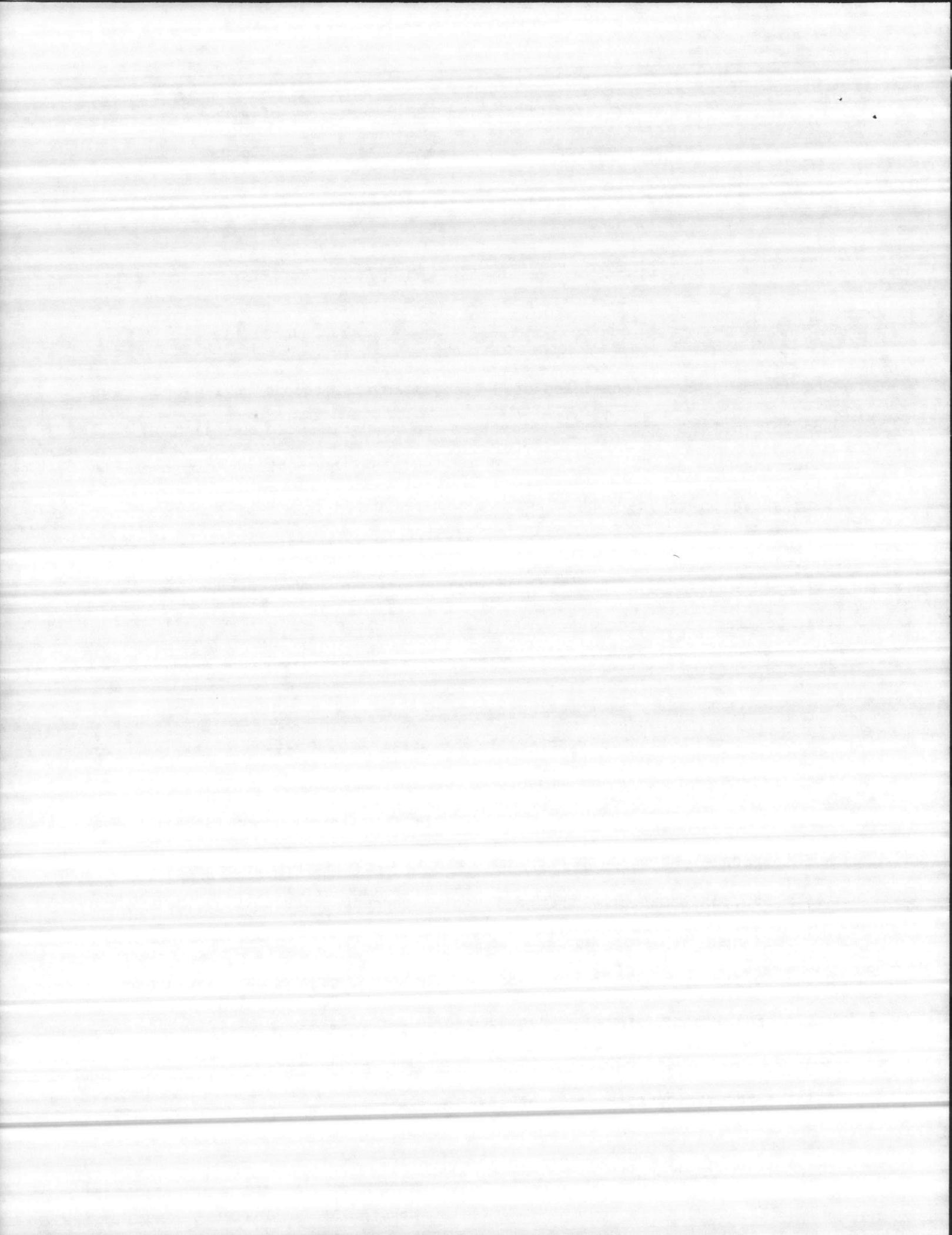


Number of activities using EPS by category of work

<u>Category of work</u>	<u>Navy</u>	<u>Marine Corps</u>
A	65	15
B	37	9
C	15	9

Because reviews are scheduled at 3-year intervals, second reviews had been accomplished at only four activities at the time of our review, all occurring during FY 1982. In three instances significant improvements were shown in the percent of work estimated using EPS, in one instance a sizeable decrease was shown. Because of the small number of second reviews no trend is apparent. However, NIEC personnel acknowledge that data collection techniques have improved since early EPS utilization reviews and therefore percentage differences may not always be meaningful.

c. There is little doubt that EPS usage is far below its potential. Lack of understanding or acceptance of the objectives and benefits has apparently suppressed its use, especially for service work (Category C). NIEC personnel advised that preliminary results of Air Force application tests at four bases show that a 12 to 18 percent productivity improvement occurred when EPS was applied to service work. Because service work accounts for about 20 percent of the man-hours devoted to real property maintenance, gains of this magnitude are significant. Our reviews show that service work may comprise as much as 36 percent of real property maintenance man-hours at some activities.

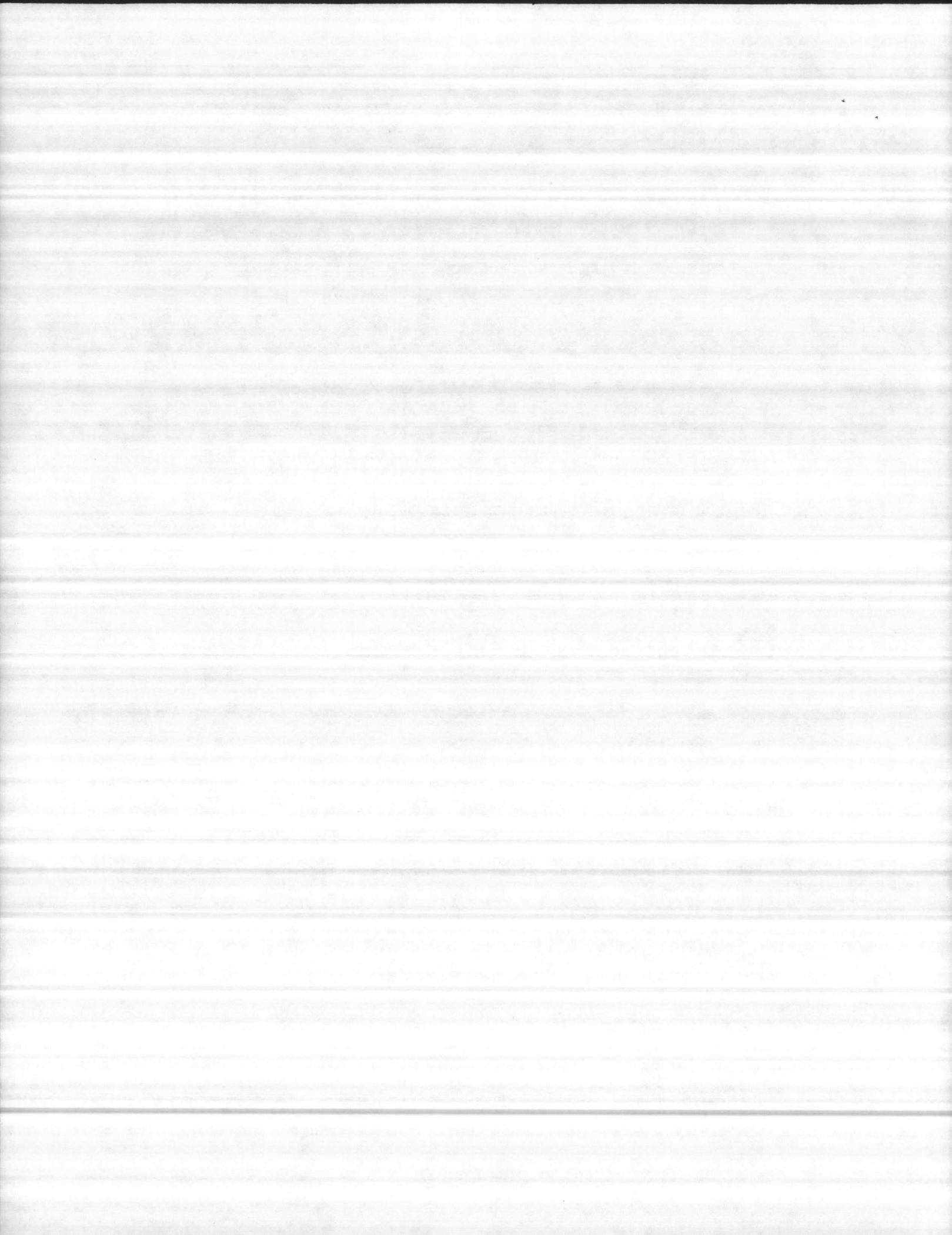


d. Collecting and reporting EPS utilization indices is only a beginning. The NIEC FY 1981 annual report states:

"This index could approach 100% without ever achieving the purpose for using engineered performance standards in the first place. That purpose is to provide maintenance managers with a tool to analyze productivity so that actions can be taken to identify and eliminate situations that adversely effect productivity. Unfortunately the FY-1981 data shows little evidence that EPS is used for this purpose. Variance analysis between actual hours and standard hours is nearly non-existent at most installations."

This report further notes that:

"At installations where variance analysis is attempted, there is little evidence that managers use the results to improve productivity. The analysis is performed mainly for record keeping to satisfy a requirement for audits and inspections."

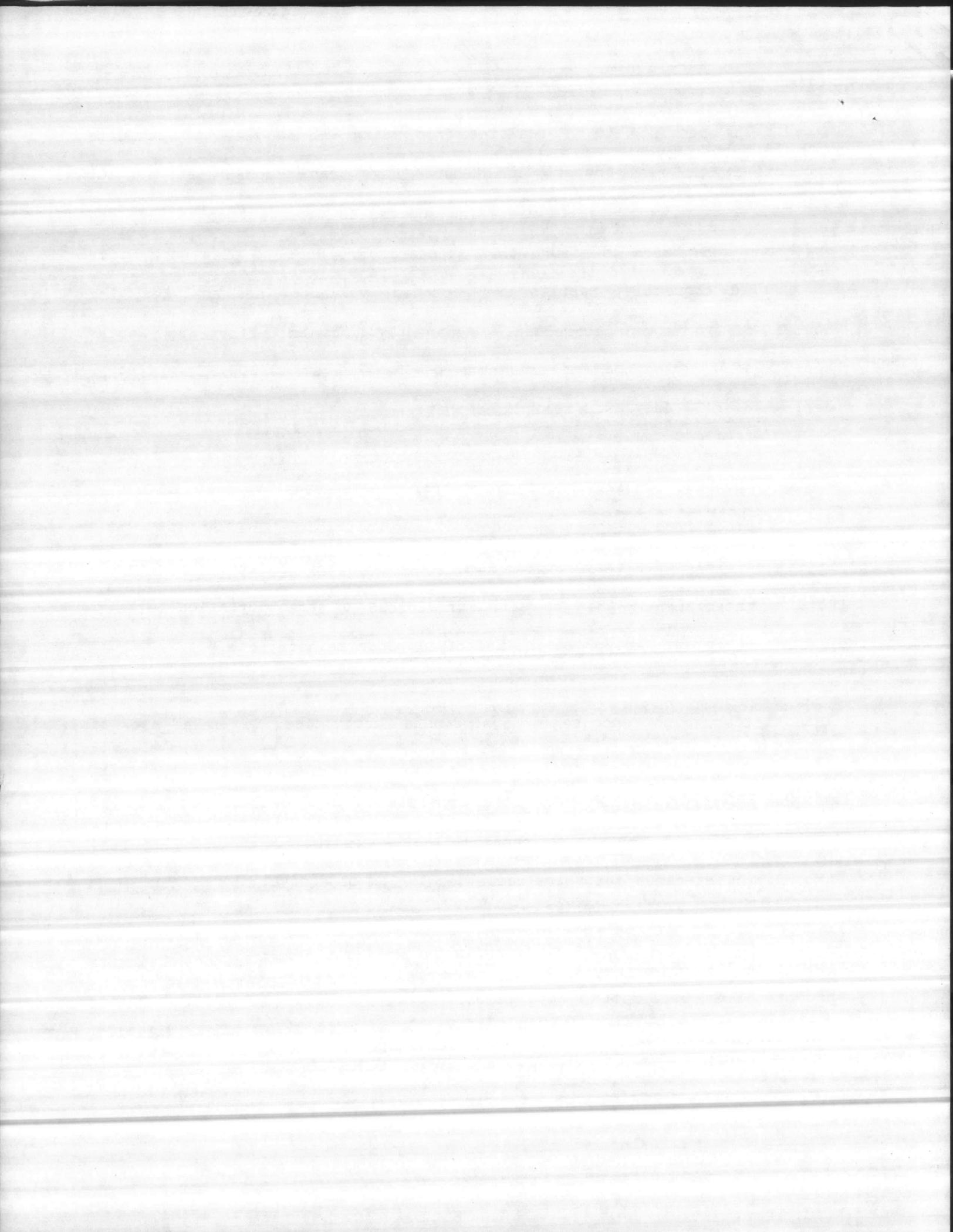


e. The benefits to be realized from using EPS to plan and evaluate productivity in real property maintenance have been demonstrated and DOD has made a commitment to its use. The success is dependent on manager and craftsman acceptance to ensure that standards are used to plan work, time is charged correctly, results are reported, variances are analyzed, and causes of variances corrected. Apparently, in an effort to foster acceptance by managers and craftsman CINCLANTFLT ltr 11000/FF1-2/N-N922, Ser. 4948 of 28 July 1982 recognized that:

"Notable variations from standards are usually due to conditions beyond the control of individual craftsman. Deficiencies may appear in job planning; delivery of materials to the job site; provisions of transportation, equipment, and/or tools; use of improper methods; etc."

This letter also encouraged subordinate activities to make use of Engineering Field Divisions (EFDs) to assist in furthering the objectives of the EPS program. However, the benefits of EPS utilization will be realized only if activities responsible for budgeting and funding real property maintenance costs are committed to its objectives.

Recommendation 1. NAVFACENCOM in liaison with major claimants promote EPS utilization by demonstrating the productivity benefits inherent in its use.



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FOR FDR

SUBJ: NAVAL AUDIT S40172 - AUDIT OF THE COST, QUALITY, AND RESPONSIVENESS OF PUBLIC WORKS SERVICES PROVIDED TO NAVY AND MARINE CORPS ACTIVITIES

A. CMC LTR FDR-41/RFK S40172 OF 23 NOV 19882

1. IRT REF COMMENTS ON FACTUAL ACCURACY SUBJ AUDIT FINDINGS FOLLOW:

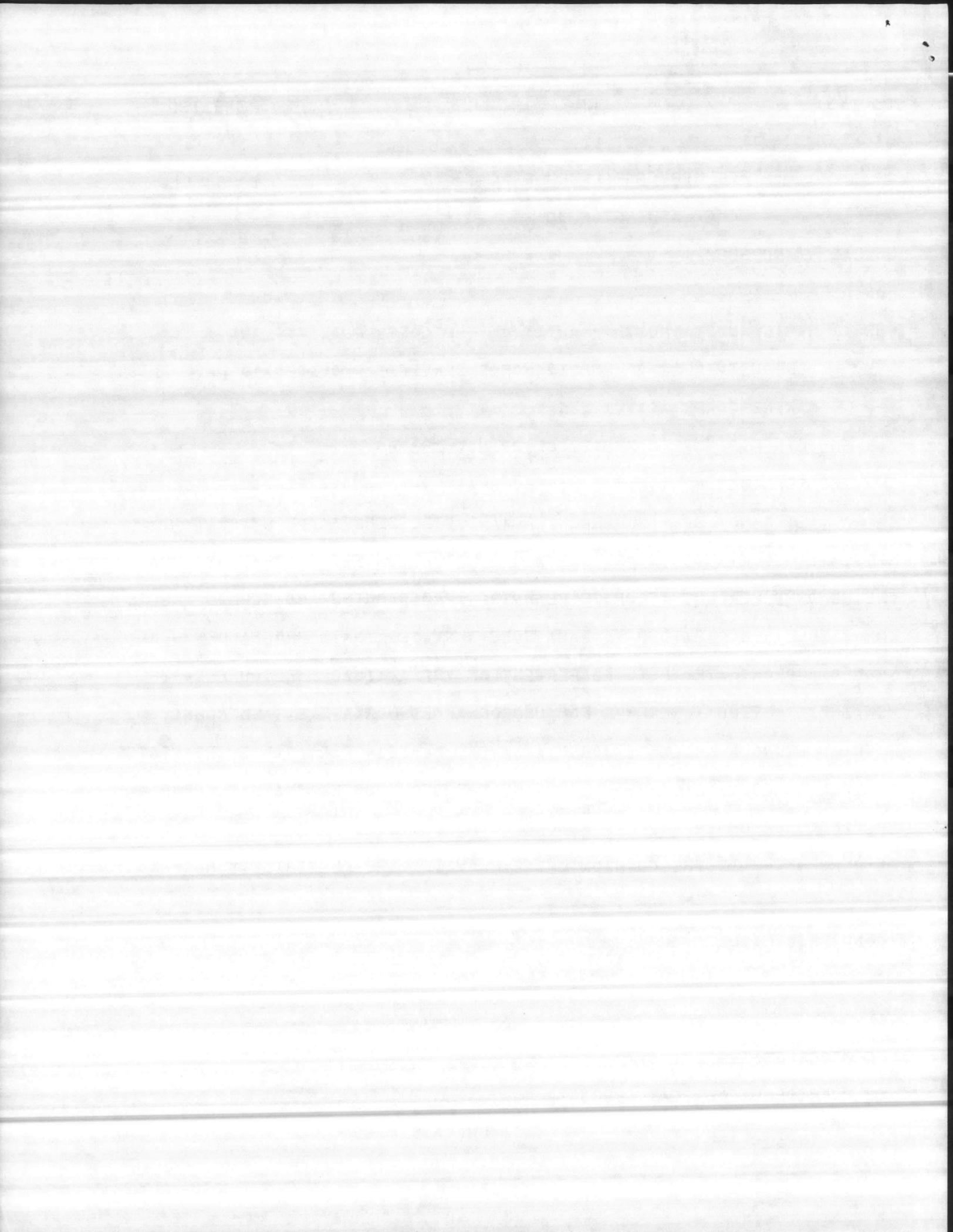
A. ITEM NO. 32 - IMPLEMENTING AND UTILIZING A JOB PRIORITY SYSTEM. MCO P11000-7B AND NAVFAC M0-321 RECOGNIZES AND ALLOWS THAT ONE HUNDRED PERCENT ACCURATE PLANNING, PROGRAMMING AND SCHEDULING IS IMPOSSIBLE. MCO P11000-7B PARA 3022-1 STATES THAT "PROGRAMMED WORK SHOULD APPROXIMATE 70 TO 80 PERCENT OF THE AVAILABLE RESOURCES, THE REMAINDER BEING A RESERVE FOR UNPROGRAMMED WORK; I.E., EMERGENCY WORK OR UNKNOWN SPECIFIC JOBS". NAVFAC M0-321, PARA 9.1.1.1(2) STATES "MASTER SCHEDULING OF 75 PERCENT OF THE SHOP FORCES AVAILABLE FOR SPECIFIC JOB ORDER AND MINOR WORK AUTHORIZATIONS". THE REMAINING 25 PERCENT -- IS THE CUSHION WHICH PROVIDES THE FLEXIBILITY NECESSARY

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L.R.MIZE, GS-12, IR, 1779

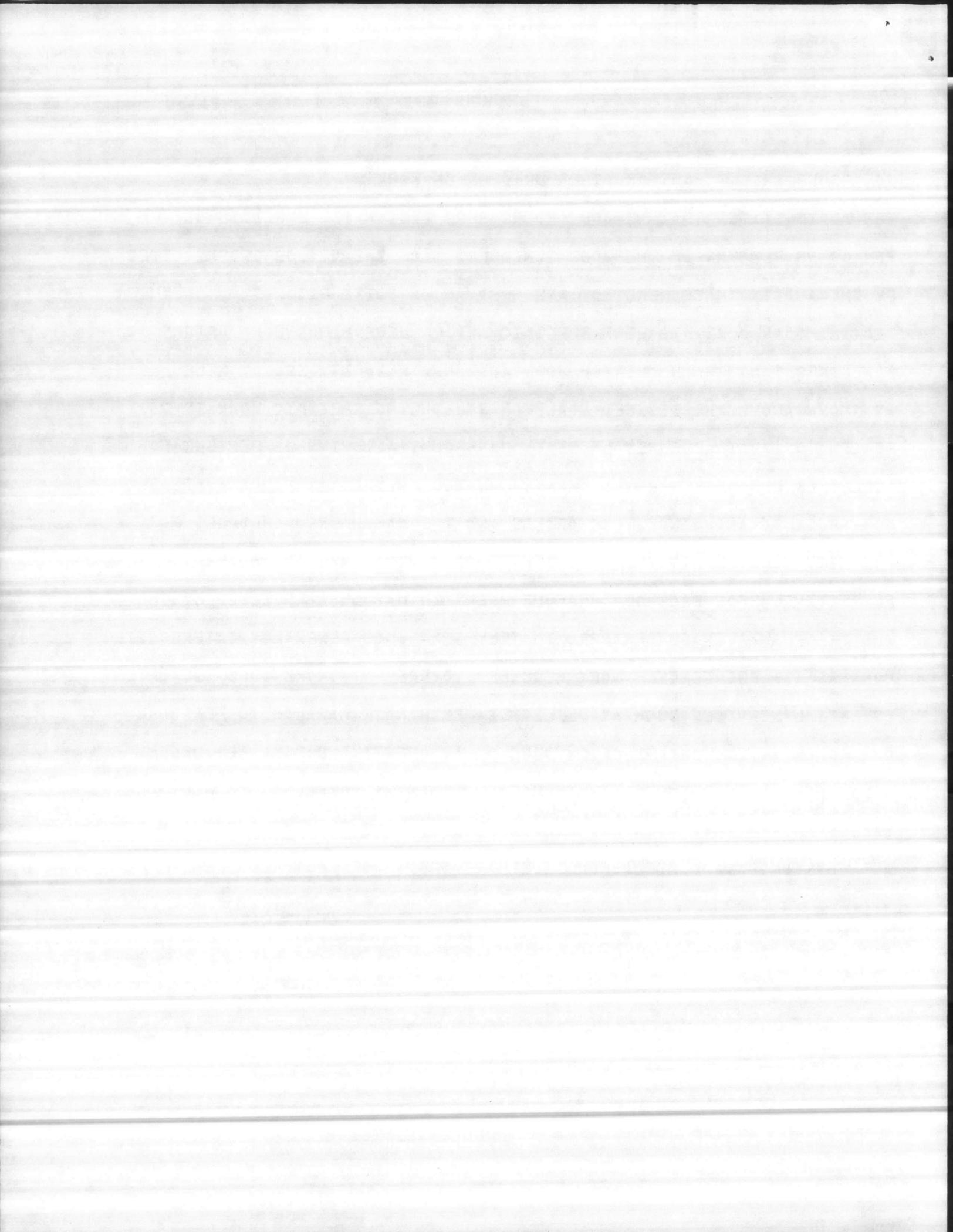
J.R.FRIDELL, COL, C/S, 2523

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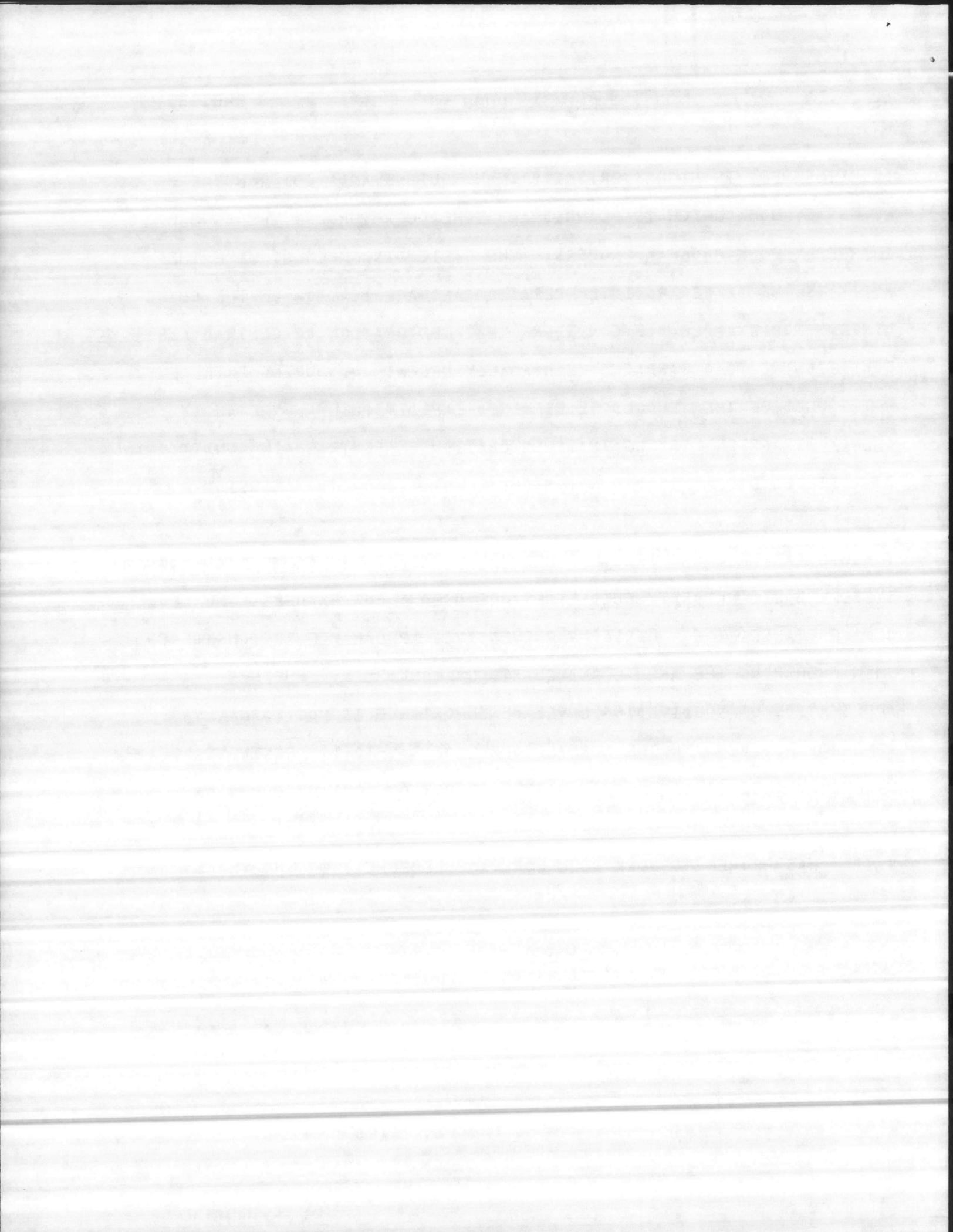
TO ABSORB URGENT JOBS OR OTHER UNFORESEEN WORK.

THE AUDIT STATES THAT 47 JOB ORDERS WERE DESIGNATED EXPEDITE OUT OF 204 OR 23 PERCENT OF THE JOBS SCHEDULED. OF THE 47 JOB ORDERS CITED BY THE AUDIT, THREE WERE NOT ASSIGNED AN EXPEDITE PRIORITY. OF THE REMAINING 44 JOBS, 18 WERE SPECIFIC AND 26 WERE MINOR WORK ORDERS. MORE IMPORTANT THE NUMBER OF JOBS ASSIGNED PRIORITY IS NOT RELEVANT<sup>E</sup>. AS SHOWN ABOVE THE DESIRED GOAL FOR SCHEDULING SPECIFIC WORK IS 75 PERCENT OF AVAILABLE RESOURCES IN MAN-HOURS ALLOWING 25 PERCENT FOR URGENT OR UNFORESEEN REQUIREMENTS. BASED ON THE MAN-HOURS AVAILABLE FOR SPECIFIC AND MINOR WORK ORDERS AND THE MAN-HOURS SCHEDULED FOR PRIORITY JOBS, EXPEDITES CONSTITUTED ONLY 20%, 14%, 8% AND 9% RESPECTIVELY FOR EACH OF THE FOUR WEEKS IN MAY 1982 REVIEWED BY THE AUDIT, OR AN AVERAGE OF APPROXIMATELY 13%. MCB GENERALLY CATERGORIZES JOBS AS {1} EMERGENCY - WORK REQUIRED TO PREVENT OR RESTORE DISRUPTED ESSENTIAL SERVICES SUCH AS UTILITIES, ELIMINATE HAZARDS TO PERSONAL OR PROPERTY, ETC AND IS OFTEN DONE ON AN OVERTIME BASIS; {2} URGENT - WORK WHICH IS NOT EMERGENCY IN NATURE, SUCH AS CORRECTING A PERSONNEL SAFETY HAZARD THAT DOES NOT NEED IMMEDIATE ATTENTION {REPAIRING HOLES AND <sup>R</sup>CUTS ON PARADE FIELD FOR SAFE MARCHING}, DOES NOT REQUIRE



OVERTIME, BUT IS HIGHER PRIORITY THAN ROUTINE AND; (3) ROUTINE - NECESSARY WORK WHICH IS PLANNED AND SCHEDULED THROUGH THE ANNUAL/ QUARTERLY WORK PROGRAM PROCESS. THE BASIC DISAGREEMENT WITH THE AUDIT IS THE DIFFERING INTERPRETATION AND APPLICATION OF THE GUIDELINES. FOR EXAMPLE MCB CONSIDERS THAT RESTORATION OF CENTRAL AIR CONDITIONING TO A BARRACKS IS NORMALLY URGENT AND DURING EXTREMELY HOT, HUMID WEATHER SHOULD BE REPAIRED EXPEDITIOUSLY. THE AUDIT AGENCY DISAGREES, SAYING THAT RESTORATION OF CENTRAL AIR CONDITIONING TO A SINGLE BARRACKS DOES NOT SIGNIFICANTLY IMPACT ON MISSION ACCOMPLISHMENT.

THROUGH CAMP LEJEUNE DOES NOT USE THE SPECIFIC NAVFAC MD-321 PRIORITY SYSTEM, BASIC PRIORITY GUIDELINES ARE USED. FOR EXAMPLE, THE LEVEL OF IMPORTANCE, I.E., MISSION, PREVENTIVE, APPEARANCE IS CONSIDERED WHEN PREPARING THE ANNUAL AND QUARTERLY WORK PLAN. FURTHER APPLICATION OF SUBDIVIDING LEVEL OF IMPORTANCE IS NOT FORMALLY APPLIED, HOWEVER, IN THE NORMAL COURSE OF DAY-TO-DAY BUSINESS, DEADLINES AND DESIRED COMPLETION DATES ARE PUT ON JOBS WHICH IS IN PRACTICE TANTAMOUNT TO SUBDIVIDING LEVELS OF IMPORTANCE. THIS SYSTEM HAS PROVEN TO WORK WELL FOR CAMP LEJEUNE OVER THE YEARS.



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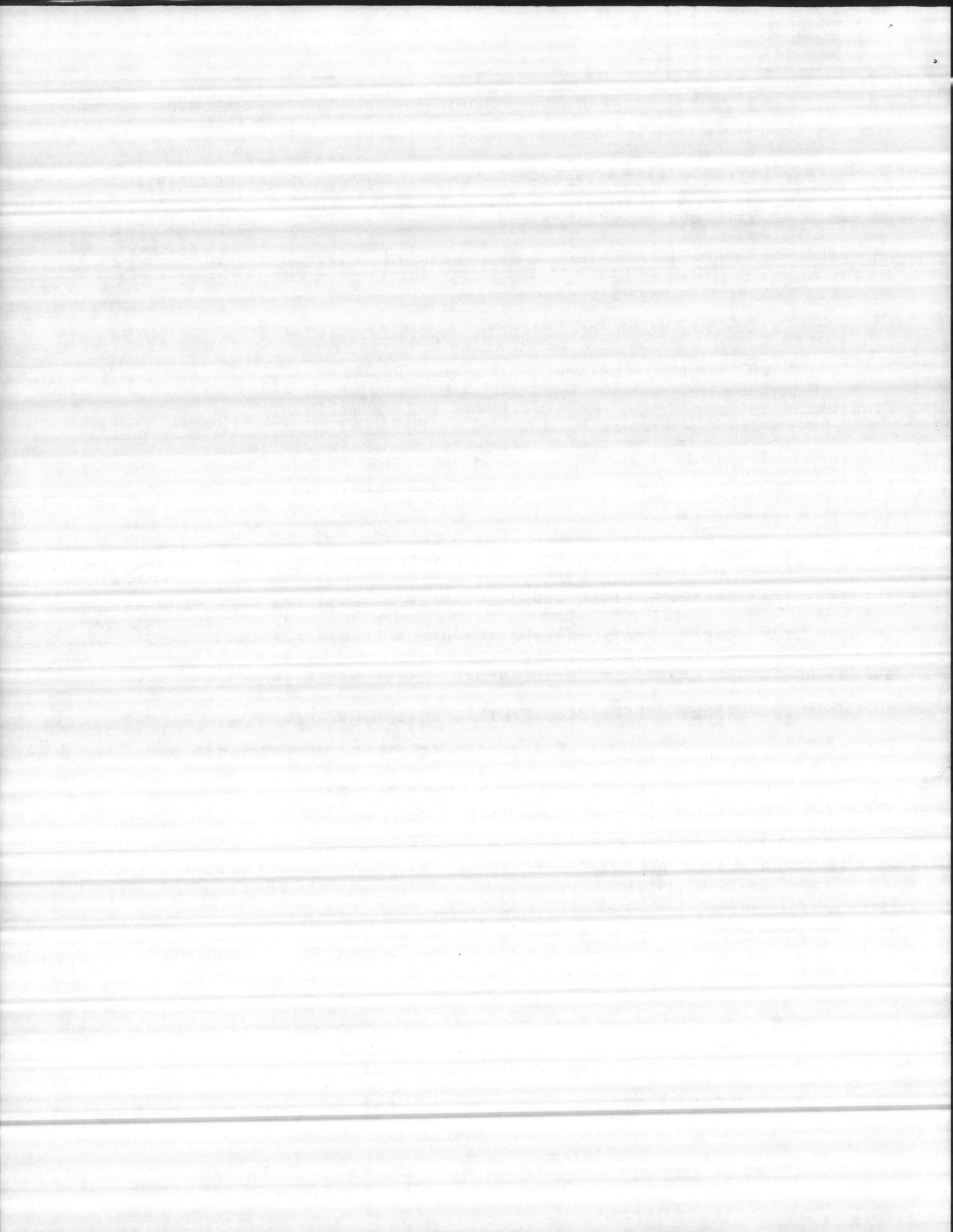
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THE USE OF PRIORITY DESIGNATORS FOR MATERIAL PROCUREMENT SHOULD NOT BE CONFUSED WITH JOB PRIORITIZATION. MATERIAL PRIORITY DESIGNATORS ARE USED, NOT ONLY AS RELATED TO THE PRIORITY OF THE JOB, BUT ARE ALSO USED ON ROUTINE JOBS WHEN ONE-OF-A-KIND ITEMS OR SMALL QUANTITIES OF MATERIAL IS DELAYING THE SCHEDULING OF A JOB. IN SUCH CASES, PREVENTING THE DELAY AND DISRUPTION TO THE WORKFORCE SCHEDULING IS THE DRIVING FORCE CAUSING THE EXPEDITE.

B. ITEM NO. 33 - REVIEWING SPECIFIC JOB ORDER VARIANCES. CONCUR. MCB IS CURRENTLY IN COMPLIANCE AND ALL VARIANCES SINCE MAY 1982 HAVE BEEN REVIEWED.

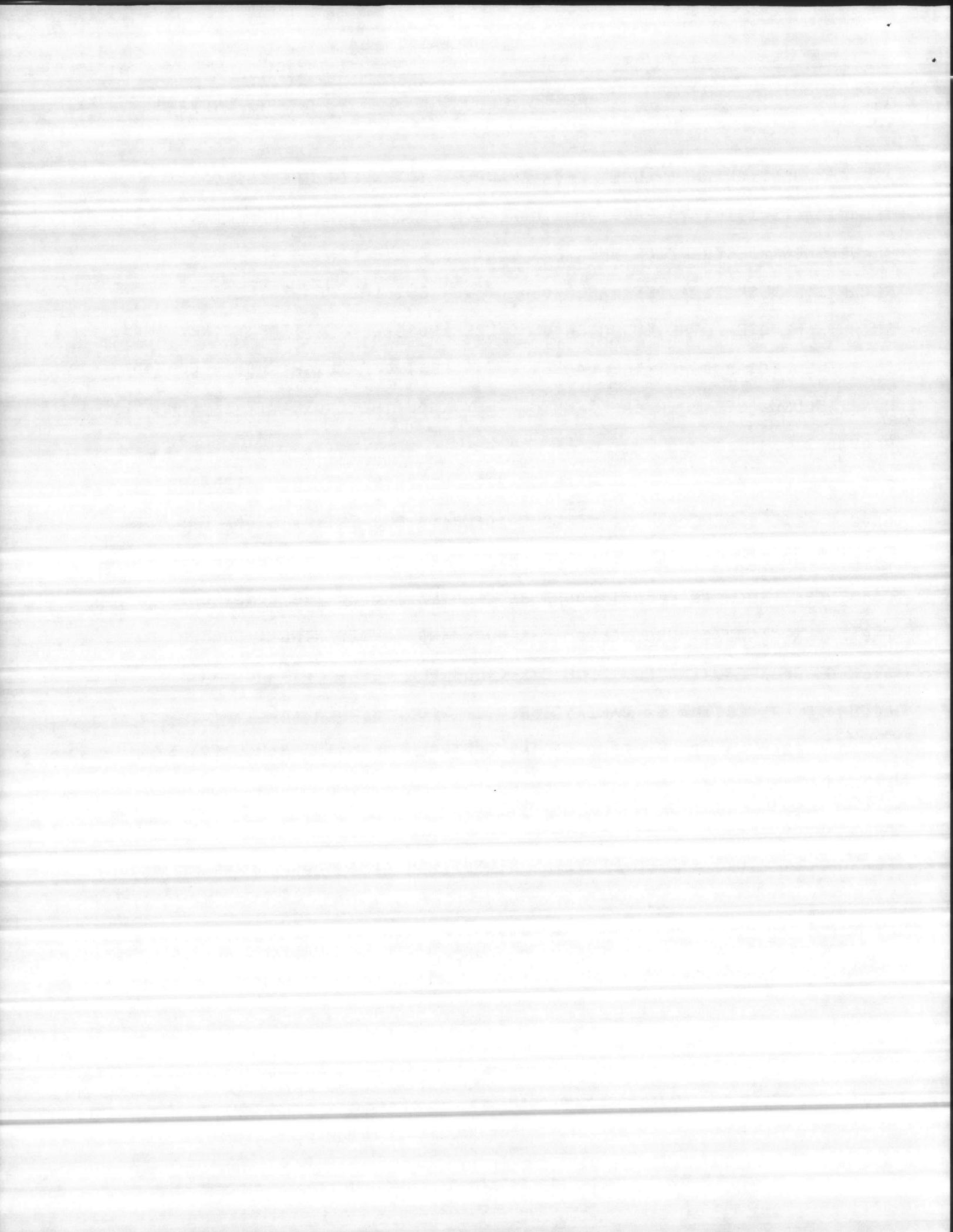
C. ITEM NO. 34 - REVIEWING EMERGENCY/SERVICE WORK VARIANCES. THE AUDIT STATES THAT "LABOR HOURS RECORDED AGAINST E/S WORK RANGED AS HIGH AS 32% OF THE TOTAL PRODUCTIVE MAINTENANCE EFFORT." THIS FINDING IS MISLEADING IN THAT CONTRACT MAINTENANCE EFFORT WAS NOT INCLUDED IN THE ANALYSIS. MCB ANALYSIS SHOWS THAT E/S ACCOUNTS FOR APPROXIMATELY 23% OF THE TOTAL MAINTENANCE EFFORT AS DISCUSSED IN MCB COMMENTS ON ITEM 49. RECOMMENDATIONS BY THE AUDIT OF ADDITIONAL STEPS THAT COULD BE TAKEN BY BMD'S THAT WOULD ASSIST IN THE REVIEW AND ANALYSIS OF E/S WORK



ARE OF QUESTIONABLE VALUE. FOR EXAMPLE, TO EXPECT THE CUSTOMER/TENANT ACTIVITIES TO PROVIDE A MORE COMPLETE AND THOROUGH WORK REQUIREMENT DESCRIPTION WHEN E/S WORK IS CALLED IN TO THE WORK RECEPTION DESK IS A DESIRABLE OBJECTIVE, BUT THE FEASIBILITY OF SUCH IS REMOTE. THE CUSTOMER OR CALLER NORMALLY IS SIMPLY ONLY AWARE OF THE EFFECT AND NOT THE CAUSE; E.G., HEAT OFF, LIGHTS OUT, COMMODE WON'T FLUSH, ETC. IN CASES WHERE THEY KNOW THE CAUSE, IT IS NORMALLY PROVIDED.

ACCURATE ESTIMATES CANNOT BE MADE WITHOUT PHYSICAL INSPECTION BY A KNOWLEDGEABLE PERSON. TO ACHIEVE ACCURATE EPS ESTIMATES ON E/S WORK WOULD REQUIRE THAT AN ESTIMATOR VISIT THE SITE FIRST, BEFORE REPAIRS COMMENCE. SUCH AN EFFORT WOULD BE COUNTER PRODUCTIVE CONSIDERING THE NATURE AND/OR URGENCY OF E/S WORK AND CONSIDERING A CURRENT AVERAGE OF APPROXIMATELY 3000 E/S CALLS PER WEEK. WITHOUT AN ACCURATE EPS ESTIMATE, VARIANCE REVIEW WOULD BE MEANINGLESS.

D. ITEM NO. 35 - REDUCING AND CONTROLLING MAINTENANCE COSTS. A FORMAL REVIEW OF THE MOTOR REWIND SHOP, CONDUCTED IN 1980, RECOMMENDED USE OF A COMBINATION OF COMMERCIAL VENDORS AND IN-HOUSE PERSONNEL. THIS SYSTEM PROVIDES ECONOMICAL ADVANTAGES WHILE



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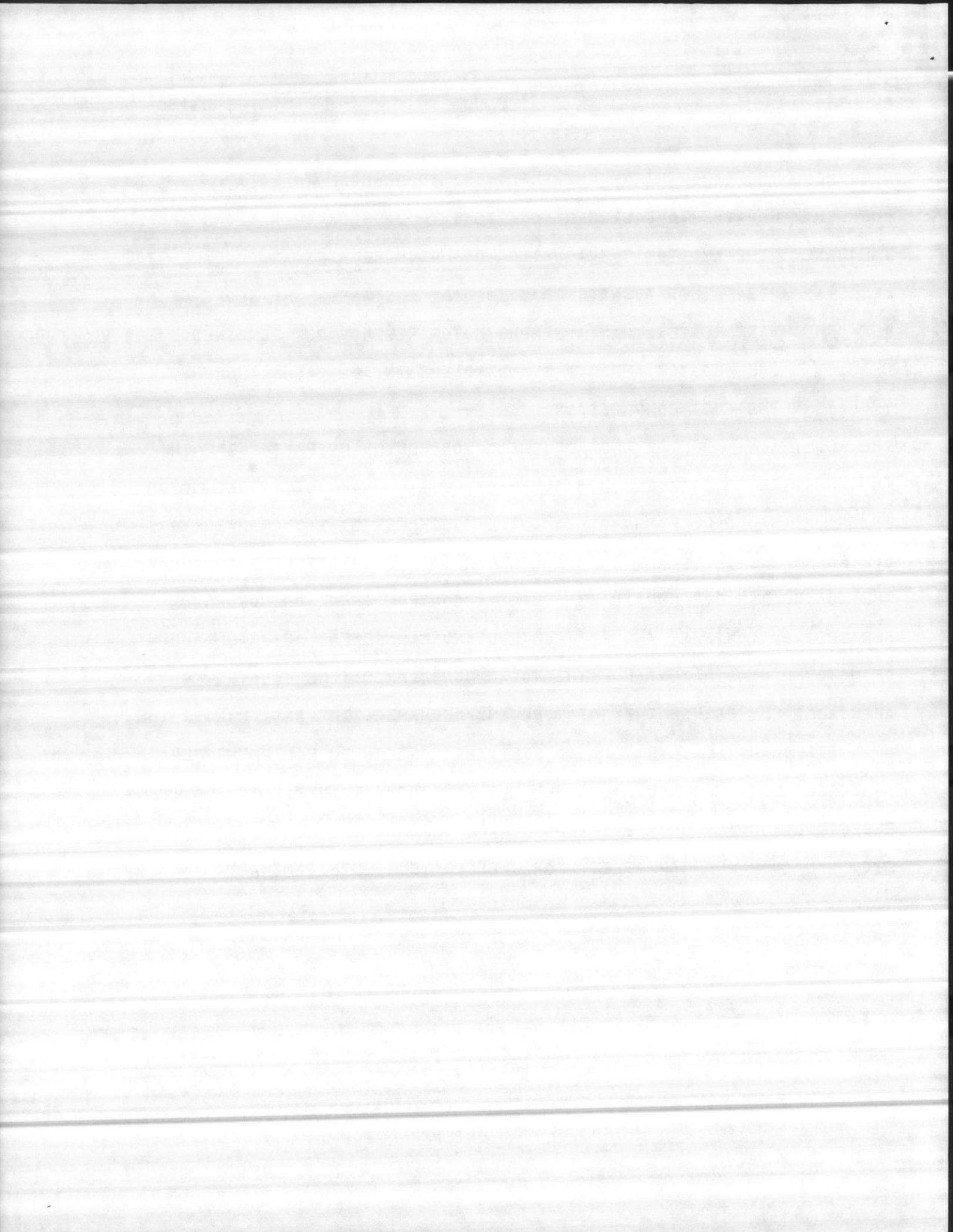
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RETAINING THE CAPABILITY {ONE EMPLOYEE} TO PERFORM IMMEDIATE EMERGENCY REPAIRS TO EQUIPMENT CRITICAL TO 24 HOUR OPERATIONS ABOARD THE BASE. THE AUDITOR'S EVALUATION OF MOTOR REPAIRS AS COMPARED TO EPS STANDARDS FAILED TO NOTE THAT IN MANY INSTANCES THE SCOPE OF WORK PERFORMED WAS GREATER THAN A SIMPLE MOTOR REWIND, BUT REQUIRED MOTOR REBUILD. THE AUDITOR APPLIED STANDARD EPS IN ALL CASES THEREBY INFLATING THE COST COMPARISONS.

THE AUDIT ALSO APPLIED 100% OF THE MOTOR REWIND MECHANIC TIME IN THE ANALYSIS TO COMPARE WITH CONTRACT COST. IN REALITY, THE MOTOR REWIND MECHANIC PERFORMS OTHER DUTIES SUCH AS {1} SHOP REPAIR TO CONTROLS, SWITCHES, AND ELECTRICAL COMPONENTS {2} ISSUING MOTORS TO THE CONTRACTOR FOR REPAIR {3} QUALITY CONTROL CHECK ON MOTORS REPAIRED BY CONTRACT AND {4} CONTROL AND MANAGEMENT OF SMALL AMOUNT OF MOTOR REWIND MATERIAL. THE TOTAL NON-REPAIR TIME EQUATES TO APPROXIMATELY 25% OF THE MOTOR REWIND MECHANIC TIME AND CHANGES THE ANALYSIS DRAMATICALLY. AN OVERRIDING CONCERN IN EQUIPMENT REPAIR IS TIMELINESS, PARTICULARLY WHEN THE EQUIPMENT IS VITAL TO PROVIDING ESSENTIAL SERVICE OR PREVENTING SEWAGE DISCHARGES, WORK STOPPAGES, ETC. AN IN-HOUSE CAPABILITY FOR EMERGENCIES, WITH CONTRACT



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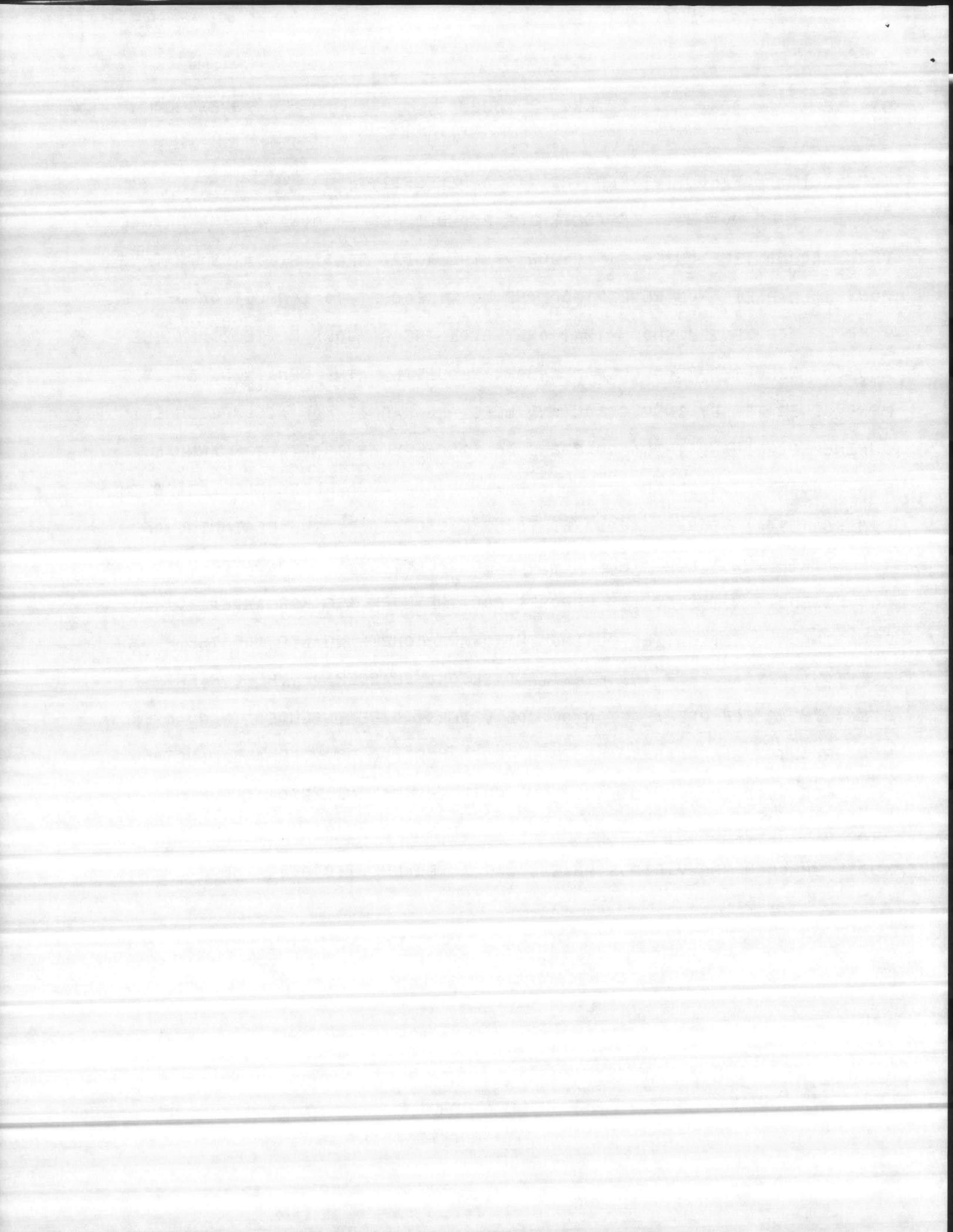
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CAPABILITY FOR ROUTINE REPAIRS, IS A NECESSITY.

E. ITEM NO. 36 - ESTABLISHING PROCEDURES TO MONITOR AND REDUCE TURN AROUND TIME ON SPECIFIC JOBS. THE AUDIT FINDING STATES THAT "8 MONTHS ELAPSED FROM RECEIPT OF THE WORK REQUEST TO COMPLETION OF THE WORK". MCB REVIEW SHOWS THAT ONLY 8 OF THE 24 JOBS REVIEWED BY THE AUDITOR RESULTED FROM CUSTOMER WORK REQUESTS. THE REMAINING 16 JOBS WERE GENERATED BY INSPECTION AND WERE PROGRAMMED FOR ACCOMPLISHMENT DURING SECOND AND THIRD QUARTERS OF FISCAL YEAR 1982. THE ANNUAL WORK PROGRAM CONSISTING OF WORK PLANNED FOR ACCOMPLISHMENT DURING THE COMING FISCAL YEAR IS REQUIRED TO BE FINALIZED BY THE BEGINNING OF THE FOURTH QUARTER OF THE PREVIOUS FISCAL YEAR IN ACCORDANCE WITH MCO P11000.7. INSPECTION REPORTS FOR THE WORK ARE FORWARDED TO PLANNING AND ESTIMATING DURING THIRD AND FOURTH QUARTER OF THE PREVIOUS FISCAL YEAR AND FIRST AND SECOND QUARTER OF THE CURRENT FISCAL YEAR FOR PREPARATION OF JOB ORDERS TO BE INCLUDED IN QUARTERLY WORK PLANS. JOB ORDERS ARE THEN PROGRAMMED TO PROVIDE A BALANCED SHOP WORKLOAD THROUGHOUT ALL FOUR QUARTERS TAKING INTO ACCOUNT SEASONAL REQUIREMENTS. THE PROGRESS OF THE JOBS REVIEWED BY THE AUDIT THROUGH THE VARIOUS PHASES WAS AS PLANNED TO MEET THE



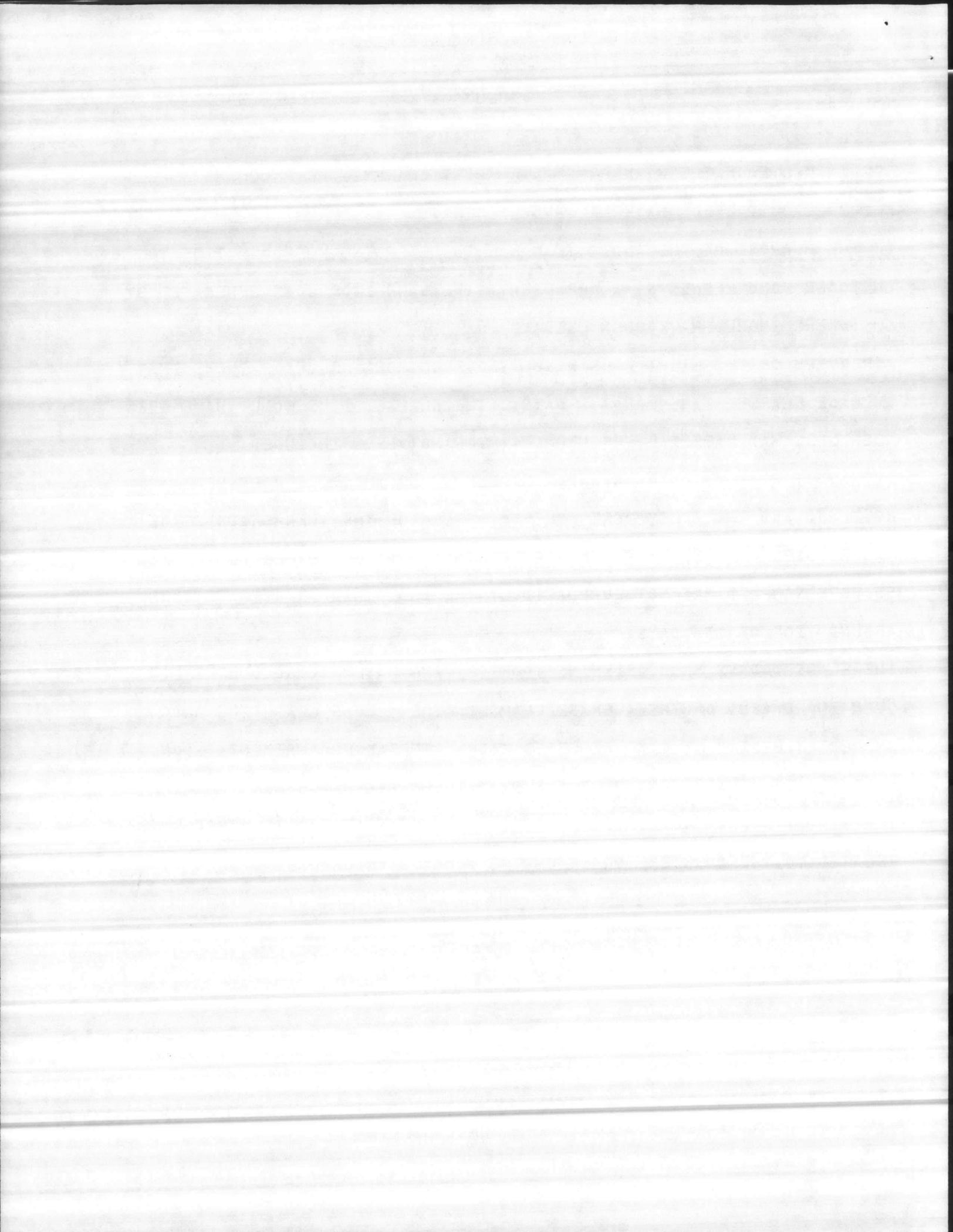
REQUIREMENTS OF THE WORK PROGRAM. ADDITIONALLY, THE PROGRAMMER MUST ALLOW LEAD TIME FOR MATERIAL PROCUREMENT.

IF THE PURPOSE OF THE AUDIT TEAM WAS TO DETERMINE RESPONSE TIME TO CUSTOMER WORK REQUESTS, A REPRESENTATIVE SAMPLE OF JOBS GENERATED BY CUSTOMERS SHOULD HAVE BEEN USED.

A REVIEW OF THE EIGHT JOBS RESULTING FROM WORK REQUESTS SHOWS THAT AVERAGE ELAPSED TIME WAS 166 DAYS. THE ELAPSED DAYS WOULD HAVE BEEN MUCH LESS HAD MATERIAL PROCUREMENT TIME NOT BEEN INCLUDED.

THE AUDIT STATES THAT A RANDOM SAMPLE OF 50 SPECIFIC JOBS WERE REVIEWED AND THAT THEY WERE ABLE TO DETERMINE THE TURN AROUND TIME FOR 24 JOBS WAS 256 DAYS. MCB DETERMINED THAT THE OTHER 26 OF THE 50 JOBS SAMPLED BUT NOT EVALUATED BY THE AUDIT HAD AN AVERAGE TURN AROUND TIME OF 138 DAYS.

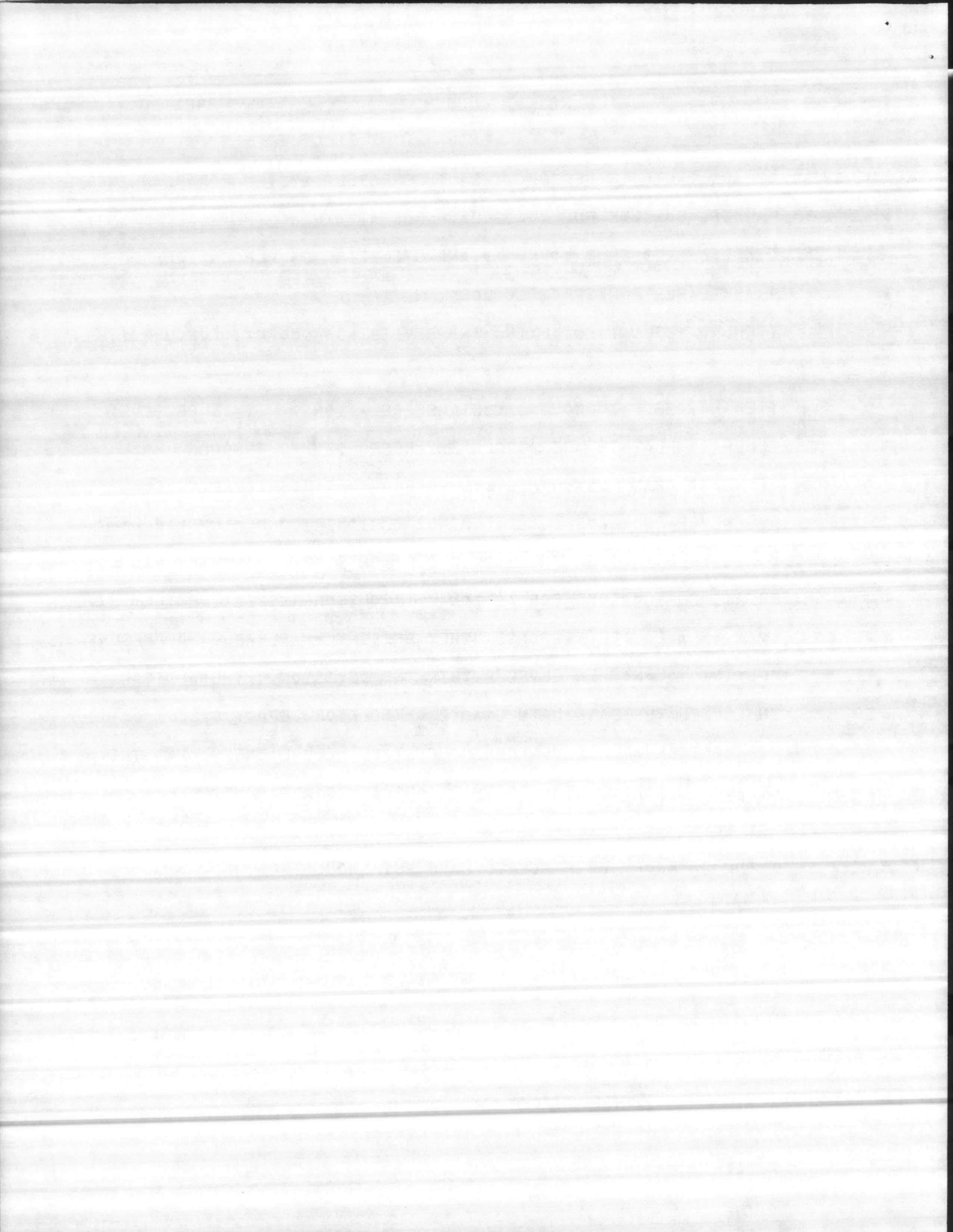
THE ELAPSED DAYS FROM ORDERING TO RECEIVING MATERIAL ACCOUNTED FOR OVER 50 PERCENT OF THE AVERAGE ELAPSED TIME. LONG LEAD TIME AND UNPREDICTABILITY OF TIME REQUIRED FOR MATERIAL PROCUREMENT IS ONE OF THE MOST SIGNIFICANT PROBLEMS IN MAINTENANCE MANAGEMENT. THE ELAPSED DAYS FROM RECEIPT OF MATERIAL TO <sup>START</sup> OF JOB IS DIRECTLY RELATED TO THE QUARTER FOR WHICH THE WORK IS PROGRAMMED. WHEN



UNDERSTOOD AND TAKEN IN PERSPECTIVE, THE PRESENT SYSTEM FOR PLANNING AND PROGRAMMING WORK IS FULLY ADEQUATE FOR ATTAINING THE GOAL OF PROVIDING A BALANCED SHOP WORKLOAD AND UTILIZING 75 PERCENT OF RESOURCES AVAILABLE FOR SPECIFIC WORK.

F. ITEM NO. 37 - IDENTIFYING AND REVIEWING REWORK. CONCUR WITH THE FINDINGS.

G. ITEM NO. 38 - IMPROVING CUSTOMER RELATIONS. IT IS BELIEVED THAT CUSTOMER COMPLAINTS ARE ADEQUATELY RESPONDED TO THROUGH EXISTING COMMAND CHANNELS. THIS SYSTEM PROVIDES FOR CORRECTIVE MEASURES WHENEVER PROBLEMS OCCUR. MINOR CUSTOMER COMPLAINTS ARE PRESENTLY RECEIVED THROUGH THE WORK RECEPTION SECTION AND ARE PASSED TO APPROPRIATE SUPERVISORS FOR ACTION. IF CUSTOMERS BELIEVE THEY HAVE NOT RECEIVED AN ADEQUATE RESPONSE, THEY PRESENTLY ARE ABLE TO PRESENT THEIR COMPLAINT TO ANOTHER LEVEL WITHIN THE DIVISION. THE AUDITORS DID NOT INTERVIEW THE BASE MAINTENANCE OFFICER OR DEPUTY BASE MAINTENANCE OFFICER AT MCB CONCERNING CUSTOMER COMPLAINTS. HAD THEY DONE SO, THEY WOULD HAVE LEARNED THAT COMPLAINTS ARE ROUTINELY RECEIVED BY BOTH. ESTABLISHMENT OF A CENTRAL COMPLAINT DESK WOULD FALL INTO THE CATEGORY OF NICE-TO-HAVE BUT SHOULD NOT BE



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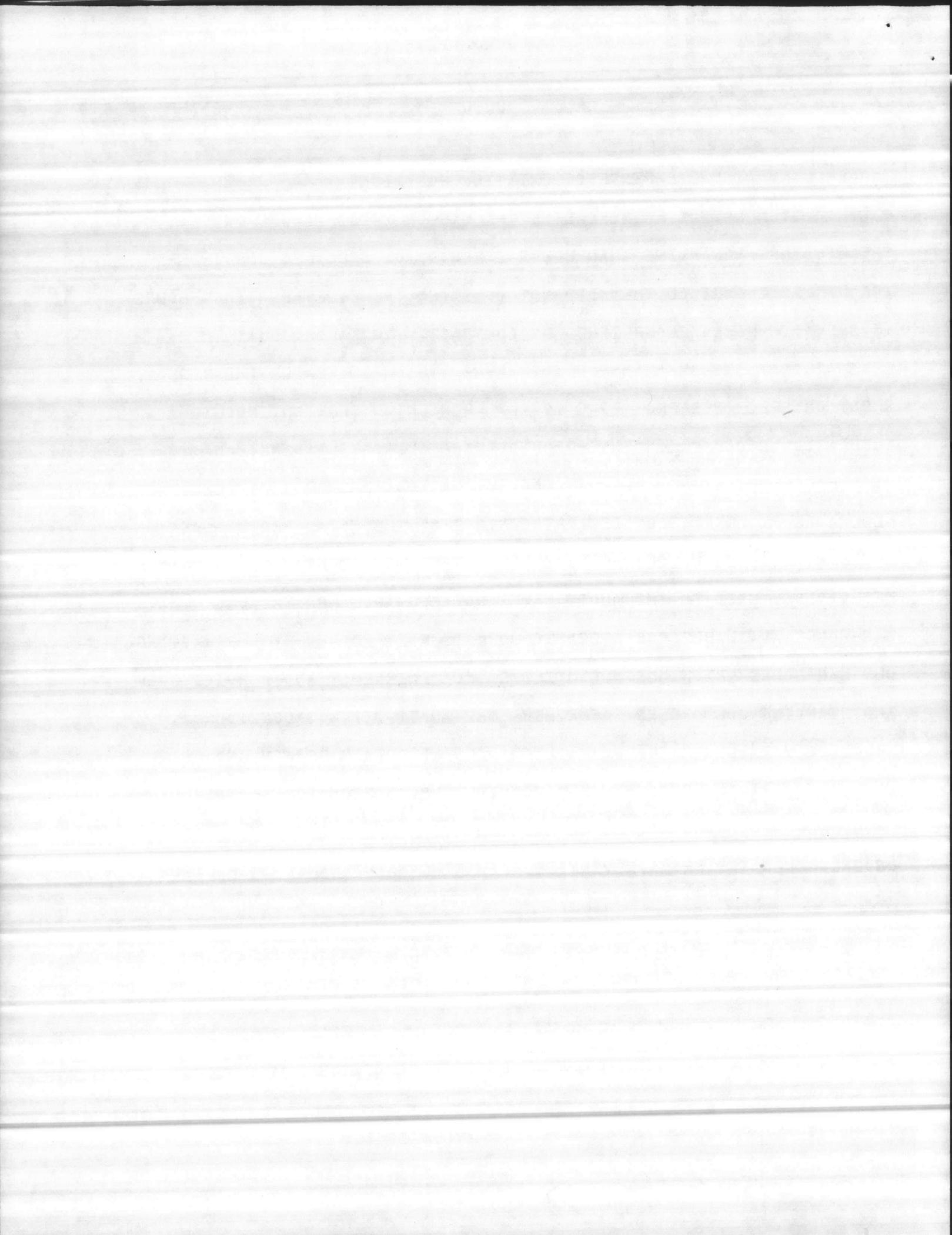
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IMPLEMENTED AT THE EXPENSE OF EXISTING POSITIONS.

H. ITEM NO. 48 - INCREASING THE USE OF SPECIFIC JOB ORDER. THE FINDINGS REGARDING MAN-HOURS EXPENDED ON SPECIFIC JOB ORDERS ARE MISLEADING SINCE THEY DID NOT CONSIDER THE EQUIVALENT MAN-HOURS OF SPECIFIC WORK ACCOMPLISHED BY CONTRACT. THIS WORK WAS ESTIMATED AT 313,846 MAN-HOURS IN FY 82 WHICH INCREASES THE TIME SPENT ON SPECIFICS FROM 27.5 TO 46.9 PERCENT. THE CONTINUOUS INSPECTION PROGRAM COMMENTS PROVIDED ARE ALSO MISLEADING. MCO P11000.7 PROVIDES NO CRITERIA FOR EVALUATION OF SHOP MAN-HOURS GENERATED BY INSPECTION AS A PERCENTAGE OF THE TOTAL PRODUCTIVE HOURS AVAILABLE. HENCE THE 11.5 PERCENT FIGURE IS MEANINGLESS. THE METHODOLOGY USED IN THE AUDIT MAKES NO ALLOWANCE FOR THE FACT THAT MAN-HOURS AVAILABLE FOR SPECIFIC WORK IS DETERMINED BY SUBTRACTING OUT MAN-HOURS WHICH MUST BE UTILIZED FOR EMERGENCY AND SERVICE WORK AND STANDING JOB ORDERS. FURTHER, THE AUDIT DID NOT CONSIDER SPECIFIC WORK GENERATED BY MAINTENANCE AND REPAIR BRANCH AND UTILITIES BRANCH PERSONNEL WHO PROVIDE INFORMATION TO THE INSPECTORS FROM PREVENTIVE AND RECURRING MAINTENANCE INSPECTIONS. HAD JOB ORDERS GENERATED FROM PREVENTIVE/RECURRING MAINTENANCE INSPECTION



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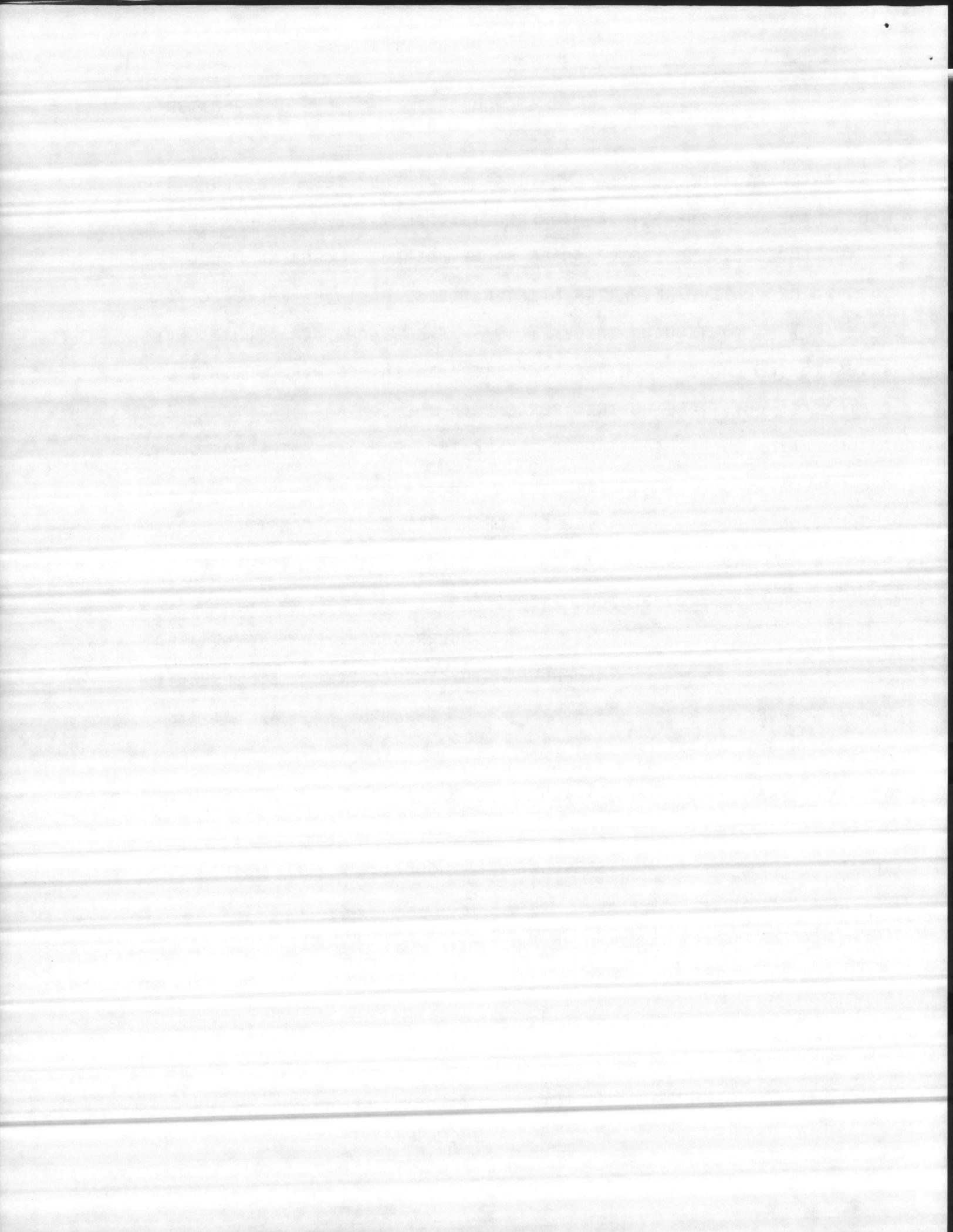
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BEEN INCLUDED. THE HOURS OF SPECIFIC WORK GENERATED FROM INSPECTION WOULD HAVE BEEN 14,459 MAN-HOURS INSTEAD OF 7,452 MAN-HOURS ALLOWED BY THE AUDITOR. NO LOGIC CAN BE FOUND FOR NOT INCLUDING FOLLOW-UP JOBS TO PREVENTIVE/RECURRING MAINTENANCE AS PART OF "SPECIFIC WORK GENERATED BY CONTINUOUS INSPECTION". AGAIN, CONSIDERATION IS NOT GIVEN TO THE LARGE AMOUNT OF SPECIFIC MAINTENANCE WORK WHICH IS CONTRACTED-OUT. ONE HUNDRED PERCENT OF THE CONTRACT MAINTENANCE WORK IS GENERATED BY THE CONTINUOUS INSPECTION PROGRAM. THE FOLLOWING IS MCB EVALUATION OF THE SPECIFIC WORK GENERATED BY THE CONTINUOUS INSPECTION PROGRAM. THE FIGURES ARE FOR FY 82 AND CONSIDERS CONTRACT MAINTENANCE AND PREVENTIVE/RECURRING MAINTENANCE FOLLOW-UP TO BE WORK GENERATED BY CONTINUOUS INSPECTION.

	MAN-HOURS	HOURS GENERATED BY INSPECTION	% GENERATED BY INSPECTION
SPECIFIC WORK IN-HOUSE	239,815	194,490	81.1%
SPECIFIC WORK CONTRACT	*313,846	313,846	100.0%
TOTAL	553,661	508,336	91.8%



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\*ESTIMATED

MAN-HOURS FROM

INSPECTION

508,336

= 982% GENERATED FROM CONTINUOUS  
INSPECTION

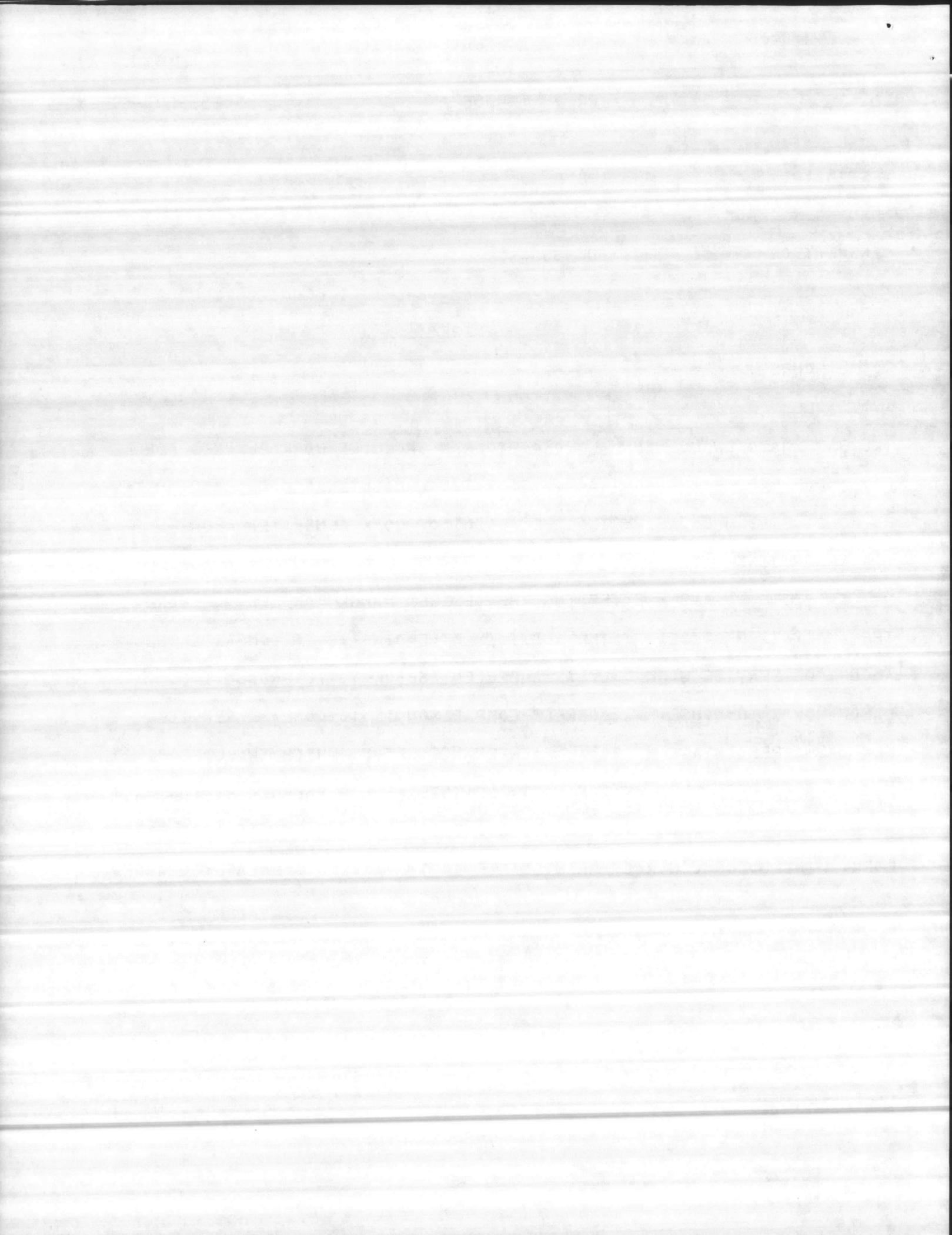
TOTAL HOURS

553,861

AVAILABLE

THE BASE MAINTENANCE ANNUAL WORK PROGRAM INCLUDES WORK PLANNED FOR BOTH SHOP FORCES AND CONTRACT. THIS TOTAL MAINTENANCE PROGRAM MUST BE CONSIDERED WHEN ANALYZING THE AMOUNT OF WORK GENERATED FROM CONTINUOUS INSPECTION.

I. ITEM NO. 49 - EXCEEDING THE DESIRED RANGE FOR SERVICE WORK. THE ANALYSIS PROVIDED BY THE AUDIT IS MILEADING AS IT COMPARES THE AMOUNT OF SERVICE WORK ONLY AS A PERCENTAGE OF TOTAL PRODUCTIVE LABOR HOURS IN-HOUSE. A CORRECT COMPARISON IS TO COMPARE SERVICE WORK AS A PERCENTAGE OF TOTAL MAINTENANCE EFFORT WHICH INCLUDES MAINTENANCE PERFORMED BY CONTRACT. MAINTENANCE PERFORMED BY CONTRACT AT CAMP LEJEUNE DURING THE PERIOD AUDITED WAS ALL SPECIFIC {05} TYPE WORK. INCLUDING CONTRACT MAINTENANCE IN THE ANALYSIS GREATLY CHANGES



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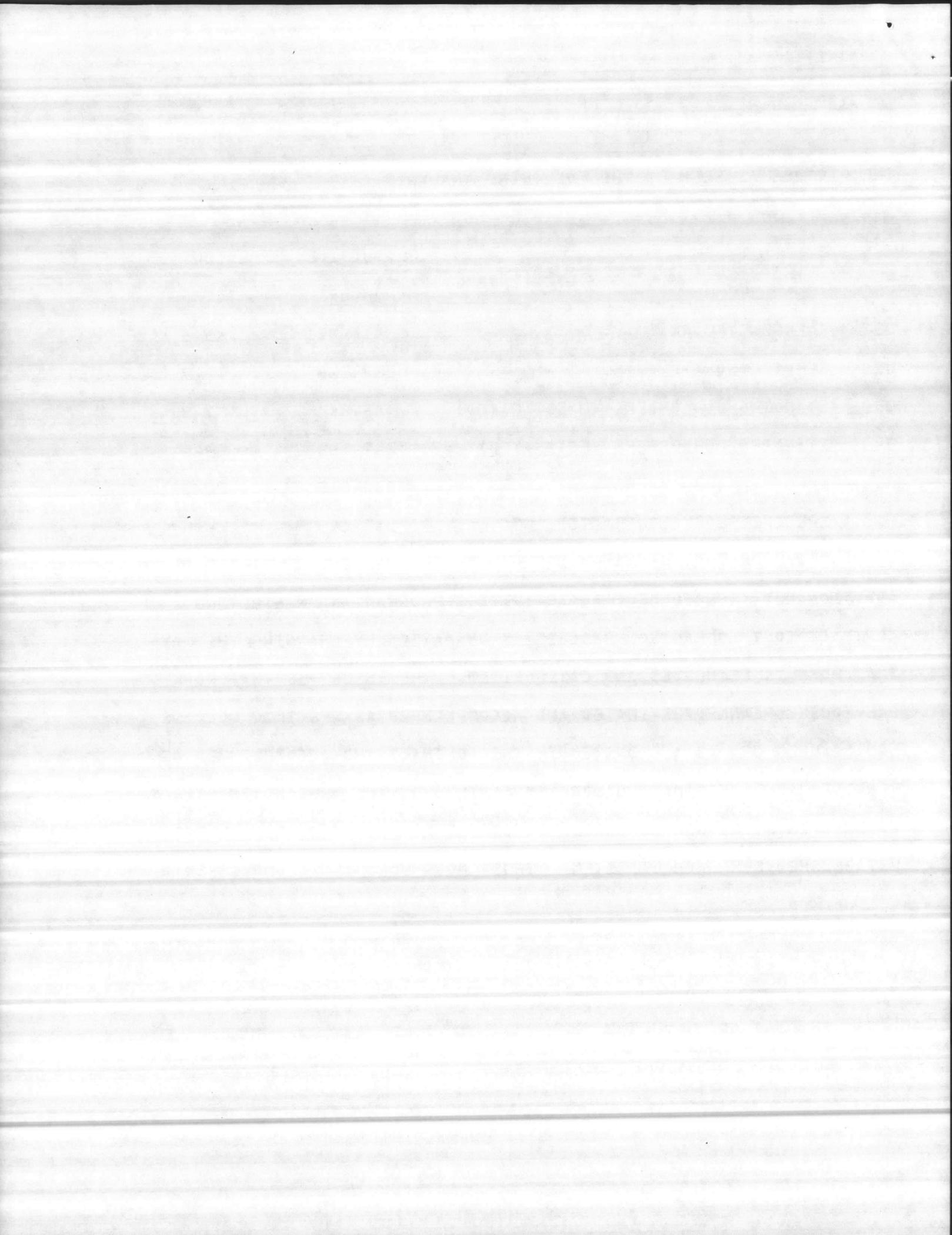
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THE PICTURE AS SEEN BY THE FOLLOWING ANALYSIS:

FY 82

WGC		PRODUCTIVE MAN-HOURS	PERCENT OF TOTAL
01	EMERGENCY WORK	418,471	3.5
02	SERVICE WORK	233,368	19.7
03	STANDING JOB ORDERS (UNESTIMATED)	85,949	7.3
04	STANDING JOB ORDERS (ESTIMATED)	267,138	22.6
05	SPECIFIC JOB ORDERS	239,815	20.3
	SPECIFIC WORK CONTRACTED OUT	313,846	26.6
	TOTAL PRODUCTIVE MAN-HOURS	1,181,587	100.0

ADDITIONALLY, THE COMMERCIAL ACTIVITIES PROGRAM AND RESULTING CONTRACT COST COMPARISON PROCESS IS DRAMATICALLY CHANGING THE WAY THAT WORK IS REQUESTED AND CATEGORIZED. THE RESULT IS THAT WORK PREVIOUSLY PLANNED/ESTIMATED AND ACCOMPLISHED AS SPECIFIC WORK IS NOW "CALLED-UP" AS A BID ITEM IN THE CONTRACT AND ACCOMPLISHED AS SERVICE WORK. ESTIMATING WORK IN FAMILY HOUSING, WHICH A CONTRACT COVERS, IS NO LONGER REQUIRED BECAUSE STANDARD TIMES ARE NOW PRE-ESTABLISHED FOR EACH BID ITEM. THUS, MORE WORK IS ACCOMPLISHED AS



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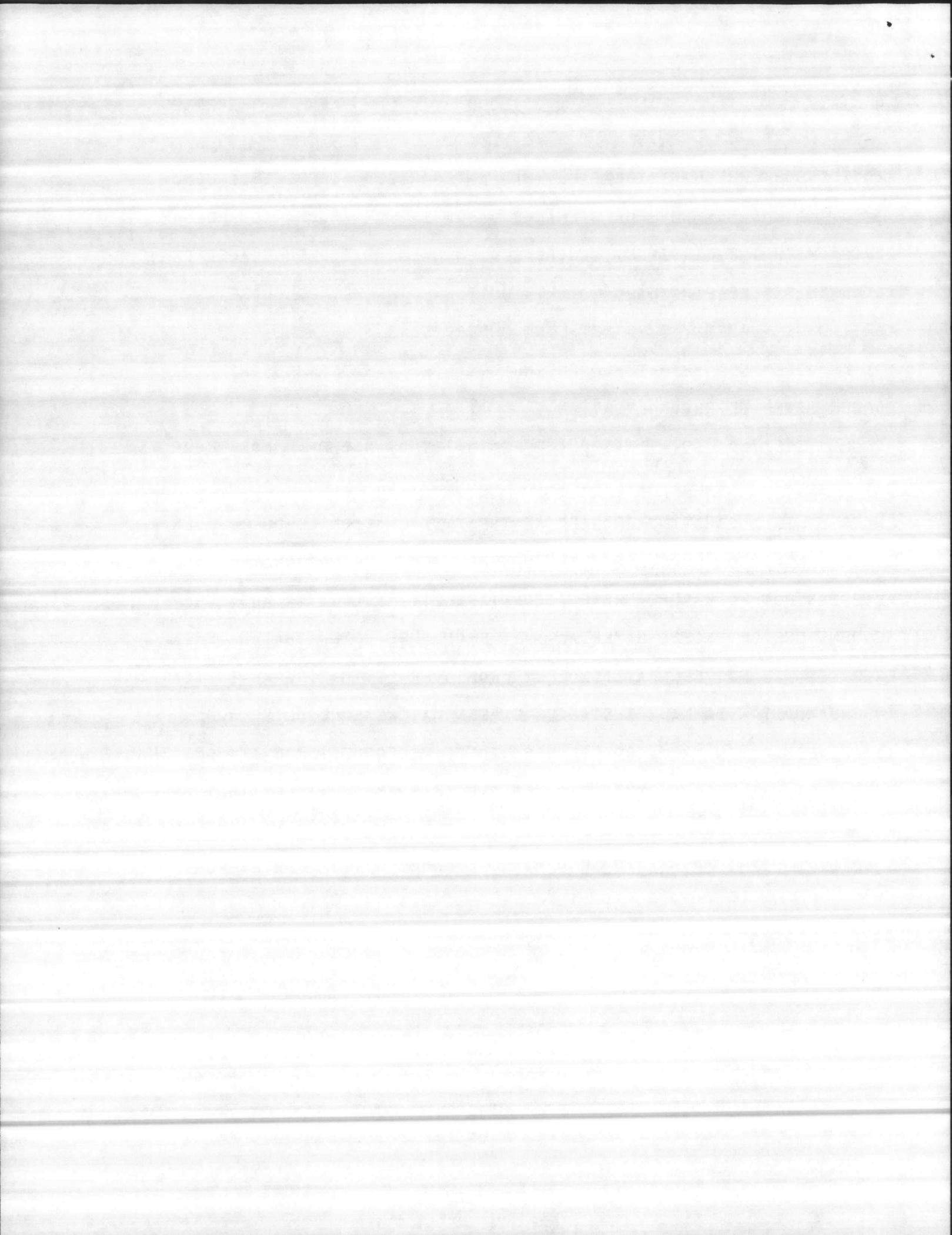
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SERVICE WORK WHICH HISTORICALLY WAS CATEGORIZED AS SPECIFIC WORK.

J. ITEM NO. 50 - MAINTENANCE LABOR IS NOT ACCURATELY REPORTED. CONCUR WITH THE FINDINGS. INCREASED EMPHASIS HAS BEEN PLACED ON ACCURATE TIMEKEEPING/LABOR DISTRIBUTION. THE KEY IS CLOSE, CONTINUOUS SCRUTINY BY FIRST-LINE SUPERVISORS.

K. ITEM NO. 52 - IMPLEMENTING EPS FOR STANDING JOB ORDERS. CONCUR WITH THE RECOMMENDATION.

L. ITEM NO. 53 - INADEQUATE ESTIMATES OF MATERIAL FOR PROJECTS HAS GENERATED EXCESS MATERIAL. THE GENERATION AND USE OF MATERIAL EXCESSES IS A CONSTANT PROBLEM AT THE INSTALLATION LEVEL. SEVERAL CONTROL MEASURES HAVE BEEN IMPLEMENTED AT MCB TO NOT ONLY REDUCE EXCESSES BUT TO ENSURE THEIR ACCOUNTABILITY, SECURITY, AND SUBSEQUENT USE OF EXCESS MATERIAL. IT SHOULD BE NOTED THAT MATERIAL EXCESSES ARE NOT GENERATED SOLELY FROM OVER ESTIMATING AS INDICATED IN THE AUDIT. IN MANY INSTANCES EXCESS MATERIAL RESULTS FROM {1} REDUCTION IN THE SCOPE OF WORK TO BE PERFORMED FROM ITS ORIGINAL ESTIMATE; {2} ITEM SUBSTITUTION OF SPECIFIED MATERIAL BY THE SUPPLY SYSTEM WHICH WHEN RECEIVED IS NOT COMPATIBLE WITH THE ORIGINALLY REQUESTED ITEM; {3} MATERIAL REMAINING FROM INITIAL CONTRACTOR



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CONSTRUCTION TO ALLOW FUTURE REPAIRS/REPLACEMENT WITH LIKE ITEMS,  
E.G. TILING. EFFICIENT MANAGEMENT OF EXCESS PROPERTY REMAINS THE  
PROBLEM AND RAPID DISPOSITION THROUGH RE-USE OR TURN-IN IS THE  
OBJECTIVE. THE MCB IS ATTEMPTING TO ACHIEVE THIS THROUGH INCREASED  
MATERIAL CONTROLS, REVIEW OF ON-HAND EXCESSES, AND AUTOMATED SYSTEMS  
TO ASSIST IN MANAGEMENT OF EXCESSES.

