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MINICOMPUTER MAINTENANCE GROUP
(MMG) OPERATIONAL REVIEW

MINICOMPUTER MAINTENANCE AND
OPERATIONS CENTER (MMOC)

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1. GENERAL

1.1 Purpose

This practice provides procedures to conduct an operational review and overall performance evaluation of a Minicomputer Maintenance Group (MMG) self-maintenance operation.

1.2 REASONS FOR REISSUE

This practice is being reissued due to changes caused by divestiture.

1.3 USE OF GENERAL TRADE VENDOR TERMS

The use of general trade vendor terms or procedures does not imply endorsement or exclusion of others. For brevity and simplicity, only those which are presently a significant factor in operation and support are covered.

2. INTRODUCTION

This practice is intended to be one in a series to be used to conduct operational reviews of the Minicomputer Maintenance Operations Center (MMOC). It is divided into the following sections:

- Section 1. General
- Section 2. Introduction
- Section 3. General Instructions
- Section 4. Outline of Evaluation
- Section 5. Operational Review Checklists

2.1 PRINCIPLE FEATURES OF THE REVIEW

Section 3 explains the methods employed in the review and post review procedures.

Section 4 contains a basic outline of the areas covered in the review checklist, along with remarks on the key points in each area.

Section 5 contains the Operational Review Checklists, Summary Statement, and Problems and Recommendations Log.

This review is intended to evaluate MMG operations. It is not intended to evaluate minicomputer site operations, vendor maintenance, or the Minicomputer Operation Group (MOG) function.

The Operational Review Checklist items listed in this practice are intended to indicate what is to be reviewed rather than to limit the scope of the review. Additional items may be considered in the review even though they are not specifically covered in the printed questions. These additional items may be used in later evaluations for company-wide benefit. Furthermore, if a unique method of handling some particular problem or procedure is discovered, the reviewer may (and should) ask additional questions to bring out details for possible wide use of the idea.

2.2 APPLICATION AND USE OF RESULTS

Review results may be used by appropriate levels of management to identify:

- Effectiveness of the minicomputer self-maintenance effort as administered by the MMG
- Performance and efficiency of the MMG operation

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- Force efficiency and administration
- Need for policy changes.

The overall view gained in this relatively short study should permit a decision that either:

- No specific action is needed at this time.
- Certain activities are indicated and should be taken without further evaluation.
- Further study of the situation is required to determine the extent of problems indicated by the initial survey and the total corrective program necessary.

2.3 PURPOSE OF REVIEW

This operational review is designed to yield an overall view of the performance and effectiveness of the MMG. The objective of this review is to identify problem areas and provide a vehicle for administering corrective action rather than for rating performance. It also serves as an excellent tool for self-review to indicate weak spots.

2.4 BACKGROUND

This review does not use a point system. It takes an overall look at the MMG operation relative to the objective of an MMG and helps identify areas that need improvement. The feedback meeting results in a list of recommendations to improve weak areas with assignment responsibility for corrective action and target dates for completing the recommendations. Allowance is made for final summary statements by the reviewer. Follow-up meetings are used to review the status of implementing the recommendations.

The MMG's primary objective is to ensure that the task of maintaining hardware in minicomputers considered telephone company maintainable and deployed throughout a company is accomplished in the most complete and efficient manner possible.

2.5 EVALUATION CRITERIA

It is essential that the reviewer be aware of certain important areas of MMG operation. Functions that help determine whether or not the MMG is performing the self-maintenance job satisfactorily on the systems it maintains include:

- Percentage Maintenance Availability:** This reflects outage time that can be directly attributed to the maintenance organization because of preventive maintenance (PM) and change activity, and corrective maintenance (CM) time from the time service was desired until the system was turned over to the user or operator for restoration. This percentage of time is critical to adequate performance of the user functions and is an important measure of MMG service.
- Average Response Time:** This measures the amount of time required for the MMG to respond to a trouble call reporting system outage and dispatch personnel to correct the problem; i.e., from the time service was desired until the minicomputer repair person arrives at the location in trouble.
- Average Repair Time:** This measures the maintenance hours expended to repair a failed system.

An additional area for consideration, although not fully under control of the MMG, is the percentage of systems considered maintainable by the operating telephone company that are actually maintained by the MMG. This is an implementation item that should be pursued in order to evaluate the overall implementation of MMG operations.

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Evaluation criteria, as covered in this practice, serve to highlight some significant and measurable aspects of MMG operation and are not meant to minimize others. All facets of MMG performance must fit together to yield an effective operation. If certain functions are not performed efficiently and effectively, the MMG work force may spend excessive time and effort on these functions to the detriment of other functions.

2.6 REFERENCES

The primary references for this operational review are:

- Practice BR 007-560-300 (canceled)
- Individual operating telephone company administrative practices.

2.7 GLOSSARY

Computer Subsystem - Includes the central processor and peripheral devices associated with a minicomputer-based operations system. These are usually located in the computer room, generally considered to be vendor provided, and normally serviced by vendor contract.

Critical System - Each operating telephone company should establish and prioritize its own critical systems. Guidelines can be found in BR 190-020-567 and the BR 007-590-300 series. As a general rule, critical systems should be those considered important enough to contain hot spare back-up or duplicate processors.

Light Coverage - Time periods when full work coverage is not provided at the MMOC.

Options - Major pieces of in-service hardware equipment, i.e., computer processors and peripheral devices as listed in the individual operations support system J-Drawings.

Recommended Documentation - In each operating telephone company, minicomputer self-maintenance methods personnel should ensure that adequate documentation is available for proper maintenance to be performed. This documentation could vary depending on the vendor involved but should include such items as Site Management Guides, Digital Equipment Corporation (DEC) Maintenance Documentation Service (MDS), DEC-O-LOG, Hewlett Packard service notes, other vendor service notes, appropriate Practices, and applicable ILs (Information Letters), ALs (Advisory Letters), MALs (Major Advisory Letters) and NPLs (National Planning Letters).

System - The word "system" is used to denote both operations system and the computer subsystem in this practice, depending on context.

Operations System - An operations system consists of the computer subsystem, data links, plant interface equipment, and software.

3. GENERAL INSTRUCTIONS

3.1 GENERAL

This section details a method for evaluating the performance and effectiveness of an MMG operation. Although size and scope of operation will vary, the major objectives of an MMG apply, and an evaluation can be made from these objectives. Responsibility for corrective action must be established at a feedback (district level) meeting.

3.2 EVALUATION

The specific procedure for performing the evaluation is contained in Section 3 of the review. There are over 95 distinct questions in the review. These questions place emphasis on areas of MMG operation

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that impact the ability of the MMG to fulfill its objectives. More emphasis is placed on the end results than on the means to achieve the end results.

The vehicle for evaluation is the MMG Operational Review Checklist. The **Review Item** column on the form contains the individual question to be addressed. If applicable, Bellcore Practices references are included for the individual questions. The **Yes/No Data** column of the form is used for direct answers to the questions. The **Remarks/Finding** column is used by the reviewer to designate compliance with the item and/or to expand upon deviation or discrepancies. Certain items may not be applicable to a given MMG operation. These items should be noted as **NA** on the checklist.

An overall Review Summary Statement and a list of problem items should be prepared by the reviewer for use in the post evaluation review meeting.

3.3 POST EVALUATION REVIEW MEETING

A post evaluation review meeting to discuss evaluation results with local supervision and higher levels of management is essential. The post evaluations review meeting and Review Summary Statement should be constructively used as a tool to point up weak spots and problem areas and to offer suggestions for corrective action. The district level manager should determine responsibilities for corrective action and establish schedules for completion at the review meeting.

The place and time of the review meeting should be established prior to the performance of the review and should be made known to management up to and including the division level manager. The feedback meeting should follow as soon as possible after the review.

The formal Review Summary Statement and list of Problem Review Items should be prepared by the reviewer and distributed to appropriate parties in keeping with local company practices.

A follow-up review should be scheduled for items found to need corrective action.

4. OUTLINE OF EVALUATION

The basic outline of the operational review evaluation is divided into the following twelve parts:

- (1) **A: Organization and Administration** - This section contains background information which addresses the MMG organizational structure and environment in terms of available personnel, coverage periods, number of computer subsystems maintained, number of computer subsystems considered maintainable, and criticality of the systems. This section may be sent to the field prior to the review to be filled out and returned so the reviewer may analyze the background material before starting the review.
- (2) **B: Personnel** - This section addresses adequacy of personnel, including training information (formal and on the job) work evaluation procedures, work schedules, job duties, and qualifications of personnel.
- (3) **C: Documentation** - This section addresses the availability, storage, and accessibility of required documentation. Refer to OTC administrative practices.
- (4) **D: System Inventory** - This section addresses the inventory status of all minicomputer systems currently within the jurisdiction of the MMG.
- (5) **E: Preventive Maintenance (PM)** - This section addresses development of a PM schedule, procedure for system release to perform PM, status of scheduled PM routines and analysis of PM found troubles.

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- (6) **F: Corrective Maintenance (CM)** - This section addresses CM procedures, flow of trouble reports, use of proper forms, trouble analysis, and CM objectives.
- (7) **G: Activity Reports** - This section addresses the submission, control, and analysis of the Maintenance Activity Reports (MAR) in accordance with Bellcore Practices guidelines.
- (8) **H: New System Installation and Coordination** - This section addresses the MMG involvement in new installation planning, performance of acceptance tests on new installations, and follow-up on correcting acceptance test failures. Refer to operating telephone company administrative practices.
- (9) **I: Field Change Order (FCO) Application** - This section addresses the MMG awareness of all current FCOs and efforts to administer FCO application. It addresses the status of FCOs on systems being transferred from vendor to operating telephone company maintenance and the method used to notify the Minicomputer Support Group (MSG) of completed FCOs. Refer to operating telephone company administrative practices.
- (10) **J: Spare Parts** - This section addresses the level of spare parts stock, method for obtaining non-stock parts, analysis of parts utilization, circuit pack repair, and quality and effectiveness of circuit pack repair.
- (11) **K: Technical Support** - This section addresses the provision of technical support, availability of an escalation procedure, frequency of escalation, provision of a vendor service support agreement, and effectiveness of the MSG relevant to escalated items. Refer to operating telephone company administrative practices, Practice BR 007-560-301, and any operational support system practice which provides escalation procedure, i.e., Automatic Message Accounting Recording Center (AMARC).
- (12) **L: Summary Statement (Problems and Recommendations)** - This section allows for all areas and aspects of MMG operation to be addressed by the reviewer(s) in a summary statement to provide a complete picture of the MMG operation. This section should be used to develop a list of problem items, recommendations for improvement, and commitments from responsible individuals for action on the recommendations. This allows subsequent review and analysis of corrective actions associated with review weak spots.

5. OPERATIONAL REVIEW CHECKLISTS

The following items are included in this section:

- Operational Review Checklists
- Summary Statement, Problems and Recommendations Log.

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MINICOMPUTER MAINTENANCE GROUP (MMG)
OPERATIONAL REVIEW
CHECKLIST INDEX

SECTION	DESCRIPTION
A.	ORGANIZATION AND ADMINISTRATION
B.	PERSONNEL
C.	DOCUMENTATION
D.	SYSTEM INVENTORY (FORM E-6634D)
E.	PREVENTIVE MAINTENANCE (PM)
F.	CORRECTIVE MAINTENANCE (CM)
G.	ACTIVITY REPORTS
H.	NEW INSTALLATION AND COORDINATION
I.	FIELD CHANGE ORDER (FCO) APPLICATIONS
J.	SPARE PARTS
K.	TECHNICAL SUPPORT
L.	SUMMARY STATEMENT, PROBLEMS AND RECOMMENDATIONS LOG

OPERATIONAL REVIEW CHECKLIST (SHEET 1 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
A. ORGANIZATION AND ADMINISTRATION		
A.1 How long has this MMG been operational?		
A.2 How many computer subsystems are considered telephone company maintainable by this operating telephone company (BOC)?		
<ul style="list-style-type: none"> • Digital Equipment Corporation (DEC) • Hewlett Packard (HP) • International Business Machines (IBM) • AT&T - TI • Other. 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 2 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
A. ORGANIZATION AND ADMINISTRATION (Contd)		
A.3 How many computer subsystems are currently maintained by the MMG? <ul style="list-style-type: none"> • DEC • HP • IBM • AT&T - TI • Other. 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 3 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
A. ORGANIZATION AND ADMINISTRATION (Contd)		
A.4 How is the MMG staffed? Secure an organizational chart of the BOC MMG and Minicomputer Support Group (MSG).		
<ul style="list-style-type: none"> • Management (3rd level) • Management (2nd level) • Management (1st level) • Craft • Clerical. 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 4 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____	YES/NO DATA	REMARKS/FINDINGS
<p style="text-align: center;">REVIEW ITEM</p> <p>A. ORGANIZATION AND ADMINISTRATION (Contd)</p> <p>A.5 What are the hours of scheduled coverage for the MMG?</p> <ul style="list-style-type: none"> • NBD _____ AM _____ PM • EVE _____ AM _____ PM • NIGHT _____ AM _____ PM • SAT _____ AM _____ PM • SUN _____ AM _____ PM • HOLIDAYS _____ AM _____ PM <p>A.6 Are there any uncovered hours in the MMG?</p> <p>A.7 How is coverage provided during uncovered hours?</p> <p>Additional Comments:</p>		

OPERATIONAL REVIEW CHECKLIST (SHEET 5 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
A. ORGANIZATION AND ADMINISTRATION (Contd)		
A.8 How are trouble reports processed during uncovered hours?		
A.9 Are critical systems maintained by this MMG? List systems maintained by this MMG that are considered critical.		
A.10 Has a corporate priority list been established for system restoral in this OTC?		
A.11 Have call-out procedures been established to service critical systems during periods of light or no coverage?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 6 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
A. ORGANIZATION AND ADMINISTRATION (Contd)		
A.12 Has hot spare back-up been provided for systems listed in question A.9?		
A.13 Is account classification information available in this MMG for proper coding of labor and parts?		
A.14 Is the account classification information correct? Refer to A-95-B.		
A.15 Are capital tool and furniture inventories conducted on regular intervals per this BOC corporate guidelines?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 7 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
A. ORGANIZATION AND ADMINISTRATION (Contd)		
A.16 Are maintenance cost/benefits being tracked according to RL 79-08-288?		
A.17 Are Forms E-10436-439 being used to track maintenance expense versus savings?		
A.18 Review Form E-10438, Monthly Minicomputer Self-Maintenance Cost Analysis. <ul style="list-style-type: none"> • Are monthly operational savings exceeding expenses? • If not, what is the major reason? • Has corrective action been taken or planned? 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 8 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____		
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
B. PERSONNEL		
B.1 Is the MMG maintenance force staffed to provide adequate normal business day (NBD) and weekend coverage? How is this determined?		
B.2 What is the overtime objective for this group? OT/PERSON/WEEK?		
B.3 What is the current average overtime per person per week for the group?		
B.4 Are overtime levels acceptable?		
B.5 Are employee training records available in the MMG?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 9 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
B. PERSONNEL		
B.6 Have MMG personnel received adequate training for the type of work to which they are assigned?		
B.7 Have personnel been cross trained in the maintenance of more than one vendor's hardware?		
B.8 Does the MMG manager have a current copy of vendor and Bell training classes available?		
B.9 Has the MMG manager identified future training needs?		
B.10 Have appropriate courses been scheduled to meet these needs?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 10 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
B. PERSONNEL (Contd)		
B.11 Following formal training, are personnel assigned to the type of work that will reinforce their training?		
B.12 Does the MMG schedule on-the-job training?		
B.13 Have work evaluation procedures been established?		
B.14 Are work inspections performed and documented? How?		
B.15 Have procedures been established to follow up and correct substandard performance?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 11 OF 40)

OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
B. PERSONNEL (Contd)		
B.16 Are work schedules and job duties posted at the MMG?		
B.17 Does the MMG maintain a qualifications list on its personnel?		
B.18 Is there an employee safety plan used in this MMG?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 12 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
C. DOCUMENTATION		
C.1 Is a list of recommended documentation available at the MMG?		
C.2 Is all recommended documentation available? <ul style="list-style-type: none"> • Current Maintenance Documentation Service (MDS) microfiche • Current HP service notes • Other vendor service notes. 		
C.3 Is documentation supporting local OTC maintenance procedures available in the MMG? What specific documentation is available? <ul style="list-style-type: none"> • Is an adequate system restoral procedure available for MMG quick reference? • Are trouble reporting procedures available at the site location? Sample or spot-check. 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 13 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
C. DOCUMENTATION (Contd)		
C.4 Have controls been established to ensure the currency of documentation? What type of controls? Are they effective?		
C.5 Is documentation properly stored and readily accessible?		
C.6 If recommended documentation is missing, has it been ordered?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 14 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
D. SYSTEM INVENTORY (FORM E-6634D)		
D.1 Does the MMG maintain a current inventory of all systems within its jurisdiction? Does the inventory include all of the data over Form E-6634D?		
D.2 Is MMG inventory consistent with MSG inventory? Compare against MSG Form E-6634D and resolve any discrepancies.		
D.3 Does the inventory include all of the in-service options, major pieces of hardware associated with each system?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 15 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
<p>D. SYSTEM INVENTORY (FORM E-6634D) (Contd)</p> <p>D.4 Does each system inventory include:</p> <ul style="list-style-type: none"> • The proper Common Language Location Identification (CLLI) of each system? • Name and telephone number of the responsible maintenance contact? <p>D.5 Is the system inventory current and accurate? Sample a system inventory of a recent installation and compare to the previously submitted inventory report.</p>		
<p>Additional Comments:</p>		

OPERATIONAL REVIEW CHECKLIST (SHEET 16 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
E. PREVENTIVE MAINTENANCE (PM)		
E.1 Has a PM schedule been developed for all systems within the jurisdiction of the MMG?		
E.2 Verify that all existing systems are listed on the PM schedule.		
E.3 For DEC systems, does the PM schedule cover all items recommended in the Site Management Guide?		
E.4 Were system turndowns negotiated with the users (data base manager, etc.) when the PM schedule was developed?		
E.5 Is there a procedure for obtaining system releases for PM in the event of conflicts between the maintainer and user? Is so, describe.		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 17 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
E. PREVENTIVE MAINTENANCE (PM) (Contd)		
E.6 Are all PM routines complete to the current date?		
E.7 Is PM backlogged due to work load, etc?		
E.8 Is a Minicomputer Activity Report (MAR) used to record PM time?		
E.9 Are completed routines logged?		
E.10 Sample PMs requiring system turndown. <ul style="list-style-type: none"> • Have activity reports been completed for each system in the sample? • Compare completion dates to the Minicomputer Activity Report Log • Is posting on the PM schedule consistent with the Activity Report Log information? 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 18 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____	YES/NO DATA	REMARKS/FINDINGS
<p>E. PREVENTIVE MAINTENANCE (PM) (Contd)</p> <p>E.11 Does an analysis plan exist for completed PMs that tracks patterns of found troubles?</p> <p>E.12 Has corrective action been taken as a result of the analysis plan? If so, describe.</p> <p>E.13 Is there a pattern of troubles resulting from PM activities?</p> <p>E.14 Have changes been made in vendor recommended PM frequency? If answer is YES, explain change and rationale.</p>		
<p>Additional Comments:</p>		

OPERATIONAL REVIEW CHECKLIST (SHEET 19 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
F. CORRECTIVE MAINTENANCE (CM)		
F.1 How are trouble reports received by the MMG?		
F.2 Are control logs maintained detailing troubles, times, and reported by information?		
F.3 Are reports of system outage received from users/operators timely? Sample 10 reports and compare report time with time system went down.		
Note: Although this is a user/operator responsibility, it contributes to the overall system downtime and should be monitored by the MMG.		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 20 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
F. CORRECTIVE MAINTENANCE (CM) (Contd)		
F.4 Is MMG response to reported trouble timely? Check same 10 reports used in question F.3 and compare trouble reported time with maintenance start time.		
F.5 Is analysis being done on trouble reports to identify high failure equipment or components?		
F.6 Have PM schedules been adjusted as a result of trouble analysis?		
F.7 What objectives have been set for: <ul style="list-style-type: none"> • Percent maintenance availability? • Average response time? • Average repair hours? 		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 21 OF 40)

OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
F. CORRECTIVE MAINTENANCE (CM) (Contd) F.8 Review the current self-maintenance performance report. Does it indicate that these objectives are being met? F.9 What is this BOC percent maintenance availability? F.10 If the objective and comparison in question F.9 are not acceptable, is there a corrective action plan for improvement?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 22 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
G. ACTIVITY REPORTS (Contd)		
G.3 Are maintenance activity report data (forms, log, printouts) being analyzed by maintenance personnel?		
G.4 Does analysis cover quality control, uncovering intermittent problems, incorrect trouble diagnosis and potential software problems?		
G.5 How is the data utilized?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 24 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
H. NEW SYSTEM INSTALLATION AND COORDINATION		
H.1 Is the MMG supervisor included in the planning effort for new system installation?		
H.2 Does the MMG supervisor participate in coordination and cutover committees?		
H.3 Does the MMG supervisor sign off on equipment floor plans?		
H.4 Does the MMG perform acceptance testing on all new installations?		
H.5 Does this testing include the entire system or just the computer subsystem?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 25 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
H. NEW SYSTEM INSTALLATION AND COORDINATION (Contd)		
H.6 Are computer subsystem acceptance test results documented and maintained by the MMG?		
H.7 Has responsibility for ensuring that computer subsystem acceptance test failures are corrected and retested satisfactorily been assigned?		
H.8 Who has this responsibility?		
H.9 Does the MMG supervisor have a plan to accommodate expected maintenance activity based on projected system growth.		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 26 OF 40)

OPERATIONAL REVIEW CHECKLIST
MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
I. FIELD CHANGE ORDER (FCO) APPLICATION		
I.1 Is a list of FCO recommendations available in the MMG?		
Note: This should be the administrative responsibility of the MSG.		
I.2 Does the MMG receive current lists of change orders from the MSG or maintenance engineer?		
I.3 Are all recommended FCOs being applied to systems maintained by the MMG?		
I.4 Has a schedule been developed with the system's users for turndowns to apply FCOs?		
I.5 Is there a backlog of uncompleted FCOs?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 27 OF 40)

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
I. FIELD CHANGE ORDER (FCO) APPLICATION (Contd)		
I.6 Are FCOs backlogged due to work load or parts availability?		
I.7 Are MMG records adequate and accurate to control and administer FCO application?		
I.8 Have parts been ordered from the vendor to support current FCOs?		
I.9 Are procedures in effect to verify FCO status on systems being transferred from vendor to telephone company maintenance?		
I.10 Is there a method to notify the MSG of completed FCOs?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 28 OF 40)

OPERATIONAL REVIEW CHECKLIST
MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
I. FIELD CHANGE ORDER (FCO), APPLICATION (Contd)		
I.11 Is a Method of Procedure (MOP) prepared for major hardware retrofit changes to a system? Who coordinates the MOP?		
Additional Comments:		

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
<p>J. SPARE PARTS</p> <p>J.1 Have spare parts been stocked to achieve a particular level of availability? What is the level? How was it determined?</p> <p>J.2 Have there been instances of extended system downtime due to lack of spare parts? If so, describe and outline any corrective action taken by the MMG.</p> <p>J.3 How are nonstocked parts obtained under routine and emergency conditions?</p>		
<p>Additional Comments:</p>		

OPERATIONAL REVIEW CHECKLIST (SHEET 30 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
J. SPARE PARTS (Contd)		
J.4 What is average time from order of spare parts to receipt for: <ul style="list-style-type: none"> • Routine conditions? • Emergency conditions? <p style="margin-left: 40px;">Is this satisfactory?</p>		
J.5 Are circuit boards (received from vendors) tested by the MMG before they are placed in the spare parts inventory?		
J.6 Is analysis being done on parts utilization?		
J.7 Have high failure rates been experienced on certain modules (circuit packs)? If so, identify them.		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 31 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
J. SPARE PARTS (Contd) J.8 What action has been taken to resolve this situation? J.9 Does the MMG repair defective modules? J.10 What is the percentage of modules repaired by the MMG to total modules replacement over the past three months? J.11 Are repaired parts tracked for subsequent failure? J.12 Inspect several boards that have been repaired. Look for quality of work and parts used in repair process. Is the repair quality acceptable?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 32 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____		
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
J. SPARE PARTS (Contd)		
J.13 Is equipment Change Notice/Field Change Order (ECN/FCO) revision level verified and upgraded as part of the repair process? Does spare part inventory system track revision level?		
J.14 What is the average turnaround time on MMG parts repair? How does this compare to vendor service?		
J.15 What is the MMG procedure for repairing modules it cannot repair in house?		
J.16 Is adequate training provided to craft repairing defective modules?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 33 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
<p>J. SPARE PARTS (Contd)</p> <p>Note: The next question utilizes first cost of maintained computer system hardware for calculation. If this data is not available, the reviewer can use an average of \$200,000 for each self-maintained system.</p> <p>J.17 Does spare parts inventory investment exceed 10% of the first cost of computer hardware maintained?</p> <p>J.18 Do annual expenditures for replacement and repaired spare parts exceed 3% of inventory investment?</p>		
<p>Additional Comments:</p>		

OPERATIONAL REVIEW CHECKLIST (SHEET 34 OF 40)

**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
K. TECHNICAL SUPPORT		
K.1 How is technical support provided to the MMG for software problems, e.g., by MSG, vendor.		
K.2 How is technical support provided to the MMG for hardware problems?		
K.3 Has a formal technical support escalation procedure been established?		
K.4 How frequently are trouble conditions escalated for technical support by the MMG, e.g., number over past six months?		
K.5 Is there a service support agreement with the vendor?		
Additional Comments:		

OPERATIONAL REVIEW CHECKLIST (SHEET 35 OF 40)

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OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____	DATE _____	REVIEWER _____
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
K. TECHNICAL SUPPORT (Contd)		
K.6 How many times was the vendor called out under this agreement over the past twelve months?		
K.7 Has the vendor lived up to the provisions in the agreement with respect to: <ul style="list-style-type: none"> • Response time? • Continuous effort? • Parts? If not, explain.		
Note: The following questions pertain to the operational relationship between the MMG and the MSG, and have a significant bearing on successful MMG performance.		
Additional Comments:		

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**OPERATIONAL REVIEW CHECKLIST
 MINICOMPUTER MAINTENANCE GROUP (MMG)**

LOCATION _____ DATE _____ REVIEWER _____

REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
K. TECHNICAL SUPPORT (Contd)		
K.8 Does the MSG serve as the escalation point for technical support and referral of trouble conditions to support organizations outside the company, e.g., vendor, OSTC, etc?		
K.9 Is hardware maintenance support provided by the MSG?		
K.10 Is software maintenance support provided by the MSG?		
K.11 Have MSG personnel been responsive when called?		
Additional Comments:		

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OPERATIONAL REVIEW CHECKLIST
MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

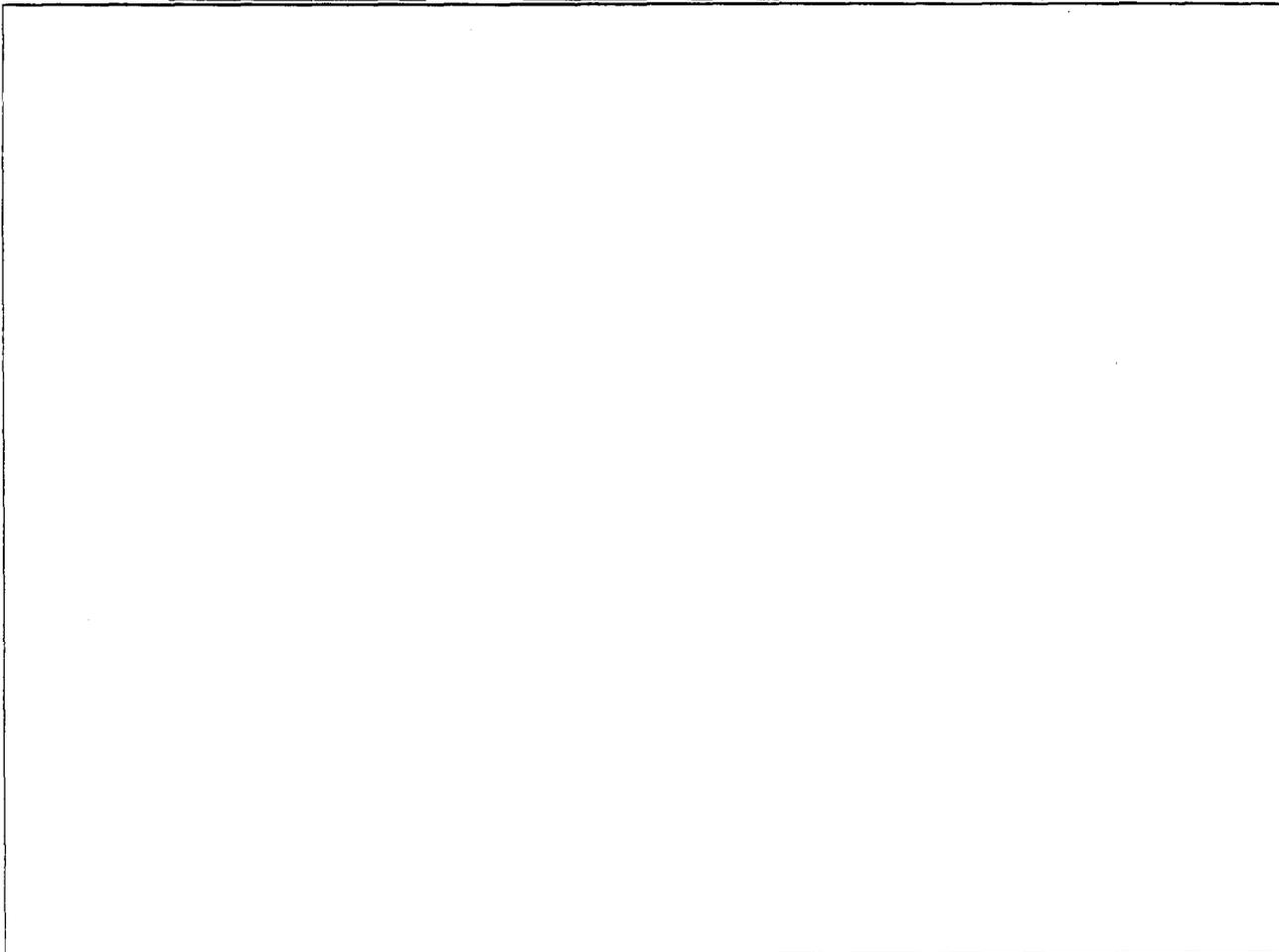
REVIEW ITEM	YES/NO DATA	REMARKS/FINDINGS
K. TECHNICAL SUPPORT (Contd)		
K.12 Has MSG been effective in clearing trouble conditions?		
K.13 Has subsequent escalation been required? If so, give examples.		
Additional Comments:		

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OPERATIONAL REVIEW CHECKLIST
MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____



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MINICOMPUTER MAINTENANCE GROUP (MMG)

LOCATION _____ DATE _____ REVIEWER _____

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