APPENDIX 8

DETAILED MANAGEMENT INFORMATION SYSTEMS GUIDELINES

A. INTRODUCTION: Because of today's highly competitive business
environment and the need to do more with less, computer-based
management information systems (MIS) are becoming increasingly
important to PHAs that want to remain competitive. Consequently, more
and more PHAs are relying on information systems to effectively manage
their operations. For this reason, operational reviews of these
systems need to be conducted to ensure that effective PHA management
controls are in place, including procedures in which to guarantee the
integrity, efficiency, security, and reliability of the MIS.

The following MIS review guidelines describe a systematic procedure
for the management, control and audit of information systems. They
combine a multitude of directives on how to best monitor MIS
operations. Using plain, understandable language, the guidelines
present a model framework to help reviewers establish controls and
document performance for these systems. The purpose is to enable the
layperson to select and implement a monitoring review strategy with a
minimum of dependence on technical personnel.

The process presented in these guidelines is generic, in that it
attempts to address the whole range of management
information systems, regardless of the size of the PHA, the
system, or the budget. In trying to express all of the
issues involved, the MIS review guidelines may be somewhat
biased towards larger information systems. Therefore, when
appropriate, the review process should be tailored to adjust
its scope to that of the task at hand. Steps can be
eliminated or minimized depending on the size of the PHA or
the type of review. However, even when monitoring a simple
information system, the considerations and component tasks
are relatively the same.

Another important consideration in the review of MIS
controls is the impact the system has on a PHA. Although the
size and cost of a system is significant, other factors,
such as its strategic importance to running the PHA and the
upheaval caused by an ill-suited system dictate that the
review process be carefully planned and executed.

For all these reasons, it is important to first understand
each step of the MIS review process, its objective,
approach, implementation, expected result and possible
pitfall. Only then can an informed decision be made about
how to best adjust the review process.

B. METHODOLOGY TO INTERNAL CONTROLS The overall approach
presented in these guidelines is a qualitative judgmental
assessment of the amount of critical controls that should be
present and operating in a PHA's information system. The
objectives of this type of approach are to assess the MIS
environment and to determine if appropriate controls are
present and working. The method to achieve these objectives,
however, can be quite different depending upon the approach

taken by the PHA.
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It is up to the PHA to identify those events and
circumstances whose occurrence could effect the proper
utilization of an information system. These events and
circumstances usually lead to periods of exposed risk.
Controls are those acts which the PHA implements to minimize
the risks. Therefore, before any controls are put in place,
it is important to know what risk is being addressed, what
is the likelihood of its occurrence and, consequently, what
is the PHA's financial exposure. In other words, to ensure
that the cost of a control does not exceed the risk it was
designed to prevent, detect and/or correct.

In addition to knowing the risk that a particular control is
intended to act upon, it is also useful to know the type of
role the control is intended to perform. There are basically
four categories of control:

1.Deterrent These controls are designed to deter
employees from undesirable or inappropriate behavior.

2.Preventive These controls prevent unwanted
circumstances from occurring at all or, at least,
minimize the possibility.

3.Detective When unacceptable incidents have occurred,
detective controls report its existence in an effort to
minimize the extent of the damage.

4.Corrective These controls are necessary to recover from
a loss situation.

A system of internal controls within a PHA incorporates the
policies, procedures and practices that are intended to
ensure that MIS control objectives are met. The policies,
practices and procedures will vary from PHA to PHA depending
on the size of the PHA, the PHA's management style, and the
technical knowledge of the PHA staff. However, the purpose
of internal controls remains the same within each PHA. The
combination of the four categories of control as previously
described must, on a cumulative basis, provide assurance
that a PHA's MIS control objectives can be met.

C.DEFINING CONTROL OBJECTIVES MIS control objectives for a
successful PHA operation can be described in several ways.

The ultimate objectives are operational efficiency,
competitiveness, management effectiveness, protection of
assets, and continuity of business. For these reasons, many
PHA's are looking to automation and technology in the form
of information systems to play an increasingly important
role in meeting these objectives. The impact that
information systems can have on each of these objectives are
as follows:

1.Operational Efficiency Information systems may be used

to reduce costs and improve productivity. They are two of the more alluring aspects of information systems. However, the trick is to discover how this can be done within the context of the particular PHA in question.

2.Competitiveness It is often necessary to develop new systems or modify existing systems in order to maintain overall effectiveness in an increasingly changing environment.

3.Management Effectiveness Management needs to be in a position to make fundamental business decisions based upon the output from information systems.

4.Protection of Assets Computer hardware and communications equipment are major physical assets of the PHA and need to be safeguarded against damage or destruction. Application systems and the data maintained on them are also important enough to warrant significant measures to protect the overall integrity.

5.Continuity of Business

(a)Many PHA's have come to the point of relying primarily on their information system. In the event of a system failure, these PHA's would be severely affected. Clearly, a contingency plan to deal with various levels of system interruption is necessary.

(b)Regardless of the objective, it is apparent that information systems have a major impact on the internal controls within any PHA that is more than just a casual user of technology. Therefore, it is important to combine the various definitions of meeting both the PHAs objectives and HUD's monitoring objectives in order to align the focus and priorities in the MIS review process.

D.SCOPE OF A MIS OPERATIONAL REVIEW The scope of a MIS operational review will vary depending on the PHA's management requirements, problems and the importance of the MIS to the agency. Management's concerns include cost/benefit relationships, plans and achievements, the acquisition and utilization of resources, and user relationships; therefore, a MIS operational review would usually consider the following matters:

1.The adequacy of systems development and implementation policies and standards to provide technical and operational compatibility and to ensure proper understanding by MIS personnel of such factors as project management, design practices, documentation, programming, and the roles of users.

2.The adequacy of administrative control exercised by top
management including the degree of formal planning, the
monitoring of MIS activities, the assignment of
responsibilities, the methods of acquiring, developing,

educating, and retaining competent MIS personnel.

3.The suitability of the hardware, software, and
operating facility including planning, expanding,
financial implications, resource utilization, security,
and control.

4.The responsiveness of application systems in meeting
the needs of the PHA and its users including whether
users are satisfied with the services being provided
and the adequacy of controls, file and program design,
and integration of application systems.

5.The existence and adequacy of essential MIS
documentation including system, application, operating
and other related practices and procedures.

The results of a MIS operational review should provide
reasonable assurances that hardware and software are
safeguarded and information is timely and reliable. The
results should also provide sufficient information to
evaluate and encourage compliance with managerial policies
and procedures as well as governing directives.

E.REMOTE MONITORING The importance of objective evaluations of
the MIS sub-function increases as a PHA becomes more reliant
on its data processing. It is obvious that a regular remote
monitoring schedule is desirable, although the need clearly
depends upon individual circumstances.

The MIS sub-function primarily focuses on the review of MIS
controls, however MIS controls are difficult to monitor
remotely. For that reason, the remote monitoring strategy
for the MIS sub-function is different than the other sub-
functions in that there are no Remote Monitoring Worksheets.
Instead, guidelines are provided on how to use the
information available in the Area Office to detect
situations that would require a closer examination of the
MIS functions.

Typical situations that trigger such concerns are these:

--Receiving PHA reports consistently late and/or
containing inaccurate information.

--A proposal for a major hardware or software upgrade or
acquisition;

--Costs for MIS services that appear excessive;

--An excessive or increasing number of complaints;

--An inability to attract and retain competent MIS personnel;

--A proposal to consolidate or distribute MIS resources;

or

--Major systems that appears unresponsive to needs or are difficult to enhance or maintain;

There are a number of remote monitoring resources which are available in the Area Office. Following is a non-exclusive listing and brief description of those resources. Your office may have specific data, reports, and other information which should be included in the remote monitoring.

a.Automated Reports
Virtually every day the Area Office receives information from a PHA. Most of this information comes from the PHA itself in the form of reports, policies, and/or documents. If any of them are produced from the PHA's automated management information system, they can be used to measure the systems effectiveness.

An analysis of PHA reports, policies and/or documents enables the reviewer to develop a feel for the agency's operating environment, specific information needs and thus, the parameters of the PHA's existing MIS. Additionally, it will provide the reviewer with an objective frame of reference which can be used during the initial assessment to examine the PHA's own perceptions of its MIS requirements.

b.MIS Contracts/Specifications
If the PHA purchased the MIS, then a review of the approved contract and/or RFP will reveal the system characteristics. However, if the PHA developed the MIS, then you might have to obtain the system specifications from the PHA. The reviewer should focus on how the system was intended to function.

c.MIS Policies/Procedures
Every PHA utilizing a management information system should have developed various policies, procedures, rules or processes to assist in controlling the system. This includes controls dictated by standard ADP practices and those that are discretionary on part of the PHA. Review of these policies is a very useful remote monitoring exercise, therefore if the HUD Area Office does not have recent copies of the PHA's MIS Policies and Procedures, they should be requested from the PHA.

d.Organizational Chart/Position Descriptions
The organizational chart and position descriptions
should indicate the MIS personnel structure, lines of
communication, authority and responsibilities. The
reviewer can use this information to get a feeling for
the PHA's MIS administrative controls.

        e.Financial Documents
The PHA's Operating Budget can be another source of
information on different aspects of the MIS operation.
The budget offers information on MIS staffing, plans
for extraordinary expenses

related to the MIS, and other PHA expenditure plans.

f.Prior Reviews and Audits
Past reviews and audits can offer insight into
historical problems and issues at a PHA. You can use
the information contained in these reports to get a
perspective on how the MIS has performed in the past.
However, keep in mind that a PHA's situation may have
changed dramatically since the last review, due to
turnover in staff, system enhancements, etc.

g.Miscellaneous Correspondence/Other Information
This category refers to any other correspondence,
records, and reports you may have which give additional
information on the MIS's performance.

F.SUGGESTED AREAS OF REVIEW FOR THE ON-SITE REVIEW The
management practices and operating procedures that might be
included in a MIS operational review follow. These matters
are not intended as a checklist but are an overview of
subject areas that should be included when planning the
scope of the review and preparing a review strategy.
Circumstances leading to the decision to conduct a review,
and good judgement, will dictate the matters to be
investigated, the depth of the investigation, and the
procedures to be employed to meet the objectives of the
review.

The MIS controls, practices, and procedures can be broadly
divided into five major, critical areas of operation which
we will call "components." They are:

1.Development and Maintenance Controls
        2.   Administrative Controls
3.Operation Controls
4.Application Controls
5.Documentation Controls

Essentially, the scope of MIS controls needs to be broad and
deep enough to ensure that the integrity of the system is
maintained. For this reason, the components represent major

groupings of activities within the overall subfunction.
While these divisions have been made to facilitate
understanding of the MIS sub-function, the reader should
also understand that all of the activities in the MIS area
are interrelated.

The steps outlined in this sub-function are applicable to
both large and small PHA's, but the time and effort required
will vary greatly depending on the volume and nature of the
processing requirements.

The following paragraphs offer a brief introduction of each
MIS "Component". The reader should refer to the MIS On-Site

review

Worksheets found in Appendix 5 of this Guidebook for greater
detail on the specific activities and tasks included in each
component.

DEVELOPMENT AND MAINTENANCE CONTROL COMPONENT

MIS development and maintenance requires that certain procedures
be followed and that the necessary controls be applied for that
phase of the work which deals with the actual development of the
system and programs their testing, implementation and
maintenance.

The development and maintenance process requires a series of
defined and disciplined steps in order to ensure that preliminary
studies are complete and accurate, and that they form a sound
basis for management decisions. These controls guarantee a sound,
well organized approach to the work preceding the system and/or
program installation and maintenance.

Development and Maintenance controls can be generally categorized
into four control areas: Preliminary Studies; MIS
Acquisition/Selection; Development Standards; and Maintenance and
Change Procedures. These control areas would be reviewed
depending on the development stage of the MIS at the particular
PHA in question. For example: if a PHA is still considering
whether to automate, then a review of only the preliminary
studies would be justified; or if a PHA has already or is in the
process of purchasing a MIS, then a reviewer might examine their
acquisition/selection controls along with their preliminary
studies; or if a PHA is developing its own MIS, then a check of
their development standards and preliminary studies is warranted;
or if a PHA has a functioning MIS in place, then a reviewer might
just be concerned with the PHA's maintenance and change
procedures.

The four control areas are discussed in further detail in the
following paragraphs:

A.Preliminary Studies

When a PHA is considering to automate, management should
select a team of one or more persons from within the PHA to
undertake a preliminary survey which will attempt to answer
two basic questions:

1.What will a MIS do for the PHA and what will be the
total cost?

2.What are the alternatives to computer processing, how
effective will they be and what will be the total cost.

The survey should determine the favorable application areas,
including those where cost savings are likely to be

experienced; as well as the non-profitable, but necessary
computer processing operations.

If after reviewing the preliminary survey, the decision is
made to follow a course leading to the acquisition or
development of a MIS, PHA management should then arrange for
a Feasibility Study to be undertaken. Generally, the study
is related to the same areas as the survey, but should
provide a much greater degree of detail in areas of problem
description, systems definition, and costs and savings for
each major application area.

Specifically, the objectives of the study should be the
following:

1.To determine the appropriateness and feasibility of
automating some elements or all of the PHA's
operations.
2.To assist the PHA in assessing the relative
cost/benefit of automation over improved manual
operations.
3.To develop a cost effective strategy for accomplishing
the desired automation.
4.To formulate a reasonable, realistic plan for the
conversion to an automated environment.
5.To determine the probable impacts on existing staff and
identify appropriate staffing plans as well as the need
for staff development programs.

The results of the Feasibility Study should provide PHA
management with a clear understanding of the proposed
approach to the PHA's data processing problems, the
anticipated cost and the benefits which can realistically be
expected from the complete utilization of the MIS.

The Feasibility Study should also attempt to determine the
most appropriate systems approach for each application area
without regard to specific computer equipment. By setting
out the results of the Study in this manner, the report can
serve as the systems specification documentation (if a PHA

develops its own system) or request for proposal (RFP) from which computer manufactures and system vendors can prepare their proposals.

The Preliminary Studies approach should also be used when contemplating additional applications for existing MIS's.

B.MIS Acquisition/Selection (Hardware/Software)

Many PHA's do not possess the in-house staff capabilities to successfully develop and implement information systems. Therefore, consultants are often used to assist the PHA to determine its hardware and software needs, develop an RFP to solicit vendor proposals, evaluate the proposals and select a vendor.

For this reason, PHA management should ensure that comprehensive selection criteria are established and that all proposals are measured and evaluated against these. The vendor and/or system selected should be that which is most successful in meeting the criteria.

C.Development Standards

If a PHA decides to develop its own system, then management should establish standards to ensure the development of a quality system. The system should be developed in such a way that it can be easily modified and maintained by someone other than the original developer. Adequate attention must be given to the establishment of security and controls during the design phase to ensure that the system will have integrity once it is installed. Finally, the completed system should be subject to rigorous testing to provide assurance that the results produced are valid and reliable.

D.Maintenance and Change Procedures

Systems must continue to be adapted to meet changing HUD requirements and individual PHA circumstances. Modified programs should be subject to many of the same controls as newly developed systems. Most important among these is the requirement that there be thorough testing of the modified system. In addition, accurate records should be maintained that describe the change, the reasons for making the change, and the person responsible for making the change.

ADMINISTRATIVE CONTROL COMPONENT

Administrative controls generally are controls over the PHA environment in which MIS's exist. These controls can be generally categorized into three control areas:

A.Executive Administration

A large part of the operational effectiveness of a MIS is
derived from the vision adopted by the PHA executive
director and other top managers. The attitudes and actions
of the end-users toward the issues of control and security
will be determined in large part by the explicit and
implicit initiatives and actions of these administrators.

Another major perspective of Executive Administration is the
assignment of responsibilities or more specifically the
separation of duties. This type of control deals with the
organizational issues that are involved in being effective
and efficient, as well as signifying whether or not there
are adequate human resources to get the job done.

B.Personnel Policies

The productivity gains from well qualified and trained staff
members are considerable. For that reason, it is essential
that a PHA have effective personnel policies and procedures
in place that incorporate adequate hiring, termination,
salary administration, training, and employee development
programs. Of particular interest, is the area of employee
education as it relates to need for security and control.

C.Long-range Planning

Long-range MIS planning is achieved through the formulation
of an information strategy. An information strategy is a
plan to meet the PHA's needs over the next three to five
years. It should deal with all aspects of MIS from the point
of view of providing a long-term integrated business
environment for the development, maintenance and operation
of the PHA's system.

OPERATIONS CONTROL COMPONENT

Methods and procedures are established for the operation of the
MIS in order to produce an environment intended to ensure
effective production by the PHA staff and to provide security for
the data maintained in it. These controls can be generally
categorized into three control areas:

A.   Security

Information is a valuable asset to the PHA.   The accuracy
and confidentiality of this information is essential to the
PHA's operation. Accordingly, the information must be
protected from abuses such as inadvertent misuse, disclosure
and fraudulent activity. In terms of MIS, the software and
the data processed by the software must be secure and must
allow access on a "need to know" and a "need to do" basis.

B.   Problem Management

A key attribute of MIS operations should be the ability to
deliver consistent, high quality, and prompt service.
Problems in data processing are a normal part of business,
however the difference in performance is how a PHA manages
those problems. PHA's should have the proper procedures in
place to ensure that previous mistakes are not repeated,
that problems are fixed on a priority basis, and that
problems are detected before they become significant.

C.   Contingency Planning

Every PHA needs to develop and maintain a disaster recovery
plan for all MIS's that are critical to the ongoing
operation of the PHA. The objective of the plan is to
provide a continuity of business processes in the event
major difficulties unfold in the primary MIS applications.
An important part of contingency planning is the backup and
recovery procedures which ensure that all information files
can be recreated to the point just before the problem arose.

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APPLICATION CONTROL COMPONENT

Application controls for specific programs are needed to ensure
that authorized, valid, complete, and accurate information are
produced on a timely basis. These controls can be generally
categorized into four control areas:

A.Input Controls

Input controls are needed to ensure that all input (i.e.,
records) is authorized, timely, complete and accurate before
being processed. This includes the records to be processed
by the system, and the associated processes from origination
to storage in the MIS. Input controls can be both procedural
(i.e., manual) and automated.

B.Processing Controls

Processing controls are needed to ensure that the input
transactions are properly applied to the appropriate data
base records and files. It involves all computer processing
after input has been accepted by the MIS, and before output
has been created. This includes the processing that matches
or merges files, modifies data, updates master files, and
performs file maintenance.

C.Output Controls

Output controls are needed to ensure that the files and
reports to be produced by the application system are
actually produced, and in the case of printed reports, are
distributed in a timely manner. This includes the
preparation of output and reports produced by the system,
and the associated manual processes from the computer to the
user.

D.Storage Controls

Storage controls are needed to ensure that the application
data is securely controlled between and during executions of
the application system. This includes all program
code/instructions and data files.

DOCUMENTATION CONTROL COMPONENT

Adequate documentation of system, application, operating and
other related procedures is necessary for a complete and accurate
understanding of MIS processing activities and the impact of such
processing on end-users.

The MIS areas that require sufficient documentation are as
follows:

A.Development

Documentation of the development process and strategy
provides systems analysts and programmers with a reference
to original design ideas and concepts. These documents could
include the following: Preliminary Survey; Feasibility
Study; Risk Analysis; Cost/Benefit Analysis; System Decision
Paper; Project Plan; Functional Requirements Document;
Request for Proposal; and Data Requirements Document.

B.Applications

Documentation of the MIS applications provides PHA
management with a clear understanding of application
objectives, concepts and output and
to ensure that their policies are adhered to. These documents could
include the following: System, Application, and Data Base
Specifications; User's Manuals; and Installation and Conversion Plan.

C.Operations

Documentation of the MIS operations provides a convenient reference
for systems analysts and programmers responsible for maintaining
existing systems and applications. These Documents could include the
following: Operations and Maintenance Manuals; System, Application,
and Data Base Specifications; and Test Results and Evaluation Report.

G.PROBLEM ANALYSIS The MIS Problem Analysis Worksheets (Appendix 6) are
an available tool to assist you in the process of analyzing the
problems you've uncovered, regardless of the form of monitoring, and
developing appropriate strategies. The GUIDE is structured by first
identifying the problem itself, then listing the possible causes
behind these problems, and possible strategies for addressing these
causes.

Problem Identification Problems identified by the guide include the
following:

1.Erroneous record keeping is the recording of transactions that are contrary to established policies. This may involve the timeliness, accuracy and completeness of information/data.

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2.Business interruptions may include anything from a temporary suspension to a termination of the management information system.

3.Erroneous management decisions are objectionable in themselves but may also lead to other problems. Such decisions may arise due to misleading information, or errors in judgement.

4.Excessive costs include any expense of the PHA which could be readily avoided.

5.Loss or destruction of assets refers to the unintentional loss of physical assets, monies, or information assets.

6.Competitive disadvantage relates to the inability of an organization to effectively remain abreast of the demands of HUD or to respond effectively to housing demands.

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