

PART 11

EQUIPMENT MANAGEMENT

CHAPTER 1 - INTRODUCTION

1-1 OVERVIEW

- A. Health care facilities routinely utilize equipment that play a vital role directly or indirectly in the treatment of patients. It is therefore imperative, that Indian Health Service (IHS) installations; control, maintain, and monitor the performance of the equipment in order to reduce the risk of patient, employee, and visitor injury during normal equipment operation and during any period of equipment malfunction or failure. The intent of establishing an equipment management program is to institutionalize a program that will assure operational reliability and response to failure of critical equipment in the support of the patient care environment.
- B. Equipment at each installation is generally unique to each installation because each installation's interrelationship of organizational elements is unique to each site. The parameters for conducting the tests, inspections, and preventive maintenance (PM) must be specifically identified for each equipment at each installation.
- C. Equipment operation cannot be taken for granted. Without proper equipment operation installations could not perform the functions necessary to conduct their mission. It is therefore imperative that a well functioning equipment management program exist at each installation.

An equipment management program is essential to:

- (1) Assure accreditation
- (2) Manage support for health care delivery
- (3) Practice good engineering

1-2 PURPOSE

The purpose of this guideline is to outline the development, establishment and implementation of a an equipment management program.

A program is required for two reasons:

- (1) MANDATED - To assure that equipment is available in proper working order when needed to deliver or support the medical care mission.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- (2) ECONOMIC - To preserve the considerable investment made by the government on behalf of Native Americans and Alaskan Natives. Maintenance of equipment extends its useful life, therefore minimizing interruptions and the reduction of the resulting additional costs when the equipment is not operational.

1-3 POLICY

The physical risks of operating and using equipment at each installation will be controlled through program functions that identify, maintain, train, evaluate, and resolve problems. These functions are a service unit wide multi-disciplinary responsibility which must be carried out by all applicable department heads and subordinate personnel as part of their daily responsibilities.

1-4 APPLICABLE EQUIPMENT

When the word equipment is used in this document it specifically implies non-clinical personal property (e.g., ovens, mowers, sweepers) for which the repair and maintenance responsibility has been delegated to the facilities department. All other equipment is specifically excluded from this document as shown below.

Other types of equipment are covered as outlined below:

- A. CLINICAL PERSONAL PROPERTY EQUIPMENT - This equipment is normally referred to as patient care equipment. An equipment management program for this type of equipment is covered in the Technical Handbook for OEHE, Volume V, Clinical Engineering.
- B. REAL PROPERTY EQUIPMENT (UTILITIES) - This equipment is normally referred to as building service equipment. An equipment management program for this type of equipment is covered in this manual Part 8, Utilities Management.
- C. OTHER EQUIPMENT - All other equipment not included above (i.e. computers, telephones) must be covered by each responsible department head under their own equipment management program. this equipment

NOTE:

The JCAHO Environment of Care accreditation standards no longer require maintenance of non-clinical personal property equipment. Therefore, documentation for testing, inspecting and/or maintaining personal property equipment other than clinical is not necessary for accreditation purposes. IHS however,

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

encourages that Facilities Managers follow good engineering practice and evaluate non-clinical personal property equipment for inclusion/exclusion into an equipment management program. Criteria to assist such an evaluation is found elsewhere in this document.

CHAPTER 2 - ESTABLISHING A MANAGEMENT PROGRAM

2-1 REQUIREMENTS

A. GENERAL

The requirements for establishing an equipment management program is tailored to each installation. In the IHS the minimum acceptable requirements for an equipment management program are those that will satisfy accreditation and maximize the government's investment.

B. GUIDELINES

The minimum acceptable implementation guidelines for establishing an equipment management program are:

- (1) All newly acquired additional or replacement equipment must be evaluated within 30 days of receipt and be either included or excluded from the program.
- (2) All equipment that is excluded from the program must be approved by the installation safety committee.
- (3) All newly acquired additional or replacement equipment must be assessed for training requirements.
- (4) The equipment inventory listings must be separate or separable from other inventories (e.g., personal property PM inventory, utilities management PM inventory, CMR inventory, clinical equipment PM inventory).
- (5) The accuracy of the equipment inventory must be verified and documented in writing to the installation safety committee at intervals not to exceed one year.
- (6) All equipment in the program must be inspected at intervals not to exceed one year.
- (7) Each item in the inventory must have written PM guidelines, and testing and inspecting procedures as recommended by the manufacturer and/or codes.
- (8) Evidence of PM, tests and inspections must be documented.
- (9) All equipment repairs must be logged in each equipment historical record card.
- (10) Significant reportable equipment failures and user errors must be evaluated and the corrective follow-up actions

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

monitored. A written report must be forwarded for concurrence by the installation safety committee.

- (11) The installation safety committee shall be the final authority in matters pertaining to the equipment management program.
- (12) An effectiveness evaluation of the program must be conducted annually and a written report forwarded for concurrence by the installation safety committee and approval of the IHS Governing Body.

2-2 PREVENTIVE MAINTENANCE

All items in the equipment management program must be included in the PM program. Recommended criteria to determine inclusion or exclusion of equipment from an equipment management program is outlined in exhibit 2-3-A. See Part 4, of this manual for the development of a comprehensive PM program.

- A. TESTING AND INSPECTING PARAMETERS - Written procedures for testing, inspecting, calibrating, and maintaining each component must be included in the program.

This includes at a minimum:

- What will be tested
- What intervals it will be tested and/or inspected
- What are the high/low acceptable parameters

NOTE:

There are numerous sources for testing and maintenance guidelines including codes (e.g. NFPA), standards, industry and trade periodicals, and manufacturer's technical manuals and literature. These guidelines may also specify or recommend maintenance and testing intervals, but actual frequency must often be developed by the Facilities Manager based on equipment performance history and risk for failure.

- B. DOCUMENTATION - Documentation will be maintained on testing, inspections, calibrations and corrective actions for compliance reviews by accreditation surveyors and IHS personnel.

It will include at a minimum:

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- When the test/inspection took place.
- What the results were.
- Who conducted the test/inspection/calibration.
- If the test results were not acceptable a statement should specify action required. Can the equipment be used? Is a tag/label affixed to the equipment to indicate the action to be taken by the user?
- Results of testing should be communicated to the departments that use the equipment. This may be accomplished through the service unit safety committee to avoid having to write separate memoranda to each department.

2-3 EQUIPMENT EVALUATION

- A. Installations are permitted to evaluate themselves, the risks associated with operating the installation's equipment. An installation may either include all equipment in a program or develop criteria that will determine the equipment that will be included and/or excluded. This allows the installation to reduce the funding required to maintain all the equipment. This allows concentrating the available funding on equipment that is vital to the operation of the health care program at the installation.
- B. Each installation that wants to reduce the quantity of equipment that will be included in the management program must therefore, develop written procedures for controlling, maintaining and monitoring the performance of the equipment under their responsibility. The identified risks are then used as the basis for determining what will and what will not be maintained. This is accomplished documenting a written evaluation of each individual type of equipment against established criteria developed by the Facilities Manager and approved by the safety committee.
- C. If equipment is to be evaluated for inclusion or exclusion it must be evaluated based on the following parameters:
- (1) Risk Category I
Equipment Functional Areas - This risk factor identifies the location where the equipment provides support at the installation.
 - (2) Risk Category II
Impact of Failure - This risk factor identifies the

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

potential impact of the physical risks to patient or staff that may result by failure or malfunction of the equipment.

(3) Risk Category III

PM Frequency - This risk factor identifies the PM frequency requirement of the equipment.

D. Each risk factor includes specific criteria that is assigned weighted values (See exhibit 2-3-A). When the values are added together according to the formula below, they yield a total score. This score determines if the equipment will be included or excluded from the program.

- (1) Equipment with a total score of twelve (12) or higher is included in the program and added to the PM inventory. Equipment with a total score of 12 or lower is excluded from the PM program.
- (2) Equipment that scores below (12) may be added to the program inventory at the discretion of the facilities manager.
- (3) Equipment that scores (12) or higher may only be removed from the program upon the recommendation of the Facilities Manager and concurrence of the service unit safety committee.

The formula used to calculate the total score is:

$$\text{Total} = A + I + F$$

A = Area of Use
I = Impact of Failure
F = Frequency of PM

2-4 EQUIPMENT INVENTORY

The following steps will assist a Facilities Manager in establishing the inventory for an equipment management program:

- A. Inventory all the Equipment at the Installation - This inventory should already exist. This listing should have been generated at the time the installation was opened. This inventory is not the CMR listing. CMR listings include all the personal property at the installation. Contact the property management department for assistance in locating the inventory. If the inventory is not available conduct a new survey and inventory only the applicable equipment noted in paragraph 1-4 above.

NOTE:

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

Every item in the PM (non-clinical personal property equipment and utilities equipment management) inventory listing must be in the installation inventory listing but not all items in the installation inventory listing may be in the non-clinical personal property equipment and utilities equipment management inventory listings.

- B. Equipment Applicable to this Program - Extract the applicable equipment from the installation inventory and generate a listing to be identified as the facilities engineering non-clinical personal property equipment program.
- C. Develop Risk Factors to Reduce the Inventory - The risk factors found in paragraph 2-4 of this document meets accreditation requirements and establish the IHS methodology for evaluating the type of equipment included in this document.
- D. Develop Criteria to Evaluate the Inventory - Exhibit 2-3-A of this document is a checklist that meets accreditation requirements and establishes an IHS methodology for evaluating the type of equipment included in this document.
- E. Apply the Criteria to the Inventory - The scoring resulting from application of exhibit 2-3-A will determine what equipment must be included in the program.
- F. Determine the Inventory to be Contracted - An installation may not be able to accomplish maintenance of all the equipment in the program with its in-house staffing. This may be due to the lack of technical skills by the existing facilities engineering staff, lack of testing equipment at the site and/or the lack of staff to accomplish the identified workload due to other facilities engineering program needs. Equipment that will be accomplished by a contractor must still remain as an integral part of the equipment inventory listing for the purposes of this program.
- G. Determine the Inventory to be Accomplished In-House - The remaining equipment after the portion that will be contracted is identified will be the in-house inventory responsibility.

2-5 EQUIPMENT REPAIR HISTORY

A complete record of all repairs performed on the equipment must be maintained in an automated or manual system for the life of each item of equipment. This repair history cost is utilized in the replacement justification when a recommendation for replacement is processed.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

2-6 UPDATING THE INVENTORY

- A. ADDITIONS - When a new piece of equipment is added to the program a unique PM number is assigned by the Facilities Manager and all relevant information is included in the PM program.
- B. EDITING - When a change in the location of equipment is reported it is edited in the inventory.
- C. DELETIONS - Equipment permanently removed from use (turn-in) must be removed from the equipment inventory. These changes may occur as a result of program changes, excess or replacement due to construction.

2-7 REVIEW OF EQUIPMENT PURCHASE REQUISITIONS

Facilities Managers must evaluate all new additional or replacement equipment purchase requisitions prior to procurement to review utilities and space needs before the equipment is purchased. Adequate equipment information must be attached to the requisition by the procurement department to allow the facilities engineering review.

- A. Frequently the facilities manager is not part of the equipment replacement committee and/or equipment is procured without the facilities manager's knowledge. When the equipment appears at the loading dock he/she is asked to install it to test it for compliance. A working agreement between the facilities manager and the Administrative Officer is therefore necessary to outline the handling of new or replacement equipment so that equipment requisition is reviewed prior to purchase. This will avoid excessive construction installation and/or eliminate the need to occasionally return equipment because it does not meet or is not compatible with structural, space or site utilities.
- B. This evaluation can be accomplished by the development of a written service unit procedure approved by the Service Unit Director. The procedure should outline the responsibilities of the Facilities Manager, the user departments and the Administrative Officer in all matters concerning purchase of personal property equipment applicable to this guideline.

The end result of the procedure is to ensure that:

- (1) All user departments at the installation are provided with equipment which meets IHS safety and performance requirements and will perform the required function when it arrives on site.
- (2) Necessary utilities are available and compatible for hook-up

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

when the equipment arrives for installation.

- (3) Location (floor, cabinet, table) where the equipment is to be located and the path the equipment needs to traverse to arrive at its final destination will support the weight of the equipment being installed.
 - (4) Maintenance service manuals to support the equipment is requested with the purchase.
 - (5) Adequate space is available to install the equipment.
 - (6) Maintenance costs (service contract, stock repair parts, staffing support) are included in the decision to purchase the equipment.
 - (7) Training of facilities engineering employees is included in the request, if facilities engineering will be required to maintain the equipment.
 - (8) Test equipment, if needed, to support the in-house maintenance is included in the purchase requisition.
 - (9) Construction funds needed for the installation of the equipment are included in the final purchase decision.
 - (10) Construction, if necessary, will be considered, planned, scheduled and phased in such a manner that it will be complete when the equipment arrives on site.
- C. The Facilities Manager should be prepared to make pre-purchase evaluations of equipment on verbal or written requests from user departments, or upper management.
- (1) Pre-purchase evaluations should be limited to:
 - Construction quality
 - Mechanical reliability
 - Ease of maintenance
 - Compatibility with existing systems
 - Required agency approvals
 - Construction requirements
 - Other information concerning the equipment about which maintenance may be expected to be knowledgeable.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- (2) Regardless of the method used for conducting the evaluation it must be documented in writing and attached to the requisition before it is forwarded to the procurement department. The Facilities Manager should sign and date the evaluation to document that an evaluation was conducted. A copy of the entire package should be retained by the Facilities Manager.

B. PROCEDURES

- (1) Administrative Officer - Prior to initiating the purchase of any equipment item, the installation Administrative Officer should ensure that all equipment requisitions are routed through the Facilities Manager for an evaluation of the equipment. Adequate equipment information must be attached to the requisition to allow the facilities engineering review.

NOTE:

If technical specifications are not included, the requisition should be returned to the user department with a request to furnish equipment specifications in order to accomplish the facilities engineering evaluation.

- (2) Facilities Manager

a. **FOR EQUIPMENT NOT ASSOCIATED WITH A CONSTRUCTION PROJECT AND THE EQUIPMENT IS BEEN INSTALLED IN EXISTING SPACE:**

- Screens all equipment requests and obtains the necessary information to conduct an evaluation to determine and request necessary resources.

- Consults with the user department and the personal property management office to determine the best way to accommodate requirements.

- Determines if construction will be associated with installation of the equipment. Develops a project scope of work for installation of the equipment. Performs space and utility surveys to determine the capability of existing space and utilities to support the requested equipment.

- Reviews the equipment specifications to ensure that the requested equipment will meet all IHS safety specifications, such as proper grounding,

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

and guards. Conducts evaluation tests prior to proposed purchases.

- Performs acceptance testing on all newly acquired equipment before such equipment is accepted by the installation and delivered to the user department. Whenever possible, testing shall be completed within 7 days after arrival of the equipment. Under no circumstances should equipment be ever be allowed to be in use without acceptance testing.
- Determines if contract services will be needed to support the equipment. If contract services are required the cost must be researched and added to the FEPP Work Plan for the upcoming year.
- Determines if any specialized test equipment, diagnostic software or hardware is needed to service and maintain the equipment with in-house staff. Specifies accessories to be purchased, such as diagnostic materials or hardware necessary to maintain the equipment. The cost must be researched and added to the equipment purchase requisition.
- Determines the need for technical manuals to service the equipment. Tthe cost must be researched and added to the equipment purchase requisition.
- Determines if training associated with servicing the equipment by in-house personnel is needed. If needed, the availability and estimated cost of training must be researched and added to the purchase requisition. A cost-effectiveness evaluation of training for in-house employees versus contracting out repairs and maintenance must be conducted.
- Determines if the proposed equipment is compatible with other existing equipment at the installation and/or service unit. The parts currently stocked for other types of equipment, interchangeability of existing parts and the availability of service by an existing contractor needs to be considered. If the request is for a brand or model that is different from the current standard in use at the installation, the Facilities Manager must contact the user department to determine whether the standard

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

brand and model will be sufficient for their needs. If the equipment standard is not acceptable, the Facilities Manager must recommend a more appropriate substitution. The installation's goal should be to standardize equipment whenever possible.

- If the requested item is known to have design flaws or excessive maintenance needs, the consult with the user department and recommend an alternate solution.
- If the requested equipment is a replacement item and a request for turn-in is attached, review the turn-in by verifying the repair history in the equipment card. The total cost of repairs for the equipment and the history for the repairs to date needs to be used as a verification that the equipment is justified for turn-in. If it is not, the equipment request must be returned to the user through the Administrative Officer with a memo explaining the recommended action.

FOR EQUIPMENT ASSOCIATED WITH A CONSTRUCTION PROJECT TO INSTALL AND/OR REMODEL THE LOCATION OF THE EQUIPMENT:

- Review installation drawings furnished by the manufacturer to verify that planned utilities are adequate to support the needs of the requested equipment.
- If adequate utilities are not available, confers with the user department to determine if an alternate item can serve the same function (e.g., 110 volt instead of 220 volt; a floor model versus a wall mounted unit, etc.).
- If no alternate is appropriate, document the inadequacies.

FOR EQUIPMENT ASSOCIATED WITH AN INSTALLATION IN EXISTING SPACE WITHOUT THE NEED OF A PROJECT:

- Determines if existing space and utilities are adequate to support the requested equipment. If not adequate, determines if necessary changes can be accomplished in-house with relatively low cost in terms of manpower and materials. If so, works with the requesting department to determine the

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

requirements and estimate a cost for the installation.

- If the required changes are within the capabilities of in-house staff, but the added workload would impose considerable cost in terms of manpower, an evaluation of the project must be conducted. Estimate the cost to accomplish the work in-house versus the cost of contracting out the work. The estimate must include the impact on the facilities engineering workload created by the equipment installation. Recommends to management the necessary work that will be associated with the installation of the equipment.

 - If the installation of the equipment does not require changes that would disrupt the normal workload of in-house manpower, document it in the evaluation. Develops an installation concept, a cost estimate and an approximate date for accomplishing the work considering the existing installation workload. The evaluation must contain a recommendation for a priority to accomplish the work if other work has also been scheduled previously. The recommendation must include a completion date.
- m. The completed evaluation will then be forwarded to the user department through the Administrative Officer. Include any appropriate comments that the user department should be aware of if the equipment is purchased. For example, problems affecting the equipment when the emergency generator is tested.

(3) Personal Property Management

- a. Upon receipt of the equipment the personal property management office should forward to the Facilities Manager the following information:
- Equipment name and description
 - Equipment location
 - Acquisition value
 - Acquisition date
 - Life expectancy

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- CMR number
- Warranty expiration date
- Manufacturer's name, address and phone number
- Vendor's name and address (if not purchased directly from the manufacturer)
- Serial number
- Model
- Purchase order number

This information will then be used as the basis for the conducting the equipment management inventory evaluation.

- b. Arranges for evaluation tests (prior to purchase) to verify the ability of the equipment to perform as desired, or to determine the relative merits of equipment from various manufacturer.
- c. Informs the user department of the requirements for electrical safety testing of loaned/leased equipment.
- d. Delivers new equipment directly to the facilities engineering office for safety testing before it is delivered to the user area. When delivery to the facilities engineering office is not feasible, notification that the equipment has been received at the warehouse is given to the Facilities Manager.
- e. Notifies the Facilities Manager of the location of loaned equipment when a manufacturer's representative visits the installation to sign an equipment loan agreement.
- f. Ensures that all requests for new or replacement equipment are forwarded to the Facilities Manager, accompanied by the necessary product literature to accomplish an evaluation.
- g. Notifies the Facilities Manager of the expected delivery date for the equipment by forwarding a copy of the procurement requisition, along with an equipment site preparation guide (when furnished by the manufacturer).
- h. Notifies the Facilities Manager of the scheduled

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

installation date and time for manufacturer-installed equipment.

- i. When operation and/or maintenance manuals are not received with the equipment, the following procedures are implemented:
 - Warehouse personnel notify the purchasing department that operations and service manuals are not included in the shipment.
 - The purchasing department will contact the vendor and determine the expected date of delivery of the operation and service manuals.
 - The purchasing department will contact the Facilities Manager and notify him/her of the status of the manuals.
 - If arrangements were made for manuals to be delivered directly to the Facilities Manager and manuals are not received as expected, the Facilities Manager will contact the purchasing department for a follow-up with the vendor.
- j. Makes all necessary arrangements with the vendor for warranty integrity in those cases for which elements of the acceptance test may infringe on normal warranty requirements.
- k. Accepts or rejects equipment based on the results of acceptance testing, examination of complete documentation, guarantee, the presence of all parts and accessories, availability of vendor provided training, and others as agreed on the purchase contract.
- l. If documentation has been determined to be inadequate, the personal property management office shall make all the necessary arrangements with the vendor for the delivery of all the required documentation.

INDIAN HEALTH SERVICE
 DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
 FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

EXHIBIT 2-3-A
CHECKLIST FOR EQUIPMENT EVALUATION

A. NOMENCLATURE

Equipment Name _____
 Model Number _____
 Serial Number _____
 CMR Number _____
 User Department _____

B. EVALUATION CRITERIA (Circle only one for each category)

RISK CATEGORY I

EQUIPMENT FUNCTIONAL AREA (A)	POINTS
Anesthetizing Areas (i.e., O.R., E.R., Ob/Gyn.)	10
Critical Care Areas, Recovery Room	9
Dialysis, Dental, Inpatient Areas, Blood Bank	8
Outpatient Clinics	7
Diagnostic Services (i.e., Clinical Laboratory, Radiology)	6
Support and Therapeutic Services (i.e., Pharmacy, PT)	5
Central Computer, and Telephone Room	4
Mental Health	3
Administrative Areas	2
Employee Quarters	1

RISK CATEGORY II

IMPACT OF FAILURE OR MALFUNCTION (I)	POINTS
Potential Patient Death	5
Potential Patient or Staff Injury	4
Potential Patient or Staff Health Problem	3
Discomfort or Inconvenience	2
No Significant Risk	1

RISK CATEGORY III

PREVENTIVE MAINTENANCE FREQUENCY (F)	POINTS
Monthly	5
Quarterly	4
Semi-annually	3
Annually	2
Not Required	0

FACILITIES MANAGER'S CERTIFICATION: (Insert an X)
 It is my determination that the above equipment should _____
 or should not _____ be included in the equipment management program.

Signature _____ Date: _____

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

EXHIBIT 2-7-A
REVIEW OF EQUIPMENT REQUISITION

A. UTILITY REQUIREMENTS

(1) **ELECTRICAL**

- a. Voltage
Is the required voltage available in the equipment location? YES/NO _____
- Will a transformer be required to deliver the requirements? YES/NO _____
- b. Amperage
Is there sufficient capacity available to hook-up the equipment? YES/NO _____
- Will an new additional breaker be necessary? YES/NO _____
- Is there a need to install a new panel to support the installation of the equipment? YES/NO _____

(2) **MEDICAL GASES** - Is there a need to hook-up medical gases to the equipment? YES/NO _____

(3) **CONTROL AIR** - Is there a need to hook-up control air to the equipment? YES/NO _____

(4) **PLUMBING** - Is there a need to hook-up to:
Sewer Drain YES/NO _____
Potable Water YES/NO _____
Hot Water YES/NO _____

ESTIMATED COST FOR UTILITIES MODIFICATIONS \$ _____

B. WEIGHT (FLOOR LOADING) OF EQUIPMENT

What is the gross installed weight of the equipment to be installed? _____ Kg

What is the design floor load where the equipment is to be located? _____ Kg/M₂

What is the design floor load of the floor from the entrance point to the building to where the equipment will be located? _____ Kg/M₂

C. SPACE AVAILABILITY

Where will the equipment be

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

located? Room _____ Building _____

Is remodeling necessary to install the equipment? YES/NO _____

ESTIMATED COST FOR SPACE REMODELING CHANGES \$ _____

D. HEATING VENTILATING AND AIR CONDITIONING (HVAC) - Is there a need to modify the HVAC system to accommodate the equipment installation? YES/NO _____

ESTIMATED COST FOR HVAC CHANGES \$ _____

E. STRUCTURAL SUPPORT - Is there a need to perform structural changes due to the installation of the equipment? YES/NO _____

ESTIMATED COST FOR STRUCTURAL CHANGES \$ _____

F. MAINTENANCE AVAILABILITY - How is the equipment maintenance to be accomplished?

Contractor: What is the annual cost of the service contract? \$ _____

In-House: What is annual increase in additional funds to support the maintenance in-house? \$ _____

NOTE: The Facilities Manager should review the equipment record card and verify that the equipment is justified for replacement. If it is not, the request should be sent back to the user department.

ESTIMATED ANNUAL MAINTENANCE COST \$ _____

G. SPECIALIZED TESTING EQUIPMENT

Is there a need to purchase specialized test equipment, diagnostic software or hardware to maintain the equipment in-house? YES/NO _____

If test equipment is needed for proper maintenance of the equipment, complete an HHS-393 request and attach to this evaluation.

ESTIMATED COST OF ADDITIONAL TEST EQUIPMENT \$ _____

H. SERVICE/TECHNICAL MANUALS NEEDED

If the service manual is available separately from the operator's manuals what is the cost?

Attach an HHS-393 for the manuals requested

ESTIMATED COST OF SERVICE MANUALS \$ _____

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

I. TRAINING - Is training necessary for facilities staff to maintain this equipment? Contact the vendor and prepare an HHS-393 for training. YES/NO _____

ESTIMATED COST OF TRAINING \$ _____

J. COMPATIBILITY

Is the requested equipment compatible with existing equipment? YES/NO _____

If not, the Facilities Manager should consult with the requesting service and recommend a more appropriate substitution.

K. SAFETY

Does the requested equipment meet OSHA requirements? YES/NO _____

Is the equipment UL approved? YES/NO _____

Does the equipment meet NEC? YES/NO _____

If the ground resistance and leakage current value limits required in the electrical safety standards for the area of use are not met, return the requisition to the user department for selection of different equipment that will meet hospital standards.

If technical specifications are not included, the request should be returned to the requesting department with a request for the required specifications.

If the request is for a brand/model that is different from the standardized one currently used in the installation, contact the user department to determine whether the standardized brand/model will be sufficient for their needs. The service unit's goal should be to standardize equipment whenever possible.

L. DESIGN FLAWS

Does the equipment have design flaws that have been made public through trade journals or product recalls? YES/NO _____

If the requested item is known to have design flaws or excessive maintenance needs, the Facilities Manager should consult with the user department and recommend an alternate equipment item.

M. PROCESSING THE COMPLETED EVALUATION - The facilities

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

manager shall return the completed evaluation to the procurement office or the user department through the Administrative Officer as necessary.

Q. REVIEWING OFFICIALS

CONCUR/DO NOT CONCUR

CONCUR/DO NOT CONCUR

Facilities Manager

Administrative Officer

CHAPTER 3 - EQUIPMENT TESTING

3-1 ACCEPTANCE TESTING

Some equipment in the equipment management inventory must be initially tested before activation. Equipment parameters must be met before the equipment is put in use at the installation. The source for obtaining acceptance parameters is the manufacturer's literature and the designer's requirements decided in the design development stage. By combining these two sources of information, the Facilities Manager can develop effective acceptance performance standards for each item of equipment in the inventory.

3-2 ROUTINE TESTING

- A. Each item of equipment that has been identified in the equipment management inventory may have certain requirements that need to be continuously maintained to ensure minimally acceptable standards of performance. These tests are different from acceptance tests. The sources for obtaining this information are codes, manufacturer's requirements, designers and user experience. By carefully combining these various sources of information, the Facilities Manager can develop the installation's routine standards. These routine standards should include the process used for determining testing intervals, testing procedures, reporting and correcting device malfunctions, and their required documentation.
- B. The determination of testing intervals is a dynamic process which is to be implemented so that adjustments can be made when necessary. By establishing proper testing intervals, the Facilities Manager can conserve staff time and direct maintenance and repair efforts to equipment with the greatest need.

3-3 SAFETY TESTING

- A. A program for conducting safety testing of all equipment throughout the installation and the records of the completed tests is of utmost importance. New equipment that fails to pass the applicable electrical safety tests will not be approved for use in the installation until such deficiencies have been corrected. The electrical safety testing program must be implemented also for patient and employee own equipment that is used at the installation. All equipment, regardless of ownership (owned, loaned or rented) which is included in the equipment management program shall be inspected and tested and identified by an appropriate tag.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

B. The initial electrical inspection shall be performed by the facilities engineering department at the time that the equipment is originally received and accepted at the installation. Facilities engineering will also conduct routine follow up safety checks after completion of any future repairs to the equipment. Electrical testing (between repairs and the initial acceptance electrical safety check) is the responsibility of the department who uses the equipment. Periodic safety inspections should be conducted by the employees who use the equipment, the supervisor of the area where the equipment is used and the safety committee of the department where the equipment is used.

- (1) Permanently Installed Equipment - Permanently installed (hard-wired) electrical equipment, or where the equipment power cord and attachment plug are neither accessible for inspection nor available for testing, should be visually inspected for physical defects such as cracked or dented surfaces, missing or broken controls and indicators.
- (2) Portable Equipment Test Procedure - Perform the following tests for equipment that is not permanently installed and whose power cord and attachment plug are readily accessible for inspection and are usable for testing.
 - a. Visually inspect the equipment for physical defects such as, cracked or dented case, missing or broken controls or indicators, and missing strain relief cord protectors.
 - b. Check the electrical plug for damage.
 - c. Check the full length of the cord for fraying, cuts or kinks.
 - d. Leakage current and grounding resistance shall be measured for all non-patient equipment that may be used in the patient vicinity and is likely to contact the patient.
 - Grounding resistance shall be measured between the equipment chassis (or any exposed surface of the equipment) and the ground pin. The cord shall be flexed at its connection to the attachment plug or connector and at its connection to the strain relief on the chassis during the resistance measurement.

This measurement shall only apply to equipment that is used in the patient vicinity.

C. If the device passes all tests, then a safety inspection tag

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

should be affixed to the equipment. This serves to notify the users that the equipment is safe to use. If the safety inspection is not current it serves to warn the user of the potential liability of continued use of the equipment.

- D. If the device fails the inspection, and the device cannot be physically removed from its location, a distinct warning message shall be placed on the device. The supervisor in charge of the area must be notified immediately by the facilities engineering inspector. Whenever possible, equipment found defective with obvious hazard to the operator's or patient's health and/or safety will be removed immediately from its location by the inspector and brought to the facilities engineering shop area. The Facilities Manager shall be notified of the action at that time. A work order to correct the defect will be generated by the facilities engineering employee who removed the equipment.
- E. Equipment excluded from the equipment management program may be checked when random environmental area inspection are performed. These inspections shall be recorded on an inspection form, but placing a sticker or tag on this equipment is not required.

3-4 INSPECTION SCHEDULING

The Facilities Manager can schedule equipment inspections by environmental area, floor or department using the PM inspection schedule. A work order must be generated to correct any identified deficiencies. Inspections must be scheduled at least annually. A report of the inspections must be forwarded by the Facilities Manager to the service unit safety committee for dissemination to all departments through the committee minutes.

3-5 DOCUMENTATION OF TESTING

The results of all testing must be documented to establish the baseline historical record.

Documentation must include at a minimum:

- When the test/inspection took place (date).
- What the acceptable parameters are and what the test results were.
- Who conducted the test/inspection/calibration.
- Inspection reports shall be maintained in the facilities engineering office files.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

3-6 REMOVAL OF UNSAFE EQUIPMENT FROM SERVICE

A. FACILITIES MANAGER

- (1) Equipment that is found to be defective will be rapidly remove from use and the appropriate staff notified. The facilities engineering department shall respond in a timely manner to protect patients and staff from hazardous and potentially hazardous equipment. Identified hazards or potentially hazardous incidents shall be investigated and reported to the installation safety committee.
- (2) Remedial action such as routine inspection, modification, removal and/or replacement of equipment, and user training should be taken as appropriate. Repairing of isolated components failures, or minor problems, which are not expected to recur should be excluded from this requirement.
- (3) Equipment found to be defective should be impounded until the completion of the incident investigation. Facilities engineering should investigate the reported hazard to determine its cause. If an equipment defect is found to be the cause, the Facilities Manager should initiate immediate action or recommend appropriate action to the installation safety committee for correction of the problem. This shall include permanent removal of the equipment from service if it presents a continuing hazard. Hazards which are life threatening or which pose imminent danger to employees or staff, should be reported by telephone to the Area facilities office immediately. A follow up written report should follow.
- (4) If it is determined that the incident was caused by an operator error, the Facilities Manager should report the findings to the installation safety committee, and the appropriate department head. The Facilities Manager should make recommendations for resolution of the problem to prevent recurrence of the incident.
- (5) Hazard alerts received by the Facilities Manager must be resolved immediately and must be reported to the installation safety committee along with the action taken. The Facilities Manager should monitor health care engineering publications for recalls and hazards associated with equipment in the installation.
- (6) All reportable hazards and corrective actions taken must be documented. Hazard summaries and trend analysis must be reported to the installation safety committee on a quarterly basis.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- a. All information pertaining to the incident and corrective action should be included, but not be limited to, the following items:
 - Description of the device (name, model, serial number, manufacturer, PM number).
 - Physical condition of the device.
 - Environmental conditions.
 - Name of operator/Person reporting the incident.
 - A description of how the event occurred.
 - Safety inspection results.
 - Summary of the investigation and recommended action.
- b. If the incident involves an electrical shock, an electrical safety inspection must be performed immediately.
- c. If a defect is found to be the cause, the Facilities Manager should validate the hazard with the equipment manufacturer, determine the proper corrective action and initiate a work order for the corrective action. In cases where the manufacturer is liable for the correction of a design defects, improper installation and/or maintenance, etc., the Facilities Manager should coordinate the incident with the procurement office. This will require the manufacturer to be brought in to investigate the problem and take corrective action. All manufacturer's actions must be documented and included in the final incident report.
- d. If it is determined that the incident was caused by operator error, the Facilities Manager should report the findings and make recommendations to the appropriate user department head for resolution of the problem, including user training to prevent recurrence of the incident. The affected department head should forward an incident report to the safety committee.
- e. The Facilities Manager will determine when the equipment can be safely returned to the user department.
- f. Follow-up must be provided on the regularly scheduled PM inspections to determine the effectiveness of the

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

corrective action.

- B. PROCUREMENT OFFICE - Returns any recalled equipment items to the manufacturer.

- C. DEPARTMENT HEADS - Ensure that procedures regarding hazards are adhered to by all individuals assigned to their department.

3-7 INSPECTION OF STAFF/PATIENT OWNED EQUIPMENT

A. GENERAL

All staff and/or patient personally owned equipment and/or appliances must meet the established service unit criteria and be included in the equipment management program. This will prevent harm to patients, staff and visitors through the use of unsafe electrical appliances and electrical equipment brought for use at IHS installations.

- (1) The use of personally owned appliances by patients should be authorized only by the patient's physician. Written documentation of the clinical staff authorization should be maintained in the patient's clinical record. Use of equipment or appliances should be only authorized if it will be of therapeutic value to the patient.

- (2) The use of personally owned appliances by employees shall be authorized by each employee's department head. Written documentation of the authorization should be maintained in the user department office.

- (3) Food preparation devices such as toasters, popcorn poppers, and hot plates will not be permitted for routine use. Exceptions may be made for special functions such as holiday dinners, retirement parties, or going-away parties. The items should be approved by the department heads prior to the item being brought on the premises. The equipment/appliance must be removed from use at the conclusion of the function.

- (4) Electrical devices owned jointly by employee associations or groups are also considered as "Employee Owned".

- (5) The use of coffee pots will generally be acceptable, providing that such devices are found electrically safe. Consideration should be given to the purchase of models incorporating plastic rather than metal housings.

- (6) The use of personal radios by employees should be at the

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

discretion of the department head. Use should not interfere with the operation of the department or the provision of patient care due to noise.

- (7) Portable heating devices and cooling fans **should not** be permitted for personal use.
- a. Heating devices can result in fires, burns, and electrical shock.
 - b. Improperly guarded cooling fans represent a mechanical hazard and a shock hazard.
- (8) The Facilities Manager shall inform the department head of each area of any defective privately-owned equipment found during the inspections. Privately-owned equipment must be claimed by the owner and removed from the premises immediately upon written notice by the appropriate supervisor.

B. PROCEDURES

(1) Patients

- a. Admitting personnel will not allow entry of any personally owned electrical equipment brought by a patient upon admission. The Head Nurse shall submit a work order to facilities engineering before it can be placed in use. Facilities engineering shall then inspect and approve the equipment as safe for patient use.
- b. Nursing personnel will remove from the ward area any equipment brought to the ward after admission by the patient, or donated for patient use if it has not been authorized by the patients physician and inspected for safety.
- c. Upon authorization by the patients physician, the Head Nurse or designee will complete a work order requesting a safety inspection of the equipment. The work order will state the type of equipment to be inspected and the location. It will state that it is personally owned property to be inspected for therapeutic use by the patient. The work order will ensure an inspection within (48) hours of receipt in facilities engineering.
- d. If the equipment is approved for use it will be tagged. The tag will state the inspector's name and date of inspection. At such time the Head Nurse will

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

document authorization of the equipment on the patient's chart.

- e. Approval of equipment by engineering personnel does not relieve nursing personnel from occasional spot checking for safety compliance. This inspection will include, but not be limited to frayed cords, broken or bare wires, cracked connectors, faulty switches and cracked or broken equipment/appliance body.

(2) Employees

- a. The responsibility for obtaining an electrical safety check lies with the employee or group using the device. All "Employee Owned" electrical devices will be delivered along with a work order to the facilities engineering department for an electrical safety evaluation before the equipment is used at the installation.
- b. If the item passes the safety test, the item will be tagged showing the serial number, date and the signature of the inspector. The item will then be returned to the owner.
- c. If the item does not pass the safety test, it will not be allowed to be used at the installation until the deficiencies have been corrected by the owner. Facilities engineering cannot make repairs to employee owned equipment. A re-evaluation by the facilities engineering department will be necessary when the equipment is again brought to the site.

- (3) Electrical devices in use prior to this guideline, that do not bear a valid inspection tag, should be tested immediately. Such tests will be subject to the availability of time in the maintenance department.
- (4) Non-approved devices, devices bearing outdated inspection tags, or devices that have deteriorated in condition since the last inspection, may be removed by the Safety Officer or the Facilities Manager to prevent electrical hazards.

THE USE OF PERSONAL ELECTRICAL EQUIPMENT BY STAFF AND PATIENTS SHOULD BE STRONGLY DISCOURAGED.

- (5) Personal television sets are dangerous and should not be permitted. Television sets designed for home use are not compatible with electrical devices used in the diagnosis and treatment of patients. An ungrounded television chassis is a hazard to anyone touching it because it does not have an

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- isolation transformer or a grounded power supply cord.
- (6) Personal video disc players and video cassette recorder/players should not be allowed in patient rooms.
 - (7) Personal heating pads, curling irons, portable electric heaters, electric blankets, blow driers, and any other device with heating elements, should not be allowed. These appliances present a dual hazard of possible burns and electric shock.
 - (8) Personal battery operated radios, stereo devices and/or tape players will be allowed for known long-term patients if designated by the patient's physician.
 - (9) Line operated radios, (clock radios included), or other line operated devices should not be permitted.
 - (10) Personal electric shavers will be allowed after the facilities engineering department has performed an electrical safety check. If the item passes the electrical safety evaluation it will be so labeled with a tag showing the serial number, the current leakage reading, the date and the signature of the inspector, then returned to the Head Nurse. If the item fails the safety test, it should be held by the Head Nurse until the patient is released.
 - (11) The use of personal extension cords and adapters will be strictly prohibited.

EXHIBIT 3-6-A
INSPECTION OF STAFF AND PATIENT OWNED EQUIPMENT

SAMPLE MEMO TO DEPARTMENT HEADS AFTER INSPECTION

DATE: November 12, 1994

TO: _____ Department

FROM: Facilities Manager

SUBJECT: Inspection of Staff Owned Equipment

During the recent microwave leakage test conducted by the facilities engineering department throughout the installation a microwave unit was found in your department that is not listed on the facilities engineering inspection list.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

The microwave oven is located in Room 215A. To help ensure user safety, a courtesy test was made during the inspection cycle. Service Unit procedure XXX-XX requires that all personally owned property that is used in the work site be inspected prior to its use at the work site. Our files show no authorization from the Service Unit Director for this item. We will not inspect this unit any longer unless we receive written authorization from the Service Unit Director to do so.

Will E. Coyote

CHAPTER 4 - RESPONSIBILITIES

4-1 FACILITIES MANAGER

- A. Evaluates new or additional equipment within 30 days of arrival at the installation to consider the equipment for inclusion in the equipment management program.
- B. Submits recommendation for changes to the installation safety committee on matters affecting the equipment management program.
- C. Reviews the equipment management program annually and documents the results in writing to the installation safety committee.
- D. Implements continuous preventive maintenance, testing and inspection of equipment to minimize interruption of service. Ensures preventive maintenance schedules are met and maintains the required documentation.
- E. Conducts cross training of facilities maintenance personnel to ensure that facilities employees are aware of their role during equipment failures.
- F. Reports appropriate equipment failure incidents to the installation safety committee for risk assessments.
- G. Reviews work orders to determine changes such as entry, editing, or deletions to the inventory that affect the equipment management program.

4-2 INSTALLATION SAFETY COMMITTEE

- A. Reviews and approves appropriate equipment incident reports submitted for risk assessments and recommends actions to minimize or avoid more future incidents.
- B. Reviews and approves the annual effectiveness review of the equipment management program submitted by the Facilities Manager.
- C. Reviews and approves recommendations or deviations and/or modifications to the criteria used to evaluate equipment for inclusion/exclusion in the equipment management program.

4-3 DEPARTMENT HEADS

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- A. Develop departmental plans to implement during failure of equipment.
- B. Coordinate the impact of the equipment management program within their respective departments.
- C. Implement educational sessions within their departments to ensure their staff are proficient in the steps to be taken in the event of equipment failures.

CHAPTER 5 - TRAINING

5-1 REQUIREMENTS

Accreditation requires that personnel who use or maintain equipment receive refresher training with respect to their job responsibilities involving the equipment they are charged with maintaining.

- A. Facilities Managers only need to be concern with having employees who maintain the equipment receive training. Establishing and managing an effective training program for the employees is a dynamic process requiring continual updating and development, and demands significant effort from the facilities manager in order to succeed. Therefore a program has to be established to train only personnel who maintain equipment which may pose a high risk to patient, staff or visitor safety.
- B. All new maintenance employees whose duties require them to maintain equipment should have their training needs assessed within the first two weeks of employment. This will enable the development of a training schedule tailored for each employee.
- C. Training should include initial orientation, additional training when changes are to occur and, in certain cases, periodic (e.g. annual) continuing refresher, and evaluation for effectiveness.
- D. In the case of facilities personnel, it is important to note that there is presumed basic competence of personnel in their respective craft or trade. The training required by this standard is the initial and recurring training needed to tailor the knowledge and skill of these persons to the requirements of a particular installation, including specialized technical training, infection control training (unique to hospital environment), and emergency operating and failure procedures.

5-2 POLICY

- A. Regardless of training source documentation must be prepared and readily accessible for review and analysis.

Minimal documentation should include:

- (1) Date of Training
- (2) Title of Course
- (3) Course outline

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- (4) Instructor's name and Title
 - (5) Names of the participants
- B. It may be found helpful to identify all required training for the facilities engineering department and set up a chart or grid with the data. This will facilitate the monitoring for compliance. Accreditation surveyors often appreciate concise and readily reviewable documentation such as charts or grids in determining installation compliance with standards.

5-3 PROCEDURES

- A. Facilities Managers shall ensure that facilities engineering employees, including temporary employees, are oriented properly on the hazards involve in the maintenance of some critical types of equipment.
- B. Equipment training needs must be assessed to determine which equipment needs to be identified as critical. Training must be considered for all equipment. Events such as equipment failures, user errors, accidents, interruption of services, employee turnover, equipment age, hazard reporting and other conditions which create a risk to patient or user should be considered when determining the type of additional training needed.
- C. Additional training is indicated when:
 - (1) A problem is identified that appears to be related to a user misuse or abuse. The user's supervisor should be informed that the employee needs training.
 - (2) Modifications are made to the equipment that impact the facilities engineering interaction with the equipment.
 - (3) Changes in policies or operating procedures.
 - (4) Facilities engineering employees request the additional training.
- D. Training must be provided when the supervisor and employee agree on the need for additional training. Training will vary from a brief orientation by supervisors or co-workers to specialized training through a combination contractor furnished training and on-the-job training.
- E. Emphasis must be placed on new employees and new equipment.
- F. Training must be assessed on an annual basis. Orientation and training assessments must be documented.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- G. Training and attendance records are to be filed in the facilities engineering office and be easily retrievable for review by accreditation surveyors.

CHAPTER 6 - EQUIPMENT REPLACEMENT PLAN

6-1 PURPOSE

The purpose of an equipment replacement plan is to enable a Facilities Manager to plan and schedule equipment replacement costs over a period of time. The plan identifies equipment which, when needing replacement, will significantly impact the funding in a service unit if it had to unexpectedly absorb the equipment replacement costs within its budget.

6-2 SCOPE

- A. An equipment replacement plan is an itemized listing of non-clinical personal property under the facilities engineering program responsibility. The plan includes equipment that should be scheduled for replacement over the next five years.
- B. The Indian Health Facilities appropriation, M&I activity only allows replacement and repair of real property equipment. Non-clinical personal property covered under this part of the manual is replaced with H&C funds. Repair of the equipment is accomplished with facilities support (FS), if it was transferred from the H&C account. If not H&C funds must also be used for the replacement. Therefore, there is a need for planning the replacement of this type of equipment so that department heads can be appraised and management can plan for systematic replacement with the appropriate funding.

The following planning actions will allow a more effective accomplishment of equipment replacement:

- (1) Funding - Planning for equipment replacement enables adequate budgeting to ensure funding is available when needed. The funding impact to the Area and indirectly to the other service units can be absorbed easier if several items are replaced over several years rather than at one time (i.e., replace one sterilizer at a time at \$15,000 each rather than three at the same time for \$45,000. Each Area should develop written guidelines outlining the amount of funds that will be set aside for equipment replacement.
- (2) Minimize Emergency Replacements - Equipment should be replaced near the end of its useful life, but before it fails and becomes an emergency situation.
- (3) Purchasing - Adequate time is available to purchase and manufacture long lead equipment which is not a stock item.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- (4) Scheduling - Equipment replacement can be scheduled to be performed at non-critical hours.
- (5) Phased Replacement - Replacement of multiple units of the same item should be phased so that one could be replaced each year rather than replace all four in the same year). This distributes the total cost of replacement over several years.
- C. The plan will ensure that the equipment is replaced in an economic and reasonable fashion. Failure to plan the replacement will create the problems encountered when emergency breakdowns require emergency replacements. This causes disruptions in the operation of the health care program, the facilities engineering program plan and in some cases may even cause threat to life.

6-3 METHODOLOGY

Examples of the type equipment contemplated are:

Personal Property Equipment (Non-Clinical - Facilities Support

- Dietetic dishwasher, dietetic refrigerator
- Morgue refrigerator
- Bed pan washer
- Laminar flow hood, bio-hazard cabinet hood
- Medical air compressor, dental air compressor
- Lawn Mower, snow blower, table saw, drill press

6-4 LONG RANGE FORECASTING

Non-clinical personal property equipment can be very expensive to replace and is often critical to the operation of a facility. Therefore it is necessary to schedule the replacement of the equipment systematically. Equipment of this type should be scheduled for replacement when it is within five years of its expected life, even if it is operating properly. The basis for replacement is an assessment of the documented repair costs contained in the equipment record card of each item of equipment. A general rule of thumb is that equipment that is within five years of its expected useful life and/or whose repair costs exceed 60% of the value expended on repairs should be scheduled for replacement. This is only a general rule of thumb as different items of equipment have a useful life that is unique to the

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

duty and type of equipment. This will affect the percentage of replacement cost defined above.

6-5 FORMAT

A sample of a Five Year Equipment Replacement Plan for FS funds is found in the Technical Handbook for EHE, Volume VI, Facilities Engineering, Part 71, FEPP.

CHAPTER 7 - QUALITY ASSURANCE

7-1 REQUIREMENTS

- A. The equipment management program must be included in the facilities engineering quality assurance program. Accreditation requires that an effectiveness review of the entire equipment management program be conducted on an annual basis. Facilities Managers therefore, need to systematically monitor the program using indicators developed specifically to monitor program implementation. The annual effectiveness review must be in writing and forwarded for concurrence by the installation safety committee and approval of the service unit Governing Body.
- B. Facilities engineering plays a key role in determining what significant incidents must actually be reported to the installation safety committee. Evaluation of significant incidents must occur expeditiously if the program is to operate effectively. The key element for facilities engineering is that only incidents occurring as a direct result of facilities engineering involvement should be reported by the Facilities Manager. Incidents need to be reported by the user department(s) or the department(s) that were affected as a direct result of the equipment failure. The incident report must however, be routed by the affected department head through the Facilities Manager, to the installation safety committee for review and further action. A review of the incident needs to be made by the Facilities Manager before the report is forwarded to the installation safety committee because although a department may be knowledgeable of the circumstances of the incident it may not be capable of recommending corrective action for the incident. The information required to be documented for a proper evaluation of an incident can only be documented by the individual witnessing the occurrence if the evaluation is to be meaningful.
- C. Since all equipment failure incidents may not be classified as critical to the operation of the facility, the installation safety committee needs to identify what incidents are significant and should be reported. In addition, there is a need to identify the parameters that will be used to measure the minimum acceptable performance of the program. A method for reporting incidents which identify and document significant problems, failures and user errors is essential for collecting and gathering data in determining relevancy. An incident report for equipment failures provides a mechanism to elicit necessary information for properly assessing incidents.

7-2 IMPLEMENTATION

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

An effectiveness review of the equipment management program requires the following steps to implement monitoring of the program.

- A. Identify the critical equipment that needs to be monitored. These shall include high risk, and/or problem prone areas with direct failure impact on the patient care mission of affected departments.
- B. Establish indicators to monitor the effectiveness of the program performance. For example, measuring the percentage of un-scheduled equipment failures per quarter. Facilities related malfunctions would be failures attributed to equipment failure as a result of poor maintenance (lack of adequate PM) or equipment failure.
- C. Establish a threshold for evaluations such as the point at which an in-depth review will be triggered. For example, more than one equipment interruption occurs per month in any one quarter.
- D. Establish and implement a process for collecting the necessary data.

7-3 REPORTING OF EQUIPMENT FAILURES

A. REQUIREMENTS

- (1) It is necessary that all significant equipment problems, failures, and user errors that are or may be a threat to the patient care environment be identified and documented, summarized and reviewed by the installation safety committee. An analysis of the failure or user error will be conducted and appropriate adjustments made to ensure that future recurrences which may cause injury to patients or staff are avoided.
- (2) Reportable errors, failures or problems that may posed or may pose a threat to the patient care environment must be defined by the installation safety committee.

The following criteria may assist in defining reportable incidents.

- a. Significant Reportable Incidents - Incidents of equipment failure, malfunction error, or problem that pose or may pose be a threat to the patient care environment and result or could result in injury, or death to patients. staff or the public.
- b. User Error - An error caused by the improper use of

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

equipment by the user.

B. PROCEDURES

- (1) When a failure incident occurs an incident report will be prepared within 24 hours of the incident. The report must be prepared by the supervisor of the area where the incident occurred. The written report must be forwarded through the Facilities Manager to the service unit safety committee for risk management analysis. The Facilities Manager will review the report, and attached any comments with recommendations to the installation safety committee for action and approval.
- (2) Any facilities engineering employee having knowledge of a user error incident outside of the facilities engineering department will report the incident to the Facilities Manager for follow up action.
- (3) Actions recommended by the installation safety committee must be implemented expeditiously.
- (4) Follow up actions will be accomplished by the Facilities Manager to ensure that the actions recommended by the committee continue to be implemented.
- (5) Facilities engineering will maintain an incident log on all reportable equipment problems, failures, and user errors.

7-4 REPORTS

A. TYPES OF REPORTABLE INCIDENTS

- Abuse of equipment by user
- Electric cord abuse
- Equipment dropped by user
- Improper accessories used with the equipment
- Improper use of the equipment by the user
- Improper user maintenance
- Liquid spill on equipment
- No problem identified when equipment was inspected by facilities engineering personnel

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- □ Problem that should have been corrected by the user

B. CLASSIFICATION OF INCIDENTS

- (1) User Error - This report is made by the user since the failure was attributed to the user. The narrative report shall include:
 - a. Errors that have a serious effect on safety
 - b. Errors which occur repeatedly
- (2) Hazard Alert - This report is made by the property management department since the incident is attributed or could be attributed to a potential failure of the equipment.
 - a. Number of hazard alerts forwarded to department heads
 - b. Number of hazards which required action by the user
 - c. Number of hazard alerts which required facilities engineering action.

Included in this report should be hazard alert information which is the responsibility of the user department, is more than 30 days old and has not been corrected.
- (3) Equipment Failure - This report is prepared by the supervisor of the area where the equipment is located.

C. FREQUENCY

- (1) Incident - Incidents should be reported to the Safety Officer within 48 hours of their occurrence.
- (2) Quarterly - A summary report should be reported to the safety committee by the Safety Officer on a quarterly basis.
- (3) Annually - An effectiveness review of the entire program should be reported to the Governing body by the Safety Officer on an annual basis.

D. FORMAT

The following format should be followed to assist in preparing a comprehensive report.

- (1) Findings - A summary of the data collected and of any trends identified. For example, report the percentage of completion for PM and note if it has decreased since the last reporting period.

INDIAN HEALTH SERVICE
DIVISION OF FACILITIES AND ENVIRONMENTAL ENGINEERING
FACILITIES ENGINEERING OPERATIONS MANUAL
PART 11 - EQUIPMENT MANAGEMENT

- (2) Opportunities for Improvement - Identify trends or incidents which indicate a recurring problem which should be addressed. This may also include incidents which warn of impending problems.
- (3) Conclusions and Recommendations - Determine what needs to be done as a result of the findings. Identify causes or suspected causes of problems. Identify specific actions to be taken to resolve problems. Identify actions that can be done within the department as well as actions which may require upper management involvement.
- (4) Actions Taken - Describe actions which have been recommended and/or taken since the last reporting period.
- (5) Results - This section should be used to follow up on all unresolved problems identified in previous reports. Additional actions may be recommended in this section if previous actions have not been effective.
- (6) Responsible Official - State the name and title of the individual(s) responsible for the actions to be implemented to correct the identified deficiency.
- (7) Follow-Up Action - State the date and name of individual that the safety committee designates to monitor the recommended corrective action. A written follow-up report will be made to the safety committee.