SECTION THREE

SPARES

Section Contents

3.1 INTRODUCTION

3.1.1 Categories

Within the context of this manual spares are deemed to be the replacement components required during the normal life of the installation due to wear or failure.

Spares can be divided into two primary categories, those to be carried "in house" at all times, and those to be bought as and when the need arises. These will be termed "held" and "non-held" spares respectively.

3.1.2 Holding Requirements

The demarcation between "held" and "non-held" spares depends on a great number of factors including management and capital investment policy, budgetary constraints, availability, service priorities, etc. Therefore, it is outside the scope of this manual to give a precise list of spares.

Furthermore, as previously stated, one of the main needs for spares will arise through component failure which cannot be forecasted.

Due to these reasons, this section can only give advice and guidance to assist in the formulation of a spares policy.

3.1.3 Policy Determination

In order to ensure the rationalisation of spares and hence the successful operation and maintenance of the plant, a policy on spares should be immediately formulated. The objects of this policy should be to determine:-

The range of spares to be "held".

The stock level of each item of "held" spares.

The procedure for ordering, storing and recording spares.

A list of suppliers of "held" spares.

A list of suppliers of "non-held" spares.

The above points are dealt with in the following sub-sections.

3.2 POLICY FORMULATION

3.2.1 Manufacturers' Recommendations

Manufacturers' recommendations give a good guide when forming a "held" spares list. In the company manual volume - "Manufacturers' Technical Literature" - will be found spares quotations from the various manufacturers. These were provided in response to enquiries sent to each of them for a quotation for replacement parts giving prices (current at the time of quoting), part numbers and availability under the following categories:-

Consumables (belts, bearings, filters, seals, chemicals, etc). - in sufficient estimated quantities for two years plant operation.

Critical replacements - extended delivery or low cost items deemed necessary to be carried to ensure quick rectification after malfunction.

Non-critical replacement - items normally readily available or of non-critical nature and therefore deemed not necessary to be carried.

Accompanying these should be found general details of their service and spares facilities, local stockists and details required by them when ordering, this information also having been requested with the enquiries.

The response achieved by each manufacturer to these requests can be seen and used to judge the interest each shows in offering a back-up service for his equipment. This in turn can be used to judge whether a manufacturer can be relied upon to deal promptly with a request for spares.

3.2.2 Criteria

The formation of a "held" spares list depends upon the careful weighing together of many considerations, some of which are discussed in the following sub-sections:-

Capital Cost

This is probably the most influencial factor in the decision. Spares lying on shelves ties up capital which otherwise could be earning interest. This is possibly offset to some extent by the fact that the market cost of each item is always increasing but

Capital Cost Contd..

nevertheless the question must be asked - could the capital represented by the "held" spares be put to better us? A further aspect is the total of capital that can be allocated for "held" spares.

Low Cost Items

Such items as fuses, bulbs, washers, etc. due to the low capital outlay they require, should be included within the "held" spares list even though they perhaps are not considered vital items or are readily obtainable from "the shop around the corner". As is generally the case if you have not got them, you can almost guarantee that when they are needed it will be just after your local supplier has closed prior to a Bank Holiday weekend.

Wear or Failure

A differentiation must be made between items which have to be replaced due to wear and those due to failure on the assumption that through good preventive maintenance no failures will occur due to wear.

As a general basis wear items (bearings, belts, etc) should take preference over items to cover failure, although there are some critical items, see below, which can be considered as exceptions to this.

Critical Items

In certain instances the possible cost implications in losing a plant or system due to failure can more than outweight the cost of holding the associated spares (e.g. the loss of a computer facility due to the failure of the air conditioning plant). In such an instance, a comparison must be made between the availability of the spares (see below) and the "down-time" cost implication.

Availability

Availability is an important factor in the decision. Consideration should not only be given as to whether an item is held in stock by a supplier or manufacturers but also what delivery facilities can be offered. Will the item be delivered by a courier service or will it be put in the hands of one of our nationalised delivery services?

Availability Contd..

The result could be the difference between hours and weeks.

Alternative Sources

Alternative sources should be sought for items quoted by manufacturers as being on extended deliveries. Often it is found that parts quoted by manufacturers are either to be a standard specification met by a number of other manufacturers (e.g. bearings), or are in turn bought in by the manufacturer from another manufacturer. This can also result in a cheaper alternative being found.

Sub-Contracted Maintenance

Where sub-contracted maintenance is employed, it should be ascertained what spares they carry in stock. Their advice should be sought with regard to "held" spares.

Shelf Life

Some items have a limited shelf like, and this should be considered when compiling a "held" spares list. Shelf like is often very dependant on the conditions in which the items are stored, and the manufacturers advice should always be followed in this respect.

3.2.3 General Spares Holding Guide

In order to assist in the formulation of a "held" spares list a guide to the types of spares that should be considered for the installation is given below. As will be seen, this list divides the spares into general cost levels, but does not take into consideration sub-contracted maintenance or particular requirements that might arise through any special usage to which the building might be part.

Low Budget

Filament Lamps
Fluorescent Tubes

Fuse Links - Selection to cover all types and ratings (3 of each minimum)
Indicating Lamps
Plug Tops

3.3 HOLDING SPARES

3.3.1 Quantities

The quantities in which various spares should be held is dependant on the number of components covered by each spare, the frequency at which it is likely to be required, the priority of the function it covers, its initial cost and its availability.

The more components covered by one item of spares, the greater the number that should be held, but be wary of the shelf like of the item.

The frequency at which it will be needed can be fairly easily estimated for wear items but not for items required to cover for failure. Only the light of experience can assist in the latter case. Either way, the frequency should be compared with the availability in making an analysis.

The initial cost of the item should be judged in respect to the priority of the function it covers and its availability.

3.3.2 Locations

Consideration must be given to the physical location of the spares, whether they are kept at a central point or local to their place of requirements, or a bit of both.

Centralised storing aids control of security, condition and stock levels, whereas local storage (i.e. spare relays in a control panel) helps speed the rectification work.

3.3.3 Conditions

In order to prevent deterioration, all spares must be stored in clean and dry conditions. Manufacturers' recommendations must be followed with respect to any special requirements that are required with regard to protection, stacking etc.

3.3.4 Stock Control

In order to ensure that the right spares are readily available, some method of stock control must be implemented. At the very minimum this must give a comprehensive record of all items stocked and used, together with a system to implement re-ordering when items reach their minimum stock level.