

1. SUMMARY

This project involves a comparative study of two statistical quality control techniques, namely the \bar{X} chart and the cumulative sum method.

The comparisons were carried out in the following ways :

- 1) Using different sample sizes.
- 2) Sample values with varying deviations between the desired process mean values and the actual process mean value.
- 3) Economic comparison of both methods at different sample size.

The following results were obtained :

- 1) Both the cusum and \bar{X} chart showed increasing sensitivity with increasing sample size.
- 2) The cusum method was able to detect changes from the desired process mean more quickly than the \bar{X} chart; but the reverse did not appear to be true for large changes.
- 3) The cost of quality control per unit produced increased with sample size for both cusum and

INTRODUCTION
 2.1 THE CONCEPT OF QUALITY CONTROL
 \bar{x} chart and for any given sample size the cost of quality control per unit produced for the cusum was greater than for the \bar{x} chart.

The quality of a product may be defined as the composite of those characteristics that differentiate individual units of a product, and have significance in determining the degree of acceptability of that unit by the purchaser. Or it may be defined simply as "degree of excellence". In this broad sense quality may be considered as a specification or set of specifications which are to be met within given tolerances or limits. Now, the level, or the excellence of the product may be compared with the average or mean level of quality required by the market, and not necessarily the highest quality regardless of cost, and so quality control may be defined as the maintenance of quality at levels and tolerances acceptable to the market while minimizing cost for the manufacturer.

Quality control is a function of two related activities in the production system that is the development of general and technical specifications for any product which is a complete sub system related primarily to the market place. The character of any goods or service is mainly determined by the needs of customers. Technical specifications, however, are determined at least in part by the availability and costs of processes and materials. Thus the first set of decisions relating to the control of quality are those of design.