"I am acknowledged to be the only man who still carries around a five-inch slide rule because you cannot stir a cup of tea with a calculator," said Tom Cutler, commercial engineering manager of Dowty Mining Equipment Ltd.

In 1979, Dowty Mining realised that if they wished to remain in a very competitive market place [illegible] their estimating department.

Initially, the company thought that a desk top calculator would be the answer to their problems. But they soon found out that nobody manufactured this type of equipment so they called in the experts from head office. Cutler explained his problem, requirements, the type of information his department would want and the experts were given the task of searching for the right computer.

With the success of the Dowty Group in the 1930s and during the Second World War in hydraulically operated undercarriages which pioneered the application of hydraulic power, opened the way to wide-scale use of hydraulic units for aircraft and industry manufactured within the group.

Dowty Mining was an offspring of developments pioneered after the war with the launching of the first Dowty hydraulic pit prop being patented in 1947 and production began that year. With its success this led to the introduction of a 'walking chock' an hydraulic roof support unit functioning in the same manner as the prop, but which could advance itself. Dowty Mining have now developed a complete range of powered supports which can cater for every condition encountered in longwall mining from seams as thin as 2' 2" to those 12' or more in thickness. Supports may have two, four, five or six legs, each support offering resistance to roof loading from 150 to 750 tons at yield. Such roof support installations have greatly increased the speed of coal-[illegible]ing machines and in this way [illegible] has been achieved.

The need to computerise, to have information at one's finger tips was vital and the search began in earnest for the right type of equipment to do the job.

THE SEARCH

After an initial selection process the main contenders were CMC, Digico, Rediffusion and ICL, as the Dowty Group are large ICL users, having three of their mainframes. Access to the computer had to be on a 24 hour basis — it had to be up and running when Cutler and his team needed the system. An estimator may come in at any hour and therefore would want to retrieve data immediately. At that time there was still a great deal of overtime being worked on a China contract and information was required sometimes far into the night.

It was quickly accepted that the answer was a stand-alone system and the short-listed manufacturers were approached [illegible] Rediffusion offered that little bit extra in terms of further development. They had an excellent support system and Dowty Mining liked what they saw, even though the equipment was more expensive. What Dowty Mining had to be doubly sure of was the fact that should the system 'crash' then an engineer would be on site, say, within 2/4 hours, although the estimators could continue their work manually.

TIME CRITICAL

As already mentioned, the company are in a very competitive business. It is therefore essential and vital that their quotations meet the set deadlines. All the work to be on the mini-computer would be in real time, there would be no batch update whatsoever — files had to be updated immediately. Working as they do in a time critical situation, there is no time for files to be updated overnight. When an estimator is looking at an assembly he is actually looking at his live file and when he accesses any record he is actually altering the real-time database. The estimators are only the first link in the chain giving the works costs. After that the commercial people have to decide at what price to sell, and therefore it is crucial that people need time to do their homework.

PROGRAM PLANNING

Before the R850 was installed in 1979, estimating had been done manually. The computer was to act as an aid and not a [illegible] system. The estimating manual method had been perfected over 20 years and they had built up a system of manufacturing estimates which they considered to be second to none.

When Kevin Poole (who has now left the Dowty Group) was assigned as Project Analyst he assured the estimators that he had not come to change their concept of estimating. Here was a well tried and tested system carefully built up over the years and from his view it was pretty sound and a good basis from which to create a computer system tailor made for them. It meant that the estimators did not need extensive training in this new area of technology, but it was important to remember that the applications had to be easy to understand. One problem was that an estimator was not keying in details from a 'standard sized' computerised input document, the information would come from a drawing which may be 4' long and 3' wide which he would study in [illegible] build the component, which when finalised produces rates, prices, factors — the magic answers. It was also important to take into consideration the age range of the estimating department. The younger members would naturally streak ahead and learn new tricks but how does one bring the chaps with the slide rule into the computer age? Much thought and planning was done before any programs were written. Poole held meetings with Cutler and his staff to discuss the best way of achieving the results they required. Ideas were carefully discussed and considered. The R850 had to store good clean data which the estimators could quickly retrieve at will. They did not want to spend hours/days searching around for information.

Poole commented. "The danger of going into any department and computerising it without giving it very deep thought is obvious — chaos and a loss of valuable existing expertise. It is fine to automate, to have a robotic estimator who does nothing more than press a button and then to let the computer do the work, but knowledge, expertise and experience must not be lost in the process."

He continued: "The R850 had to be a system which would not upset them and which would not change their working methods significantly. Any drastic improvements to their existing system simply to make programming easier would be all very well for me, but Cutler's workforce would have suffered as a result." Consequently, after these in-depth discussions the estimating department now has a [illegible] to use system, [illegible] creation.

A most important factor which also had to be taken into account was costs — paying for a systems analyst and programmer. Cutler had a budget to adhere to and having paid for his hardware his next big headache was programming costs. Specialists are expensive and usually at the end of the day, more expensive than hardware. But because the Rediffusion language is Editor and is similar to COBOL, as an ICL user the Dowty Group computer