MCM/800 AND APL GAIN ACCEPTANCE IN INSURANCE APPLICATIONS AT CROWN LIFE

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CASE HISTORY No. 1

Using APL to solve actuarial problems has been recognized as an extremely beneficial tool in handling many of the cumbersome manual calculations often encountered in this field. APL has been useful in handling a class of problems too large to do manually, but too small for a large computer. It is used by many actuaries because it is easy for a user to learn and apply to his particular problem, and because it is more flexible than some other computer languages.

The Search

At Crown Life we conducted an evaluation of APL and minicomputers from two suppliers to determine the effectiveness of APL and which minicomputer would best meet our requirements. Initially, we justified the need for a small computer for actuarial applications alone, but since we installed the equipment, a number of users from other application areas have learned to use the system, and have come to appreciate the benefits of APL.

Among the features we looked for in our evaluation were:

- ☐ a system being used by other actuaries
- ☐ good file handling ability
- ☐ communication with Datacrown time-sharing system support - hardware and software
- ☐ ease of use
- ☐ actuarial application program

APL is available from a number of different sources, including time-sharing, on service bureau computers, and on some large in-house computer systems. However, the minicomputer approach seems to offer a number of additional benefits in our operation.

We began our evaluation of minicomputers while still examining other methods of acquiring an APL capability, in the spring of 1976. At that time, Micro Computer Machines, Inc. had a basic APL machine – the MCM/700, but were developing a faster model – the MCM/800, which would cost approximately the same and be compatible from a software standpoint with the earlier model.

In evaluating the features of the MCM/800, when it became available, we concluded that one of the major advantages of this minicomputer was that its cost was about two-thirds that of equivalent configuration from another supplier. Cost of maintenance and its capability to act as a time-sharing terminal to Datacrown, our computer service subsidiary company, for storage and retrieval of data, were also attractive. As well, a significant operational feature on which the MCM/800 rated considerably better than the other minicomputer, was file handling, because of the availability of a direct access diskette system as an add-on option. The competing system uses cassette storage and sequential, rather than random access.

Based on our analysis, we ordered an MCM/800 system with a printer/plotter and a dual diskette, which was delivered in the fall of 1976.

Applications

Over the past several months, a number of users have learned to operate the MCM/800. The applications in which it has been used include the following:

- ☐ research on deficiency reserves for Yearly Renewable Term insurance for California and Texas insurance regulations
- ☐ group sales commissions reports
- ☐ Karup King interpolation for new dividend scales
- ☐ contingent term life
- ☐ transfer of mortality tables from Datacrown via time-sharing

- ☐ cash value for different plans
- ☐ calculation of substandard premiums
- ☐ underwriting decisions study

Roger Lumsden, Manager, Actuarial Valuation, found that using APL on the MCM minicomputer saved approximately one week over manual calculations in making deficiency reserve calculations required to respond to state regulatory requirements for yearly renewable term in California and Texas. A program was written to satisfy the California requirements and minor changes enabled it to be used for the Texas calculations.

Jack Watts, in group sales, has been able to use the MCM/800 in calculating claim information, including a lag study, for the State of Illinois life insurance case. As well, a program to calculate group salesman bonuses, relatively complex manual calculations, has been developed. He finds the immediate response available from the minicomputer a distinct advantage and has used it for a number of other one-shot tasks requiring manipulation of data.

In actuarial research, John Dark has used the Karup King interpolation to establish new dividend rates for the U.S., Canada and the West Indies. In addition to this application, he has also been able to modify dividend rates for a new insurance product to bring the rates in line with other Crown Life policies. In both applications, the required programming was performed quickly and easily, the output from the minicomputer was in a tabular format which could be used directly as a coding form to prepare punched cards. The punched cards were used to place the data into Datacrown files for future use. John found the minicomputer particularly beneficial in providing data – rate tables, etc., for use in calculating interest rate changes on annuities. As he described it, "we have saved many hours of labour in these areas by using the MCM/800 rather than our time-sharing service".

The calculation of sub-standard premiums and preparation of standardized data for an insurance industry underwriting study are two of the major applications undertaken by **Dave Burry of Group Underwriting** on the MCM/800. With very little programming background, he designed a program to convert rate book premiums to sub-standard premiums for the guaranteed issue policies. In the second application area, Dave uses the minicomputer to standardize underwriting data from all insurance companies, and has found this method to be considerably faster than manual techniques.

Our experience to date on MCM/800 has been quite satisfactory. We have had a few hardware problems, which were rectified, and we have been working with the company to modify its communications software for using the computer as a terminal. Although the minicomputer demonstrated its capability to function as time-sharing terminal to Datacrown, we have requested that the supplier modify the communications software to make this communication faster and more efficient.

Users have been able to make some dramatic comparisons between manual and computerized problem-solving. One task in policy accounting which took about one day manually, was completed in about 45 minutes. In another comparison, commutation functions for reserves for contingent lives were calculated in ten minutes whereas manually it would take two days.

Using APL on the MCM/800 has proven that the class of actuarial problems mentioned earlier, involving data manipulation can be handled in the time frame required. As well, APL has demonstrated particularly its capability to handle many other problems in an interactive manner, particularly where strings of data must be manipulated.

Although the system has been cost-justified on the basis of being a useful tool in an actuarial environment, other applications have quickly been put on the system, as its capabilities have become known.

As user comments indicate, the MCM/800 has been well received, with the number of users increasing, as the advantages of using it for routine calculations are appreciated by more and more staff members.