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| ITEM | 10 |
| MANAGER'S REPORT NO. | 60 |
| COUNCIL MEETING | Sept. 27/76 |

Re: DATA PROCESSING

Following is a report on data processing from the Municipal Treasurer.

RECOMMENDATION:

1. THAT the Treasurer's recommendations be adopted.

* * * *

TO: MUNICIPAL MANAGER

23 September 1976

FROM: MUNICIPAL TREASURER

File: D1-1

RE: DATA PROCESSING

In November 1966 the Corporation put into service an I.B.M. 16K Model 20 card oriented computer, and in January 1972 upgraded the equipment by the addition of tape and disk drives. The installation was upgraded further in June 1974 by adding 16K in core storage.

Initially, I.B.M. had available to municipalities a purchase plan whereby for the value of approximately five years in rentals, the computer could be purchased. As it happened, we found a further savings by financing through our bank. Periphery equipment such as key punches, verifiers and sorters were not subject to purchase and have continued to be rented. As it appeared that the equipment would be in service for at least five years, the purchase route seemed to be the way to go.

Payments on the multi-function input machine and the printer have long since been completed. Payments on the central processor end 31 January 1977, and on the additional core storage, 1 August 1979. From this point onwards, we may expect to pay approximately \$6,931 annually for maintenance and \$14,638 for periphery equipment rentals.

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The equipment has operated satisfactorily over the years, and if it were not for several problems that have occurred, we should be able to look forward to many years of low cost operation.

One problem is that we have a configuration of equipment that is unique - no similar installation being in operation in B.C. There is one, however, in Seattle. This means that in the event of serious breakdown, we have no nearby backup.

A second problem is that in this generation of computers a considerable amount of staff time must be taken in the maintenance of existing computer programs and the creation of new ones. This is costly and because of the workload we are finding it difficult to produce new programs as quickly as we would like to.

A third problem is that this generation of computers is staff intensive and particularly so with us because of the large number of applications being processed. The staff complement is 14.

During the past five years, a new generation of computers has come into being. Instead of three or four brands of equipment being available to small users, there are now many more. This came about because of the development of relatively cheap core storage, enabling the manufacturers to build powerful computers of compact size - much smaller than the second generation series. This has enabled the manufacturers to create equipment that will do the work of hitherto very expensive installations and at reasonable cost to users. This interests us very much. It offers resolution to the problems outlined above and may make it possible to introduce improvements in paper handling in many areas of our operations.

One outstanding development is the improvement of the "on line" system - a system that has been available for many many years but at high cost. An "on line" system is one where users communicate directly with a computer by means of terminals. It takes input directly and does not require material to be "batched" and sent to a data centre for keypunching before entry into the computer. Full "on line" systems and "batch" systems with on line capabilities are now available at reasonable cost.

An "on line" system is in operation in the District of Surrey. The maintenance programming problems referred to earlier have been lessened to a startling degree. The data processing staff complement has been reduced from 18 to 5. Staff reductions in line departments have also occurred.

Surrey has spent some half million dollars in development. Much of the work performed by their computer is similar to that of other municipalities. As a consequence, portions of the Surrey system are being adapted to the requirements of several other municipalities in this Province - at a cost, of course.

Surrey developed this system jointly with Boeing Computer Services Canada Ltd. The equipment in use in Surrey is manufactured by the T.W.R. Ltd. which took no part in the systems development.

The best way to determine whether or not the Surrey system would be useful to Burnaby would be to engage Boeing Computer Services Canada Ltd. to make a comparison between the applications in use in Surrey and those in use in Burnaby, and to determine the costs involved in purchasing systems from Surrey, in adapting systems from Surrey and in the reprogramming required to perform those operations not in use in Surrey. To this end, the attached letter was sent to Boeing Computer Services Canada Ltd. Their reply is attached.

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At the same time, other computer systems should be examined. I.B.M., Univac and other interested companies should be invited to make their presentations.

Surrey's estimated data processing costs for 1976 are \$290,000 in comparison with Burnaby's \$344,000 (which, of course, will be reduced as computer purchase payment periods cease). Surrey's projected costs for the continuance in service of the old system were \$600,000. From these figures it would appear that after startup costs still to be determined, it should be possible for Burnaby to acquire a new computer and the benefits expected to result therefrom at little additional annual cost than currently is incurred.

Boeing Computer Services Canada Ltd.'s estimated consulting fee is \$3,000. We have a budget provision of \$6,000. As and when Boeing's report is received, together with the submissions from machine suppliers, it may become necessary to engage a consultant to assist us in their evaluation, particularly in view of the fact that there are a number of interesting developments in the computer field being developed in other municipalities.

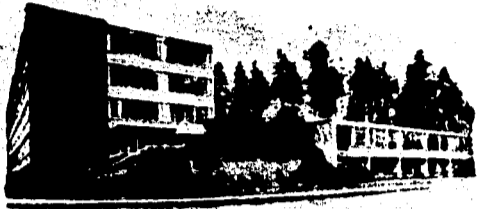
RECOMMENDATIONS

1. THAT Boeing Computer Services Canada Ltd. be engaged at an approximate fee of \$3,000 to perform the services outlined in their letter of 17 September 1976; and
2. THAT the several computer suppliers be invited to make proposals without obligation to the Municipality; and
3. THAT these proposals and the presentation of Boeing Computer Services Canada Ltd. be analysed by the Municipal Treasurer; and
4. THAT a further report be made to Council in due course.

Bas M. J. H.
MUNICIPAL TREASURER

BM:gw
Attach.

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THE CORPORATION OF THE DISTRICT OF BURNABY

TREASURY DEPARTMENT

MUNICIPAL HALL
4949 CANADA WAY
BURNABY B.C. V5G 1M2
TELEPHONE 294-7361

PLEASE ADDRESS REPLY TO THE
MUNICIPAL TREASURER FOR THE
ATTENTION OF:

9 September 1976
File: D1-1

Mr. Norman Song
Executive Vice-President
Boeing Computer Services Canada Ltd.
134 Abbott Street
Vancouver, B.C.

Dear Sir:

We are interested in engaging your company to make a study of the feasibility of introducing an EDP on-line system in Burnaby. Particularly we are interested in knowing how Surrey's system can be adapted to Burnaby's requirements with the resultant reduction in software costs.

We have prepared terms of reference which we ask you to examine and to then submit an estimate of your fee to perform the examination.

We would also like to inform you that we will be having other companies examining our present operations, and they will be coming forward with their own proposals. You will not be asked to comment on these proposals.

We would appreciate your prompt attention to this since we would like to have your report completed by 15 October 1976.

Yours truly,

H. B. Karras, C.A.
DEPUTY MUNICIPAL TREASURER

HBK:gw
Attach.

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TERMS OF REFERENCE TO ENGAGE BOEING COMPUTER SERVICES CANADA LTD.

An examination should be made of the EDP applications in use in Surrey and the EDP applications in use in Burnaby and a report prepared by a person or persons having adequate technical training and proficiency in data processing on-line systems, with due care and with an objective state of mind.

The report should contain an expression of opinion on the following:

1. Which of Surrey's EDP applications can be used in Burnaby without modification of the program? What is the cost of the program?
2. Which of Surrey's EDP applications can be used by Burnaby with some program modification? What is the cost of the program? What is the cost of making the modifications to the program?
3. Which of Burnaby's EDP applications must be reprogrammed entirely because Surrey does not have similar or suitable applications? What is the cost of preparing those programs?
4. In order to make use of Surrey's EDP programs, and such other additional programs as Burnaby may require, what configuration of EDP equipment is required by Burnaby? What is the estimated annual rental of that equipment? What is the estimated annual cost of staffing (programmers, machine operators, keypunch operators) for such an EDP installation?

In answering this question, consideration should be given to the most suitable equipment available on the market, which may, or may not be, Data Point.

Your report should be submitted to the Municipal Treasurer, Corporation of the District of Burnaby, not later than 15 October 1976.

It is understood and agreed that the cost of preparing this report shall be on a "Time" basis and shall, in any case, not exceed \$

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BOEING COMPUTER SERVICES CANADA, LTD. THE CONSULTING DIVISION
3RD FLOOR, 134 ABBOTT STREET, VANCOUVER, BRITISH COLUMBIA V6B 2K4
(604) 688-2266

September 17, 1976

RE: YOUR FILE D1-1

Mr. H.B. Karras, C.A.
Deputy Municipal Treasurer
The Corporation of The District
of Burnaby
4949 Canada Way
Burnaby, B.C.
V5G 1M2

Dear Mr. Karras:

Thank you for inviting us to submit an estimate of fees for carrying out the work detailed in our Terms of Reference.

In order for us to express our opinion on the four matters detailed, we intend to proceed as follows:

1. Gather and classify the existing Burnaby applications and compare these with the Surrey's system modules.
2. Interview selected major users of the existing datacentre resources.
3. Determine applications which have to be custom-developed for Burnaby, and estimate the cost of such development.
4. Analyse the suitability of the TRW Datapoint computer to Burnaby requirements which are not included in the Surrey system.
5. Determine specific modifications required in the Surrey system to meet Burnaby's requirements and estimate cost of such modifications.
6. Consider alternative on-line mini-computer makes and configurations.

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2.

7. Estimate the annual operating cost (rental and staff) for the recommended installation.
8. Review with you our preliminary findings by October 6, 1976.
9. Submit our report to the Municipal Treasurer not later than October 15, 1976.

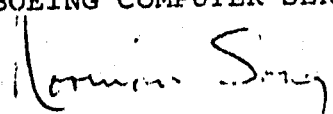
Our report will address each of the specific questions asked in the Terms of Reference.

Our fee for the foregoing work is estimated at \$3,000.00. Out-of-pocket fees will be billed at cost. Should we be able to accomplish the assignment in fewer hours than estimated, a proportionate reduction will be made.

The assignment will be carried out by Greg Flett (who developed a number of major modules of the Surrey system) under the direction of Brian Mullen, Regional Manager, Consulting. Both are well qualified and experienced in on-line systems. We will make Mr. Flett available to commence the assignment upon receiving your instructions to proceed.

We trust the foregoing meets with your request and look forward to working with you. Should you have any questions on the above, please call the writer or Mr. Mullen.

Yours very truly,
BOEING COMPUTER SERVICES CANADA, LTD.


Norman Song
Executive Vice-President

NS:dg

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Brian C. Mullen, M.Sc.

Mr. Mullen completed a M.Sc. in Theoretical Physics at the University of British Columbia in May 1968. The next 20 months were spent travelling extensively in Europe and teaching in Harrow, England.

In January 1970, Mr. Mullen joined Canadian General Electric Information Services Department as a Time-Sharing Applications Specialist in Edmonton, Alberta. In October 1970, Mr. Mullen was promoted to Account Representative in Vancouver. His accounts included B.C. Tel, B.C. Hydro, MacMillan Bloedel, and C.P. Air. In November 1971, Mr. Mullen became Western Regional Database Specialist with responsibility for providing technical and marketing support for database applications in Vancouver, Calgary, and Edmonton.

In June 1972, Mr. Mullen joined MacMillan Bloedel Limited as a systems analyst with responsibility for designing and implementing on-line business systems on a PDP-11. A Purchasing System developed by Mr. Mullen cut clerical effort to produce Purchase Orders from requisitions by 75% and included 12 modified teletype terminals in supplier offices for direct daily transmission of orders from MacMillan Bloedel.

Mr. Mullen also designed and initiated implementation of an on-line financial system for Canadian Transport Ltd., MacMillan Bloedel's shipping subsidiary.

In January 1974, Mr. Mullen was promoted to Systems Supervisor in the Building Materials Group to act as co-ordinator for a large on-line Sales Information System. The system was being implemented on an IBM 370/145 using ADABAS as a database Management System and involved a project team of eight programmer analysts.

In July 1975, Mr. Mullen joined BCS Canada Ltd. as a consultant. He has completed several assignments including Feasibility studies, systems design and hardware and software evaluation mainly in the area of mini-computers.

Mr. Mullen's expertise include systems design, project management, business modeling, and human considerations in using on-line computer terminals.

Gregory A. Flett, B.Sc.

Mr. Flett graduated from the University of British Columbia with a Bachelor of Science in Mathematics in 1968.

Upon graduation, Greg joined Amoco Canada Petroleum Corporation as a programmer/analyst. His accomplishments included exploration simulation and a user-oriented plotting package. He acted as the interface for OS RJE and DOS plotting applications, and assisted in the training program for new programmers.

In May of 1971, Greg returned to Vancouver as the senior programmer for Crown Zellerbach Canada Ltd. He became their first technical support analyst and was responsible for Operations' performance and its interface with Systems Development. Specific duties were applications support, system generation, hardware/software evaluations and standards development. His chief projects were implementing a key-to-disk conversion, and a disk conversion of all systems which included new scheduling, library and operational procedures.

In late 1973, he accepted a Systems Analyst position responsible for application system upgrades as the contact person for all CZ divisions. Functions included feasibility and cost studies, divisional and datacentre seminars, and supervision of five programmers.

Greg joined BCSC in May 1975 as a programmer/analyst, bringing a blend of technical expertise and general experience in most commercial applications.

APPLICATIONS

Payroll
 Accounts Payable
 Accounts Receivable
 Inventory

HARDWARE

IBM 360/30
 IBM 360/40
 IBM 360/65

SOFTWARE

OS and DOS JCL
 COBOL
 FORTRAN
 PL/I
 ASSEMBLER
 VANDL-1 database
 CALCOMP plotting
 Databus

Municipal Systems

Datapoint 5500