APPLICATION AND EVOLUTION OF SAS* SOFTWARE AND SAS/FSP* SOFTWARE
IN A PERSONNEL ENVIRONMENT

Michael J. Hans, Valero Energy Corporation

Abstract

This paper describes the application of SAS software in a personnel division of a 2000 employee energy corporation. Base SAS software was first introduced into the personnel department in 1981 to provide simple ad hoc reports of HAY job evaluation for compensation. Almost immediately, the flexibility and versatility of SAS software allowed it to be used, in conjunction with the payroll software package, as a self-contained personnel system to support not only all areas of personnel but also other divisions of the corporation. Explanation is given concerning the personnel system design, the SAS software data sets, and SAS software procedures used. The paper also examines the reports typically produced, and the benefits gained by establishing an independent personnel system using SAS software.

Introduction

The Personnel function at Valero Energy Corporation is a traditional collection of diverse personnel support activities. Our personnel function has grown over the past decade into a highly professional activity, comparable to other personnel functions at major corporations. In addition to Employment, Compensation, and Benefits support for our 2000 employees, our personnel responsibilities also cover Payroll, Manpower Utilization, Employee Training, and most recently, Human Resource Systems.

Personnel Information And Personnel

Each of these areas is responsible for collecting and reporting on large amounts of data, and often depends on the flow of information from one personnel area to another. Each month changes in personnel practices generate new report requirements or create changes in existing reports. In addition, a simple change in one area can impact several areas causing reports to become obsolete.

The need for advanced and timely computer support in personnel has paralleled the changes in payroll from clerical tracking to independent payroll software packages, and reflects the creativity and complexity in compensation from simple base pay plans to flexible benefits with pre-tax deduction. Personnel is no longer clerical processing of pay checks, no longer simple salary grades, and no longer single benefits plans. We now have flexible cafeteria-style benefit plans, complex job evaluation procedures, and pay checks with deferred pay and pre-tax deductions. Our use of SAS software in conjunction with the payroll software package and other data sources allows us to meet our personnel computer support requirements.

Personnel Information And The Corporation

In a similar manner personnel information is required by many different areas of our corporation in addition to the traditional areas of Compensation, Benefits, and Payroll: driver's license information for Security; demographic and EEO information for Legal; mailing labels and other mailing information for the Credit Union and Employee Publications; longevity information for service awards; employee dependent information for the wives' club; turnover and overtime information to all the operating sections; and cross references of various employee numbers and codes.

This sample listing of external requests for personnel data reinforces the need for quick and accurate personnel information, and indicates the growth of personnel computer support to the corporation. It also highlights the requirements for confidentiality in a personnel system.

Confidentiality

In almost every aspect of personnel there is a need for confidentiality. Information dealing with employees' pay, EEO classification, beneficiary information, succession planning, recruitment goals, and reductions in force, require utmost confidentiality. Using SAS software in our personnel environment, we have designed a decentralized user computer function. This decentralized function gives our personnel systems specialists complete access to payroll and other personnel data and all the programming capabilities of SAS software. Taking advantage of this combination, our personnel systems specialists, using SAS
programming capabilities and decentralized access to payroll data, are able to provide personnel information to the corporation while ensuring the confidentiality of both the data and the personnel projects.

History and Evolution

The evolution of our SAS software personnel system has been occurring over a period of four years. Base SAS software was first introduced by our Data Processing section to the personnel function specifically to help Compensation with job evaluation using the HAY Guide Chart Profile Method. Four data sets were established and pre-written SAS programs produced the job evaluation reports. This was the initial limit of the personnel system.

However, using the 1979 SAS Introductory, Applications, and User’s Guides we in personnel took the initiative and expanded our data base, our source data access, and our programming capabilities to other computer master files and tapes and support applications. Currently, two Human Resource Specialists, one knowledgeable in personnel with computer experience, the other knowledgeable in computers, design and maintain personnel computer support for the entire corporation. We now use base SAS software to accomplish all of our personnel data support requirements. All new programming applications are written in SAS software, and current computer personnel production jobs, written in COBOL, are being revised and rewritten in SAS software and maintained by the personnel systems specialists.

Personnel System Design

The design of our personnel system is simple. In general, the components consist of an independent payroll software package; personnel data from benefits consultants; internal personnel data; base SAS software for data set maintenance, comprehensive analysis and reporting, and advance level data analysis; and SAS/FSP software for data entry and inquiry. We use SAS software in TSO/ISPF on an IBM 3090 with MVS/KA as the base operating system. Our security package is ACF2. The sources of our data are our payroll package, benefits tapes, and internal personnel data. Using base SAS software, we create and update SAS data bases capturing pertinent personnel and payroll information from these various sources. We then use SAS software for data set maintenance, comprehensive data analysis and reporting, and for advanced SAS statistical analysis. We use SAS/FSP software for data entry of our internal training and pension data and for occasional data inquiry into all our SAS data sets.

Detail Design

Our SAS files have grown from the original four and now include: payroll information; HAY job evaluation information; training data and retiree information, both entered and maintained by SAS/FSP software; benefits files with employee and dependent data; end of month files; and end of year files. These files comprise the personnel SAS data base, and are all used separately or in combination to produce our reports.

We employ the output sophistication of base SAS software to produce reports which take the form of hardcopy computer paper, laser printing on typing paper, tapes for consultants to use, tapes for microfiche production, and electronic copy for viewing through computer terminals.

With the 1982 edition of base SAS software, we upgraded and enhanced our reports making use of the proc format, macro, %let, and the proc tabulate. By using the format procedure for value labeling of organizational structure and job title, we have eliminated these two original SAS data files. Instead of maintaining a file on the organizational number and the description, we set up the format and use the value label for decoding the organizational code. Similarly, proc format is used to decode the title of the job from the job number. These and other enhancements have been most useful both in streamlining our system design and in producing professional reports.

In the meantime, we continue to use the original SAS code set up by the computer department to execute our Hay job evaluation and merit pay processing. This four year old code, using file - put for the report layout, is still meeting our needs.

SAS/FSP Software

The addition of SAS/FSP software has added a new dimension to personnel computer support. Local data entry of our internal personnel data and inquiry of confidential personnel information is simple and quick using SAS/FSP software. Initially, to accomplish data entry, we directly edited TSO data sets. These TSO data sets were then read into SAS programs and reports produced. Now with SAS/FSP software any staff member can enter the data directly into the SAS data file. Entering data through SAS/FSP software takes full advantage of the data entry edits and allows the operator to see all the data elements on pre-formated screens.
Detail Application

The production reports we run each pay cycle make creative use of SAS coding statements and procedures which have been available to us in the 1979 edition of base SAS software. By using such common SAS statements and procedures as: substrate, input, file - put, do - end, if - then, retain, label, proc sort, merge, first, and last, variable, date formats, rename, proc print, cards, trailing @, and data null, we accomplish the majority of our programming objectives. Our production reports include: employment population count, payroll reports, turnover analysis, mailing labels, salary listings, and monthly new hired analysis. We perform all our benefits calculations for the 415 test for equity in pre-tax contributions by the upper third and lower two-thirds of the employees.

We also generate information for payroll to use in determining if the update or classifications entered into the payroll software package were coded correctly. Only providing feedback to the payroll section, base SAS software serves an additional purpose of replacing the very limited report writer that is included with our payroll software package.

Taking Credit For Our Work

An important aspect of our job is taking credit for our work. We include a 'by-line', using a %let macro and title statement, on all our reports. The by-line (This Report Was Prepared By Personnel Management Information Services) tells the user that the information that they have in their hands is a computer generated report produced by personnel. This procedure is our personal way of signing a computer printout, and it eliminates confusion concerning the origin of the analysis. Questions from the users of the reports concerning computations or selection criteria can be quickly addressed to us. I recommend that a by-line be used by all SAS software users, if possible, to recognize and reward the work done by the computer specialists.

Documentation

Our concept of documentation has two additional aspects to complement formal written documentation. By having a self-contained personnel system to support our requirements, we view as documentation: 1) comments and labels in the SAS code, 2) the knowledge and familiarity of the personnel system specialists with the requirements, coding, and reports, and 3) the actual formal written documentation.

Because base SAS code is relatively self-explanatory, we have decided to use comments and labels within the programs as extensive informal documentation. This documentation of the program is done as the SAS code is being written. We try to state the obvious, which as time passes is not always so obvious. We place the reason and general comments at the beginning of the program, and explain each step as the program progresses.

By having a self-contained SAS software personnel system, the knowledge and experience gained by the personnel specialist supplements the written documentation. Unlike those in the computer department, our analysts are continually involved with the design and implementation of the programs and understand the personnel requirements in addition to the programming specifications. Having this knowledge readily available is an important part of the documentation process and is extremely useful in changing and maintaining our systems.

There is no substitution for formal documentation, however. While documentation is enhanced through our SAS software personnel system design, we still require formal documentation on all our production jobs. Our formal documentation, though, is more useful to us because 1) we have control over our computer programs, 2) we have included informal comments in the programs, and 3) the SAS software specialist who designed the system is available to assist in any changes.

Future Plans

We are continuing with our plans to broaden computer support into all aspects of personnel. On the drawing board are system plans for applicant tracking, relocation cost tracking, and a position accounting system. Our plans call for the integration of base SAS software, SAS/FSP software, and the users on these new systems to bring the users more fully into the computer support process. We also are reviewing possible applications for SAS/Graph software in presenting analytical results to company executives.

We are using SAS software to bring advanced computer technology to the personnel function while decreasing clerical processing and at the same time increasing our reporting and data tracking capabilities.
Importance Of SAS Software And Our Personnel System Design

It has been our experience over the last four years that base SAS software is a reliable product, easy to use, and sophisticated enough to handle data analysis and file manipulation. We capitalized on these important aspects of SAS software and set up an independent confidential personnel system. We perform sophisticated programming and data analysis within our own personnel operation, ensuring speed and confidentiality, and direct interaction with the users.

Requestors feel confident to approach us with only a vague idea for a report. Together we determine the amount of time and degree of sophistication needed for the analysis and the report. We respond by producing the report while we remain ready for their changing requirements. By being able to communicate and move together, we help each other by saving time and utilizing labor and computer resources more efficiently.

Conclusion

There are many software packages on the market today. We started using SAS software and we like it because it does what we want it to do. By using SAS software in conjunction with our payroll software package and other personnel source data, we have created a versatile personnel system. We have: 1) moved the control of our production reports back to personnel. This keeps the knowledge of the computer programs near the people who use them and near the people charged with the design, implementation, and maintenance of the system. And 2) we can produce simple reports or perform complex analysis, while remaining flexible to requests for changes and modifications.

Our personnel system has helped to eliminate the fear of computers in personnel. By using SAS software as the main ingredient in this personnel system, we are giving our managers the personnel information that they need, when they need it. We are also advancing personnel as a professional activity by providing managers with computer technology skills to meet managerial objectives, and to manage human resources more effectively.

References


Notes

* SAS, SAS/FSP, and SAS/GRAPH are registered trademarks of SAS Institute Inc., Cary, N.C., USA

** ACF2 is a proprietary product developed and maintained by: SKK, Inc., 10400 West Higgins Road, Rosemont, Illinois.

Acknowledgments

The author expresses his gratitude to: Carol Athens, Kathy Hazelwood, and Kevin Murphy for their valuable comments and assistance in preparing this paper.

For further information contact Michael Hons at Valero Energy Corporation, 530 McCullough Avenue, San Antonio, TX 78215, 512-246-2462.