

VIRTUAL I.S. STAFF TO FILL I.S. STAFFING GAPS

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On January 1, 1983 ARCO Transportation Company's Information Services and Technology (or Systems) Department had a total authorized staff of 14 people to support four

operating units having a combined total of over 450 home office employees. That staff of 14 breaks down as follows:

14	
- 4	Department Managers and Secretary
10	
- 3	Operations Supervisor, Day and Swing Shift Operators
7	
- 4	Equivalent Analysts/Programmers engaged in maintaining a variety of production systems
3	Equivalent Analysts/Programmers available to develop new systems

On April 4, 1983 managers of the Systems Department met with the Transportation Company's Information Services Steering Committee to review prospective projects and set priorities. After thorough preparation and reasonable analysis efforts over 100 developmental projects were identified for consideration.

Clearly 100 projects is substantial, even though they had already been prioritized and evaluated on their merits before being presented. Yet, to address only the 15 or so high priority projects would require a development

staff of several times the equivalent of 3 available programmer/analysts.

A resource-vs.-demand gap such as this is probably not too unusual, and as those who have had the experience realize, maintaining creditability and providing service with a small staff can seem like an impossible challenge. This is especially true in today's environment of end users led to believe by television ads, computer salesmen and "Apple Lisa"-type computers that their needs will be increasingly met.

"OUR REMEDIES OFT IN OUR 'USERS' DO LIE"

A small twist on a line from Shakespeare (1564 - 1616) points to one of our approaches for dealing with the resource-vs.-demand gap at ARCO Transportation Company. The

approach is the development of a "Virtual" I.S. Staff. To provide insight into the magnitude of our efforts, a summary chart is presented in Figure RJETXT-1. It shows the number of

non-systems department personnel engaging in activities traditionally thought of as belonging to or being preformed by systems personnel. A brief elaboration on the scope and impact of our virtual I.S. Staff's activities follows.

BACKLOG REDUCTION

Our efforts to reduce systems development backlog have involved assembling and making available a variety of capabilities that end-users can use productively in developing their own applications. Currently these capabilities include:

On Our HP/3000

INFORM - A menu based, user oriented, ad-hoc report capability which is part of HP's RAPID/3000 database management package. With a minimum of instruction, INFORM allows users to select from an existing database any combination of records and fields desired and then to sort, create column totals, perform calculations, etc. as needed.

QEDIT - A powerful editing tool which is a product of Robelle Consultants QEDIT includes a word processor-like fullscreen editing feature with typical editing commands. It also has a very useful on-line foreground file execution capability referred to as "USE" files. By combining these capabilities with the HP/3000's system sorting and stream file utilities end-users with minimal training can develop and maintain some very effective list management, text manipulation and reporting tools.

SPREAD - A computerized worksheet capability that is a product of Account-A-Call Corporation and is marketed under the name Math/3000. "SPREAD" is very similar in design philosophy to the popular "Visicalc" software and basically allows an end-user to compose a worksheet with titles, headings, numeric input values, and most

usefully calculations. The capability is very straightforward to learn and combined with utilities developed by ARCO allows for performing consolidations printing publication quality reports, and providing documentation of calculations used in a particular model.

HP/3000 UTILITIES

- Capabilities such as the HP/3000's SORT utility and its facility for batch or STREAM file processing can be useful in list management applications. In particular stream files can be used to sort and select data routinely instead of using otherwise tedious interactive procedures.

On Our HP/125's

GRAPHICS - A highly end-user-oriented plotting capability that permits individuals with very little training to produce publication quality bar charts, pie charts, linear graphs and word slides. Original graphs can be produced using up to 8 pen styles and colors, and overhead transparencies can also be prepared.

VISICALC - A computerized worksheet capability that is marketed by HP. Visicalc is very similar to "SPREAD" described above. It is very straightforward to learn and Visicalc files can be interfaced with the HP/125's Graphics capability.

Use of these capabilities alone and in combination has permitted development of a wide variety of applications. These have ranged from simple list management, spread-sheet and text processing systems that might never have been attended to by systems personnel, to entire budgeting and monthly financial or ad hoc database reporting capabilities that now do not need to appear on our already long list of systems to be developed. A summary list of our current user-developed/controlled applications is provided in Figure RJETXT-2.

END-USER TRAINING

In order to; make user-oriented capabilities available, improve the computer literacy of our personnel, and provide as a byproduct what often is an important personnel development function, we have established an ongoing program of computer systems training. Designed to take prospective computer users and turn them into actual users, our offerings range from "Introduction to HP/3000" to advanced workshops where users learn to use utilities and packaged capabilities in combination. Current Information Systems training offerings are listed in Figure RJETXT-3.

The success of our training program can be seen in the statistics generated after two years of operation. Over 180 home office employees (over 40%) have voluntarily participated in a growing array of now 10 course/workshop offerings and have collectively rated their experience with an overall average 5.9 score on a scale of 1 poor to 7 excellent. However, the real test of effectiveness remains the growing list of user-developed applications such as those listed in Figure RJETXT-2.

It is of particular interest to note that seven courses or 70% of our training efforts are conducted by non-systems personnel who bring to their classes the creditability of being real users like their students.

USER DEVELOPED APPLICATIONS SUPPORT

One expected result of training new users in a variety of capabilities is their need for support. Our Systems Department lacks sufficient personnel for a dedicated staffing of user support. In fact, Systems Department staff have provided less than one half of one person in support of purely user-developed applications over the last 18 months. However, our virtual staff of I.S. instructors and I.S. Coordinators designated by major user groups, is contributing substantially to filling this gap. As might be expected, users turn first to those who trained them. Also, as developing expertise and office politics permit, users get assistance from their co-workers who know about and also use the capabilities they need help with.

SYSTEM MANAGEMENT

If users are truly the owners of their data and increasingly their production systems and applications in general, a final step in their use of systems capabilities is their participation in the management of those systems. Over last year

we have formalized a concept of user account managers and conducted a formal Account Manager's Workshop. As a part of the workshop current and prospective account managers were instructed in techniques for controlling access (creating new account log-ons, setting passwords, etc.), controlling space (creating account groups, managing files, etc.), and supporting processing efforts (e.g. understanding user defined commands (UDC's) stream file processing capabilities, and making formal requests of operations and systems development/maintenance personnel).

Along with the above functions, specific account manager responsibilities were discussed and formalized, including.

- o First line hardware/software support and problem resolution
- o Support of and participation in emergency planning
- o Periodic file review and purge to manage system disk space
- o Periodic security revisions and checks
- o Review, comment, and implementation support for policies and procedures related to account management.

Current and prospective user account managers give our HP/3000 System Manager a virtual operations staff that combined with operations personnel, makes up an impressive group of employees able, to quickly deal with and resolve problems and to respond to new requests. Our current user account manager assignments are shown with their respective types of accounts in Figure RJETXT-4.

UNEXPECTED BENIFITS

Our success in developing a Virtual I.S. Staff to help with backlog reduction, training, applications support and system management has had an unexpected additional benefit. It has given us an increasingly computer literate user group that understands our systems development resource constraints. The result is that our systems staff is free to focus on the development of major databases and accompanying maintenance systems. At the same time end-users now expect to provide ongoing data entry and updating functions for their systems while looking forward to meeting the majority of their reporting needs with user-oriented reporting capabilities.

I.S. Staffing Gaps Filled

Creation and recognition of a virtual I.S. staff has yielded for us what might be seen as an addition to our full-time information systems staff of roughly six to ten full-time persons. But more concretely what has occurred is a growing acknowledgement of the important role our users play in meeting their own information resource requirements.

At ARCO Transportation we are hopeful that a growing Virtual I.S. Staff is just realistically positioning our actual I.S. Staff. And in this position we hope to meet the challenges of providing information services in a world where users increasingly determine and respond to their own information needs. To draw again from another of Shakespear's intuitive lines:

"DIRECT NOT HIM WHOSE WAY HIMSELF WILL CHOOSE".

SUMMARY OF NON-SYSTEMS DEPARTMENT PERSONNEL ENGAGED IN SYSTEMS ACTIVITIES

	Involvement	
	Current 12-81 to 6-83	Prospective 12-81 to 12-83
BACKLOG REDUCTION	60*	90*
CONDUCTING END-USER TRAINING	7	9
END-USER TRAINING REPRESENTING	280 150	400* Participations 190* Individuals
USER DEVELOPED APPLICATIONS SUPPORT	7+	9+
SYSTEM/ACCOUNT MANAGEMENT	5	11

*The asterisked values represent rough estimates.

Note: In NO case do the above numbers of personnel indicate more than a part time involvement with the possible exception of user developed applications.

SUMMARY OF USER-DEVELOPED/CONTROLLED APPLICATIONS

	Calcs & Worksheets SPREAD/ VISICALC	Database Access INFORM	HP/125 GRAPHICS	HP/3000 Utilities SORT STREAM	Text Editing & Report- ing QEDIT
ACCTS PAYABLE(*)		X			
ACCOUNTING PROCEDURES					X

ADMINISTRATIVE DEPT. DETAIL BUDGET	X			X		X
AGENTS STATEMENTS (for ship"s operations)						X
ARCO MARINE INC. - Budget	X		X	X		X
- Monthly Financials	X		X	X		X
ATC CAPITAL ADMIN.	X			X		X
ATC MOVE SCHEDULE				X		X
AUTHORIZED APPROVERS GUIDE						X
COMMON CALENDAR				X		X
EMPLOYEE TRANSPORTATION SYSTEM(*)	X	X				X
FLEET STAFFING AND REPLACEMENT NOMINATION(*)		X				
FORMS CONTROL						X
	Calcs & Worksheets SPREAD/ VISICALC	Database Access INFORM	HP/125 GRAPHICS	HP/3000 Utilities SORT STREAM	Text Editing & Report- ing QEDIT	
INVENTORY(*)		X				
MATERIALS MANAGEMENT ACTION ITEMS				X		X
MEDICAL INVOICE SUMMARY	X					X
PAYROLL(*)		X				
PERSONNEL(*)		X				
PURCHASING(*)		X				
RIGHT-OF-WAY STATEMENTS	X					X
SHIPS MAINTENANCE CERTIFICATES				X		X
SYSTEM CHANGE REQUESTS				X		X
TELEPHONE DIRECTORY & EQUIPMENT ASSIGNMENT				X		X
TONNAGE BALANCES	X					X
TRAINING CLASSES & PARTICIPATION						X
TRANSPORTATION SURVEY ANALYSIS				X		X

UNITED WAY
SCHEDULE

X

X

VESSEL ACCOUNTING &
OPERATING STATISTICS(*)

X

(*) Applications Involving Production system databases

INFORMATION SYSTEMS TRAINING OFFERINGS

INTRODUCTION TO HP/3000

An introduction to computers in general and the HP/3000 system in particular. Introduces basic HP capabilities including creating and copying files, and sorting. Focuses on use of the system's QEDIT (word processor-like) capability. This course is a recommended prerequisite for all other HP/3000 courses.

ADVANCED QEDIT TECHNIQUES

For users of QEDIT and system utilities (e.g. sorting, SPREAD, INFORM, line printers, etc.) who would like to learn more about using QEDIT with these capabilities. New material and areas of concern or interest to the participants will be addressed. Making this an appropriate course to repeat. Recommended prerequisite: "Intro. to HP/3000".

LIST MANAGEMENT *** NEW ***

QEDIT techniques for managing lists or tables on the HP/3000, including setting tabs, updating, sorting, searching for specific items, selecting out specific items for reports, using printers, QEDIT "USE" files, and HP/3000 "stream" files. Recommended prerequisites: "Intro to HP/3000" and "Advanced QEDIT Techniques".

INFORM

The fastest-and-easiest-to-use capability we have for developing simple reports from a database. It allows sorting, totaling, and selecting desired lines and/or columns of informa-

tion. Recommended Prerequisite: "Intro to HP/3000."

SPREAD

A simple user-oriented tool (like Visicalc) which simulates a common spreadsheet and is much faster and easier than pencil and paper or even programming in BASIC. Recommended Prerequisite: "Intro to HP/3000."

ADVANCED SPREAD TECHNIQUES

For users of SPREAD who would like to learn more about how to use powerful SPREAD commands and utilities for purposes such as moving data between SPREAD files and obtaining high quality finished reports. New material and areas of concern or interest to the participants will be addressed, making this an appropriate course to repeat. Recommended Prerequisites: "Intro to HP/3000" and "SPREAD".

HP/3000 ARENS GRAPHICS

A capability available via any HP/3000 terminal that allows you to transform numeric data and/or text into charts and graphs for overhead transparencies and report illustrations. This is a high quality graphics package that provides more flexibility than HP/125 Graphics. (General-use plotters are currently available at ARCO Center and ARCO Plaza.) Recommended Prerequisite: "Intro to HP/3000."

*** HP/125 COURSES ***

BASIC

An easy-to-learn-and-use computer programming language that provides a good opportunity to learn the fundamentals of how a computer works. Recommended Prerequisite: "Intro to HP/3000."

HP/125 GRAPHICS

A capability that allows you to transform numeric data and/or text into charts and graphs for overhead transparencies and report illustrations.

HP/125 VISICALC

A simple user-oriented capability (like SPREAD) which simulates a common

spread-sheet and is much faster and easier than pencil and paper or even programming in

BASIC.

*** IBM COURSES ***

INTRO TO IBM ***NEW***

An introduction to the IBM systems used by the L. A. Data Center. Useful for any beginning IBM user. This course will be a recommended prerequisite for all other IBM courses.

This model is used for evaluation of capital projects within ATC and is accessed through the Los Angeles Data Center (LADC) IBM computer. It is designed for calculation of cash flow and financial indicators. Tariffs can also be calculated under both the consent decree and original cost methodologies. Recommended prerequisite: "Intro to IBM."

EVALUATION MODEL

If you have any comments or questions on these courses please contact Dave D 590-4500.

HP/3000 USER - ACCOUNT MANAGERS

PRODUCTION SYSTEMS -----	User Account Manager -----	Data Entry by User Department(s) -----	INFORM Ad-hoc Reporting -----
ACCOUNTS PAYABLE	N/A	N/A	X
BUDGETING & MONTHLY FINANCIALS	C	X	N/A
EMPLOYEE TRANSPORTATION		X	X
FLEET STAFFING	P	X	X
INVENTORY	P	X	X
PAYROLL	C	X	X
PERSONNEL (RESUME)	C	X	X
PURCHASING	C	X	X
VESSEL ACCOUNTING & VOYAGE OPERATING PERFORMANCE STATISTICS (VAVOPS)	P	X	X
UNDER DEVELOPMENT			
ACCOUNTING	P	X	X
COMPREHENSIVE PROCUREMENT (CPS)	P	X	X
EMPLOYEE TRANSPORTATION	N/A	X	X

USER-DEVELOPED APPLICATIONS

FOUR CORNERS	C	X	N/A
MARINE	C	X	N/A
ATC HQ-STAFF	P	X	N/A

C= CURRENT

P = PROSPECTIVE

Ronald "RON" J. Ellis Biography

As the Manager of Systems Development for ARCO Transportation Company, (A subsidiary of Atlantic Richfield) Ron Ellis is responsible for meeting the information resource needs of ARCO's California based Pipeline companies and the Transportation Company's headquarters staff. Previously he was employed as the Los Angeles Branch Technical Manager for COMSHARE an international computer services firm. As a result of his employments Mr. Ellis has been responsible for planning, design and implementation of systems in over 30 companies. Additionally he has created numerous training courses to assist non-systems personnel in using computers to extend their productivity.

A graduate of the University of Southern Calif. (MBA 1978) and Calif. State University Fullerton (BA 1974), Mr Ellis has served as an instructor for Coastline Community College in Orange County. He is involved in a number of professional and community activities including the Data Processing Management Association, Toastmasters International and service as an officer of the Los Angeles Chapter of the Planning Executives Institute. His involvements in community organizations include the Boy Scouts of America, United Way, Junior Achievement and the ARCO Speakers Bureau.
