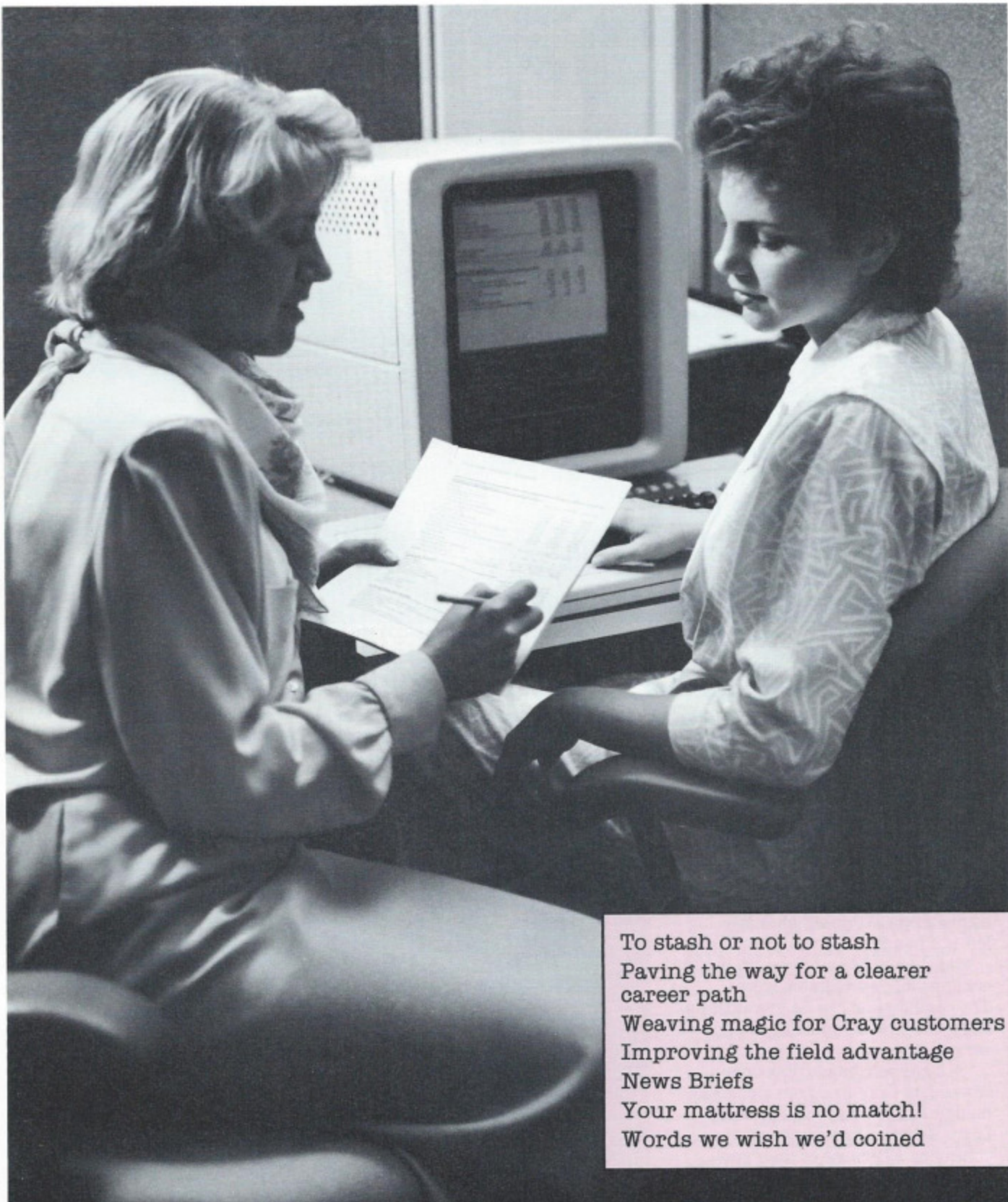


# interface...

A Cray Research, Inc. publication

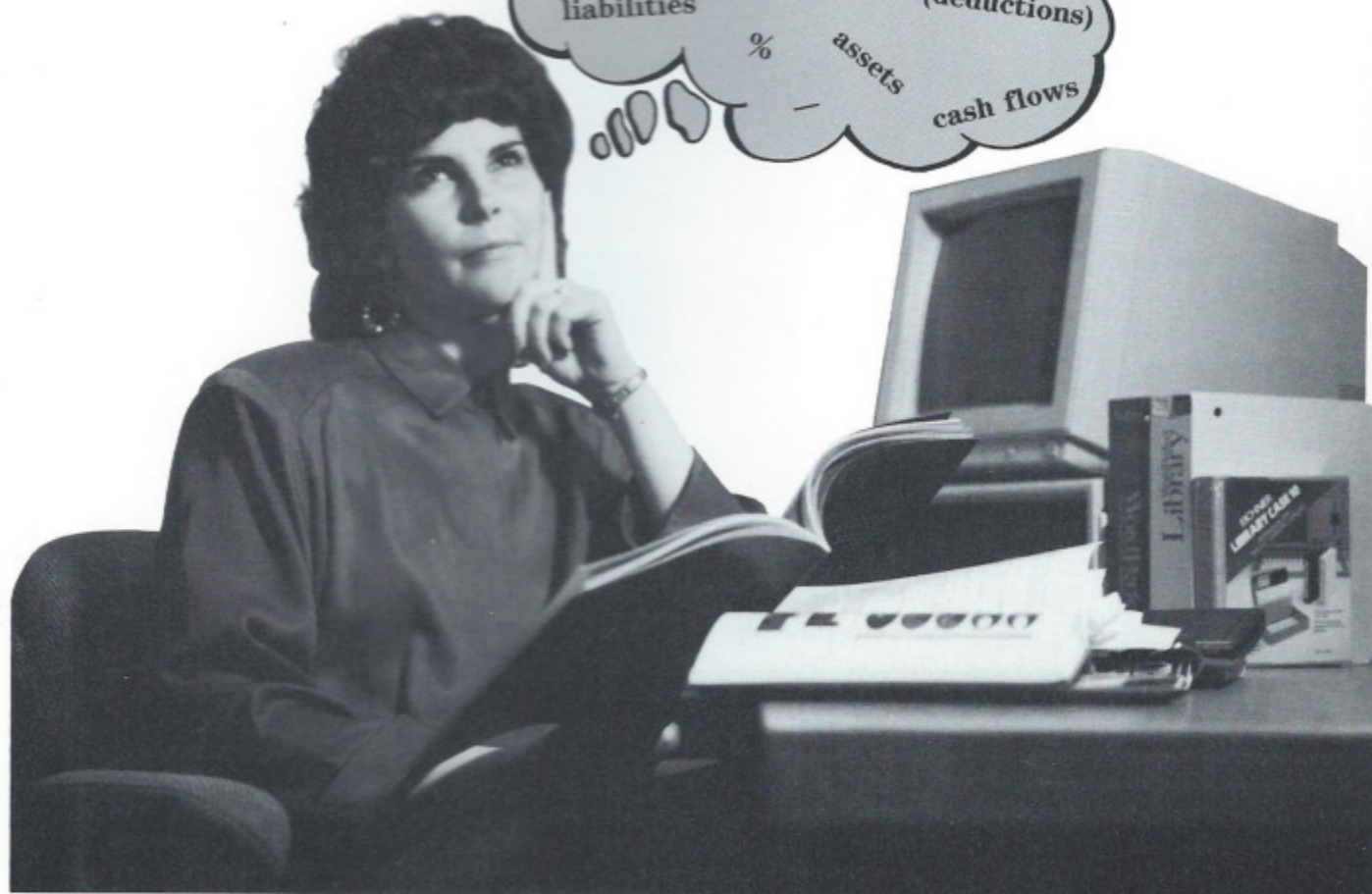
April 1988



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*Jill Nussbaum, manager of financial reporting, and Barb Cahlander, corporate graphics, discuss the charts and figures that make up 1987's annual report.*





## To stash or not to stash

You've looked at all the nifty pictures. You've read John Rollwagen's letter to stockholders. You've absorbed all the interesting details of the company's activity throughout the year by looking at the timeline and reading the Operations Report. And now you find yourself ready to stash that annual report away until next year's comes along. After all, all that's left is a bunch of numbers.

And they're big numbers, in big columns labeled with big words. The combination can be intimidating, but it can also be understood and very useful.

"A large percentage of people working at Cray Research are stockholders in the company," explains Larry Betterley, assistant corporate controller. "Because of their personal investments, most of these people are also interested in Cray's financial performance."

But stockholders or not, employees can find useful information in the annual report — information that can help them understand the company, their jobs, and the supercomputer industry. So with help from Larry, *Interface* broke down several key sections of the annual report and explained them further.

### Looking beyond the numbers

The "numbers" section of the annual report is called the Financial Report. It begins with the Historical Financial Summary — an overview that provides information such as revenue, costs, and earnings per share over the past eleven years. "The Historical Financial Summary is useful," says Larry, "because it allows you to see trends in the company's financial performance over a number of years. You can read it and

see, for example, Cray Research's revenue growth each year, and how much of that growth we've been able to bring to the bottom line in net earnings. This kind of historical picture gives you some idea of what the financial future might hold for the company."

Next is the Management's Discussion and Analysis of Results of Operations and Management's Discussion and Analysis of Financial Condition (MD&A). This is where management discusses the reasons for change in the company's financial performance over the last three years. Management also talks about items that may affect the company's future performance, and the company's ability to fund future operations.

As you turn the pages, it's easy to miss another important item, the Auditor's Report. It's small — the standard length is about two paragraphs — but it is very significant.



It is a report from the external auditors, saying that the numbers accurately represent the company's financial condition. "An explanation longer than two paragraphs," says Larry, "could mean one of three things. First, that the methods used to prepare the financial statements are inconsistent with those used in prior years, second, that a significant uncertainty exists which could adversely affect financial results, or third, that the financial statements were not prepared in accordance with generally accepted accounting principles."

Next is the Consolidated Statements of Earnings, or income statement. This statement shows how much revenue the company has earned each year for the past three years, the expenses the company incurred in generating the revenue — engineering and development, marketing, or administrative costs, for example, and how much was earned as a result, commonly referred to as the bottom line.

Opposite the income statement is the Consolidated Balance Sheets, which shows what the company has done with its earnings. It lists the cash, inventory, and property we own (assets), the amounts we owe to creditors and employees (liabilities), and the amount of assets owned by the stockholders (stockholders' equity). Total amounts for assets reflect what

the company paid, less depreciation, not necessarily the assets' current or market values.

Next you'll find the Consolidated Statements of Changes in Cash Flows for the last three years. This schedule tells you the amount of cash we received and used in our operations, investment and finance activities throughout the year, and the amount of cash we have remaining to fund future operations.

The next page is the Consolidated Statements of Stockholders' Equity. This statement shows changes in the ownership of the company (common stock). It also details the amounts paid in by the owners (additional-paid-in-capital and common stock accounts) and net earnings retained by the company (retained earnings) for the last three years.

The Summary of Accounting Policies is next, and this information can be very significant. "The accounting policies that a company chooses," says Larry, "can have a significant impact on net earnings." For example, different companies recognize products as sold at different times, depending on how conservative their accounting policies are. At Cray Research, we recognize revenue on our systems when they are accepted. Many companies recognize that revenue upon shipment of the system. If Cray Research shipped a system at the end of 1988, and considered it sold then, we could include it in our revenue for 1988. But we actually wait until that system is accepted, sometime in 1989, to recognize it as revenue — a conservative practice. "Accounting policies can help you understand how the financial statements were prepared, and how the numbers were reached," says Larry.

Finally, the Notes to Consolidated Financial Statements discuss certain items of the financial statements in more detail. "Because they help fill in the holes, the notes are an integral part of the financial statements," says Larry. "They must be read to fully understand the statements."

Now that some of those statements, summaries, and numbers have been explained, the annual report\* probably doesn't look so overwhelming. So don't put it away just yet, take another look. ●

\*1987's annual report will be available in April and will be distributed automatically to all stockholders.





# Paving the way for a clearer career path

"I think the philosophy works. As far as how well it works, the level of success depends a great deal on a person's attitude."

"I'm not sure that a balance of technical specialists and managers exists company-wide."

"The opportunities are there for the philosophy to work, but employees just don't have enough information about how to get from one salary level or career track to another."

These people are talking about the parallel paths philosophy at Cray Research — a concept that recognizes the fact that individual contributors and managers should have equal career paths to the same levels of reward and recognition. The concept is important to Cray Research, a company that relies equally on technical and managerial competence to maintain its leading position in the supercomputer industry. But a concept remains just that unless it is backed by action. And that is why the company is working to make sure that employees are fully aware of the parallel paths concept at Cray Research.

"We need to be a company that actively supports the practice of parallel paths," says Mary McDiarmid, employee development specialist.

"We want to make sure that employees receive appropriate recognition for their contributions, and that they feel comfortable with the options available to them in their managerial and technical career choices."

With that ideal in mind, a task team was set up in 1987 to examine parallel paths at Cray Research and, where necessary, to recommend strategies for its support. The team gathered information from three sources: interviews held with vice presidents, directors, and some upper level managers; a questionnaire given to a special interest group made up of employees at the 1987 Technical Symposium; and that same questionnaire sent to a random sample of about 150 other technical employees.

The findings of the attitude survey showed that, in general, employees are supportive of the parallel path concept and think that it fits the style at Cray Research. But there are mixed opinions about how well the idea is actually working. Based on these results, a decision was made to further analyze the concept at Cray Research. One step took a look at company compensation programs.

This analysis revealed that for the most part, Cray Research's compensation programs do support the

parallel paths concept, but there are specific subjects that need to be addressed further. Communication of various issues is forthcoming.

Beyond compensation issues, additional research and discussion took place, and the team agreed that there is a lack of information, or communication, about what an employee can do to move ahead on his or her career track in terms of recognition and reward.

Addressing this communication problem, the task force suggested that employees be provided with career planning tools such as complete job descriptions and written performance and development plans. This information will help employees to see more clearly how to move forward on their individual paths.

A second problem is the perception that there is a lack of role models in the technical arena at Cray Research. "Technical specialists," says Sara Graffunder, a senior programmer analyst, "want to know who are considered to be the exceptional technical people, because we can use them as role models. When rewards for excellence are kept quiet, we lose one way to see what to aim for ourselves."



In addition, technical specialists expressed an interest in working more with technical leaders, perhaps in ad hoc groups, to gain experience and expertise.

Third, the task team recognizes that employees clearly want performance reviews, but that they do not always get them in a timely or useful manner. Employees want to be more involved in decision-making and goal-setting so they have influence over their work. A general feeling seems to exist that communication concerning job performance between managers and employees is lacking. "As a technical employee," says George Behnke, "much of the work I do is not for my own manager. I interact with many other people, and I'd like them to tell me how I've done. I'd welcome the chance to be reviewed by, and to review, my peers."

In light of these challenges, the task team came up with these recommendations: First, publish a parallel path philosophy statement (at right) for all employees, and the company itself, to use as a guide; second, provide employees with more education and communication about current reward and recognition programs; third, promote the recognition of both technical people and managers, and their talents, using vehicles such as

*Interface* and employee meetings to acknowledge a job well done; and fourth, share all of these recommendations with management groups.

As support for these recommendations and responsibilities, the task team suggested that criteria be set that let managers and individual contributors know specifically what their position entails and what their responsibilities are. John Rollwagen points out that, despite specific criteria, managers and technical specialists have equal amounts of responsibility. "A technical specialist, even if he or she has no one reporting to him or her, directs a lot of traffic. That's a lot of responsibility.

What's important is that all people feel that they have access to the same levels of reward and recognition."

In addition, the task team suggested that a systematic approach to career pathing be developed, so all employees know how to fully benefit from any information available. Human resources representatives are available to help employees plan their careers.

Two programs, each offered several times a year, help employees with career planning. "Exploring the choice: Management vs. Technical Specialist" helps employees choose the most appropriate career path. "Managing Personal Growth" helps

employees move forward on the path they've chosen.

Although the task team spent a full year exploring parallel paths at Cray Research, reached some significant conclusions, and made some strong recommendations for action, there is still work to be done before the concept is 100 percent workable and visible for all employees.

"We all have to work together on this. But at the same time, everyone has to take individual responsibility for making this philosophy work for him or herself," says John Rollwagen. "They're not escalators — they're paths." ●

## Parallel Career Paths at Cray

We want to support the concept of being able to do as well at Cray by making technical or other professional contributions as by taking on greater management responsibilities.

Another way to say this might be that the person who wants to be a key individual contributor, or to provide leadership for a project, should have a path to the same levels of reward and recognition as the person whose responsibility grows

in terms of how many people report to her or him.

We want to do this simply because it is the right thing to do given our basic mission. This company cannot succeed without technical excellence.

excellence in the other professions we rely upon, as well as excellence in management.

We will subject our compensation programs, including salaries and incentives such as bonuses and stock options, and our

terms of recognition including titles and awards, to regular review to be sure they support the parallel path concept and make changes when it is evident they do not.







systems to a small software firm outside of Berkeley, Calif. — Franz, Inc. "We're not experts in the LISP language, and there are people outside of Cray Research who are," explains John. "This is a clear case for buy, rather than build."

## Not a one-person project

Is Franz familiar enough with the Cray computer system to develop a compiler strong enough to run a supercomputer version of LISP? "Although Franz, Inc. will do the majority of the development work," continues John, "Cray Research employees will definitely participate in the project. Jeff Nicholson, George Behnke, Don Lee, Mike Merchant, and John Champine have already been involved because interaction between Franz' LISP experts and Cray's software developers is imperative during the design process. Franz needs to fully understand the capabilities of the supercomputer, and the way software can be designed for optimum performance — only Cray employees can help Franz do this."

The LISP project also will impact other areas at Cray Research. A close and continuing involvement with Denny Olson, the AI specialist in

the applications support department, is essential to properly integrate LISP capability with AI applications such as Expert Systems. In addition, software licensing will be involved in the administration of customer licenses; technical publications will customize Franz' user documentation to Cray specifications, and after implementation, technical operations will operate as a liaison among Cray Research, Franz, and the customer running LISP, particularly in terms of installation, support, and software problem report processing.

## Managing project progress

How is the project managed now that the preliminary market research is complete, the business plan is approved, and an outside vendor is doing the bulk of the work? "Now that the project is in full swing, I'm spending about half my time coordinating meetings between Cray Research's technical people and the vendor, and tracking Franz' progress on the project," explains John.

John will spend the other half of his time working with customers and prospects to market the resulting product. "There are technical milestones and deadlines just as with any other development project," says John. "For example, we have alpha-

(an alpha-test demonstration takes place when the program is actually run on a Cray computer system) and beta-test (secondary) demonstrations to conduct, and defined performance criteria to meet."

In addition, John will work with a few early customers to ensure that their applications needs will be met and that appropriate field tests can be run. And of course lining up sales for LISP is very important to the financial success of the project.

The combined efforts of Cray Research employees and Franz' team should mean a product acceptance by the middle of November and a standard release before the end of 1988. "Having a compiler available to support the COMMON LISP programming language on Cray computer systems will be extremely valuable," concludes Denny Olson. "COMMON LISP has become the standard for academic and commercial artificial intelligence programming, a rapidly expanding applications area. And as usual, Cray Research wants to be at the forefront in helping customers explore and learn more about this new realm of science. COMMON LISP will present a wide spectrum of potential applications that can be run on Cray supercomputing systems." ●







*Dave Poole and Susan Rhodes,  
Petroleum Region, see the IR and SPR systems  
as two ways to help maintain high-quality service for Cray Research customers.*

## Improving the field advantage

The analyst gets word from the customer — there's a software problem on the system. Examining a memory dump, the analyst can't determine whether the problem is in the software or if the customer is making a programming error. Regardless, an incident has occurred that has affected operation of the Cray system.

As such, the next step is to notify the technical operations group in Chippewa Falls. The analyst signs on to the Pyramid computer system through his PC and files an incident

report (IR), noting that more analysis is needed to determine the cause of the problem.

Further analysis shows that a bug exists in the software. The analyst signs back on to the Pyramid to update and close the IR, noting that any further information on this problem will be contained in a related software problem report (SPR) on the Pyramid system in technical operations in Mendota Heights.

Next, the analyst signs on to the Pyramid in Mendota Heights and files the SPR, repeating the facts previously disclosed in the IR and adding the most recent analysis. Over the next few weeks, the site analyst and a software developer in Mendota Heights each work on the problem, updating the SPR as progress is made so that no duplication of effort takes place. Eventually, they come up with a bug fix, and the SPR is closed.

### And the result?

Use of the software problem and incident reporting system (SPR/IR) not only streamlines the maintenance procedure by keeping all reports and updates on-line, but also establishes a communication network throughout the field organizations. People in technical operations, hardware and software development, and the site analysts and engineers all know *when* and *where* there is a problem, and *who* is doing *what* to fix it. Such a system has obvious potential to be a strong resource in the pursuit of high-quality service for Cray Research customers.

### How the system works

The Petroleum Region has been using the SPR/IR system for over a year. "With help from the communication team in the computer center in Mendota Heights, we've created an outstanding regional communication system," explains Dave Poole, the technical training manager of the Petroleum Region. "It doesn't matter where you are in the region, you now have easy access, technically speaking, to the Pyramid data-



bases in Chippewa Falls and Mendota Heights.”

The technology used in the Petroleum Region is Codex 6740, a statistical multiplexor whose job is to take incoming data from computer terminal lines on site and convert it into one signal from Houston to the HYPERbus in Mendota Heights. From there, the HYPERbus directs data to either the Pyramid in Chippewa Falls technical operations for incident reporting, or to the Pyramid in Mendota Heights technical operations for software problem reporting.

The only equipment the engineers and analysts need on site is a PC to dial into the Codex 6740. “We maintain 10 lines in the Houston district, five in Dallas, and three in Tulsa, for a total of 15 sites (17 systems), because engineers and analysts in the region do a lot of reporting and want ready access to these databases,” says Dave.

### A definite improvement

In the past, software problem reports were compiled on a hand-written form and mailed to software technical support in Mendota Heights along with supporting documentation. Now, with the entire system on-line, people send pertinent data electronically, and forward any additional documentation (such as a software dump or tape) by mail. Thus, work to find a solution to the problem can begin right away.

In Mendota Heights technical operations, the technical support team prints out incoming SPRs routinely and routes them to the appropriate people for analysis. As the development group works on the software problem in Mendota Heights, status updates also can be entered on-line, thereby reducing the need for time-consuming phone tag between the sites and Mendota.

### An added bonus

Anyone with access to the Pyramid databases can access SPR and IR information. For technical management, this is an added bonus because

they can check on incidents and software problems without having to contact the engineers and analysts, the people in technical operations, or the software developers for site updates. “We don’t have to waste a lot of time calling people because we have a site activity history right in front of us,” explains Larry Stewart, region technical manager in Houston. “We are always aware of situations that need attention to ensure customer satisfaction and can make sure they are attended to.”

Continues Gary Sparks, Houston district analyst manager, “Both of these systems, but especially IR, have the potential to be very effective management tools. For the people on site, it means a little more work in terms of database administration. If both Pyramid systems (technical operations in Chippewa Falls and Mendota Heights) could be accessed in one attempt, and overall response time was improved, perhaps with larger Pyramid systems, I could see this entire program really taking off — not just here in the Petroleum Region, but throughout the company. I could even see this system augmenting, or in time, replacing the current MTTI reporting system. In

some ways, SPRs are even now being used as a measuring tool — maybe someday all site activity will be measured in terms of incidents.”

### Using the databases in technical support

Earl Dodd and Bob Rekieta, both members of technical support in the Petroleum Region, also see the two reporting systems as tools to help them in their jobs. “The system has really improved in recent months,” says Bob. “The Mendota Heights team has really listened to the field and responded to their suggestions for improving the database. And as a result, the entire system, although there is a way to go in many areas, has really become a valuable resource.” It also has become a preventative maintenance tool.

“Using these databases regularly helps us maintain stability at our sites,” explains Earl. “If I access the system and see that no progress has been made on an incident or software problem report in several weeks, I can follow up by contacting either the site or technical operations for resolution. I can scan the



Earl Dodd, Bob Rekieta, and Gary Sparks (left to right) are working to develop the incident and software problem reporting systems as powerful management tools.



system to check for similar problems. I can provide my own input. And I can do it all on-line. Before, I would have had to make numerous calls and waste a lot of valuable time. The key to the success of this system, however, is to get people to use it — regularly. It would create a new definition for the term preventative maintenance.”

### Keeping the customer happy

Incident and software problem reporting, used on a company-wide basis, will in part help keep interrupts at bay. Preventative maintenance can keep multiple halts from happening on site — or across many sites. “What happens on one

site does not have to happen on another — if we use all of the tools available to us,” says Rich Wendt, hardware technical support in the Houston District. “In the course of a normal day, I’ll log on to the IR database to see if any new incidents occurred on any of my sites. If they have, I’ll get in touch with the site engineer. Maybe I can provide more information — maybe I can help resolve the problem a little bit quicker as a result of my being aware of it a little bit sooner.”

Effective use of incident and software problem reporting has the potential to establish a resource network that ideally would eliminate, and realistically would greatly reduce, software problems on site. As site analysts and engineers take an active role in reporting, maintaining, and using the data on these systems, an invaluable resource is created for everyone — a resource that will help Cray Research continue to produce the most powerful computing systems available. ●



Rich Wendt, left, and Jim Abernathy use the incident reporting system as a tool to monitor interrupts on Petroleum region sites.

## News Briefs

### Sun Company orders CRAY X-MP system

On March 3, Cray Research announced that Sun Company ordered a CRAY X-MP/48 computer system with SSD solid-state storage device. The system will be installed at the Sun Exploration and Production Technology Center in Dallas, Texas, in the first quarter of 1988.

The system will be used primarily for advanced seismic processing for onshore and offshore exploration. In addition, the system will process data for reservoir modeling, log analysis, and other scientific computing applications.

Sun is an energy resources company that explores for and produces crude oil and natural gas, refines crude oil, and markets a full range of refined petroleum products. Sun is the eleventh largest U.S. petroleum company.

### Toyota orders CRAY X-MP system

The company announced on March 16 that the Toyota Motor Corporation has signed a letter of intent to order a CRAY X-MP/18 computer system, subject to negotiation of a final contract and obtaining an export license. The system is valued at approximately \$8 million and is scheduled for installation in the second half of 1988.

Toyota selected a Cray computer system because of its overall performance, availability of applicable software, and maintenance servicing. Toyota has been using a Japanese-made supercomputer for several years, and will be the first Japanese

automaker to purchase a second supercomputer.

### Clarification

In the March 1988 issue of *Interface*, the article “Mission accomplished...again” said ‘Datasets may be assigned to the SSD solid-state storage device by a single control statement, which makes it unnecessary for users to modify their programs.’ While this is accurate, it needs clarification. It is unnecessary for users to modify programs provided that the program is capable of performing out-of-memory computations.

### Just a reminder

The 1988 Annual Stockholders’ Meeting will take place on May 17 at 10:00 a.m. The meeting will be held in the auditorium of the Lutheran Brotherhood Building, 625 4th Avenue South, in downtown Minneapolis. All employees are invited to attend.



# Your mattress is no match!

Tucking it under your mattress, stashing it away in your sock drawer, and burying it in your backyard are, conceivably, three ways to save money for retirement. More practical methods, however, include individual retirement accounts (IRAs), pension plans, and 401(k) plans. Cray Research's primary retirement plan is the Deferred Profit Sharing and Investment Savings Plan.

Recently, the Board of Directors voted to establish\* the annual deferred profit sharing contribution at a minimum rate of four percent — even if Cray Research experiences years with no profit. Past contributions have aimed at four percent of an employee's eligible compensation, but have varied according to profit levels.

This decision comes as a result of a thorough look at the Deferred Profit Sharing and Investment Savings Plan as a retirement vehicle. During 1987, a group of human resources managers studied the plan and its appropriateness for Cray Research.

The group began by looking at the current makeup of the workforce at Cray Research and reviewing other types of retirement plans and the impact they would have on employees here. Because the Cray Research population is younger and more mobile than the overall labor force, and because of the changing legislative environment, it was decided that the current plan is still the best way to provide retirement benefits, because plan monies are immediately vested and are portable from company to company.

During this research, it also was noted that Cray Research's current plan fits the company's philosophy of providing simple, understandable

benefits which also provide employees with choices — such as where money should be invested (bond, money market, or stock funds), and which can be modified as individual needs and goals change. Employees also are free to choose how much money they want to contribute to the plan.

Further research and projections based on conservative assumptions about inflation rates and interest earned on employees' accounts showed that in order to have a moderate retirement income, Cray's four percent annual contribution, by itself, is probably not enough. Employees must share in the responsibility of saving for the future.

"It is generally believed," says Cindy Kimmel, human resources manager, "that basic retirement needs can be met with about 60 percent of pre-retirement pay. This is because when people retire they typically move into lower tax brackets, have no working expenses, and have no

children at home. But to ensure that they will have that 60 percent, employees must begin saving early in life."

For example, anyone participating in the Deferred Profit Sharing and Investment Savings Plan at Cray Research, or rolling funds over from a previous employer, could build up roughly 60 percent by saving a minimum of four percent each year in the plan. That estimate assumes that the employee begins saving at age 25 and continues until retirement at age 65. "Cray matches that four percent," says Cindy, "with 50 cents on each dollar up to \$2,000 — in many cases that's two percent of income. Then Cray adds the four percent deferred to your account. This ten percent total, saved every year, can add up to the 60 percent retirement income."

Cindy adds that for anyone over 25 who hasn't started saving in the Deferred Profit Sharing and Investment Savings Plan, now is better than later to begin contributing and saving. "The longer someone waits to start saving," says Cindy, "the greater the possibility that a four percent contribution won't be adequate for providing retirement benefits later. Your financial planner can also advise you, depending on your personal savings situation."

Now that the four percent has been established as the minimum contribution that Cray will make to employees' accounts, employees have a good start in planning for the future. Of course you might not want to completely rule out that mattress, sock drawer, or backyard. ●

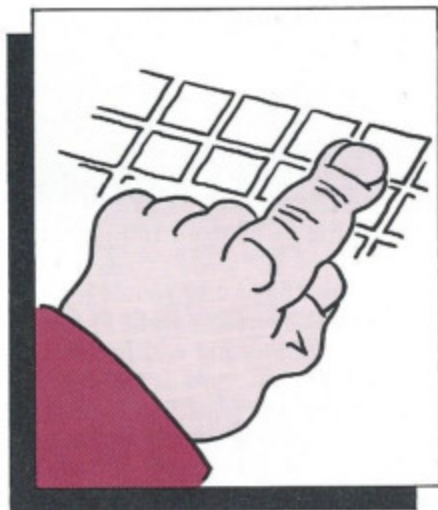
\*The Board may change the minimum contribution rate should the company experience a financial emergency.



# Words we wish we'd coined

We found the sniglets below in Sandia National Laboratory's employee newsletter, whose editor found them in Systematics, Inc.'s (a firm in Little Rock, Ark.) employee newsletter. The Systematics employee who submitted these made-up words got them from a co-worker who got them from her brother Bob who lives in L.A. and won't be back until Saturday.

Oh heck. We'll just claim them as our own.



**superstitiniiate:** to resubmit a job that abended (an IBM term for "abort-end") previously without making any changes, hoping it will magically work this time.

**onosecond:** the amount of time between the pressing of the ENTER key and the realization that you made a horrendous mistake.

**pscrewddocode:** the gibberish that results when you put your typing fingers on the wrong set of keys.

**purgeatory:** where jobs go after they are purged.

**dorkumentation:** incomplete documentation.

**stupiduplicate:** to make an error and then copy it.

**beepcreep:** one who keeps pressing ENTER when the terminal is locked up.

**queue pasa:** looking at a computer's queue list to see what's happening.

**overbytes:** unit of measurement for unavailable disk space.

**paper popper:** a job which prints one line per page and spews paper all over the floor.



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