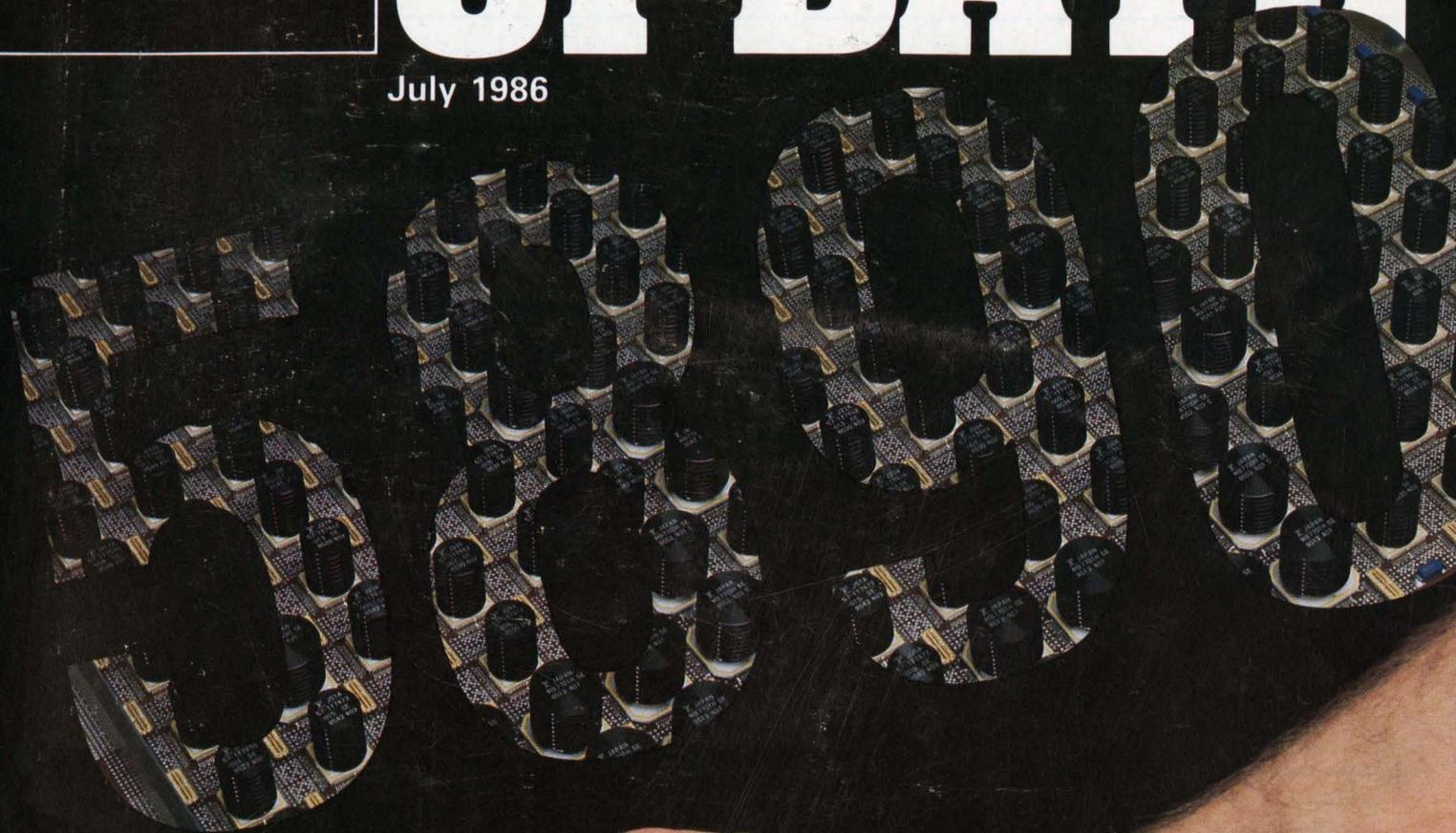


amdahl

UPDATE

July 1986



Inside This Edition:

- How Is The 5890 Different?
- Worldwide Employees Build A Winner
- Marketing The New Machine . . . and more!

**SPECIAL
EDITION**

UPDATE

For Employees and Families of Amdahl Corporation

July 1986

From the Editor

Last October Amdahl announced the 5890, our newest addition to the 580 Series. Now it is time to celebrate the next milestone: customer shipments. In June, processors began being shipped to major customers in the United States and Europe, events that will launch the next chapter of the Amdahl phenomenon.

This special edition explores the 5890's importance to Amdahl and highlights some of the efforts that were critical to the success of the product's introduction. Articles explore 5890 technology, worldwide team efforts, the Corporate Computer Center installation, 5890 marketing techniques, and more.

The *Update* staff hopes you enjoy this issue and that it helps you share the company's pride in its most recent achievement.

Staff

Editor

Marilyn Kochman

The *Update* is an Employee Communications publication designed and printed by the Graphics and Printing Departments.

Contents

How Is The 5890 Different? 3

Our newest processor offers a host of design enhancements.

Worldwide Employees Build A Winner 5

Non-U.S. employees play a big role in the development of the 5890.

5890 Installed In Corporate Computer Center 8

Why the CCC is Amdahl's first 5890 customer.

Marketing the 5890: A Worldwide Success 9

Marketing our new computer requires a worldwide effort.

Special Efforts 11

Crazy hours, team effort, and pleasant surprises characterized our engineers' work on the 5890.

Senior Executives Talk 5890 12

Gene White, John Lewis, and Joseph Zemke talk with pride about our new processor.

On The Cover

An LSI (large-scale integration) logic chip, the heart of the 5890.

July 1986 Volume 11, Number 6

Suggestions for articles can be mailed to:

Amdahl Update M/S 300, 1250 East Arques Avenue, P.O. Box 3470, Sunnyvale, CA 94088-3470 or Mailbox I.D.: UPDATE.

Amdahl Corporation is an

Equal Opportunity/Affirmative Action Employer.



How Is The 5890 Different?

Although the 5890 is based on the same technology as the 580, each of the two processors in the 5890 DP (dual processor) system runs from 70% to 90% faster than the 5860-based models of the 580 Series. According to Uli Spannagel, manager of CPU design, "Some of this improvement comes from technology enhancements, such as faster RAM chips. Most of the improvement, however, comes from design enhancements discovered through our experience with the 580 design." Following is an overview of the primary design changes, as well as a summary of the machine's serviceability features and impressive selling points.

CPU Redesign

One major change was a redesign in the processor's pipeline. The pipeline is the sequence of processes through which all instructions (or work) must pass in order to be executed. The 5890 designers refined the 580 pipeline to allow each of its processes to be performed in 15 nanoseconds (billionths of a second) rather than in the 580's time of 23.25 nanoseconds (a 55% improvement). The 5890 designers, using the same technology — but more of it — defined more and

faster processes. The use of a greater number of processes allows more instructions to be in the pipeline (under execution) simultaneously, while the use of faster processes allows sequential instructions to follow each other closer, yielding faster execution.

In addition, designers made many special purpose enhancements to specific processes to get more work performed per cycle.

Storage System Enhanced

According to Ted Robinson, manager, System Control Unit, "The storage system was enhanced to make sure that the processor always has the data it needs. The high speed buffer (CPU storage area) was increased from 64 KB (kilo bytes) to 96 KB, increasing the probability that the processor can get its data immediately, rather than having to wait for the data to be accessed from the comparatively slower MSU (main storage unit). When the data needs to be fetched from the MSU, wider data paths allow the transfer to be completed more rapidly. In addition, both the high speed buffer and the main storage designs make greater use of techniques (called queuing and

parallel processing) that allow different types of work to be done simultaneously rather than serially (one type at a time).

Larger Memory, Greater Number of Channels

The main storage capacity has been increased to 256 MB (mega bytes), and the number of channels (access to tapes and discs) has been increased to 64. This helps to put more jobs in and out of the system and take advantage of the faster processing capability of the 5890.

Serviceability Features

The 5890's serviceability features are also impressive. The field feedback system allows the computer to regularly collect information about its activities and transmit it to headquarters for analysis. When a problem occurs at a customer site, Amdahl engineers can review the machine's history — a big aid in determining the root of the problem.

Another feature is an enhanced error-recovery system, a design that allows the computer to recover from a greater number of malfunctions.

The 5890 also has more redundancy built in. For example, if one of the cooling fans that pulls the air through the system fails, there is sufficient capacity in the remaining fans to keep the system operating. A message indicating that one of the fans has failed will be issued on the console, but the machine can keep going until the next regularly scheduled maintenance check. This type of redundancy is a major contributor to customer availability.

Multiple Domain Feature Continued

In addition to the 5890's architectural and performance differences, there are some exciting 580 features that are being continued on the 5890. One is the 580/Multiple Domain Feature (580/MDF). This is a facility that allows the user to support different operating environments simultaneously, in one machine, without introducing extraneous overhead. This gives users greater flexibility in managing their computer resources. According to Cyndy Ainsworth, 5890 marketing manager, "580/MDF is doing very well on current 580 Series models.



(Left to right): Kevin Berg, Bob North, and Chris Cook work on 5890 certification.

With a processor the size of a 5890, the opportunities to run multiple systems, using a tool like MDF, become even greater."

By all indications, the 5890 is off to an excellent start. "We have a good machine that everyone feels comfortable with," says Cyndy. "Engineering is comfortable with the technology; Manufacturing is comfortable building the machine; and PS&S is comfortable servicing it." □

Customer Applications

As formally announced last October, 5890 shipments to external customers began in late June. They will be using the 5890 for various applications. Here are just a few.

One corporation is taking over the billing processes of its regional offices, and needs the 5890 for the new billing applications as well as for customer service. The firm has an online system that allows their customers to phone in and obtain information about their bills. The 5890 will eventually print the customer bills.

Another company will also use its 5890 for billing as well as for payroll and inventory.

A retail business, which currently uses a 5880, will use the 5890 for order entries, and for managing their

inventory.

No matter what applications the 5890 is used for, customers will be able to count on Amdahl's exemplary support and service, and remain confident that they have purchased the best IBM-compatible mainframe computer on the market.

Project Management: Key to Success

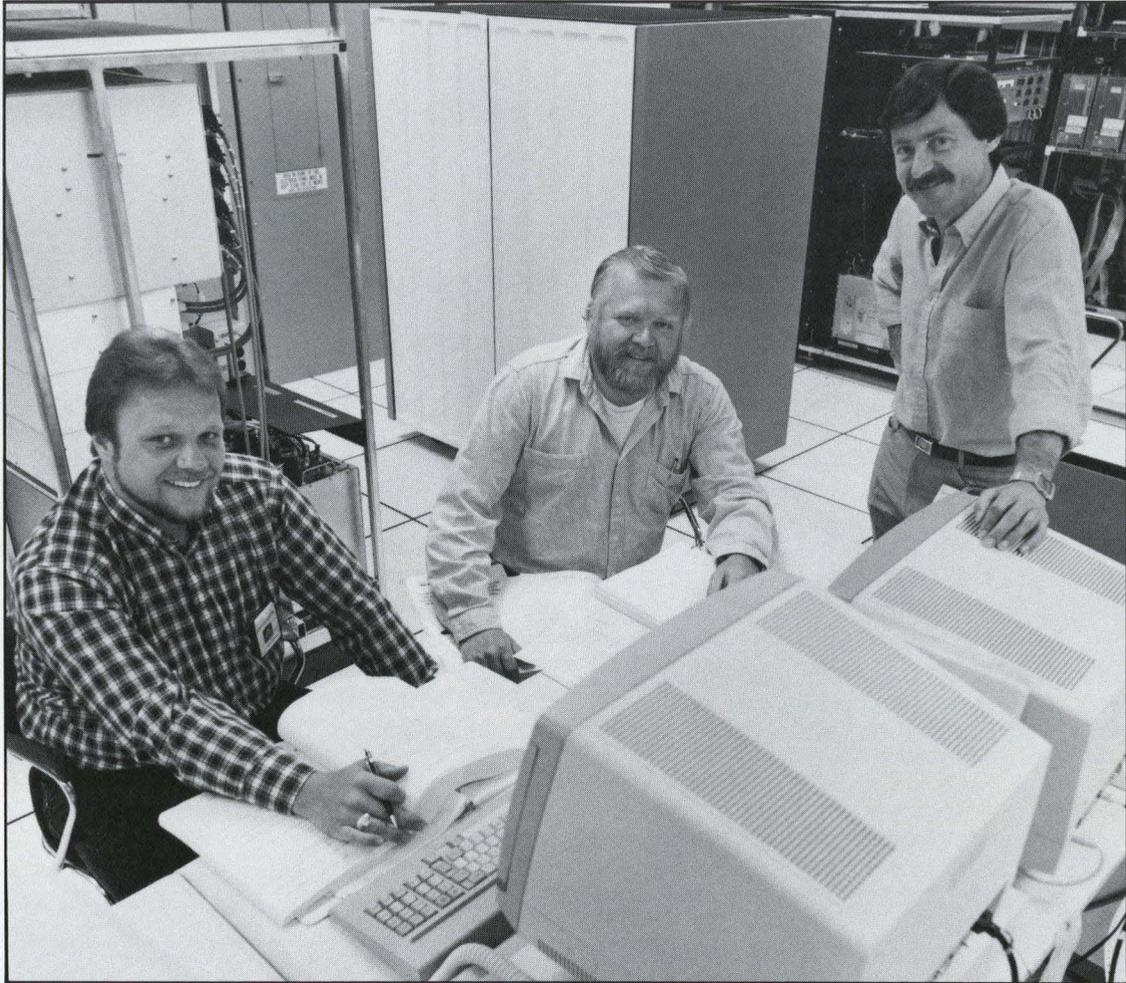
According to Joe Erikson, manager of Manufacturing Project Management, Manufacturing's success with the 5890 product introduction was largely due to the teamwork with engineering. "We improved communications dramatically," he says. "We identified who our customers were. We recognized that we are Processor Products' customers, and

that our customers consist of PS&S and the external companies that buy our products."

Another reason for the success was that the project management concept was firmly in place. "Project management has been integral to the success of the 5890," says Joe. "It has helped us create a central focal point of responsibility and helped us establish common goals."

Dave Beaulieu, 5890 Manufacturing project manager, agrees. "Project teams allow us to decide what has to be done, identify who is responsible, and determine when each task needs to be completed. This clear focus has enabled us to meet our commitments and has greatly contributed to the success of the 5890 introduction."

Worldwide Employees Build A Winner



Ian Bannister (*right*), instructor from Dogmersfield, talks with Jim Connors (*left*) and Art Smith, field engineers from Fairhaven, Massachusetts, about a lab project for a 5890 training class.

“The field representatives came to headquarters both to learn the machine and to contribute to its development. They are a sharp group. Because they work so far away from headquarters, they need to be self-sufficient.”

— Joe Streng —

Employees throughout the company have contributed to the development and introduction of the 5890. For the past two years, representatives from PS&S, Marketing, and AIL (Amdahl Ireland Limited) have either worked at headquarters on temporary assignment, or have periodically visited to attend product seminars and classes. The following overview describes some of these efforts.

Amdahl Ireland Limited (AIL)

Since last September, twenty-four AIL employees, including system test engineers, test and equipment maintenance technicians, and supervisors and managers, have spent time in Sunnyvale to learn the new product. When they return to Ireland they will be able to instruct their colleagues or perform the essential processes themselves. According to Bernie Dillon, general manager of Ireland, the first power-on in Ireland is scheduled for July, the first two systems will be completed in October, and twelve will be finished by year end.

"The employees are very excited about the new product," says Bernie. "They are pleased that the initial feedback has



Photo by Joe Gavin

Kiernan Murray performs sub-assembly wire-wrapping in the AIL (Amdahl Ireland Limited) plant.

been so positive. Everybody at AIL is enthusiastic about the startup of the 5890 and they are looking forward to its success in the marketplace."

Marketing

While PS&S technicians worked with headquarters engineers to develop the product, worldwide Marketing representatives worked with the Corporate Marketing staff to create marketing strategies. In January 1985 Amdahl formed an announcement coordinators' group, consisting of members from each of the four field business units. Representatives included Robert Langley, Pacific Basin; John Kindler, Europe; Henry Cassel and Jean-Claude Bourdon, United States; and Geoff Senson and Ken Wilson, Canada.

The group initially met every three months, but as the announcement day drew closer, they convened more frequently. Their job was to keep abreast of the technical and marketing issues relating to the 5890, and to relay that information to selected employees in their geographic areas. About two weeks prior to the announcement, Headquarters Marketing hosted a "Teach The Teachers" seminar, held in Sunnyvale, designed to explain the 5890 in technical detail to additional representa-



Photo by Joe Gavin

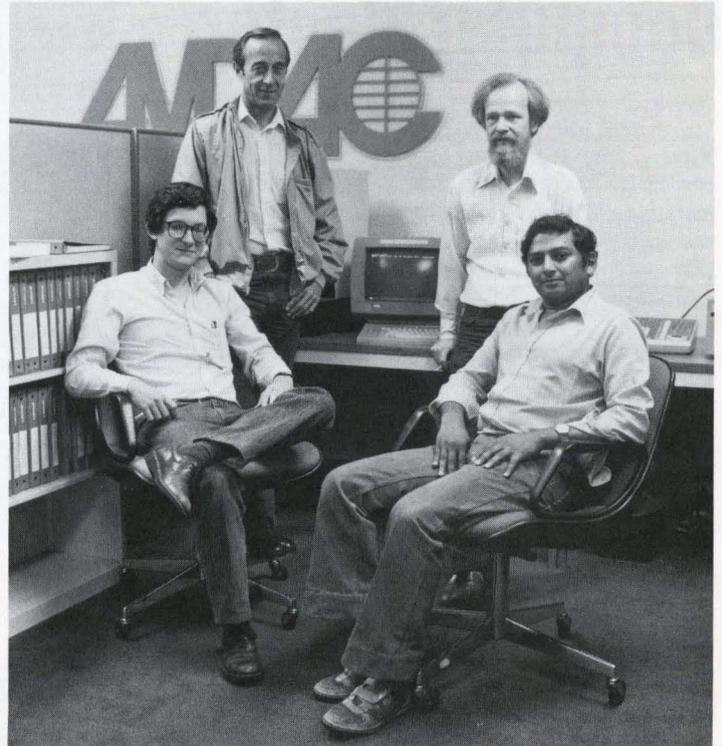
Jackie Sullivan works in AIL (Amdahl Ireland Limited) BLC area.

tives from the field business units. In addition to this technical seminar, Marketing hosted other sessions for members of the announcement teams.

PS&S

From PS&S, Tony Tasker and Derrick Chatfield of the Canadian Support Center in Toronto, and Miguel Daddario and Subhash Kundaiker of the London Support Center, have worked in Engineering Bringup, System Test, and Product Certification for over a year. Tony Innes and Ken Hailes, London; and Brian Hinton and Andrew Fordham, Australia, have also spent about six months in these areas. Ian Bannister, European Education, London, has been involved in 5890 Field Engineering Training, and Bob Ellsworth, senior staff Systems Engineering, Bellevue, Washington, has been working in 5890 Operations Training. Vincenzo Bianco and Alberto Poggesi, Italy, have been working in Software Development. In addition, two four-week training classes were held for regional specialists and site FEs from Germany and England, where two of our first processors will be shipped.

According to Joe Streng, 5890 headquarters support manager, the field representatives came to headquarters both to learn the machine and to contribute to its development. "They are a sharp group," he says. "Because they work so far away from headquarters, they need to be self-sufficient. That undoubtedly helped motivate them to learn the machine as well as they did."



(Clockwise from back left): Tony Tasker, Derrick Chatfield, Subhash Kundaiker, and Miguel Daddario learn about the 5890 and contribute to its development



Dogmersfield representative John James worked with Corporate Marketing for fifteen months.

Dogmersfield Representative Pitches In

In August 1984 — fifteen months prior to the official 5890 announcement — John James, product manager from European Headquarters, Dogmersfield, was assigned to Headquarters Marketing to work in the Future Processors Group. There he provided input to Processor Product Planning and helped write product specifications, determine what models should be announced, and decide how Amdahl could best position them in the marketplace.

John is now back in Dogmersfield helping the European sales staff with their 5890 selling strategies.

"Working at headquarters and getting back to Dogmersfield in time to prepare for the announcement in Europe was invaluable for me," he says. "I am now looking forward to my new position as manager of the announcement project office in Europe."

5890 Installed In Corporate Computer Center

Last May Amdahl's Corporate Computer Center (CCC) became the first 5890 customer. According to Edie McCharen, manager, MVS Systems Support, "We received a validated and certified machine, and will use all of the processes that our external customers will use. We will also experience the same interface with PS&S so that we can validate all of the support procedures of a typical customer. In accordance with Amdahl's quality process, we are anxious to catch any 5890 problems at the CCC — not at the customer sites."

In addition to ensuring that the new processor is ready for shipment to external customers, the CCC's early use of the first 5890 has another big advantage: it saves money for Amdahl. "The 5890 will let us consolidate workloads from three 5860s onto one machine," says Edie. "This means a savings of \$20,000 a month in MVS (IBM operating system) licenses, since we are trading three sets of licenses for one."

Preparation for the 5890 was no easy chore for the CCC. There was much to be done. "First we had to decide which workloads to run on the machine," says Steve Langley, MVS staff systems programmer, who led the project for CCC. "When that was settled we began working on site preparation. Combining three separate systems into a single fifty-four-channel configuration involved extensive recabling, scheduling, and coordination with other groups. Jeff Price, Keith Moe,



(Back, left to right): Steve Langley, Jeff Price, Pete Moore, John Gordon, Alan DiPirro; (front, left to right): Edie McCharen, Keith Moe.

Alan DiPirro and I have been working on this — in addition to our routine workload — since October."

CCC employees are enthusiastic about the installation. "This is not the first time the CCC has been on the cutting edge of a project of critical importance to Amdahl," says Edie. "However, this one is special because it involved the most powerful CPU ever. We had an excellent opportunity to significantly contribute to the success of a product. Until the 5890 performed well here, it wasn't shipped to our external customers."

According to Steve, "We now feel more a part of Amdahl's real mission. It is especially exciting to be the first production user of the most powerful commercial mainframe currently on the market." □

Why First Customer Installation Was A Success

Larry Koe, Tim Pettenati, Danny Dodson, Robert Molenda, Nick Edwards, Stanley Graham, Wally Caritj, John Gordon, John Franks, and Pete Moore are feeling mighty good these days. Last May they installed a 5890 at the first customer site — Amdahl's Corporate Computer Center. They were assisted by three customer representatives: Steve Langley, J. D. Ward, and Jeff Price. The entire job took thirty-six hours, from the time the machine was delivered to Building M-2, to the time the customer was able to run a program on it. According to Joe

Streng, manager of 5890 Support, "This is the fifth installation that we've done, and it gets smoother each time. We did one in Minneapolis for certification by the FCC [Federal Communications Commission] and by the VDE [the German licensing agency], one for the return to headquarters, two in O-8, and one in the PS&S training lab. We've done enough to know that our most recent success wasn't a fluke, but a pattern."

According to Larry Koe, field engineer specialist, "When the machine arrived in the CCC, the hardware was checked out, reassembled, and it worked. The customer was able to bring up its operating system in a short period of time. We finished the install in less than the allotted amount of time. Based on our experience to date, we expect the product to really sell."

Another 5890 Install

On May 29, a 5890 was installed in the PS&S Training Lab in Building O-11. Installation support was provided by the twelve students in the second 5890 Functional Flow Diagnostics Class. Lou Gervais, who led the installation, commended the students for their excellent and cooperative assistance.

Students involved in the install are: Jim Connors and Art Smith, Eastern Region; Kelly Timmerman and Bill Hickman, Western Region; Ken Wilk, Larry Low, and Ray Walker, Southwestern Region; Geoff Wright and Lee Cymbal, U.K.; Thomas Jechorek and Michael Sautter, Germany; Dick Taylor, Midwest Region; Rick Laszlo, Canada.

amdahl

5890-200 and 5890-300
Dual Processor

Functional Characteristics



HEADQUARTERS
MARKETING

amdahl

amdahl

Announces

Marketing The 5890: A Worldwide Success

When the 5890 was announced last October, Amdahl's Marketing group had already spent a considerable amount of time and effort to position the corporation's latest new product favorably in the minds of Amdahl's current and potential customers. That effort has resulted in early orders from six major customers in the United States and Europe. Amdahl's marketing strategy was not merely a success — it was a *worldwide* success.

"The worldwide response is a significant factor," says Dennis Stein, manager of Current Processor Product Marketing. "By placing the 5890 in some locations outside the U.S., we have gained an important foothold in several attractive markets."

The successful marketing of the 5890 required a worldwide effort by Amdahl employees. Key field personnel from the U.S. and Europe were flown to Sunnyvale late last

year for extensive briefing on the 5890's features and capabilities. Since then, the field has stayed informed on the status of the 5890 through an extensive training program designed to insure that all field personnel were well versed in all aspects of the product.

"We wanted to make sure that employees from all of our worldwide locations were involved early in this program so we could attract customer interest around the globe," Dennis recalls. "Obviously, this approach was quite successful."

Why has the 5890 received such a favorable response? Cyndy Ainsworth, 5890 Marketing Manager, points to two major marketing factors as the key reasons.

"First, we really concentrated on providing our customers with accurate performance information," she explains. "Performance is such a major concern in this business. We wanted to make sure that the expectations of our customers were

realistic. This builds trust in Amdahl and our products.

"Second, we positioned the 5890 as an extension of the 580 Series which allowed us to build on existing customer support for that particular product line. Customers have reacted very favorably to this because we offer tremendous flexibility in comparison to some of our major competitors."

While the marketing of the 5890 has demonstrated the success of a worldwide team effort, work is already underway to develop the processor product and marketing strategies that will carry Amdahl into the next decade.

"What we're really looking at now is the data center of the 1990s," Dennis explains. "Our customers look to us to provide innovative solutions and future direction, and we are currently developing a presentation on this subject. This presentation has been given at a meeting of the Amdahl Users Group and will be used by Amdahl field business units around the world."

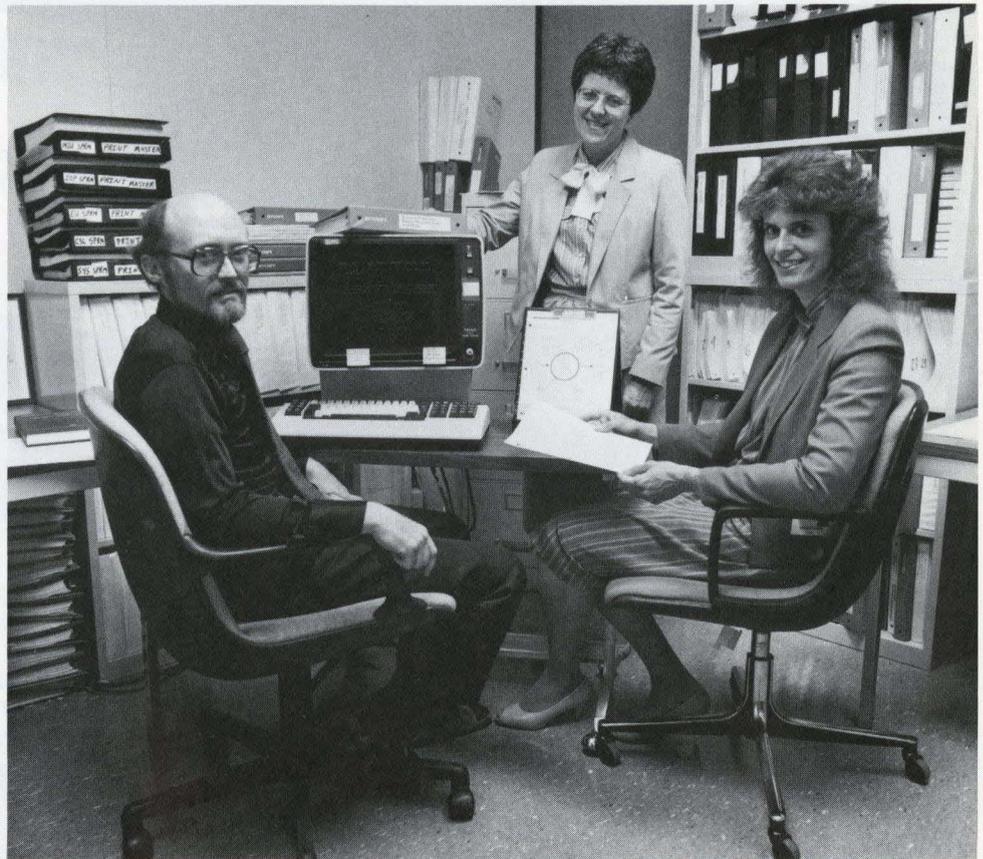
Continued on next page

Sources Are Everything For Technical Publications

One group that contributed to Marketing's effort is Technical Publications. Their support was critical to the on-time delivery of eleven new customer manuals for the 5890.

"Our group is often invisible in a project such as this one," says Roscoe Robinson, 5890 Technical Publications program manager. "In addition to Marketing, we support several different groups who need manuals and other technical material written in a short space of time. That's why we depend heavily on our sources."

To make sure that Publications met the needs and deadlines of everyone involved in the development of the 5890, Roscoe regularly attended status meetings of the 5890 project teams to stay up-to-date. The writers in the Technical Publications group would also meet one-on-one



(Left to right): Randy Nelson, Marcia Gill, and Pat Vaughn, Technical Publications, discuss 5890 CPU theory of operation.

with engineers who could provide the source material needed to write manuals and instruction booklets.

"It takes a lot of patience," Roscoe explains. "There are constant revisions and new material to be

added. We feel strongly that the best way to deal with this is through communication and teamwork. I believe the 5890 project is an excellent example of how successfully this works for us."

“Clock Skew Control”

In the 5890, timing signals (clocks) are sent to different parts of the machine to synchronize machine operations. One of the major challenges of computer design is the minimization and control of “clock skews,” the arrival time windows of various clock signals at different parts of the machine.

For Steve Si, manager of the 5890 Execution Unit, this problem is particularly important because his group is also responsible for 5890 clock design and making sure that there are no clock problems before the product is shipped.

“I’d say that quality and teamwork were the two most important parts of our ‘clock design’ efforts,” Steve recalls. “Because there have been no problems at all with clock skew in the 5890, we were very successful in the area of quality. And it took a concerted team effort with several different groups throughout the corporation to make our work successful.”

Steve specifically mentions Electrical Engineering, Manufacturing Clock Tuning and Rework, Test Tool Development and various 5890 Logic Design units as groups his staff worked closely with to solve problems early and stay ahead of schedule.

“We really tried to support other groups when called upon,” Steve says. “This frequently meant working very closely with other groups on extended hours to solve a problem. But we’re proud of our work and pleased with our contribution to the 5890.”

“There’s Gold To Be Mined”

When you’re working hard to complete a project, sometimes an unexpected turn of events can lead to a pleasant surprise. This is what Bob

Maier, manager of the 5890 Instruction Unit, found during the final development stages of Amdahl’s latest product.

As his group’s work was nearing completion, there was a need to improve the 5890 performance in a virtual machine (VM) operating environment and one particular instruction enhancement would have a dramatic effect. This was a particularly

“People worked a lot of crazy hours, and still they maintained a very positive attitude throughout. I think that is why we’re in a mood to celebrate the first 5890 shipment.”

— Erika Williams —

tense time because everyone wanted to make sure that the instructions were properly debugged and did not cause system failure. To make sure the instruction enhancement performed as expected, Bob’s Instruction Unit worked with Mark Goheen’s Performance Measurement Unit.

“It was a very hectic time,” Bob recalls. “But when we got into the project we suddenly realized that, hey, there’s gold to be mined here!”

What Bob and the others discovered was that in writing one additional instruction, there were two more that would dramatically improve the 5890’s performance. So what began as a “one instruction” job resulted in three actual instructions being successfully written and debugged in a short amount of time.

To make sure the additional instructions worked correctly, a concerted team effort between Bob’s Instruction Unit, John Andoh of

5890 Macracode Development, and Steve Rawlinson of the 5890 Execution Unit was necessary.

“There’s no question about it,” says Bob. “Without teamwork and a truly outstanding effort, these three instructions would not have been possible. But we succeeded and the 5890 is even better because of it.

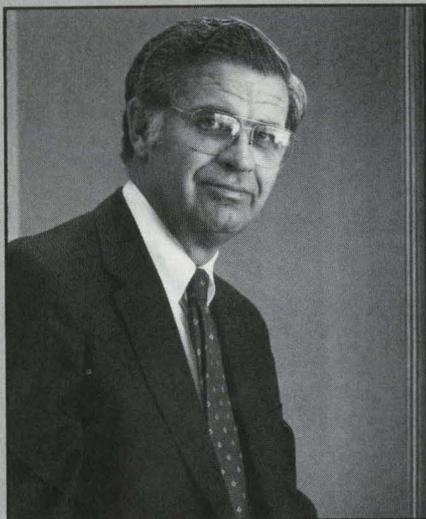
Special recognition goes to Kai Wong, Al Zmyslowski, Carolee Schober, Chris Benson, and Kevin Neeson for their extra work and tireless energy in making this particular aspect of the project successful.

Crazy Hours

Erika Williams, director of Product Software, has worked on a variety of different projects at Amdahl. She found the 5890 validation project to be a particularly striking example of teamwork.

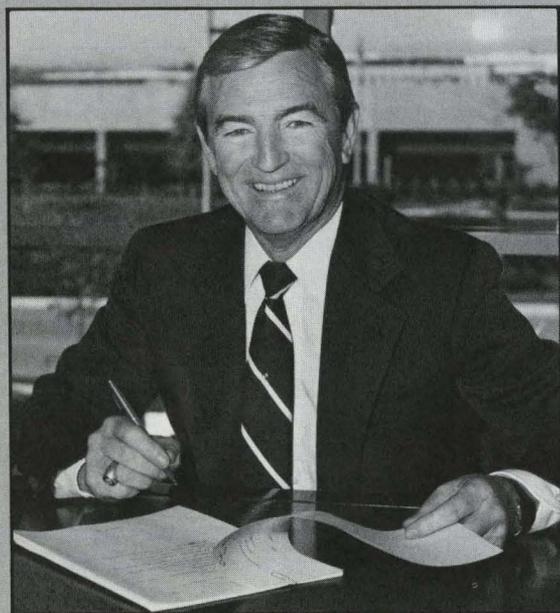
“It was especially important that the development and bring-up staff work closely with the validators on this project because of the tight constraints,” Erika recalls. “They became a very cohesive team thanks to a lot of flexibility, constant communication, and on-going focus on the project objectives.” Daily meetings among the groups were held to iron out problems, answer questions about the project tasks, and plan activities.

“I know that a lot of personal lives were impacted during this process,” says Erika. “People worked a lot of crazy hours, and still they maintained a very positive attitude throughout. I think that is why we’re in a mood to celebrate the first 5890 shipment. We had a very good team effort and we know that this is going to be a very successful product.” □



John C. Lewis, President and Chief Executive Officer

"The performance of the machine makes it a very competitive product. The successful introduction of the 5890 is the result of the cooperative efforts between Engineering, Manufacturing, PS&S, and Marketing. Customer interest in the processor is very high in all parts of the world. The 5890's success will form the foundation for much of our future growth."

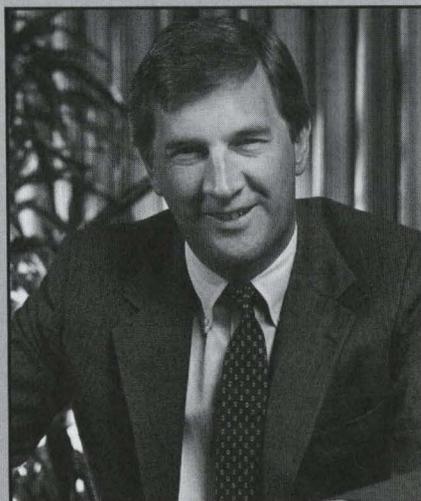


Eugene R. White, Chairman of the Board

"The 5890 product introduction has been the most professional product introduction program that Amdahl has ever had. The company's dedication to the quality improvement process has been a significant factor in the 5890 program. The new processor is an exceptionally competitive product and represents an opportunity for the company to continue its growth and to improve its financial performance. I am very excited about our potential with the new processor."

Executives Talk 5890

As the first customer shipment date for the 5890 drew near, the Update asked Amdahl's senior officers to comment on the significant milestone.



E. Joseph Zemke, Chief Operating Officer

"The 5890 is a bellwether product for Amdahl. We have a highly reliable machine, and expect to exceed our commitments on performance.

"In the design of the product, we looked at our past mistakes, learned from them, and made sure that we didn't make them again. These efforts were manifested in the extensive testing of the machines, the way they were tested, and in the planning and documentation. All indications are that the machine is an excellent product.

"The 5890 is the result of great teamwork between various functional organizations. The result is a product that has the performance and reliability to be very competitive in the marketplace. It certainly gives our salesforce the potential to be more aggressive in the marketplace, and I am confident our sales and service people will be able to take advantage of this product to satisfy current customer requirements and to encourage new customers to join the Amdahl ranks."