

# Update

amdaahl

JUNE 1985

TEN YEARS OF  
QUALITY  
PRODUCTS



# Update

For Employees and Families of Amdahl Corporation

## From the Editor

Ten years ago this month – in June 1975 – Amdahl shipped its first product, the 470V/6. It was a joyous event that proved to us and to the computer industry that we had accomplished our mission: developing and manufacturing large-scale mainframe computers that would run IBM software and compete with the industrial giant. The first steps toward attaining that goal occurred fifteen years ago – in January 1971 – when a group of zealous engineers got together to form Amdahl Corporation – a company that would accomplish what many viewed as unthinkable.

This special retrospective issue celebrates the Amdahl phenomenon and highlights the events that led to the company's formation. It also describes the drama and excitement that characterized the winning of our early customers, and the subsequent shipments and installations.

The stories in this issue illustrate the characteristics that successful companies thrive on: the passion to pursue a dream; the business savvy to realize it; and the ability to guide it. These are the dynamics that launched Amdahl's success – and that will ensure a future as bright as our company's past.

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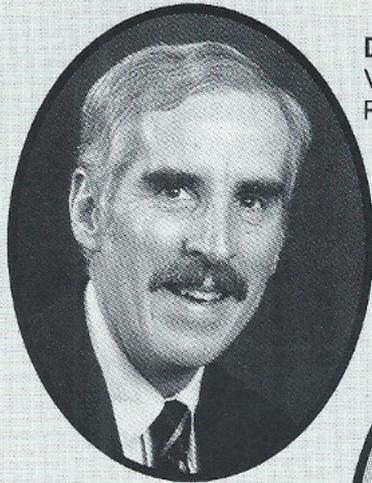
# REBELS WITH A CAUSE

## High-tech visionaries pioneer an alternative to Big Blue

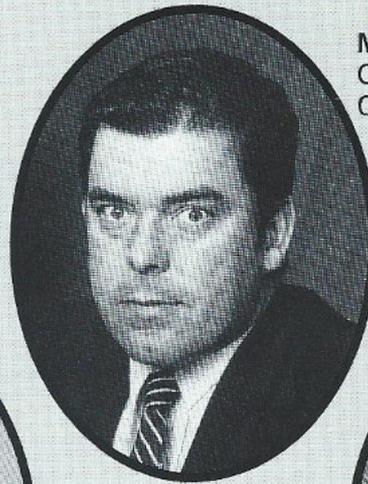
**J**une 1975: It was ten months after President Nixon resigned in the wake of the Watergate scandal, one month before the launching of the first joint U.S.-Soviet space mission, and three months before newspaper heiress Patricia Hearst — kidnapped by members of the Symbionese Liberation Army — was arrested for robbery of the Hibernia Bank in San Francisco. In the part of the United States that was becoming known as “Silicon Valley,” another historic event was taking place. Five-year-old Amdahl Corporation was celebrating the first shipment of its first product, the 470V/6, the first large-scale non-IBM mainframe manufactured that could run IBM software, and therefore was an alternative to IBM’s largest processors. This meant that companies around the world that had collectively spent billions of dollars on application software were no longer confined to running that software on IBM machines. Now there was another choice — one that was less expensive and, at the same time, offered higher performance.

The genesis of Amdahl’s 470V/6 goes back to the mid-60’s, to IBM headquarters in Armonk, New York, where some executives decided to form a new division that would be solely dedicated to exploring the potential of large-scale processors. IBM assigned some of its most talented employees — Bruce Beebe, Glenn Grant, and Dick Tobias — to launch the Advanced Computer Systems (ACS) division in Menlo Park, California.

About the time that ACS was starting, Dr. Gene Amdahl, architect of IBM’s System 360 computers,



**Dave Brewer**  
Vice-President,  
Processor Products



**Mike Clements**  
Corporate Vice-President,  
Chief Technical Officer



**Bruce Beebe**  
Vice-President,  
Product Operations



**Richard Bishop**  
Director,  
Advanced Systems Planning

A 1985 view of eight original employees: They came aboard January 4, 1971.

was named an IBM Fellow, and was given the freedom to work wherever in the corporation he desired. Enticed by the opportunity to explore new architectures for large computers, Gene chose to work at ACS. According to Dick, “Gene wanted to show IBM that there was a technology and an architecture that could be made to work well in a high-performance market and that could result in a computer that had a higher performance than anything else IBM had yet developed.”

But that goal was never reached. In 1969 ACS began focusing on disc products. Bruce, Glenn, Dick and Mike Clements left ACS and helped form MASCOR, a new startup located in Cupertino. Later other IBM employees like Jim Henry, Dave Brewer, and Rudy Bovier joined the firm. So did some non-IBMers like Russ Young, Lyle Topham, Jim Meyer, Richard Bishop, Reed Larsen, and Warren Yenney.

After a year, Gene Amdahl also left ACS to spend a summer in Europe as a guest lecturer at a NATO summer school for computer architecture. During this trip, Gene had plenty of time to ponder what went wrong at ACS. “The gestation period of Amdahl took place when Gene was thinking about what it would take to get something else going,” says Dick.

It didn’t take long for him to figure it out, and it didn’t take long before he found an opportunity to make his plan public. In 1970, MASCOR was unable to procure the funds it needed to continue, and the company was forced to close. Gene invited some of his

former colleagues to lunch at the Santa Clara Ramada Inn. Then he unveiled his plans. He wanted to develop a mainframe that would offer better performance than the comparable IBM machine, cost less, and run IBM software.

Jim Henry recalls his reaction to the plan. “When I heard Gene give his speech, it just felt right. The time was good, also. There were many antitrust suits against IBM, so they wanted to be able to point to a startup like Amdahl and say, ‘See, Amdahl just started. It has made it against us, so what are we being accused of?’ Besides, Gene Amdahl is a brilliant man. We use the term ‘creative’ in Engineering, but I think Gene is even a step above that. I would say he is a visionary. Anybody who would say he could start a company that could compete against IBM — and make that stick — knew what he was talking about.”

Bruce also recalls the historic luncheon. “Gene was very enthusiastic about his new company and at one point during his speech, he said that it would be realistic to assume that the Amdahl stock price would go to \$1,000 a share.”

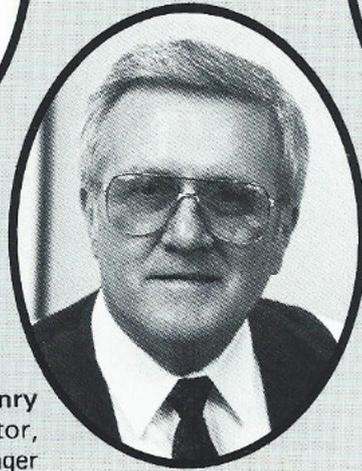
On January 4, 1971, twenty-two employees showed up for their first day of work at Amdahl Corporation — a company that had been in existence since October 1970, and had been staffed by Gene Amdahl, Ray Williams, a former IBM financial employee, Ralph



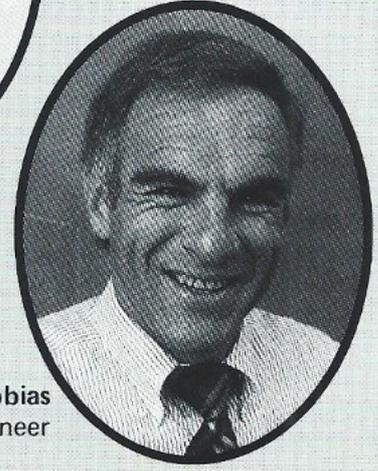
**Lyle Topham**  
Director,  
Processor Products  
Quality



**Glenn Grant**  
Director,  
Design Architecture



**Jim Henry**  
Director,  
Project Manager



**Dick Tobias**  
Consulting Engineer

Rodriguez, a former Litton Industries engineer, and Marjorie Slaughter and Susie Warren, secretaries.

Joining the new startup meant something different to each employee. Glenn recalls, "I had confidence in Gene Amdahl's business plan, even though in those days, people didn't understand the concept of startups. They didn't understand the kind of successes that were possible to achieve. To me, this was simply an interesting job with interesting people."

Dick reflects on his reasons for joining the new startup. "Dr. Amdahl was the greatest optimist in the world," he says. "He was the shining light. He had fantastic goals, as far as how much the 470 would cost, how quickly it could be developed, how much it would be sold for, and what the performance would be. He was optimistic, and as it turned out, unrealistic. The goals were so high, though, that it didn't really matter if they were reached or missed by a factor of two or three. Also, I knew from my experience at MASCOR that failure wouldn't be catastrophic to my career. The people from MASCOR already had been through failure. We were motivated in part by the attitude, 'Let's do this so we don't fail again.' We knew it didn't feel good to stand in the unemployment line. We knew what *not* to do, because of our previous experiences."

Jim and Bruce had more practical reasons for working for Amdahl Corporation. "When MASCOR folded, we didn't have the opportunity to go back to IBM,"

says Jim. "When you leave IBM, it's like leaving your family. You get disowned. They don't take you back."

According to Bruce, making the decision to join Gene Amdahl's new venture was very simple. "MASCOR had just closed the doors. We were on the street without a job. Gene had money and a plan for a challenging product. It was an easy decision to make."

The venture was on, and so the work began. "We simply transferred the MASCOR organization to Amdahl," says Dick. "We worked in the same areas we had worked in at MASCOR. My specialty was the storage system portion of the mainframe; Glenn worked on instruction sequencing; Mike worked on the E unit; Richard Bishop, on the I/O System; and Jim, on the console. We were a group of people who knew what each other could do. We could start, almost from the first day, developing a product."

Russ Young, who was hired in March 1971, observes, "The original Amdahl employees were the cream of the crop. They had been pre-selected by IBM. They were committed computer designers who had been at ACS, seasoned their skills at MASCOR, and were now ready to tackle the challenge of working at Amdahl."

By the end of 1972, just two years after founding his company, Gene Amdahl had raised more than \$27 million. Fujitsu Limited and Heizer Corporation, the Chicago-based venture capital firm, were the primary backers. According to Dick, "Fujitsu invested

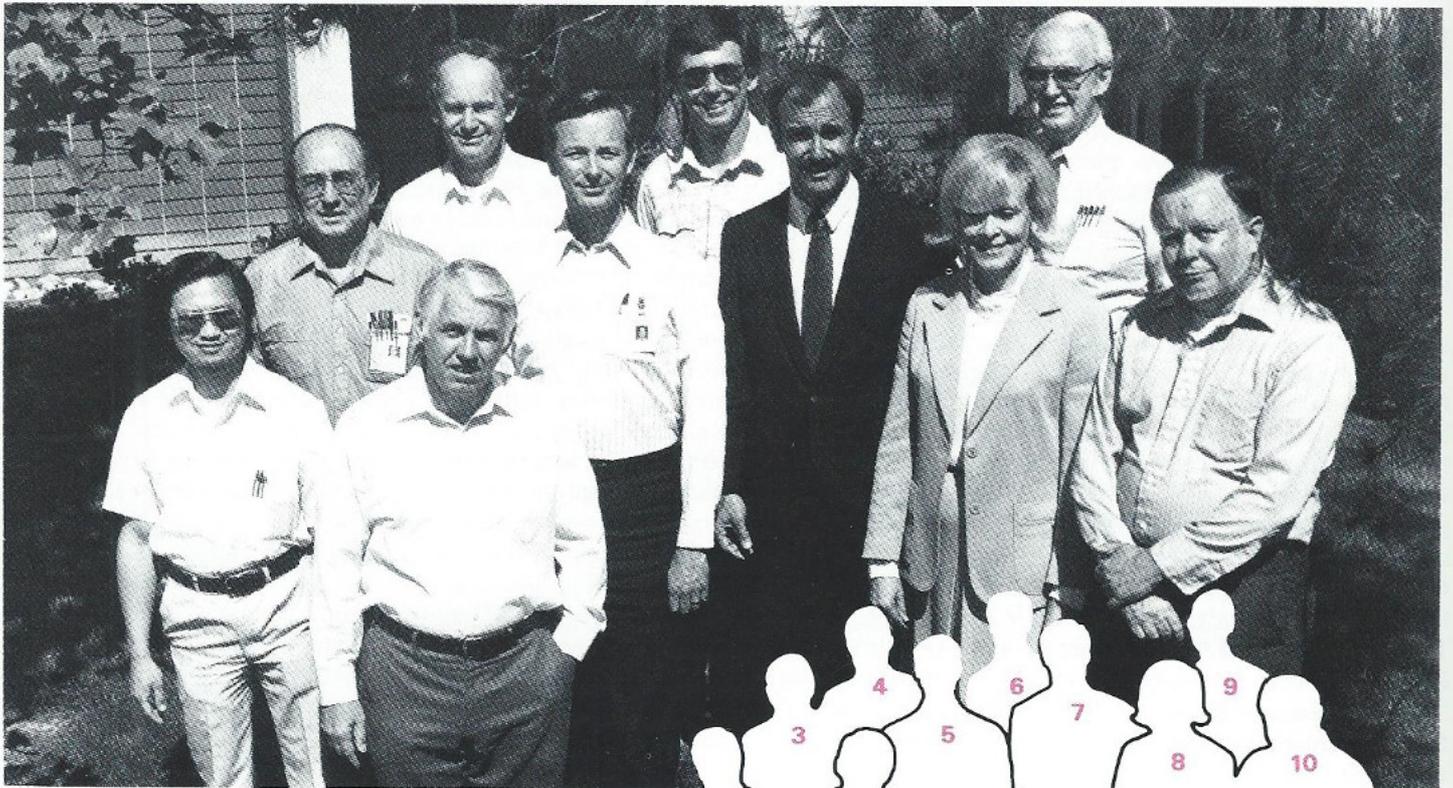
in Amdahl because it was a way for them to acquire the new technology that Amdahl was developing. They liked what Amdahl was doing in the area of semiconductors and packaging technology. About fifteen to twenty Fujitsu engineers worked with us side by side in the development portion. Some of them stayed here for two years.”

Hard times for any new venture are usually inevitable. Amdahl met adversity in August 1972 when IBM announced its first computer with virtual memory. Amdahl was forced to scrap its plan for a non-virtual computer, a machine that would not be competitive with IBM’s new product – and concentrate instead on one that would be.

Enter Eugene R. White, former key senior manager with General Electric’s Computer Operations, and a highly respected businessman with the reputation for making organizations work. In February 1974, the board of directors asked Gene to serve as a consultant to Amdahl. They gave him a big job: reorganizing the company, defining the work that had to be done, refining the business strategy, interviewing candidates for company president, and identifying sources for raising money.



Gene Amdahl (left) and Gene White are all smiles on a September afternoon in 1975 – when the NASA/Goddard Institute for Space Studies formally accepted P1, Amdahl’s first production 470.



First-year employees hired after Day One: 1) Anthony Wong, 2) Uli Spannagel, 3) Seymour Stern, 4) Robert Maier, 5) Allen Buskirk, 6) Russ Young, 7) Dave Anderson, 8) Rudy Bovier, 9) Chuck Ramba, 10) Warren Yenney. (Not pictured: Jim Meyer and Steve Tulloh.)



Gene Amdahl (third from left), Ned Heizer (fifth from left) and other Amdahl employees and well-wishers toast Amdahl's success at the company's groundbreaking ceremony.

"During those few months as a consultant," reflects Gene, "I grew increasingly more enthusiastic about Amdahl. I appreciated the technical skills and the competence of the staff. The job was full of challenge and excitement. I felt as though I was pioneering a new concept in the marketplace that could have significant impact — and of course, it did."

In August 1974 Gene White became president of Amdahl Corporation. Through Gene's superb management skills, Amdahl eventually was transformed from a financially faltering company to one that had a sound economic base, loyal customers, and a growing reputation in the computer industry. One of Gene's early business decisions was especially significant. "The original business plan was to lease our equipment," Gene recalls. "We soon realized that this would not be financially feasible. In February 1975 we decided that we could only sell our equipment. The customer would have to pay cash — upon acceptance — and wire-transfer the money. Many people at the company said, 'It can't be done.' I insisted, 'It's the only way.'" With that, Gene took the next step.

"I went to the initial customers and said, 'Give us a \$4 million check and have faith that we will be here in five years supporting you.'"

Gene got the checks. In the next decade, many other customers were to benefit from the talents, integrity, and commitment of Amdahl Corporation.

Due to the company's rapid growth in the mid-seventies, Gene knew the time had come to search for another talented executive who could help guide the company to even greater success. In 1977 Gene recruited John C. Lewis from his post as president of Xerox Business Systems. John became Amdahl's chief operating officer. In 1983 he was promoted to chief executive officer.

The entrepreneurial spirit that launched the company can serve as a modern-day model for conducting business today. Bruce attributes the success of the 470 to "significant team accomplishment. Many people gave much of their lives to making the product successful," he reflects, "and there was a lot of pride and enthusiasm when the product went out the door." □

## WHERE WE ARE TODAY

In 1980, it became clear that we had to diversify our product line to meet our customers' many data processing needs. According to Kip Witter, Amdahl treasurer, "Supplementing our main product line has generated incremental revenue at minimum expense because the products can be sold and serviced through the existing sales and support organizations, respectfully." Instead of one product line, there are now four, serving mainframe users of System/370 software:

### Central Processors

Amdahl's 580 Series consists of seven field-upgradeable models. The 1100 and 1200 Vector Processors are two high-performance super-computers that are compatible with System/370 scientific application software.

### Storage Products

The 6000 Series Storage Products include the high-performance 6280 and the large-capacity 6380 storage devices.

### Communications

The 4705 Series Communications Processor is a high-performance processor that serves as a front-end or remote concentrator in SNA networks.

Amdahl's Communications System Division (CSD) supplies networking communications products including the 2200 series multiplexers and the 4400 series network concentrators, which allow large numbers and varieties of remote terminals to communicate with central processors.

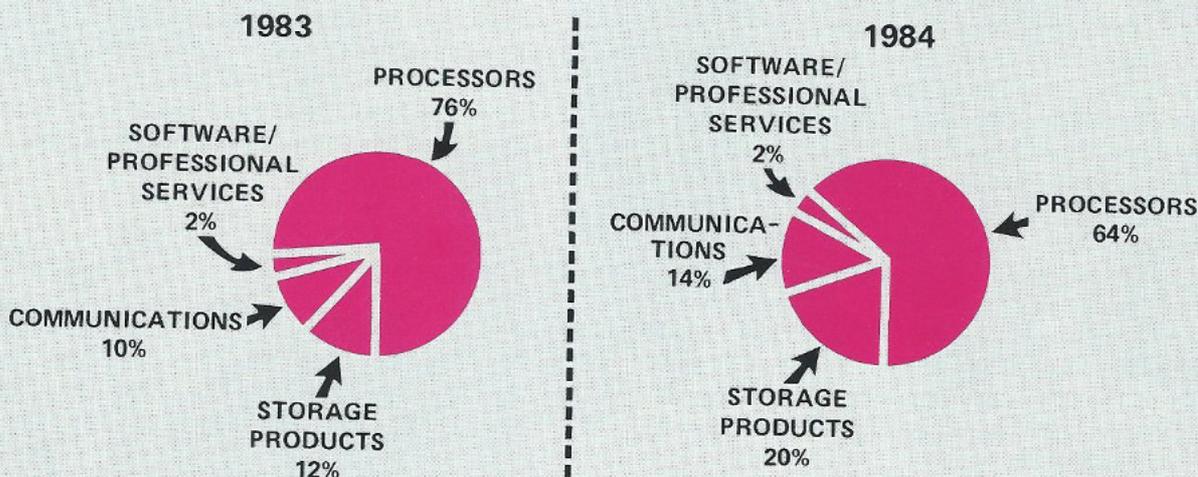
### Software/Professional Services

Amdahl develops software products that accommodate the large system user's special needs. In addition to supporting the major operating systems installed in our customers' operations (MVS and VM), Amdahl now supports the UNIX\* operating system. UTS\*\* permits UNIX to run on Amdahl 470 and 580 series computers, as well as on Amdahl-compatible processors. The Education and Professional Services division provides high-quality system-level education products and services to users of Amdahl and Amdahl-compatible products.

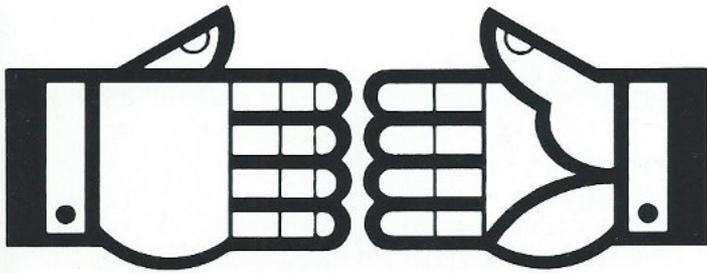
It is clear that Amdahl's technological innovations and customer-oriented attitude will ensure Amdahl's continued success in the years ahead.

\* UNIX is a trademark of AT&T Bell Laboratories.  
\*\* UTS is a trademark of Amdahl Corporation.

## PRODUCT REVENUE PROFILE (Less Maintenance)



These diagrams illustrate the percentage of revenue generated by each Amdahl product line.



# RISKY BUSINESS

## Early customers gamble on an upstart

**I**n 1975, the biggest, fastest computers in the world were made by IBM and by Amdahl. So when the NASA/Goddard Institute for Space Studies decided it needed a powerful computer to track data from its Nimbus weather satellite, the choices were narrowed down to these two companies. Amdahl was hopeful, because it was confident that its product rivaled IBM's. But NASA/Goddard already owned an IBM system, and like most IBM customers at the time, it was a little nervous about choosing a different computer company.

Another factor seemed to stack the deck in IBM's favor. Amdahl did not have time to follow standard government procedures required to offer a formal bid for the contract. According to Jim Shaw, director, Market Development, Planning and Analysis, and at that time, a software engineer, "We were a little naive about how

we did business back then. This was a government installation, which meant that we should have had a bid in. Instead, we just showed up with our machine in a truck." Amazingly, NASA/Goddard allowed its bureaucracy to be circumvented in order to purchase the 470. Amdahl had acquired its first customer.

It is easy to understand why NASA/Goddard — and subsequent customers — decided to buy. The processing power of the 470 was faster than that of IBM's machines — and it was from one to four million dollars cheaper. In addition, the 470 was about one-third the size of IBM's

largest machine, the 370/95. This meant a lot to a New York-based operation like NASA/Goddard, where floor space was expensive and at a premium.

Despite the 470's superior features, however, the early sales were not easy. "People were afraid to buy anything but IBM," says Charlie Pratt, senior account executive. "There was a feeling that it was a safe bet to stay with them. That is why we needed to find somebody who had the backbone to say, 'It really makes sense to buy a machine that is fifty percent faster and costs a million dollars less. That is a reasonable risk to take.'" Charlie adds, "You'd think that would be an easy sale, but people were quaking in their boots at the thought of doing it."

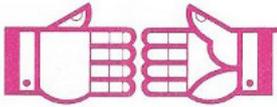
After the NASA/Goddard purchase, the next brave souls to take a chance on Amdahl were two universities. The University of Michigan, which became the second customer, used the 470 in its education center, where students learned programming. Texas A&M, the third customer, used the Amdahl computer to meet education and administrative requirements. In mid-1975, when the machines were purchased, the two schools were rivals, particularly in the area of data processing technology. So, when

Texas A&M learned that Michigan had purchased the second machine, they were a little upset. "Texas A&M had been talking to us on and off, but didn't think we were really serious about building a machine that would compete with IBM's," says Jim.



"However, when Texas A&M heard about the NASA installation and the Michigan purchase, they were at our doorstep. They literally walked around and kicked the doors on the machines like you do to the tires on a used car, and said, 'Is this really real?'" They grabbed the third machine, and from that point on, academic institutions became an important segment of Amdahl's customer base.

Sales to Computer Usage Corporation (CUC), a data processing service bureau, and to Massachusetts Mutual Life Insurance Company were also milestones because the companies were the first commercial customers. CUC bought machine number four. Massachusetts Mutual bought the sixth 470 in December 1975. This account was significant because it placed an Amdahl ma-



chine — for the first time — into an extremely complex, interactive data processing environment. “We were hooked up to all kinds of equipment, including IBM systems,” says Jim.

With six machines installed in just six months, Amdahl was well on its way. However, customer number seven — the Southwestern Ohio Regional Computing Center (SWORCC) — was a real cliffhanger. According to Jim, IBM brought in the big guns to keep us from getting the account. “IBM told SWORCC, ‘We are going to stop Amdahl here. It’s growing too fast.’ They flew in dozens of people — technicians, sales people, and some top brass — which was unheard of for them.” Despite the competition, SWORCC decided to buy the 470. Amdahl’s price, product performance, and service proved to be that good.

“Clearly, Amdahl had a better product in terms of technology and price/performance,” says Phil Lemay, vice president, Corporate Information Services. Phil should know, since he was one of Amdahl’s first international customers prior to joining the company in 1979.

In 1975, Phil was president of IST, a data processing service bureau in Montreal, Canada. After examining the 470, IST became Amdahl’s fourteenth customer, and within one year of the first IST installation, switched totally to Amdahl (from IBM).

The customer list in the first few years grew to include such accounts as Bell Labs, Western Electric, Liberty National Life Insurance, Pacific Northwest Bell, American Airlines, Canadian Pacific Railway, Sundstrand, Outboard Marine, the Williams Company, Reynolds Metals, and the Library of Congress. By far, one of the most important accounts from those early days is AT&T (and the Bell operating companies), which has become our largest customer.

For the early salesmen, there was a special excitement in being involved with Amdahl. “I think we developed a feeling that we were on a mission,” says Ollie Nutt, vice president of Marketing, U.S. Field Operations (South). “We felt we were doing something important for the industry by providing competition. It wasn’t just the sale that mattered. The industry needed us, and the customers needed us. We have done a lot of innovative things since then, like introducing products

that are field upgradeable, and developing a special emphasis on product support and serviceability. Also, prices have come down by a factor of ten since we entered the marketplace. Prior to Amdahl’s first shipment, the large CPUs had been increasing in price by about ten percent a year.”

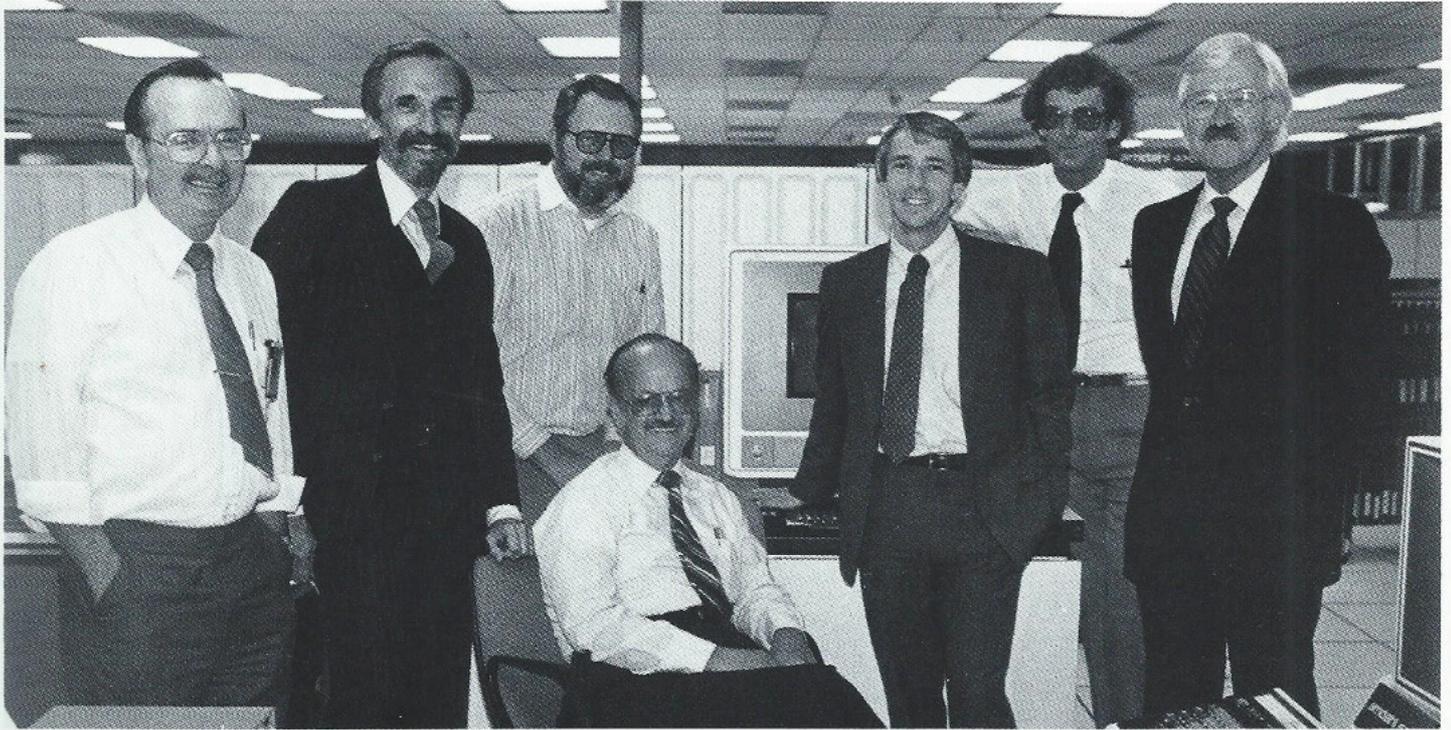


Wayne McIntyre, director of Special Purpose Systems, and Amdahl’s fourth salesman, says that despite the obstacles, the energy level at Amdahl was “almost mystical. We were going up against a juggernaut,” says Wayne. “Everyone was telling us that the 470 couldn’t work, and that there was no way to compete with IBM. But we believed in the product — so much so, that when we lost a sale, we knew it wasn’t because our machine wasn’t good enough. It was because the customer was too timid, too afraid to consider an IBM alternative.”

One company that dared to make the switch was Massachusetts Mutual Life Insurance Company. Vice President

Dave Blackwell says he has never had any regrets in choosing Amdahl. “In making that first decision to go with Amdahl, we were, quite frankly, a little bit worried that the company might not stay in business,” says Dave. “But we did an analysis, and found that even if Amdahl folded, or if the machine was worth zero in four years, we would still be money ahead — the product and the price/performance were that good.”

Charlie praises the courage of companies like Massachusetts Mutual, and understands how important they were to Amdahl’s success. “One of the things we pitched strongly in those days was the need for competition, the need for a choice,” he says. “I think that was one of the key motivators for some of our customers. They were rebels in a way, the ‘lunatic fringe’ as some people called them, and thank God they were, because that is what our business was built on.” □



Early customer support employees (left to right): Frank Nehse, Ed Cardinal, Tom Weathers, Bud Enochs, Jim Shaw, Bill Ehrman, Loren Dewey. (Not pictured: John Matthews and Gregg Peterson.)

## TALES FROM THE FIELD

John Matthews, director of technical support, and one of Amdahl's earliest field engineers, explains the tension, excitement, and sense of purpose that characterized the work environment of Amdahl's early customer support organization. "In the early days, if someone bought our less costly, faster machine – and it worked – he'd be a hero," says John. "If, on the other hand, he spent all that money and Amdahl folded – or the machine couldn't be fixed – he might get fired."

**T**he job of Amdahl's original field employees was to create heroes out of Amdahl's early customers. "I never worked so hard and long and enjoyed it so much," recalls Loren Dewey. "You were effective. You made a difference."

John, Loren, and other long-time customer support personnel, are filled with memories of the trials and tribulations they experienced during the 470's first few installations – installations that would lay the groundwork for Amdahl's startling success.

Bill Ehrman, hired in 1975 as one of the first SEs (system engineers), recalls the high-spirited comradery that evolved during the 470 installation at the University

of Michigan, our second customer. "Gene White would get on the company intercom about twice a day and provide a status report on the installation," he says. "In those days we lived by a simple, but meaningful slogan: 'It is better to ship than to receive.'"

In 1972, Bud Enochs, a seasoned field engineer with twelve years of IBM experience, was hired to start a customer support organization that would be ready to install and service 470s at the time of their shipment. Joining Bud were Loren Dewey, Gregg Peterson, Ed Cardinal, and Frank Nehse. These new employees had a specific mission: planning for future field support, working on 470 bringup, and writing

manuals for the 470. "Most of all, our people contributed to the serviceability of our machines," says Bud. "We influenced the engineers to change part of the design so that it would be easier to repair. We worked many hours, but had a lot of fun."

Bud, who was instrumental in developing AMDAC — Amdahl's Remote Diagnostic Assistance Center — has fond memories of the early installations, especially the one at the University of Michigan. "Dr. Bartels, director of the computer center, was obviously very excited about the installation," recalls Bud. "Although he was well into his sixties, he ran around like crazy, helped to unload the truck, pushed the machines around, operated the elevator — things a data center director usually doesn't do."

Bud ended up doing some things he normally didn't do, either — like playing air conditioner repairman. One hot, muggy night, the rubber hose in the computer room's air conditioning system malfunctioned. Since computers cannot operate in an uncooled room, the data center was going to shut down. But just in the nick of time, Bud had an idea. "In the middle of the night, I went to my car, lifted up the hood, and removed the air vacuum hose," he says. "Then I went back to the computer center and replaced the broken hose with the one from my car. The system continued operating for several days."

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**"I never worked so hard and long and enjoyed it so much. You were effective. You made a difference."**

— Loren Dewey —

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But the achievements of that early installation went beyond home remedies for broken air conditioner systems. The most memorable coup was a record-breaking engineering change. It took sixteen hours to implement — one of the fastest engineering changes in Amdahl's history. "We had a channel bug," Bud recalls, "that was created by the university's tele-processing controller. When we finally figured out what was wrong it was two in the afternoon. We took our spare MCC, rushed it to the airport, and sent it to San Jose. An Amdahl courier picked it up. Then things began to happen fast. A manufacturing employee came in for rework. She finished about ten or eleven at night. By seven the next morning, that MCC was back in the 470 at the University of Michigan — and the computer was up and running."

Problems of all sizes, shapes, and colors — literally — beset the early installations. When the 470 was installed at Texas A&M University, our third customer, there was one major dilemma. The university did not like the computer's red-orange color. It was the same as that of one of the school's rivals: the University of Texas. Before Amdahl FEs could comprehend the magnitude of this complaint, the data center director had removed

all of the 470's outer panels, rushed to the local Cadillac dealer, and requested a paint job.

For John, the installation at the University of Alberta, Canada, our fifth customer, was particularly memorable. "I was there for three months," he recalls. "It was forty-five degrees below zero — not counting the wind-chill factor. I had daily talks with the data center director. He kept asking me, 'Is Amdahl going to continue? Was it safe for me to buy an Amdahl computer?' His job depended on its performance."

Occasionally, an early customer developed an unexplained attachment toward an Amdahl FE. Herb Beatty, from the Williams Company (our twenty-sixth installation), in Tulsa, Oklahoma, is a case in point. "After the installation was completed," recalls John, "Herb and I agreed there was a tough bug somewhere. He was confident that I could fix it because he thought I was a good technician. I went home for a few days, flew back to Tulsa, and — sure enough — fixed the bug. But I wanted to go home for New Year's. I told him I was leaving. He said, 'No you're not. You're staying here.' I repeated, 'I have to go home.' Then I said, 'Look, Herb, I just got married on my last trip home. I have plans with my wife over New Year's, and I want to be with her.' Herb said, 'That's not a problem. Bring her here.' So my wife and I ended up spending New Year's day in Tulsa."

But not every customer developed this attachment. In fact some — like AT&T in Piscataway, New Jersey (our twenty-second customer) harbored the exact opposite sentiments.

"When we installed the system, someone forgot to order a cable, and eventually the machine failed," John recalls. "The director of the data center was very upset. He came by one morning and said, 'Do you want to have a cup of coffee?' I said 'Yes.' When we got to the cafeteria he said, 'Do you still have the boxes this thing came in?' I said, 'Yes, I have them.' He said, 'Well, just pack it up and send it back. It was a good try, but it didn't work.'

"We tried to talk to him but he wouldn't listen," says John. "All he said was, 'I'm about to retire and you guys are going to mess up my retirement.' I quickly called back to headquarters. The next thing I remember . . . it was morning and Gene White was meeting with the data center director. When Gene walked out of the office there was a smile on his face. AT&T had decided to purchase another machine."

Had Gene resorted to magic to win over AT&T? No sir. He simply told the customer what he had been telling customers from the beginning, and what has, in fact, become the backbone of Amdahl's sales and customer support efforts: "I told them not to worry," Gene recalls. "I said I'd make it right for them." □



Amdahl's "V" Log Sim can be viewed by nostalgia buffs.

# AMDAHL'S FIRST COMPUTER

By Russ Young

How does Amdahl know if a new computer system will function as intended when it is finished? Does Manufacturing just build it and hope for the best? Not on your life.

**L**ong before any hardware is built for Amdahl's current products, the new design undergoes a software simulation. Here is what happens. A computer model of the new system is developed. The model is a large, complex software program that represents the new design. This large program then runs on an existing large computer system. As problems are found and the design is corrected, the model is run again.

Amdahl's first design — code named the "A System" — was for a machine that would compete with IBM's then-current top-of-the-line computer, the 370/165. In June 1972 — about a-year-and-a-half after the company was founded — the computer's architecture was defined, the circuits were designed, and the logic was connected. It was time to test the product to see if it would work. But back in those days, we were unable to run a software simulation because we didn't yet have the large, complex computer program, and we didn't have a large computer.

What did we do? Using old-fashioned technology, Engineering built a logic simulator to test the operation of the new product. Each 470 LSI chip became a 5" x 6" printed circuit card, and each MCC became a card cage with a twisted-pair back panel. And the elegant 470 became a monster of MSI (medium scale integration) circuits, double-sided printed circuit cards and miles and miles of twisted-pair wire. The complete system stood six feet tall and was forty feet long.

How was life breathed into this monster? Amdahl went out and found Fritz Schneider, a system software

wizard, now with Amdahl's Software Development in Dallas; Dennis Terry, a streetwise former IBM engineer (no longer with Amdahl); and Tom Hirst, a brilliant escapee from Berkeley, and today a bringup specialist. They, along with other bright design engineers and field engineers, were presented with the challenge of running an IBM operating system on a non-IBM machine, and were reminded that this had never been done before.

At 1 p.m. on Saturday, February 3, 1973, the first operating system message was received on a 2150 typewriter console. After several months of debugging, the operating system testing began in earnest in October. On January 2, 1974, the "A" Log Sim ran its first job stream. At that moment the plug-compatible mainframe (PCM) industry was born.

On January 3, 1974, the "A System" was cancelled. Amdahl decided to compete with IBM's newest mainframe, the virtual memory Model 168. Amdahl then focused its limited resources on the "V" Log Sim, the logic simulator for Amdahl's virtual memory system. This machine became the legendary 470V/6.

Whatever happened to the "A" Log Sim? At first it was ignored; later it was shoved into a corner; and finally, it was pushed out into an Amdahl parking lot, where it weathered a rainstorm. Finally, the machine was cut up for scrap. But the "V" Log Sim is intact today and can be viewed by nostalgia buffs in the Martin Street Warehouse. □



In the early seventies, orchards and farmhouses dotted the future Headquarters site.

# BUILDING ON SUCCESS

**“W**hen we were located in the Kern Avenue building in the early seventies, I would look out my office window and see people riding horses,” says Dave Brewer, vice president, Processor Products. “And there were onion fields where we are now. You could smell them during the harvest. It was a very bucolic setting.” Bud Enochs, in Group Operations, also has fond memories of the early days. “There were huge open fields all around us. We used to fly kites during the lunch hours.”

Back in the early seventies, when Amdahl was still a young firm, the surrounding area was, indeed, idyllic. There were orchards, farmhouses, and a distinct absence of commuter traffic. By the time we shipped our first 470 in 1975, the whole face of the valley had begun to change. The onion fields and the orchards were being replaced by modern office complexes that would support an industry that seemed to thrive on change.

Fifteen years after the company’s inception, and ten years after our first product shipment, Amdahl can boast an impressive growth in facilities. We have expanded our operations from one small building on East Arques (the Kern Avenue facility was Amdahl’s second) to more than 100 buildings worldwide that occupy approximately two million square feet of space.



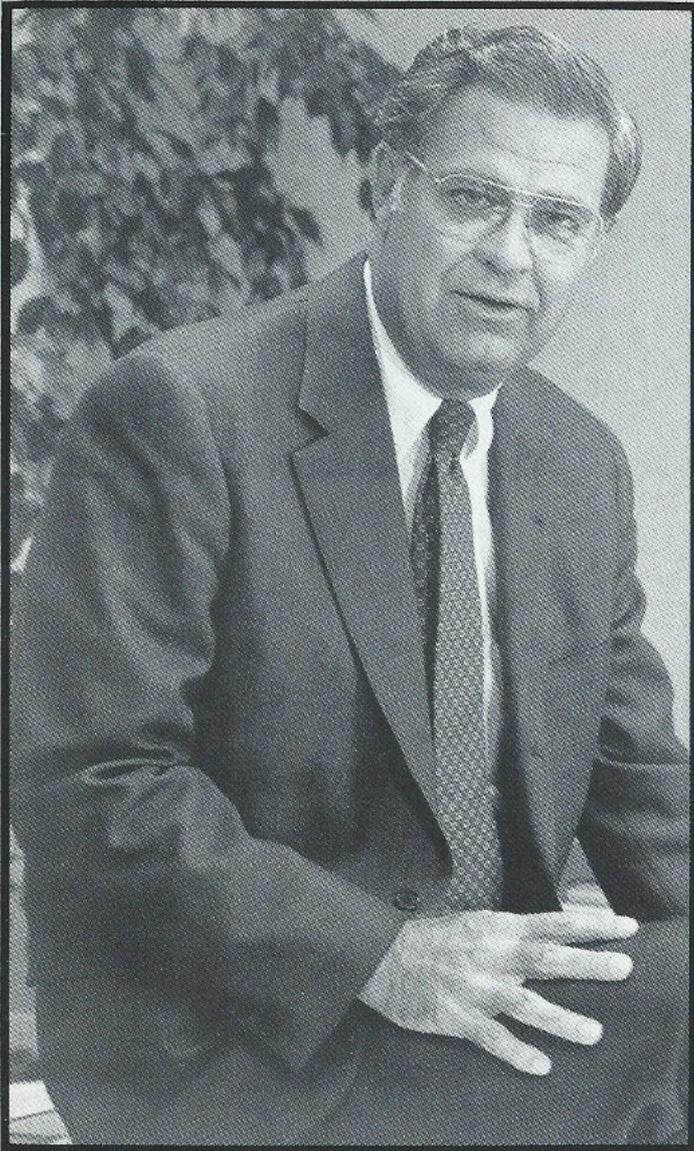
The idyllic setting (*opposite*) was gradually replaced by the main campus, a modern-day office complex.

Of course, we didn't go from a single building to the present-day complex overnight. After occupying several facilities on Kern Avenue, employees moved, in stages, to buildings A (Administration), E-1 (Engineering), and M-1 and M-2 Manufacturing). And signs of future growth were evident, even then. "Those of us who worked in the Administration building could look out the window and see 'Mount Amdahl,' says Dave Brewer. "It was a large mound of dirt for future construction, which was home to a lot of squirrels." In 1977 and 1978, the balance of the present-day Sunnyvale complex — more than twenty buildings occupying 1.2 million square feet — was constructed.

According to Dave Newgen, who joined Amdahl in 1978, and is now director of Facility Projects, the activity level in those early days was hectic. "We had construction crews here sixteen, eighteen hours a day in order to keep up with Amdahl's facility needs," he says. "For months, we worked every weekend." Amidst this flurry of construction, there were a few times when projects were completed before the paperwork was finalized, "something that would never happen today," says Ed Hartford, vice president, Corporate Facilities. Dave describes the mix-up. "In the spring of 1979, we undertook a major construction project in front of buildings H and A, in order to provide access for our handicapped employees," says

Dave. "The paperwork to approve the project dragged on and on, and meanwhile, there were construction deadlines with contractors. The documents finally made their way to the responsible officer, and just as he was about to sign the forms, he looked out his window and saw the construction crew putting the finishing touches on the project. We were told to slow down our activities after that!" (Later that summer, Amdahl received a community award for making the facility available to the handicapped.)

In the last decade, our facilities have grown and matured with the people, and the business. We have added a host of U.S. and international sales and service offices, as well as a manufacturing site in Ireland. And while most of the farmhouses may be gone, occasionally you might see, on a warm, spring day, a kite soaring high above an Amdahl building. □



## **A MESSAGE FROM THE PRESIDENT**

Since its beginning fifteen years ago, Amdahl has become a major international corporation with a reputation for quality products. The company's phenomenal success could not have happened without the talents, integrity, and dedication of our employees. They have worked hard to develop, manufacture, sell and service a series of products that offer high performance and reliability at a superior price.

Our employees persevered through the company's hard times, as when our first computer design had to be shelved at the last minute, and when our first public offering did not get public support. They also rejoiced at such triumphs as learning that the new operating system worked, and shipping the first 470V/6 in June 1975.

Today Amdahl continues to thrive. Instead of one product line, we now have four. In 1984 we added two new processors to the 580 series; we introduced two additions to the 6000 Series of storage products; and we entered the high-performance scientific processor business with the supercomputer.

The future looks bright. We are expanding in areas that represent some of the highest growth segments in the data processing industry: central processors, storage products, communications products, and software. And we will continue to offer Amdahl employees a challenging and rewarding environment that will provide opportunities for professional growth and a sense of contribution to the company. □