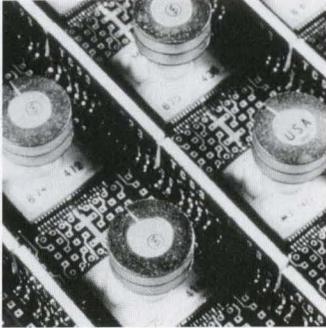


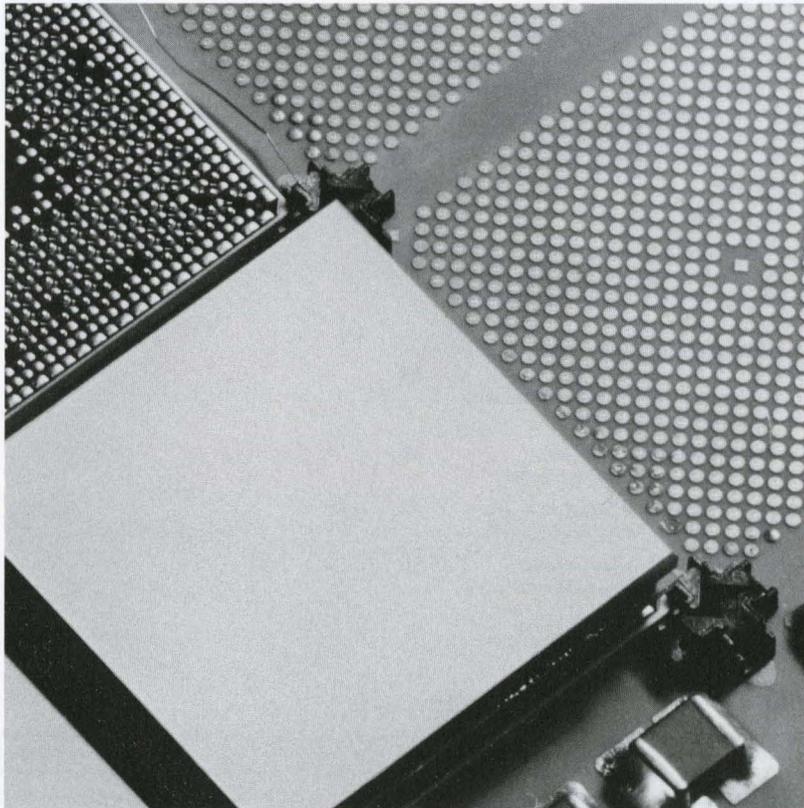
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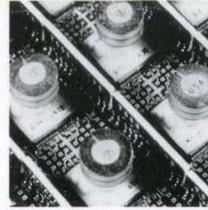
amdaahl



CELEBRATING TWENTY YEARS OF QUALITY ACHIEVEMENT



November 1990

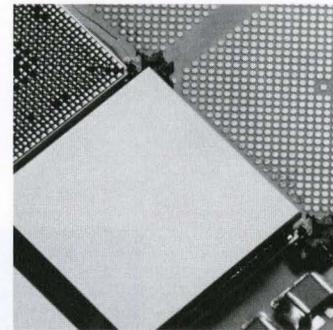


On the Cover

◀ In 1975, Amdahl's innovative chip design for the 470 gates each (top photograph). Two decades later, each chip on the MCC board in Amdahl's latest products, the 5995 Processor Series, has up to 100 times that amount.

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Suggestions for articles

can be mailed to Amdahl® Update, m/s 300, 1250 East Arques Avenue, P.O. Box 3470, 94088.

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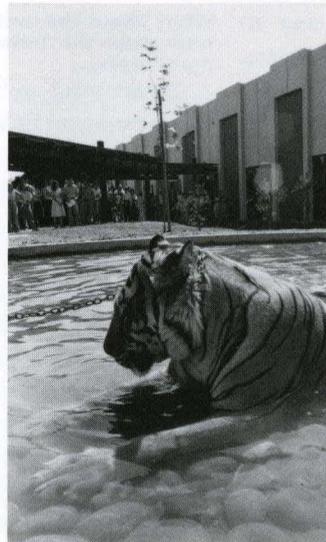
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Special thanks for background research:

John Challinor, Dan Chomko, Frans De Hollander, Gary Doyle, Pat Duffy, Gillian Greening, Johannes Hauvik, Roger Heath, Mike Kennedy, Marcel Ledergerder, Pauline McLaughlin, Ulla Nyberg, Bill O'Connell, Bill Stewart, Claude Theard, Sean Traynor, Herma Van Gisteren, Marie-Louise Van Kerckhoven, Enrico Vecchi, and Peter Williams.

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20,000 Gates & 20 MIPS

A Look at 20 Years of
Innovation with Bruce Beebe
and Dave Brewer

Innovation is risky business. It isn't always knowing what you're doing, it isn't always doing the right thing, but it is learning from your mistakes and improving on them. In an interview conducted just days before Amdahl revealed its sixth generation of products, these first generation employees revealed how Amdahl has forged innovations in both the technology business and the "people" business.

How did you first make your way to Amdahl?

Bruce: After going Chapter 11 at a startup called MASCOR, Dave and I were virtually on the street when Gene Amdahl came along with a new opportunity. When you're looking at it from that perspective...it's real easy! We had worked with Gene at IBM®, so we had some acquaintance with one another. It really wasn't a difficult decision to make.

Gene felt that the large end of the market wasn't being aggressively pursued because IBM's technology was always designed to address the midrange, where most of the dollars were. To create a high-end machine, they just tried to stretch that midrange technology. Gene thought if you designed the technology specifically for a high-end machine, you could be much more successful. He first tried to convince IBM of this. When he was unsuccessful, he decided to do it himself—and Amdahl Corporation was born.

Gene's vision was a very small machine, because small meant fast, and very high performance—certainly the success of the 470® was wrapped around the technology behind its 100 gate LSI. The ex-

pectation the first day we heard about the machine was 20,000 gates and 20 MIPS. But as we sorted through it, 12 MIPS became the next goal, and when we actually implemented it the result was about three MIPS. In those days, no one measured these things very accurately. Anyway, we significantly missed our vision, yet we were well ahead of the competition.

"In the early days, everyone was working on the same thing practically within shouting distance and the uniformity of goals was good, the team spirit was good. The challenge for today is to maintain that kind of feeling and that kind of energy with the enormous groups of people that we have."

What about the tools used then? We now make the majority of our development tools....

Dave: And we made our own then. But they ran on IBM 1130s—we did all of the design files on punch cards that we would feed into the machine, and the machine would process them and give out wire lists. And we had a router to produce artwork for the chips and boards.

Bruce: We also had the hardware Logic Simulator. We had this thing about as long as a freight train built out of technology that was one generation older than the LSI. We did that because you could never build out of the LSI and get it right the first time. So we built it out of this

older generation technology that was very changeable.

Each week we'd isolate design problems on the machine and on the weekend we'd implement Engineering Changes (ECs) for the problems we'd found. We'd tear the machine down and change all these wires on the back panels and then we'd put the machine back together at the end of the weekend and try to bring it back up again. We got to the point where we spent Monday-Thursday just trying to get the machine to run again, and then we'd have only one day to work on it before we'd have to take it down for ECs again. The hardware logic simulator was a great concept, but we didn't spend enough time engineering it.

How much storage did the original 470 have?

Bruce: We may have been all the way up to eight megabytes of memory in full configuration—less than PC-class stuff these days.

Thinking about the areas of responsibility such a small group of people had in the early days, how many people would cover comparable design areas now?

Dave: Glenn Grant, Mike Clements, Richard Bishop, and Dick Tobias were the lead designers in each of the major areas such as the I-unit and the S-unit, and they probably had 6-8 folks working for them in each unit. So, when we first started out about 25 people were working on the design.

My guess is, a little later on there were probably 50 people where there are 500 people now. Design Automation then was probably 4-5 people, and now it's 150. The technology group (chip design) was

4-5 people then, and the comparable group now is probably 40-50. And of course, we do many things now that we didn't do then. We didn't have anything called Macrocode then, so that's all new. Diagnostics, that's a big organization now.

Bruce: Things are also complicated much more now because our design groups are working on several different product generations at the same time.

Was the idea of upgradeability a goal from the beginning?

Dave: No. That just kind of happened.

Bruce: I guess the first "upgrade" was the V/8. The V/7 was a new machine, with a redesigned S-unit (storage system). With the V/8 we just went in and honed the cycle time of the V/7. The idea of upgrades wasn't originally a part of our strategy—it fell out of what we did to squeeze more performance out of the same basic design.

Dave: You could almost say we were sloppy with the V/6—we didn't spend a lot of time trying to get the most performance we could out of the technology—we were so far ahead of the competition. It really wasn't necessary to squeeze it harder. And then we went back and squeezed it and went from a 32.5 nanosecond cycle time to, I think, a 24 or 26.

What about factors like manufacturability and user-friendliness? How big a part did they play in the initial design?

Dave: Amdahl was a classic engineering-driven company, which meant that we ignored all of that. We got ourselves in

deep weeds because of this. The bonding of the fine wires to the back of the Multiple Chip Carriers, something we do easily now, was a technique no one had ever done before. We bought some bonders and hired a bunch of people and got all set up to manufacture before we were really ready. The company had a very big setback because of this—in fact, we very nearly went out of business in 1974.

When was Fujitsu first involved?

Bruce: In November, 1971 some initial meetings were held, but those were focused on Fujitsu making a financial investment rather than development. They were trying to understand what we had.

Dave: Bruce and I first went over there in February of 1972, and very soon after they sent a team of about a dozen people over here. They were really bright guys, very good at what they did. I was always impressed with how easily they adapted to us. I can remember playing touch football with them, and of course they had never played football before, but they picked it up very quickly.

Bruce: And the entire Fujitsu contingent learned to drive in the Amdahl parking lot. We had fun working together.

Were they doing the same kind of design work as you were?

Dave: They were sharing offices and working elbow to elbow. They worked long and hard, and then they went off and held their own meetings because they were not only trying to help us get our

design done, they were also trying to figure out how they were going to use the machine once they got it back to Japan.

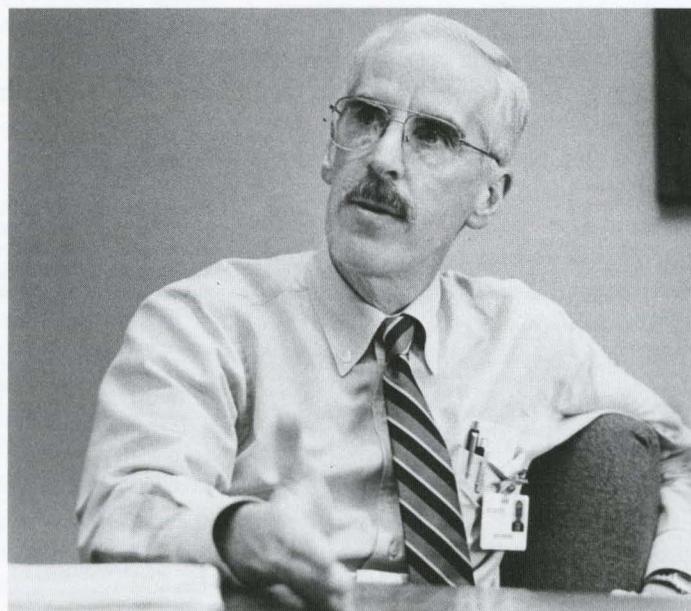
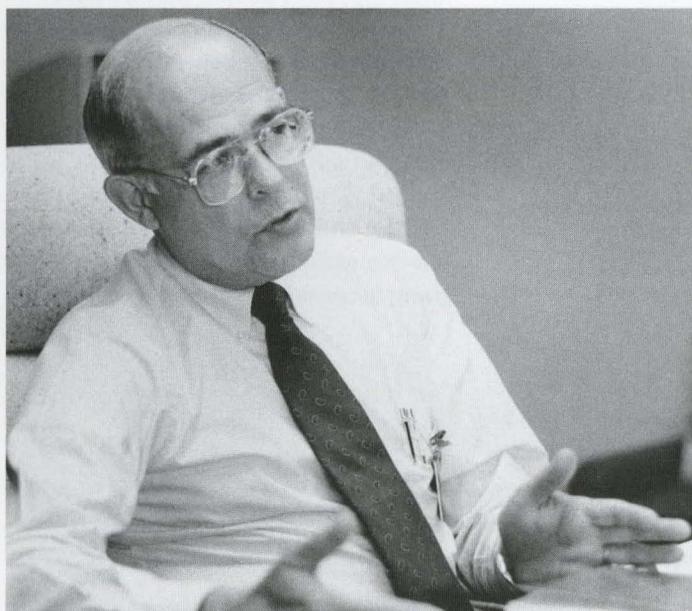
Bruce: As far as managing them went, we first tried to take a typical Amdahl organization chart and plug the Japanese into appropriate organizations based on their skills. This didn't work, because they are very hierarchical in their management structures. We ended up having one of the lead Japanese being the group leader for 2-3 junior Japanese engineers. The senior level person would work with the Amdahl engineers and any communications to the junior guys would be worked through him.

We allowed the Fujitsu group to organize their way and then we built a bridge between the two organizations. It wasn't a serious problem, we just had to go through that learning experience.

When the 580 came around, the next generation, what was done differently?

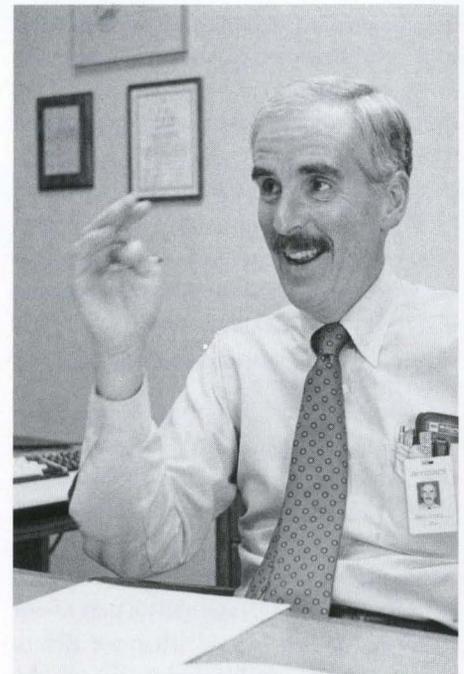
Bruce: We started talking about that technology in 1977. The chips were four times bigger—400 gates per chip. It was also a bigger board, 11x11 chips, 121 versus 42. More layers. Yet it was still an extension of the V series.

Dave: To me, the remarkable thing about the 580 was that we didn't do much differently, and that was our mistake. With the 470, we had an inherently more reliable technology than the competition, so with the 580 we said "okay, we'll make a machine about as reliable as the V/6





From a shared office at the IBM Poughkeepsie, NY Development Facility to their current respective positions as Senior Vice President, Product Operations and Vice President, Processor Products, Bruce Beebe (left) and Dave Brewer have ridden on the leading edge of innovation—and they've seen a lot of changes in twenty years with Amdahl.



because that worked well the last time.” Then the other guy leapfrogged us.

For all the vendors in those days, the dominating factor in outages was design flaws—you sent them over to customers without getting all the bugs out and ended up debugging them for the first year on the customer's floor. We did it and so did IBM—except that they began to develop better means of testing internally.

So what did we do to change that?

Bruce: Implemented a lot more disciplined testing. Now we're doing much more simulation and design checking.

Is it easier to develop machines now than it was then? Today's machines are much more complex, of course, but we have so many more tools....

Dave: There's one big difference that we have now that we didn't have then. Then we could fail. Now we can't. If we fail now we have 8,500 people and I don't know how many investors riding on this. In those days, we had a handful of venture capitalists who understood the high risks of the business. If they hit one in ten they were happy. So we took all sorts of risks, in retrospect, that we'd never do now.

Does that conservative philosophy carry over into the engineering arena? Are we risk averse in the design work we do now?

Dave: Not at all. In fact, it's the opposite. We have to press the technology very hard, a lot harder than we did then.

For example, a lot of the circuitry that we put in now is for recovery. I don't think we had anything in the V/6 for recovery—maybe a 30 percent recovery at a maximum.

Our conservative attitude today has much more to do with schedule. I don't know what our first schedule was back in 1970—probably shipping in 1973. And we shipped in 1975. We just couldn't afford to do that now.

Bruce: You could examine this graphically if you compared the principles of operation or the design rules that we had then with what exists today. Then, the design rules were probably a half-dozen sheets of paper where there would be a one-inch notebook today. And you'd find this order of magnitude and change in complexity in every area of processor design.

Some people say that mainframes are heading toward extinction, but we're certainly not building our business based on that assumption. Where do you see them going in the next ten years or so?

Dave: Within ten years, I think we'll see some extremely powerful single chip machines. The advantage is that you get a tremendous amount of performance for a very low cost, so the whole balance of the market changes.

Bruce: The requirement to manage huge amounts of data is not going to go away. Therefore, the need for something

very large to manage large amounts of data is still going to be there.

Is it still fun?

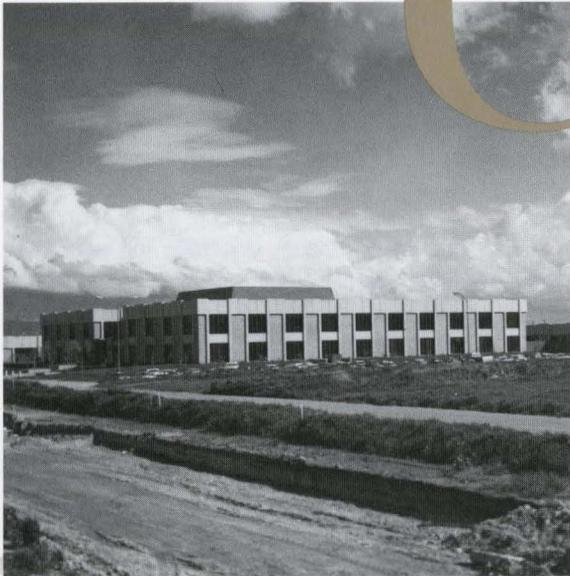
Dave: For me, the “fun” issue now has a lot more to do with people than it does with technology. We've gotten to the point where we need to get large groups of people working together well. In the early days, everyone was working on the same thing practically within shouting distance and the communication was good, the uniformity of goals was good, the team spirit was good. The challenge for today is to maintain that kind of feeling and that kind of energy with the enormous groups of people that we have.

Bruce: Human Resource organizations say they are in the people business. Baloney. We're all in the people business, and if we think we're in the technology business and not the people business we're not going to grow the company right. Getting and keeping the right people is how we made it then, and it's how we're going to continue building for the future.

The Beginning



Continuing Pride



The genesis of Amdahl Corporation goes back to the mid-60's when some computer executives decided to form a new division solely dedicated to exploring the potential of large-scale processors.

Several IBM satellite sites were established to develop ideas independently. One of these, the Advanced Computer Systems (ACS) division, was launched in Menlo Park, California and some of their most talented employees— including Bruce Beebe, Glenn Grant and Dick Tobias— were assigned to the project. The ideas that grew out of their work formed the cornerstone of the Amdahl Corporation.

As ACS was being founded Dr. Gene Amdahl, architect of System 360 computers (the predecessor to the 370 System) was given the opportunity to work wherever he desired. Enticed by the challenge of exploring new architectures for large computers, Gene chose to work at ACS.

The driving force for the ACS team was to show that there was a technology and an architecture that could be made that had a higher performance than anything else IBM® had yet developed.

But that ACS goal was never achieved at IBM. Another technology was selected, and in 1969 the ACS group began focusing on disc products. However, that change didn't interest some of the engineers. A handful of ACS employees—Bruce, Glenn, Dick and Mike Clements—left to form a start-up company, MASCOR, in order to pursue their dream of producing a faster mainframe that could be sold for a competitive price. Later they were joined by Jim Henry, Bruce Beebe, Dave Brewer and Rudy Bovier. MASCOR also attracted others interested in large system architecture including Russ Young, Lyle Topham, Richard Bishop, Reed Larsen and supporting technicians, Jim Meyer and Warren Yenney.

Meanwhile Gene Amdahl, who had also left ACS, went to Europe as a guest lecturer at a NATO summer school focusing on large-scale systems. During this time Gene pondered what had gone wrong at ACS. When he returned, he gathered some of his former colleagues together for a lunch

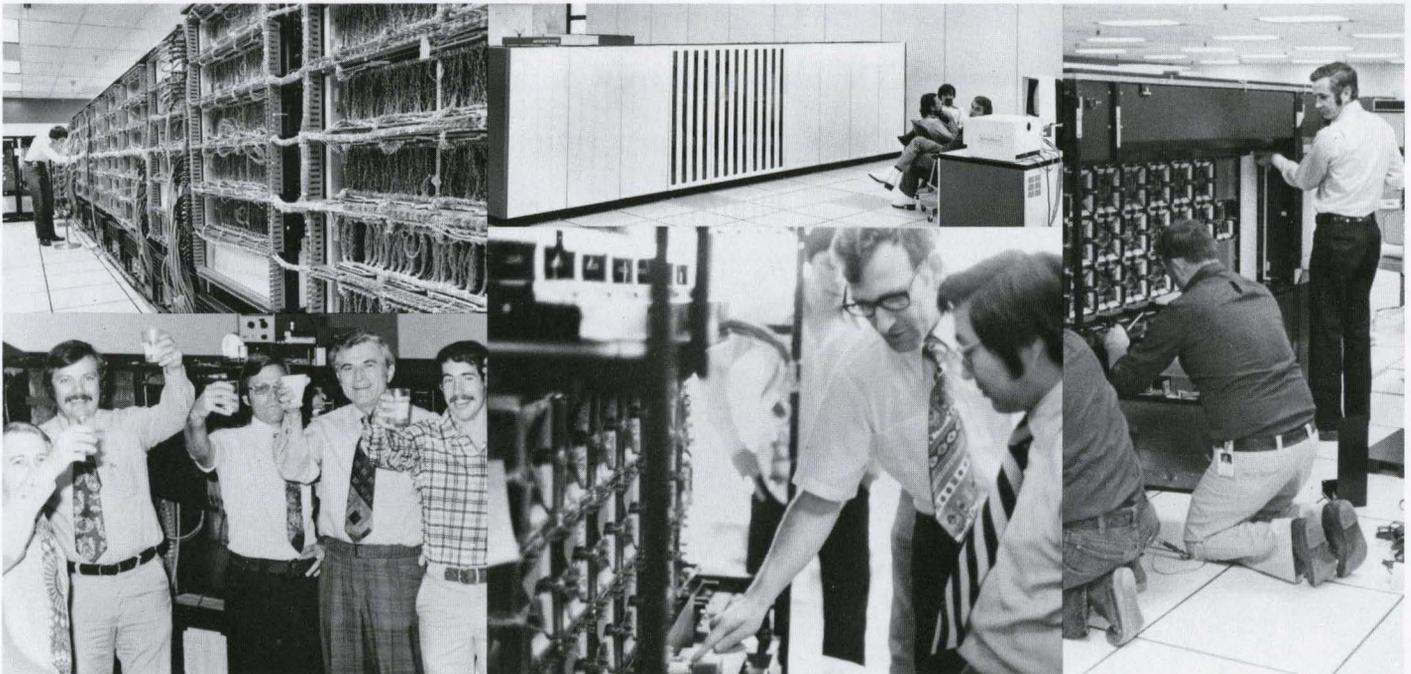
at the Santa Clara Ramada Inn. There he unveiled his plans to form a new company.

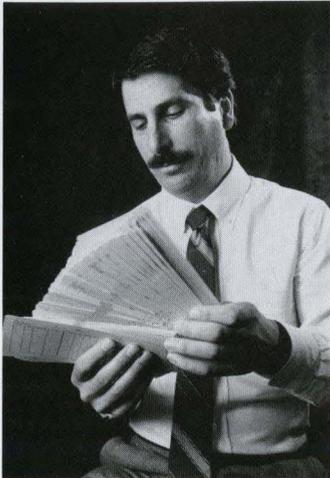
“The timing was right for the project,” states Glenn Grant. “MASCOR was faltering due to lack of funding and there were several antitrust suits filed that opened opportunities in the computer industry. Everything seemed to be pointing in the direction that this was an idea that could make it— and Gene Amdahl’s enthusiasm for the project made it feel possible.”

On January 4, 1971, Amdahl Corporation opened its doors for business when 18 new employees, including the recruits from MASCOR, joined the existing employees (Amdahl Corporation had been formed in October, 1970 and there were four employees, including Gene Amdahl, before the new year) for their first day of work.

It was a hard five years later, with an investment of over \$50-million, before the first product was shipped. Despite this long development time and tremendous financial investment, the dream of making a significant impact on the computer industry kept the challenges from becoming overwhelming. Today, that same entrepreneurial spirit, pride and personal dedication that produced Amdahl’s first computer continues to grow as we expand our product line and services.

Several Amdahl employees reflect on those early years, the changes they’ve seen and why they continue to work at Amdahl.





BILL TARANGIOLI

"When I joined Amdahl in 1974 we were planning to move to the four new buildings on 'East' Arques." At that time East Arques was only a gravel road.

"Even though we were only moving 350 people, half the number you would find in just one building today, it was a big effort. We were definitely learning as we went along.

"I remember upstairs from Building A you could see the construction of Great America. There was a big dirt mound where H Building is now. In those days pheasants and rabbits weren't uncommon sights.

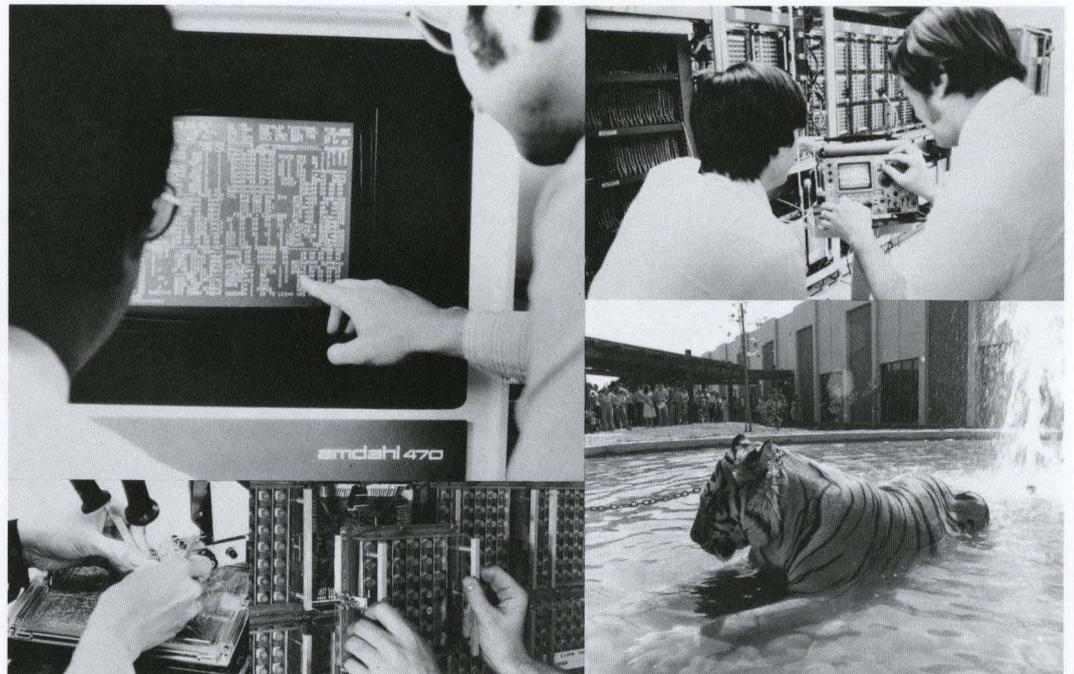
"In 16 years, Amdahl has never quit changing. In many ways it is like a different company today. It's a lot more stable—and now we have products to sell. Back then, we really didn't know what the future would look like. And I'm sure no one thought we would become the size we are today. We just thought of ourselves as a small company."

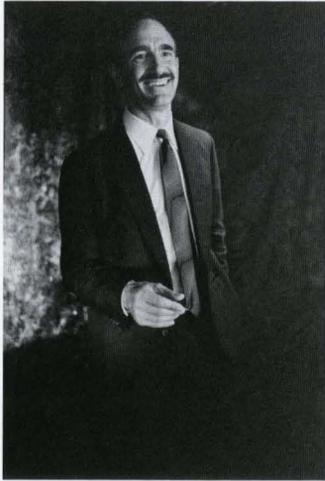
JIM MEYER

"My original Amdahl business card didn't have a title on it, that way I could become whatever I needed to be that day." Hired on February 21, 1971, Jim was the first line employee in the Drafting Department, but with a quick change of hats he would also become the representative for the Mechanical Engineering Department or the Machine Shop.

"With Amdahl's first machine we were working on some very innovative connection layers on the circuit boards. We started with eight and then finally moved to ten different layers— this presented some unique problems in terms of how the space would be used and how the physical connections would be made. The Electrical Engineers would bring me the 'needs' and I would figure out the physical concept. We came up with the solution of putting the connections on the internal boards and the wires out the back— so they could be changed easily."

Jim also designed Amdahl's first tool. "We had contracted with a vendor to crimp the chips so they would fit onto the chip-carrier. But when they came back all of them were incorrect and wouldn't fit the space that we had allowed. So I devised a tool, out of some scrap brass from my garage, that would put the proper crimp on the edge and allow the chip to fit the board. I lost only one in the process—the first one while I was learning to use the tool!"

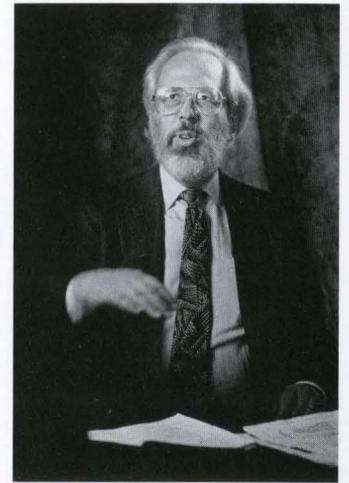
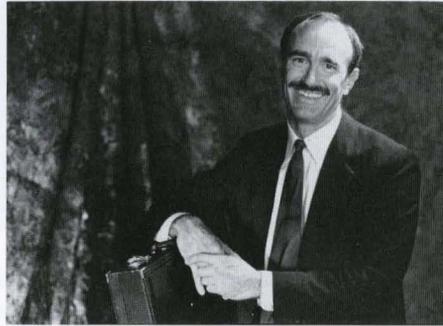




DAVE ANDERSON

"When I started at Amdahl I was too young to know how risky it was." Dave Anderson, vice president of Advanced Systems, began his Amdahl career on October 4, 1971. "I was originally recruited to work on the console, which I did for a couple of years. Then I progressed to system integration—setting up the 'unit test floor' as we called it back then. What was amazing is that I worked on aspects of the project that today they wouldn't let me anywhere near. I did lots of different things and so did everyone else. Today we've got a dozen specialists to handle those things.

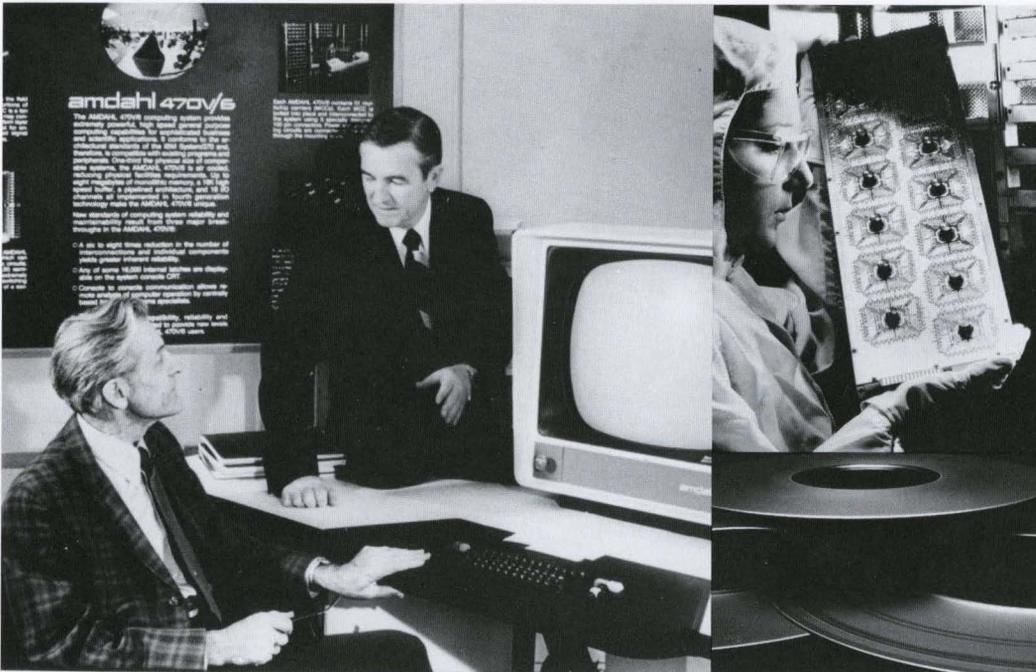
"Being at Key has made me realize again how much Amdahl has grown and how sophisticated we've become, both in terms of how we think about things and also how complicated we are in our processes. My challenge at Key has been to try to retain some of the lightness of foot of a start-up while instilling some of the stability of a large organization. And I'm also striving to integrate some of what I've learned at Key, such as shorter cycle times, back into Amdahl."



RICHARD BISHOP

Richard Bishop, director of Advanced Systems Planning, was a member of the original group that started at Amdahl on January 4, 1971. He managed the design groups working on the I/O unit and the Systems console for the first 470. "My recollections of the early days are not very rosy—personal sacrifice by many and 70 to 90 hour workweeks. At times the responsibility was overwhelming. But eventually, we were successful and that was very satisfying.

"When I think back to the beginning, it seemed beyond expectation that we would become a Fortune 500 company. But now, when I think about the future, I believe that there is better opportunity than ever. We know our customers and what they do. With that knowledge, by helping customers so they can develop and run their applications better, we have the potential over the next 10 years of raising Amdahl to the preeminent position in the data processing industry."

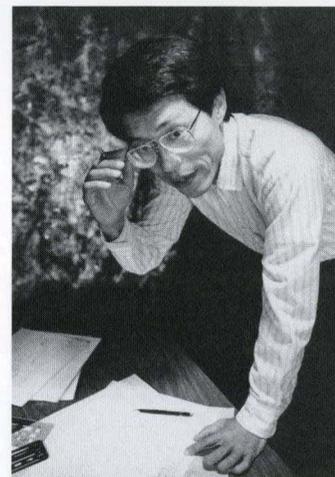


MARSHA SCHNEIDER

"When I began at Amdahl in 1972 it was a unique environment. We didn't really have a product then, but it felt like an established company. We had a mission we were working towards. We all believed in the goal and each of us, no matter if you were on the manufacturing floor, in payroll or whatever, knew what you did made a difference."

"The early days of selling (1976-77) felt like a war zone. Our salesmen would go out and march up that hill—often returning with empty briefcases—and we all felt it. It was like a family, we shared. When contracts began to be signed we all savored the success, everyone from Engineering to the receptionists and the people in manufacturing."

Marsha is currently the District Administration manager for the Western Region. During the 18 years Marsha has been with the company she has seen Amdahl grow from when she was the only secretary for Manufacturing to our current presence worldwide. "We've proven that we can survive in a very competitive industry. Amdahl has also retained its concern for the employees' welfare, making it a quality place to work."

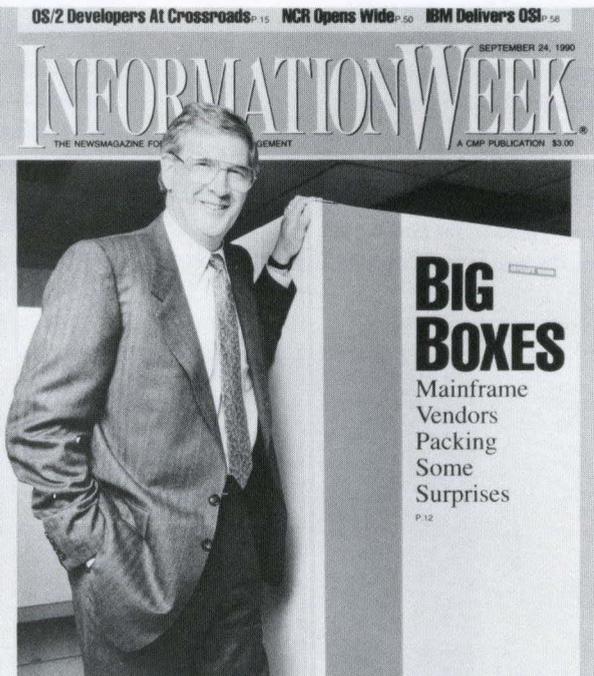
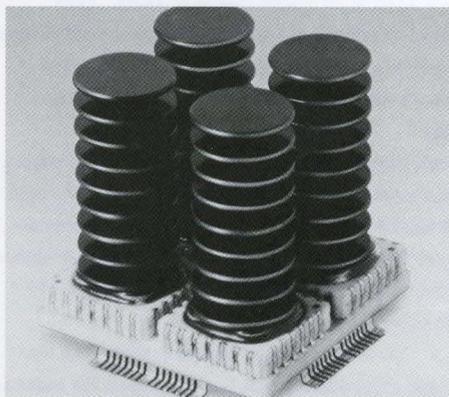


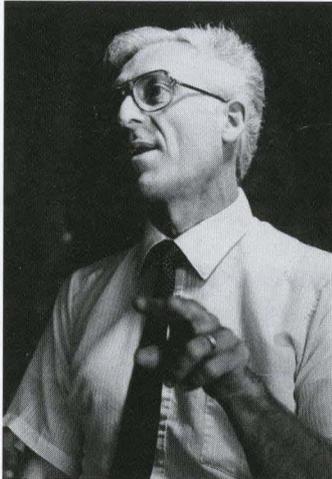
SHERMAN LEE

"Our original I-unit design team consisted of four engineers and a manager, Glenn Grant." Sherman Lee was hired in July, 1972 to work on the instruction unit design for the APS System that eventually became Amdahl's first product, the 470. "I remember the design team for the whole machine could fit inside a conference room.

"It was a totally different design environment back then. Our logic drawings were done by hand using templates. I remember getting my first automated design tool—an electric eraser. It was quite a kick and it really helped with the tedious parts of my job. Once the design was finalized, then you still had to map it into a form the computer would recognize—the connections were assigned numbers that were recorded on key-punch cards and then the stacks of cards were fed into the computer.

"Everything was very exciting back then. Our finances were tight and frequently there were rumors about whether we were going to make it—but look where we are today."





EILEEN JENKINS

"I was hired as an assembler when they were just beginning to build the manufacturing floor at Kern Avenue." Eileen started on March 6, 1972 and was the third assembler hired. "Manufacturing was just a big open room then.

"When we had a deadline everyone worked very hard. I remember one programmer had brought in a cot and his sleeping bag and was basically living at the plant so that we could meet the schedule. And he wasn't the only one—we weren't working for the money, in fact at that time I was working for three dollars an hour, but it was the challenge. The spirit was there and it was very catchy."

Eileen is currently the document technician for Computer Systems Architecture but over the years has been in several different work groups. "I've always sought out positions where I can be a strong individual contributor and Amdahl has provided me with opportunities where I can grow. It is up to the individual employee to put in his or her own contribution—in the best way he or she knows how.

I feel fortunate that I've always been able to work around people that are dedicated to our products and to the success of the company."



LYLE TOPHAM

"There were about 22 of us, 18 from a failing start-up company, MASCOR, who gathered on January 4, 1971. Gene Amdahl described to us his dream of what Amdahl Corporation would design and build—the cycle time, the machine footprint size and its power requirements.

"In the beginning the company was so small to be taking on the industry giant, but we had confidence in the technology and in each other. Very much like today, we were in the forefront of technology so the sophisticated equipment required to

test our components and assemblies couldn't be purchased but had to be custom designed and built by us. For each new technology we have designed and built chip testers, automatic curve tracers, wire verifiers and other unique test systems.

"Working at Amdahl has always been a challenge because we are competing against the industry giant on the forefront of technology. Twenty years later, it's great to be participating in this continuing contest."

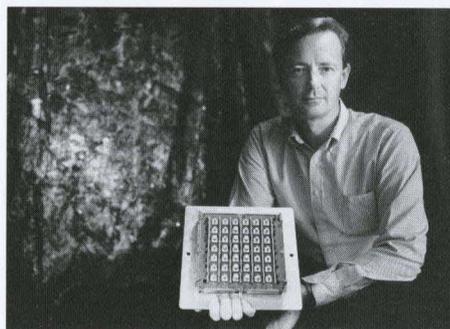


ALLEN BUSKIRK

"We used to look down on the reverse engineers. We thought they were kind of funny, in fact. We designed through principals and many of us, the new folks like myself, had never seen the insides of an IBM® machine." Allen Buskirk was one of Amdahl's first college recruits—he had interviewed with MASCOR and then reinterviewed with the newly established Amdahl Corporation. He joined Amdahl on June 7, 1971 and has spent most of his career in computer development, working on hardware design. Since the 580, he has been focusing on system reliability issues. "Even though IBM's logic drawings were publicly available we didn't have them. We felt we had a strong architecture and just wanted to implement it, so we weren't too concerned about how IBM had done it internally."

"Consequently we were very innovative, particularly in respect to things like the cache memory. For example, on the 580 we used a virtually addressed memory cache which was the first commercial application of that theoretical concept. I can actually remember reading an engineering paper at the time that said that it would never work. We smiled as we built the 580.

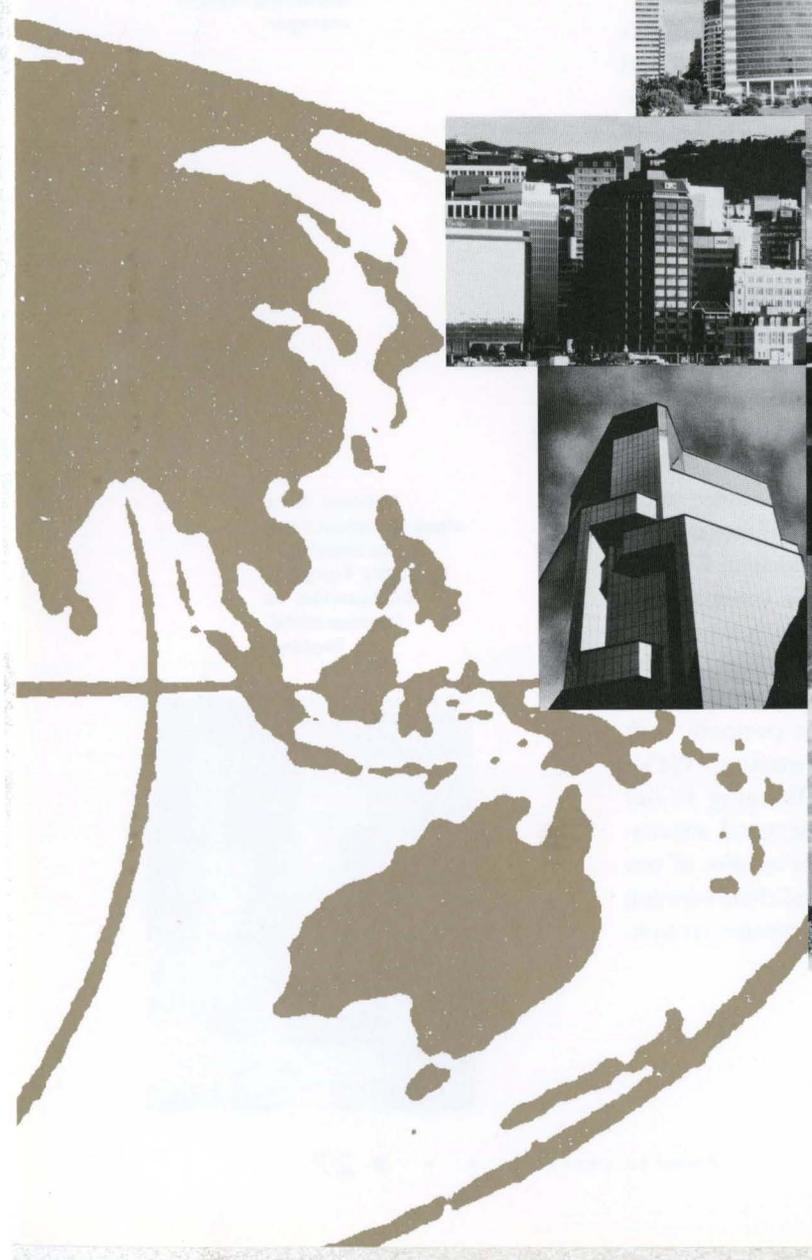
"We learned a lot of lessons in those days that have shaped how we do business today. We learned to work with our vendors to ensure we would get components that help make our machines reliable. And we've been willing to listen to our customer needs and change as the uses of the equipment have changed. I feel this is one of our strongest attributes as a company—the willingness to meet the customer and go the extra mile."



Number 1 Pacific Highway

The Pacific Basin is Amdahl's third largest Field Business Unit (FBU) with nine offices located across six countries. Somewhat prophetically the address of its headquarters is "Number 1 Pacific Highway."

Early in 1982, the Australian Government issued its then largest Request for Tender to re-equip the Department of Social Security (DSS). The tender covered main-frame installations in seven capital cities, terminals and office computers for hundreds of locations, and database software, a big request for the then fledgling group representing Amdahl in the Pac Basin. But this group, working through a distributorship agreement with a Fujitsu subsidiary (Facom Australia Limited— FAL), was never one to think small. They, with some trepidation from Amdahl Sunnyvale headquarters, decided to go for the bid.



Southern Bells...and Shells

Like many other early Amdahl employees, Ollie Nutt was really faced with two decisions when he was deciding whether or not to join Amdahl. First, was he willing to leave IBM? Second, was Amdahl a place he might want to work? "I thought IBM was the best—I'd spent 10 years there," he reflects. "I got a call from Amdahl, and out of curiosity met with them at Texas A&M." He then visited Sunnyvale, and liked what he saw. "I realized that if I thought IBM was the best and I could successfully compete against them...hey, let's go out and run them a good race!" Ollie says. "I slept on the decision and was gone the next day."

In January, 1976 Ollie joined Amdahl as the Regional Manager for what is now the South Central Region, building that territory from one person up. "At that time," says Ollie "training for field managers consisted of coming to Sunnyvale and roaming around talking to various people to find out about the product." After his "training course," Ollie went back to Houston and rented Amdahl's first office in that region. For six weeks, Ollie booked himself solid making sales calls. "I had no problem getting in to see people," he recalls, "They had a basic curiosity—'what are these crazy people up to that think they can compete against IBM?' To do business with us, they had to gather up a lot of courage to take what was obviously a risk at the time.

"But we had a very sound product. I would talk to prospects and say 'If you'll give me one open-minded hour, we'll talk about our product and compare it to competitive offerings. I think I can convince you that we have something superior.' So I would go through the pitch, and ask them one question at the end of the hour—'If you had a choice between putting in an IBM 370/168 or an IBM 470V/6, which decision would you make?' I could get people to say very easily 'Yes, if they were both IBM labels, the 470 is obviously the superior machine.' The challenge was to have them feel confident in Amdahl.

"For the better part of the first 12-18 months, we built the staff up in Houston—sales, marketing, and support people—and then we were opening other offices roughly every six months during the first three years," Ollie continues. "We were able to sell and install three systems by the end of 1976 (all were in Tulsa and Kansas City), and all three are still good Amdahl customers. We had much success in the early years with the oil companies, most notably Shell and Exxon. We also had some good success with state agencies and universities in Texas."

"I had no problem getting in to see people. They had a basic curiosity—'what are these crazy people up to that think they can compete against IBM?'"

In Big Blue's Backyard

Like Charlie Pratt, Wayne McIntyre left IBM in Chicago to come to Amdahl in January, 1976. As the second full-time Account Executive, Wayne worked out of his home basement for the first few weeks, and was able to set up many contacts despite a four-year-old daughter who thought every phone call was for her.

Wayne fondly recalls his early sales strategies. "We didn't really have time in those days to make a long-term kind of sales pitch," Wayne says. "What we had to find were prospective customer sites where you strike a spark, kindle it rapidly, and get into a serious business conversation before IBM people had a chance to see you in the hallway and send the alarm back to Armonk!"

Working Together

From early on, all the regions worked extremely close together. Everything they developed, from presentation materials to sales strategies, was a team effort. "The regions also worked together to get the best people they could," Ollie says. "For example, I knew Dave Beamer and I helped to get him placed into our Chicago office. We had Charlie Pratt out here, and Milt Nelson in New York.

"I recognized that if someone sold one in Chicago, that helped me because then I could use them as a reference. We all covered enormous amounts of physical distance. In 1976 we sold and installed 27 systems, with only about seven salespeople on board. We couldn't have done that with those seven people operating individually."

Within the regions, teams of sales and support people were also learning to work together. "I remember going on sales calls with Milt Nelson in New York," says former SE, now Staff Software Engineer Larry Hardiman, who joined Amdahl in November, 1975. "He didn't know much about the technical side of the business, and I didn't know about sales. At first, we just didn't understand what the other was trying to achieve, but we soon learned to work together."



NASA. Besides first-time install jitters, working in the heart of New York created its own anxieties, such as creative double-parking on a busy city street.



Solid Support

John Matthews, director of Technical Support and one of Amdahl's earliest Field Engineers, explains the excitement and sense of purpose that characterized the work environment of Amdahl's early U.S. customer support organization. "In the early days, the data center guys' jobs were on the line every bit as much as Amdahl's," he says. "If they approved the purchase of the less costly, faster Amdahl machine and it worked, they'd be heroes. But if they spent all that money and Amdahl folded, or the machine didn't run, they could get fired."

The young customer support group had a specific mission: planning for future field support, working on 470 bringup, and writing manuals for the 470. The service technicians even influenced the engineers to change part of the design so that it would be easier to repair.

Jane Bonneson, hired in Minneapolis in 1977, was the first woman hired as a Systems Engineer (SE). "It was really amazing back then. I got help from both the Amdahl people and our customers. They were all incredibly positive and it was unbelievably fun," she says. But we were like Maytag repairmen—waiting for calls."

Customer Service manager Ed Cardinal, was a former IBM technician from Detroit who found Big Blue too conservative for his free-wheeling style. Ed served as the backbone of Amdahl's early install teams, and recalls getting most of his sleep in the early days on data center consoles during round the clock installations. "Customers loved Amdahl's enthusiasm," Ed says. "We worked hard, and did everything we could to meet their needs."

Problems of all sizes, shapes and colors—literally—beset the early installations. When the 470 was installed at Texas A&M University (P-3), the university did not like the red-orange color of the machine because it was the same as the school colors

"After the Install": An early Customer Services team takes a post-maintenance breather. Many technicians recall getting most of their sleep in those days on top of computer consoles.

of the University of Texas, A&M's biggest rival. Before the Amdahl FEs could comprehend the magnitude of this complaint, the data center director had removed all of the 470's panels and rushed them to a local Cadillac dealer for a custom paint job.

The financial situation on the home front was sometimes tight. Larry recalls a period when Accounting was so slow in reimbursing employees for expenses that some field engineers were having a hard time paying their bills. "When Dr. Amdahl, who was calling on a local customer, caught wind of this," Larry says, "Accounting sped up their processes. 'It's okay to prioritize,' Dr. Amdahl said, 'but you can't not pay the people who are maintaining our machines for customers.'"

Sometimes it wasn't money that was lacking. "I remember getting a call from a stranded SE we had hired fresh out of school," Larry says. "He had completed his Sunnyvale training course and had been shipped out to a Hartford, Connecticut customer site. He arrived at the airport but couldn't get any farther—they wouldn't give him a rental car since he was under 25."

Occasionally there were other concerns as well. "When we installed at the AT&T Piscataway site (P-22), someone forgot to order a cable, and eventually the machine failed," John remembers.

"The director of the data center was very upset. He came by one morning and asked me if I wanted 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. All he said was, 'I'm about to retire and you guys are going to mess up my retirement.' I quickly called Headquarters. The next morning Gene White was meeting with the data center director. When Gene walked out of the office, he was smiling. Instead of throwing us out, AT&T had decided to purchase another machine."

Twenty years later, these Amdahl pioneers are pressing eastward towards yet more unexplored territory. This time it's the Far East, where they face not only the same challenge from a well-dug-in competitor, but the additional hurdle of crossing cultural barriers that make state lines look like cracks in a sidewalk.

Eastward, ho.



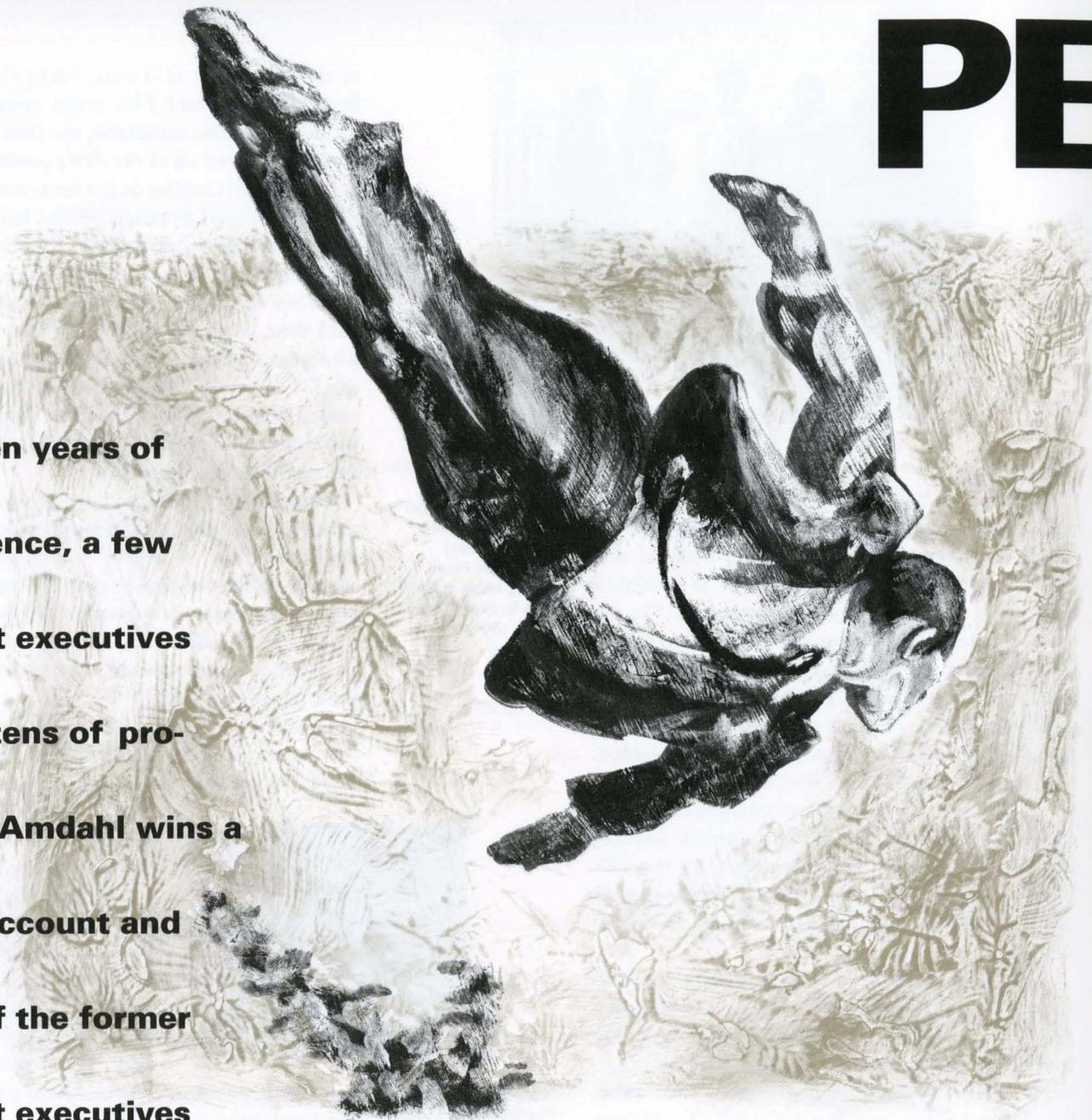
"Salesman Emeritus" Charlie Pratt receives one of the many outstanding sales awards he has earned over the years from former Amdahl sales manager Jim Dutton.

After ten years of persistence, a few account executives and dozens of proposals, Amdahl wins a major account and some of the former account executives

take a swim.

Probably one of the most demanding tasks for a new Account Executive is to sell an account to a long term prospective customer who for years has relied on competitors. With this in mind, Rosemont Regional Director of Marketing Dan Chomko proposed a unique challenge during an obviously unguarded moment to Minneapolis Account Executive (AE) Joe Donovan. "If you sell to this prospect, I'll personally come to Minneapolis and jump in the Mississippi River," proclaimed Dan one November day in 1989.

As the Amdahl Account Executive for this large Midwestern financial firm from 1980 to 1984, Dan had never been able to sell them anything—not even a presentation! Nineteen seventy-seven was the last time a successful contact was made with this customer when they purchased a 470V/6. "I thought their mold was 'true blue' and was skeptical that they would ever change...I guess the timing was never right," explains Dan. However, despite these doubts, Dan knew this was an important account for us to win. "This is the largest and most influential financial institution in the upper midwest. Getting



RESISTANCE

MAKES A SPLASH!

this account would potentially lead to other sales because of their prestige.”

The history of this pursued account does not stop here. Looking back at the mid 80s, other AEs pitched their award-winning proposals only to lose the account to our competitors. From 1984 to 1986, Larry Murtha was one of those account executives who used his best sales tactics in the hopes of obtaining a contract with this prospective customer. “Try as we did, nothing worked. We were never able to effectively get the Amdahl story across,” says Larry. Despite these efforts the customer was not “sold” on Amdahl until Joe Donovan took over the account. “We simply were not going to give up. We kept going back to the customer looking for opportunities,” explains Joe.

Finally, after years of persistence and a few Account Executives, this customer decided that the Amdahl solution was in fact the best solution. The team of Joe and Bob Wagner (Minneapolis’ Regional Systems Engineers) worked closely with all levels of the customer organization to ensure that Amdahl’s upcoming recommendations and proposal met the customer’s needs. “We focused on customer requirements and direction, Amdahl’s commitment and support, the value of

competition and the performance and flexibility of Amdahl’s 5990 system with its Multiple Domain Feature™ (MDF),” explains Joe.

“We simply were not going to give up. We kept going back to the customer looking for opportunities.”

In the midst of digesting this information, the customer visited Amdahl’s Sunnyvale Headquarters for an extensive Executive Briefing. The reasons for these meetings were two-fold: to help Amdahl executives better understand the customer’s needs while also allowing its executives to more fully understand Amdahl’s past, present and future.

More than 10 years after the original contact was drawn up, the customer signed a new contract and soon after, a 5990-500 system with MDF was installed. The customer was so impressed with the system and Amdahl’s service that they’ve already upgraded it to a 5990-1400.

But what ever happened with Dan Chomko’s challenge?

“We had no intention of letting him off the hook,” Larry explains. “We an-

nounced Dan’s challenge at our next Regional Sales meeting just to make sure both ends of the bargain were fulfilled.”

As all good managers do, Dan immediately enlisted the support of his superiors, namely, Tony DeMory, North Central Regional vice president and Dave Wright, vice president of Commercial Sales. Tony and David agreed to take the plunge along with Dan. After all, how could they say no in front of a semi-annual sales meeting with over 100 eager AEs looking on?

The date of the big event was set: August 17. To honor the occasion, Dan, Tony and Dave were presented with tailor-made sets of official river jumping trunks—in symbolic red—from Jane Bonnesen, systems engineer. “The trunks were a terrific way to tie everything together—the jump, everyone’s hard work, and the contract,” says Dan.

The entire Minneapolis office turned out for the festivities that day. Cheers from the crowd came as Dan, Tony and Dave fearlessly jumped off a pontoon boat into the cold, murky waters of the Mississippi River. As the courageous three were jumping, Joe chuckled at one tiny oversight—“We forgot to ask them if they knew how to swim.”

“The jump was a great way to celebrate,” concludes Joe, “but the best part was knowing that we were able to meet this customer’s needs and that we can work on fostering relationships with their data center personnel.”

As for Dan, he has become more judicious in “voicing” his opinion about our chances at new prospects. “Our guys did a terrific selling job with the key words being perseverance and professionalism. They flat out-marketed our competitors and when that happens, I’m happy to take a swim!” he exclaims.

Might this be a new motivation tool for all Sales Managers?

Terilyn Monroe



Signs of the Times

nineteen-hundred, ninety
 november

**What do cats, chip cooling towers,
 Matryoshka dolls, wooden ducks and
 blue ribbons have in common?**

**They all have represented Amdahl in
 our information campaigns at one time
 or another.**

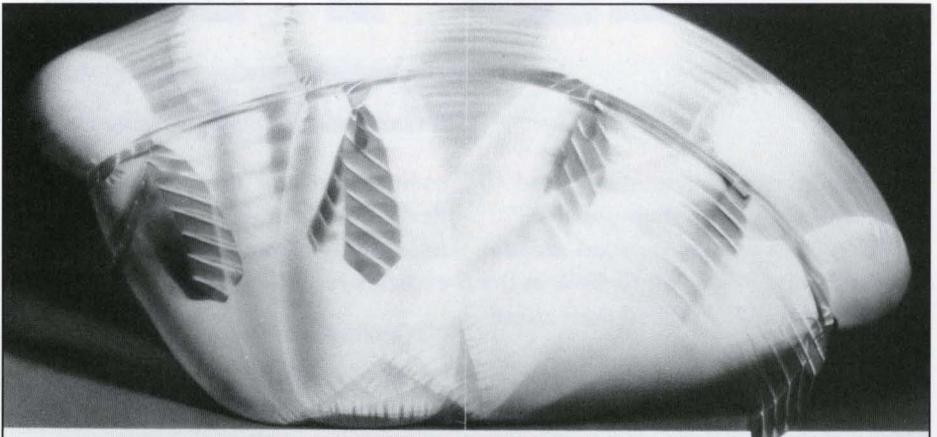
Over the past 15 years, many creative
 tools have been used to tell the Amdahl
 story. Be it animate or inanimate objects,
 one message always shines through—
 quality in everything we do.

In the first years after the 470 was
 developed and shipped, Amdahl relied
 on word-of-mouth and industry coverage
 to promote name recognition. When mass
 media campaigns began to be used, they
 addressed the primary question that pre-
 vailed in the marketplace—"Is Amdahl
 going to last?"

The company's campaigns were used
 to communicate the existence, accom-
 plishments and capabilities of Amdahl.
 "Early on, we had to say to our target
 markets 'YES,' Amdahl will be around in
 the next 5, 10, 20 years," says Jeff Finn,
 manager, Corporate Communications.

The Cat in the Bag campaign best de-
 scribes Amdahl's period of infancy in
 the industry. Its caption read: "This phe-
 nomenon is not only unusual, it's also
 untold. Until now." In 1983, this bold
 statement opened the eyes of many—
 the secret was out of the bag.

Soon to follow, Amdahl embarked on
 direct mail campaigns. The year 1984
 was marked by the distribution of paper-
 weights containing chip cooling towers
 that were sent to the key decision mak-
 ers at current and prospective customer
 sites. The *Heart of the Giant* advertising
 campaign, which emphasized the tech-



**You can't keep a good idea
 down.**

Eighteen years ago, a small group
 of ambitious engineers launched
 a company on a laudable idea:
 With the partnership of some of
 the world's most demanding people—
 IBM mainframe users—
 by offering them a better
 return on their data
 processing investments

than they were getting from IBM.
 And the experts laughed.
 And then we introduced a
 mainframe that ran IBM software
 significantly faster than IBM main-
 frames could run IBM software.
 And we backed it with an
 unsurpassed service/support policy.
 A customer's data processing
 problem is an Amdahl problem.
 Period.
 And the experts stopped
 laughing.

Competition had finally arrived.
 For the first time, mainframe users
 had a real choice. And the cost of
 mainframe data processing started
 dropping.
 And it still is.
 Today, we offer a family of high-
 performance mainframes that all
 deliver superior I/Os, a full line
 of profitable, remote diagnostic
 services...
 And education and consulting
 services funded by our competitors'

customers as well as our own.
 We rank first in our industry
 in service, technical and software
 support and ease of system opera-
 tion, per an independent survey
 conducted by the Datapac Research
 Corporation.
 This survey also reports that
 97% of our customers would recom-
 mend our mainframes to other
 users in their situation—the highest
 percentage in our industry.
 We're now a \$1.5 billion

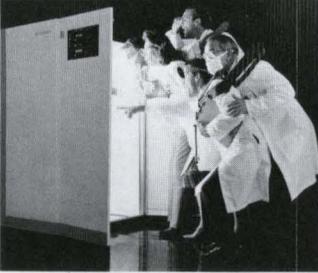
company, with 7000 employees,
 manufacturing plants in North
 America and Europe and sales
 support facilities worldwide.
 The laughter has come home.
 Which suggests that if your
 DP MIS people aren't recommend-
 ing Amdahl products, you're missing
 a good bet.

amdahl
 A good idea.

18

PLATINUM UPDATE

STORAGE CONTROLLER GETS 30 BRAINS.



**Breakthrough approach creates
 storage system of 30s.**
 With all its intelligence, the Amdahl 6300 can
 control and manage up to 30 individual
 storage subsystems. With DACS supports 30
 CPU controllers, 30 controllers of 1 to 16
 device paths, 30 MB shared storage and 30 MB
 available storage.

With its incredible flexibility, you have
 immediate advantages. You can tailor the 6300 to
 your individual needs. And forget about tradeoffs
 between capacity and performance. With 30
 storage subsystems, you can have 30 MB of
 storage capacity, adding to 30 MB of storage
 capacity. And with 30 CPU controllers, you can
 have 30 MB of storage capacity, adding to 30 MB
 of storage capacity.

**DACS resources managed intelligently
 for 30s.**
 With cost control, connectivity has been
 limited to four lines in and out. So long as you
 have three, DACS systems have evolved from
 one to 30.

But now, with the 6300's unique working
 method, you can have 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out. And you can have 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out. And you can have 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out.

Even since the first mainframe and the first
 storage device were introduced, there have been two
 main questions:
 1. The number of all the brains.
 2. The link up of all the brains.
 3. How to get around the link up of all the brains.
 The Amdahl 6300 storage controller
 has done so much better on all three questions
 than any other storage controller.
 As a result, you can have a fully balanced storage
 subsystem. With up to 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out. And you can have 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out.

Storage Processor. Instead of a low-tech controller,
 we made the Amdahl 6300 an incredibly smart
 brain.
 In different configurations, it has 12 to 17 main-
 processors, all dedicated to the job of making any
 storage subsystem a 30s more efficient. And a real
 easier to manage.
 As a result, you can have a fully balanced storage
 subsystem. With up to 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out. And you can have 30 lines in and out. 30
 device controllers, and up to 30 lines in and
 out.

**AMDAHL PERFORMS
 WORLD'S LARGEST
 BRAIN TRANSPLANT.**

nological advantage of the chip cooling
 towers, accompanied this distribution. "We
 had a very gratifying response to the mailing
 of the paperweight containing the cool-
 ing tower from a 5890," says Jack Lewis,
 chief executive officer. "By all indica-
 tions, most data processing executives
 who received the gift kept it on their
 desk as a constant reminder of Amdahl."

In 1986, the Matryoshka doll (a Rus-
 sian toy that opens at the waist to reveal a
 series of successively smaller dolls) re-
 vealed an important message—only Amdahl
 offered mainframes within mainframes.
 The Multiple Domain Feature™, a cost-
 efficient hardware solution that allows

the use of two or more operating systems
 at the same time on one mainframe, was
 highlighted with this campaign. "Our main
 objective was to create a clear, concise
 image of who Amdahl was and how it was
 changing the industry," explains Jeff.

Another direct mail piece illustrating
 our uniqueness and dedication to service
 and quality was developed by Amdahl
 Canada Limited in 1990. More than 350
 hand-carved wooden ducks were mailed
 to senior customer and prospective cus-
 tomer executives. The package also inclu-
 ded an Amdahl corporate brochure and
 a personal letter from Amdahl Canada
 President Ron Smith.

1969
The world has only one mainframe choice.

1970
"A Red Letter Year," Amdahl Corporation formed in October.

1971
Work on the Execution, Instruction, and Storage units begins on January 4th.

1972
Amdahl forms a financial and working partnership with Fujitsu Limited.

LSI Operating System Good Test completed.

Amdahl hires its first manufacturing employees.

August—IBM announces virtual memory availability, sending Amdahl engineers back to drawing board.

1974
February—Gene White is hired as a business consultant and in August becomes president of Amdahl Corporation.

1975
Amdahl Corporation has spent nearly \$50-million dollars on development and production before first product is released.

470V/6 introduced, Amdahl's first product.

NASA buys an Amdahl computer, with 1MB of memory, and becomes first customer.

Amdahl engineers introduce first Large Scale Integration Technology to achieve speeds measured in trillions of seconds.

1976
Amdahl international offices open: Amdahl Canada is closely followed by Amdahl Deutschland.

The first 470 contracted in Europe goes to a Norwegian customer.

1977
470V/7 announced (50-70 percent faster than the V/6). First large-scale upgradeable mainframe. (Product enhancement will become an Amdahl hallmark.)

United Kingdom office opens in Hounslow, England.

Amdahl stock listed on the American Stock Exchange.

Credit Suisse becomes first Amdahl customer in Switzerland.

Jack Lewis recruited from Xerox Business Systems to become chief operating officer.

Qantas purchases two 470V/6 machines and becomes first Amdahl customer in the Pacific Basin.

1978
Third model, 470V/8, announced (25 percent faster than V/7).

100th 470V/6 installed.

Amdahl Ireland, Limited formed and Dublin manufacturing plant opens.

First two-for-one stock split.

Amdahl France office formed in March, 1978.

1979
470 Accelerator announced (boosts 470V/7 performance)—an innovation that enables smaller class 470V/7 users to periodically increase workloads.

Amdahl product line reaches six available models.

Over 300 470 series systems installed in 13 different countries.

The first 470V/8 leaves Systems Test.

Number of employees on December 31—3,658.

Scan/Benelux Region established.

1978 First test tube baby born in England—Louise Brown.
1979 Hostage Crisis in Iran begins.



1980
Training centers open in response to increasing demand for customer education services.

Research and Development expenditures rise 60% over the previous year.

Revenues reach \$394,351,000.

580 Series Processor announced—100 percent faster than the 470V/8 and uses less floor space.

First front-end Communications Processor, 4705, announced.

Second public offering, \$55-million raised in common stock.

October 20, a new 200,000 square foot manufacturing facility opens in Swords, Ireland.

470th shipment of 470 system, October 30th.

1982
Revenues near the half billion dollar mark—\$462,243,000.

Research and Development expenditures are \$81,276,000.

Peripheral Products Division formed.

6000 Series DASD announced.

Amdahl Communications Systems Division formed.

4400 Series Network Concentrators announced.

Amdahl makes Fortune 500 list.

First two production models of the new 5860 product line delivered to Systems Test exactly on schedule.

Customer Satisfaction Research Institute rates Amdahl superior in customer services.

Expansion of the Support System Development's mailbox system: in operation since 1980.

First shipment 580 product line in August.

1981
100th 470 built in Ireland and installed in Europe.
UTS introduced commercially.

Amdahl listed on London Stock Exchange.

\$370-million multi-currency credit agreement with an international banking firm established.

Amdahl Federal Services Corporation is officially incorporated.

First Day on the Green drew record-breaking crowd of 1100+ employees.

Corporate Computer Center sets record—99 percent availability...downtime averages less than 9.6 hours per week out of 960 operating hours per week.

1969 Reaching speeds of 700 m.p.h., the British Concorde makes its first supersonic flight.
1973 Great Britain, Ireland and Denmark enter the European Common Market.
1975 The joint U.S. and Soviet space mission is launched.



THE TWENTY YE



1983

Revenues jump to \$777,680,000—68 percent higher than 1982.

Amdahl's first full year of shipping storage devices, DASD (Direct Access Storage Devices).

Research and Development expenditures hit the hundred million dollar mark, \$101,728,000.

580/XA (extended architecture) announced.

First 580 shipped from Ireland plant.

Amdahl Pacific Basin Field Business Unit established.

Second two-for-one stock split.

Number of employees: 6,400.

Amdahl receives United Way's highest award, the Award of Excellence.

Quality Improvement Process formally introduced.

Amdahl runs first ad campaign, "The Amdahl Phenomenon", in May.

Communication Industry Region formed.

1984

1100/1200 Vector Processors announced (up to 533 megaflops).

6880 Storage Controller/6380DASD announced (new cache controller and doubled capacity).

Multiple Domain Feature introduced.

Laser and robotic technology used to build 580s.

AMDAC locations increase to include sites in London and Columbia, Maryland.

Amdahl purchases Dogmersfield Park—the new site for European Headquarters.

Polytekniskrevy, a Norwegian publication, names Amdahl "Computer Company of the Year."

1985

E. Joseph Zemke hired as chief operating officer. Jack Lewis promoted to chief executive officer.

5890 Series Processors announced (up to 80 percent faster than the fastest 580).

6380E DASD announced (double the capacity of 6380).

500/1400 Vector Processors announced (up to 1.14 gigaflops).

First 580 with MDF installed in Europe goes to Primdata in Sweden.

Manufacturing facilities in Swords and Sunnyvale expanded.

Revenues hit \$862,032,000.

1986

6380E announced—double capacity disk storage system. (Response time improved by a factor of 10).

580th 580 and 100th MDF installed.

First stand-alone version of UTS announced.

Revenues rise to \$966,349,000.

Amdahl is included in Standard and Poors Composite Stock Price Index.

10,000th DASD unit shipped.

The first 5890 installations and certifications conducted at a testing facility in Minnesota.

Princess Anne opens Amdahl's European Headquarters at Dogmersfield Park. Later the same year Amdahl wins Environmental Planning Award for this facility.

Business Week- Amdahl ranks 52 out of 100 largest US companies ranked by stock market valuation.

1987

First billion-dollar year—\$1,505,000,000.

Current Climate Survey started.

5890-190 Uniprocessor announced.

Amdahl Ireland plant doubles in size.

Computerworld, Information Week, MIS Week, Datamation run ads for Amdahl highlighting Storage Products, EPS courses and the Multiple Domain Feature.

Mercury News ranks Amdahl 6th largest Silicon Valley company in terms of sales and net worth.

1988

Amdahl unveils new 5990 models. Over 300 engineers contributed to its design and development over a four-year period. \$223 million spent on research and design.

5890-390E two-way Multiprocessor announced.

6100 Storage Processor developed. 6380J and 6380K DASD announced.

4745 Series Communications Processors announced (100 percent more throughput than 4705).

Revenues reach \$1,801,000,000.

New Marketing support group, Corporate System Engineers, established.

7,638 employees worldwide.

Amdahl receives the Crosby Quality Fanatics Award.

Two ducks make the Amdahl HQ pond their spring retreat.

1989

Amdahl Television Network airs its first broadcast.

New generation of network management products, Network Processor Series, announced.

Key Computers Laboratories acquired.

Amal goes into full production.

General availability of UTS 2.0.

7300 Series of processors announced. Amdahl's first UNIX based processor.

Amdahl opens an office in Austria.

Amdahl spends \$277 million for research and development.

October 17, the biggest Earthquake since 1906 rocks the Bay Area. Amdahl's Customer Services Representatives work around the clock to respond to customers' needs.

Revenues surpass the \$2-billion mark.

1990

ATN used to broadcast U.S. field kickoff.

Move-Page Facility and Hiperbatch capabilities implemented on 5990 and 5890E mainframes.

Ireland plant recognized by local government for outstanding factory premises.

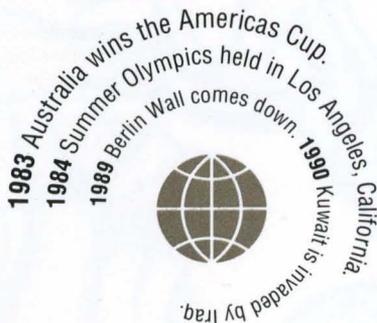
Via distributorship agreements, Fujitsu installs Amdahl computers in Korea and Japan.

Amdahl begins preparation work on the Malcolm Baldrige Award application.

The first non-U.S. installation of a 5990-350 went to Wusternrot, a savings and loan institution in Austria.

New High-Performance Storage subsystem, the 6110, announced and ships 35 units in the first three weeks.

Amdahl announces its 6th generation of mainframes—the 5995 Series processors



milestones



CHRISTINE
BENJAMIN

Ten Out of Ten

Of the first 10 Amdahl Canadian Customers—all are still on the roster today. What's the secret to their success? Service, Service, and more...

From the beginning Canadian customers have shown an enthusiasm for Amdahl products. According to Charlie Pratt, Amdahl's first account executive for the Western Region (which in 1976 included all of Canada), the first machine installed at the University of Alberta was bought—not sold. In fact, the University had been interested in Amdahl's design from the beginning and was involved during the research and development stages of the original product.

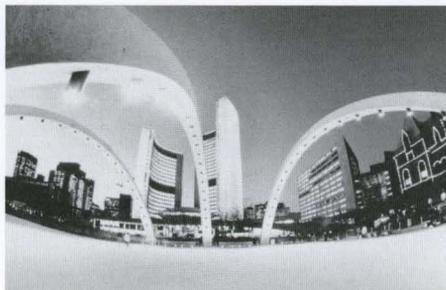
They received the fifth machine produced and the first piece of Amdahl equipment installed outside of the United States (U.S.).

The installation was handled by a Sunnyvale team, headed up by Ed Cardinal, then, senior field engineer. Shortly after, Ian Lanouette, a Canadian expatriate who had been working in Engineering Bring-up, was assigned to the University of Alberta to replace two local FEs that had resigned.

"Charlie Pratt continued to make sales in Canada, adding the private railroad company, Canadian Pacific and a service bureau, IST, as the next two accounts," states Ian. (Phil Lemay was the founder and president of IST until he resigned to join Amdahl in 1978.)

"Later in '76 when Amdahl Canada (the first international subsidiary of Amdahl Corporation) was founded, I was the first employee on their records," recalls Ian. "I remember our Christmas party that year was held in Toronto and Amdahl U.S. flew some AMDAC technicians up to cover the accounts so we could all attend. It was a small group, but it had a real entrepreneurial spirit."

One of the first accounts in Toronto was the Bank of Montreal. Leon Hoppel, who started with Amdahl in June of 1976 remembers, "The Bank of



Montreal needed a lot of processing power in a single engine machine and Amdahl had the largest, fastest uniprocessor. They ran their highest priority job—the on-line banking—on one Amdahl 470V/6. Service was the key! The customer felt that the Canadian economy could be affected if the machine was down more than four hours and sometimes used this notion to motivate the FEs.

"In those days the machines weren't as reliable—though the Amdahl computers were the best available—as well as the fastest," continues Leon. "Early customers referred to them as 'screamers'.

"We were the 'white knights' who saved the customers. Now problems are being designed out of the product, which is very good for Amdahl, but it is changing the role of the field engineers.

"Now things are much better. People think differently about computers. The workloads have increased substantially and become more critical. They're dependent on it working 24 hours a day and down time is allotted once a year."

During the early days the Canadian organization attracted employees who enjoyed the atmosphere and feeling of a start-up company. "We were able to hire some very experienced people because they were given the freedom to do what they felt needed to be done to solve a customer problem," states Jack Cowan, senior FE also hired in June, 1976. "We were the 'white knights' who saved the customers. Now problems are being designed out of the product, which is very good for Amdahl, but it is changing the role of the field engineers. The FEs are having to find new direction and meaning to their jobs."

"Amdahl was a very results-oriented company from the beginning," recalls Mike Taylor, former field manager for Central and Western Canada (recently named a vice president in the Open Systems group). "You did whatever it took to get the job done. Consequently there was a lot of flying to move parts around. I remember one night having to get a part from Vancouver to Toronto. I was able to convince a charter airline company to send out one of their planes during the middle of the night and give us credit to do it—even though they had never done business with us before.

"The field manager for the Eastern Region at the time held the record for the largest expense report in one month, \$18,000 Canadian, for chartering a

Learjet™ jet to get a part to a customer. Whatever it took you did it.”

The operation in Canada continued to grow, adding both private and government agency accounts to its customer roster. Statistics Canada and Bell Canada were two early accounts. Another customer, I.P. Sharp, a service bureau, managed a worldwide communications network which Amdahl contracted with for the original international mailbox system.

One event that illustrates Amdahl's responsiveness to customers concerns Alcan and took place in early 1978. “Late one Monday afternoon the salesman for Eastern Canada walked into the office and stated that he had just sold a 470V/6 subject to meeting an urgent install date,” remembers Tony Tasker, senior staff FE.

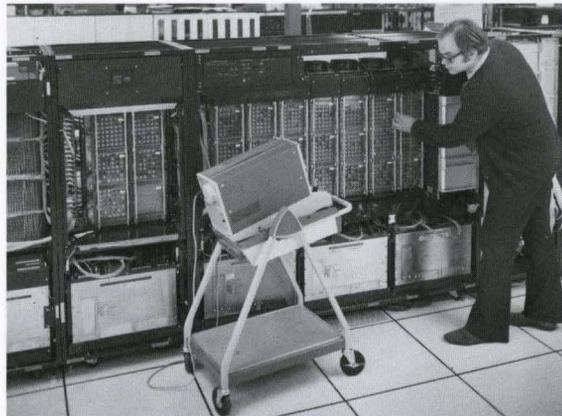
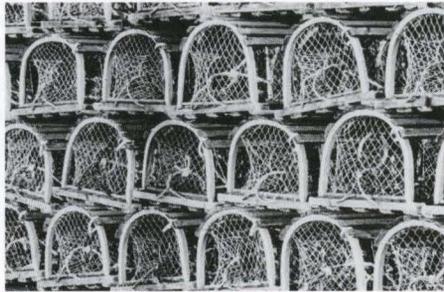
“By Tuesday our local Field Manager had orchestrated a meeting with Alcan's staff (Operations, Software, and Facilities), outside vendors (air-conditioning, electrical, and transportation), and Amdahl representatives including Management, Hardware, and Software Support.

“Amdahl led the meeting of 20 people, ensuring that all the action items were assigned and could be performed by the following Monday,” continues Tony. “This included changing the electrical supply to the computer room, obtaining and installing a new main ground, obtaining the 470, and installing both the hardware and software.

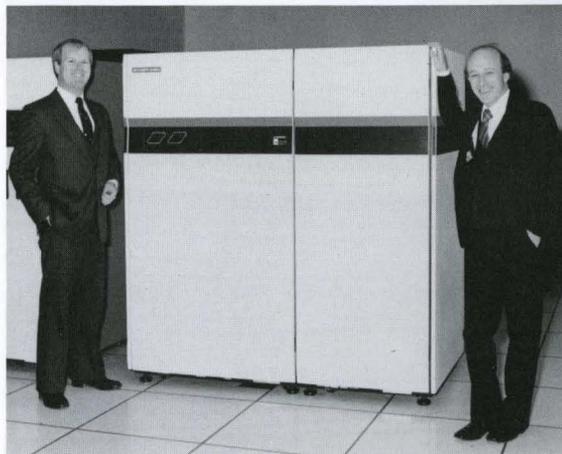
“The following Monday morning Alcan was up and running production and has remained a faithful ‘Big Red’ customer ever since!”

In 1981 Amdahl Canada outshipped our competitors in terms of MIPS installed. “We were successful because the data processing community we were working with was very small,” states Mike Hurley, senior staff consultant. “Since the senior managers talked with one another the word got around very quickly that we were a company that was willing to stand beside them and work through any problems that might arise.

“That attitude was driven from the most senior levels on down. Everyone was very customer oriented.”



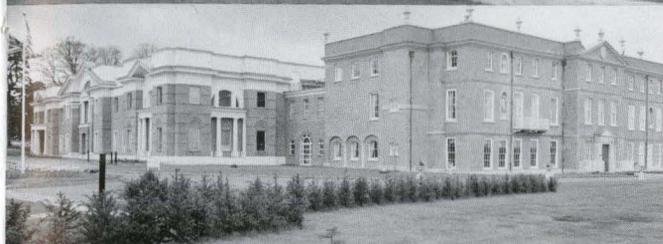
P-005 on the Systems Test floor prior to shipment to the University of Alberta in Montreal. (Circa 1975.)



May 1984. Peter Dowsett and Dave Butchart standing next to the first 6880-AA4 and B4 sold and installed in Canada. These two disk drives are still in operation today at Canada Post in Ottawa.

Amdahl was also interested in research and development activities in Canada. Starting in 1980, Amdahl Canada has worked with five major Canadian universities in joint research and development activities. These activities have been concentrated in the area of systems control programs and subsystems—products marketed by Amdahl around the world. Amdahl is also a member of the Information Technology Research Centre, an Ontario Centre of Excellence, which is supported by government and industry funds.

With a commitment to local support and education Amdahl Canada continues to grow. Now there are over 100 machines installed at approximately 90 different customer sites. “In the early days selling a machine was an event, sometimes we went months without a sell,” recalls Mike. “Now the emphasis isn't so much on convincing the customers that we're technically competent. The top priority still remains customer services—we do whatever needs to be done and they know we'll stand next to them in a true partnership.”



During the Oktoberfest of 1976, Jim Henry arrived in Germany (without a hotel reservation) with the task of establishing an Amdahl office in Europe. Three machines had already been sold in Europe, but no provision for customer support had been made.

One of the three machines was installed at a Norwegian insurance company. Rumors have it that Gene Amdahl had been welcomed as a native son and had sung a Norwegian song after the contract was signed. The other two machines went to Germany, one to a research organization, Max Planck-Institute, and the other to a space agency.

Shortly after the Munich office was established Jim was replaced by Amdahl's first European Vice-President of Sales and Ed Cardinal, who provided customer services. They continued to spread the good news about Amdahl while spending a lot of their time airborne moving from Oslo to Rome and all stops in between.

In early 1977, Amdahl U.K. was legally incorporated and David Charles, who has just recently joined the European Headquarters team, was the first U.K. employee hired. "When I started there was no office, no bank account, and no customers," states David. "My first duty was to find an office and then set up accounting. I remember that our secretary worked from home since there was no room for her in the office we rented."

Ed Cardinal recruited the first Customer Services employees. Among them were Alan Bell, Andy Walker, Dave Hall and Terry Dalley. In June, 1977, they went to Sunnyvale for training and the first "graduate," Andy Walker, was immediately sent to Oslo to cover the account there.

Amdahl Norway was established later in 1977 following the second 470 order at IDA A/S, a commercial bank data center.

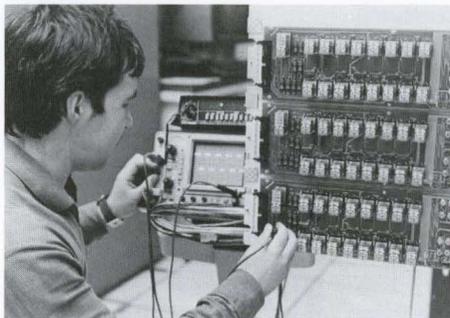
Meanwhile, the U.K. office was relocated to Viking House in Hounslow, England. In October, Peter Williams became the U.K. general manager (currently Chairman, Europe). "When I started," says Peter, "we only had one floor of the building—with no walls, two chairs and telephones all over the floor. For several years there were running bets as to who

Spreading
the Good
News:

10 countries
in 3 years

**AMDAHL
EUROPE**

Eamon Galligan, Amdahl Ireland, in Unit Test debugging a 5890. (Circa early 1980s.)



Mary Galvin, Amdahl Ireland, assembling chip-side of MSU/LSI new build board. (Circa early 1980s.)

would win the final occupancy of the building—this start-up American computer company or the bookstore on the ground floor. The U.K. now has 13 locations including Scotland and Ireland and all three floors of Viking House!”

The first U.K. account (1977) was British Oxygen’s data center—Datasolve (serving internal and external clients). “They contracted just before Christmas and thanks to a major effort by many Amdahl employees everything was installed before the new year,” recalls Peter.

“Initially people were dubious as to whether we would be able to support them. I remember one early account stating they would buy from us when they felt confident that we could provide them with good support.

“When we had 15 employees I took all of them to the account and introduced them as a representative sample of our employees. In fact, they were completely representative! The prospect purchased a machine and has been a satisfied customer ever since.”

The deciding factor in another early account may have been due to a recommendation by a complete stranger on the 7:52 a.m. train to London. Peter had been making calls on the Chairman of the Board for Great Universal Stores (a major U.K. retail/mail order company), who regularly took the train from Bouinemouth to London. One morning, this man noticed another passenger going through computer listings. He inquired whether he had ever heard of a company called Amdahl. As Peter tells it, his sale, at that moment, was dependant on this unknown traveler. Fortunately for all, the mysterious passenger replied with a comprehensive list of Amdahl’s attributes. “Mind you,” says Peter, “at this point we didn’t have a machine installed in Britain.

“I couldn’t resist the urge and said, ‘Thank goodness, he finally found you. I’ve had him going up and down on that train for the last three weeks!’”

The prospect replied, “You’re joking, Mr. Williams,” and I confirmed, “yes, I’m joking.”

That wasn’t the end of this sales campaign however. According to Peter, in a subsequent meeting the prospect was still hesitating and he said, “You know there is a lot of risk taking this machine and I’d like you to try to ease that risk for me.” “We tried to alleviate his qualms with repeated praise of the technology, but still he hesitated. Finally, I asked what we could do to reduce the risk and he responded, ‘Three months’ more free maintenance.’” Needless to say the request was granted and written into the contract—and they are still an all red shop today.

“Initially we didn’t have any offices outside of Germany and the U.K.” says Peter. “We flew all over the place as we established six European countries simultaneously. As soon as we could afford it we opened offices and hired local people.

“Amdahl also made an early commitment to manufacturing in Europe. The decision to open a plant in Ireland, in 1978, was based on the belief that if we were going to be successful we would have to make this kind of tangible investment,” says Peter. “As it has turned out, that was a very far-sighted move by Jack Lewis and Gene White. It has been well received and continues to play an integral role in our acceptance.”

“When Amdahl first set up in Ireland we had a temporary office in the center of Dublin,” says Sean Traynor, director of Personnel in Ireland. “Many of the employees hired through that office are still with us today; Maura Barter, Barry O’Reilly, Marie Henvey and Bernard Roe, to mention just a few. In 1979, we moved to another temporary facility, where we grew to over 100 employees prior to moving to our present location in 1980. Now we employ over 500 people.”

In March 1978, Amdahl Denmark installed a 470V/5 at Datacentralen, a data processing service for the Danish government. The machine was handed over to the customer by Alan Bell. As soon as the test period ran out the customer ordered another system, which was installed at the Sparekassernes Datacenter in August, the same year.

Amdahl Denmark's original employees worked out of the customer site until the premises at Store Kongensgade 70 could be found. They stayed there until the following February, when staff increases caused yet another move.

Another Scandinavian country that joined the Amdahl ranks in 1978 was Amdahl Sweden. In April 1979, an official office (business was conducted out of an employee's home at first) was opened in Danderyd. In the autumn, Svenska Varv and another data center bought their first 470 systems. By the year end Amdahl Sweden had six employees.

Amdahl Norway also continued to do well in 1979, closing another 470 at Fellesdata A/S. The customer showed a vote of confidence by ordering a second CPU shortly after the installation of the first machine.

Switzerland was opened in 1978 after Credit Suisse, one of the biggest banks in Europe, became the first Swiss customer. Both the subsidiaries in Italy and France were established that year as well.

Amdahl Italy was founded after two 470s were installed, one at Sogei and another at Italsiel (service companies for the Finance and Treasury Ministries). Both purchases were recommendations from Professor Santacroce, president of an influential data processing group in Italy. "Amdahl didn't actually 'sell' the machines," explains Phil Lemay, general manager for Italy and Amdahl France in the late 70s, "he bought them. He had come unannounced to Sunnyvale and was met by Gene White after surprising the people in the front lobby." The deal was negotiated by Gene White and Bill O'Connell over a period of several months.

Amdahl France had some early commercial success. "The first customer was the car manufacturer, Simca, which is now part of Peugeot," says Bill O'Connell, senior vice president of Corporate Strategy, who actively worked the account at that time. "The install site was in Poissy, which is about 30 kilometers from Paris, and is still one of the main plants for Peugeot today."

Three other companies became customers in 1979, Citroen, another car manufacturer—now part of the Peugeot

group, Saint Gobain Informatique, a multinational glass company, and Renault, a nationalized car manufacturer. All three accounts remain customers today.

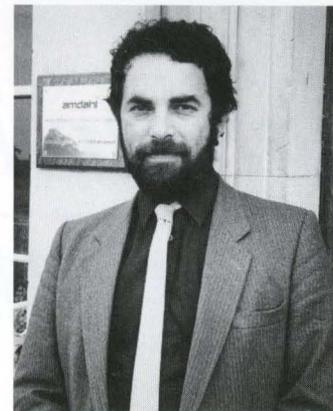
In the spring of 1979 Amdahl Belgium took off, selling two 470s its first year, with Bell Telephone Manufacturing Company and De Belgische Boerenbord, (a farmers' cooperative) installing the first machines. Both continue to top the sales list today having Amdahl CPUs, DASDs, and EDAS. The three pioneering employees, Robert Moreaux, Jan Bovens and Charles Ghyselinck are still on board. And, with a customer base of over 30 sites (including the European Community account in Luxembourg), Amdahl Belgium continues to grow.

Amdahl Netherlands B.V. originally located in Amsterdam, also opened its doors in 1979. Two years later, Amdahl's European Distribution Center was established at the same location.

Customers like Philips (one of Amdahl's largest European customers), Shell and the Universities of Delft and Leiden formed a solid base on which Amdahl Netherlands continues to grow. Currently they have 24 customer sites and have 20 percent of the high performance CPU market share.

Europe continued its rapid growth in marketshare, revenues and new customer sites throughout the decade. In 1989 the Austrian office was opened and has already sold one system and has prospects for others.

"I'm a strong believer that there are no limits on us," says Mornay Mahoney, vice president and general manager, Europe. "When I look at what's been accomplished—such as 50 percent marketshare in Norway and over 25 percent in the U.K., I'm pleased. We know what our competitors can do. To compete with them and win is very exciting. We've become successful by listening to our customers and providing good alternative choices, but it's the quality of our employees in Europe and their winning attitude that really distinguishes us from the rest."



John Kindler began his Amdahl career in 1977 as a Marketing systems engineer for Amdahl U.K.. "I remember being on the road most of the time in those early days prospecting customers." John is currently the European CPU Marketing Product manager.

Princess Anne signs the guest book at the opening of Amdahl's European Headquarters in Dogmersfield, England.



They were cowboys, whether they wore a salesman's dark suit or a technician's install T-shirt. The plains they chose to roam were white-tiled, not grassy, underscored with cables, not overrun by buffalo. They came to California only to turn around and head back East in search of new technology markets where they could prosper.

The Lone Salesman

In 1975, Charlie Pratt was the first full-time U.S. salesman. His territory included everything west of the Mississippi, and Canada. A nine-year IBM® employee, Charlie came to Amdahl looking for unexplored territory to conquer. "I had lived in Chicago for 35 years, and everybody, including my parents, thought I was crazy to think about moving to California and joining this company that thought it could compete with IBM," he reflects. "But I knew there was something special about Amdahl."

"I don't think anybody at that time saw it as just a job," Charlie says. "We were on a mission. We all realized that there was something we could bring to the industry called competition, and that we could change the industry forever."

Working out of Sunnyvale, Charlie made endless sales calls on established mainframe users across the West, who were all very skeptical of the fledgling company. "It was thirteen months before I had my first sale, and it seems like they were the longest months of my life," he says. "It was actually easier to spend long hours on the road making calls than to be in Sunnyvale and have people asking 'when are you going to sell something?'"

Amdahl's first customer was NASA in New York City. The system was installed in an area "not much bigger than a large closet," Charlie says. This successful install was closely followed by ones at the University of Michigan and Texas A&M. By late 1975, the company was even ready to hold its first national sales meeting—five people around one table in a Holiday Inn in Ann Arbor, Michigan!

eastward ho!

Tales of territorial expansion on the high-tech frontier

"It took us several days of hard work to finalize what had been over a year in preparation," states Jim McDonald, former Pacific Basin general manager (currently vice president of European Operations). "Somehow during that time we were able to maintain customer satisfaction while devoting 150 percent of our resources to the tender response."

Delivering the bid was a feat in itself. It had to be submitted in Canberra (300 km from Sydney) by 2:00 p.m. on the closing date. "We had it all packaged up by 9:00 a.m. and thought we were finished until we discovered that the Canberra airport was closed by the worst fog of the year," continues Jim. "Fortunately one of the team members, Alan Thompson, had had enough foresight to book a light aircraft and the response was dispatched in the safe hands of Geoff Cooper.

"The fog lifted around 1:00 p.m. and Geoff made it with ten minutes to spare." The receptionist's response to his arrival, "IBM® told us you'd be along soon!"

The DSS account bid marks the decision that eventually led to the Pacific Basin FBU being established.

But Amdahl's history in the Pacific Basin really starts in 1977 when Qantas, Australia's international airline, placed an order for two 470V/5s to replace some aging equipment. A deciding factor in Amdahl's favor in this early bid was the fact that the first V/5 could be installed outside the main machine room in a space previously used for data entry terminals. A consequence of this positioning was that for many years afterward Amdahl's Field Engineers were consigned to "spacious" offices at Qantas in what was formally the women's locker room.

Despite these humble beginnings Amdahl's presence in Australia began to grow. In 1979, Henry Chaeff, Amdahl's Division manager, came to assist with FAL's marketing efforts. Shortly after his arrival Amdahl won its first Australian Federal Government accounts with the Department of Finance and the Department of Veterans' Affairs. Jim McDonald was hired to replace Henry as Amdahl's representative in the Pacific Basin and eventually became the general manager when the FBU was established.

Two employees that also hail from these first few years are John Mason and Graeme Collins. By the early 1980s more accounts were beginning to be won and a core group of employees was beginning to be established. This group included Murali Dharan, Merv Howell, and Mark Duncan. The State Electricity Commission of Victoria was added, and followed by the the first V/8 sale in Australia to a major retail chain.

Up to this point Amdahl in the Pacific Basin was really Amdahl Sydney but in 1981 an office was opened in Melbourne when the first 580 was installed at General Motors Holden. Peter O'Dowd and Nand Dureja handled the technical support for this machine.

A deciding factor in Amdahl's favor in this early bid was the fact that the first V/5 could be installed outside the main machine room in a space previously used for data entry terminals.

Amdahl products were beginning to be known in other parts of the Pacific Basin as well. Following initial inquiries in 1981, Singapore Airlines purchased a 5850 in late 1982. A significant part of this proposal was the provision for software support. This project provided the nucleus of what became Amdahl's Airline Support Center that assists major airline customers and prospects throughout the world. Support Specialists Elizabeth Styles and Chris Bradford joined Tom Flynn as early recruits to this group.

Amdahl products continued to draw attention. Bob Malseed sold a CPU to the New Zealand Dairy Board, eventually leading to the establishment of the Wellington office with Tom Denyer, FE manager, as the first employee.

It was in this atmosphere of growing momentum that the Australian team heard about the Department of Social Security opportunity and made its bid.

Just before Christmas the results came in. DSS had drawn up a short list of two vendor teams who were to undertake a massive 'integration test'. The teams were

given a couple of months to complete benchmark tests, which involved constructing and demonstrating that all the components could meet both functional and performance requirements.

"The Amdahl test was conducted in Milpitas, California (at a site now used for long term support) and the various vendors brought their equipment there to be tested," says Robert Langeley, one the Australian SEs assigned to the project. "After several weeks of 16-hour days the test was carried out to the satisfaction of DSS. The opposing team was not so successful.

"Our reward was to be asked to do it again with a different mix of vendor support equipment." This time Warwick Tarr, SE, was nominated to stay and work on the rerun.

"The second demonstration clinched the deal. The five year contract was awarded to Amdahl with the mix of vendors from the second benchmark test," recalls Warwick.

This success, combined with the other customers, led to the formal establishment of Amdahl Pacific Basin.

Since that time the Pacific Basin FBU has continued to grow. Other offices have been established in Australia and in 1984 branches were opened in Singapore and Hong Kong, providing the opportunity for further business in Asia. Amdahl now has an office in Thailand and recently, through a distributorship agreement with Fujitsu, the first piece of Amdahl equipment was installed in Seoul, Korea.

Today, Amdahl New Zealand has approximately fifty percent of their market share. And thanks to a major campaign win with the Australian Taxation Office and a repeat contract with the Department of Social Security in 1989, by Julian West and his team, Amdahl Australia has attained sixty percent of the mainframe business in the Australian Federal Government based in Canberra.

"We were once perceived as a start-up that only those willing to take a risk would do business with," states Gordon Undy, Pacific Basin general manager. "Now we're seen as a major contender that provides value-added services."

TRUE

STORIES

and quality myths

Most of you have heard the story before—how Jack Lewis read [THAT BOOK,] how Bill Flanagan *Saw the Light*, and how all 8,000-odd of us were suddenly transformed into a Quality Improvement Process army commanded behind the scenes by brigadier general Phil Crosby and dedicated to defect eradication.

Well, that's not quite the entire story. That urban legend is a little faulty, and as dedicated quality chroniclers we feel we have to set you straight about both the origins of quality at Amdahl and some more recent rumors. Here, then, are the true stories behind some of Amdahl's best-known quality myths.

»There was no quality life as we know it before the implementation of the Quality Improvement Process (QIP).«

[Wrong.]

For one thing, vendor quality control has been an important concept at Amdahl ever since the early days of the company. Just ask Sadao Hayano, manager of Equipment Engineering, who has been involved in Manufacturing quality procedures since October, 1975.

Soon after he joined the company, Sadao moved to Japan for one and a half years to demonstrate American electronics techniques to Fujitsu and establish quality standards for the components. "In 1975," says Sadao, "America was

"Quality may not be as visible as it used to be, because it's more fully integrated into the Amdahl workday."

considered to be far ahead of the Japanese in electronics workmanship. My job was to teach them about our tools and techniques. I also inspected the components and tested the systems before they were shipped to Sunnyvale to ensure that they met our high quality standards. Fujitsu was very cooperative, because they knew they could gain from our high standards. In fact, they are still publishing articles in their company newspaper about Amdahl's quality activities!"

Amdahl also had a thriving Quality Circle program in Manufacturing for several years before anyone in these parts had ever heard of a guy from Florida named Crosby. The Quality Circle Program began in Manufacturing in September, 1980. Each Circle comprised 3-12 people who voluntarily met on a regular basis to solve Quality Control problems relating to the product in their work area—with full management support. The Circles were founded on the assumption that the people doing the job were the experts. And, according to longtime Facilitator Lora Sutherland (now a Plant 1 Focus Line Manager), all employees who joined Quality Circles benefitted from the problem-solving techniques and presentation skills in which they were trained.

"Circle members and managers understood the value of their contributions," she says. "Many overall Manufacturing objectives were supported by these projects, and upon completion of their projects, Circle members frequently realized that they had met even broader objectives than solving the problem they had originally identified."

When Deborah Avila began her Quality Circle facilitator role in January, 1981, only three Quality Circles had been established. When she assumed other responsibilities in April, 1983, there were 32. Projects ranged from changing tool box requirements to handling damage to Multi-Chip Carriers and inefficient use of space in work areas.

Debbie sees Quality Circles as very similar to the cell concept central to *Just in Time* manufacturing. "Like cells, the Quality Circles involved small groups of people performing the same functions," the current Senior Manufacturing Engineer explains. "They could focus very tightly on specific process problems, with the benefit of *expert* assistance from people like Manufacturing and Quality engineers."

With the emergence of the Quality Improvement Process in 1984, Quality Circles graduated to Work Improvement Teams, a Manufacturing quality pro-

"In 1975, America was considered to be far ahead of the Japanese in electronics workmanship"

gram that remains strong today. "The QIP really validated the WITs," summarizes Lora, "yet the existence of the Quality Circles certainly paved the way for the implementation of the QIP."

»Jack Lewis was given THAT BOOK by a mysterious stranger on an airplane.«

[Wrong Again.]

Jack actually received a copy of *Quality is Free* from Bob Blackburn, who in turn had been given the book by one of his managers, RubyLee Smith. Ruby, currently the manager of Manufacturing's System Support Department, was frustrated in 1983 when Manufacturing managers wanted her to rush employees through the Manufacturing Training program (then under her charge). Some managers claimed that "employees could make a few errors, as long as they caught them later," and did not think it was necessary that they pass all of their training exams 100 percent (*because it took too long*).

Not content with these slack standards, Ruby began a campaign to apply the concepts she had read about in *Quality is Free* to Amdahl's manufacturing environment. She built a case for the implementation of the QIP and presented it to her manager, Bob Blackburn. Bob, in turn, was so impressed with the strategy that he lent a copy of *Quality is Free* to Jack Lewis...and the rest is quality history.

The only unsolved mystery in this urban legend is whether Jack ever gave Bob his book back.

»This is the first time Amdahl has ever considered applying for the Malcolm Baldrige National Quality Award.«

Where were you in 1987? "When the Baldrige Award was first created by Congress, we thought we had a chance to win it," says Roger Heath, then Corporate Quality Administrator and now Application Team member. "We had made a name for ourselves as a quality-minded company, and had even received Philip Crosby Associates' highest quality accolade, the Quality Fanatics Award.

"However, when we received the Baldrige application and started going through the questions, we realized that we had a long way to go before we could even think about applying. It wasn't until this year that we were confident enough in our progress to put together an application team and pursue the award."

»Quality at Amdahl in 1990 is as deceased as disco and platform shoes.«

Quality is still alive and kicking at Amdahl.

In fact, it's never been stronger. Just ask the aforementioned Baldrige Application Team.



"The Difference is Quality", Malcolm Baldrige Award application team members are dedicating an entire year to updating Amdahl's quality methodology and pursuing the Baldrige award. Left to right: Wil Marshman, Diane Zarwell, Roger Heath (standing), Lee Shelton, Kathi Bellew, and Cheryl Gunz.

"Quality may not be as visible as it used to be, because it's more fully integrated into the Amdahl workday," explains Corporate Quality Administrator Lee Shelton. "Quality has basically become a way of life, and in doing so it has also become less in the limelight. We've done away with a lot of the jargon and the flag-waving. Quality is now business as usual."

To prove this, besides its work on the application the Baldrige team is implementing an evolutionary Quality Methodology and corresponding training program throughout Amdahl. The Phase II Methodology, "The Difference is Quality," captures all the good things we are already doing, and centers around a revised set of quality activities. Its three basic concepts are Quality Planning: Doing the Right Thing; Quality Improvement: Doing it the Best Way; and Quality Control: Doing it Right This Time. Training in the revised concepts and related "Drivers for Improvement" began in mid-October, and should be completed by next April. "By developing this methodology," summarizes Lee, "we are both developing a solid core around which to structure the Baldrige application and answering the question 'where does quality go from here?'"

[Sounds like a quality myth in the making.]

Products & Profits

"Since its founding in 1970, Amdahl has grown to be a major supplier of quality data processing systems to the worldwide data processing community," reads the opening lines of the 1986 annual report. It continues, "Over the years, innovative products have been introduced to address the needs of large-system users...". That statement is as true today as it was when first written.

Both in spirit and financially, Amdahl continues to prosper. Our research and investments have earned Amdahl the reputation of being a technological leader in the computer industry.

Amdahl has flourished because of the quality people who have helped design, manufacture, sell, and support our diversified product line as well as provide valuable customer solutions in the field. It is through their dedicated work that Amdahl's products continue to anticipate our customers needs as well as protect their substantial data processing investments.

Today instead of the one product, mainframes, Amdahl offers a variety of products, enhancements, and services. They are:

Central Processors

With the recent announcement of the 5995M mainframes, Amdahl continues its tradition of meeting or exceeding the data processing industry standards. Amdahl is ramping up for production with first deliveries expected in the fourth quarter 1991.

Amdahl is currently delivering the 5995A series consisting of six field-upgradeable models of large-scale mainframe computers. With the original 5990 and 5995 models, Amdahl achieved a significant technological breakthrough: an entire central processing unit (CPU)

was created on a single circuit board, substantially reducing instruction path lengths and dramatically speeding up performance. In 1990, Amdahl also began producing the 7300, a UNIX® based processor. This processor was developed to target the expanding computer network marketplace. Amdahl also offers refurbished computers from the 5890 series as part of our on-going CPU products.

Storage Products

The 6100 Storage Processor, combined with the 6380 Direct Access Storage Devices (DASD), offers our customers at least twice the capacity, throughput and connectivity of other storage controllers. These products utilize a centralizing control function allowing more efficient use of channel paths, device paths, cache, nonvolatile storage, and storage capacity in general. Amdahl's storage products are gaining a positive reputation for their reliability and functionality.

Communications

Amdahl offers customers several data communications units in support of mainframe connectivity. Of primary significance is the choice of two front-end communications processors, the 4700 Network series and the newly released 4655. These high performance units provide users the unique flexibility of migrating from one type of NCP industry-standard software to another as needs dictate. They also serve as remote concentrators in System Network Architecture technology. Also available through Amdahl are access processors which perform packet assembly/disassembly functions and serve as network access concentrators supporting a wide range of protocols.

Software

Amdahl develops software products that accommodate the large system user's special needs. We currently market the only stand alone version of the UNIX® platform, UTS® Release 2.1, that links 370/390 system architecture computers with workstations, minicomputers, and supercomputers. In addition, Amdahl supports the major operating systems installed in our customer's operations, such as MVS™ and VM™.

Customer Services and Maintenance

Amdahl Customer Services provides state of the art product maintenance using the latest innovations in maintenance and service technologies.

Additionally, Customer Services provides highly rated Systems Education Services, Management Consulting Services, Technical Consulting Services, and Custom System Services, all aimed at providing the Amdahl customer the highest level of availability and an optimum return on their Information Systems investment. Customer's use of these services has risen sharply in recent years—a testimony to their value-added position within our company.

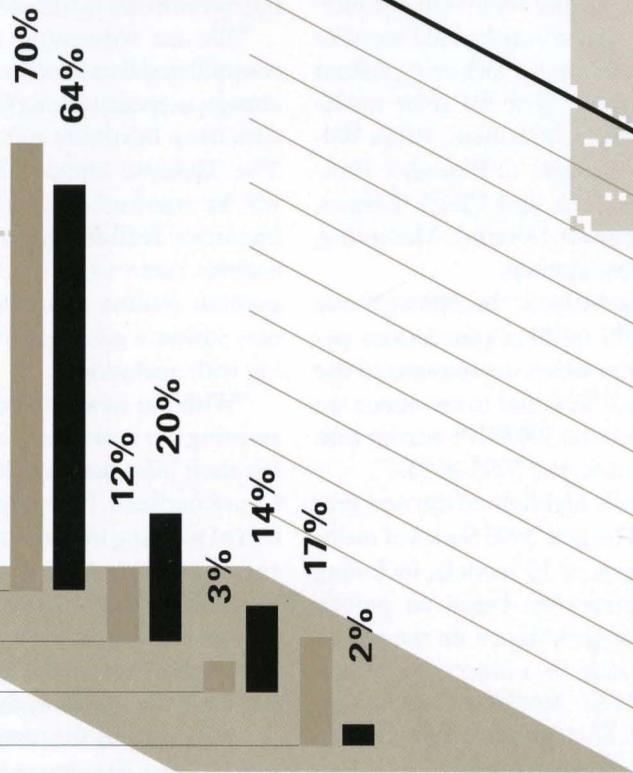


1989

1984

legend

- processors
- storage products
- communications
- software and customer services



product revenue profile (less maintenance)

Sixth Generation

Amdahl's Newest Product—Shattering the 300 MIPS Barrier

november nineteen-hundred, ninety

34

PLATINUM UPDATE

Headlines such as “Amdahl Eagles swoop on Summit”, “Amdahl muscles past IBM in mainframe war” and “IBM announced the beginning of a new era—Amdahl sets the measure” were seen in the days following Amdahl's latest processor announcement. All were referring to Amdahl's upping the ante on other mainframe vendors—once again.

In Sunnyvale, the atmosphere on October 18 was subdued—but the room, filled with press members from the U.S. as well as six Canadian trade journalists, had an air of quiet confidence. All those waiting (both in the room and via telephone hook-ups) to hear Amdahl's answer to the latest mainframe jockeying did not go away without grist for their media mills. Joe Zemke, president, Erika Williams, vice president of Processor Business Management, and Chuck Fonner, vice president of Systems Marketing, made the presentations.

Erika took the lead. “In 1988 we broke the 100 MIPS (million instructions per second) barrier when we announced the 5990. Today, I'm proud to announce we have shattered the 300 MIPS barrier with our new product, the 5995-8650.”

Erika briefly highlighted the new product line. “The new 5995 Series of mainframes consists of 10 models, including six 5995A processors based on proven 5990 technology designed for the majority of large-scale data processing needs, and four 5995M models designed with advanced technology for very large data centers with the most demanding throughput requirements. Among them is the 5995-8650M eight-way processor, which offers nearly three times the processing power of any previous Amdahl

mainframe and is the first compatible system to employ eight central processing units (CPUs). These systems offer a broad range of performance options and provide a smooth upgrade path of up to 10 times the performance of the smallest model, the 5995-350A.

“We've listened to our customers' requests and there has been a clear message that availability is their number-one goal. Because of this we placed great emphasis on ensuring reliability and availability of the product,” Erika continued. “In fact, we believe there is no equal!”

Chuck Fonner took the podium and continued with a description of the driving forces in the mainframe marketplace.

“We are witnessing a shift towards consolidated data centers. Because of this change, users are looking for larger systems with more flexibility and upgradeability. The Multiple Domain Feature, which will be standard on all the 5995s, is an important feature for our customers. It enables them to isolate workloads and perform routine maintenance or install new software packages without interfering with operations.

“With our new products we continue assisting our customers to properly manage their information processing assets,” Chuck outlined. “We've gained a reputation of working in partnership with them and our installed base vouches for that success. Our customers currently include 19 of the 25 largest data processing users in the U.S., 17 out of the top 25 in Canada, and 23 of the top 25 in the U.K..”

“We're raising the tempo,” Joe Zemke stated. “Just 20 years ago Amdahl began providing customers with an alternative—and we've come a long way from the three MIPS offered by our original CPUs. We have an excellent team developing

our products. Over 800 engineers worked on this sixth generation of Amdahl processors, and we have over 2,500 manufacturing employees, in Ireland and here, building our products.

“We have a history of having the right products at the right time, and we're well positioned to continue that tradition with the 5995 processor series. I believe that this is the most responsive product to market needs that we've ever announced.

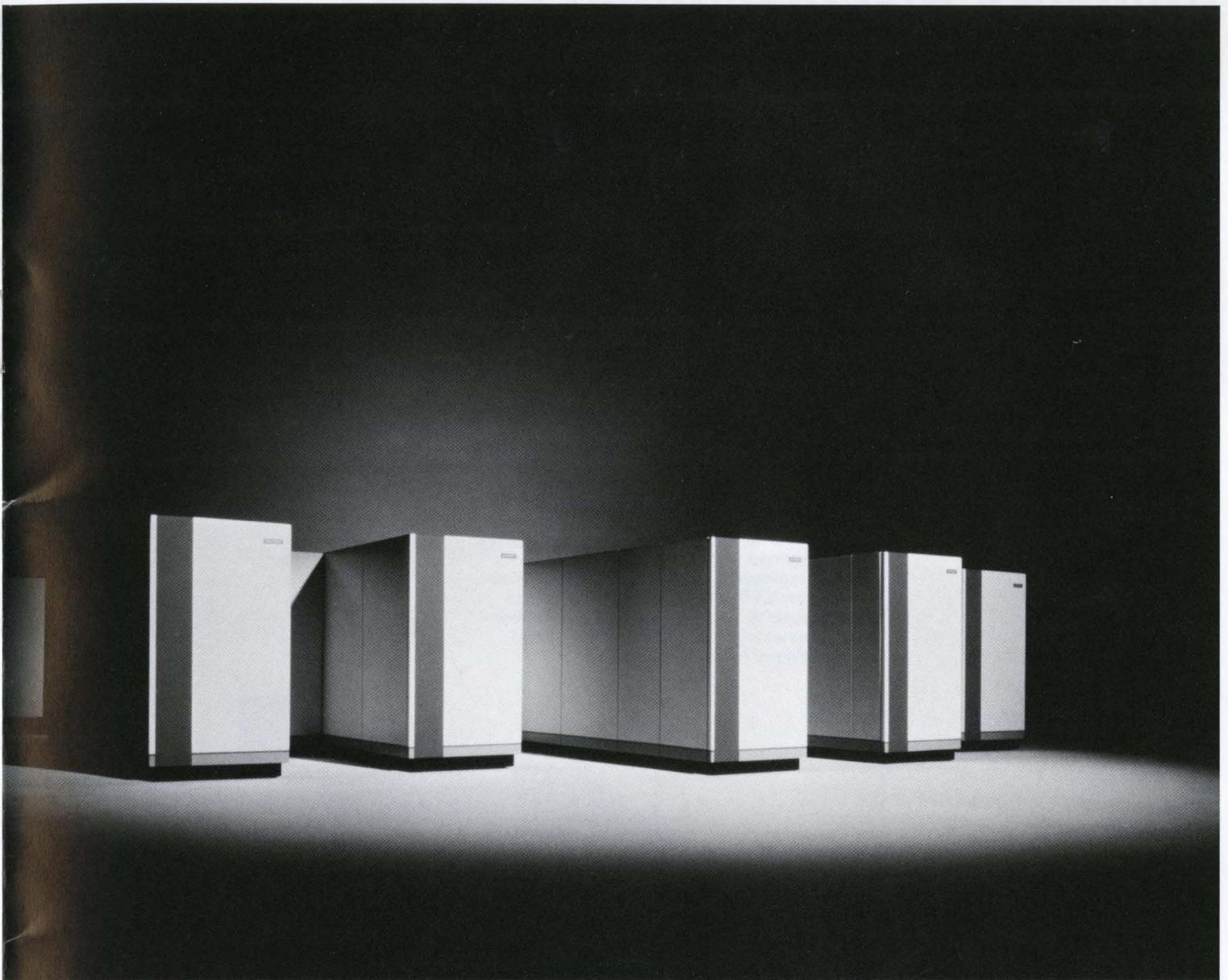
“We've always met the compatibility challenge and provided a better set of solutions to customers,” Joe summarized. “Because of this, I feel Amdahl will be an even bigger player in the System 390 architecture environment in the nineties.”

As indicated by the press coverage in the following week, the new products' specifications were well received. As the Wall Street Journal put it, “In terms of raw power, Amdahl indeed leads the pack.”

AROUND THE WORLD

Similar announcements were made around the world. In Sydney, the event took on an air of high style as a string quartet played while reporters arrived for the event. In Europe, journalists gathered in hotel facilities in nearly every country to hear Amdahl's answer to the mainframe challenge.

According to Frans De Hollander, Marketing Support manager for Amdahl Netherlands, “The press conference went



well. We also did an extensive mailing campaign to over 40 of our local newspapers. I included a short article of our own, and it actually appeared in almost half of the papers.

"The press coverage in the trade journals was very good," Frans continues. "Many of the reporters had just returned from a trip to Sunnyvale, so they were very well informed about Amdahl and our capabilities."

In Switzerland, the 5995 Series' environmental features became a point of focus according to Felix Bertschinger, general manager, Amdahl Switzerland, "That Amdahl machines use less electrical power is of major importance here. The Swiss recently voted in favor of a new law which prohibits the building of

new power plants (nuclear or any other kind) for the next 10 years. This means that we must save as much power as possible—and Amdahl helps with this problem. This was pointed out in many of the articles."

"Our announcement was very well received," says Pat Duffy, manager of Communications for Amdahl Pac Basin. "We had 18 journalists who came for the announcement and then stayed for lunch and discussions about the products' technical capabilities—actually the last reporter left around 5:00 p.m.. We gave out glass paperweights (individually designed by a local artist) to commemorate the event and help them remember Amdahl's uniqueness—functionally the same, but with something more!"

Amdahl's latest, the 5995-865M Eight-Way Multi-processor is designed to meet our customers' most exacting requirements for performance, availability, and flexibility.

Amdahl's Manufacturing Process

PRODUCTION & OPERATIONS

PLANT ONE

Frame Build

The frame, cables, and sub-assemblies are combined. Cables and harnesses are manufactured, and all electro-mechanical assemblies are tested. The process-line concept is involved in various procedures from wiring through the assembly and testing of finished frames.

PLANT THREE

LSI and Array Production

The following types of Sub-System Carriers (SSC) are produced:

- Central Processing Unit (CPU)
- Memory Control Unit (MCU)
- Main Storage Unit (MSU)
- Channel Sub-System Processor (CSP)

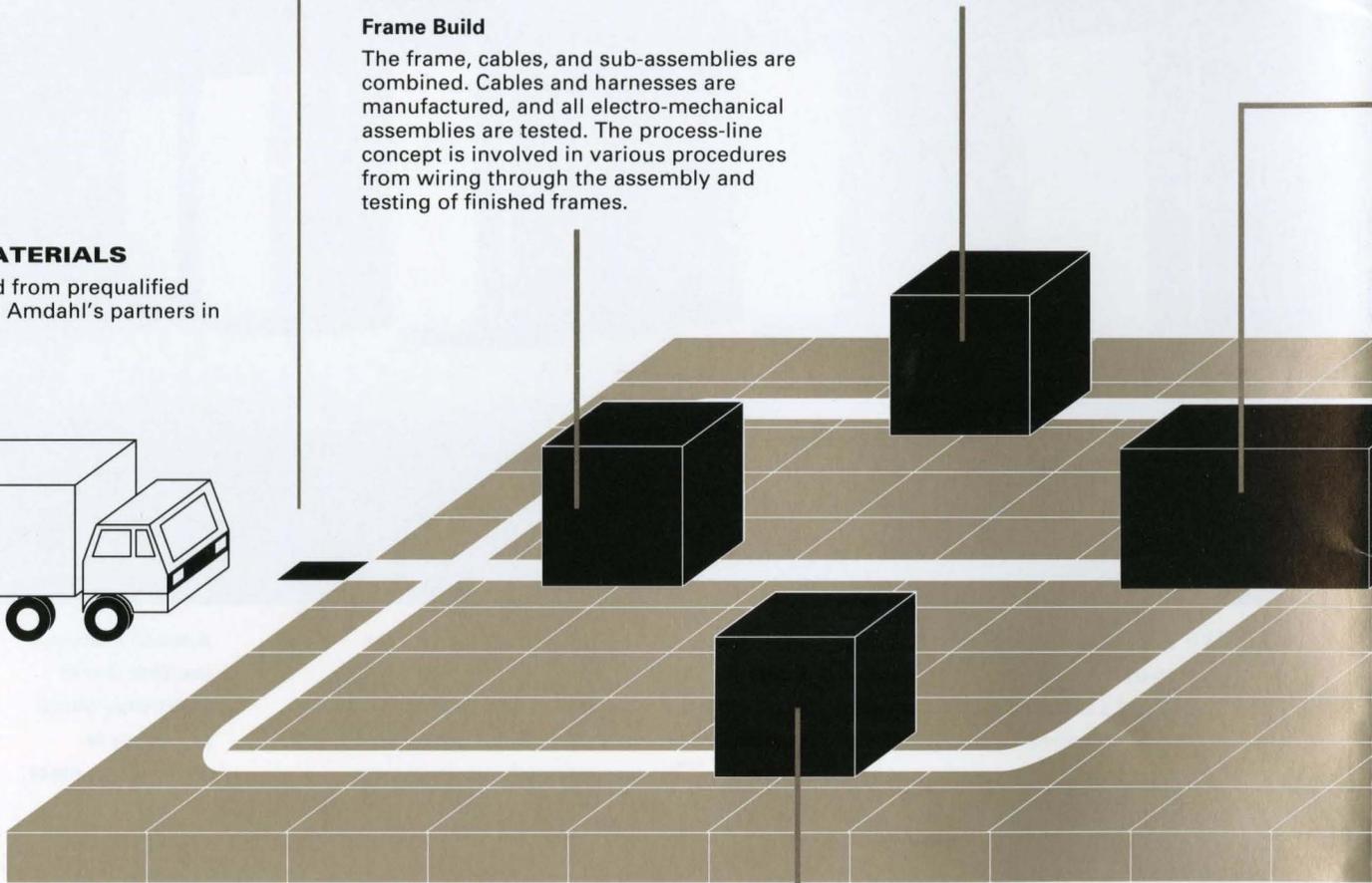
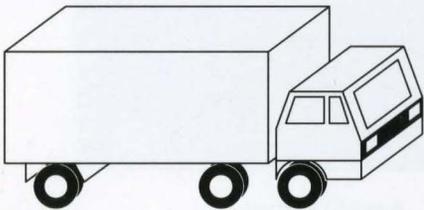
Each element is assembled and leaves the line only after it has successfully passed all functional testing.

Sub-System Module

The *Heart of the System* is assembled and fully tested in clean-room conditions using state of the art robotics.

INCOMING MATERIALS

Goods are received from prequalified suppliers and from Amdahl's partners in technology.



PLANT TWO

Printed Wiring Assembly

All non-MLS, non-SSM and MCC printed circuit boards are assembled. Using the process-line principle, each board is built and full-functioned tested. Each test must be passed before the board leaves the line in which it has been processed.

One of the myths that Amdahl people constantly have to face is the impression that Amdahl doesn't produce its own products. In fact, we do. We have two manufacturing plants which supply the company with products to meet our worldwide demand. They use the most advanced technologies and integrate World Class Manufacturing techniques in their manufacturing process.

The Sunnyvale plant began ramping up to produce products in 1972 and the Dublin, Ireland plant was opened in 1978. Still, many of us have never had the opportunity to see our manufacturing plants or fully understand our manufacturing process.

This is a simplified version of the 5995 manufacturing process. The diagram, which illustrates the Sunnyvale plant flow, was adapted from a poster that is distributed in Europe to customers and prospects to show how Amdahl's machines are produced at the Ireland plant.

SYSTEM TEST

Diagnostic Testing

Progressive levels of verification are applied. Each system is stressed to the limit of its design using test verification equipment designed and built at Amdahl.

Margins Testing

All aspects of the system's electronic and environmental specifications are verified to ensure reliable operation.

Reliability Testing

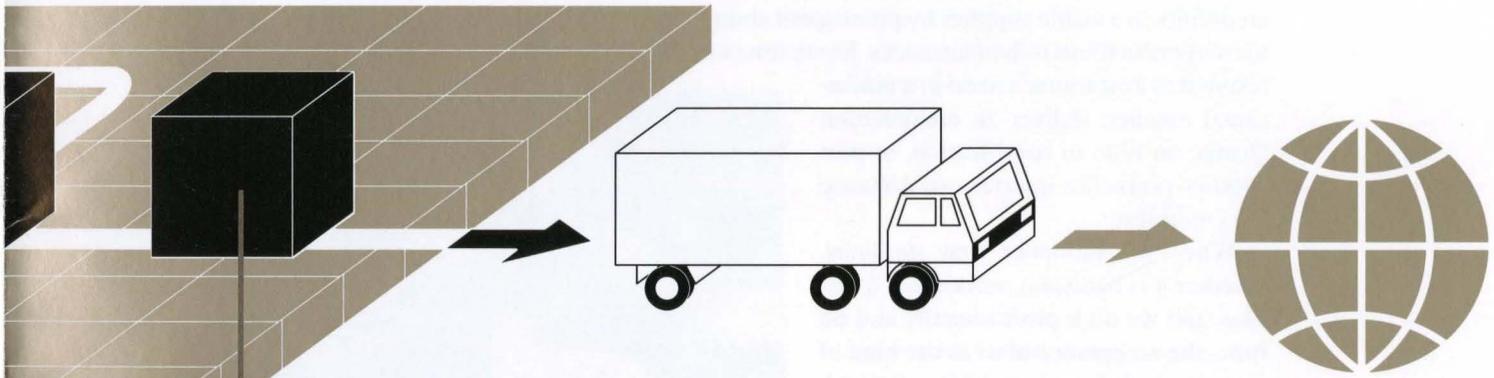
Every system is stress-tested to run error-free over a prolonged period.

Applications Testing

Full testing is undertaken to ensure that the finished product will run any of the Amdahl announced System Control Program Environments.

Customer Configuration

Systems are configured to individual customer requirements.



PACKAGING

Each system is packaged to ensure that the product arrives to the customer in first-class condition.

SHIPMENT

Using specialized computer transportation, the equipment is delivered directly to the customer.

CUSTOMER SUPPORT

Installation

Installations are carried out with minimum disruption to the customer, and are comprehensively supported by specialist Amdahl personnel.

System Monitoring

The system performance of every machine is constantly monitored. Any errors detected during the life of the product are fully investigated and corrective action is instigated.

Earning Credibility— One Step at a Time

When we shipped our first computer in 1975 we were an unknown company with no earnings record and only one product. Anyone who considered buying our products was very concerned about our staying power and how we could handle the technology changes competition could hit us with.

Fifteen years later we haven't proven our staying power and not only handled all the technology changes presented by competition but, indeed, have been a technological leader with many new and innovative products. Our product lines have expanded to meet more of the total needs of the large data processing user and our worldwide customer base has become large and impressive.

While we can be proud of our accomplishments, it hasn't been an easy task achieving the acceptance level we currently enjoy and it will take extraordinary efforts by all of us to continue to improve upon our past record.

Over the years we have been able to improve our credibility as a viable supplier by proving our ability to compete in thousands of instances. Every time we respond to a customer's need in a professional manner, deliver an architectural change on time to specification, or post another profitable quarter, we enhance our credibility.

When we announce new products, whether it is hardware, software or a service, and we do it professionally and on time, the acceptance of us as the kind of company to do business with is enhanced.

One of the most important aspects of earning our credibility has been the way we, as a company, treat our customers. It is not an accident that in our Company Values document the first value we cite concerns how we treat our customers. The attitude and enthusiasm shown by Amdahl people throughout the world when working with our customers has earned us international acclaim and is a signifi-

cant factor in the success of the company. The reputation we have earned takes years to establish by the work of everyone who ever has any contact with a customer or supported those who have the contact.

While it takes years to build a reputation of excellence, it can be lost in very short order if we don't continue to improve in all the areas of our business. So, while we can all be proud of our accomplishments and the reputation and credibility that we have earned through our hard work and a can-do attitude, we must remember that what we have done is raised the level of expectation of everyone we work with. Our competition is very capable and customers expect us to continue to become an even better company.

The challenge we face is to continually improve in all aspects of our business so that we continue to be a leader in our industry.



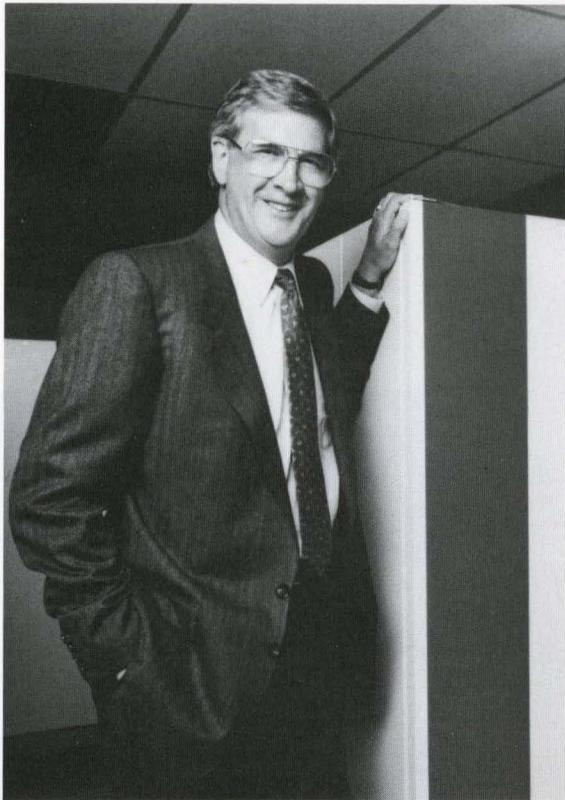
Twenty years....that's pretty impressive! As I reflect on our achievements as a company in the 1970s and 1980s, there has been one shining constant throughout: the quality and commitment of our employees has never changed.

When I joined Amdahl in 1985, that employee commitment is what impressed me the most. We established ourselves in the marketplace and grew our business because *we delivered* on what we promised. As our competitor became more aggressive and more responsive, we created a process that allowed us to adapt and change and compete successfully in a very tough market.

How do you measure our success? I measure it according to our significant penetration of the Fortune 100 level companies around the world. I measure it by the impressive growth of our business in Canada, the Pacific Basin, Europe, and of course, the United States. And I measure it based on the comments and letters I receive from customers who recognize the value we bring to their business and this industry.

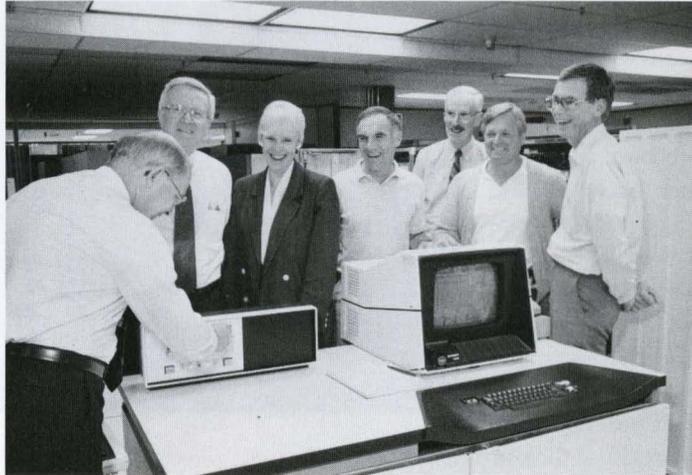
Not long ago, I received a very nice letter from a customer of ours. This person took the time to tell me how impressed he was that one of our employees had actually thanked him for his business. No previous vendor had ever thanked him for being a customer! We did.

In 20 years, we have changed the mainframe business, not simply because of *what* we did but *how* we did it. Over the next twenty years, we will experience many changes in all aspects of business. We will evolve new products, expand our services and face new competitors. The one thing, however, that we cannot allow to change is that special quality in Amdahl people that consistently "makes the difference" in whatever tasks they undertake. Your commitment, your willingness to run that extra mile in the face of significant competitive challenges is what sets us apart from all other companies in this industry. You are Amdahl's secret weapon. You are what makes Amdahl a special place to work and you are why I am so proud to be here.



joe zemke

**For 20 years,
We've Delivered**



Bruce Beebe officiates the power-down of the last remaining 470 in Amdahl Headquarters (Design Assurance Group). Watching the end of an era are: (left to right) Jim Henry, Rudy Bovier, Dick Tobias, Dave Brewer, Glenn Grant and Russ Young. Collectively this group of employees represent 140 years of Amdahl experience!