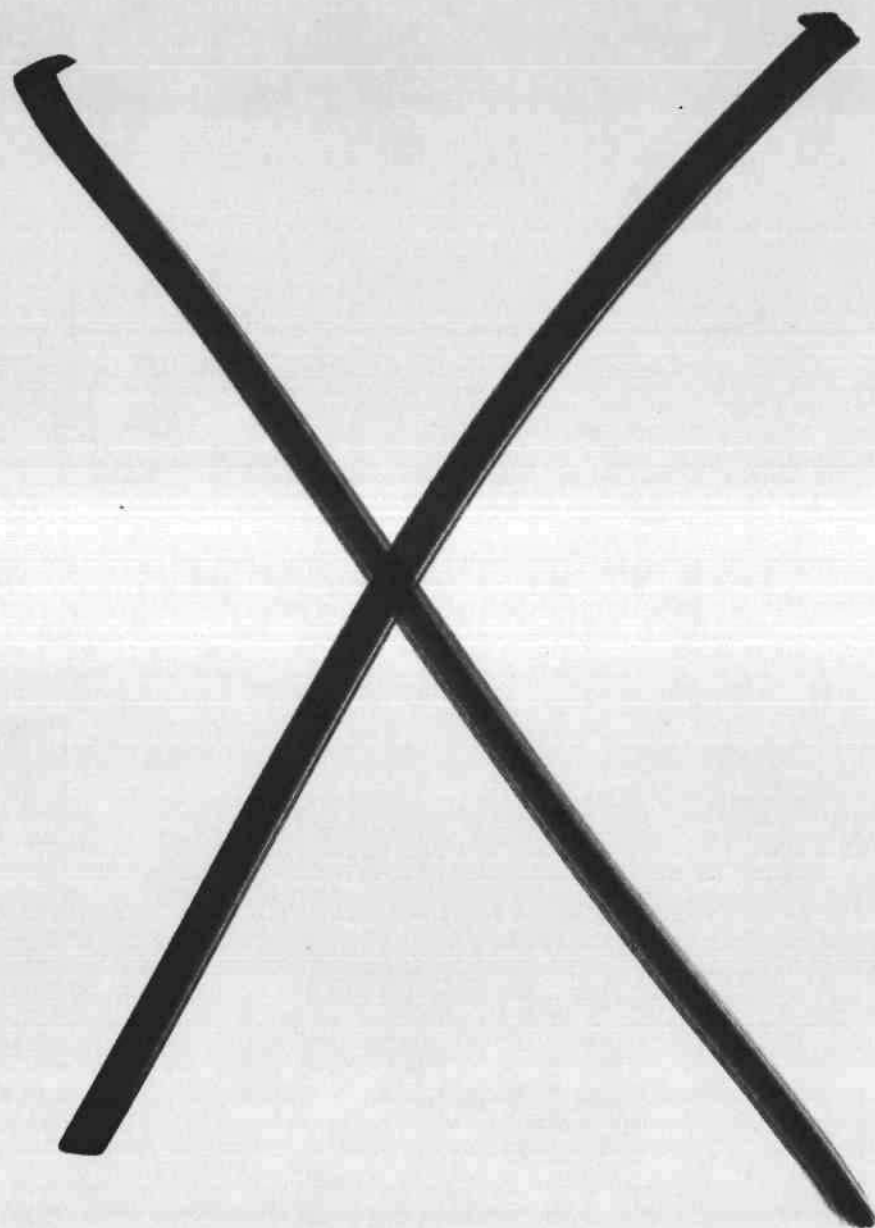


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Semiconductors

PC Demand Energizes SRAM Market



Industry Trends

1994

Program: Semiconductor Buyer's Edge
Product Code: SCBE-NA-IT-9402
Publication Date: August 1, 1994

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Cache Memory

The SRAM market is changing dramatically because of growing demand for fast memory in the high-end PCs and low power-consumption requirements in mobile computing devices. Primary SRAM applications are high-end computers, military, industrial, telecommunications, and consumer segments. SRAMs have two advantages over DRAM memory, faster access times and low current draw.

SRAMs with fast access times, known as cache memory, store and retrieve data at much faster rates than do most DRAMs. Cache SRAMs function as an intermediate memory between the fast microprocessors and the slow DRAM. By operating at or near the speed of the microprocessor, cache SRAMs minimize the number of wait-states, which greatly improves system performance.

680xx-, 286-, and 386-based PCs use minimal amounts of SRAM, usually not more than 8KB. With the advent of the 486, Pentium, and PowerPC, fuller use of the SRAM is possible. All of the Pentium-based and half of the 486 machines are running either 256KB or 512KB, with future generations of Pentiums requiring 1MB. PowerPC-based machines from Apple and IBM also are shipping with substantial cache memory.

Field and mobile systems use slower-speed SRAMs, typically greater than 45ns. DRAMs, the other RAM memory, require refresh current. SRAMs need only standby current, which is orders of magnitude less than refresh current. SRAMs are the memory of choice for any battery-operated system, for example, palmtop computing applications running on AA batteries.

SRAM Market

Although PC cache memory is one of the most dynamic segments, it comprised less than 30 percent of the \$3.9 billion 1993 SRAM market. The 1992 market is valued at \$3.0 billion, which calculates out to a respectable 1992 to 1993 growth rate of about 30 percent.

Because of the premium paid for PC cache SRAM and the relative sluggishness in other SRAMs, an interesting anomaly is developing. Total unit growth through 1997 should slow while the market and average selling price (ASP) grows. ASPs already are substantially increasing. Dataquest pricing data suggests that 1995 SRAM ASPs will be more than \$5.50, up from \$3.83 in 1993.

Segmentation of the market by speed and density shows the shift toward faster and more complex components. In the last Semiconductor Procurement service update on SRAMs, "Systems Evolution Spells 'Opportunity' for the SRAM Supplier Base," published November 22, 1993 (SPSG-WW-DP-9307), Dataquest drew the line between fast and slow SRAMs at 70ns. Because of the dynamism of this market, one hesitates to place any speed label on these parts at all. However, for the sake of clarity, convenience,

and simplicity, Dataquest uses the following speed labels: less than 20ns is very fast, 20 to 44ns is fast, 45 to 70ns is medium, and greater than 70ns is slow.

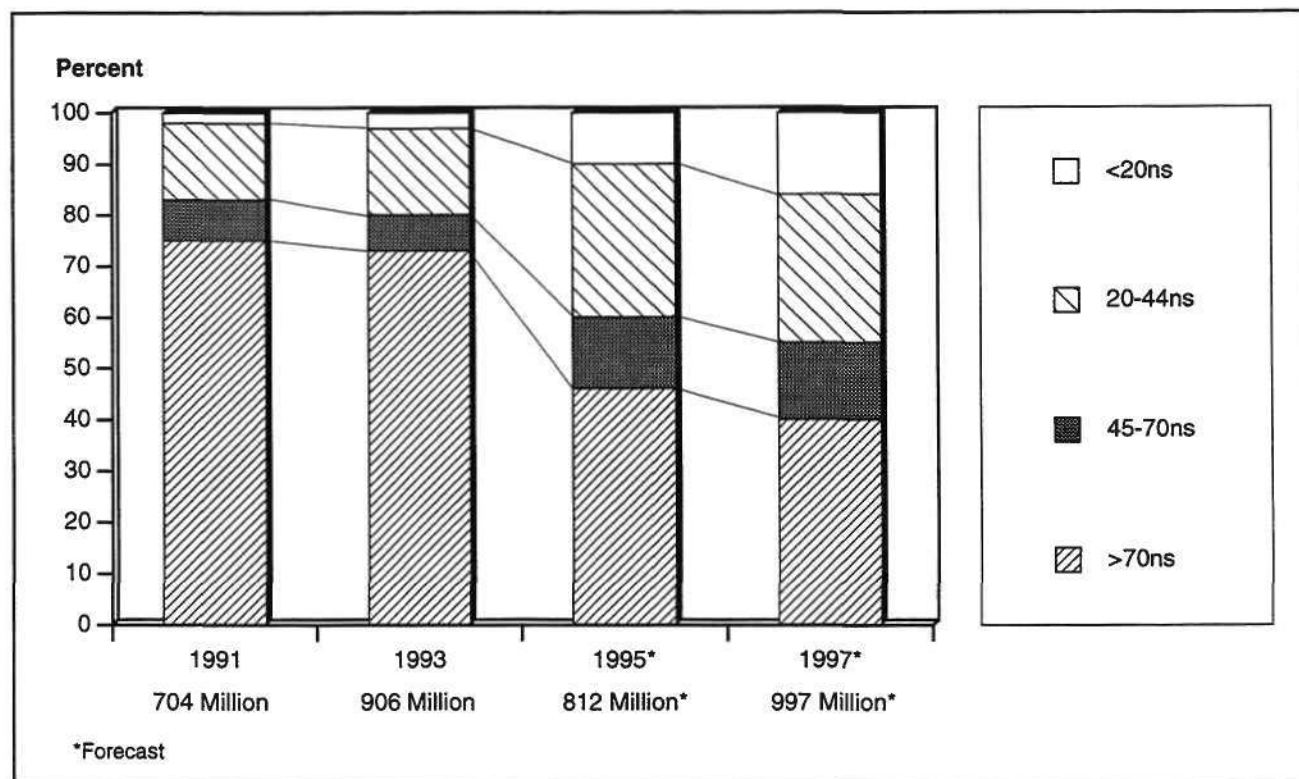
As shown in Figure 1, more than 70 percent of all SRAMs sold in 1993 are slow (greater than 70ns). The percentage of slow SRAMs will drop to 40 percent by 1997, with medium (45 to 70ns), fast (20 to 44ns), and very fast (less than 20ns) growing dramatically.

Figure 2 shows how the SRAM density mix will change over time. In 1993, 89 percent of all units were 256Kb or below, with a shift to 81 percent more than 256Kb by 1997. Dataquest sees 1Mb and 4Mb as the primary densities in the late 1990s' time frame, but sees limited demand for the 16Mb.

SRAM Life Cycles

Another way to analyze the market is by charting the movement of specific SRAMs through the life-cycle curve, which has seven stages or phases. The horizontal axis is time and the vertical axis is number of units. The entire SRAM life cycle can be greater than 15 years, or about three times longer than the DRAM life cycle (see Figure 3).

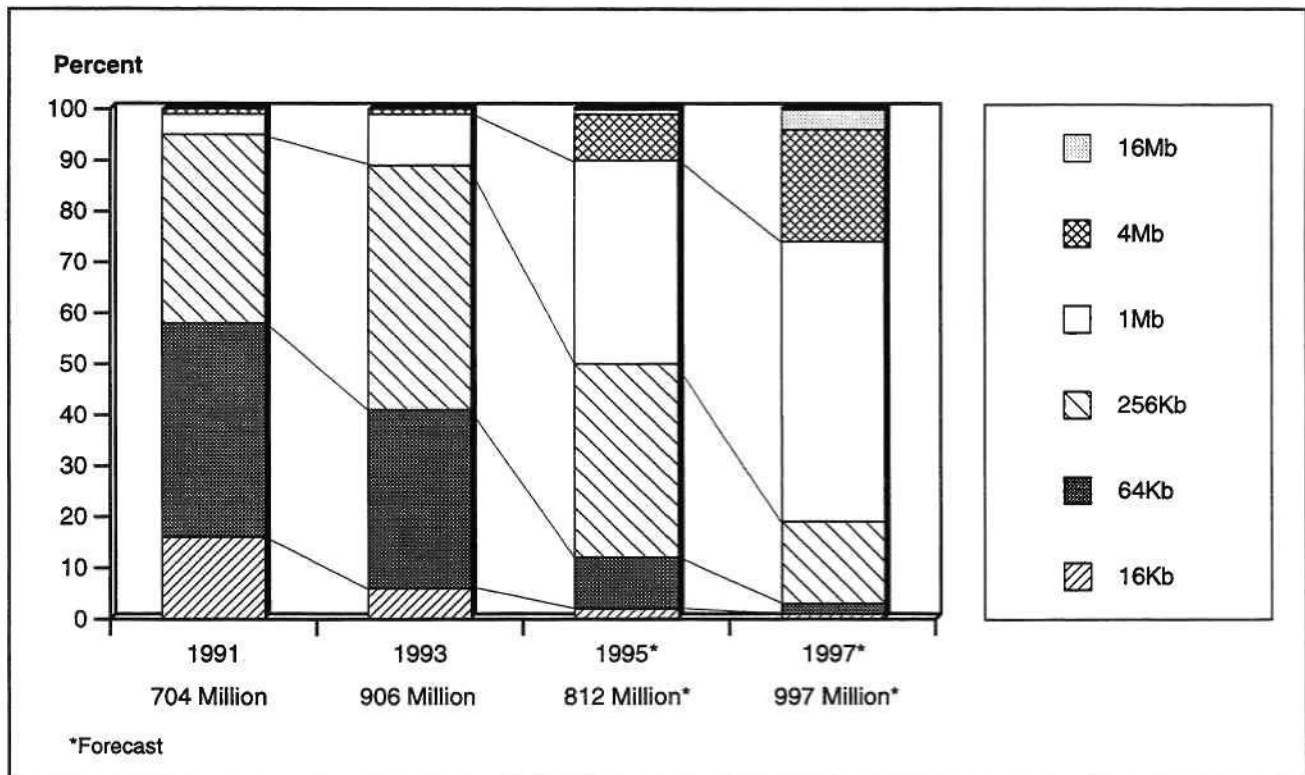
Figure 1
Worldwide SRAM Units by Speed (Percentage of Worldwide Market)



Source: Dataquest (August 1994)

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Figure 2
Worldwide SRAM Units by Density (Percentage of Worldwide Market)



Source: Dataquest (August 1994)

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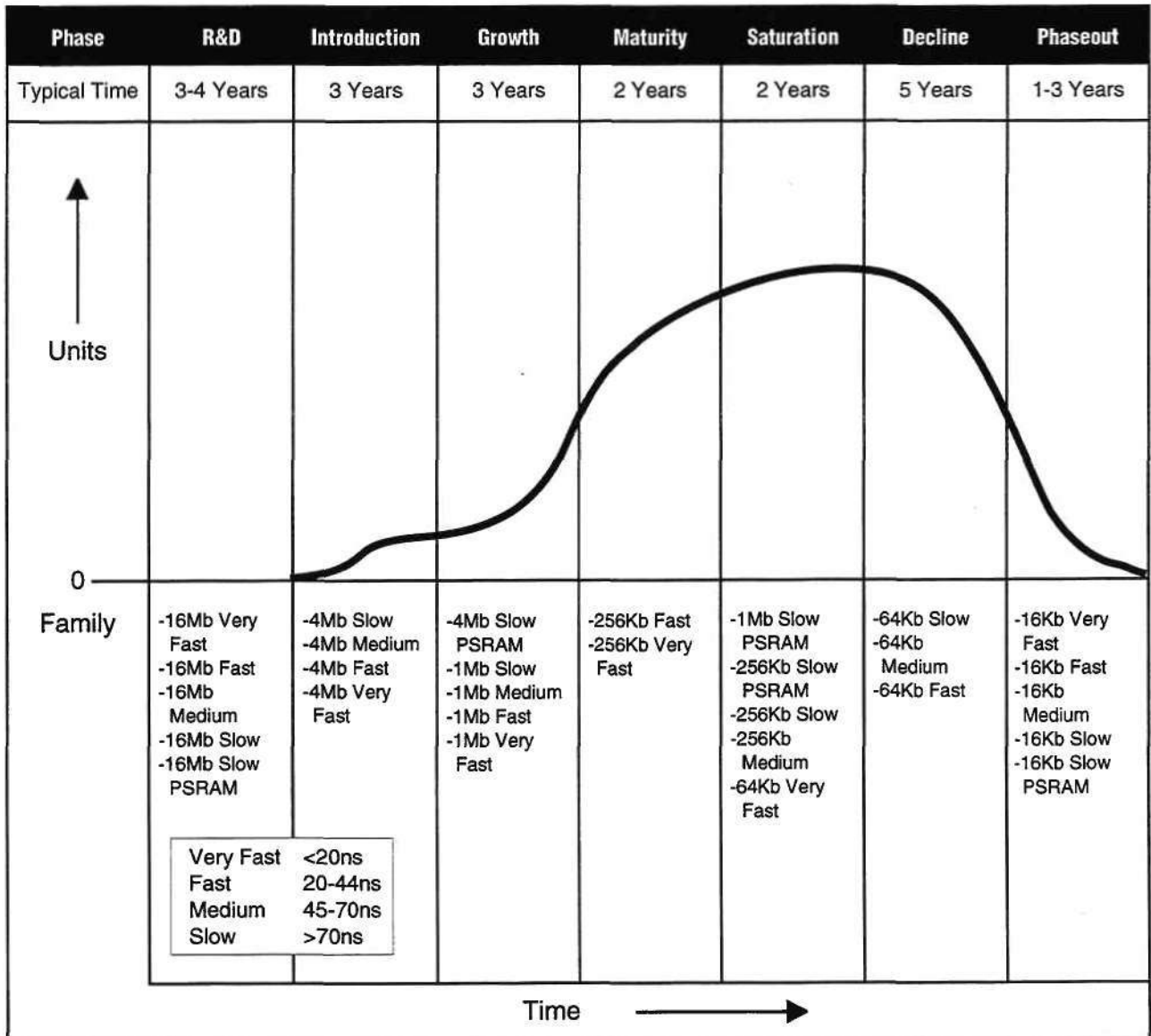
Understanding where a particular part is in the life-cycle curve is important to both IC suppliers and users. IC suppliers can use life-cycle curves to estimate product life, which greatly impacts resource allocation and pricing strategy. IC users, typically system houses, can use life-cycle curves to guide their technology road maps and to help manage procurement strategies.

System houses are wise to align their product life cycles with that of the life cycles of the critical components. For example, peak system production should occur in the maturation and saturation stages, where pricing and availability are best. Nothing is more difficult, frustrating, and expensive than trying to ramp system production with critical components in either the R&D/introduction or decline/phaseout stages.

In Figure 3, the updated SRAM life-cycle curve shows the most restricted supply of SRAMs to be at the 16Mb and 16Kb levels. Most abundant are the 256Kb at all speeds, with fast (20 to 44ns) and very fast (less than 20ns) parts expected to enter the saturation stage in late 1995.

Widespread acceptance of the 1Mb part by the design community is slow because of the uncertain economic conditions in Japan and limited demand. This reluctance to make the transition to the 1Mb should

Figure 3
SRAM Life-Cycle Stages by Density



Source: Dataquest (August 1994)

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evaporate once the new high-end PCs, workstations, and servers create sustainable demand for the more complex parts.

Even further back in the life cycle are the 4Mb parts, currently in the introduction phase. Because of the long SRAM life cycle, 4Mb SRAM production will extend into the 21st century. Also, 64Kb parts will have moved into the phaseout stage by the beginning of the next century, with few suppliers and potentially high price tags.

System houses with long-lived products using components in the decline or phaseout stages should consider making arrangements with suppliers, such as guaranteed minimum deliveries or an end-of-life buy. Another

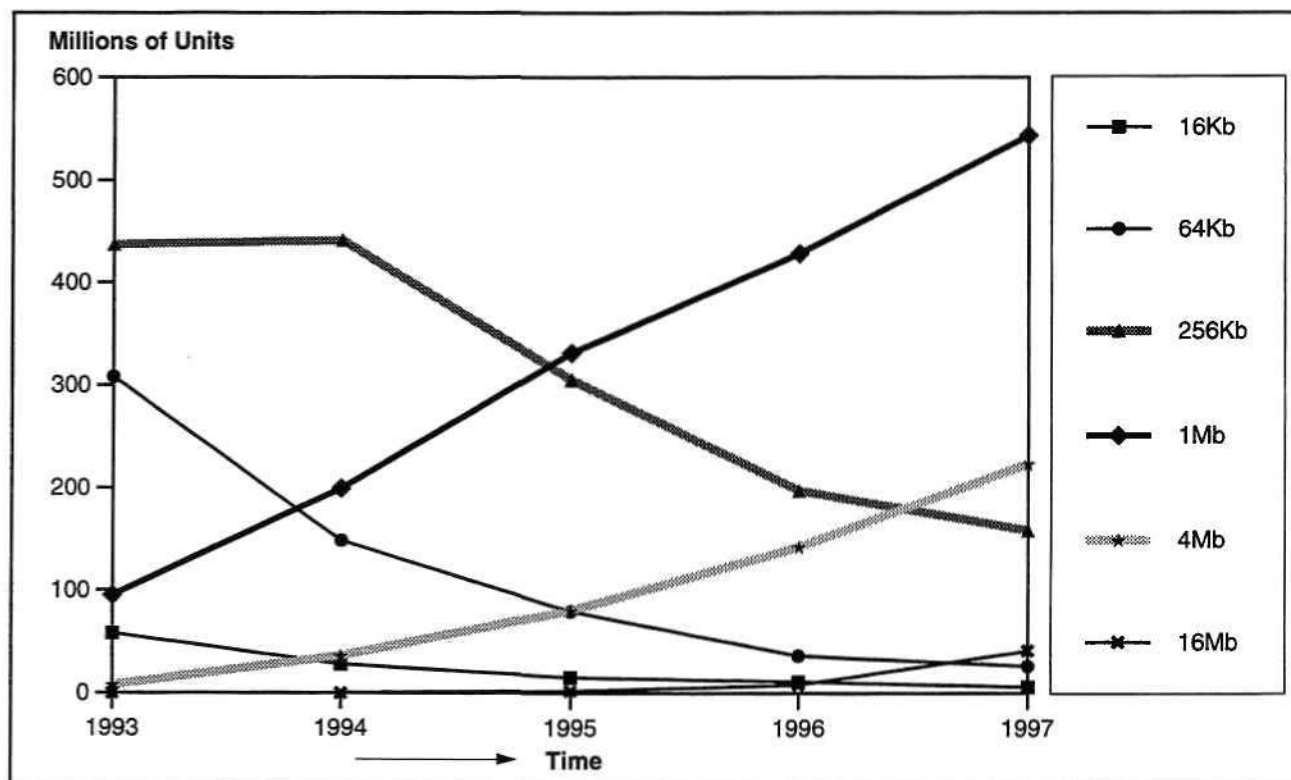
option is to move to the more available part, usually in a higher density. In some cases, the newer part, even though more complex, could cost less than the old one.

Figure 4 shows just how abrupt product transitions can be. For example, 300 million 64Kb parts were produced in 1993, with production forecast to fall 90 percent only four years later. Also of particular interest is the difference between the 1Mb and 4Mb forecast. The 1Mb shows a steep ramp up, with peak production in 1996, compared to the more leisurely steady rise of 4Mb production. One final point is that in 1997 only the 1Mb, 4Mb, and 256Kb will be available in large quantities and with (assumed) highly competitive pricing.

Supply Base Profiles

The top 10 SRAM supply base shifted only slightly from 1992 to 1993 (see Table 1). Hitachi remained at the top, Toshiba moved up one place, NEC dropped one, Fujitsu stayed the same, Sony moved up one, Samsung moved up one, Motorola dropped two, Mitsubishi stayed the same, Cypress moved up one, and Sharp dropped one. Japanese-based suppliers dominate the SRAM market, holding 7 of the top 10 positions. The

Figure 4
Worldwide SRAM Units by Year (Millions of Units)



Source: Dataquest (August 1994)

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Table 1
1993 Worldwide Ranking of Top SRAM Suppliers
(Based on Factory Revenue, Millions of U.S. Dollars)

Supplier	1993 Revenue	1992 Revenue	Percentage Change	1993 Market Share (%)
Hitachi	567	494	15	15
Toshiba	346	261	33	9
NEC	333	264	26	9
Fujitsu	307	245	25	8
Sony	261	179	46	7
Samsung	243	170	43	6
Motorola	239	222	8	6
Mitsubishi	186	162	15	5
Cypress	165	119	39	4
Sharp	139	123	13	4
Micron	130	111	17	3
Others	992	688	44	25
Total	3,908	3,038	29	

Source: Dataquest (August 1994)

top five companies (Hitachi, Toshiba, NEC, Fujitsu, and Sony) account for 48 percent of the entire market. Samsung, Motorola, Cypress, and Micron are the largest non-Japanese SRAM suppliers.

Hitachi

Without question, Hitachi is the king of SRAMs, with more than half a billion in revenue and 15 percent market share. Hitachi successfully combines its DRAM manufacturing expertise and mainframe systems knowledge to quickly bring cutting-edge products to the market. Hitachi's well-regarded BiCMOS process enables very fast access times of less than 20ns. The company is shipping 256Kb and 1Mb as fast as 6ns and 10ns, respectively.

Not surprisingly, Hitachi is a tough competitor in the slower 256Kb and 1Mb parts. It also is a major producer of slow and high-density pseudo-SRAMs (PSRAMs). Hitachi introduced a 1Mx4 synchronous SRAM with access times of 8ns in early 1994. Market leadership in the 4Mb is critical if Hitachi wants to remain No. 1. Dataquest believes that Hitachi may slip some in market share over time but should remain on top of the SRAM world.

Toshiba

Toshiba nosed out NEC for second place and showed 9 percent market share in 1993. It focuses on the fast- and medium-speed SRAMs (greater than 20ns) and also is a major PSRAM supplier. Toshiba released a configurable 4Mb SRAM (either x1 or x4) in 0.5-micron process technology at 20, 25, and 30ns in 1994. At this point it is not clear whether SRAM

customers need or desire configurable parts. However, the fact that Toshiba is in volume production of 4Mb SRAMs indicates that it will continue to have top-tier status.

NEC

NEC is a major vertically integrated system house known for TSOP packages and SRAM modules. Although lacking internal demand for very fast SRAMs, NEC is at the forefront in speeds and densities. Current fast BiCMOS SRAM offerings are a 256Kb at 6ns and a 1Mb at 8ns. A 16Mb BiCMOS SRAM in 3.3V should be in production by late 1995. NEC has the process technology and marketing savvy to remain a strong broad-based SRAM supplier.

Fujitsu

Fujitsu is still the fourth-largest supplier, but market share slipped slightly from 1991. SRAMs at Fujitsu are closely aligned with its mainframe business. The slowing mainframe market could be adversely affecting Fujitsu's SRAM development. Fujitsu lags the other first-tier players in announcements of fast and very fast SRAMs at the higher densities.

Sony

SRAMs are a critical component in Sony's consumer products (camcorders) and in the manufacturing process driver for the entire IC program. Sony offers a wide range of SRAMs and is particularly strong in the 256Kb and 1Mb areas. Sony intends to be a market leader at the 4Mb level and offers a complete family with speed, power, and packaging options. For the time being, 4Mb devices are selling at more than \$100, even in volume orders. Assuming a successful ramp of the 4Mb product, Sony should realize substantial SRAM profits in 1994 and 1995.

Samsung

Samsung regards SRAMs as a crucial part of its memory strategy. In just a few short years, Samsung has moved up to the No. 6 position and is now challenging the top five suppliers. Samsung sells a broad line of 256Kb, 1Mb, and 4Mb devices in both CMOS and BiCMOS. The BiCMOS 256Kb has access times as fast as 6ns, while the 1Mb clocks in at 8ns. The 4Mb is offered at 25ns and is available in x4, x8, and x16 configurations. Samsung is supporting the JEDEC revolutionary pinout with ground and power pins in the center.

Motorola

Motorola uses 0.5-micron CMOS and BiCMOS processes to target the fast end of the SRAM market. All Motorola SRAMs are faster than 45ns. The 4Mb devices are available in the x8, x4, and x2 configurations with access speeds as fast as 10ns. The 1Mb, 512Kb, and 256Kb are in production at less than 10ns. Similar to Samsung, Motorola is supporting the JEDEC revolutionary pinout. Clearly, Motorola intends to stay ahead of the low-price commodity market and compete where the players are limited and ASPs are higher.

Mitsubishi

Mitsubishi held onto eighth position in 1993, had 5 percent market share, and, relative to 1992, grew sales 15 percent. Mitsubishi offers 1Mb and 256Kb in CMOS and BiCMOS versions. Mitsubishi's SRAM production, like Sony's, is partially driven internally by demand from the consumer electronics divisions. A recovering consumer electronics market should boost SRAM production at both Mitsubishi and Sony.

Cypress

Cypress is flying high again, this time fueled by significant sales of the 256Kb SRAM, used in PC cache memory. It moved up one notch in 1993 and increased sales 39 percent over 1992 levels. The Cypress BiCMOS process is capable of 6ns at the 256Kb density. Production for the 1Mb product is scheduled for late 1994, which is behind some of its competitors. Of general concern is the company's reliance on SRAMs, estimated to be 50 percent of all revenue.

Sharp

Known mostly for mask ROMs and flash devices, Sharp also sells nearly \$140 million in SRAMs. Sharp concentrates on the faster SRAMs and specialty SRAMs (FIFOs and the x16 configuration). In 1993, Sharp slipped from 9th to 10th position and annual sales grew 13 percent.

Other suppliers with SRAM sales of more than \$100 million are as follows:

- Micron—Balancing DRAM and SRAM production; has fast CMOS process
- Hyundai—No. 2 Korean supplier; boosting fabrication capacity
- UMC—Largest Taiwanese supplier; parts designed into major U.S. computers
- IDT—SRAM technology drives FIFO and dual-port RAMs; 1Mb SRAM not in production yet

Dataquest Perspective

The SRAM market will gain considerable momentum because of new applications in the high-end PC area. Dataquest expects all top-tier suppliers to do well, especially those with a proved BiCMOS technology. However, this once relatively stable market (compared to DRAMs) has the potential to change dramatically in the next several years.

One probable scenario is increasing pricing pressure from the Korean and Taiwan-based companies. If there is a price war in SRAMs, one or more of the top Japanese suppliers may decide to de-emphasize SRAM in favor of DRAM. The same lines that run 1Mb SRAMs can be changed to run 4Mb DRAMs in as little as two weeks.

Some smaller SRAM suppliers will have their own problems. Those companies supplying only niche devices may find it increasingly difficult to

chase the small, high-ASP SRAM markets. As these markets grow, they become ripe pickings for larger broad-based companies.

In technology, a proved half-micron BiCMOS process is critical. Any SRAM suppliers lacking BiCMOS 1Mb SRAMs are behind the market leaders and could see dropping market share.

A changing SRAM market has strategic implications for large system houses. Dataquest suggests major SRAM users work closely with their prime SRAM suppliers. It is important to understand fully the supplier's SRAM technology road map. Also, second sourcing of all critical SRAMs is strongly advised.

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Microprocessor Supply Base Analysis



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Advanced Microprocessor Supplier and Product Update: Competition Promises User Relief on Price/Performance—

This document analyzes the developments of the advanced microprocessor market from a product- and supply-base perspective. Dataquest defines advanced microprocessors as those utilizing 16/32-bit, 32-bit, 32/64-bit, and 64-bit I/O, both CISC and RISC processors. This category primarily comprises the 80x86/Pentium families, the 68xxx families, and open system RISC processors (Alpha, MIPS, PA-RISC, PowerPC, and SPARC). This market continues to dramatically change as suppliers play the game of price/performance one-upmanship at the hardware level while application software support grows in importance as a user decision factor. These factors combined with others (memory availability, among others) accelerate the rate of change to higher-performance systems while simultaneously reducing the system life cycles of many leading-edge products.

This document is divided into three sections. The first serves as a guide to the current state of microprocessor families relative to their position in the overall microprocessor product life cycle curve based upon the latest shipment data available. The second section examines the strategies of the top three suppliers of advanced MPU products and technology. The third section analyzes the current and future supply base for this critical semiconductor segment. Combining individual user company system data with this analysis provides good insight on the current and future supply base of this important product segment.

MOS Microprocessor Product Life Cycles

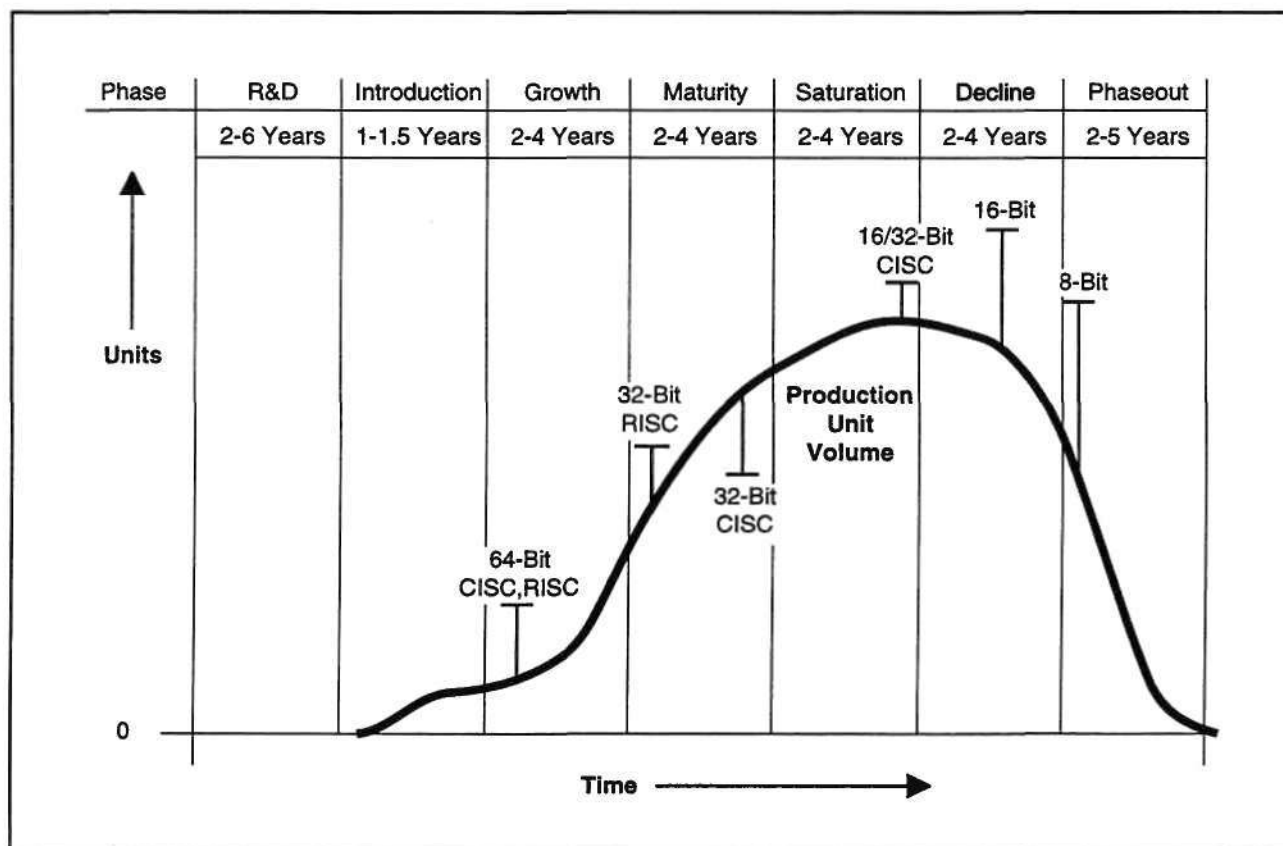
This section uses life cycle information as a guide to assist users in adjusting to forces that continue to reshape the worldwide MPU marketplace.

Typical Life Cycles for MPU Products

As seen in Figure 1, the complete life cycle for a microprocessor family ranges from 13 to 28 years from the initial R&D phase through obsolescence (phase out). The typical MPU life cycle that involves production volumes (growth through decline) generally exceeds 10 years.

The lengthy R&D phase provides users a valuable opportunity to monitor a supplier's (or prospective supplier's) pace of technical achievement, legal standing where applicable, as well as the supplier's timetable for bringing a new, state-of-the-art device to market. Reflecting this interest in emerging microprocessors during the past 12 months, Dataquest received many inquiries about leading-edge microprocessors such as the Pentium, R4000, 21064 (Alpha), and the PowerPC. The increasingly competitive x86 market continues to cause price and availability relief as Advanced Micro Devices (AMD), Cyrix, Texas Instruments (TI), IBM, and NexGen legally compete in this area. The 8-bit processor market remains solely with embedded applications, and the 16-bit arena is also quickly ramping up

Figure 1
Microprocessor Product Life Cycle As of April 1994



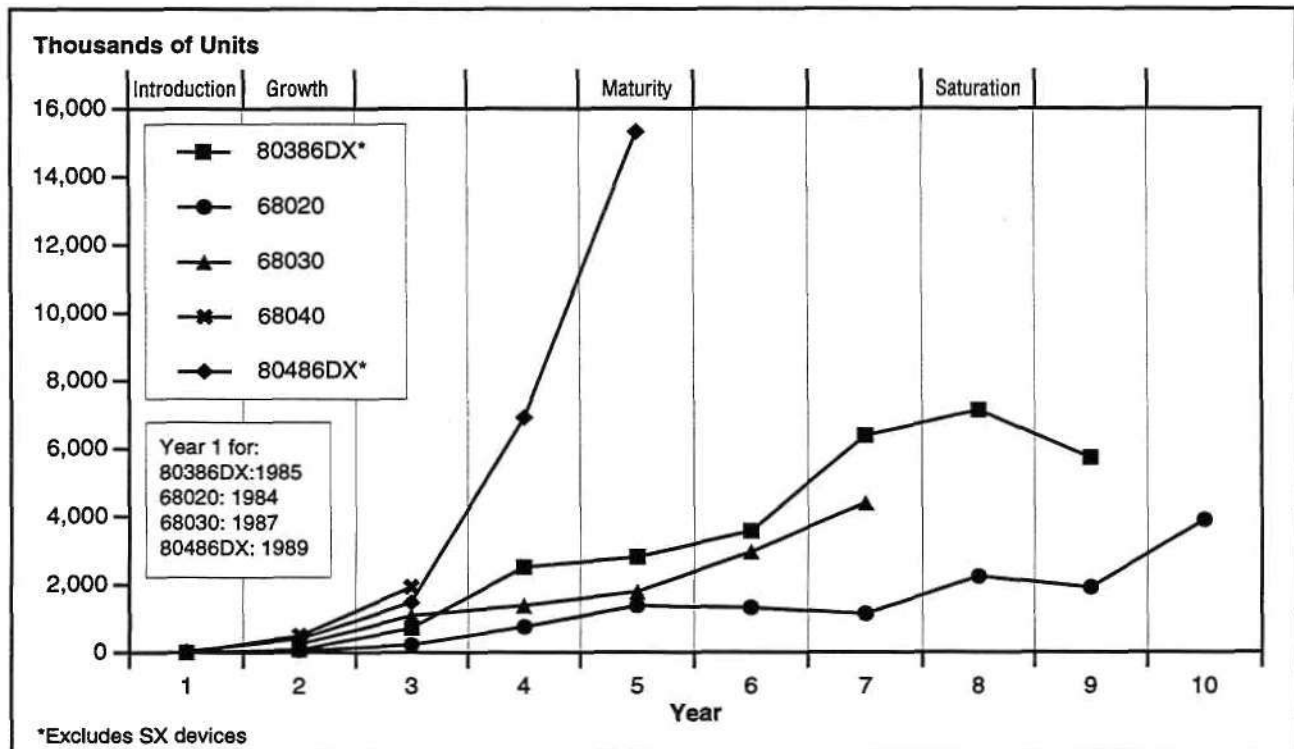
Source: Dataquest (April 1994)

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into the embedded areas and in some handheld products. The 32-bit market remains fragmented. A number of competitors vie for a piece of the Intel money pie, Motorola continues to support the aging 68020/030 products, and the 68040 falls victim to the Power PC. The emerging Pentium and other 32-bit-plus RISC products currently are on the high end of the price/performance curve but will gradually come down the learning curve during the next two to three years.

Figure 2 highlights the product life cycle for select CISC 32-bit MPUs through 1993 using historical unit shipment data and shows that 1993 continued as a stellar year for the 486 product lines. The mature Motorola 68020 products continued to decline in unit volume while the more advanced 68030 shipment growth compared favorably to the other 32-bit product growth rates. Continued use of the mature 68020, 68030, and 386 in embedded applications will keep unit shipments for these families resilient in the upcoming years while the leading-edge MPU products win computer design-ins. Continued 486 competition prices combined with Windows demand kept the 486DX market expanding and directly allowed Intel to remain the top semiconductor supplier in 1993. Figures 1 and 2 show that users should not expect market saturation for the majority of these products for the next several years. Because of the rapid acceptance

Figure 2
CISC MPU Life Cycle As of April 1993



Source: Dataquest (April 1994)

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of the economical 486SX device, the life cycle of the 386SX/DX has been truncated as a primary PC engine, but as mentioned the 386 product family has good prospects of being the embedded processor of choice because of the very large base of existing software expertise available.

Microprocessor Supplier Analysis

This section analyzes the product and market strategies of the leading suppliers of advanced microprocessors. Because of the level of interest of the Semiconductor Procurement Service client base, this section focuses on suppliers that strongly serve the European and North American markets: Intel, Motorola, and AMD. Table 1 shows how Intel increased its lead as the top semiconductor company in 1993 by owning nearly three-fourths (74.1 percent) of the microprocessor market. Suppliers exceeding the average market growth rate of 61 percent (a very good year for microprocessors) were: Intel (73 percent), Motorola (65 percent), TI (213 percent), and Cyrix (252 percent). Although the growth rates for TI and Cyrix are high, they started from a very small base in 1992.

Intel

Intel remained the No. 1 microprocessor (and semiconductor) supplier in the world in 1993 primarily because of the high growth of the 80486 product line. Intel's de-emphasis of the 386 product continued as competition grew in that market. While Intel ceded the low-margin competitive 386 market as engine for computers, it focused on its mainstay 486 offerings

Table 1
Preliminary 1993 Worldwide Microprocessor Market Share
Ranking (Millions of Dollars)

Ranking	Company	Segment Revenue (\$)	Market Share (%)	1992-1993 % Change
1	Intel	6,569	74.1	73
2	Motorola	705	8.0	65
3	AMD	511	5.8	-10
4	Texas Instruments	200	2.3	213
5	National	118	1.3	42
6	Cyrix	95	1.1	252
7	IBM	88	1.0	NA
8	NEC	87	1.0	12
9	Hitachi	79	0.9	7
10	Toshiba	68	0.8	-39
	All Others	343	3.9	18.6
	Total	8,863	100.0	61

NA = Not applicable

Source: Dataquest (April 1994)

and the quickly growing Pentium products. In 1993 the legal battle over microcode always hindered AMD's efforts to make strong inroads into the 486 market in part because of Intel's selective pricing strategy that effectively eradicated ultrahigh margins for the devices that AMD brought to market. In addition to AMD, Cyrix, TI, and IBM all offered 486 variants that have met similar pricing tactics from Intel as the company forges ahead in speed and product improvements.

Intel Strategy Remains the Same: Take the High Road

Keeping true to form, Intel flawlessly executed on its higher-technology, higher-priced formula in 1993 and showed that keeping ahead of the technology curve is a very profitable place to be. The rapid ramp-up of the Pentium superscalar processor and the some 20 new 486 products announced in 1993 continue to keep Intel ahead of the rapidly growing processor supplier pack. By aligning itself with key system companies, Intel keeps its favored customers on the leading edge with early-market product allocations and also ensures itself of a steady revenue stream to fund the next generation (or two) of product families. Not one to leave money on the table, Intel's focus for the 386 will key on high-volume/low-cost embedded applications ensuring a long life for this family.

All of this jockeying for supply dominance has forced many of the smaller PC clone companies to seek other sources of 486s. In many ways the addition of competitors in the 386 and low-end 486 markets has directly helped Intel's bottom line by siphoning away lower-volume customers that diverted attention away from the higher-profit, leading-edge products. The only potential competitive threats to the Pentium in the CISC world at this time are Cyrix's M1 and AMD's K5 products, which will not ship until

late 1994 or early 1995. But by that time Intel should have its P6 out in samples, which will start another technology cycle.

Motorola

The rise of Motorola as the No. 2 microprocessor supplier was largely because of the increasing acceptance of the 68xxx as a premium embedded microprocessor family and of the increased competition in the 386 market, where AMD stumbled in 1993. Besides being the leading volume microprocessor to date used in laser printers, the 68000 series ensured continued growth in the near future as the processor of choice for the advanced Sega-Genesis game. The 68020/030 series still focuses on Apple Macintosh shipments, laser printers, and other embedded applications. There are no new developments for this series because the integrated midrange 683xx family will take over future embedded applications in this area. The 68040 is the main engine for the current Macintosh line, and Motorola previewed the follow-on 68060 series last October. Motorola's support of the 68060 reaffirms support in this area and provides users an ultrahigh-end embedded engine. As the popularity of the PowerPC offering grows with Apple and others, Motorola will shift its energy to this fast-growing RISC computer market offering. The 68xxx computer-based applications portion of Motorola's portfolio will decline as Apple turns to the PowerPC family that will also take a large portion of revenue with it. However, overall unit shipments will grow because of Motorola's strength in winning high-volume embedded designs outside the computer systems market. Motorola's focus on the PowerPC will allow it to push the technology, keeping the Pentium market competitive, and also will allow the company to develop the early growth of the PowerPC in embedded applications.

AMD

What a difference a year makes. As mentioned last year, the short-term focus on the 386 market would allow AMD to gain some breathing room while it got its cleanroom Am486 into production. The clean Am486 never shipped in 1993 and as a result stifled the AMD 486 shipments of last year because of the legal cloud surrounding AMD's offerings. As the market quickly migrated to the 486 family, AMD's short-term focus on the very low priced 386 now hindered the development of its 486 products and resulted in lower than anticipated revenue. The recent "vindication" in the courts that effectively allows AMD to use Intel microcode (at least until the end of 1995) will improve its reputation and revenue stream in 1994. However, a clean 486 and K5 product design remain necessary for the long-term viability of AMD as a mainstream microprocessor supplier.

Dataquest understands that AMD plans to release a clean Am486 later this year and will sample a clean K5 processor in the late fourth-quarter 1994 time frame. Without these products, AMD is living on borrowed time, as the original Intel microcode agreement expires in December 1995. Assuming AMD will have its clean designs in production, it intends to keep pressure on Intel by providing higher-speed and lower-voltage products at competitive prices. As mentioned, Intel to date has successfully stymied

competitive grabs for market share by upping the technology ante. AMD hopes to slow this game plan by quickly bringing its own next-generation processor, the K5, to market. Whether AMD can both accomplish its K5 plans and stave off another round of Intel pricing tactics now that other suppliers have targeted this lucrative market, for example, Cyrix's M5 and the dissimilar PowerPC, is the big question.

Advanced Microprocessor Supply Base Analysis

This section uses information on MPU product life cycles and suppliers to present a product family evaluation of the supply base over the long term for CISC 16/32-bit, CISC 32-bit, and RISC 32-bit MPUs. This section also includes information on the global MPU fab network of key suppliers.

The advanced microprocessor market in many ways became more competitive in 1993, while also remaining monopolistic at the very high end of the technology spectrum. The result is an increased challenge for procurement managers, component engineers, and system designers of system companies concerning the choice of product, let alone supplier. This section combines product life cycle and key supplier analysis to summarize the anticipated MPU supply/supplier base from a user's perspective. The summary concludes on whether the user faces a favorable or critical supply base for each family/device. Building on prior sections, factors affecting the supply base such as supplier strategies and strategic alliances are discussed here.

Table 2 shows the estimated 1994 worldwide MPU process technology and fab capability by geographic location for the following major MPU suppliers: AMD, Cypress, Fujitsu, Hewlett-Packard, Intel, Motorola, NEC, and TI. The table shows that the process technology in most cases is between 0.7 and 1.0 microns.

Table 3 shows the size of the CISC 16/32-bit MPU market in terms of units shipped in 1993, the relative market shares of the predominant devices, and a ranking of the suppliers of these devices, including suppliers' shares in each product segment.

Supply Base for 16/32-Bit MPUs

Having peaked in unit shipments in 1992, the 16/32-bit market declined by 9.6 percent in 1993 to settle at 29.6 million units shipped. In large part because of the mentioned embedded market, the 68000 family accounts for more than three-fourths (77.3 percent) of this market, and within this market Motorola dominates a solid 78.7 percent of this supply base. Although multisourced, Motorola will remain the primary source for future users of the 68000 family as it receives nearly 95 percent of the revenue generated by these parts. Following the rapid shift to the 486 platform in 1993, the 80386SX/SL product family lost 12.7 percent of the market compared with 1992, ending with 22.7 percent of this segment's total. While Intel rapidly exits the market, falling from a 54 percent share held in 1992 to 26.2 percent in 1993, AMD picks up more than half of it (54.7 percent). Newcomers Cyrix and TI grew the fastest, with each

Table 2**Estimated Worldwide MPU Process Technology and Production Fab Capacity Facilities in Production or Slated to Begin Operation in 1993 (0.8µm CMOS Process)**

	Intel	Motorola	AMD	Fujitsu	TI	IBM	NEC	HP
Number of Fab Lines								
North America	4	2	2	-	2	1	-	2
Europe	1	1	1 ¹	-	-	-	1	-
Japan	-	-	-	2	-	-	7	-
A/P-ROW	1 ²	-	1 ³	-	-	-	1	-
Total	6	3	2	2	2	2	9	2
Cleanroom (sq. ft.)								
North America	178,000	102,000	22,000	-	29,425	50,000	-	40,000
Europe	50,000	34,000	28,000 ¹	-	-	-	20,000	-
Japan	-	-	-	56,500 ⁴	-	-	262,935	-
A/P-ROW	24,000 ²	-	7,637 ³	-	-	-	62,000	-

¹Fab line available to AMD through foundry relationship with Digital Equipment Scotland. Cleanroom space = total fab, not percentage used

²Intel Israel

³Fab line available to AMD through foundry relationship with TSMC, Taiwan

⁴Cleanroom square footage not available for each line

Source: Dataquest (April 1994)

Table 3**Supply Base for 16/32-Bit Microprocessors (1993 Preliminary)**

Leading Products	Product's Share of Total 16/32-Bit MPU Market (%)	Company	Supplier's Share of Respective Product Segment (%)
68000	77.3	Motorola	78.7
		Hitachi	11.1
		Toshiba	7.0
		SGS-Thomson	2.2
		Philips	1.0
80386SX/SL	22.7	AMD	54.7
		Intel	26.2
		Texas Instruments	11.1
		Cyrix	8.0

Note: Total market size = 29.6 million units

Source: Dataquest (April 1994)

holding a respective 8.0 percent and 11.1 percent share of market in 1993 compared with a cumulative 1992 share of less than 3 percent (2.3 percent). National Semiconductor's 32000 device was phased out last year.

Supply Base for 32-Bit MPUs

Table 4 shows the market size and predominant suppliers of the 32-bit RISC and CISC MPUs in 1993. Unit shipments of 32-bit MPUs in 1993 grew a healthy 74.5 percent following a phenomenal 104 percent growth rate in 1992. MPUs such as the 486 and 68030 should have life cycles extending to the year 2000, although sub-20- to 25-MHz versions will fade from mainstream production by the end of 1995.

Table 4
Supply Base for 32-Bit Microprocessors (1993 Preliminary)

Leading Products	Product's Share of Total 32-Bit MPU Market (%)	Company	Supplier's Share of Respective Product Segment (%)
80386DX	10.0	Intel	9.4
		AMD	90.6
80486SX		Intel	99.9
		Cyrix	0.1
80486DX	25.6	Intel	90.6
		AMD	4.0
		Texas Instruments	3.6
		Cyrix	1.8
68040	3.6	Motorola	100.0
68030	6.4	Motorola	100.0
68020	4.5	Motorola	100.0
80960	6.8	Intel	100.0
AM29000	1.2	AMD	100.0
32X32	4.1	National	100.0
R3000/R4000	1.9	Performance	5.2
		IDT	28.4
		NEC	20.6
		LSI	38.3
		Siemens	1.7
		Toshiba	5.8
SPARC	0.9	Cypress	11.6
		LSI	10.3
		Fujitsu	15.9
		Weitek	6.1
		Texas Instruments	56.1
Others	14.4		
Total	100.0		

Note: Total market size = 53.9 million units

Source: Dataquest (April 1994)

X86 Market Keeps Going and Going and Going... (with Intel in the Driver's Seat)

The growth of the x86 market in 1993 highlighted that the future of this product family lies with the 486 and Pentium-class series of processors. The addition of competition further strengthens an already strong market position for this family, resulting in a solid supply base of more competitively priced products for the future. AMD in 1993 became the big fish in the shrinking 80386 pond (80386 share of 32-bit shipments dropped from 23.5 percent in 1992 to 10.0 percent in 1993), with more than 90 percent of all shipments of this product. For the time being, the legal cloud surrounding AMD's role in the 486 market has evaporated, resulting in a more secure supply base of this important processor family. The current focus on the 486 market by the group of competitors now numbering six (Intel, AMD, Cyrix, TI, United Microelectronics Corporation, and Integrated Information Technology) promises to provide users with continued variety and price/performance improvements for the next two years as Intel leads the pack with its 486DX4 series.

The Pentium processor ramped quickly into production in 1993 and will jump into a rapid growth phase during the second half of 1994. Both Cyrix (using IBM as a foundry) and AMD plan to ship their Pentium-competitive offerings also in this third- or fourth-quarter 1994 time frame. The current price premiums enjoyed by the Pentium will decline during the next three years as competition from these two CISC products and rival RISC processors ramp up production.

Motorola Continues to Embed 68xxx Processors While Focusing on PowerPC Gold

Table 4 showed that Motorola's combined 68020/030/040 product offerings total only 14.5 percent of all 32-bit MPU shipments in 1993. Although not trivial, this share of market has been eroding for the past three years (Motorola held a like 27 percent of this market in 1990). The fastest-growing segment of Motorola embedded processors is the 683xx series, within which there are three categories: the low-end 000 core, the midrange 020/030 cores, and the high-performance LC040 core. Motorola will continue to support existing customers of its 68020/30/40 products and has an upward migration path for them either with the 68060 or the PowerPC, depending on the application. The continued emphasis on embedded MPU applications will continue to keep the fabs full but at a lower price than that enjoyed by the computer MPUs.

Balancing the embedded market focus is the PowerPC MPU, recently released in 1994. This jointly developed processor has the potential to become the largest-selling RISC product in its first year of production (barring any unforeseen difficulties in shipping PowerPC Macintoshes), overtaking the MIPS processor by a wide margin. Motorola realizes that as the shift to the PowerPC evolves, there will be a commensurate near-term revenue loss from the shift of existing 68040 Macintoshes not made up by increased PowerPC shipments—thus the accelerated focus on embedded designs.

Open System RISC Processors

Dataquest segments the open system RISC (OSR) market to include the following processor families: SPARC, MIPS, PA-RISC, PowerPC, and Alpha.

These RISC processors garner the most inquiries from SPS clients, and therefore will be the focus of this segment. Dataquest defines this class as RISC-based microprocessors focused primarily on computing platforms (mainly technical workstations and PCs). Although the RISC segment of the market accounted for only 11.7 percent of all 32-bit MPU shipments in 1993, this small segment of the market grew 117 percent, compared with 1992's shipments. These are the microprocessor products that continue to set performance standards for future computer system engines.

The MIPS processor family owns 57.9 percent of the RISC market in 1993, followed by the SPARC family with 27.2 percent, PowerPC with 9.2 percent, PA-RISC with 3.5 percent, and Alpha with 2.2 percent of this market.

MIPS Family

Unit shipments of MIPS processors grew a meteoric 206 percent, fueled by large shipments of chips from the top three suppliers—LSI Logic, IDT, and NEC. Besides shipments to Silicon Graphics (the lone computer user), 1993 saw large MIPS product growth in embedded applications such as laser printers and X terminals. Some of the more significant events that affected the MIPS world in 1993 were as follows:

- By the first half of 1993, MIPS Technologies Inc. (MTI), NEC, and Toshiba America Electronic Components Inc. (TEAC) had announced R4400 products.
- LSI Logic announced in June its LR33120 GraphX processor, based on the R3000, claiming to be the fastest X terminal solution.
- Nintendo and SGI announced an agreement to develop a 3-D Nintendo machine for home use, based on a version of the MIPS Multimedia Engine (a 64-bit MIPS RISC MPU chipset).
- Sony Corporation previewed the use of the R3000 as a basis for an advanced multimedia audio processor aimed at entertainment equipment.

Unless vendors such as NEC and Acer start a full-court press to establish a position for MIPS PCs, the prospects for this family in the PC market look dim. On the other side of the coin, strong growth in embedded applications will allow for continued growth of the product line, however, at the cost of fewer suppliers.

SPARC Family

This is the year (1994) that the SPARC family of processors steps down as the leading RISC microprocessor for computer applications with the PowerPC taking over this high-profile position. In 1993, the SPARC processor group, dominated by Sun Microsystems, moved to disassociate

itself from its largest benefactor and hindrance (Sun) by providing a technology road map targeting three design series. The low-end MicroSPARC targets embedded applications, the midrange SuperSPARC aims at the PC business, and the high-end UltraSPARC (with more than 200 SPECint performance) shoots for advanced workstation designs. Some of the key events that impacted this market in 1993 were as follows:

- The SPARC vendor base was reduced by one when Fujitsu bought the ailing Ross Technology Division from Cypress.
- Sun announced the SPARC Technology Sun Business (STB), whose charter is to market Sun-developed SPARC processors, system product designs, and software. As part of STB, Sun entered the merchant semiconductor market by offering SPARC processors and support ASIC chipsets.
- Sun and Fujitsu formed a partnership to design and produce the next-generation MicroSPARC II, which began shipping in October.
- TI released 50- and 60-MHz versions of the SuperSPARC and extended its partnership with Sun to incorporate the development and production of the first UltraSPARC I product, a 64-bit processor designed to reach more than 200 SPECint performance.

Although the SPARC family was the largest computer volume OSR family, it continues to mirror the loss of market momentum suffered by its largest computer user, Sun. Despite the good efforts of the STB and recent design wins by Fujitsu and LSI Logic, the overall outlook for large embedded shipments in the near term is dim.

PowerPC

As mentioned earlier, Motorola has big plans for its newest microprocessor offering. Applications run the gamut from PCs to workstations and then on to using the PowerPC as a high-performance future platform for embedded processors for the 68xxx families. While both Apple and Motorola have hitched their stars to the PowerPC wagon, the third horse in the team, IBM, has not been as clear with its PowerPC plans. While acknowledging that changing horses midstream is difficult (especially if the Intel horse is not dead yet), mixed signals continue to come from IBM and its PC Company regarding processor support that need better coordination. The quick adoption of the PowerPC as a standard processing platform could be at stake. Some of the significant PowerPC announcements in 1993 were as follows:

- Motorola and Microsoft announced the porting of the Windows NT operating system for the PowerPC architecture.
- The first PowerPC 601 samples began shipping in May, priced at \$275 (50-MHz) and \$380 (66-MHz) in 25,000 quantities.
- IBM created the Power Personal Systems Division chartered to sell PowerPC-based PCs in competition with the IBM PC Company's x86 PCs.

- Motorola and IBM announced in October the first production of the second-generation PowerPC, the 603, targeted for third-quarter 1994 shipment.
- In March, the initial PowerPC system companies (IBM, Apple, Bull, Harris, Thomson-CSF, Tadpole, and Motorola) formed an independent corporation, the PowerOpen Association Inc., whose goal is to promote the PowerOpen Environment and provide software developers services that support the development of PowerPC-based products.

Momentum for a price/performance competitor to Intel's Pentium continues to build, and the announcement by the PowerOpen Association of the PowerOpen Environment specification available in April 1994 should accelerate this momentum once software is written that is PowerPC platform-independent.

PA-RISC Family

The PA-RISC processor family made some significant moves in 1993 that could renew market momentum for this high-performance product line. After a six-year nascent period (the PA-RISC was first developed in 1987), this processing platform is gaining alternate sourcing support that will go a long way toward growing this segment of the OSR market. Some of the major events in 1993 were as follows:

- HP announced plans to port the Windows NT operating system to the PA-RISC architecture.
- Hitachi announced its HARP-1 family of PA-RISC processors aimed at the personal workstation and high-end embedded control markets.
- Winbond announced its first PA-RISC embedded controller in October 1993, the W89K, expected to be 486-pin-out compatible and to be available in early 1994.
- OKI announced in October a family of parts called the OP32, compatible with the latest versions of PA-RISC architecture, featuring cache freeze capability, DRAM controller, and DMA controller.
- Samsung introduced in March a new series of workstations based on the PA-RISC processor, a result of codevelopment that grew out of a strategic alliance between the companies.
- The Precision RISC Organization (PRO) was formed in March to cross-license PA-RISC technology and develop standards and compliance-testing technologies.

HP's production model for the PA-RISC platform is systems profitability-based, while the new alliance suppliers will be using a device profitability model. For PA-RISC to become a viable architecture, HP as a leading computer supplier needs to enter the RISC PC market and be the architecture standard-bearer. Except for captive embedded designs, other embedded applications for this processor will grow slowly.

Alpha Family

Digital Equipment Corporation has put much effort into carefully crafting the Alpha microprocessor into a high-performance core of its own PC and other computer businesses while simultaneously working on making the family a standard RISC architecture used by others. As an early adapter of Windows NT, Digital's market position and aggressive independent software suppliers, plus direct PC distribution channels, give it a good head start on other RISC-based Windows NT personal computer companies. The major downside is the lack of alternate sources for the part other than Mitsubishi, which has no experience in the development or marketing of microprocessors. Some of the key 1993 developments in the Alpha market were as follows:

- Digital released clock-speed improvements of its Alpha processor (200 MHz) in February and forecasts a third-quarter 1994 release of a 275-MHz Alpha.
- Novell and Digital announced plans to provide processor-independent NetWare on Alpha AXP systems.
- In April, Digital announced its Windows NT developers program with plans to have more than 1,400 Alpha AXP applications shipping by the end of 1993.
- Motherboard manufacturer Elitegroup Computer Systems Co. Ltd. (Taiwan) announced plans to use the Alpha AXP microprocessors in its new family of Windows NT motherboards.

Although Digital is going full tilt to promote the Alpha, the slow ramp of Windows NT as a mainstream desktop operating system is hindering its efforts. It has correctly focused on computer applications, and what it needs now is another processor supplier and a creative method of better marketing this advanced product family.

Dataquest Perspective

The advanced microprocessor market continues to change, and 1993 was no exception. The x86 arena is unfettered by legal intrusions, and the RISC segment appears to have a new volume leader in the making with the PowerPC. Transferable advanced software (such as Windows NT) appears to be the common denominator determining market acceptance for new processors, confirming that both hardware and software are now key factors in users' decisions over high-performance systems. The plethora of RISC organizations promoting the openness of each processor's architecture to gain software support after advanced operating system porting emphasizes this trend.

The x86 market continues to grow at almost exponential rates, all the while with Intel firmly in control of this technology-driven money-making machine. By playing technology leapfrog with its increased number of competitors, Intel continues to control the lucrative high end of the market and simultaneously sows the seeds for additional x86 sales by ceding the

low end to competition where price is the main decision factor. AMD's past focus on the Am386 without a "cleanroom" Am486 as an encore allowed Motorola to regain the No. 2 MPU supplier position. With the legal hurdles of 1993 passed, AMD's plans of releasing a clean 486 this year and a clean K5 product late this year or early next year must be achieved if it is to remain viable for the long term. Motorola's balanced mix of embedded products and now a multisourced RISC core will continue to provide users with a wide selection of price/performance options rivaled only by Intel. IBM's Blue Lightning product (board-level clock-tripled licensed 80386) has received technological approval but in many cases has been upstaged by Intel's 486DX4 marketing machine. Both Cyrix and TI gained ground in the 1993 MPU price war despite the two companies' falling out regarding foundry access. Both companies plan advanced x86-like designs to complement their current 386 and 486 products.

The OSR market continues to rightly focus on price/performance advances over CISC alternatives, and many suppliers have put the infrastructure needed by mainstream system users (common advanced operating systems and second sourcing, among others) in place that will better facilitate market acceptance. Software applications continue as critical elements of success in the conservative CISC versus RISC architecture selection process. The bottom line remains that, if an end user can use a program that is interchangeable between competitively priced different hardware options, the user will opt for the software-flexible hardware. Much of the infrastructure is now in place that allows for users to make better comparative decisions. Marketing of the various processors and software attributes now appears to be the next challenge in the high-performance MPU marketplace.

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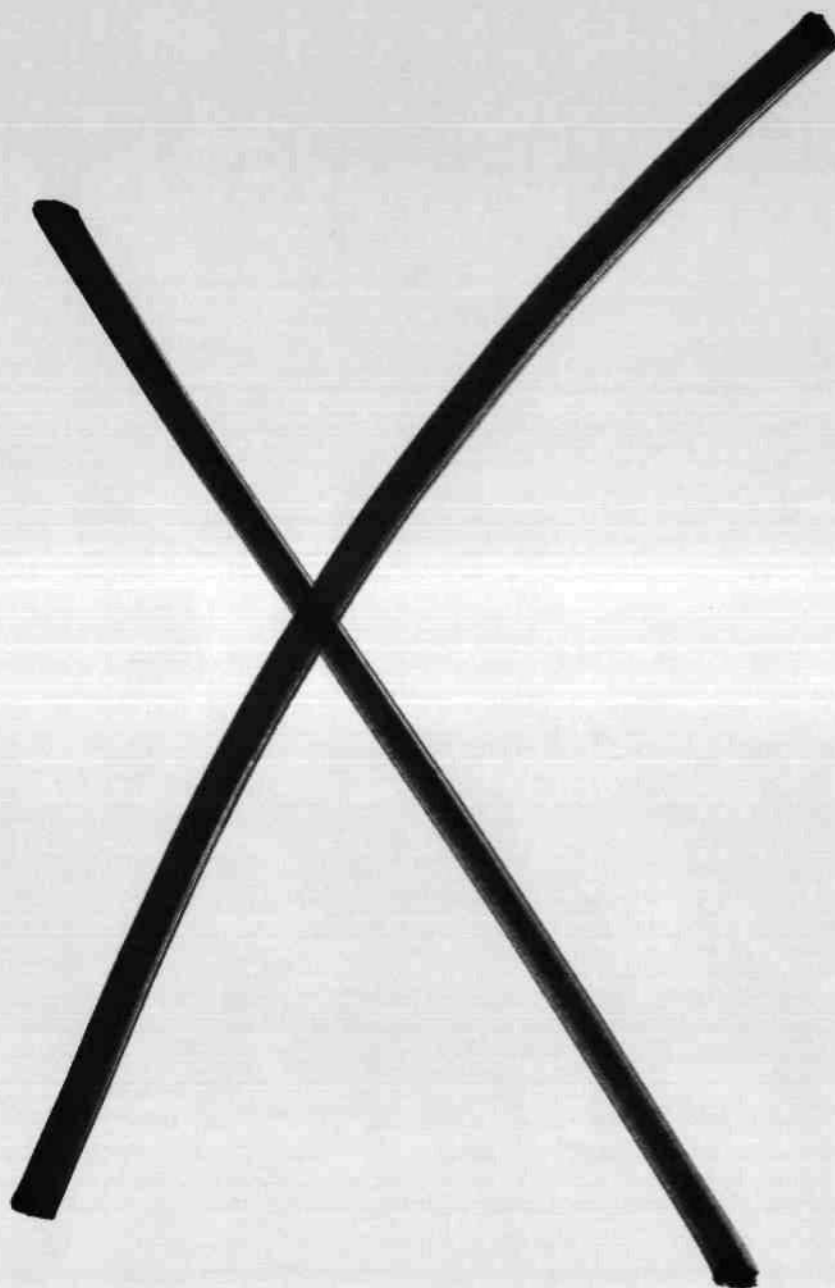
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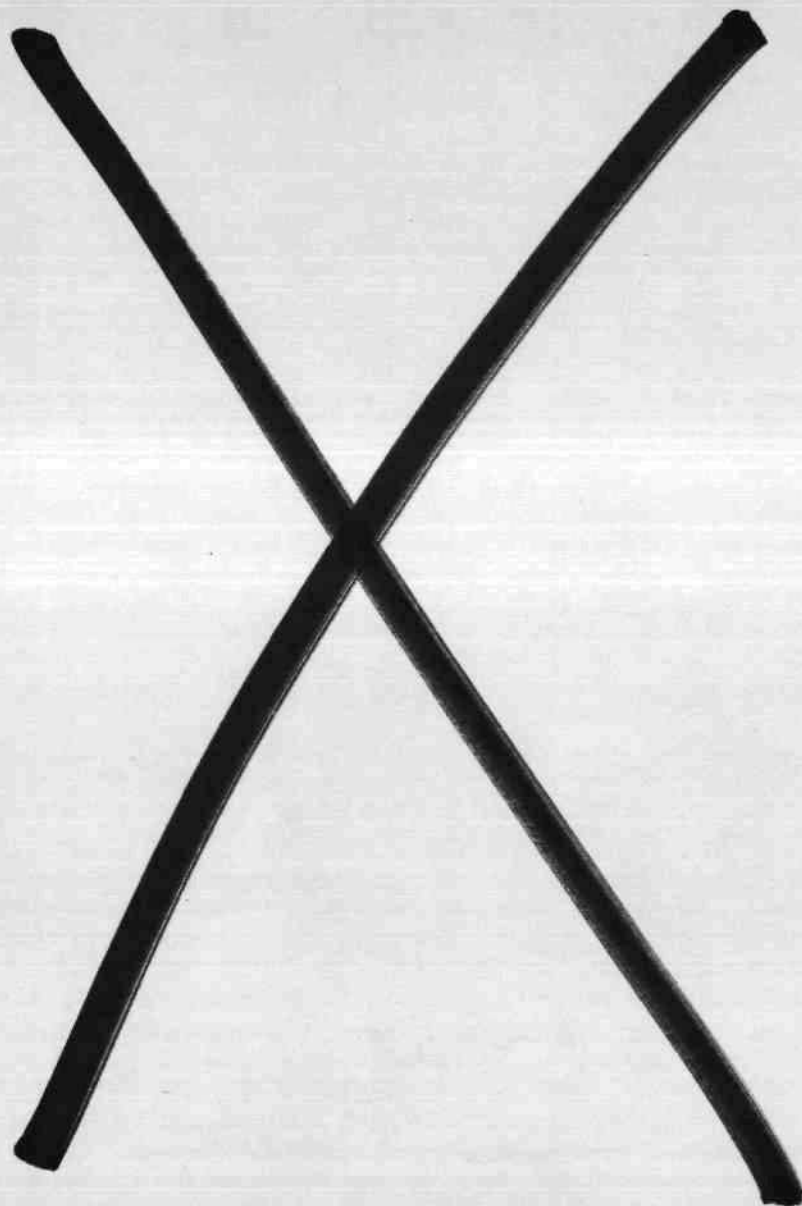
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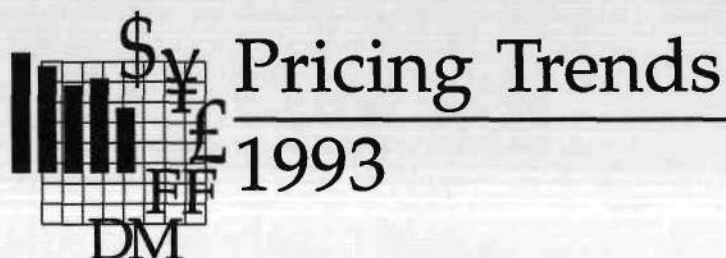


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North American Semiconductor Price Outlook: Third Quarter 1993



Program: Semiconductor Buyer's Edge North America
Product Code: SCBE-NA-PT-9301
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Note: All tables show estimated data.

North American Semiconductor Price Outlook: Third Quarter 1993

Methodology and Sources

This *Source: Dataquest* document provides information on and forecasts for the North American bookings prices of more than 200 semiconductor devices. Dataquest collects price information on a quarterly basis from North American suppliers and major buyers of these products. North American bookings price information is analyzed by Semiconductor Procurement (SP) service analysts for consistency and reconciliation. The information finally is rationalized with worldwide billings price data in association with product analysts, resulting in the current forecast. This document includes associated long-range forecasts.

For SP clients that use the SP online service, the prices presented here correlate with the quarterly and long-range price tables dated June 1993 in the SP online service. For additional product coverage and more detailed product specifications, please refer to those sources.

Price Variations

Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as product quality, special features, service, delivery performance, volume discount, or other factors that may enhance or detract from the value of a company's product. These prices are intended for use as price guidelines.

Table 1
Estimated Standard Logic Price Trends—North American Bookings
 (Volume: 100,000 Year; Package: PLCC,¹ Dollars)

Product	1993				1994				Current Lead Time (Weeks)
	Q1	Q2	Q3	Q4	Year	Q1	Q2	Q3	Q4
74LS TTL									
74LS00	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
74LS74	0.11	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
74LS138	0.15	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17
74LS244	0.20	0.22	0.23	0.24	0.22	0.24	0.24	0.24	0.24
74AC TTL									
74AC00	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
74AC74	0.20	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
74AC138	0.27	0.30	0.30	0.30	0.29	0.30	0.30	0.30	0.30
74AC244	0.36	0.39	0.40	0.42	0.39	0.42	0.42	0.42	0.42
74F TTL									
74F00	0.10	0.12	0.12	0.12	0.11	0.12	0.12	0.12	0.12
74F74	0.12	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
74F138	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
74F244	0.21	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
74HC CMOS									
74HC00	0.11	0.12	0.14	0.15	0.13	0.15	0.15	0.15	0.15
74HC74	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
74HC138	0.16	0.17	0.18	0.21	0.18	0.21	0.21	0.21	0.21
74HC244	0.24	0.25	0.26	0.28	0.26	0.28	0.28	0.28	0.28
74ALS TTL									
74ALS00	0.12	0.13	0.14	0.14	0.13	0.14	0.14	0.14	0.14
74ALS74	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
74ALS138	0.25	0.26	0.27	0.27	0.26	0.27	0.27	0.27	0.27
74ALS244	0.31	0.32	0.33	0.33	0.32	0.33	0.33	0.33	0.33
74AS TTL									
74AS00	0.16	0.17	0.18	0.18	0.17	0.18	0.18	0.18	0.18
74AS74	0.18	0.19	0.20	0.20	0.19	0.20	0.20	0.20	0.20
74AS138	0.42	0.43	0.44	0.44	0.43	0.44	0.44	0.44	0.44
74AS244	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
74BC²									
74BC00	0.26	0.26	0.26	0.25	0.26	0.25	0.25	0.25	0.25
74BC244	0.62	0.62	0.62	0.60	0.62	0.60	0.60	0.60	0.60
74BC373	0.63	0.63	0.63	0.61	0.63	0.61	0.61	0.61	0.61

¹ Pricing and lead times for SOIC devices are much higher.

² Pricing for 74BC excludes 74ABT.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 2
Estimated Long-Range Standard Logic Price Trends—North American Bookings
(Volume: 100,000 Year; Package: PLCC;¹ Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
74LS TTL					
74LS00	0.12	0.12	0.14	0.14	0.15
74LS74	0.12	0.12	0.15	0.15	0.15
74LS138	0.16	0.17	0.18	0.18	0.18
74LS244	0.22	0.24	0.26	0.26	0.28
74AC TTL					
74AC00	0.17	0.17	0.18	0.18	0.18
74AC74	0.22	0.22	0.22	0.22	0.22
74AC138	0.29	0.30	0.30	0.30	0.30
74AC244	0.39	0.42	0.44	0.44	0.47
74F TTL					
74F00	0.11	0.12	0.14	0.14	0.15
74F74	0.14	0.14	0.15	0.15	0.15
74F138	0.16	0.16	0.16	0.16	0.17
74F244	0.23	0.23	0.26	0.26	0.28
74HC CMOS					
74HC00	0.13	0.15	0.16	0.16	0.18
74HC74	0.13	0.13	0.16	0.16	0.18
74HC138	0.18	0.21	0.22	0.22	0.24
74HC244	0.26	0.28	0.30	0.30	0.20
74ALS TTL					
74ALS00	0.13	0.14	0.15	0.15	0.17
74ALS74	0.15	0.15	0.17	0.17	0.18
74ALS138	0.26	0.27	0.28	0.28	0.29
74ALS244	0.32	0.33	0.35	0.35	0.36
74AS TTL					
74AS00	0.17	0.18	0.19	0.19	0.19
74AS74	0.19	0.20	0.22	0.22	0.23
74AS138	0.43	0.44	0.46	0.46	0.48
74AS244	0.72	0.72	0.72	0.72	0.72
74BC²					
74BC00	0.26	0.25	0.24	0.24	0.24
74BC244	0.62	0.60	0.58	0.58	0.56
74BC373	0.63	0.61	0.59	0.59	0.59

¹Pricing and lead times for SOIC devices are much higher.

²Pricing for 74BC excludes 74ABT.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 3

Estimated Microprocessor Price Trends—North American Bookings

(Volume: 8- and 16-Bit—25,000 per Year; 32-Bit—1,000 to 5,000 per Year; Dollars)

(Package: 8/16-Bit Devices—PDIP; 32-Bit Devices—Ceramic PGA; Exceptions Noted)

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
68000-12	5.00	5.00	5.00	5.00	5.00	4.75	4.55	4.40	4.30	4.50	4-8
68EC000-8	2.75	2.75	2.75	2.75	2.75	2.35	2.35	2.35	2.35	2.35	4-8
68EC000-16 PLCC	5.80	5.80	5.80	5.80	5.80	5.65	5.65	5.65	5.65	5.65	8-12
80186-8 PLCC	5.50	5.50	5.50	5.50	5.50	5.30	5.30	5.30	5.30	5.30	6-8
80C186-10 PLCC	8.00	8.00	8.00	8.00	8.00	7.95	7.25	7.00	6.80	5.30	5-8
80286-10 PLCC	3.75	3.75	3.75	3.75	3.75	3.50	3.50	3.50	3.50	7.25	4-8
80286-16 PLCC	5.75	5.50	5.50	5.25	5.50	5.00	5.00	5.00	5.00	5.00	3-10
68020-16 PQFP	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	6-8
68EC020-16 PQFP	15.00	14.50	14.00	13.50	14.25	13.00	13.00	13.00	13.00	13.00	6-8
68020-25 PQFP	30.00	29.00	29.00	28.00	29.00	27.75	27.75	27.75	27.75	27.75	6-8
68EC020-25 PQFP	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	6-8
68030-16 CQFP	43.00	42.00	41.50	41.00	41.88	38.00	38.00	38.00	38.00	38.00	8-12
68030-25 CQFP	56.00	55.00	54.00	53.00	54.50	50.00	50.00	50.00	50.00	50.00	8-12
68EC030-25 PQFP	34.00	34.00	34.00	34.00	34.00	33.00	33.00	33.00	33.00	33.00	8-12
68040-25	233.00	229.00	226.00	223.00	227.75	211.00	210.00	210.00	198.00	207.25	6-8
68EC040-25	91.00	87.50	86.00	83.00	86.88	75.00	75.00	75.00	75.00	75.00	8-12
386SX-16 PQFP	39.00	36.00	33.00	33.00	35.25	31.00	28.50	27.00	25.50	28.00	8-10
386SX-20 PQFP	52.00	47.50	42.00	42.00	45.88	31.00	28.50	27.00	25.50	28.00	8-10
386SX-25 PQFP	42.25	37.00	33.00	33.00	36.31	31.00	28.50	27.00	25.50	28.00	8-12
386SL-25 PQFP	66.00	61.00	59.00	57.50	60.88	49.00	44.00	42.00	39.00	43.50	NA
AM386-40 PQFP	40.00	40.00	37.00	37.00	38.50	30.00	30.00	29.00	29.00	29.50	8-12
386DX-25 PQFP	60.90	57.00	52.00	47.00	54.23	48.00	45.00	43.00	40.00	44.00	8-13
80486SX-20 PQFP	91.00	89.00	85.44	82.02	86.87	78.00	75.00	73.00	70.00	74.00	8-13
80486SX-25 PQFP	99.00	89.00	85.44	82.02	88.87	78.00	75.00	73.00	70.00	74.00	8-13
80486DX-33	317.00	297.98	283.08	268.93	291.75	228.59	198.87	175.01	157.51	189.99	8-13
80486DX-50	469.00	447.00	424.65	399.17	434.96	339.30	288.40	253.79	223.34	276.21	8-13
80486DX2-50	428.00	412.00	395.52	375.74	402.82	319.38	271.48	233.47	200.78	256.28	8-13
29000-25*	80.00	74.00	71.00	67.00	73.00	63.00	63.00	63.00	63.00	63.00	7-12
88100-25*	64.50	62.50	60.00	58.00	61.25	56.00	56.00	56.00	56.00	56.00	4-8
R3000-25*	88.50	85.50	82.50	80.00	84.13	79.00	76.50	74.50	72.50	75.63	4-12
SPARC-25*	64.50	63.00	61.60	60.60	62.43	59.00	59.00	59.00	59.00	59.00	4-10
80960CA-25	88.35	87.45	84.30	81.20	85.33	79.00	78.00	76.00	75.00	77.00	2-8

NA = Not available

*Pricing excludes accessory parts such as floating point and memory management.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 4

Estimated Long-Range Microprocessor Price Trends—North American Bookings
(Volume: 8- and 16-Bit—25,000 per Year; 32-Bit—1,000 to 5,000 per Year; Dollars)
(Package: 8/16-Bit Devices—PDIP; 32-Bit Devices—Ceramic PGA; Exceptions Noted)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
68000-12	5.00	4.50	4.00	4.00	4.00
68EC000-8	2.75	2.35	2.30	2.30	2.30
68EC000-16 PLCC	5.80	5.65	4.95	4.75	4.75
80186-8 PLCC	5.50	5.30	5.30	5.30	5.30
80C186-10 PLCC	8.00	5.30	6.75	6.50	6.50
80286-10 PLCC	3.75	7.25	NA	NA	NA
80286-16 PLCC	5.50	5.00	4.50	NA	NA
68020-16 PQFP	20.00	20.00	17.00	17.00	17.00
68EC020-16 PQFP	14.25	13.00	11.00	10.00	10.00
68020-25 PQFP	29.00	27.75	31.00	31.00	31.00
68EC020-25 PQFP	18.00	18.00	16.00	15.50	15.50
68030-16 CQFP	41.88	38.00	58.00	53.00	50.00
68030-25 CQFP	54.50	50.00	80.75	70.00	65.00
68EC030-25 PQFP	34.00	33.00	30.12	30.00	30.00
68040-25	227.75	207.25	190.00	175.00	165.00
68EC040-25	86.88	75.00	81.00	70.00	62.00
386SX-16 PQFP	35.25	28.00	21.38	20.00	20.00
386SX-20 PQFP	45.88	28.00	21.38	20.00	20.00
386SX-25 PQFP	36.31	28.00	21.38	20.00	20.00
386SL-25 PQFP	60.88	43.50	33.00	27.00	27.00
AM386-40 PQFP	38.50	29.50	23.75	22.00	22.00
386DX-25 PQFP	54.23	44.00	36.50	34.00	34.00
80486SX-20 PQFP	86.87	74.00	54.75	42.00	42.00
80486SX-25 PQFP	88.87	74.00	54.75	42.00	42.00
80486DX-33	291.75	189.99	100.50	65.00	65.00
80486DX-50	434.96	276.21	136.50	65.00	65.00
80486DX2-50	402.82	256.28	137.16	67.00	65.00
29000-25*	73.00	63.00	57.00	45.50	42.50
88100-25*	61.25	56.00	51.50	50.00	50.00
R3000-25*	84.13	75.63	62.50	49.00	45.00
SPARC-25*	62.43	59.00	54.50	45.00	45.00
80960CA-25	85.33	77.00	75.16	70.00	70.00

NA = Not available

*Pricing excludes accessory parts such as floating point and memory management.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (June 1993)

Table 5
Estimated DRAM Price Trends—North American Bookings
(Contract Volume; Dollars)*

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
256Kx1 DRAM 80ns DIP	1.50	1.70	1.70	1.70	1.65	1.75	1.75	1.75	1.75	1.75	4-16
64Kx4 VRAM 120ns ZIP	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	4-10
1Mbx1 DRAM 70-80ns (DIP/SOJ)	3.26	3.38	3.39	3.39	3.36	3.39	3.39	3.39	3.39	3.39	4-20
64Kx16 DRAM 80ns SOJ	4.40	4.40	4.40	4.45	4.41	4.45	4.45	4.45	4.45	4.45	8-14
256Kx4 VRAM 100ns ZIP	6.50	6.43	6.25	5.90	6.27	5.50	5.25	5.10	5.00	5.21	6-22
128Kx8 VRAM 100ns SOJ	6.60	6.35	6.22	5.93	6.28	5.50	5.30	5.25	5.20	5.31	12-22
4Mbx1 DRAM 70-80ns SOJ	10.65	10.90	11.19	11.45	11.05	11.22	9.99	8.35	7.10	9.17	8-22
1Mbx4 DRAM 60ns SOJ	10.85	10.99	11.25	11.47	11.14	11.22	10.04	8.40	7.15	9.20	10-22
512Kx8 DRAM 70-80ns	12.25	12.25	11.60	11.55	11.91	11.25	10.10	8.50	7.25	9.28	10-22
256Kx16 DRAM 70-80ns SOJ	12.62	12.90	12.92	12.82	12.82	11.78	10.39	8.60	7.28	9.51	8-14
256Kx18 DRAM 70-80ns SOJ	13.19	14.00	13.50	13.08	13.44	12.23	10.84	9.07	7.51	9.91	8-14
1Mbx8 SIMM 100ns (2 pc)	27.75	27.71	26.40	25.80	26.92	24.23	20.15	18.29	17.14	19.95	8-20
1Mbx9 SIMM 80ns (3 pc)	29.50	28.28	26.83	27.76	28.09	25.83	20.05	18.50	17.50	20.47	4-14
256Kx9 SIMM 100ns	14.31	14.05	14.35	14.00	14.18	15.00	15.00	15.00	15.00	15.00	6-14
256Kx36 SIMM 80ns	39.87	38.25	37.25	37.25	38.16	34.00	30.00	28.50	27.00	29.88	4-14
512Kx36 SIMM 70-80ns (24 pc)	74.20	74.80	74.80	74.25	74.51	68.00	61.00	58.00	53.50	60.13	4-16
4Mbx9 SIMM 80ns (9pc)	104.00	107.15	107.00	105.00	105.79	96.50	85.00	76.00	72.00	82.38	8-16
1Mbx36 SIMM 70-80ns (9pc)	107.00	107.00	107.85	106.00	106.96	99.75	91.00	83.00	79.00	88.19	8-16
4Mbx4 DRAM 70ns SOJ 400 mil	91.00	80.00	68.25	58.00	74.31	48.67	41.00	34.20	30.00	38.47	4-14

*Contract volume = at least 100,000 per order except VRAMs.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (June 1993)

Table 6
Estimated Long-Range DRAM Price Trends—North American Bookings
(Contract Volume; Dollars)*

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
256Kx1 DRAM 80ns DIP	1.65	1.75	1.80	1.85	1.85
64Kx4 VRAM 120ns ZIP	2.75	2.75	2.50	2.50	2.50
1Mbx1 DRAM 70-80ns (DIP/SOJ)	3.36	3.39	3.39	3.40	3.45
64Kx16 DRAM 80ns SOJ	4.41	4.45	4.45	4.50	4.50
256Kx4 VRAM 100ns ZIP	6.27	5.21	5.00	5.00	5.25
128Kx8 VRAM 100ns SOJ	6.28	5.31	5.05	5.00	5.25
4Mbx1 DRAM 70-80ns SOJ	11.05	9.17	5.80	5.60	5.60
1Mbx4 DRAM 60ns SOJ	11.14	9.20	5.80	5.60	5.60
512Kx8 DRAM 70-80ns	11.91	9.28	5.85	5.60	5.60
256Kx16 DRAM 70-80ns SOJ	12.82	9.51	5.91	5.75	5.75
256Kx18 DRAM 70-80ns SOJ	13.44	9.91	6.75	6.75	6.75
1Mbx8 SIMM 100ns (2 pc)	26.92	19.95	16.50	16.25	16.25
1Mbx9 SIMM 80ns (3 pc)	28.09	20.47	17.60	17.30	17.30
256Kx9 SIMM 100ns	14.18	15.00	15.00	15.00	15.00
256Kx36 SIMM 80ns	38.16	29.88	25.00	22.00	21.00
512Kx36 SIMM 70-80ns (24 pc)	74.51	60.13	49.00	42.00	42.00
4Mbx9 SIMM 80ns (9pc)	105.79	82.38	62.00	56.00	56.00
1Mbx36 SIMM 70-80ns (9pc)	106.96	88.19	68.00	57.00	56.00
4Mbx4 DRAM 70ns SOJ 400 mil	74.31	38.47	18.95	14.00	12.00

*Contract volume = at least 100,000 per order except VRAMs.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (June 1993)

Table 7

Estimated Static RAM Price Trends—North American Bookings
(Volume: Slow SRAM/50,000 per Year; Fast SRAM/20,000 per Year)
(Package: PDIP; Dollars)

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
4Kx4 25ns	2.10	2.10	2.20	2.20	2.15	2.00	2.00	2.00	2.00	2.00	4-8
2Kx8 25ns	2.13	2.13	2.20	2.20	2.17	2.00	2.00	2.00	2.00	2.00	4-8
64Kx1 25ns	2.30	2.30	2.45	2.45	2.38	2.30	2.30	2.30	2.30	2.30	4-13
16Kx4 25ns	2.17	2.17	2.17	2.17	2.17	2.12	2.12	2.12	2.12	2.12	4-13
8Kx8 25ns	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	4-13
16Kx4 35ns	2.20	2.20	2.35	2.35	2.28	2.35	2.35	2.35	2.35	2.35	4-13
8Kx8 45ns	1.80	1.90	1.90	1.95	1.89	1.95	1.95	1.95	1.95	1.95	4-10
8Kx8 100-120ns	1.65	1.65	1.65	1.65	1.65	1.67	1.67	1.67	1.67	1.67	6-8
64Kx4 10ns	20.80	19.42	17.91	15.40	18.38	11.00	9.10	7.50	6.55	8.54	4-16
64Kx4 25ns	4.98	4.64	4.37	4.25	4.56	4.25	3.99	3.70	3.50	3.86	8-13
32Kx8 12ns	11.75	11.70	11.50	9.99	11.24	8.25	6.65	5.55	5.00	6.36	8-16
32Kx8 25ns	4.75	4.50	4.39	4.23	4.47	4.10	3.90	3.55	3.40	3.74	8-14
32Kx8 70-100ns SOJ	3.47	3.43	3.43	3.40	3.30	3.30	3.30	3.30	3.30	3.30	6-8
256Kx4 20ns	24.31	21.20	19.03	17.50	20.51	15.00	13.00	11.50	9.98	12.37	4-16
128Kx8 20ns	23.04	21.20	19.03	17.50	20.19	15.00	13.00	11.50	9.98	12.37	4-16
128Kx8 25ns	19.00	17.98	15.99	14.60	16.89	13.50	12.00	10.50	9.55	11.39	4-16
128Kx8 70-100ns SOJ	9.50	9.20	9.10	9.00	9.20	8.50	7.70	7.00	6.50	7.43	8

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 8
Estimated Long-Range Static RAM Price Trends—North American Bookings
(Volume: Slow SRAM/50,000 per Year; Fast SRAM/20,000 per Year)
(Package: PDIP; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
4Kx4 25ns	2.15	2.00	1.80	1.75	1.75
2Kx8 25ns	2.17	2.00	1.75	1.70	1.70
64Kx1 25ns	2.38	2.30	2.30	2.30	2.30
16Kx4 25ns	2.17	2.12	1.97	1.95	1.95
8Kx8 25ns	2.10	2.10	1.95	1.90	1.90
16Kx4 35ns	2.28	2.35	1.95	1.90	1.90
8Kx8 45ns	1.89	1.95	1.85	1.80	1.80
8Kx8 100-120ns	1.65	1.67	1.80	1.80	1.80
64Kx4 10ns	18.38	8.54	5.10	3.90	3.90
64Kx4 25ns	4.56	3.86	3.10	3.00	3.00
32Kx8 12ns	11.24	6.36	4.75	3.40	3.40
32Kx8 25ns	4.47	3.74	3.10	3.00	3.00
32Kx8 70-100ns SOJ	3.30	3.30	3.10	3.00	3.00
256Kx4 20ns	20.51	12.37	7.45	5.50	5.50
128Kx8 20ns	20.19	12.37	7.45	5.50	5.50
128Kx8 25ns	16.89	11.39	6.85	5.40	5.40
128Kx8 70-100ns SOJ	9.20	7.43	5.25	4.05	4.05

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 9

Estimated ROM Price Trends—North American Bookings
 (Speed/Package: ≤1Mb Density—150ns and Above; 28-Pin PDIP;
 ≥2Mb Density—200ns and Above; 32-Pin PDIP)
 (Volume: 50,000 per Year; Dollars)

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
32Kx8 ROM	1.35	1.35	1.35	1.35	1.35	1.30	1.30	1.30	1.30	1.30	6-8
64Kx8 ROM	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	6-8
128Kx8 ROM	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	5-7
64Kx16 ROM	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	5-7
256Kx8 ROM	2.55	2.55	2.55	2.55	2.55	2.45	2.45	2.45	2.45	2.45	5-7
512Kx8 ROM	3.65	3.44	3.38	3.36	3.46	3.00	3.00	3.00	3.00	3.00	5-8
256Kx16 ROM ¹	3.95	3.95	3.75	3.75	3.85	3.25	3.25	3.25	3.25	3.25	6-8
1Mbx8 ROM ²	5.50	5.25	5.25	5.05	5.26	4.93	4.88	4.80	4.78	4.84	5-8
1Mbx16 ROM	10.10	10.05	9.90	9.60	9.91	8.90	8.45	8.15	8.05	8.39	6-8
2Mbx8 ROM	10.10	10.05	9.95	9.70	9.95	8.90	8.45	8.15	8.05	8.39	6-8

¹256Kx16 ROM: 150ns and above; 40-pin PDIP.

²1Mbx8 ROM: 150ns and above; 32-pin SOP.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 10

Estimated Long-Range ROM Price Trends—North American Bookings
(Speed/Package: ≤1Mb Density—150ns and Above; 28-Pin PDIP;
≥2Mb Density—200ns and Above; 32-Pin PDIP)
(Volume: 50,000 per Year; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
32Kx8 ROM	1.35	1.30	1.30	1.30	NA
64Kx8 ROM	1.70	1.70	1.80	1.80	NA
128Kx8 ROM	1.75	1.75	1.85	1.80	1.80
64Kx16 ROM	1.95	1.95	1.95	1.90	1.90
256Kx8 ROM	2.55	2.45	2.25	2.10	2.00
512Kx8 ROM	3.46	3.00	2.30	2.30	2.30
256Kx16 ROM ¹	3.85	3.25	2.45	2.40	2.40
1Mbx8 ROM ²	5.26	4.84	4.50	4.30	4.00
1Mbx16 ROM	9.91	8.39	6.50	6.35	6.00
2Mbx8 ROM	9.95	8.39	6.95	6.65	6.15

NA = Not available

¹256Kx16 ROM: 150ns and above; 40-pin PDIP.

²1Mbx8 ROM: 150ns and above; 32-pin SOP.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 11
Estimated EPROM Price Trends—North American Bookings
(Volume: 50,000 per Year; Package: Windowed Cerdip;
Speed: 150ns and Above; Dollars)

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
16Kx8 EPROM	1.65	1.90	1.90	1.90	1.84	1.90	1.90	1.90	1.90	1.90	4-8
32Kx8 EPROM	1.62	2.00	2.05	2.05	1.93	1.90	1.90	1.90	1.90	1.90	7-12
64Kx8 EPROM	2.50	2.50	2.60	2.60	2.55	2.30	2.30	2.30	2.30	2.30	8-12
128Kx8 EPROM	3.00	3.25	3.35	3.35	3.24	3.05	3.00	2.95	2.90	2.98	8-20
256Kx8 EPROM	4.60	5.25	5.25	4.75	4.96	4.75	4.50	4.25	4.25	4.44	8-12
128Kx16 EPROM	6.00	6.00	6.00	5.50	5.88	5.00	4.75	4.50	4.50	4.69	8-12
512Kx8 EPROM	10.25	10.10	10.00	9.75	10.03	9.25	9.00	8.75	8.70	8.93	8-14
256Kx16 EPROM	12.50	11.95	11.00	10.50	11.49	9.55	9.05	8.80	8.75	9.04	10-14

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 12

Estimated Long-Range EPROM Price Trends—North American Bookings
(Volume: 50,000 per Year; Package: Windowed Cerdip;
Speed: 150ns and Above; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
16Kx8 EPROM	1.84	1.90	2.00	2.00	2.00
32Kx8 EPROM	1.93	1.90	2.00	2.00	2.00
64Kx8 EPROM	2.55	2.30	2.75	2.75	2.75
128Kx8 EPROM	3.24	2.98	3.15	3.25	3.25
256Kx8 EPROM	4.96	4.44	4.50	4.50	4.50
128Kx16 EPROM	5.88	4.69	4.50	4.50	4.50
512Kx8 EPROM	10.03	8.93	8.50	8.50	8.50
256Kx16 EPROM	11.49	9.04	8.75	8.50	8.50

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 13
Estimated Flash Memory Price Trends—North American Bookings
(12 Volts; Volume: 10,000 per Year; Speed: 150ns; Dollars)

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
32Kx8, PDIP/PLCC	4.75	4.68	4.50	4.25	4.55	4.00	4.00	4.00	4.00	4.00	10-14
64Kx8, PDIP/PLCC	5.50	5.25	5.00	4.75	5.13	4.25	4.25	4.25	4.25	4.25	10-16
128Kx8, PDIP/PLCC	6.99	6.81	6.55	6.40	6.69	5.50	5.00	4.25	3.75	4.63	14-26
128Kx8, TSOP	9.25	7.34	7.26	7.15	7.75	6.00	5.50	4.75	4.00	5.06	14-26
256Kx8, TSOP	16.31	15.95	15.00	14.25	15.38	14.25	13.25	12.50	12.00	13.00	14-26

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 14**Estimated Long-Range Flash Memory Price Trends—North American Bookings
(12 Volts; Volume: 10,000 per Year; Speed: 150ns; Dollars)**

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
32Kx8, PDIP/PLCC	4.55	4.00	3.30	2.90	2.55
64Kx8, PDIP/PLCC	5.13	4.25	3.70	3.25	2.75
128Kx8, PDIP/PLCC	6.69	4.63	3.70	3.40	3.30
128Kx8, TSOP	7.75	5.06	3.95	3.70	3.45
256Kx8, TSOP	15.38	13.00	6.50	5.50	5.00

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 15

Estimated Gate Array Pricing—North American Production Bookings (Millicents per Gate)
 (Package: 84-Pin PLCC for <10K Gates, 160-Pin PQFP for 10K-29.9K, 208-Pin PQFP for ≥30K Gates)
 (Volume: 10,000 Units; Based on Utilized Gates Only; NRE = Netlist to Prototype)
 (Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	0-1.99K Gates		2-4.99K Gates		5-9.99K Gates		Current Lead Time (Weeks)
	1993	1993	1993	1994	1993	1994	
CMOS							Production:
1.5 Micron	140	140	110	110	91	87	7-14
1.2 Micron	115	115	85	83	75	73	8-14
1.0 Micron	110	110	78	77	71	70	10-20
0.8 Micron	NA	NA	85	77	65	61	10-20
NRE Charges (\$1,000)							
CMOS							Prototypes:
1.5 Micron	12	12	20	20	25	24	3-5
1.2 Micron	12	12	16	16	20	20	2-4
1.0 Micron	18	17	21	20	27	26	2-7
0.8 Micron	NA	NA	26	26	30	30	3-4

(Continued)

Table 15 (Continued)

Estimated Gate Array Pricing—North American Production Bookings (Millicents per Gate)
(Package: 84-Pin PLCC for <10K Gates, 160-Pin PQFP for 10K-29.9K, 208-Pin PQFP for ≥30K Gates)
(Volume: 10,000 Units; Based on Utilized Gates Only; NRE = Netlist to Prototype)
(Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	10-19.99K Gates		20-29.99K Gates		30-59.99K Gates		60-100K Gates		Current Lead Time (Weeks)
	1993	1994	1993	1994	1993	1994	1993	1994	
CMOS	Production:								
1.5 Micron	95	95	77	75	85	82	NA	NA	8-14
1.2 Micron	70	67	76	75	88	87	NA	NA	9-14
1.0 Micron	62	58	60	57	61	58	61	58	8-20
0.8 Micron	62	56	57	55.22	57	55	57	56	8-16
NRE Charges (\$1,000)									
CMOS	Prototypes:								
1.5 Micron	40	40	57	57	95	95	NA	NA	3-6
1.2 Micron	38	38	55	55	97	96	NA	NA	3-8
1.0 Micron	44	44	63	63	89	87	130	125	2-7
0.8 Micron	50	50	68	68	95	94	128	120	2-5

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 16

Estimated CBIC Pricing—North America Production Bookings (Millicents per Gate)
 (Package: 84-Pin PLCC for <10K Gates; 160-Pin PQFP for 10K-29.9K; 208-Pin PQFP for ≥30K)
 (Based on Utilized Gates Only; Volume: 10,000 per Year; NRE = Netlist to Prototypes)
 (Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	0-1.99K Gates		2-4.99K Gates		5-9.99K Gates		Current Lead Time (Weeks)
	1993	1993	1993	1994	1993	1994	
CMOS							Production:
1.5 Micron	105	105	90	90	90	90	10-16
1.2 Micron	100	100	80	80	72	72	10-16
1.0 Micron	95	92	78	74	62	58	10-20
0.8 Micron	135	120	78	78	52	47	10-20
NRE Charges (\$1,000)							
CMOS							Prototypes:
1.5 Micron	33.3	33.3	36.0	36.0	45.0	45.0	5-8
1.2 Micron	30.4	30.4	33.0	33.0	41.0	40.0	5-8
1.0 Micron	40.0	40.0	45.0	45.0	47.5	47.5	6-10
0.8 Micron	49.0	45.0	50.0	50.0	55.0	53.0	5-9

(Continued)

Table 16 (Continued)

Estimated CBIC Pricing—North America Production Bookings (Millicents per Gate)
 (Package: 84-Pin PLCC for <10K Gates; 160-Pin PQFP for 10K-29.9K; 208-Pin PQFP for ≥30K)
 (Based on Utilized Gates Only; Volume: 10,000 per Year; NRE = Netlist to Prototypes)
 (Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	10-19.99K Gates		20-29.99K Gates		30-59.99K Gates		60-100K Gates		Current Lead Time (Weeks)
	1993	1994	1993	1994	1993	1994	1993	1994	
CMOS									Production:
1.5 Micron	95	95	77	77	85	85	NA	NA	10-16
1.2 Micron	70	70	70	70	85	85	NA	NA	10-16
1.0 Micron	62	58	59	56	56	49	56	49	12-20
0.8 Micron	62	57	56	54	52	47	50	47	12-18
NRE Charges (\$1,000)									
CMOS									Prototypes:
1.5 Micron	62.0	61.0	81.0	79.0	103.0	101.0	NA	NA	5-8
1.2 Micron	56.0	55.0	71.0	70.0	97.0	95.0	NA	NA	5-8
1.0 Micron	72.0	70.0	89.0	82.0	105.0	99.0	135.0	122.0	6-10
0.8 Micron	74.0	70.0	98.0	84.0	111.0	100.5	145.0	124.0	5-9

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 17
Estimated CMOS PLD Price per Unit—North American Bookings
(Volume: 10,000 per Year; Package: PDIP or PLCC; Dollars)

Pin Count	Speed* (ns)	1993 Q1	Q2	Q3	Q4	1993 Year	1994 Q1	Q2	Q3	Q4	1994 Year	Lead Time (Weeks)
≤ 20	6.1-7.5	4.60	4.55	4.45	4.40	4.50	4.00	4.00	4.00	4.00	4.00	4-10
	7.6-10.0	2.00	1.95	1.90	1.85	1.93	1.60	1.55	1.50	1.45	1.53	4-20
	10.1-14.99	1.58	1.55	1.50	1.50	1.53	1.35	1.20	1.15	1.10	1.20	4-12
	15 - <25	0.76	0.76	0.76	0.76	0.76	0.67	0.63	0.62	0.60	0.63	4-20
	> or = 25	0.58	0.73	0.71	0.68	0.67	0.66	0.65	0.65	0.64	0.65	4-20
24	6.1-7.5	6.40	3.97	3.83	3.70	4.47	3.67	3.54	3.28	3.13	3.40	4-10
	7.6-10.0	2.65	2.65	2.65	2.65	2.65	2.20	2.00	1.90	1.80	1.98	4-12
	10.1-14.99	2.40	2.30	2.25	2.20	2.29	1.98	1.85	1.83	1.80	1.86	4-12
	15 - <25	1.30	1.30	1.30	1.29	1.30	1.27	1.25	1.23	1.21	1.24	4-12
	> or = 25	0.88	0.88	0.87	0.83	0.87	0.81	0.80	0.79	0.78	0.80	5-14
24 (22V10)	6.1-7.5	17.78	15.00	12.00	10.20	13.75	9.50	9.00	8.50	8.00	8.75	4-10
	7.6-10.0	6.75	6.75	6.75	6.50	6.69	5.43	5.00	4.50	4.00	4.73	2-6
	15 - <25	3.65	3.45	3.25	3.20	3.39	3.10	3.00	2.90	2.85	2.96	2-6
	25 - <35	1.98	1.85	1.80	1.75	1.85	1.75	1.75	1.75	1.75	1.75	2-8

*Nanosecond speed is the TPD for the combinatorial device.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 18

Estimated Long-Range CMOS PLD Price per Unit—North American Bookings
(Volume: 10,000 per Year; Package: PDIP or PLCC; Dollars)

Pin Count	Speed* (ns)	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
≤ 20	6.1-7.5	4.50	4.00	3.70	NA	NA
	7.6-10.0	1.93	1.53	1.38	3.25	3.00
	10.1-14.99	1.53	1.20	1.05	1.25	1.25
	15 - <25	0.76	0.63	0.57	1.00	1.00
	> or = 25	0.67	0.65	0.57	0.55	0.55
24	6.1-7.5	4.47	3.40	3.00	NA	NA
	7.6-10.0	2.65	1.98	1.60	2.50	2.25
	10.1-14.99	2.29	1.86	1.58	1.50	1.45
	15 - <25	1.30	1.24	0.95	1.45	1.40
	> or = 25	0.87	0.80	0.78	0.90	0.90
24 (22V10)	6.1-7.5	13.75	8.75	7.00	NA	NA
	7.6-10.0	6.69	4.73	3.60	6.50	5.50
	15 - <25	3.39	2.96	2.50	3.10	2.70
	25 - <35	1.85	1.75	1.65	2.25	2.00

NA = Not available

*Nanosecond speed is the TPD for the combinatorial device.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 19
Estimated Discrete Semiconductor Price Trends—North American Bookings
(Volume: 100,000 per Year; Dollars)

Product	1992 Year	Q1	1993 Q2	Q3	Q4	1993 Year	Q1	1994 Q2	Q3	Q4	1994 Year	Current Lead Time (Weeks)
Small-Signal Transistors												2-10
2N2222A	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	
2N3904	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	
2N2907A	0.068	0.066	0.066	0.066	0.066	0.066	0.064	0.064	0.062	0.062	0.063	
MPSA 43	0.050	0.047	0.047	0.047	0.047	0.047	0.047	0.046	0.046	0.046	0.046	
2N2222	0.046	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	
Bipolar Power Transistors												3-10
2N3772	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	
2N3055A	0.700	0.690	0.690	0.690	0.690	0.690	0.680	0.680	0.680	0.680	0.680	
2N6107	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.235	
Power MOSFET												3-9
IRF530	0.400	0.420	0.420	0.420	0.420	0.420	0.400	0.400	0.400	0.400	0.400	
IRF540	1.000	1.000	1.000	1.000	0.990	0.998	0.980	0.980	0.980	0.980	0.980	
IRF9531	1.035	1.028	1.028	1.028	1.028	1.028	1.022	1.022	1.022	1.022	1.022	
IRF9520	0.415	0.410	0.410	0.410	0.410	0.410	0.408	0.408	0.408	0.408	0.408	
Small-Signal Diodes												1-10
1N4002	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	
1N645	0.046	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	
Power Diodes												2-8
1N3891	0.883	0.873	0.873	0.873	0.873	0.873	0.870	0.870	0.864	0.864	0.867	
1N3737	7.105	7.035	7.035	7.035	7.035	7.035	7.000	7.000	6.990	6.990	6.995	
1N4936	0.092	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	
Zener Diodes												1-10
1N829	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	
1N752A	0.027	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	
1N963B	0.027	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	
1N4735A	0.040	0.040	0.040	0.040	0.040	0.040	0.039	0.039	0.039	0.039	0.039	
1.5KE62A	0.617	0.604	0.604	0.604	0.604	0.604	0.595	0.595	0.595	0.595	0.595	
1.5KE30CA	1.215	1.186	1.186	1.186	1.186	1.186	1.160	1.160	1.160	1.160	1.160	
P6KE30CA	0.699	0.690	0.690	0.690	0.690	0.690	0.681	0.681	0.681	0.681	0.681	
Thyristors												2-10
2N6400	0.620	0.583	0.583	0.583	0.583	0.583	0.562	0.562	0.562	0.562	0.562	
2N4186	2.270	2.260	2.260	2.260	2.260	2.260	2.250	2.250	2.250	2.250	2.250	

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 20
Estimated Long-Range Discrete Semiconductor Price Trends—
North American Bookings
(Volume: 100,000 per Year; Dollars)

Product	1993	1994	1995	1996	1997
Small-Signal Transistors					
2N2222A	0.150	0.150	0.150	0.150	0.150
2N3904	0.030	0.030	0.030	0.030	0.030
2N2907A	0.066	0.063	0.061	0.061	0.061
MPSA 43	0.047	0.046	0.045	0.045	0.045
2N2222	0.045	0.045	0.045	0.045	0.045
Bipolar Power Transistors					
2N3772	1.040	1.040	1.040	1.040	1.040
2N3055A	0.690	0.680	0.670	0.670	0.670
2N6107	0.235	0.235	0.235	0.235	0.235
Power MOSFET					
IRF530	0.420	0.400	0.356	0.350	0.350
IRF540	0.998	0.980	0.975	0.975	0.975
IRF9531	1.028	1.022	1.020	1.020	1.020
IRF9520	0.410	0.408	0.406	0.406	0.406
Small-Signal Diodes					
1N4002	0.020	0.020	0.020	0.020	0.020
1N645	0.045	0.045	0.045	0.045	0.045
Power Diodes					
1N3891	0.873	0.867	0.860	0.860	0.860
1N3737	7.035	6.995	6.850	6.850	6.850
1N4936	0.090	0.090	0.089	0.089	0.089
Zener Diodes					
1N829	1.165	1.165	1.165	1.165	1.165
1N752A	0.030	0.030	0.026	0.025	0.025
1N963B	0.030	0.030	0.026	0.025	0.025
1N4735A	0.040	0.039	0.039	0.039	0.039
1.5KE62A	0.604	0.595	0.590	0.590	0.590
1.5KE30CA	1.186	1.160	1.155	1.155	1.155
P6KE30CA	0.690	0.681	0.671	0.671	0.671
Thyristors					
2N6400	0.583	0.562	0.556	0.556	0.556
2N4186	2.260	2.250	2.250	2.250	2.250

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 21
Estimated Analog IC Price Trends—North American Bookings
(Volume: 100,000 Year; Dollars)

Product	1993				1993 Year	1994				1994 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
Voltage Regulators											6-9
78L05 (TO-92)	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	
Comparators											6-8
LM339	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	
LM393	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	
Op Amps											6-9
741	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	
3403P	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	
1741CP1	0.130	0.130	0.130	0.130	0.130	0.140	0.140	0.140	0.140	0.140	
Interface ICs											6-10
1488P	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	
3486P	0.880	0.870	0.870	0.860	0.870	0.850	0.840	0.830	0.830	0.838	
Telecom IC											7-10
CODEC/FILTER #1	1.700	1.700	1.700	1.700	1.700	1.600	1.600	1.600	1.600	1.600	
CODEC/FILTER #2	3.800	3.800	3.800	3.800	3.800	3.600	3.600	3.600	3.600	3.600	
34017P	0.310	0.310	0.310	0.310	0.310	0.300	0.300	0.300	0.300	0.300	
Video DAC											6-8
IMSG171D-35-MHz	1.600	1.600	1.600	1.500	1.575	1.450	1.450	1.450	1.450	1.450	

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

Table 22
Estimated Long-Range Analog IC Price Trends—North American Bookings
(Volume: 100,000 per Year; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year
Voltage Regulators					
78L05 (TO-92)	0.150	0.150	0.150	0.150	0.150
Comparators					
LM339	0.140	0.140	0.140	0.140	0.140
LM393	0.140	0.140	0.140	0.140	0.140
Op Amps					
741	0.140	0.140	0.140	0.140	0.140
3403P	0.180	0.180	0.180	0.180	0.180
1741CP1	0.130	0.140	0.140	0.140	0.140
Interface ICs					
1488P	0.150	0.150	0.150	0.145	0.145
3486P	0.870	0.838	0.820	0.780	0.780
Telecom IC					
CODEC/FILTER #1	1.700	1.600	1.500	1.400	1.400
CODEC/FILTER #2	3.800	3.600	3.450	3.350	3.200
34017P	0.310	0.300	0.300	0.300	0.300
Video DAC					
IMSG171D-35-MHz	1.575	1.450	1.400	1.350	1.300

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (June 1993)

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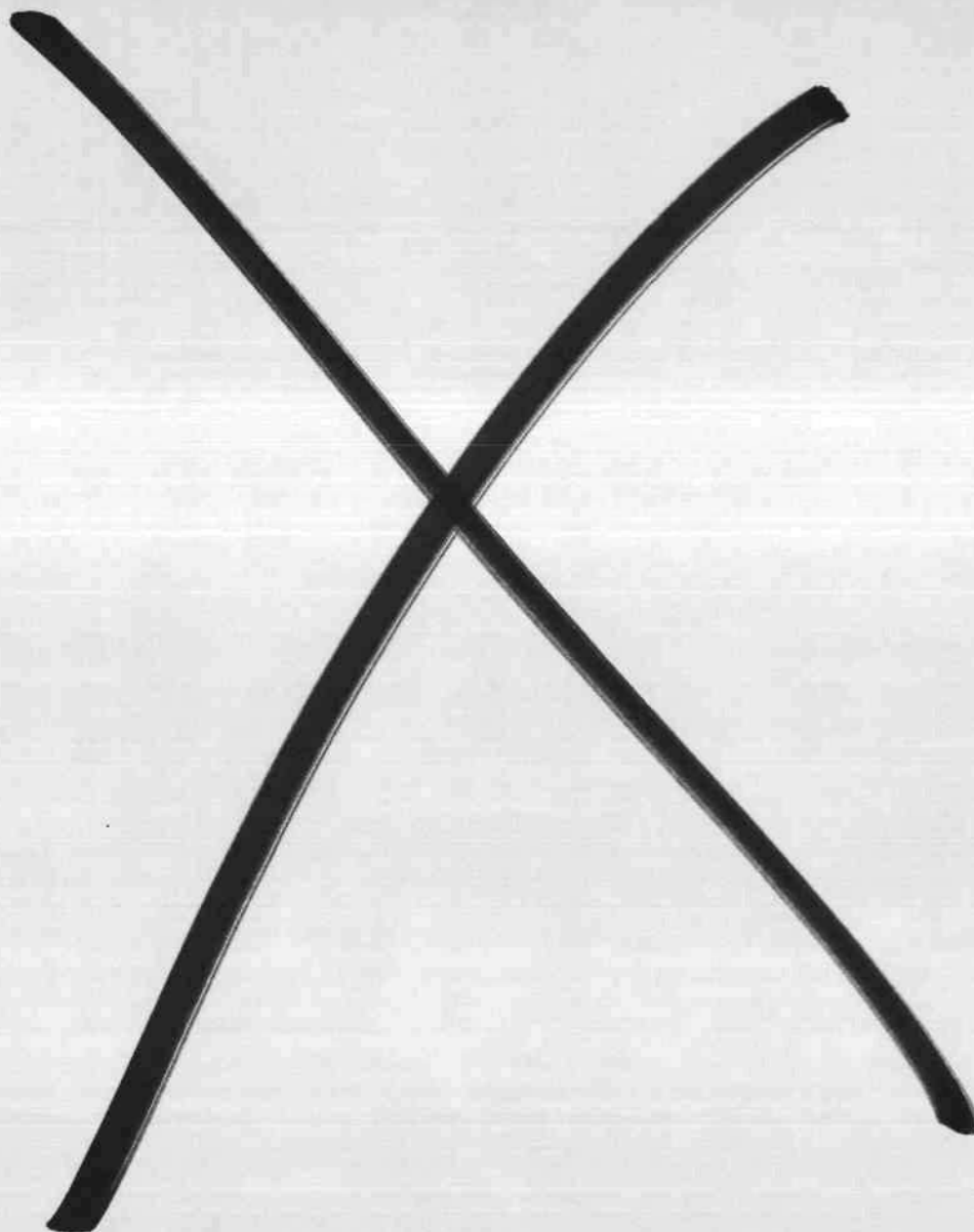
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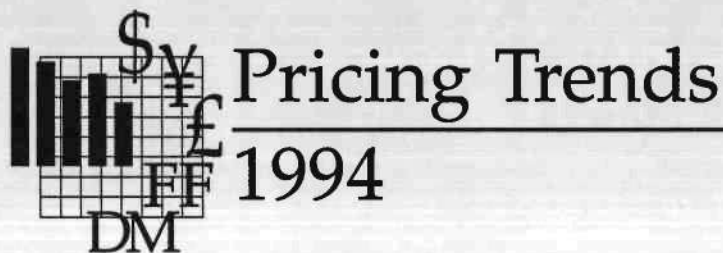


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North American Semiconductor Price Outlook: First Quarter 1994



Program: Semiconductors Buyer's Edge North America

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North American Semiconductor Price Outlook: First Quarter 1994



Pricing Trends
1994

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North American Semiconductor Price Outlook: First Quarter 1994

Methodology and Sources

This document provides information on and forecasts for the North American bookings prices of more than 200 semiconductor devices. Dataquest collects price information on a quarterly basis from North American suppliers and major buyers of these products. North American bookings price information is analyzed by Semiconductor Procurement (SP) service analysts for consistency and reconciliation. The information finally is rationalized with worldwide billings price data in association with product analysts, resulting in the current forecast. This document includes associated long-range forecasts.

For SP clients that use the SP online service, the prices presented here correlate with the quarterly and long-range price tables dated December 1993 in the SP online service. For additional product coverage and more detailed product specifications, please refer to those sources.

Price Variations

Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as product quality, special features, service, delivery performance, volume discount, or other factors that may enhance or detract from the value of a company's product. These prices are intended for use as price guidelines.

Table 1
Estimated Standard Logic Price Trends—North American Bookings
(Volume: 100,000 Year; Package: PLCC; Dollars)

											Current Lead Time (Weeks)
Product	Q1	1994			1994		1995			1995	
		Q2	Q3	Q4	Year	Q1	Q2	Q3	Q4	Year	
74LS TTL											
74LS00	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.18	8-Allocation
74LS74	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	
74LS138	0.22	0.22	0.22	0.22	0.22	0.24	0.23	0.23	0.23	0.23	
74LS244	0.29	0.29	0.29	0.29	0.29	0.30	0.30	0.30	0.30	0.30	
74AC TTL											
74AC00	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	8-Allocation
74AC74	0.23	0.23	0.23	0.23	0.23	0.22	0.22	0.22	0.22	0.22	
74AC138	0.33	0.34	0.34	0.34	0.34	0.32	0.30	0.30	0.30	0.31	
74AC244	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	
74F TTL											
74F00	0.17	0.17	0.17	0.17	0.17	0.19	0.19	0.20	0.20	0.20	8-Allocation
74F74	0.17	0.17	0.18	0.18	0.18	0.20	0.20	0.20	0.20	0.20	
74F138	0.23	0.24	0.26	0.28	0.25	0.30	0.30	0.30	0.30	0.30	
74F244	0.32	0.33	0.33	0.33	0.33	0.36	0.36	0.36	0.36	0.36	
74HC CMOS											
74HC00	0.21	0.21	0.21	0.22	0.21	0.24	0.24	0.24	0.24	0.24	8-Allocation
74HC74	0.22	0.22	0.22	0.23	0.22	0.25	0.25	0.25	0.25	0.25	
74HC138	0.24	0.24	0.25	0.27	0.25	0.28	0.28	0.28	0.28	0.28	
74HC244	0.36	0.36	0.37	0.37	0.37	0.40	0.40	0.40	0.40	0.40	
74ALS TTL											
74ALS00	0.19	0.19	0.19	0.20	0.19	0.21	0.22	0.22	0.22	0.22	8-12
74ALS74	0.20	0.20	0.20	0.21	0.20	0.22	0.23	0.23	0.23	0.23	
74ALS138	0.33	0.33	0.35	0.35	0.34	0.36	0.36	0.36	0.36	0.36	
74ALS244	0.42	0.42	0.43	0.43	0.43	0.45	0.45	0.45	0.45	0.45	
74AS TTL											
74AS00	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.23	8-12
74AS74	0.21	0.21	0.22	0.22	0.22	0.24	0.24	0.24	0.24	0.24	
74AS138	0.47	0.47	0.49	0.49	0.48	0.50	0.50	0.50	0.50	0.50	
74AS244	0.72	0.72	0.73	0.74	0.73	0.75	0.75	0.75	0.75	0.75	
74BC*											
74BC00	0.25	0.25	0.24	0.24	0.25	0.22	0.24	0.24	0.24	0.24	4-8
74BC244	0.60	0.60	0.59	0.59	0.57	0.57	0.58	0.58	0.58	0.58	
74BC373	0.61	0.61	0.60	0.60	0.61	0.58	0.59	0.59	0.59	0.59	

*Pricing for 74BC excludes 74ABT.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 2

Estimated Long-Range Standard Logic Price Trends—North American Bookings
(Volume: 100,000 Year; Package: PLCC; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
74LS TTL						
74LS00	0.15	0.17	0.18	0.18	0.20	0.20
74LS74	0.16	0.18	0.19	0.19	0.21	0.21
74LS138	0.19	0.22	0.23	0.23	0.25	0.25
74LS244	0.24	0.29	0.30	0.30	0.33	0.33
74AC TTL						
74AC00	0.17	0.18	0.19	0.19	0.19	0.20
74AC74	0.21	0.23	0.22	0.22	0.22	0.22
74AC138	0.31	0.34	0.31	0.30	0.30	0.30
74AC244	0.40	0.46	0.46	0.46	0.46	0.46
74F TTL						
74F00	0.14	0.17	0.20	0.20	0.21	0.21
74F74	0.15	0.18	0.20	0.21	0.22	0.22
74F138	0.18	0.25	0.30	0.30	0.32	0.32
74F244	0.30	0.33	0.36	0.36	0.39	0.39
74HC CMOS						
74HC00	0.15	0.21	0.24	0.25	0.28	0.28
74HC74	0.16	0.22	0.25	0.26	0.29	0.29
74HC138	0.20	0.25	0.28	0.30	0.34	0.34
74HC244	0.30	0.37	0.40	0.42	0.47	0.47
74ALS TTL						
74ALS00	0.14	0.19	0.22	0.24	0.24	0.24
74ALS74	0.16	0.20	0.23	0.26	0.26	0.26
74ALS138	0.27	0.34	0.36	0.39	0.39	0.39
74ALS244	0.36	0.43	0.45	0.48	0.48	0.48
74AS TTL						
74AS00	0.18	0.22	0.23	0.24	0.27	0.27
74AS74	0.19	0.22	0.24	0.25	0.29	0.29
74AS138	0.44	0.48	0.50	0.52	0.55	0.55
74AS244	0.72	0.73	0.75	0.77	0.82	0.82
74BC*						
74BC00	0.26	0.25	0.24	0.23	0.22	0.21
74BC244	0.62	0.57	0.58	0.55	0.52	0.50
74BC373	0.63	0.61	0.59	0.56	0.53	0.51

*Pricing for 74BC excludes 74ABT.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 3

Estimated Microprocessor Price Trends—North American Bookings

(Volume: 8- and 16-Bit—25,000 per Year; 32-Bit—1,000 to 5,000 per Year; Dollars)

(Package: 8/16-Bit Devices—PDIP; 32-Bit Devices—Ceramic PGA; Exceptions Noted)

Product	Q1	1994 Q2	Q3	Q4	1994 Year	Q1	1995 Q2	Q3	Q4	1995 Year	Lead Time (Weeks)
68000-12	4.75	4.55	4.40	4.30	4.50	4.10	4.10	4.10	4.10	4.10	8-12
68EC000-16 PLCC	5.65	5.65	5.65	5.65	5.65	5.35	5.35	5.35	5.35	5.35	8-12
80186-8 PLCC	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	5.30	6-10
80C186-10 PLCC	7.00	7.00	7.00	7.00	7.00	6.75	6.75	6.75	6.75	6.75	6-10
80286-10 PLCC	3.75	3.75	3.75	3.75	3.75	NA	NA	NA	NA	NA	4-8
68020-16 PQFP	19.75	19.50	19.25	19.25	19.44	17.00	17.00	17.00	17.00	17.00	8-12
68EC020-16 PQFP	13.00	13.00	13.00	13.00	13.00	11.00	11.00	11.00	11.00	11.00	8-12
68020-25 PQFP	27.75	27.25	27.00	27.00	27.25	27.00	27.00	27.00	27.00	27.00	3
68EC020-25 PQFP	10.85	10.85	10.85	10.85	10.85	10.00	10.00	10.00	10.00	10.00	3
68030-16 CQFP	35.00	35.00	35.00	35.00	35.00	33.00	33.00	33.00	33.00	33.00	3
68030-25 CQFP	45.00	45.00	45.00	45.00	45.00	42.00	42.00	42.00	42.00	42.00	3-5
68EC030-25 PQFP	25.00	25.00	25.00	25.00	25.00	23.00	23.00	23.00	23.00	23.00	3-5
68040-25	198.00	195.00	190.00	185.00	192.00	172.00	167.00	165.00	165.00	167.25	5
68EC040-25	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	3-5
386SX-16 PQFP	31.00	29.00	27.00	26.00	28.25	23.00	23.00	23.00	23.00	23.00	8-12
386SX-25 PQFP	36.00	31.00	27.00	24.00	29.50	22.00	21.00	20.00	19.00	20.50	8-12
386SL-25 PQFP	52.00	51.00	49.00	48.00	50.00	45.00	45.00	45.00	45.00	45.00	NA
AM386-40 PQFP	30.00	28.00	27.00	25.00	27.50	22.00	21.00	20.00	20.00	20.75	9-12
386DX-25 PQFP	44.00	42.00	40.00	38.00	41.00	32.00	29.00	27.00	24.00	28.00	8-12
80486SX-25 PQFP	76.00	72.00	67.00	65.00	70.00	61.00	59.75	57.50	55.00	58.31	8-12
80486DX-33	270.00	257.00	245.00	231.00	250.75	221.76	212.89	204.37	196.20	208.81	8-12
80486DX-50	411.00	391.00	372.00	353.00	381.75	328.29	311.88	302.52	293.44	309.03	8-12
80486DX2-50	250.00	237.00	225.00	215.00	231.75	204.25	196.08	188.24	180.71	192.32	8-14
Pentium-60	795.00	762.00	732.00	703.00	748.00	660.82	627.78	596.39	572.53	614.38	2-6
29000-25 ¹	78.00	76.00	74.00	71.00	74.75	67.00	62.00	59.00	57.00	61.25	6-12
88100-25 ¹	56.00	56.00	56.00	56.00	56.00	52.00	52.00	52.00	52.00	52.00	6-10
R3000-25 ¹	78.25	75.65	73.60	71.50	74.75	67.50	65.00	62.50	62.00	64.25	6-12
R4000SC-50	615.00	554.00	521.00	497.00	546.75	486.00	470.00	460.00	445.00	465.25	NA
R4400SC-75	955.00	855.00	787.00	737.00	833.50	641.40	593.75	551.90	518.25	576.33	NA
SPARC-25 ¹	59.00	58.00	57.00	56.00	57.50	54.50	54.50	54.50	54.50	54.50	4-10
80960CA-25	79.00	78.00	77.00	75.00	77.25	74.00	73.00	72.00	71.00	72.50	4-8

NA = Not available

¹Pricing excludes accessory parts such as floating point and memory management.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 4

Estimated Long-Range Microprocessor Price Trends—North American Bookings
(Volume: 8- and 16-Bit—25,000 per Year; 32-Bit—1,000 to 5,000 per Year; Dollars)
(Package: 8/16-Bit Devices—PDIP; 32-Bit Devices—Ceramic PGA; Exceptions Noted)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
68000-12	5.00	4.50	4.10	4.00	4.00	4.00
68EC000-16 PLCC	5.80	5.65	5.35	4.75	4.75	4.75
80186-8 PLCC	5.50	5.30	5.30	5.30	5.30	5.30
80C186-10 PLCC	8.00	7.00	6.75	6.50	6.50	6.50
80286-10 PLCC	3.75	3.75	NA	NA	NA	NA
68020-16 PQFP	20.00	19.44	17.00	17.00	17.00	17.00
68EC020-16 PQFP	14.25	13.00	11.00	10.00	10.00	10.00
68020-25 PQFP	29.00	27.25	27.00	26.00	26.00	26.00
68EC020-25 PQFP	18.00	10.85	10.00	9.50	9.25	9.00
68030-16 CQFP	41.88	35.00	33.00	31.00	30.00	30.00
68030-25 CQFP	54.50	45.00	42.00	40.00	39.00	39.00
68EC030-25 PQFP	34.00	25.00	23.00	20.00	20.00	20.00
68040-25	227.75	192.00	167.25	155.00	146.00	137.00
68EC040-25	86.88	50.00	50.00	45.00	42.00	42.00
386SX-16 PQFP	36.00	28.25	23.00	20.00	20.00	20.00
386SX-25 PQFP	50.50	29.50	20.50	18.00	NA	NA
386SL-25 PQFP	59.50	50.00	45.00	42.00	36.00	36.00
AM386-40 PQFP	33.75	27.50	20.75	19.00	18.00	18.00
386DX-25 PQFP	52.55	41.00	28.00	19.00	18.00	18.00
80486SX-25 PQFP	89.00	70.00	58.31	46.75	40.00	38.00
80486DX-33	298.75	250.75	208.81	183.04	165.98	155.00
80486DX-50	450.50	381.75	309.03	262.65	NA	NA
80486DX2-50	387.75	231.75	192.32	168.96	155.00	150.00
Pentium-60	846.33	748.00	614.38	503.48	417.49	366.96
29000-25 ¹	79.75	74.75	61.25	55.50	54.50	54.00
88100-25 ¹	61.50	56.00	52.00	50.00	50.00	50.00
R3000-25 ¹	84.13	74.75	64.25	55.50	49.00	45.00
R4000SC-50	NA	546.75	465.25	NA	NA	NA
R4400SC-75	NA	833.50	576.33	NA	NA	NA
SPARC-25 ¹	62.45	57.50	54.50	45.00	45.00	45.00
80960CA-25	85.53	77.25	72.50	67.00	65.00	65.00

NA = Not available

¹Pricing excludes accessory parts such as floating point and memory management.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 5
Estimated DRAM Price Trends—North American Bookings
(Contract Volume; Dollars)*

Product	Q1	Q2	Q3	1993 Q4	1993 Year	Q1	Q2	Q3	1994 Q4	1994 Year	Lead Time (Weeks)
64Kx4 VRAM 120ns ZIP	3.60	3.60	3.75	3.75	3.68	3.70	3.70	3.70	3.70	3.70	12
1Mbx1 DRAM 70-80ns (DIP/SOJ)	3.95	4.10	4.20	4.25	4.13	4.20	4.20	4.20	4.20	4.20	6-Allocation
256Kx4 DRAM 60ns ZIP	4.03	4.25	4.30	4.30	4.22	4.45	4.45	4.45	4.45	4.45	16-Allocation
256Kx4 VRAM 100ns ZIP	5.90	5.80	5.70	5.60	5.75	5.50	5.40	5.30	5.15	5.34	8-14
128Kx8 VRAM 100ns SOJ	6.00	5.90	5.80	5.70	5.85	5.60	5.50	5.40	5.25	5.44	8-14
4Mbx1 DRAM 70-80ns SOJ	12.39	11.15	9.96	8.80	10.58	7.98	7.47	6.95	6.46	7.21	10-Allocation
1Mbx4 DRAM 60ns SOJ	12.70	11.54	10.57	9.33	11.04	8.25	7.72	7.10	6.62	7.42	10-Allocation
512Kx8 DRAM 70-80ns	14.49	13.52	11.98	10.75	12.68	9.34	8.70	7.85	7.18	8.27	16-Allocation
256Kx16 DRAM 70-80ns SOJ	14.51	14.04	12.90	11.25	13.18	9.69	8.96	8.07	7.39	8.53	10-Allocation
256Kx18 DRAM 70-80ns SOJ	15.49	14.60	13.59	11.40	13.77	10.20	9.31	8.52	7.69	8.93	Allocation
256Kx16 VRAM 70ns SOP	35.00	30.00	27.00	24.00	29.00	23.50	21.00	20.00	18.00	20.63	NA
1Mbx8 SIMM 80ns (2 pc)	27.60	27.00	26.43	26.00	26.76	24.66	23.45	22.33	21.23	22.92	8-Allocation
1Mbx9 SIMM 80ns (3 pc)	31.30	30.58	29.67	28.17	29.93	28.45	27.29	26.20	25.23	26.79	8-Allocation
256Kx9 SIMM 100ns	14.75	14.70	14.65	14.60	14.68	14.45	14.35	14.25	14.18	14.31	16-Allocation
512Kx36 SIMM 70-80ns (24 pc)	88.71	87.99	82.10	77.09	83.97	91.00	91.00	91.00	91.00	91.00	16-Allocation
4Mbx9 SIMM 70ns	116.02	112.51	108.33	101.90	109.69	98.10	91.98	86.38	80.51	89.24	16-Allocation
1Mbx36 SIMM 70-80ns	122.00	119.44	116.20	111.05	117.17	106.92	101.77	96.91	90.13	98.93	10-Allocation
4Mbx4 DRAM 70ns SOJ 400 mil	62.00	52.05	42.11	35.83	48.00	30.52	26.00	21.98	18.59	24.27	10-Allocation

NA = Not available

*Contract volume = at least 100,000 per order except VRAMs

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 6
Estimated Long-Range DRAM Price Trends—North American Bookings
(Contract Volume; Dollars)*

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
64Kx4 VRAM 120ns ZIP	3.09	3.68	3.70	3.80	3.80	3.95
1Mbx1 DRAM 70-80ns (DIP/SOJ)	3.49	4.13	4.20	3.95	3.95	4.00
256Kx4 DRAM 60ns ZIP	NA	4.22	4.45	4.50	4.55	4.65
256Kx4 VRAM 100ns ZIP	6.33	5.75	5.34	5.25	5.25	5.50
128Kx8 VRAM 100ns SOJ	6.43	5.85	5.44	5.30	5.25	5.55
4Mbx1 DRAM 70-80ns SOJ	11.45	10.58	7.21	5.75	5.60	5.60
1Mbx4 DRAM 60ns SOJ	11.61	11.04	7.42	5.90	5.74	5.75
512Kx8 DRAM 70-80ns	13.37	12.68	8.27	6.11	5.97	5.99
256Kx16 DRAM 70-80ns SOJ	13.84	13.18	8.53	6.21	6.05	6.05
256Kx18 DRAM 70-80ns SOJ	14.54	13.77	8.93	6.88	6.75	6.95
256Kx16 VRAM 70ns SOP	NA	29.00	20.63	NA	NA	NA
1Mbx8 SIMM 80ns (2 pc)	27.61	26.76	22.92	18.21	17.20	17.50
1Mbx9 SIMM 80ns (3 pc)	30.09	29.93	26.79	20.72	19.20	19.60
256Kx9 SIMM 100ns	14.34	14.68	14.31	15.00	15.50	15.95
512Kx36 SIMM 70-80ns (24 pc)	80.01	83.97	91.00	88.00	78.00	NA
4Mbx9 SIMM 70ns	109.97	109.69	89.24	71.42	55.44	54.68
1Mbx36 SIMM 70-80ns	113.38	117.17	98.93	76.15	58.48	56.67
4Mbx4 DRAM 70ns SOJ 400 mil	80.75	48.00	24.27	14.00	12.25	10.00

NA = Not available

*Contract volume = at least 100,000 per order except VRAMs

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 7

Estimated Static RAM Price Trends—North American Bookings
(Volume: Slow SRAM/50,000 per Year; Fast SRAM/20,000 per Year)
(Package: PDIP; Dollars)

Product	1994					1995					Lead Time (Weeks)
	Q1	Q2	Q3	Q4	Year	Q1	Q2	Q3	Q4	Year	
4Kx4 25ns	2.77	2.77	2.77	2.77	2.77	2.80	2.80	2.80	2.80	2.80	6-16
64Kx1 25ns	3.40	3.40	3.45	3.45	3.43	3.45	3.45	3.45	3.45	3.45	6-16
16Kx4 25ns	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	6-Allocation
8Kx8 25ns	2.50	2.50	2.50	2.50	2.50	2.77	2.77	2.77	2.77	2.77	4-Allocation
16Kx4 35ns	2.75	2.75	2.75	2.75	2.75	2.77	2.77	2.77	2.77	2.77	4-26
8Kx8 45ns	2.42	2.42	2.42	2.42	2.42	2.60	2.60	2.60	2.60	2.60	6-12
8Kx8 100-120ns	1.70	1.70	1.70	1.70	1.70	1.85	1.85	1.85	1.85	1.85	8-12
64Kx4 10ns	12.96	12.20	10.95	9.98	11.52	9.75	8.95	7.75	6.65	8.28	4-Allocation
64Kx4 25ns	4.85	4.85	4.45	4.15	4.58	3.65	3.55	3.44	3.35	3.50	4-16
32Kx8 12ns	7.94	7.54	7.00	6.51	7.25	5.65	5.35	5.05	4.75	5.20	4-Allocation
32Kx9 12ns Burst	18.62	17.71	16.83	15.85	17.25	15.20	14.45	13.65	12.96	14.07	10
32Kx8 25ns	4.10	4.00	3.60	3.50	3.80	3.30	3.22	3.21	3.10	3.21	4-8
32Kx8 70-100ns SOJ	3.15	3.15	3.08	3.08	3.12	3.10	3.10	3.10	3.10	3.10	6-12
64Kx16 12ns Burst	61.65	52.70	44.44	36.10	48.72	32.85	29.89	28.10	26.41	29.32	12
256Kx4 20ns	15.75	15.50	15.00	14.50	15.19	12.20	11.65	11.05	10.56	11.37	4-10
128Kx8 25ns	15.50	14.51	13.39	12.48	13.97	11.75	11.13	10.50	10.10	10.87	4-Allocation
128Kx8 70-100ns SOJ	8.79	8.52	8.30	8.18	8.45	7.55	7.05	6.70	6.30	6.90	8-12

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 8

Estimated Long-Range Static RAM Price Trends—North American Bookings
(Volume: Slow SRAM/50,000 per Year; Fast SRAM/20,000 per Year)
(Package: PDIP; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
4Kx4 25ns	2.34	2.77	2.80	2.80	NA	NA
64Kx1 25ns	2.61	3.43	3.45	3.55	3.58	3.70
16Kx4 25ns	2.37	2.77	2.77	2.77	2.85	2.85
8Kx8 25ns	2.25	2.50	2.77	2.77	2.85	2.85
16Kx4 35ns	2.40	2.75	2.77	2.77	2.85	2.85
8Kx8 45ns	2.09	2.42	2.60	2.75	2.85	2.85
8Kx8 100-120ns	1.65	1.70	1.85	1.85	1.90	1.90
64Kx4 10ns	17.49	11.52	8.28	5.19	3.90	3.60
64Kx4 25ns	4.69	4.58	3.50	3.00	3.00	3.00
32Kx8 12ns	10.85	7.25	5.20	3.75	3.40	3.20
32Kx9 12ns Burst	NA	17.25	14.07	NA	NA	NA
32Kx8 25ns	4.45	3.80	3.21	3.00	3.00	3.00
32Kx8 70-100ns SOJ	3.36	3.12	3.10	3.00	3.00	3.00
64Kx16 12ns Burst	NA	48.72	29.32	NA	NA	NA
256Kx4 20ns	20.55	15.19	11.37	8.06	5.80	5.60
128Kx8 25ns	17.68	13.97	10.87	7.63	5.50	5.45
128Kx8 70-100ns SOJ	9.25	8.45	6.90	5.50	5.05	5.05

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 9**Estimated ROM Price Trends—North American Bookings****(Speed/Package: ≤1Mb Density—150ns and Above; 28-Pin PDIP;****≥2Mb Density—200ns and Above; 32-Pin PDIP)****(Volume: 50,000 per Year; Dollars)**

Product	Q1	1994 Q2	Q3	Q4	1994 Year	Q1	1995 Q2	Q3	Q4	1995 Year	Lead Time (Weeks)
32Kx8 ROM	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	6-8
64Kx8 ROM	1.70	1.70	1.70	1.70	1.70	1.80	1.80	1.80	1.80	1.80	6-8
128Kx8 ROM	2.05	2.05	2.05	2.05	2.05	1.95	1.95	1.95	1.95	1.95	6-12
64Kx16 ROM	2.05	2.05	2.05	2.05	2.05	1.95	1.95	1.95	1.95	1.95	6-12
256Kx8 ROM	2.70	2.70	2.70	2.70	2.70	2.55	2.55	2.55	2.55	2.55	6-12
512Kx8 ROM	3.50	3.40	3.40	3.40	3.43	3.20	3.00	2.85	2.65	2.93	10-16
256Kx16 ROM ¹	3.50	3.40	3.40	3.40	3.43	3.20	3.00	2.85	2.65	2.93	10-16
1Mbx8 ROM ²	5.40	5.23	5.05	5.00	5.17	4.95	4.85	4.75	4.65	4.80	8-16
1Mbx16 ROM	10.00	9.75	9.25	9.00	9.50	8.50	7.95	7.70	7.50	7.91	8-16
2Mbx8 ROM	10.00	9.75	9.25	9.00	9.50	8.50	7.95	7.70	7.50	7.91	6-16

¹256Kx16 ROM: 150ns and Above; 40-Pin PDIP.²1Mbx8 ROM: 150ns and Above; 32-Pin SOP.

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 10

Estimated Long-Range ROM Price Trends—North American Bookings
(Speed/Package: ≤1Mb Density—150ns and Above; 28-Pin PDIP;
≥2Mb Density—200ns and Above; 32-Pin PDIP)
(Volume: 50,000 per Year; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
32Kx8 ROM	1.35	1.35	1.35	1.40	NA	NA
64Kx8 ROM	1.70	1.70	1.80	1.80	NA	NA
128Kx8 ROM	1.89	2.05	1.95	1.80	1.95	2.00
64Kx16 ROM	1.98	2.05	1.95	1.90	1.98	2.00
256Kx8 ROM	2.60	2.70	2.55	2.35	2.00	2.20
512Kx8 ROM	3.52	3.43	2.93	2.40	2.30	2.45
256Kx16 ROM ¹	3.85	3.43	2.93	2.40	2.40	2.50
1Mbx8 ROM ²	5.43	5.17	4.80	4.20	4.00	3.80
1Mbx16 ROM	10.16	9.50	7.91	6.50	6.00	5.00
2Mbx8 ROM	10.16	9.50	7.91	6.50	6.15	5.05

¹256Kx16 ROM: 150ns and Above; 40-Pin PDIP.

²1Mbx8 ROM: 150ns and Above; 32-Pin SOP.

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 11

Estimated EPROM Price Trends—North American Bookings
(Volume: 50,000 per Year; Package: Windowed Cerdip;
Speed: 150ns and Above; Dollars)

Product	Q1	Q2	Q3	1994 Q4	1994 Year	1995 Q1	Q2	Q3	Q4	1995 Year	Lead Time (Weeks)
32Kx8 EPROM	1.90	1.90	1.80	1.80	1.85	1.80	1.80	1.80	1.80	1.80	6-12
64Kx8 EPROM	2.65	2.60	2.50	2.40	2.54	2.40	2.40	2.40	2.40	2.40	8-12
128Kx8 EPROM	3.15	3.10	3.05	3.00	3.08	3.00	3.00	3.00	3.00	3.00	8-14
256Kx8 EPROM	5.20	5.20	5.10	5.05	5.14	4.80	4.80	4.80	4.80	4.80	8-12
128Kx16 EPROM	5.65	5.50	5.25	5.10	5.38	4.85	4.85	4.85	4.85	4.85	8-12
512Kx8 EPROM	9.90	9.75	9.50	9.25	9.60	9.00	8.75	8.65	8.50	8.73	8-14
256Kx16 EPROM	10.50	10.30	10.00	9.55	10.09	9.15	8.75	8.65	8.50	8.76	9-14

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 12

Estimated Long-Range EPROM Price Trends—North American Bookings
(Volume: 50,000 per Year; Package: Windowed Cerdip;
Speed: 150ns and Above; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
32Kx8 EPROM	1.91	1.85	1.80	1.80	2.00	2.15
64Kx8 EPROM	2.60	2.54	2.40	2.40	2.60	2.70
128Kx8 EPROM	3.24	3.08	3.00	3.00	3.15	3.25
256Kx8 EPROM	5.09	5.14	4.80	4.60	4.55	4.55
128Kx16 EPROM	6.00	5.38	4.85	4.60	4.60	4.55
512Kx8 EPROM	10.11	9.60	8.73	8.50	8.35	8.25
256Kx16 EPROM	11.58	10.09	8.76	8.50	8.35	8.25

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 13**Estimated Flash Memory Price Trends—North American Bookings
(12 Volts; Volume: 10,000 per Year; Speed: 150ns; Dollars)**

Product	1994				1994 Year	1995				1995 Year	Lead Time (Weeks)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
32Kx8, PDIP/PLCC	3.75	3.50	3.30	3.20	3.44	3.00	2.90	2.80	2.75	2.86	4-6
32Kx8, TSOP	4.18	3.90	3.70	3.35	3.78	3.20	3.10	3.00	2.90	3.05	4-6
64Kx8, PDIP/PLCC	4.25	4.05	3.85	3.75	3.98	3.60	3.60	3.60	3.60	3.60	4-6
64Kx8, TSOP	4.75	4.55	4.25	4.05	4.40	3.78	3.73	3.69	3.69	3.68	4-6
128Kx8, PDIP/PLCC	5.65	5.20	4.70	4.20	4.94	4.00	3.75	3.60	3.50	3.71	2-10
128Kx8, TSOP	6.20	5.65	5.10	4.60	5.39	4.30	4.00	3.85	3.70	3.96	2-10
256Kx8, TSOP	11.65	10.65	9.70	8.80	10.20	7.95	7.10	6.60	6.20	6.96	2-10
512Kx8, PDIP/PLCC	27.00	23.00	17.30	15.00	20.58	12.50	10.50	9.45	8.80	10.31	6-12
512Kx8, TSOP	30.70	25.55	19.05	16.35	22.91	13.30	10.85	9.77	8.90	10.70	8-12

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 14
Estimated Long-Range Flash Memory Price Trends—North American Bookings
(12 Volts; Volume: 10,000 per Year; Speed: 150ns; Dollars)

Product	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
32Kx8, PDIP/PLCC	4.71	3.44	2.86	2.65	2.50	2.50
32Kx8, TSOP	NA	3.78	3.05	2.71	2.55	2.55
64Kx8, PDIP/PLCC	5.03	3.98	3.60	3.25	2.75	2.75
64Kx8, TSOP	NA	4.40	3.68	3.35	2.79	2.79
128Kx8, PDIP/PLCC	6.65	4.94	3.71	3.20	2.95	2.95
128Kx8, TSOP	7.62	5.39	3.96	3.30	3.00	3.00
256Kx8, TSOP	15.00	10.20	6.96	5.46	4.95	4.85
512Kx8, PDIP/PLCC	NA	20.58	10.31	7.92	6.95	6.50
512Kx8, TSOP	NA	22.91	10.70	8.08	7.01	6.60

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as guidelines.

Source: Dataquest (December 1993)

Table 15

Estimated Gate Array Pricing—North American Production Bookings
 (Millicents per Gate) (Package: 84-Pin PLCC for <10K Gates, 160-Pin PQFP
 for 10K-29.9K, 208-Pin PQFP for ≥30K Gates)
 (Volume: 10,000 Units; Based on Utilized Gates Only; NRE = Netlist to Prototype)
 (Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	0-1.99K Gates		2-4.99K Gates		5-9.99K Gates		Current Lead Time (Weeks)
	1993	1993	1993	1994	1993	1994	
CMOS							Production:
1.2 Micron	127	127	85	83	75	73	8-14
1.0 Micron	122	122	78	77	71	70	10-20
0.8 Micron	NA	NA	85	77	61	55	10-20
0.6 Micron	NA	NA	87	77	63	55	12-20
NRE Charges (\$1,000)							
CMOS							Prototypes:
1.2 Micron	12	12	16	16	20	20	2-4
1.0 Micron	18	17	21	20	27	26	2-7
0.8 Micron	NA	NA	26	26	30	30	3-4
0.6 Micron	NA	NA	29	29	33	33	5-7

(Continued)

Table 15 (Continued)

Estimated Gate Array Pricing—North American Production Bookings
(Millicents per Gate) (Package: 84-Pin PLCC for <10K Gates, 160-Pin PQFP
for 10K-29.9K, 208-Pin PQFP for ≥30K Gates)

(Volume: 10,000 Units; Based on Utilized Gates Only; NRE = Netlist to Prototype)
(Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	10-19.99K Gates		20-29.99K Gates		30-59.99K Gates		60-100K Gates		Current Lead Time (Weeks)
	1993	1994	1993	1994	1993	1994	1993	1994	
CMOS									Production:
1.2 Micron	70	67	76	75	88	87	NA	NA	9-14
1.0 Micron	62	58	60	57	61	58	61	58	8-20
0.8 Micron	60	54	56	50	55	50	55	52	8-16
0.6 Micron	61	54	57	50	56	50	56	52	10-18
NRE Charges (\$1,000)									
CMOS									Prototypes:
1.2 Micron	38	38	55	55	97	96	NA	NA	3-8
1.0 Micron	45	45	63	63	89	87	130	125	2-7
0.8 Micron	50	48	68	66	95	93	115	108	2-5
0.6 Micron	58	55	78	76	109	107	132	124	4-7

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 16

Estimated CBIC Pricing—North American Production Bookings**(Millicents per Gate) (Package: 84-Pin PLCC for <10K Gates; 160-Pin PQFP for 10K-29.9K; 208-Pin PQFP for ≥30K)****(Based on Utilized Gates Only; Volume: 10,000 per Year; NRE = Netlist to Prototypes)****(Includes Standard Commercial Test and Excludes Special Test)**

Gate Count Technology	0-1.99K Gates		2-4.99K Gates		5-9.99K Gates		Current Lead Time (Weeks)
	1993	1993	1993	1994	1993	1994	
CMOS							Production:
1.2 Micron	127	127	85	83	75	73	10-16
1.0 Micron	122	122	78	77	71	70	12-20
0.8 Micron	NA	NA	85	77	61	55	12-20
0.6 Micron	NA	NA	87	77	63	55	12-20
NRE Charges (\$1,000)							
CMOS							Prototypes:
1.2 Micron	30	30	33	33	41	40	5-8
1.0 Micron	40	40	45	45	48	48	6-10
0.8 Micron	49	45	50	50	57	54	5-7
0.6 Micron	NA	NA	59	59	67	63	8

(Continued)

Table 16 (Continued)

Estimated CBIC Pricing—North American Production Bookings

(Millicents per Gate) (Package: 84-Pin PLCC for <10K Gates; 160-Pin PQFP

for 10K-29.9K; 208-Pin PQFP for ≥30K)

(Based on Utilized Gates Only; Volume: 10,000 per Year; NRE = Netlist to Prototypes)

(Includes Standard Commercial Test and Excludes Special Test)

Gate Count Technology	10-19.99K Gates		20-29.99K Gates		30-59.99K Gates		60-100K Gates		Current Lead Time (Weeks)
	1993	1994	1993	1994	1993	1994	1993	1994	
CMOS									Production:
1.2 Micron	56	55	71	70	97	95	NA	NA	10-16
1.0 Micron	72	70	89	82	105	99	135	122	13-20
0.8 Micron	74	70	98	84	111	101	145	124	13-18
0.6 Micron	64	56	59	52	58	52	58	54	16-18
NRE Charges (\$1,000)									
CMOS									Prototypes:
1.2 Micron	56	55	71	70	97	95	NA	NA	5-8
1.0 Micron	72	70	89	85	107	102	130	121	6-10
0.8 Micron	74	72	89	86	108	102	130	122	6-8
0.6 Micron	85	83	102	99	124	117	150	140	8

NA = Not available

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume discount. These prices are intended for use as price guidelines.

Source: Dataquest (December 1993)

Table 17**Estimated CMOS PLD Price per Unit—North American Bookings****(Volume: 10,000 per Year; Package: PDIP or PLCC; Dollars)**

Pin Count	Speed* (ns)	1994 Q1	Q2	Q3	Q4	1994 Year	1995 Q1	Q2	Q3	Q4	1995 Year	Lead Time (Weeks)
≤20	6.1-7.5	3.90	3.90	3.75	3.75	3.83	3.45	3.25	3.10	2.98	3.20	4-10
	7.6-10.0	1.60	1.55	1.50	1.45	1.53	1.40	1.38	1.38	1.36	1.38	2-20
	10.1-14.99	1.40	1.40	1.40	1.30	1.38	1.30	1.30	1.30	1.20	1.28	4-12
	15 - <25	0.68	0.66	0.66	0.65	0.66	0.61	0.59	0.58	0.56	0.58	2-10
	> or = 25	0.66	0.66	0.65	0.64	0.65	0.60	0.57	0.55	0.55	0.57	1-10
24	6.1-7.5	3.65	3.55	3.30	3.15	3.41	3.05	3.00	2.95	2.80	2.95	1-10
	7.6-10.0	2.50	2.24	2.10	2.00	2.21	1.85	1.70	1.60	1.55	1.68	4-10
	10.1-14.99	2.40	2.40	2.40	2.40	2.40	2.20	2.20	2.00	2.00	2.10	4-12
	15 - <25	1.12	1.10	1.07	1.06	1.09	0.96	0.93	0.90	0.89	0.92	2-12
	> or = 25	0.81	0.80	0.79	0.78	0.80	0.78	0.78	0.78	0.78	0.78	1-10
24 (22V10)	6.1-7.5	9.35	8.90	8.70	8.10	8.76	7.75	7.35	7.15	6.90	7.29	2-8
	7.6-10.0	5.72	5.25	4.75	4.25	4.99	4.15	3.85	3.80	3.58	3.84	1-6
	15 - <25	3.35	3.30	3.30	3.15	3.28	3.10	3.00	2.95	2.85	2.98	2-8
	25 - <35	1.67	1.65	1.60	1.55	1.62	1.48	1.45	1.40	1.35	1.42	2-6

*Nanosecond speed is the TPD for the combinatorial device.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume price. These prices are intended as guidelines.

Source: Dataquest (December 1993)

Table 18

Estimated Long-Range CMOS PLD Price per Unit—North American Bookings
(Volume: 10,000 per Year; Package: PDIP or PLCC; Dollars)

Pin Count	Speed* (ns)	1993 Year	1994 Year	1995 Year	1996 Year	1997 Year	1998 Year
≤20	6.1-7.5	4.51	3.83	3.20	2.80	2.60	2.50
	7.6-10.0	1.90	1.53	1.38	1.36	1.36	1.35
	10.1-14.99	1.56	1.38	1.28	1.20	1.10	1.10
	15 - <25	0.76	0.66	0.58	0.56	0.58	0.60
	> or = 25	0.63	0.65	0.57	0.55	0.57	0.60
24	6.1-7.5	4.10	3.41	2.95	2.80	2.65	2.60
	7.6-10.0	2.64	2.21	1.68	1.50	1.45	1.40
	10.1-14.99	2.40	2.40	2.10	1.75	1.55	1.55
	15 - <25	1.26	1.09	0.92	0.89	0.90	0.90
	> or = 25	0.87	0.80	0.78	0.78	0.80	0.80
24 (22V10)	6.1-7.5	13.95	8.76	7.29	6.50	6.25	6.00
	7.6-10.0	6.68	4.99	3.84	3.45	3.40	3.40
	15 - <25	3.69	3.28	2.98	2.80	2.80	2.80
	25 - <35	1.85	1.62	1.42	1.35	1.35	1.45

*Nanosecond speed is the TPD for the combinatorial device.

Note: Actual negotiated market prices may vary from these prices because of manufacturer-specific factors such as quality, service, and volume price. These prices are intended as guidelines.

Source: Dataquest (December 1993)

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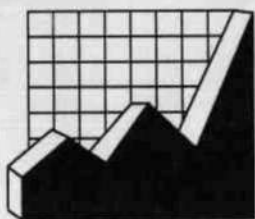
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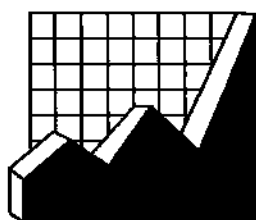
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1994 SRAM Supply Base Outlook



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1994 SRAM Supply Base Outlook

A central element to the Semiconductor Procurement service strategy for material management is for users to match system life cycles with component life cycles. This evaluation enables systems manufacturers to compare their long-term system migration plans to SRAM life cycles for the purpose of managing SRAM costs and component changes in cases where system and SRAM life cycles do not match.

This article contains two main sections. The first section uses life-cycle analysis as a guide to cost-effective procurement of SRAMs. The second section focuses on the top-ranked suppliers of SRAMs and looks at market positions, product strategies, and technology strengths of leading suppliers. These two sections support users of SRAMs in assessing which direction to take for SRAM products and suppliers over the long term.

For example, on the basis of Dataquest's final estimate of suppliers' 1992 SRAM market share, the first section assesses the product life stage as of November 1993 for fast SRAMs and slow SRAMs. Dataquest estimates that worldwide production of SRAMs will total 950 million units in 1993. The report covers fast SRAMs in densities of 64K through 1Mb, and slow SRAMs in densities of 256K through 4Mb. It also assesses the evolving supply-supplier base for these critical products as the market moves through the mid-1990s. By 1997 worldwide production of SRAMs should reach 1 billion units.

Vibrant SRAM Marketplace

A vibrant pace of technological evolution and supplier competition characterizes the SRAM business. A major reason is that high-speed MPU architectures outstrip main memory's performance. DRAM speed improvements have lagged the dramatic gains in 32-bit and 64-bit MPU speeds. This DRAM performance lag creates opportunities for suppliers of fast SRAMs, including cache memories.

The second section of this report looks at the shifting SRAM supplier base. Vertically integrated Japan-based suppliers such as Hitachi likely will retain their top SRAM ranking. Even so, the wide SRAM supplier base continues a relentless underlying shift. For example, during the early 1990s companies such as Motorola, Samsung, AT&T, and Winbond gained fast SRAM market share. Suppliers such as Cypress Semiconductor, Fujitsu, and Integrated Device Technologies (IDT) lost share. The latter companies, however, are striving for a rebound in 1993 and 1994.

Typical Life Cycles for SRAM Products

This section uses information on SRAM product life cycles as a guide to assist users in adjusting to forces affecting the marketplace over both the short and long term. We use an operating definition of fast SRAMs as SRAMs with access times at or less than 70ns. Dataquest defines slow SRAM as devices with access times of more than 70ns, including

pseudo-SRAMs (PSRAM). The approximate line of demarcation separating high-density SRAMs from low-density devices occurs at the 256K level, although next year the line should move toward the 1Mb level.

Figure 1 shows a series of curves that depict the life cycles of fast SRAMs with densities of 64K, 256K, and 1Mb, and slow SRAMs with densities of 256K, 1Mb, and 4Mb. Historic and projected unit shipment information provides the basis for this figure.

Figure 1 shows that SRAMs experience life cycles that exceed 15 years, excluding the R&D stage. Users of 64K fast SRAMs can expect a decreasing supply of parts—slightly more than 50 million units in 1994 versus nearly 70 million units for 1993. By contrast, the supply of 256K fast SRAMs should increase for the next several years. Worldwide supply of these fast parts should grow from fewer than 150 million units this year to more than 200 million units in 1994. The supply of 1Mb fast SRAMs will continue to ramp up for the next several years.

Figure 1 shows that the supply of 256K slow SRAMs—which include PSRAMs—will exceed the 400 million-unit level for 1993. The supply should decline starting next year as suppliers move to the 1Mb density. Vertically integrated Japan-based suppliers such as Hitachi, Mitsubishi, NEC, Sony, and Toshiba rank among the leading suppliers of 1Mb slow SRAMs. Vertically integrated Korean suppliers such as Hyundai and Samsung, however, are steadily migrating to the higher densities of slow SRAMs.

As shown in Figure 1, worldwide supply of 1Mb slow SRAMs should approach the 100 million-unit level this year. The 4Mb density will not approach the 100 million-unit level until 1996.

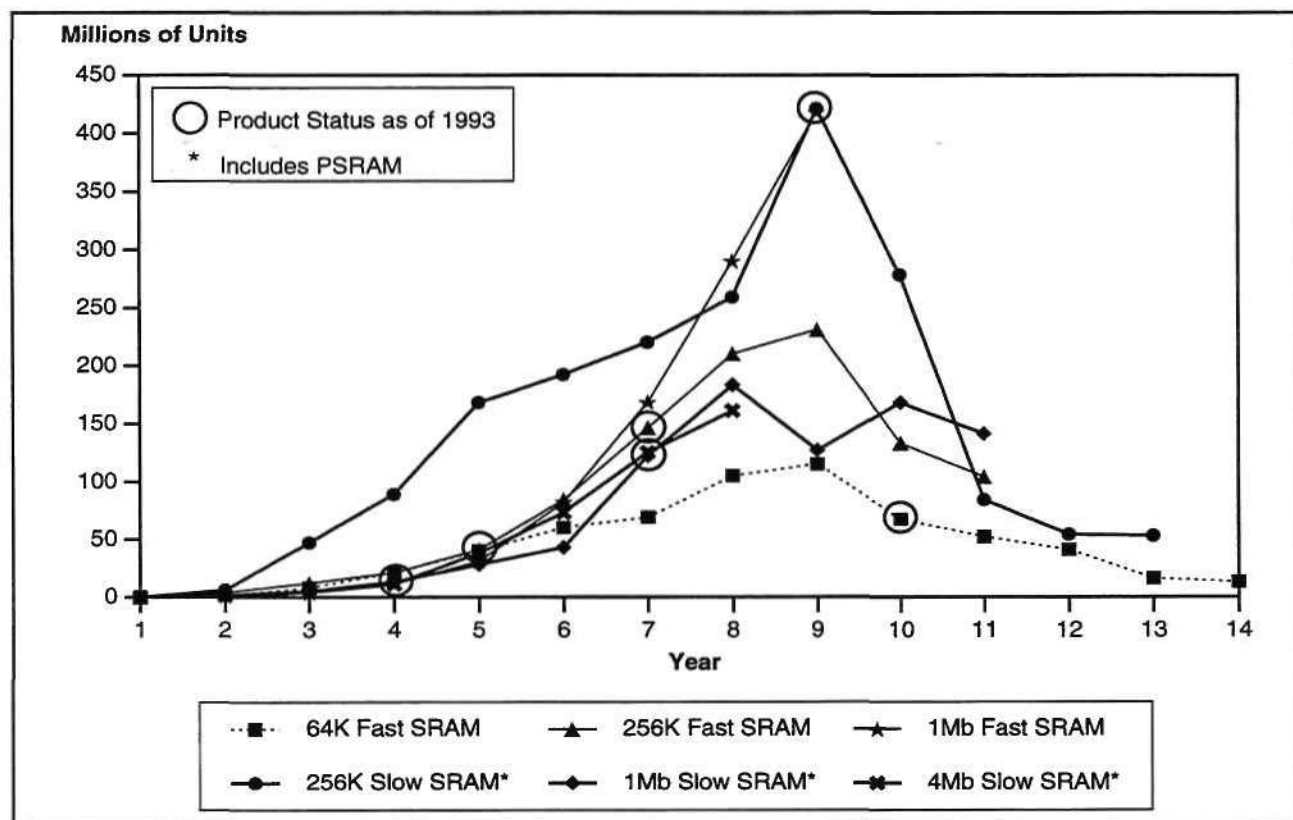
SRAM Life Cycle Stages

Figure 2 looks at the SRAM life cycle from a somewhat different perspective. It breaks each stage of the SRAM life cycle into specific time intervals. The SRAM R&D stage occurs over a several-year period.

Figure 2 positions 16K fast SRAMs and 16K slow SRAMs in the phaseout stage. The 64K slow SRAM is in the decline stage of its curve, with 1994 supply totaling less than 30 million units. The 64K fast SRAM has also moved into the decline stage of the life cycle. The x4 configuration of 64K fast SRAMs should have a somewhat longer life cycle than organizations such as the x1.

By contrast, higher-density SRAMs have life cycles that should extend well into the second half of this decade. For example, the 256K slow SRAM sits at the peak saturation stage of its life cycle. The 256K fast SRAMs continue to move toward the peak stage, which occurs in the 1994-to-1995 period. The BiCMOS process will be a key technology for fast SRAMs that operate at a sub-20ns speed.

Figure 1
SRAM Product Life Cycles, by Density (As of November 1993)



Source: Dataquest (November 1993)

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As the figure shows, 1Mb slow SRAMs and 1Mb fast SRAMs continue to move through the growth stage of their life cycles. The ramp-up for these parts has been somewhat slower than expected several years ago. The life cycle for 4Mb slow SRAMs and 4Mb fast SRAMs—which will be introduced during the next several years—should extend beyond the 1990s.

Supplier Analysis

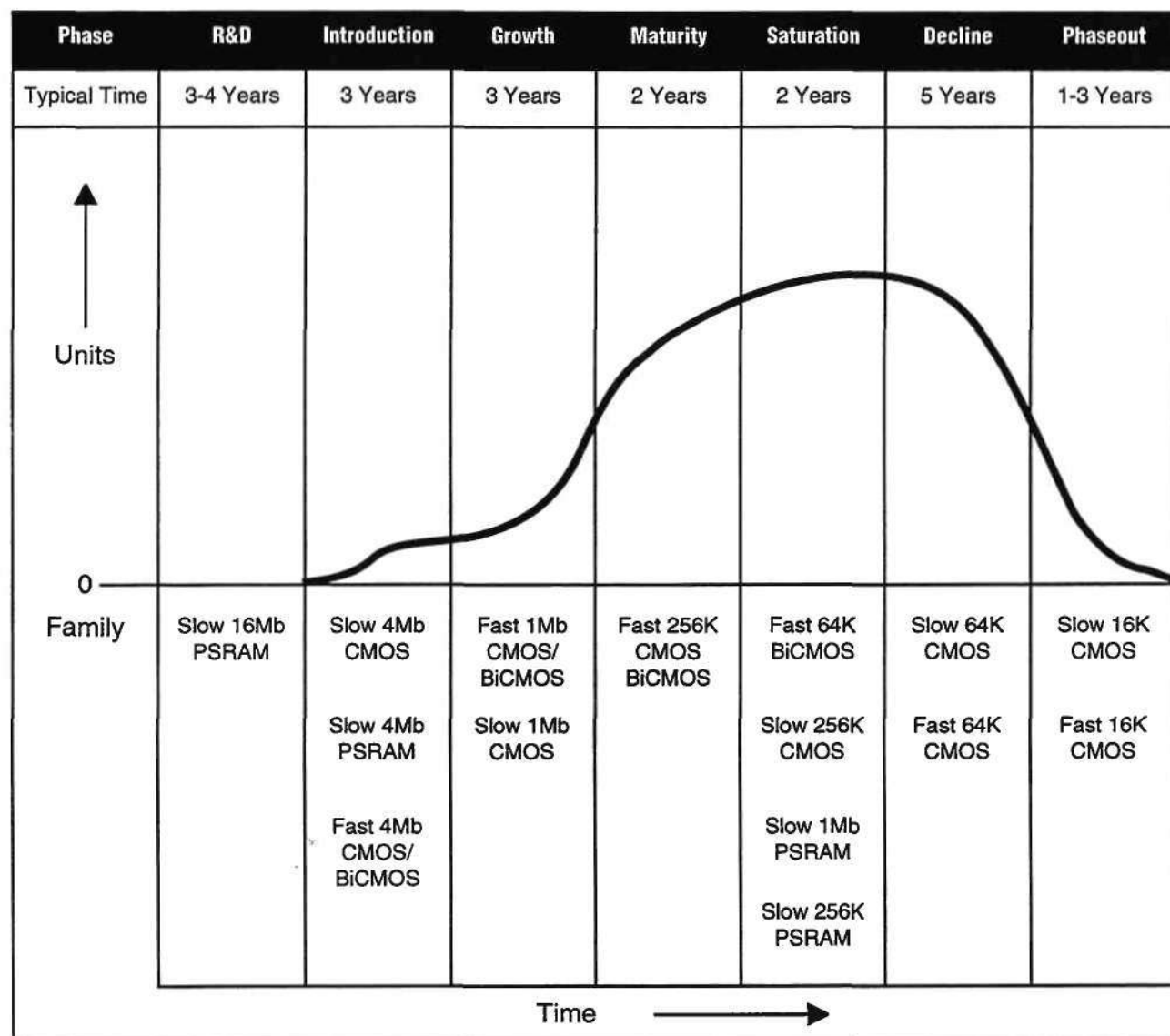
This section analyzes the strategies of the leading SRAM suppliers. This assessment covers market strategy, product positioning, and related factors. Table 1 shows Dataquest's final 1992 worldwide market share ranking for the top suppliers of MOS SRAMs.

The table shows that Japan-based suppliers of SRAMs hold 7 of the top 10 positions. Given the aggregate strength of Japan-based suppliers, users should note supplier leadership for their respective regions.

Europe

Leading SRAM suppliers in Europe, in descending order, are as follows: NEC, Hitachi, Toshiba, Motorola, Samsung, Mitsubishi, Matra MHS, Sony, Fujitsu, Cypress Semiconductor, Micron Technology, Hyundai, IDT, and SGS-Thomson.

Figure 2
SRAM Life Cycle Stages, by Density



Source: Dataquest (November 1993)

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North America

For North America, the regional ranking shows Hitachi first, followed by Motorola, Toshiba, Cypress Semiconductor, Micron Technology, Fujitsu, Samsung, NEC, Mitsubishi, Sony, IDT, and MOSEL/Vitellic and AT&T.

Asia/Pacific

For Asia/Pacific-Rest of World—which excludes Japan—the leading suppliers, in descending order, are as follows: Samsung, Hyundai, Hitachi, Motorola, Winbond Electronics, United Microelectronics, Goldstar, Fujitsu, Micron Technology, Sony, MOSEL/Vitellic, Mitsubishi, and Toshiba.

Table 1
1992 Worldwide Ranking of Top SRAM Suppliers (Based on Factory Revenue¹)

Supplier	1992 Revenue (Millions of U.S. Dollars)	1991 Market Share (%)	1992 Market Share (%)
Hitachi	494	17.4	16.4
NEC	264	9.4	8.8
Toshiba	261	9.4	8.7
Fujitsu	245	10.1	8.1
Motorola	222	5.1	7.4
Sony	179	6.7	5.9
Samsung	170	3.6	5.6
Mitsubishi	162	5.9	5.4
Sharp	123	4.2	4.1
Cypress ²	135	5.6	4.4
Micron	111	3.5	3.7
Hyundai	99	1.9	3.3
Others	549	17.2	18.2
Total	3,014	100.0	100.0

¹Factory revenue includes internal captive consumption.

²Includes Performance Semiconductor

Source: Dataquest (November 1993)

Supplier Profiles

The following profiles of leading SRAM suppliers are presented in descending order of 1992 worldwide SRAM factory revenue, which includes internal captive consumption.

Hitachi

Hitachi has ranked first in terms of worldwide SRAM factory revenue throughout this decade. It exhibits SRAM technology leadership. For example, Hitachi's strategy for fast SRAMs focuses on the leading-edge sub-20ns segment.

Hitachi is an established leader in the 256K slow SRAM market. Users should expect similar leadership from Hitachi in the 1Mb slow segment. The product portfolio will include the newly emerging 4Mb products. Hitachi—along with Toshiba—dominates the PSRAM market.

The factors that contribute to Hitachi's market strength include a vertically integrated structure, a strong product development process, and a broad SRAM product line. For example, internal consumption for Hitachi mainframes and supercomputers has driven fast SRAM product/process technology over the years. Hitachi supplies some of the fastest emitter-coupled logic I/O BiCMOS SRAMs. Despite the slowdown in its systems' businesses, Hitachi should remain at the forefront of SRAM technology. The "store" of advanced SRAM technology in Hitachi's labs will continue to generate leading-edge products during this decade. Also, as a leading

supplier of DRAMs, Hitachi has DRAM technology development that enables it to advance its leadership role among suppliers of high-density slow SRAMs including PSRAMs.

Tightly Bunched Suppliers

Hitachi holds more than 16 percent of worldwide SRAM market share based on 1992 factory revenue. The next three suppliers—NEC, Toshiba, and Fujitsu—bunch closely together with each share ranging from slightly more than 8 percent to slightly less than 9 percent. Depending on their specific product strategies, as discussed in the following sections, these suppliers should be competitive in higher-density segments including next-generation 4Mb SRAMs.

NEC Corporation

NEC is another vertically integrated Japan-based supplier; however, internal captive demand at NEC does not center on leading-edge fast SRAMs. *This supplier instead bases its strength in SRAMs on packaging technology.* For example, NEC offers a competitive line of TSOP-packaged SRAMs. NEC also supplies SRAM modules. These modules can provide a cost-effective solution for users that need a limited volume of next-generation SRAMs in today's systems.

Although NEC recently exited the PSRAM market, users of slow SRAMs can expect continuing strength from NEC in the higher-density segments of the slow SRAM business. NEC ranks among the leading suppliers of 256K and 1Mb slow SRAMs. It will make a timely migration to the 4Mb device.

Toshiba Corporation

Toshiba, a vertically integrated Japan-based manufacturer, should continue to rank as a leading player in the higher-density segments of the slow SRAM and fast SRAM markets. For example, Toshiba was first to market with a fast SRAM in the 64Kx16 configuration that targets leading-edge RISC cache applications. Another example is that Toshiba effectively shares the PSRAM market with Hitachi.

Toshiba's SRAM strategy falls somewhere between the strategies of Hitachi and NEC. It focuses somewhat more strongly on slow SRAMs than does Hitachi—but less so than NEC. By contrast, Toshiba focuses somewhat less strongly on fast SRAMs than does Hitachi—but more so than NEC.

Fujitsu Ltd.

As noted in last year's report, Fujitsu continues to confront the challenge of managing a downturn in its mainframe computer business. It confronts a related challenge of staying near the leading edge of semiconductor technologies including SRAMs.

For example, Fujitsu now lags the market leaders in the 1Mb slow SRAM segment—which soon will become the mainstream business. Fujitsu has

also experienced a loss of fast SRAM technology leadership. Reduced internal captive demand to some extent has lessened the requirement that Fujitsu maintain the leading edge in fast SRAM technology.

Dataquest expects Fujitsu to forge a remodeled long-term SRAM market strategy.

Motorola Incorporated

During the late 1980s some competitors scoffed that North America-based Motorola would never emerge as a formidable supplier of fast SRAMs or other memory products. The 1990s result is that Motorola continues a relentless advance in the worldwide memory market. During 1992 Motorola—whose product portfolio focuses exclusively on devices that operate faster than 45ns—advanced its worldwide SRAM ranking by an impressive two notches to the fifth position.

Motorola's strategy focuses on the high-density fast SRAM segment including RISC- and x86-cache applications. These leading-edge application-specific memories command higher selling prices and profit margins vis-à-vis commodity SRAMs. For example, Motorola commands a strong position in the sub-20ns segment of the 64K, 256K, and 1Mb SRAM markets. Motorola's key technology for these applications is BiCMOS.

Motorola has a two-prong fast SRAM strategy. As indicated, the first prong entails the early introduction by Motorola of leading-edge BiCMOS products that operate at speeds of 12ns and faster. The second prong involves a strict schedule on use of advanced manufacturing processes. This second prong requires that high-speed SRAMs in continuing demand migrate on schedule to Motorola's most advanced process.

The upshot of this two-prong strategy is that Motorola exerts initial speed leadership in its targeted segments of the fast SRAM business. For devices with longer life cycles, Motorola ultimately achieves manufacturing leadership.

Sony

Although Sony's worldwide ranking slipped one notch during 1992, this vertically integrated Japan-based company maintains a leadership reputation in terms of SRAM product technology and market strength. Sony's camcorder product generates internal demand for Sony SRAM. Disappointing 1992 sales of the camcorder in part accounts for the one-place drop in Sony's SRAM ranking to sixth position.

For Sony, the fast SRAM is a technology-process driver. SRAMs represent a key prong in Sony's product portfolio and long-term IC market strategy. The focus is on higher-density SRAM, which today includes fast and slow SRAMs in densities of 256K and 1Mb. Over time, Sony's strategy will shift toward leadership in the 4Mb density.

As an example of SRAM technology leadership, Sony serves as the sole source for the 128Kx9 synchronous SRAMs used in Sun Microsystems' systems. In this leading-edge application, Sony's cache SRAMs support the high-speed processing power of Texas Instruments' Viking SPARC processor.

Samsung Electronics Company Ltd.

Blank stares greeted Samsung's bold 1984 announcement that within 10 years the supplier would be a major player in the DRAM market. The world now knows the result. Samsung recently announced similar SRAM market ambitions. The most recent result is that Samsung jumped three notches to the seventh position during 1992—with a 10-year goal of worldwide market leadership.

Samsung is establishing a secure position in the slow SRAM business. For example, Samsung became the second supplier to market with a 4Mb slow SRAM. Samsung also is eyeing the relatively uncrowded PSRAM marketplace.

Last year's report on the SRAM supply base noted Samsung's intention to compete against suppliers such as Hitachi, Fujitsu, and Motorola in the higher-density segments of the fast SRAM business. Samsung has captured a share of the market for leading-edge 256K and 1Mb BiCMOS SRAMs that operate at speeds of 10ns or faster. Users should expect Samsung to stay at the forefront of the fast SRAM and slow SRAM technology curves.

Mitsubishi Electronics Corporation

Mitsubishi marks another vertically integrated Japan-based supplier. The supplier's SRAM ranking as measured in factory revenue dropped by two positions during 1992 to eighth place. As with Sony, slower demand from the company's consumer electronics division accounts in part for the SRAM market slippage. Users can expect Mitsubishi's SRAM market position to rebound when Japan's consumer electronics market recovers. Meanwhile, users of 256K and 1Mb slow SRAMs should expect strong support from Mitsubishi, given reduced demand in Japan.

Sharp

Sharp commands wider publicity in other memory products such as ROM or flash memory than SRAMs. Somewhat quietly, the vertically integrated Japan-based supplier has ranked ninth among SRAM suppliers since 1990.

Sharp's strategy focuses on fast SRAMs. For example, it recently exited the DRAM market. The strategic focus strengthens Sharp's competitiveness in fast SRAMs. For example, Sharp recently introduced a leading-edge fast SRAM organized in the 64Kx18 configuration. The supplier targets specialty SRAMs such as first-in/first-out devices and the x16 configuration. Except for the PSRAM, Sharp de-emphasizes slow SRAMs.

Cypress Semiconductor Corporation

Cypress remains a relatively small North America-based supplier that focuses on fast SRAMs as a technology-process driver. This supplier has suffered a diminished reputation in terms of leading-edge fast SRAM technology. Companywide challenges continued during 1992—resulting in a drop in ranking of two places to No. 10.

The company's performance has rebounded during 1993 to the extent that Cypress has gone into the acquisition mode. The most recent acquisition was Performance Semiconductor, which should marginally strengthen Cypress' position in the SRAM business including the sub-20ns segment.

Dataquest Perspective

The worldwide SRAM market remains vibrant and continues to grow. Vertically integrated suppliers from Korea including Samsung and Hyundai will battle vertically integrated Japan-based suppliers Hitachi, NEC, and Toshiba for a share of the slow SRAM business. The real action—in terms of technology and supply competition—however, lies in the fast SRAM business.

For example, Motorola sells only fast SRAMs yet continues to advance in SRAM worldwide rankings. Like Motorola, Samsung's SRAM market advance derives in key measure from fast SRAM technology leadership. The strategies of Fujitsu, Hitachi, Sharp, and Sony also place a strong focus on fast SRAMs. At Sony, the fast SRAM is a technology-process driver. For Sony, fast SRAMs represent a key prong in its long-term IC market strategy.

The performance lag between MPU speed and DRAM speed in part accounts for the vibrant opportunity in fast SRAMs. Suppliers such as Cypress Semiconductor, Fujitsu, and IDT, among others, commanded a wide profit margin for fast SRAMs in the 1980s. The giants of the semiconductor industry such as Motorola and Samsung now exert more influence over fast SRAM pricing—meaning more narrow profit margins. Fast SRAM suppliers such as Taiwan-based Winbond aim at regional market leadership plus a global market advance.

The SRAM supplier base will continue to shift during the next several years—perhaps dramatically. Cypress, Fujitsu, and IDT rebounded in the fast SRAM business during 1993. However, most competitors also performed well. This level of competition signals a market exit for any supplier that fails to forge a sound business plan—or else fails to execute on an otherwise good plan.

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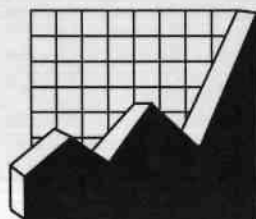
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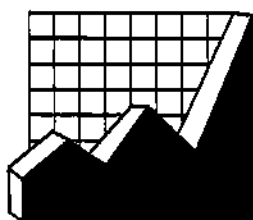
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Microprocessor Supply Base Analysis



Industry Trends

1993

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Product Code: SCBE-NA-IT-9301

Publication Date: May 24, 1993

Advanced Microprocessor Supplier and Product Update: A Fast Market Getting More Crowded

This article analyzes the developments of the advanced microprocessor market from a product- and supply-base perspective. Dataquest defines advanced microprocessors as those utilizing 16/32-bit and 32-bit I/O, both CISC and RISC processors. This category is made up primarily of the 80x86 family, the 68xxx family, and open system RISC processors (MIPS, SPARC, PowerPC, and PA-RISC). The advanced microprocessor market went through dramatic changes in 1992 and is expected to continue to evolve in 1993 and beyond. Increased competition in the x486 market, combined with continued price competition in the x386 arena, promise to make the high end of the microprocessor market an exciting environment as technology increases its rate of change for future families of processors.

This article is divided into three sections. The first section serves as a guide to cost-effective procurement of MPUs through the use of product life cycle analysis. The second section examines the strategies of the leading suppliers of advanced MPU products and technology. The third section analyzes the current and future supply base for this important semiconductor product segment.

MOS Microprocessor Product Life Cycles

This section uses life cycle information as a guide to assist users in adjusting to forces that continue to reshape the worldwide MPU marketplace.

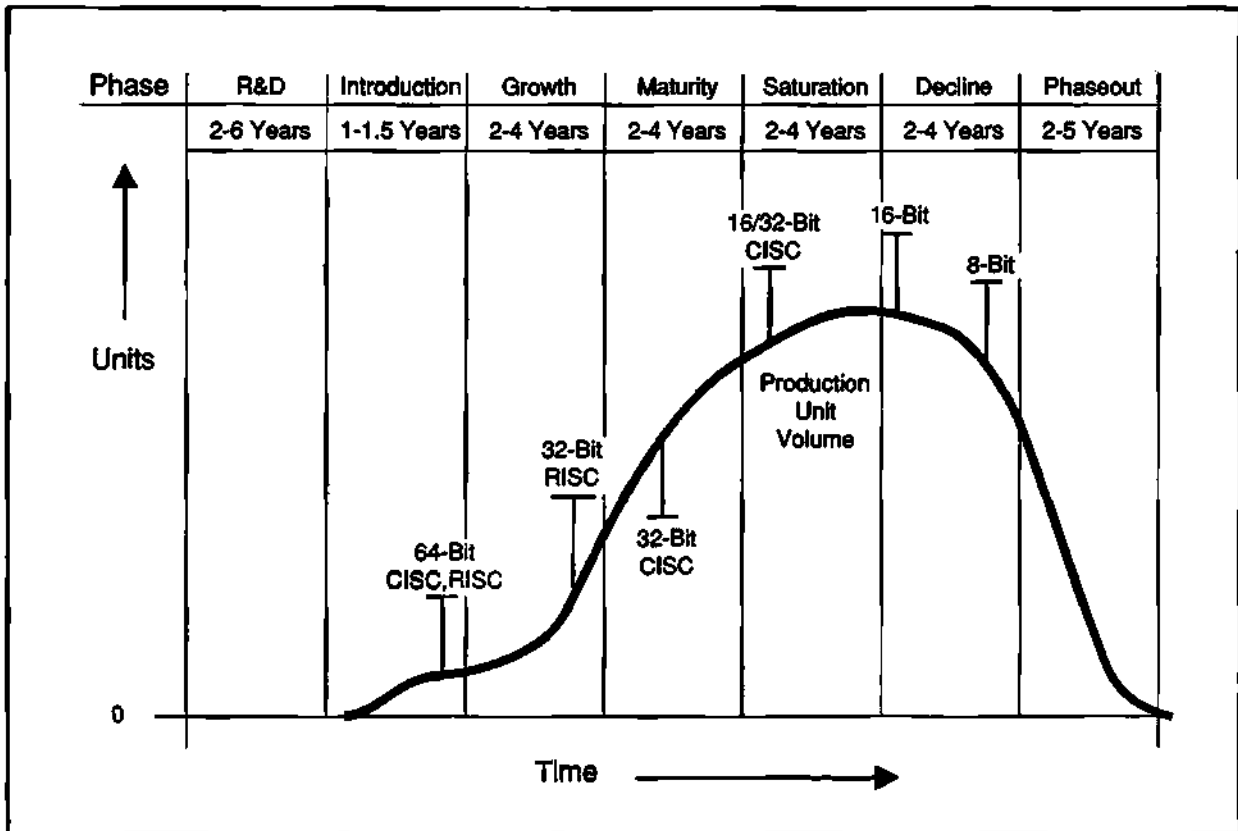
Typical Life Cycles for MPU Products

As seen in Figure 1, the complete life cycle for a microprocessor family ranges from 13 to 28 years from the initial R&D phase through obsolescence (phaseout). The typical MPU life cycle that involves production volumes (growth through decline) generally exceeds 10 years.

The lengthy R&D phase provides users a valuable opportunity to monitor a supplier's (or prospective supplier's) pace of technical achievement, legal standing where applicable, as well as its timetable for bringing a new, state-of-the-art device to market. Inquiries to Dataquest have revolved around the following leading-edge microprocessors: the Pentium, R4000, 21064 (Alpha), and the SuperSPARC. Many inquiries have also been asked about the increased competition in the traditionally sole-sourced 486 market, as Advanced Micro Devices (AMD), Cyrix, and Texas Instruments (TI) begin to enter this area.

Figure 2 highlights the product life cycle for selected CISC 32-bit MPUs through 1992 using historical unit shipment data, and shows that 1992 was a stellar year for the 386 and 486 product lines. The mature Motorola 68020 declined in unit volume, while the more advanced 68030 shipment growth compared favorably with the 32-bit x86 product

Figure 1
Microprocessor Product Life Cycle As of April 1993



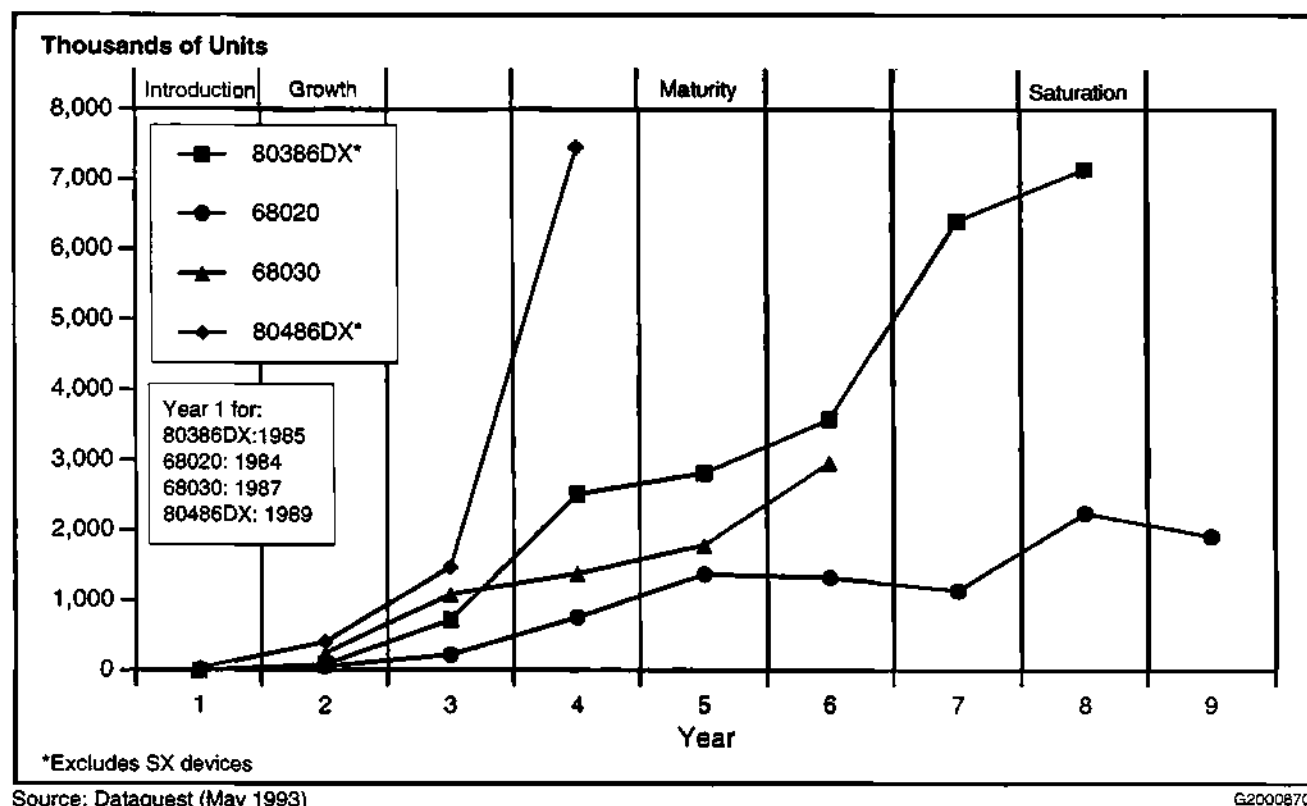
Source: Dataquest (May 1993)

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growth rates. The large jump in 80386DX shipments was primarily caused by the rapid acceptance of Windows software and increased price competition from AMD. The price erosion in the 386 market indirectly affected the Intel 80486DX price curve downward. Lower 486 prices combined with Windows demand resulted in phenomenal growth in the 486DX market and thus in large part propelled Intel to the top position in 1992 worldwide semiconductor sales. Figures 1 and 2 show that users should *not* expect market saturation for the majority of these products for the next several years. Because of the rapid acceptance of the economical 486SX device, the life cycle of the 386DX may be truncated over the next three years.

While life cycle expectation for the major microprocessor products remains consistent, the market dynamics influencing these products have expanded to include—besides speed gradation and packaging options within a product category—encroachment of advanced processors into more mature product niches (that is, the previously mentioned 486SX versus 386DX market shift). Figure 3 illustrates that, except for the 486DX device, the other four major 32-bit CISC processors shown have leveled in speed. These parts are subsequently being affected by related, cost-effective advanced products (that is, 68EC020 versus 68020, 68LC040 versus 68030, and 80486SX versus 80386DX).

Figure 2
CISC MPU Life Cycle through 1992



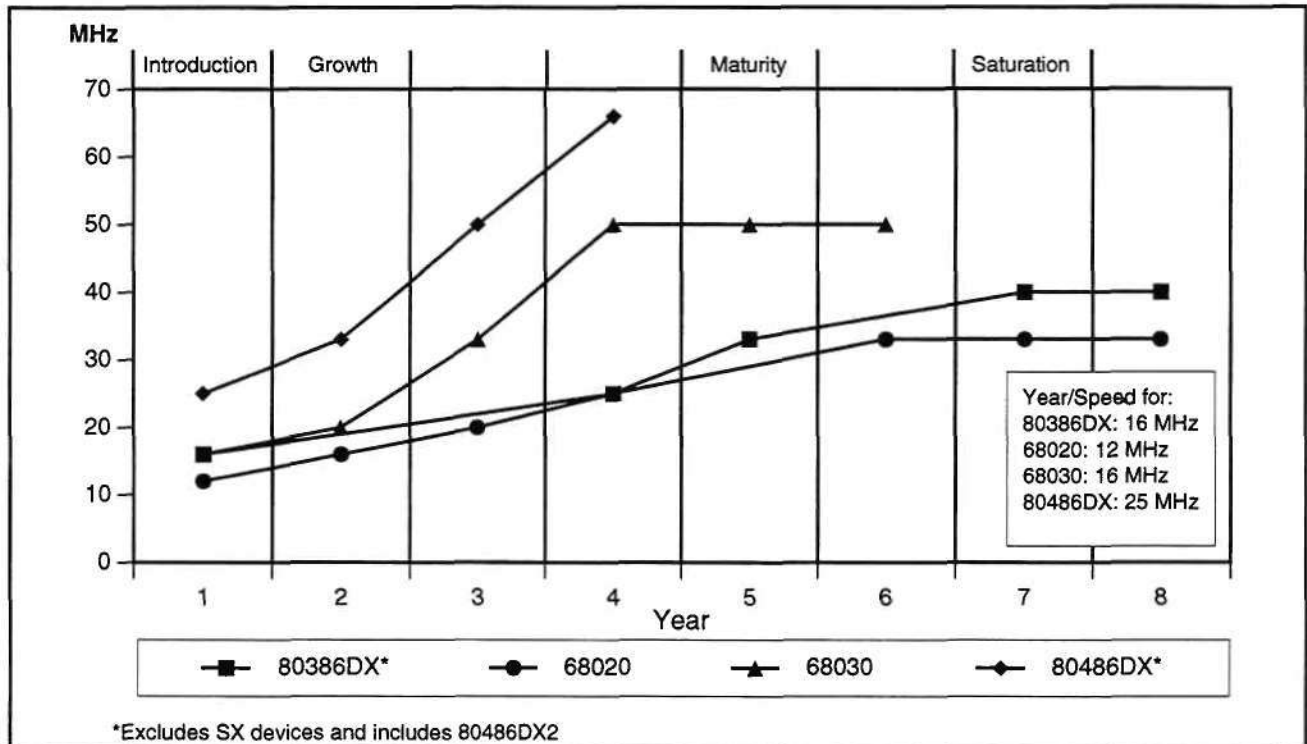
Microprocessor Supplier Analysis

This section analyzes the product and market strategies of leading suppliers of MOS microprocessors. Because of the level of interest of the Semiconductor Procurement service client base, this section focuses on suppliers that strongly serve the European and North American markets: Intel, Motorola, and AMD. Table 1 shows how Intel was propelled to the top semiconductor company in 1992 by gaining nearly 70 percent (67.7 percent) of the microprocessor market. Suppliers exceeding the average market growth rate of 35 percent in 1992 were Intel (42 percent), AMD (74 percent), and TI (137 percent).

Intel

Intel remained the No. 1 microprocessor supplier in the world in 1992. The 48 percent unit growth rate of 32-bit 80x86 devices in 1992 (\$3.5 billion) came largely at the hands of the sole-sourced 486 series of microprocessors that Intel strategically promoted throughout the year as the second wave of 32-bit x86 processors. Throughout 1992 and to the present, Intel has consistently de-emphasized its 80386 product offerings in favor of its more advanced (and sole-sourced) 80486 and Pentium product lines. Despite this de-emphasis, Intel provides a broad product offering of 80386 devices, along with a rapidly growing 80486 product

Figure 3
CISC MPU Life Cycles, by Speed



Source: Dataquest (May 1993)

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Table 1
Preliminary 1992 Worldwide Microprocessor Market Share Ranking
(Millions of Dollars)

Ranking	Company	Segment Revenue (\$)	Market Share (%)	1991-1992 % Change
1	Intel	3,549	67.7	42
2	AMD	553	10.5	74
3	Motorola	428	8.2	18
4	National	84	1.6	4
5	NEC	78	1.5	3
6	Hitachi	76	1.4	-3
7	TI	64	1.2	137
8	SGS-Thomson	49	0.9	-11
8	Toshiba	49	0.9	4
10	Cypress	40	0.8	-13
	All Others	277	5.3	-9
	Total	5,245	100.0	35

Source: Dataquest (May 1993)

line and the recently released Pentium family of superscalar devices. The Intel product portfolio for these devices includes the following:

- 80386SX: 16 MHz, 20 MHz, 25 MHz
- 80386SL: 20 MHz, 25 MHz (included on-board cache controller)
- 80386DX: 20 MHz, 25 MHz, 33 MHz:
- 80486SX: 20 MHz, 25 MHz, 33 MHz
- 80486SL: 25 MHz, 33 MHz
- 80486DX: 25 MHz, 33 MHz, 50 MHz
- 80486DX2: 50 MHz, 66 MHz (internal clock rate doubled)
- Pentium: 60 MHz, 66 MHz

Intel's response to AMD's increased market penetration into the 386 market has been to support customers when asked, but to avidly promote the advantages of its 486 products. In effect, Intel is ceding the 386 market in favor of its more powerful, diverse, and advanced 486 products. How Intel responds to the increased competition in the 486 arena anticipated later this year is yet to be seen. However, the recently released Pentium processor and potential strategic price reductions for the 486 family are competitive weapons available to Intel as needed.

Competition in the 486 market saw another player emerge (besides announced AMD and Cyrix) in 1992: IBM with its 100-MHz clock-tripled 486SX "Blue Lightning" device that is expected to ship in volume in the first half of this year. This Intel-licensed device is IBM's first attempt at marketing a microprocessor to the merchant market and may prove to be the dark horse in the 486 market share race.

Intel's Strategy Remains Consistent

The release of the next-generation CISC processor, the Pentium, on March 22 follows Intel's consistent strategy to remain the unparalleled technological leader in this market. This product pushes the boundaries of the traditional CISC world by entering an area that, to date, has only been supported by RISC-based processors. With capital and R&D expenditure exceeding \$2 billion in 1992 and similar amounts planned for the rest of the decade, Intel plans to retain its hard-earned leadership position. On the legal front, Intel is expected to consistently and aggressively protect its claimed intellectual property against future 486 competitors where applicable. Intel's successful court case in defending its 287 microcode effectively has delayed AMD's entry into the 80486 market by at least six months, possibly longer as AMD works on making a forward-engineered 486.

The higher-performance/higher-priced MPU migration strategy that Intel has made its hallmark continues to pose some risk to system users. Dataquest believes that part of Intel's marketing strategy is to strengthen its relationship with its top PC customers, thus enabling it to go after the low-end PC segment without harming its key customers and simultaneously edge out the hundreds of no-name clone vendors that

move the bulk of non-Intel processors. As the PC vendor base consolidates, another barrier to entry into the x86 market will have been erected. The continued existence of the processor enhancement slot (PES) for 80486 devices still highlights how Intel has become indirectly a competitor to even its best customers by allowing end users to upgrade their 486SX systems by going to an Intel dealer for the 486DX insertion chip rather than buying a new 486DX system from the system house.

AMD

AMD's rise to the No. 2 microprocessor supplier is primarily because of the available, affordable, and powerful Am386SX and DX devices. The same forces that benefited Intel (Windows software and competitive pricing) also helped AMD grow at almost twice the rate of Intel (74 percent versus 42 percent) and surpass Motorola in the 1992 microprocessor rankings. It goes without saying that the competitive pricing enjoyed by users would have probably not occurred without AMD's entry into this market. With the legal battles over microcode now behind AMD, the next challenge is to bring a forward-engineered 486 device to market in the shortest period. At this writing the unannounced but expected release of this part is due by the end of second quarter of 1993. Every month that passes without an alternative 486 product is foregone AMD revenue and realized Intel profits as the window of opportunity continues to shrink now that the next-generation Pentium device has been released.

AMD's focus on the 386 market, and in particular the 386SX portable segment, will allow it some short-term breathing room, but its long-term strategy in the microprocessor market hinges on its clean Am486 device and how quickly it can ramp up production once released. Defending itself in the courts against Intel is part of this market, and AMD is well versed on what areas Intel finds offensive. Assuming that legal issues will be resolved and the Am486 comes to market, the long-term advanced technology agreement with Hewlett-Packard should allow AMD to remain in the technological pack for future generations of microprocessors.

Motorola

The third-ranked microprocessor supplier in 1992 was Motorola, which based much of its growth on the 68030 device. Motorola continues to target the MPU market as a key element of its long-term strategic plans. Strategic alliances remain a key long-term factor and will play an increased role in the company's future MPU endeavors.

As seen in Figure 2, the more advanced 68030 continued to experience unit growth, while the 68020 device declined in 1992 shipments. This is a result of the near total shift of the largest single user, Apple Computer, to using 68030s in its Macintosh computer line at the expense of the mature 68020 device. The delayed introduction of the 68040 device has clouded its long-term future despite its ready availability now and high-speed offerings of the device. A low-cost variant of the 68040 without an FPU (like the 486SX) is now available targeting the low-cost and portable PC market.

The long-term outlook for the 68xxx family has a superscalar RISC-like device family called the 68060 expected to be introduced in the first quarter of 1994. This high-performance device is expected to have 2.8 million transistors, run on 3.3V, and be designed to operate up to 66 MHz.

Motorola's work on the jointly developed (with Apple and IBM) PowerPC family is proceeding on schedule, with the first device of the family due to market in mid-1993.

Microprocessor Supply Base Analysis

This section utilizes information on MPU product life cycles and suppliers to present a product-by-product evaluation of the supply base over the long term for CISC 16/32-bit, CISC 32-bit, and RISC 32-bit MPUs. This section also includes information on the global MPU fab network of key suppliers.

As the microprocessor market continues to shift from a limited to multiple-sourced market, the challenges and opportunities for procurement managers, component engineers, and system designers multiply. The approach of this section is to combine product life cycle and supplier analyses to summarize the anticipated MPU supply/supplier base from a user's perspective. The summary includes a statement on whether the user faces a favorable or critical supply base for each device. Building on prior sections, factors affecting the supply base such as supplier strategies and strategic alliances are discussed here.

Table 2 shows the size of the CISC 16/32-bit MPU market in terms of units shipped during 1992, the relative market shares of the predominant

Table 2
Supply Base for 16/32-Bit Microprocessors (1992)

Leading Products	Product's Share of Total 16/32-Bit MPU Market (%)	Suppliers' Share of Respective Product Segment (%)
68000	62.8	Motorola 84.8 Toshiba 7.2 Hitachi 4.0 SGS-Thomson 2.9 Philips 1.1
80386SX/SL	35.4	Intel 54.2 AMD 43.0 Chips & Technologies 0.3 Cyrix 1.9 TI 0.4
32000	1.8	National 100.0

Note: Total Market Size = 33.5 million units
Source: Dataquest (May 1993)

devices, and a ranking of the suppliers of these devices, including suppliers' shares in each product segment. Table 3 shows a like update for the predominant CISC and RISC 32-bit supply base.

Table 4 shows the estimated 1992 worldwide MPU process technology and fab capability by geographic location for the following major MPU suppliers: AMD, Cypress, Fujitsu, Hewlett-Packard, TI, Intel, Motorola, and NEC. The table shows that the process technology in most cases is between 0.7 and 0.8 microns.

Supply Base for 16/32-Bit MPUs

Reflecting rapid market maturity, the 16/32-bit market grew at a 14 percent rate in 1992 to reach 33.5 million units shipped.

The 68000 family still accounts for nearly two-thirds (62.8 percent) of the 16/32-bit market, and Motorola lords over 84 percent of this supply

Table 3
Supply Base for 32-Bit Microprocessors (1992)

Leading Products	Product's Share of Total 32-Bit MPU Market (%)		Suppliers' Share of Respective Product Segment (%)
80386DX	23.5	Intel	82.2
		AMD	17.8
80486SX	14.6	Intel	100.0
80486DX	24.4	Intel	100.0
68030	9.7	Motorola	100.0
68020	6.3	Motorola	100.0
80960	2.9	Intel	100.0
AM29000	2.4	AMD	100.0
32X32	2.3	National	100.0
R3000/R4000	1.1	Performance	19.0
		IDT	29.3
		NEC	35.2
		LSI	6.5
		Siemens	4.4
		Toshiba	4.4
		Bit	1.2
SPARC	0.9	Cypress	24.6
		LSI	20.5
		Fujitsu	30.7
		Weitek	7.8
		TI	16.4
Others	11.9		

Note: Total Market Size = 30.5 million units

Source: Dataquest (May 1993)

Table 4
Estimated Worldwide MPU Process Technology and Production Fab Capacity

	Intel	Motorola	AMD	Fujitsu	TI	Cypress	NEC	HP
Process	0.8 Micron CMOS	0.8 Micron CMOS	0.7 Micron CMOS	0.7 Micron CMOS	0.8 Micron CMOS	1.2 Micron CMOS	0.8 Micron CMOS	0.8 Micron CMOS
Geographic Distribution of Production and Pilot Lines by Region of the World								
Facilities in Production or Slated to Begin Operation during 1992								
Number of Wafer Fabrication Lines								
North America	6	5	3		4	2	1	2
Europe	1	2			1		1	
Japan		1		2	2		13	
Asia/Pacific-Rest of World	1 ¹		1 ²					
Total	8	8	3	2	7	2	15	2
Geographic Distribution of Estimated Clean Room Space (Square Feet)								
North America	232,000	130,700	80,703		25,000	28,000	40,000	40,000
Europe	50,000	59,600					19,500	
Japan		23,800		56,500 ³			372,935 ³	
Asia/Pacific-Rest of World	24,000 ¹		40,000 ²					

¹ Intel Israel

² Fab line available to AMD through foundry relationship with TSMC, Taiwan

³ Clean room square footage not available for each line

Source: Dataquest (May 1993)

base. The 80386SX/SL product family accounts for 35.4 percent of this market segment, losing 1.4 percent of market share, compared with 1991. AMD grabbed nearly half (43 percent) of this market, up from the 13 percent held in 1991, all at former monopolist Intel's expense. Intel now has less than 55 percent (54.2 percent) of this segment and is likely to cede more of it to competition as it sets its sights on the 486 and Pentium markets. Three new players entered the x386SX/SL market in 1992: Cyrix, Chips & Technologies (C&T), and TI. Besides C&T, which has since exited this segment, both Cyrix and TI have shown that they plan to provide abundant levels of their product beginning in 1993. National Semiconductor now holds less than 2 percent (1.8 percent) of the 16/32-bit market with its sole-sourced 32000 part.

The 68000 Family Takes a Larger Share of a Maturing Market

Although users of the 68000 family of processors can still expect a long life cycle for these devices, the phaseout of the 68008 and 68010 devices in favor of the 68EC000 product will be completed in 1993. Motorola continues to be the predominant supplier of this family of products and can be relied on for long-term support. The other suppliers of 68000 parts, Toshiba, Hitachi, SGS-Thomson, and Philips (Signetics), continue to provide support to a lesser extent.

Pyrrhic Victory? AMD Rapidly Gains Share of a Rapidly Shrinking Target Market

Users of 80386SX devices can expect increased support from AMD, but overall shipments for these devices peaked in 1992 and Dataquest forecasts declining growth for this processor family to begin this year. The 386SL/SC product offerings are expected to continue to grow through 1996, supporting portable market growth. Supplies of 386SX/SL parts from newcomers Cyrix and TI are expected, but to date limited shipments from these suppliers have hindered their market acceptance.

Intel plans to lose share in this market and will selectively support user demand for 386SL/SC business as it strategically migrates customers to its more advanced product offerings. Despite Intel's de-emphasis of the 386xx product family, there is adequate fab capacity among AMD, TI/Cyrix, and Intel to meet user needs through 1994. The life cycle of most 386SX/SL/SC devices is expected to continue through 1996, with the slower (sub-20-MHz) 386SX devices being the first products to be phased out beginning in the 1995 to 1996 time frame. As a result of multiple sourcing, the life cycle of the 386SX should follow historic patterns, as shown in Figure 1.

Supply Base for 32-Bit MOS Microprocessors

Table 3 shows the market size and predominant suppliers of the 32-bit RISC and CISC MPUs in 1992. Unit shipments of 32-bit MPUs grew a phenomenal 103.7 percent over 1991, rising to a level of 30.5 million units. As indicated in Figures 2 and 3, MPUs such as the 80486DX and 68030 should have life cycles that extend to the end of this decade, although slower-speed versions likely will end by 1995.

Intel Continues to Dominate the 486 Market

As a result of the ruling on April 15, 1993 calling for another trial regarding the copyright of 80287 microcode, Intel no longer is the sole source for the 80486 device. This situation is expected to change further when AMD and Cyrix introduce their forward-engineered 486 offerings. The 386 arena is rapidly becoming a competitive market as AMD, Cyrix, and newcomer IBM all vie for portions of the market that Intel is openly de-emphasizing. AMD's delayed entry into the 486 market is providing Intel with windfall profits that would not likely have been realized in a more competitive environment.

Under current market and legal conditions, the 386DX/486 supply base outlook remains favorable for users. Users should be aware that the U.S. Federal Trade Commission is still investigating Intel's market activities concerning past "restraint of trade" accusations made by AMD. Anticipated strong growth in 80486DX/SX shipments this year should push this family's unit volume over the 386 product family.

Outlook Unclear for Other 80X86 Market Suppliers

Although Cyrix, TI, and IBM have now joined AMD as contenders in the 386DX/486 market, it remains unclear how well Intel customers will accept its offerings. While most users of Intel products are satisfied with levels of support and product quality, many are exploring alternative sources of 386/486 parts on economic and philosophical grounds. Apart from Intel-licensed IBM, the legal battle is not over for those companies wanting a share of the Intel 32-bit MPU pie. It remains to be seen how the market will sort out the emerging competitive playing field, but it is assured that, if and when legal competition heats up, pricing is sure to decline at a faster than historical rate.

The Pentium Is Unveiled—At Last

On March 22, the long-awaited successor to the 80486 was announced to much acclaim. With 3.1 million transistors, speeds of 60 and 66 MHz, and a rating of 64.5 SPECint running at 66 MHz, this 64-bit CISC processor compares favorably with many of today's RISC workstation processors. Although technically impressive, the Pentium is not without its shortcomings, two of which are heat dissipation and interfacing with the high-speed Pentium bus. It is available to a core of select customers, it is expected that volume shipments of this part will be closely orchestrated as the level of 80486 competition grows. Initial prices for the Pentium (still unannounced at press time) are expected to range from \$800 to \$1,000.

Motorola Continues to Embed Its Product and Focus on Future Alliance Business

Table 3 shows that Motorola 68020 and 68030 devices account for only 16 percent of all 32-bit MPU shipments in 1992. While still substantial, this level of market penetration has been eroding for the past two years,

when Motorola held a like 23 percent in 1991 and 27 percent in 1990. Motorola's strategy to shift to embedded applications continues for its 680X0 families while increased focus is put on developing a market for its jointly created PowerPC RISC product family. Users of Motorola's 68020, 68030, and 68040 product families should anticipate continued support that will result in traditional lengthy life cycles for these parts.

Motorola continues to emphasize the high-performance embedded application market for the 68EC/LCXXX product families, as it plans to migrate many of the current 68000 applications to 68EC020 devices. The 683XX family is the fastest growing Motorola product family targeting hand-held instrument applications, where its fully static MPU and integrated I/O are strong attributes.

The strategy for the 68040 device family continues to evolve with market demands that hold some risk for users of these devices. The target market for this family, workstations, has shifted overall demand to other varied processor solutions (primarily RISC-based). The 68LC040 targets medium-powered PC applications not requiring an FPU, while the 68EC040 aims to meet high-performance embedded applications that have not yet fully materialized.

Motorola's long-term focus on the RISC market hinges on the PowerPC family jointly developing with IBM and Apple Computer. Waning market acceptance of the 88XXX RISC family puts long-term clouds over this product's future.

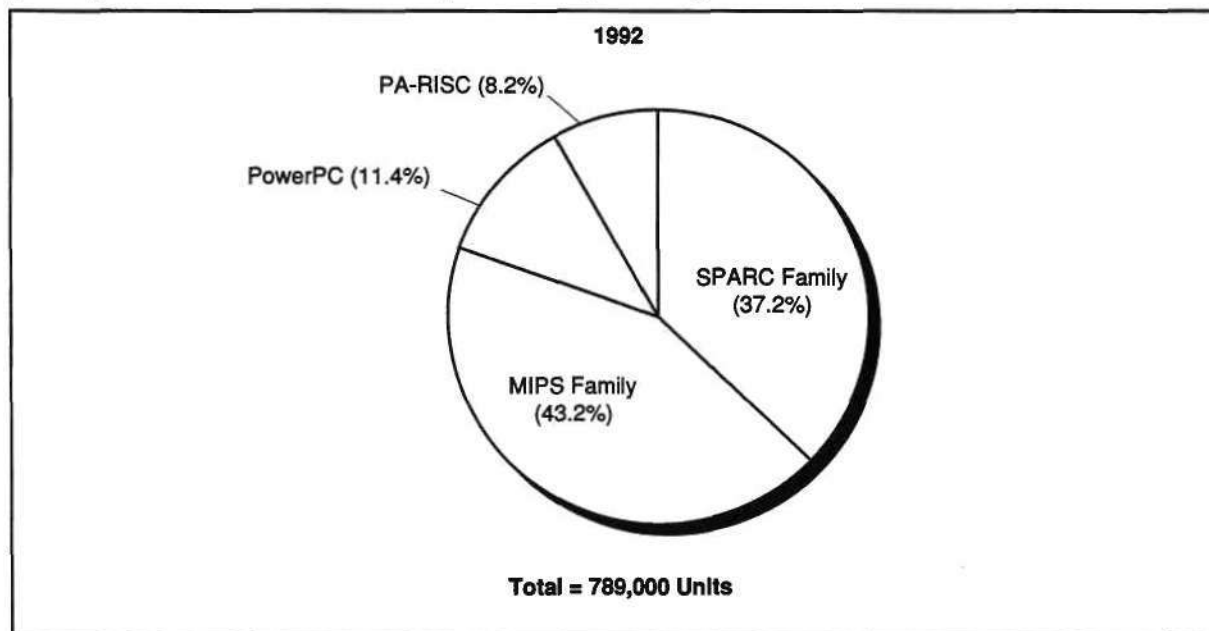
Open System RISC Processors

In terms of Dataquest's open system RISC processor segmentation, the discussion here will center on the SPARC, MIPS, PowerPC, and PA-RISC families, with a brief update on Digital Equipment's Alpha processor. These RISC processors have received the most attention from SPS clients and therefore will be the focus of this segment. This class is defined as RISC-based microprocessors focused primarily on computing platforms (primarily workstations and PCs).

Although the open system RISC market accounted for only 2.6 percent of all 32-bit MPU shipments in 1992, this segment of the MPU market is setting the pace for competition in the computer systems marketplace.

Figure 4 shows the MIPS processor family with 43.2 percent of this market, the SPARC family with 37.2 percent, and the to-date captive PowerPC and PA-RISC families rounding out the segment with 19.6 percent combined. Each segment represents a major industry alliance aimed at the future mainstream/high-volume desktop market. As seen in Figure 5, the two primary families, MIPS and SPARC, each have their own exclusive list of suppliers, with the exception of LSI Logic, which supplies both parts.

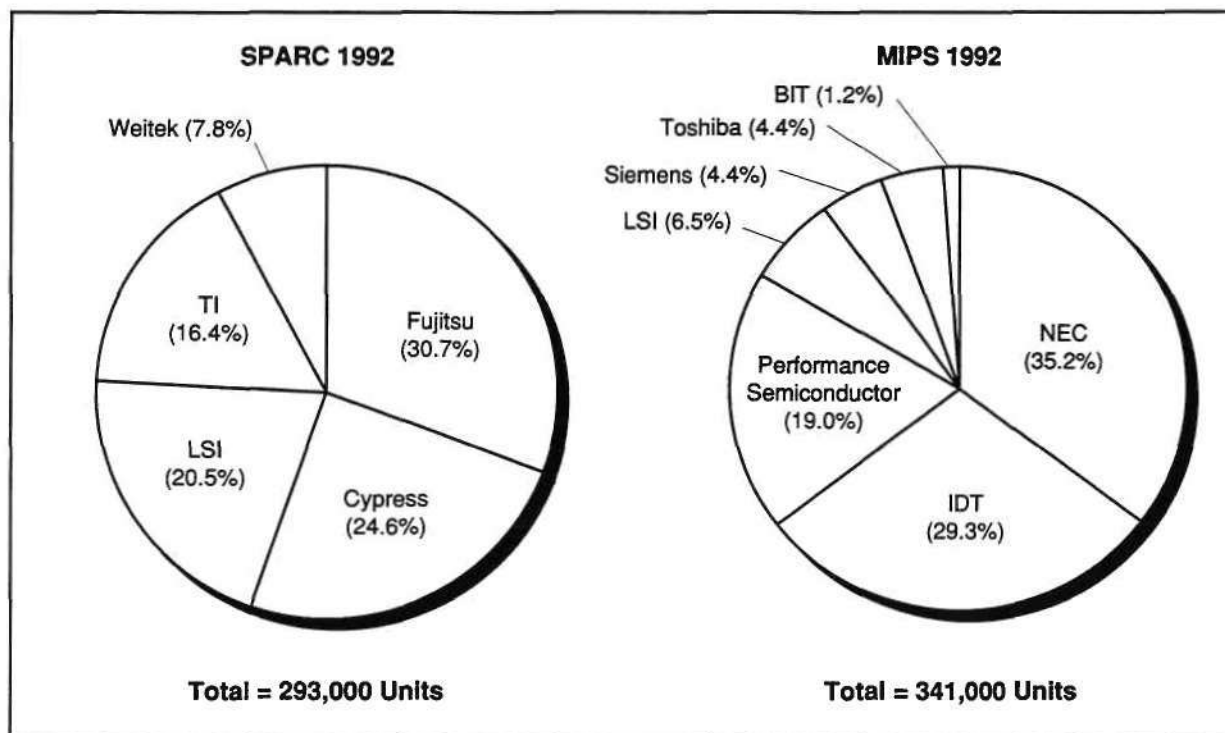
Figure 4
Open Systems RISC MPU Shipments, by Family



Source: Dataquest (May 1993)

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Figure 5
Preliminary 1992 RISC Market Share



Source: Dataquest (May 1993)

G3000297

MIPS Family

Shipments of MIPS architecture processors grew by 49.6 percent in 1992, despite the collapse of the ACE initiative designed to make the MIPS line the de facto RISC platform standard. Silicon Graphics is now the lone large computer user of this product, with much of the other growth coming from embedded applications. The more significant announcements that affected the MIPS camp in 1992 include the following:

- Compaq and Zenith withdrew from the ACE initiative.
- Silicon Graphics acquired MIPS Computer.
- Digital Equipment lost as MIPS' long-term supporter and customer as it focused on its own RISC processor, the Alpha.
- Shipments of the R4000 started, one of the fastest integer-performance single chip microprocessors to date.
- The R4400 was announced, successor to the R4000 with 32K of cache, internal speeds of 150 MHz, and estimated performance of 113 SPECmarks.

Dramatic developments such as these often mark the initial phases of an emerging market not yet settled on a platform standard. Although the MIPS architecture appears heading to become a strong one-company processor (Silicon Graphics), the embedded applications for this market and the solid group of suppliers for this family leave it as a leading-edge RISC alternative.

SPARC Family

The SPARC family of processors actually declined by 3 percent in 1992, primarily because it is primarily tied to the growth of Sun Microsystems. The main strength of the SPARC processor is proving to be also its largest weakness. The predominant growth engine for SPARC's success has been closely linked with the success of SPARC's designer, Sun. Primarily because of Sun's intense marketing, pricing, and channel dominance of the SPARC-based system market, efforts to convince other workstation companies to adapt the SPARC engine have not to date been successful. Compounding the situation is the proprietary nature of each supplier's SPARC offering, with no current second sourcing (that is, lack of price competition or availability protection). Dataquest expects this slow/no-growth trend to continue for the SPARC line, as it grows around Sun's business and the Solaris operating system.

PowerPC Family

A critical part of Motorola's long-term future in supplying the computer industry with microprocessors involves the PowerPC alliance with Apple and IBM. An outgrowth of IBM's RS/6000 POWER architecture, the joint development and separate manufacture by IBM and Motorola of this RISC MPU family is designed to meet the market needs of workstations, PCs, notebooks, and servers. The first single-chip version of the device (601) to be released this year will be a slight improvement over

the existing multichip version. In 1994, this new architecture will be offered to the merchant market in three versions, as follows:

- 603: Optimizes power/performance, targeting notebook/entry-level systems. Price: \$100.
- 604: Optimizes power/performance targeting the workstation desktop. Price: \$400.
- 620: Maximizes all performance in multiprocessing systems and servers. Price: \$900.

To date, the alliance is meeting or beating its development schedules both for hardware and software and should provide these parts to market as planned.

PA-RISC Family

First developed by HP in 1987, the Precision Architecture RISC (PA-RISC) now has gone through two iterations and was first seen in the market in its advanced VLSI version in 1991 in the HP 700 series of workstations running at 66 MHz and 76 SPECmarks. Lower- and higher-speed versions of the PA-RISC processor were introduced in 1992. Dataquest expects the PA-RISC architecture to be extended both upward and downward because HP plans to introduce entry-level systems (running Windows NT) and embedded applications. HP continues to quietly grow this market. Easing sole-source fears, in addition to HP, are Hitachi and Samsung, other suppliers of the PA-RISC processor.

Alpha Family

The Alpha family processor was developed by Digital primarily because of the lack of dramatic performance increases expected from the MIPS processor camp. Using expertise gained in designing uVAX chips, the Alpha represents the most recent RISC architecture, avoiding most of the early architectural mistakes made with other RISC families. The Alpha has been heavily promoted since the fourth quarter of 1992 and was recently second-sourced by Mitsubishi. Alpha's key strengths are very high performance (more than 100 SPECmarks at 133 to 150 MHz), support from Windows NT, and Digital's strong sales support. Digital plans to ship the following three versions of the Alpha by the end of this year:

- 21064: High performance with 120-plus SPECmarks. Price: \$800.
- 21066: Price/performance version with 80-plus SPECmarks. Price: \$400.
- 21068: Low-end version with 40 SPECmarks. Price: \$100.

The sourcing alliance with Mitsubishi is expected to be rounded out by a European partner that will be announced later this year.

Dataquest Perspective

The advanced microprocessor market continues to evolve into a more differentiated, multisourced arena where proprietary architectures are making inroads to long-existing market strongholds. It is expected that, with software advances such as Windows NT, many issues involving MPU hardware will become nonissues. End users will look to ease of use, speed, and price as differentiators in future systems.

Growth of the Intel-based X86 market will continue to expand, and Intel is expected to keep at least one generation of processor ahead of its competition. AMD's growth in the microprocessor market is heavily tied to the whims of the 386/486 market and how quickly it can introduce its version of the 486 processor. Motorola's future in the processor marketplace is solidly based, with a good mix of embedded applications, CISC system growth (linked to Apple), and future RISC opportunities with the PowerPC architecture. IBM's Blue Lightning (the Intel-licensed version of the 80386 with an internal trebled clock running at 100 MHz) recently was announced and will soon be seen in the market. Cyrix and TI both plan strong growth in the 386/486 arena with their forward-engineered parts and should provide good customer support at competitive prices.

The open systems RISC arena is fast becoming a one-processor/one-system company market as consortia fail to meet the needs of all members in a timely fashion. Breakaway proprietary processors solving particular technical problems continue to offer differentiation to users at the current expense of software flexibility. Software advances in this market that will make the transfer of other applications is expected to help this high-performance segment of the industry the most. As the distinction between RISC and CISC processors begins to blur because of advances in hardware and software design, the silicon playing field that has long favored semiconductor companies is significantly being leveled.

By Mark Giudici

For More Information...

Mark Giudici, Director/Principal Analyst(408) 437-8258
Via fax.....(408) 437-0292

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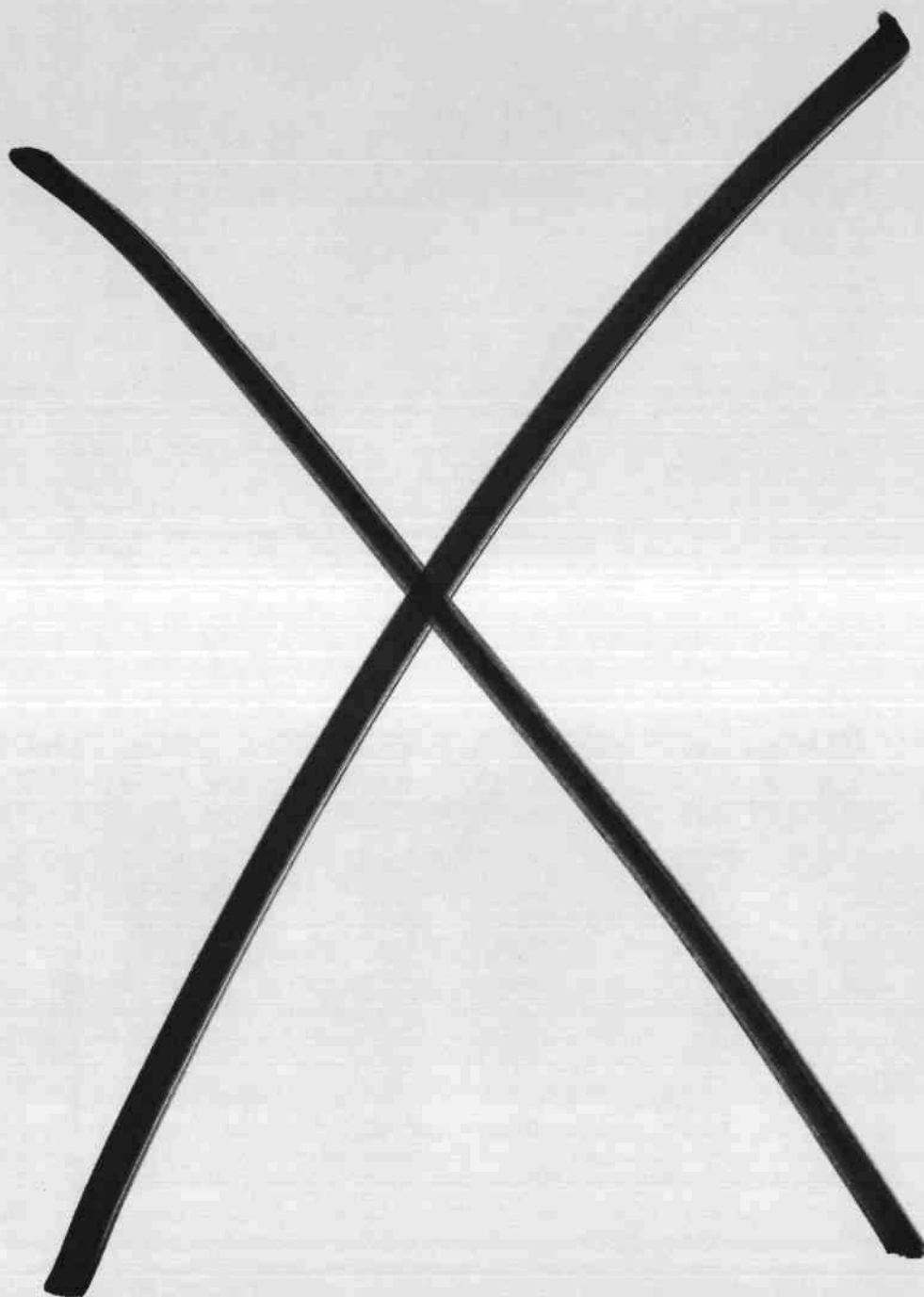
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Representative Agencies in
Bangkok, Hong Kong,
Kronberg, North Sydney,
Singapore, Taipei, and Tel Aviv



Dataquest®

DUNS: 04-863-4059

DATE PRINTED:
JUL 23 1993

SUMMARY

ADVANCED MICRO DEVICES, INC

BOX/DRAWER 3453
901 THOMPSON PLACE
SUNNYVALE CA 94086-0000
TEL: (408) 732-2400

CONTROL	1969
SALES F	\$1,514,489,000
NET WORTH F	\$1,046,740,000
EMPLOYS	11,550 TOTAL
	3,106 HERE

CHIEF EXECUTIVE: W J SANDERS III, CHB

PRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUITS

SPECIAL EVENTS

07/06/93

EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended June 27, 1993 are as follows: sales of \$816,525,000 and net income (loss) of \$125,804,000 compared to sales of \$757,588,000 and net income (loss) of \$126,347,000 for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 4 < 5 > 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending DEC, 1992 are Up by 23.5%.
- Net worth for the Fiscal year ending DEC, 1992 is Up by 33.6%.
- Average Payments are 19 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 12/27/92 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Jose, CA.
- Under present management control 24 years.

Supplier Evaluation

Dun & Bradstreet
Information Services

ADVANCED MICRO DEVICES, INC

PAGE 2 OF 5

SUBSCRIBER:

FINANCIAL PROFILE

(Based On An Audited Fiscal Consolidated Statement Dated Dec. 27, 1992.)

The Financial Appraisal Ranking of the Supplier = 2
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	23.4	2.1	1.6	95.6	38.3
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	1	3	2	3	2

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

OPERATION

07/19/93

Manufactures complex monolithic integrated circuits. Terms are net 30 days. Has 1,000 accounts. Sells to original equipment manufacturers of computers and communication and instrumentation equipment. Territory: United States (73% of 1992 net sales), Europe (18%) and Asia (9%).

Nonseasonal.

EMPLOYEES: 11,550. 3,106 employed here.

FACILITIES: Owns 262,000 sq. ft. in one story concrete building in good condition. Premises neat.

LOCATION: Industrial section on side street.

BRANCHES: The company's principal engineering, manufacturing and administrative facilities as of Dec 27 1992 comprised approximately 1.8 million square feet, located in Santa Clara County, CA and in Austin, TX, over 1.5 million square feet of which were owned by the corporation. The company owned or leased facilities containing approximately 698,000 square feet for its operations in Malaysia, Singapore and Thailand. The company also holds 82 acres of land in the Republic of Ireland, and currently has an equity interest in 61 acres of land in Albuquerque, NM. As of Dec 27 1992, the company maintained 34 sales offices in the United States and 17 sales offices in Asia and Europe for its direct sales force. In late 1992, the company entered into certain operating leases and an arrangement for the purchase of certain property containing a building with approximately 318,000 square feet, located on 45.6 acres of land in Sunnyvale, CA, which the company intends to utilize for its corporate sales, marketing and administrative offices upon completion of alterations to the building in 1994.

SUBSIDIARIES: As of Dec 27 1992, the company identified 21 foreign and domestic, direct and indirect, subsidiaries which are engaged in the company's consolidated operations. Intercompany relations consist of merchandise transactions. A list of these subsidiaries is on file at the Orange, CA, Dun & Bradstreet office.

Standard Industrial Classification (SIC) Summary:
3674 00 00 Semiconductors and related devices

HISTORY

07/19/93

W J SANDERS III, CHB-CEO+

ANTHONY B HOLBROOK, V CHB-CHIEF

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Supplier Evaluation

Dun & Bradstreet
Information Services

AMERICAN MICRO DEVICES, INC
OF 5

SUBSCRIBER:

RICHARD PREVITE, PRES-COO+

MARVIN BURKETT, SR V PRES-CFO-
TREAS+

GENE CONNER, SR V PRES-OPERATIONS

STEPHEN ZELENCIK, SR V PRES-
CHIEF MARKETING EXECUTIVE+

DIRECTOR(S): The officers identified by (+) and Charles M Blalack, Dr
R Gene Brown and Joe L Roby.

TECHNICAL OFFICER+
THOMAS W ARMSTRONG, V PRES-GEN
COUNSEL-SEC
LARRY R CARTER, V PRES-CORP
CONTROLLER
STANLEY WINVICK, V PRES-HUMAN
RESOURCES

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 05/01/1969
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 250,000,000
PAR VALUE-COMMON: \$0.0100
AUTH SHARES-PREF: 1,000,000
PAR VALUE-PREF: \$0.1000

ISSUED CAPITAL STOCK: 88,225,587 common shares and 345,000
serial preferred shares on Dec 27 1992.

Business started 1969 by W J Sanders III.

BACKGROUND/CONTROL: This is a publicly held company. Shares are
listed on the New York Stock Exchange under the symbol "AMD". At Dec
27 1992, there were 11,395 shareholders of record. Those shareholders
identified by the company as owning beneficially over 5% of the
outstanding shares as of Feb 28 1993 were FMR Corp (Fidelity
Investments), 82 Devonshire Street, Boston, MA with 12.1% and The
Capital Group, Inc, 333 South Hope Street, Los Angeles, CA with 12.1%.
The officers and directors as a group beneficially owned 3%.

RECENT ACQUISITIONS/DISPOSITIONS: On Aug 13 1987, the company
acquired all of the common stock of Monolithic Memories, Inc for
19,326,507 shares of the company's common stock.

During 1990, the company acquired a 21% interest in Xilinx, Inc.
At Dec 30 1990, the company's carrying value of the Xilinx, Inc
investment was \$37.3 million and the estimated market value was \$64.4
million. In Dec 1991, the company sold 3.5 million shares of Xilinx,
Inc stock resulting in proceeds of \$84 million, reducing its interest
in Xilinx, Inc to 5.6% of its outstanding shares.

During the first quarter of 1990, the company consummated an
agreement with Sony USA providing for a technology transfer to the
company and for the sale of the company's manufacturing facility in
San Antonio, TX for \$55 million.

MANAGEMENT BACKGROUND

SANDERS born 1936. University of Illinois, BSEE. 1961-69
Fairchild Camera & Instrument Corp, Mountain View, CA, sales manager
and director of marketing. 1959-61 sales engineer for Motorola
Semiconductor, Los Angeles, CA. 1958-59 Douglas Aircraft Co, circuit
design engineer, Los Angeles, CA. Active here since 1969.

PREVITE born 1935. San Jose State University, BS, MA. 1956-61 U
S Army. 1961-69 Sierra Electronic Corp, Menlo Park, CA, controller.
1969 came here.

HOLBROOK born 1939. University of California at Los Angeles,
BSEE; Stanford University, MSEE. 1970-73 Computer Micro Technology,
Sunnyvale, CA, vice president-operations. 1967-70 Fairchild Camera &
Instrument Corp, Mountain View, CA, engineer and manager. 1964-67
Lockheed Missiles & Space, Sunnyvale, CA, engineer. 1959-63
University of California, Los Angeles, BS-english; 1966 MSEE, Stanford
University. Active here since 1973.

CARTER born 1943. 1967-87 Motorola Inc, lastly vice president
and controller, MOS Group. 1987-88 SGS-Thomson Microelectronics, vice
president finance & administration. 1988-92 V L S I Technology Inc,
lastly as vice president, chief financial officer, secretary and
treasurer. Active here since 1992.

SUBSCRIBER:

CONNER born 1944. Came here in 1969. Prior to 1969, college; MS-electrical engineering and BS-physics, Stanford University.
ARMSTRONG born 1940. Southern Methodist University, BBA, LLB. 1973-79 partner in the Washington, DC law firm of Sullivan & Worcester. 1979-83 Schlumberger Ltd. Joined subject 1983.
WINVICK born 1939. San Jose State University, BS, MBA. 1966-70 International Business Machines Corporation. 1970-80 Syntex Pharmaceutical, vice president-personnel. Joined subject 1980.
ZELENCIK born 1935. Purdue University, BSEE. Came here 1970. 1960-70 Fairchild Camera & Instrument Corp, Mountain View, CA, sales manager. 1955-60 college; graduated from Purdue University, BSEE.
BURKETT born 1942. University of Arizona, BS, MBA. Came here in 1972.

-----OTHER OFFICERS-----
Other vice presidents are as follows: Benjamin M Anixter, Gary Ashcraft, Frank Barone, Donald M Brettner, W Curtis Francis, Clive Ghest, Gary O Heerssen, Larry Hollatz, Mark Koretz, Robert M Krueger, Gerald A Lynch, Walid Maghribi, W Richard Marz, Robert McConnell, Giuliano Meroni, Douglas Mincey, K C Murphy, Daryl Ostrander, Joseph Proctor, Douglas Ritchie, Fred Roeder, William Siegle, Terryll R Smith, Robert S Turnbull and Susan Tanenbaum Daniel.

-----OTHER DIRECTORS-----
BLALACK. Chairman of the board and chief executive officer of Blalack-Loop Incorporated.
BROWN. Private investor and managing director of Putnam, Hayes and Bartlett, Inc, an economic consulting firm.
ROBY. Managing director of investment banking group of Donaldson, Lufkin & Jenrette, Inc.
OTHER RECENT EVENTS: In Jul 1992, the company and Fujitsu Ltd announced a major strategic alliance for the design, development, manufacture and marketing of non-volatile memory products based on 0.5-micron and smaller geometries. The alliance includes a manufacturing joint venture in Japan to be owned equally by AMD and Fujitsu and minor cross-equity investments between the two companies. Precise terms of the companies' financial arrangement were not disclosed, but the companies reportedly said that the equity investments will total less than 5% of each partner's stock.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 51 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT

(As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 14

Possible Candidate for Socio-Economic

Supplier Evaluation

Dun & Bradstreet
Information Services

MICRO DEVICES, INC
OF 5

SUBSCRIBER:

Activity Summary:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - NO
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Program Consideration:

Labor Surplus Area: - YES (1993)
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier PAYDEX	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL
	64	63	67	70	69	64	69	69	67	67	69	70	69	66	65	66

Industry (Based on 1,057 establishments in SIC 367X)
PAYDEX

UP QRT	74	74	75	75	74	74	74	75
MEDIAN	68	68	69	69	68	68	69	69
LO QRT	59	60	61	62	60	62	62	62

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

		PAYDEX	PAYMENT
Average High Credit:	\$19,049	100	ANTICIPATE
Highest Credit:	\$900,000	90	DISCOUNT
Placed for Collection:	-	80	PROMPT
Cash Experience(s):	-	70	SLOW TO 15
No. of Trade Experience(s):	350	50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 09-853-8341

DATE PRINTED:
JAN 25 1994

SUMMARY

APPLIED MICRO CIRCUITS CORPORATION
+AMCC

6195 LUSK BLVD
SAN DIEGO CA 92121-0000
TEL: (619) 450-9333

CONTROL 1979
SALES F \$38,296,000
NET WORTH \$15,522,981
EMPLOYS 280 TOTAL
120 HERE

CHIEF EXECUTIVE: ALBERT MARTINEZ, PRES-
CEO

PRIMARY SIC NO. 3674
MFG INTEGRATED MICROCIRCUITS

SPECIAL EVENTS

09/24/93 According to published reports, subject announced that it will
add 50 engineering, manufacturing and marketing positions by March
1994.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 4

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 < 4 > 5 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending MAR, 1993 are Down by 0.1%.

- Net worth for the Fiscal year ending MAR, 1993 is Up by 7.6%.
- Average Payments are 12 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Financing secured.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Statement dated 03/31/93 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Diego, CA.
- Under present management control 15 years.

FINANCIAL PROFILE

(Based On A Fiscal Statement Dated Mar. 31, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
 (Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	6.4	2.5	1.6	69.4	71.3
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	3	2	2	2	2

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
 Industry norms based upon 196 establishments.

OPERATION

07/02/93

Manufactures integrated microcircuits.

Terms are net 30 days for both national and international accounts.
 Has 150 account(s). Sells to electronics industry. Territory :
 National (90%) and International (10%).
 Nonseasonal.

EMPLOYEES: 280 which includes officer(s). 120 employed here.

FACILITIES: Leases 120,000 sq. ft. in three, 2 story concrete
 block buildings. Premises neat.

LOCATION: Central business section on well traveled street.
 Located in a business park.

BRANCHES: Another facility with the same operations is
 maintained at 5502 Oberlin Dr, San Diego, CA. The facility is 20,000

square feet.

Standard Industrial Classification (SIC) Summary:
3674 02 06 Microcircuits, integrated (semiconductor)

HISTORY
07/02/93

ALBERT MARTINEZ, PRES-CEO+
LAURENCE H MARTY, V PRES-CORP
PLANNING

ROGER A SMULLEN, CHB+
JOEL O HOLLIDAY, V PRES-FIN-SEC-
TREAS

RAY YUEN, V PRES-ENGINEERING
WILLIAM W STAUNTON, V PRES-
RELIABILITY AND QUALITY ASSURANCE

MONTE REED, CONTROLLER-ASST TREAS

DIRECTOR(S): The officers identified by (+) and William K Bowes Jr,
Fredrick K Fluegel, Franklin P Johnson, Arthur Stabenow and Gregorio
Reyes.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 02/06/1987
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 28,000,000

Was originally incorporated in California Apr 9 1979.

The trade style is registered and used for general business
purposes.

Business started 1979 by several venture capital groups.

100% of capital stock is owned by officers, employees and venture
capital firms. No one individual or company owns 10% or more of the
stock.

A MARTINEZ born 1945. 1966-80 Motorola Semiconductor, Mesa, AZ,
operations manager. 1980-86 Burr-Brown Corp, Tucson, AZ, executive
vice president, resigned. 1986-87 TRW-LSI Products Division, general
manager, La Jolla, CA. 1987-present active here.

R SMULLEN born 1937. Prior to 1967, Fairchild Semi Conductor,
Santa Clara, CA, director of integrated circuits. 1967-71 co-founder
of National Semiconductor, Santa Clara, CA, sold, creditors satisfied.
1971-80 Intersil Inc, Santa Clara, CA, senior vice president of the
semiconductor division, resigned. 1980-present active here.

L MARTY born 1951. 1972-1975 student. 1975-80 Burroughs Corp,
Detroit, MI, administrative manager. 1980-present active here.

J HOLLIDAY born 1939. 1966-68 Tridair Industries, Brookfield,
MI, financial manager. 1968-75 Spin Physics, Rochester, NY, officer
and co-founder, resigned. 1975-78 Westgate California Corp, Los
Angeles, CA, vice president of finance, resigned. No financial
interest. 1978-81 Orion Properties, Santa Monica, CA, partner, sold
interest, creditors satisfied. 1981-present active here.

R YUEN born 1948. 1969-1972 student. 1972-79 Burroughs Corp,
Detroit, MI, project engineer. 1979-present active here.

M REED born 1959. 1979-1981 student. 1981-86 Arthur Young &
Company, San Diego, CA, audit manager. 1986-present active here.

W STAUNTON born 1949. 1970-1973 student. 1973-80 Motorola Semiconductor, Mesa, AZ. 1980-87 Burr-Brown Corporation, Tucson, AZ. 1987-present active here.

W K BOWES JR. Outside director.

F K FLUEGEL. Outside director.

F P JOHNSON. Outside director.

A STABENOW. Outside director.

G REYES. Outside director.

The outside directors are from the various venture capital firms holding stock interests. None of the directors are active in daily operations.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 75 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 49

Activity Summary:

Borrower (Dir/Guar):	- NO
Administrative Debt:	- NO
Contractor:	- YES
Grantee:	- NO
Debarred, Suspended or Ineligible Contractor:	- NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area:	- YES (1993)
Small Business:	- YES (1993)
Women-Owned:	- N/A
8(A) Firm:	- N/A
Minority Owned:	- N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	'92	'92	'92		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	
PAYDEX	72	73	65	69	70	68	66	66	66	66	69	69	72	71	72	72	72	72

Industry (Based on 1,044 establishments in SIC 367X)
PAYDEX

UP QRT	75	75	74	74	74	75	75	75	75
MEDIAN	69	69	68	68	69	69	70	70	70
LO QRT	61	62	60	62	62	62	63	63	63

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$8,500	PAYDEX	PAYMENT
Highest Credit:	\$100,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	88	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 12-170-9190

DATE PRINTED:
JAN 25 1994

SUMMARY

BROOKTREE CORPORATION

9868 SCRANTON ROAD
SAN DIEGO CA 92121-0000
TEL: (619) 452-7580

CONTROL	1981
SALES F	\$111,342,000
NET WORTH F	\$120,450,000
EMPLOYS	540 TOTAL
	520 HERE

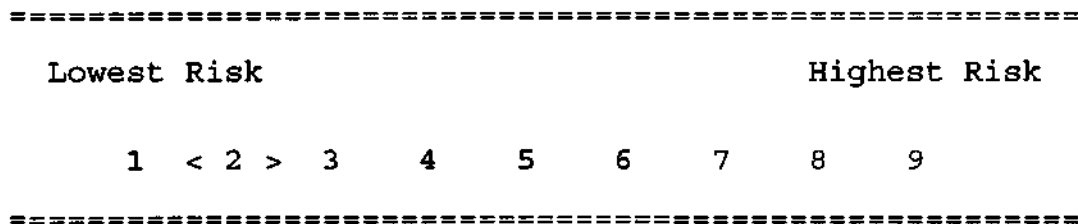
CHIEF EXECUTIVE: JAMES A BIXBY, CHB-
PRES

PRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUITS AND RELATED
DEVICES

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 2

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS A RELATIVELY LOW RISK.



Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending SEP, 1993 are Up by 21.0%.
- Net worth for the Fiscal year ending SEP, 1993 is Up by 40.8%.
- Average Payments are 9 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Firm's debts on 1 occasion(s) have been placed for collection as reported to Dun & Bradstreet.
- UCC Filings present.
- Operations reported profitable.

- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 09/30/93 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Diego, CA.
- Under present management control 13 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Sep. 30, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
 (Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	23.6	4.2	1.2	129.2	19.4
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	1	1	2	4	1

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
 Industry norms based upon 196 establishments.

OPERATION

01/19/94

Manufactures proprietary integrated circuits and related devices. Terms are net 30 days for national and international accounts and net 60 days for international distributors. Has 200 account(s). Sells to original equipment manufacturers and distributors. Territory : National (63% of fiscal 1993 revenues) and international (37%). Nonseasonal.

EMPLOYEES: 540. 520 employed here.

FACILITIES: Leases 155,000 sq. ft. in 3, 2 story concrete block buildings.

LOCATION: Industrial section on well traveled street.

BRANCHES: The company leases sales offices in Santa Clara, CA; Schaumburg, IL; Wilmington, NC; and Dallas, TX. Foreign sales offices are maintained in Thame, England; Munich, Germany; Hong Kong; and Tokyo, Japan.

GLOBAL ACTIVITY.

The following section is a global summary and is intended to assist D&B's non-U.S. customers when evaluating D&B reports on U.S.

companies.

.....
FAMILY TREE SUMMARY.

D&B's global linkage file on this company shows this business has subsidiaries located in England (1), Japan (1).

.....
IMPORT/EXPORT ACTIVITY.

Over the last three years, international sales have been up.

.....
Based on information in our file, D&B has assigned this company an extended 8 digit SIC. D&B's use of 8 digit SICs enables us to be more specific to a company's operations than if we use the standard 4 digit code.

36740200 Mfg Integrated Circuits & Related Dev.

.....
GLOBAL NEWSWORTHY EVENTS.

None reported.

SUBSIDIARIES: Brooktree Corporation identifies the following wholly-owned subsidiaries, which are engaged in the company's consolidated operations. Intercompany relations consist of merchandise transactions. There are no known guarantees or endorsements.

Brooktree Ltd, located in Thame, England, started 1988.

Brooktree, K.K., located in Tokyo, Japan, started 1988.

Brooktree Foreign Sales Corporation, a Virgin Islands corporation, started 1988.

Standard Industrial Classification (SIC) Summary:

3674 00 00 Semiconductors and related devices

HISTORY

01/19/94

JAMES A BIXBY, CHB-PRES-CEO+

NARESH BATRA, V PRES

STEWART KELLY, V PRES

JEFFREY R TEZA, V PRES

RICHARD H LEE, EX V PRES-COO

HENRY S KATZENSTEIN, V PRES

BRYAN ROONEY, V PRES

DIRECTOR(S): The officers identified by (+) and Wilfred J Corrigan, Myron S Eichen, Ellsworth R Roston, J Sidney Webb, Jack W Savidge, William L Mobraaten and Michael S Wishart.

CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY

OF STATE OR OTHER OFFICIAL SOURCE AS OF 01/07/1994:

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 08/19/1981
STATE OF INCORP: California

Authorized capital consists of 45,000,000 shares of no par value common stock and 15,000,000 share of no par value preferred stock.

ISSUED CAPITAL STOCK: 16,172,244 shares common stock as of Sep 30 1993.

Business started 1981 by Myron S Eichen, Henry S Katzenstein, Ellsworth R Roston and venture capital investors.

CONTROL: This is a publicly held company. The company's common stock is traded over the counter under NASDAQ symbol "BTRE". As of Sep 30 1993, there were approximately 415 holders of record of the company's common stock. As of Jan 8 1993, those shareholders identified by the company as beneficially owning more than 5% of the company's common stock were State Farm Mutual Automobile Insurance Company (25.2%) and State of Wisconsin Investment Board (9.9%), with the officers and directors, as a group, beneficially owning 11.8%. Other than the aforementioned beneficial interest, the subject is not affiliated in any other manner with State Farm Mutual Automobile Insurance Company.

.....MANAGEMENT BACKGROUND.....

JAMES A BIXBY born 1946. Graduated from Massachusetts Institute of Technology, Cambridge, MA; BSEE degree; holds an MSEE degree from the University of California at Berkeley, Berkeley, CA and a masters degree in engineering from University of California at Los Angeles, Los Angeles, CA. 1968-75 Lawrence Livermore Laboratories, Livermore, CA; engineering group leader. 1975-83 Spin Physics, Inc, San Diego, CA; director of engineering. 1983-present Brooktree Corporation, San Diego, CA.

RICHARD H LEE born 1944. Graduated from Tulane University, New Orleans, LA; BSEE degree and MSEE degree from the University of Wisconsin and an MBA from Claremont Graduate School, Claremont, CA. 1967-1978 was with Fairchild Semiconductor, National Semiconductor, Honeywell and Pertec. 1978-85 Mostek; lastly an engineering manager. 1985-present Brooktree Corporation, San Diego, CA.

NARESH BATRA born 1949. 1973 graduated from Marquette University, Milwaukee, WI; MSEE degree and holds an MBA degree from the University of Dallas, Dallas, TX. 1973-77 A B Dick & Co; project engineer. 1977-88 Texas Instruments; director of marketing. 1988-present Brooktree Corporation, San Diego, CA.

HENRY S KATZENSTEIN born 1927. Graduated from the University of Chicago, Chicago, IL, BS degree and has MS and PhD degrees from the University of Connecticut, New London, CT. 1956-62 Lear Siegler Inc, Long Island, NY; research director. 1962-69 Solid State Radiation Inc; president. Discontinued record clear. 1969-82 Quantrad Corporation, Torrance, CA; director and chief scientist. 1981-present Brooktree Corporation, San Diego, CA; co-founder.

STEWART KELLY born 1946. Graduated from Strathclyde University, Glasgow, Scotland; BSEE degree. Was with GTE Microcircuits Inc until 1984. 1984-86 Intel Corporation; a design manager. 1986-present Brooktree Corporation, San Diego, CA.

BRYAN ROONEY born 1948. 1973 graduated from Strathclyde University, Glasgow, Scotland; engineering degree. 1973-87 Monolithic Memories Inc; director of international sales. 1987-88 Silicon Systems Inc; vice president-sales. 1988-present Brooktree Corporation, San Diego, CA.

JEFFREY R TEZA born 1956. Graduated from the State University of New York at Stonybrook, NY; BSEE degree. 1977-81 Texas Instruments. 1981-83 Integrated Circuit Engineering Corporation. 1983-present Brooktree Corporation, San Diego, CA.

.....OTHER OFFICERS.....
DAVID GELVIN, vice president, development engineering. EDWARD P HOLTAWAY, vice president, quality assurance and reliability. RICHARD IRVING, vice president, graphics and imaging strategic business unit. ROBERT W ZABARONICK, senior vice president, human resources.

.....OTHER DIRECTORS.....
WILFRED J CORRIGAN. Chairman and CEO, LSI Logic Corporation.
MYRON S EICHEN born 1929, not active here. Director since 1981 and co-founder and former chairman of the board. Self employed private investor, he has been involved as a founder, director and/officer with various high technology companies.

ELLSWORTH R ROSTON born 1923, not active here. Director since 1981 and a co-founder. Patent attorney and president of Roston and Schwartz, Los Angeles, CA.

J SIDNEY WEBB born 1920, not active here. Director since 1986. Chairman of the board of The Titan Corporation, San Diego, CA.

JACK W SAVIDGE born 1933, not active here. Director since 1986. President of Jack Savidge & Company, a marketing and management company.

WILLIAM L MOBRAATEN born 1930, not active here. Director since 1987. Chairman of the board of Mobraaten Enterprises Inc, Philadelphia, PA.

MICHAEL S WISHART born 1955, not active here. Managing director of Lehman Brothers, an investment banking firm.

RECENT ACQUISITIONS: In Feb 1992, the company acquired the digital communications device product line from Rockwell International Corporation for \$5,000,000 in cash with an additional \$1,000,000 to be paid over approximately three years.

In Jan 1993, the company acquired Base2 Systems Inc, Boulder, CO for a purchase price of \$9 million in cash. Additional consideration of approximately \$6,100,000 has been accrued and may be paid over three years, a portion of which is contingent upon the continued employment of key employees for an agreed upon period of time and other conditions. Of the additional consideration, \$3,448,000 will be paid in Jan 1994.

RECENT DISPOSITION: In Mar 1992, the company sold its Bristol Development Center located in England to a wholly-owned subsidiary of Pioneer Electronic Corporation for \$3,700,000 in cash.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 29 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 49

Activity Summary:

Possible Candidate for Socio-Economic Program Consideration:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - NO
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Labor Surplus Area: - YES (1993)
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	'92	'92	'92		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
PAYDEX	69	68	61	62	71	63	63	64	63	69	75	74	75	75	74	74		

Industry (Based on 1,044 establishments in SIC 367X)
PAYDEX

UP QRT	75	75	74	74	74	75	75	75
MEDIAN	69	69	68	68	69	69	70	70
LO QRT	61	62	60	62	62	62	63	63

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$7,961	PAYDEX	PAYMENT
Highest Credit:	\$200,000	-----	-----
Placed for Collection:	1	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	115	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

DUNS: 10-210-8446

DATE PRINTED:
JUL 23 1993

SUMMARY

CYPRESS SEMICONDUCTOR CORPORATION

3901 N FIRST ST
SAN JOSE CA 95134-0000
TEL: (408) 943-2600

CONTROL	1982
SALES F	\$272,242,000
NET WORTH F	\$262,061,000
EMPLOYS	1,394 TOTAL
	930 HERE

CHIEF EXECUTIVE: T J RODGERS, PRES &
CEO

PRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUITS

SPECIAL EVENTS

07/07/93 According to published reports, the company announced that the Federal Government had approved the proposed sale of its Ross Technology unit to Fujitsu Ltd.

07/02/93 According to published reports, Cypress Semiconductor Corp announced that Cypress and Fujitsu Ltd have obtained all federal regulatory approvals necessary to complete the proposed sale of Ross Technology Inc to Fujitsu's computer operation.

05/13/93 According to published reports, Cypress Semiconductor Corp and Fujitsu Limited have signed a letter of intent, whereby Fujitsu will acquire Cypress's SPARC microprocessor subsidiary, Ross Technology, for approximately \$23 million. The 75 employees of Ross Technology will become employees of Fujitsu when the agreement is finalized, expected to be the end of June 1993. The agreement is subject to final governmental approval.

04/27/93 **STOCK REPURCHASE PROGRAM:** The Company repurchased 1.0 million shares of its common stock in the 1993 first quarter, for \$10.2 million, and on Apr 1 1993, the Company's Board of Directors authorized the repurchase of an additional 500,000 shares of its common stock. This expands the Company's previous stock buy-back, by which the Company repurchased 2.9 million shares of its common stock in 1992.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 4 < 5 > 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

Supplier Evaluation

Dun & Bradstreet
Information Services

SEMICONDUCTOR CORP
2 OF 7

SUBSCRIBER:

- Suits, Liens, and/or Judgments are present.
- Sales for the Fiscal year ending DEC, 1992 are Down by 5.1%.
- Net worth for the Fiscal year ending DEC, 1992 is Down by 12.2%.
- Losses reported.
- Average Payments are 19 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 12/28/92 is included in the Risk Rating.
- Statement prepared by Price Waterhouse, San Jose, CA.
- Under present management control 11 years.

FINANCIAL PROFILE

(Based On An Audited Fiscal Consolidated Statement Dated Dec. 28, 1992.)

The Financial Appraisal Ranking of the Supplier = 3
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/Sales)%	(Total Liab/Net Worth)%
This Supplier	-	3.7	1.0	117.7	22.3
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	4	1	3	4	1

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

OPERATION 04/27/93

The Company is principally engaged in the manufacture of a broad line of high performance digital integrated circuits, currently offering products in seven product areas: Static RAMs (random access memories), PROMs (programmable read-only memories), PLDs (programmable logic devices), Logic devices, RISC (reduced instruction set computing) Microprocessors and peripheral devices, high-speed ECL (emitter coupled logic) devices and Memory Modules. Terms are net 30 days for domestic accounts and net 45 days for international accounts. Has 1,600 accounts. Sells to military, aerospace, telecommunications, instrumentation and computation markets. Territory: Worldwide. Export revenues, principally to customers in Europe, Japan and Canada, were 27% of total revenues in 1992.

Nonseasonal. The semiconductor industry is highly competitive.

EMPLOYEES: 1,394 including officers. 930 employed here.

FACILITIES: Leases 184,200 sq. ft. in a one story concrete block building in good condition. There are three adjacent buildings at the headquarters location.

BRANCHES: Additional manufacturing facility located in Round Rock, TX.

There are nineteen sales offices located throughout the United States and eight sales offices located in Europe, one office in Japan and a network of 32 international sales representative firms.

SUBSIDIARIES: The Company has 13 subsidiaries. Except where

otherwise indicated, all subsidiaries are wholly owned. Subsidiary operations are included in the consolidated operation described above. Intercompany relations consist of occasional advances and open account merchandise transactions, settled on a management convenience basis.

UNITED STATES SUBSIDIARIES:

- 1) ASPEN SEMICONDUCTOR CORPORATION, San Jose, CA. Started 1987. At Dec 28 1992, the Company owned 75% of the common and 100% of the convertible preferred stock.
- 2) CYPRESS SEMICONDUCTOR (MINNESOTA) INC, Minneapolis, MN. Acquired 1990.
- 3) CYPRESS SEMICONDUCTOR (TEXAS) Inc, Round Rock, TX. Started 1986. At Dec 28 1992, the Company owned 69% of the outstanding common stock (17% was owned by Altera Corporation, San Jose, CA) and 100% of the convertible preferred stock.
- 4) MULTICHIP TECHNOLOGY INCORPORATED (100%), San Jose, CA. Formed in Mar 1988 to design, develop, and manufacture RISC microprocessors and peripherals.
- 5) ROSS TECHNOLOGY INC (90%), Austin, TX. Started 1988.

INTERNATIONAL SUBSIDIARIES:

- 1) CYPRESS EXPORT INC.
- 2) CYPRESS SEMICONDUCTOR INTERNATIONAL INC.
- 3) CYPRESS SEMICONDUCTEURS (FRANCE) SARL.
- 4) CYPRESS SEMICONDUCTOR GMBH (GERMANY).
- 5) CYPRESS SEMICONDUCTOR ITALIA SRL.
- 6) CYPRESS SEMICONDUCTOR (JAPAN) KK.
- 7) CYPRESS SEMICONDUCTOR (SCANDINAVIA) AB.
- 8) CYPRESS SEMICONDUCTOR (UK) LIMITED.

BANK: Bank of America, Palo Alto, CA

Standard Industrial Classification (SIC) Summary:

3674 00 00 Semiconductors and related devices
3674 02 09 Random access memory (RAM)
3674 02 10 Read-only memory (ROM)
3674 02 01 Computer logic modules

HISTORY
04/27/93

T J RODGERS, PRES & CEO+

PATRICK VERDERICO, V PRES,
FINANCE & ADMIN, CFO

R MICHAEL STARNES, V PRES-
PROCESS TECHNOLOGY

LOWELL TURRIFF, V PRES-MKTG &
SALES

DIRECTOR(S): The officers identified by (+) and Fred B Bialek, L John Doerr and Pierre R Lamond (Chmn).

Authorized capital consists of 50,000,000 shares common stock, \$.01 par value, and 5,000,000 shares preferred stock, \$.01 par value.

OUTSTANDING CAPITAL STOCK AT DEC 28 1992: 36,067,000 common shares at stated value \$389,000. No preferred shares were issued and outstanding. There were 2,873,000 common shares held in treasury at a cost of \$26,359,000. At the same date, additional paid-in capital was \$186,561,000.

BACKGROUND/SHAREHOLDER INFORMATION

Business started Dec 1982 by T J Rodgers, Fritz Beyerlein, Fred Jenne, Steven Kaplan, R Michael Starnes and Lowell Turriff. Relocated 1983 from Santa Clara, CA.

The Company's common stock is listed on the New York Stock Exchange under the trading symbol "CY". At Mar 12 1993, there were approximately 3,062 stockholders of record. As of Dec 28 1992, the officers and directors as a group beneficially owned approximately 4.7% of the outstanding capital stock; Merrill Lynch Asset Management Inc, Princeton, NJ, beneficially owned 9.8%; and the balance is owned by other institutional investors and the general public.

SUBSIDIARY SALE OF STOCK: In Apr 1990, Altera Corporation acquired a 9% minority ownership interest in the Company's Cypress

Semiconductor (Texas) Inc subsidiary (CTI) from CTI employees who had previously exercised stock options. Altera also received an option to purchase additional shares of CTI.

In 1991, Altera exercised its remaining options to acquire a total of 5,000,000 shares of CTI common stock, increasing Altera's ownership percentage to approximately 17%.

On Dec 31 1990, the Company signed an agreement to purchase the assets comprising a wafer fabrication facility known as Cypress Semiconductor (Minnesota) Inc (CMI) for an aggregate of \$14.7 million. The purchase price for land and building of \$11.5 million was paid in Mar 1991, upon transfer of title of the facility to Cypress, in the form of notes payable due Jul 1991. The purchase price of the equipment is being paid as the seller transfers title of the equipment to the Company.

MANAGEMENT BACKGROUND
T J RODGERS born 1948. 1982 to present active here. 1980-82 Advanced Micro Devices, Sunnyvale, CA, Manager Static RAM Business. 1975-80 American Microsystems Inc, Santa Clara, CA, Manager MOS Memory Design Group. Received PhD in Electrical Engineering from Stanford University and a Bachelors degree from Dartmouth College. He also serves as a Director of Vitesse Semiconductor Corporation.

PATRICK VERDERICO born 1944. University of Akron, Bachelors degree; Pennsylvania State University, Masters degree in Public Administration. He joined the Company in Oct 1992. 1989-1992, he was a partner in management consulting with Coopers & Lybrand and a Senior Vice President with Technology Solutions Co. Previously, he held operations and financial positions with Signetics, National Semiconductor, and Fairchild Semiconductor.

R MICHAEL STARNES born 1945. 1983 to present active here. 1979-83 Intel Corporation, Livermore, CA, Engineering Manager. 1974-79 American Microsystems Inc, Santa Clara, CA, Manager Research and Development and Wafer Fabrication. 1972-74 Texas Instruments Inc, Manager of the MOS Process Development Department. 1972 PhD in Electrical Engineering from the University of Illinois.

LOWELL TORRIFF born 1936. 1983 to present active here. 1982-83 Advanced Micro Devices, Advanced Technology Division, Director of Product Marketing. 1978-82 Advanced Micro Devices, Sunnyvale, CA, Manager. 1973-78 Fairchild Semiconductor, Mountain View, CA, Director of Marketing and Application Group. 1958-73 Raytheon Semiconductor, Redwood City, CA, sales. 1958 Marquette University, BSEE.

OTHER VICE PRESIDENTS
ANTONIO ALVAREZ, Vice President, Research and Development.
DAN BARRETT, Vice President, European Sales and Marketing.
THOMAS A FREEZE, Vice President, Programmable Logic Device Group.
JEFF K KASZUBINSKI, Vice President, PROM Group
PAUL KESWICK, Vice President, Logic Product Group.
MANUEL MERE, Vice President, Manufacturing, San Jose.
MICHAEL POWELL, Vice President, Static Random Access Memory

Group.
DON J STOOPS, Vice President, Wafer Manufacturing.
TERRY D TRUMBULL, Vice President, North American Distribution.
WILLIAM P VERDI, Vice President, North American Sales.

OTHER DIRECTORS
FRED B BIALEK, Director since 1991. He has been an independent business consultant since Nov 1986, during which time he has been active in the negotiation and execution of merger and acquisition transactions for semiconductor and other technology companies. He acted as a consultant to the Company in its acquisition of Cypress Semiconductor (Minnesota) Inc. He was a founder of National Semiconductor Corporation, has over 30 years operating experience in semiconductor and related technology industries.

L JOHN DOERR, Director since 1983. He has been a General Partner, Kleiner Perkins Caufield & Byers and Kleiner Perkins Caufield & Byers II, venture capital partnerships since 1980; and has been a general partner of KPCB Associates, the General Partner of Kleiner Perkins Caufield & Byers III, a venture capital partnership, since Dec

SUBSCRIBER:

1982. He is a Director of Sun Microsystems Inc and Symantec Corporation.

PIERRE R LAMOND, Chairman of the Board, and has served on the Board of Directors since 1983. Since 1966, he has been a General Partner of Sequoia Capital, Menlo Park, CA, which manages several venture capital funds, including Sequoia Capital IV, Sequoia Capital V and Sequoia Capital Growth Fund, since 1981. He is a General Partner of a venture capital firm which invested in the Company prior to its initial public offering in 1986. He serves as a Director of Vitesse Semiconductor Corporation.

RELATED COMPANIES.....
1) VITESSE SEMICONDUCTOR CORPORATION, Camarillo, CA. Started 1987. Manufactures high speed integrated microcircuits. Following are highlights from Vitesse Semiconductor's financial statement for the year ended Sep 30 1992: Current assets \$45,439,000; current liabilities \$9,499,000; noncurrent liabilities \$9,918,000; shareholders' equity \$42,723,000; sales in fiscal 1992 \$37,310,000; and net income \$704,000.

During 1990, Cypress Semiconductor made a cost-basis investment of \$1,000,000 in Vitesse Semiconductor Series E Preferred Stock (which was converted to common stock since their public offering) and guaranteed an equipment lease line of credit of \$3,500,000, maturing on Aug 31 1997. The outstanding principal balance related to the lease line at Dec 28 1992, is \$2,300,000. In exchange for guaranteeing the leases, the Company received a warrant, exercisable at \$9.00 per share, for up to 35,000 shares of Vitesse common stock. Cypress Semiconductor exercised the warrant for 35,000 in Dec 1991, increasing its cost-basis investment to \$1,315,000. Pierre Lamond, Chairman of the Board of the Company, and T J Rogers, President and Chief Executive Officer of the Company, serve on Vitesse's Board of Directors. Pierre Lamond is also Chairman of the Board of Vitesse.

2) ALTERA CORPORATION, San Jose, CA. Started 1983. Manufactures semiconductor logic devices and related development software. Following are highlights from Altera Corporation's financial statement dated Dec 31 1992: Current assets \$85,595,000; current liabilities \$19,087,000; shareholders' equity \$95,606,000; 1992 sales \$101,470,000; and net income \$11,539,000.

Altera Corporation owns approximately 17% of the outstanding common stock of the Company's Cypress Semiconductor (Texas) subsidiary. In return for its investment, Altera Corporation receives wafer fab capacity commensurate with its ownership percentage, and the Company and Altera have an extensive technology cross-license agreement in place.

3) QUICKLOGIC CORPORATION, Santa Clara, CA (DUNS # 60-668-6269), started 1988. QuickLogic is a developer of logic gate array chips. During 1992, the Company made a cost-basis investment of \$2,000,000 in QuickLogic Series D preferred stock. Under certain circumstances, the Company may be required to make additional investments in QuickLogic. Pierre R Lamond, the Company's Chairman, is a member of the Board of Directors of QuickLogic.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * LIEN(S) * * *

BOOK/PAGE: M049/0828
AMOUNT: \$6,100
TYPE: Mechanics

STATUS: Open
DATE STATUS ATTAINED: 02/14/1992

SUBSCRIBER:

FILED BY: VIKING ELECTRIC INC
AGAINST: CYPRESS SEMICONDUCTOR
WHERE FILED: SANTA CLARA COUNTY RECORDER,
SAN JOSE, CA

DATE FILED: 02/14/1992
LATEST INFO RECEIVED: 03/23/1992

There are 21 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 16

Activity Summary:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - NO
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - YES (1993)
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91	---	'92	---	'92	---	---	---	---	'93	---	---	---	---	---	---
Supplier	SEP	DEC	MAR	JUN	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
PAYDEX	57	59	58	59	60	54	59	59	62	64	65	64	65	66	68	66
Industry (Based on 1,057 establishments in SIC 367X)																
PAYDEX																
UP QRT	74	74	75	75		74			74			74				75
MEDIAN	68	68	69	69		68			68			69				69
LO QRT	59	60	61	62		60			62			62				62

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

		PAYDEX	PAYMENT
Average High Credit:	\$8,887	100	ANTICIPATE
Highest Credit:	\$95,000	90	DISCOUNT
Placed for Collection:	-	80	PROMPT
Cash Experience(s):	-	70	SLOW TO 15
No. of Trade Experience(s):	74	50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Supplier Evaluation

Dun & Bradstreet
Information Services

SEMICONDUCTOR CORP
OF 7

SUBSCRIBER:

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 11-331-2730

DATE PRINTED:
JAN 25 1994

SUMMARY

DALLAS SEMICONDUCTOR CORPORATION

4401 SOUTH BELTWOOD PKWY
DALLAS TX 75244-0000
TEL: (214) 450-0400

CONTROL	1984
SALES F	\$120,155,000
NET WORTH F	\$135,675,000
EMPLOYS	696 TOTAL
	649 HERE

CHIEF EXECUTIVE: C V PROTHRO, CHB-PRES

PRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUITS

SPECIAL EVENTS

10/14/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 9 months ended October 3, 1993 are as follows: sales of \$114,857,000 and net income (loss) of \$18,568,000 compared to sales of \$86,837,000 and net income (loss) of \$13,245,000 for the comparable period in the prior year.

07/16/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended July 4, 1993 are as follows: sales of \$73,849,000 and net income (loss) of \$11,749,000 compared to sales of \$55,323,000 and net income (loss) of \$8,279,000 for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 2

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS A RELATIVELY LOW RISK.

Lowest Risk

Highest Risk

1 < 2 > 3 4 5 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Average Payments are 8 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Financing secured.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 01/03/93 is included in the Risk Rating.
- Statement prepared by Ernst & Young, Dallas, TX.
- Under present management control 10 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Jan. 03, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
 (Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	13.7	3.3	1.3	130.0	15.2
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	2	2	2	4	1

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
 Industry norms based upon 196 establishments.

OPERATION

04/22/93

Manufactures electronic chips and chip-based subsystems
 (semiconductor integrated circuits).

Terms: Net 30 days. Has 1,000+ account(s). Sells to original
 equipment manufacturers. Territory : International (export sales
 accounted for 31% of 1992 sales, principally to customers in Europe
 and the Far East).

Nonseasonal.

EMPLOYEES: 696. 649 employed here.

FACILITIES: Owns 160,000 sq. ft. in 1 story 4 separate
 buildings, building in good condition. Premises neat. Located on

approximately 16.9 acres of land.

LOCATION: Suburban business section on well traveled street.

BRANCHES: Leases a total of 105,000 additional sq. ft. of nearby building space for warehousing, distribution facilities and assembly operations. Sales offices are leased in Mission Viejo, CA; Palo Alto, CA; Woburn, MA; Marlton, NJ; Duluth, GA; Schaumburg, IL; and Dallas, TX.

SUBSIDIARIES: This business has one subsidiary listed below. Dallas Semiconductor Corporation Limited, Birmingham, England (100%) chartered 1988. Operates as a distributor of the company's products. Intercompany relations: consist of merchandise transactions.

Standard Industrial Classification (SIC) Summary:

3674 02 06 Microcircuits, integrated (semiconductor)

HISTORY

04/22/93

C V PROTHRO, CHB-PRES-CEO+

CHAO C MAI, SR VP

MICHAEL L BOLAN, V PRES-

ALAN P HALE, VP-FINANCE

MARKETING AND PRODUCT DEVELOPMENT

DIRECTOR(S): THE OFFICER(S) and M D Sampels, C Richard Kramlich, Richard L King and Carmelo Santoro.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 02/01/1984
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 40,000,000

PAR VALUE-COMMON: \$0.0200

AUTH SHARES-PREF: 5,000,000

PAR VALUE-PREF: \$0.1000

ISSUED CAPITAL STOCK: 24,803,181 common shares at Jan 3 1993.
Business started 1984. Relocated Nov 1990 from 4350 South Beltwood Pkwy.

This is a publicly held company. Common shares are traded on the New York Stock Exchange under symbol "DS". At Jan 3 1993, there were approximately 895 holders of record of the company's common stock.

As of Mar 1 1993, those shareholders identified by the company as beneficially owning 5% or more of the outstanding shares of common stock were State of Wisconsin Investment Board (7.9%) and FMR Corp (9.9%). The officers and directors as a group beneficially owned 12.5%.

.....MANAGEMENT BACKGROUND.....

PROTHRO born 1939. 1960-69 attended and graduated with an MBA degree from Harvard University. 1969-84 Mostek Corporation; 1977-84 president. 1983 to present a managing general partner with Southwest Enterprises Associates, L.P., Dallas, TX, a venture capital fund.

MAI born 1936. 1957-66 attended and graduated from Utah State University with a PhD in electrical engineering. 1966-69 employed by

Sylvania Electric Co. 1969-84 president of research and development for Mostek Corporation. 1984 to present active here.

BOLAN born 1947. 1968-72 attended and graduated from the University of Cincinnati with a BS in electrical engineering. 1972-79 Cincinnati Miliron Inc as computer products manager. 1979-84 employed with Mostek Corporation as a technical planning manager. 1984 to present active here.

HALE born 1960. Graduated from Oklahoma State University, BS in accounting 1982. Is a CPA. 1982-87 Ernst & Young as an audit manager. 1987 to present active here.

.....OTHER DIRECTORS.....

SAMPELS. Partner in law firm of Worsham, Forsythe, Sampels & Wooldridge.

KRAMLICH. General partner of New Enterprise Associates group of affiliated venture capital funds.

KING. General partner of KBA Partners L.P., a venture capital fund.

SANTORO. Chairman and CEO of Silicon Systems, Inc.

.....OTHER OFFICERS.....

JOHN A MATTIS, vice president, sales. F A SCHERPENBERG, vice president, computer products. TIMOTHY A MACK, corporate secretary.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 3 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 03

Activity Summary:

Possible Candidate for Socio-Economic Program Consideration:

Borrower (Dir/Guar): - NO
 Administrative Debt: - NO
 Contractor: - NO
 Grantee: - NO
 Debarred, Suspended or
 Ineligible Contractor: - NO

Labor Surplus Area: - N/A
 Small Business: - N/A
 Women-Owned: - N/A
 8(A) Firm: - N/A
 Minority Owned: - N/A

PAYMENT TRENDS
SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92 MAR	JUN	SEP	DEC		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	
PAYDEX	70	71	72	72	72	73	74	74	74	73	74	74	74	76	76	75		

Industry (Based on 1,044 establishments in SIC 367X)
 PAYDEX

UP QRT	75	75	74	74	74	75	75	75
MEDIAN	69	69	68	68	69	69	70	70
LO QRT	61	62	60	62	62	62	63	63

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$12,517	PAYDEX	PAYMENT
Highest Credit:	\$400,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	174	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

 SUPPLIER EVALUATION COMPLETE

DUNS: 00-420-3337

DATE PRINTED:
JUL 23 1993

SUMMARY

HARRIS CORPORATION
+GOVERNMENT ELECTRONIC SYSTEMS
+ELECTRONIC SYSTEMS
+GOVERNMENT INFORMATION

CONTROL	1926
SALES F	\$3,003,971,000
NET WORTH F	\$920,140,000
EMPLOYS	28,300 TOTAL
	450 HERE

1025 W NASA BOULEVARD
MELBOURNE FL 32901-0000
TEL: (407) 727-9100

PRIMARY SIC NO. 3663
MFG ELECTRONIC SYSTEMS,
SEMICONDUCTORS, COMMUNICATIONS AND
OFFICE EQUIPMENT

CHIEF EXECUTIVE: JOHN T HARTLEY, CHB-
CEO

SPECIAL EVENTS

05/10/93 For the 9 months ended March 26, 1993 the business reported the following figures: Total Assets \$2,461,875,000; Total Liabilities \$1,352,569,000 and Total Tangible Equity \$945,481,000 (as shown after deduction of intangibles).

04/26/93 According to published reports, the board of directors of Harris Corp has elected Phillip W Farmer president and chief operating officer, effective Apr 23 1993. He also was elected to the board of directors. Farmer, 54, was executive vice president and succeeds John T Hartley, 63, who remains chairman and CEO.

04/20/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 9 months ended March 26, 1993 are as follows: revenue of \$2,266,036,000 and net income (loss) of \$73,596,000 compared to revenue of \$2,205,561,000 and net income (loss) of \$50,426,000 for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 4 < 5 > 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
- Sales for the Fiscal year ending JUN, 1992 are Down by 1.2%.
- Net worth for the Fiscal year ending JUN, 1992 is Up by 4.8%.
- History indicates business or management.

- Average Payments are 18 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Firm's debts on 1 occasion(s) have been placed for collection as reported to Dun & Bradstreet.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 06/30/92 is included in the Risk Rating.
- Statement prepared by Ernst & Young, Orlando, FL.
- Under present management control 67 years.

FINANCIAL PROFILE

(Based On An Audited Fiscal Consolidated Statement Dated Jun. 30, 1992.)

The Financial Appraisal Ranking of the Supplier = 3
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY (Return on Net Worth)%	SOLVENCY (Current Ratio)	SHORT TERM (Quick Ratio)	EFFICIENCY (Assets/ Sales)%	DEBT UTILIZATION (Total Liab/ Net Worth)%
This Supplier	8.2	2.0	0.9	82.7	153.8
Industry Median	4.3	2.6	1.6	99.3	63.3
Quartile Rank (Supplier)	2	3	3	2	4

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 28 establishments.

OPERATION 04/26/93

Harris Corporation, through subsidiaries and divisional units, is principally engaged in the manufacture of advanced communication, information processing and microelectronic equipment. The company reports its operations under four business sectors (segments) which are described as follows with contributions to total fiscal year 1992 revenue shown in parenthesis.

Electronic Systems Sector (34%): Engages in advanced research, development, design and production of high technology custom electronic (communication) systems for U S government agencies, foreign governments and commercial organizations. Principal products include satellite communication systems and communications security devices.

Lanier Worldwide Sector (30%): Markets, sells and services office equipment and business communication products, including copying systems, facsimile units, dictating equipment, telephone equipment, presentation and document systems and continuous-recording systems for monitoring and logging two-way voice communications.

Semiconductor Sector (20%): Produces standard, semi-custom and custom integrated circuits using complementary metal oxide semiconductor (CMOS), dielectric isolation, gallium arsenide (GaAs) and radiation hardening technologies.

Communications Sector (16%): Produces microwave and lightwave transmission (communication) systems, two-way HF, VHF and UHF radio (mobile communication) equipment, turnkey communication systems, radio and television broadcast-transmission equipment (including AM,

Supplier Evaluation

SUBSCRIBER:

shortwave and FM radio transmitters; VHF and UHF television transmitters (phototransmission equipment) and antennas), digital network switches, private branch exchanges (PBX equipment), and auxiliary telecommunication products.

Sales terms range from cash and Net 30 days to short-term leases and installments up to 36 months based on a diversified product line. Has 500,000+ accounts. Sells to governmental agencies, commercial, industrial and institutional accounts and utilities. Territory: Worldwide, domestic 80.4% international 19.6%, principally to Canada, Asia, Europe, Latin America and the Middle East.

Nonseasonal.

EMPLOYEES: 28,300 including officers. 450 employed here.

FACILITIES: Owns 244,500 sq. ft. in two-1 story masonry buildings. Buildings are in good condition.

LOCATION: Industrial section on side street.

BRANCHES: As of Jun 30 1992, the company operated 40 plants and approximately 460 offices in the United States, Canada, Europe, Latin America, Asia, Australia and New Zealand consisting of manufacturing and administrative, engineering and office facilities of which approximately 7,000,000 sq. ft. are owned and approximately 4,200,000 sq. ft. are leased.

SUBSIDIARIES: As of Jun 30 1992, the company identified 90+ direct and indirect subsidiary units. The underlying units carry on the business of the company incidental to its consolidated activities.

Intercompany relations are confined to merchandise and service transactions on Net 30 day terms and occasional loans and advances payable at the discretion of management. A list of subsidiaries is on file at the Woodbury, NY office of Dun & Bradstreet, Inc.

Standard Industrial Classification (SIC) Summary:

3663	99	09	Satellites, communications
3663	99	05	Microwave communication equipment
3663	99	08	Receiver-transmitter units (transceiver)
3699	05	02	Security control equipment and systems
5044	02	07	Photocopy machines
5044	03	01	Dictating machines
5065	00	00	Electronic parts and equipment, nec
5065	02	03	Facsimile equipment
5065	01	03	Telephone equipment
5065	02	04	Intercommunication equipment, electronic
3674	00	00	Semiconductors and related devices
3674	02	05	Metal oxide silicon (MOS) devices
3661	00	00	Telephone and telegraph apparatus
3661	01	06	SWITCHING EQUIPMENT, TELEPHONE
3661	02	01	PBX EQUIPMENT, MANUAL OR AUTOMATIC

HISTORY
04/26/93

JOHN T HARTLEY, CHB-CEO+

BRYAN R ROUB, SENIOR VICE

PRESIDENT-FINANCE

ROBERT E SULLIVAN, SENIOR VICE

PRESIDENT ADMINISTRATION

RICHARD L BALLANTYNE, VICE

PRESIDENT GENERAL COUNSEL-

PHILLIP W FARMER, PRES-COO+

FRANK J LEWIS, SENIOR VICE

PRESIDENT

ROBERT W FAY, VICE PRESIDENT-

CONTROLLER

GUY W NUMANN, PRES-

COMMUNICATIONS SECTOR

WESLEY E CANTRELL, PRES-LANIER

WORLDWIDE

ALLEN S HENRY, PRES-ELECTRONIC

SYSTEMS

DIRECTOR(S): The officers identified by (+) and Joseph A Boyd, Lester E Coleman, Ralph D DeNunzio, C Jackson Grayson Jr, Alexander Trowbridge, Walter F Raab, Robert Cizik, Allan Huber and Joseph L Dionne.

Supplier Evaluation

SUBSCRIBER:

BUSINESS TYPE: Corporation - Profit

DATE INCORPORATED: 12/06/1926
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 100,000,000
PAR VALUE-COMMON: \$1.0000
AUTH SHARES-PREF: 1,000,000
PAR VALUE-PREF: No Par Value

ISSUED CAPITAL STOCK: 39,140,833 common shares at June 30 1992.

BACKGROUND/CONTROL:

Business started 1926.

This is a publicly held company. Shares are traded on the New York, Boston, Midwest, Pacific and Philadelphia Stock Exchanges under trading symbol "HRS". As of Jun 30 1992, there were 12,161 shareholders of record. Officers and directors, as a group, owned approximately 2.1% of the outstanding common shares; Delaware Management Company, Inc (an investment advisor) owns 9.29%; and no other shareholders identified by the company as owning as much as 5% at Jul 31 1992.

LEGAL PROCEEDINGS

During fiscal year 1987, the company entered into an agreement with the U S Department of Justice pursuant to which the company pleaded guilty to making false claims in connection with an Army contract awarded in 1981. In settlement, the company made full restitution by paying \$2,053,000, together with penalties, fines and investigative costs amounting to an additional \$2,293,000. The company also entered into an administrative agreement with the Army, with the result that the company was not suspended or debarred from further government business.

According to a published report, the Harris Corporation was convicted in federal court for its role in a \$2 million kickback scheme involving a Defense Department loan to the Philippines in 1983. The Harris Corporation pleaded no contest to a charge that it aided a Filipino businessman in making false claims to the Pentagon. The Harris Corporation was fined \$200,000 in the U S District Court in Alexandria, VA and ordered to pay \$300,000 to settle civil claims, excluding civil tax liability.

RECENT ACQUISITION: In Nov 1988, the company acquired the net assets of GE Solid State from the General Electric Company for approximately \$203,600,000 cash.

In Apr 1989, the company exercised its option with the Minnesota Mining and Manufacturing Company to acquire its 50% investment in Lanier Worldwide, Inc for approximately \$189,600,000 in cash.

According to published reports, Harris Corporation announced Oct 3 1991 that it has completed the previously announced acquisition of two of Midwest Communications Corporation's broadcast equipment manufacturing operations. Terms of the transaction were not disclosed.

In Oct 1992, Harris Corporation acquired Westronic Inc as part of its expansion strategy in the \$1 billion-plus international market for electric-utility power-control systems. The purchase price was not disclosed. Westronic is headquartered in Calgary, Canada and has operations in Dallas, Texas and Perth, Australia.

MANAGEMENT BACKGROUND

HARTLEY born 1930. 1955 Auburn University BSEE and BSCH. 1956-present Harris Corporation. 1968 vice president and general manager electrical systems division, 1971 vice president and group executive systems group, 1976 executive vice president and a director, 1978 president and chief operating officer. 1986 president and chief executive officer. 1987 chairman.

LEWIS born 1930. 1960 University of Florida BSEE. 1951-53 U S Army, corporal. 1960-present Harris Corporation, 1969 director engineering department, 1976 division vice president programs, division vice president and general manager government common systems division, 1979 group executive government systems group, 1982 senior vice president, sector executive, government systems group.

NUMANN born 1932. 1953 Rensselaer Polytechnic Institute, BSEE.

1953-62 General Dynamics Corp. 1962-present Harris Corporation; vice president R F Communications division 1970, senior vice president 1984.

ROUB born 1941. 1959-63 attended Ohio Wesleyan University; 1966 Ohio State University BS, 1978 University of Pennsylvania, Wharton MBA. 1966-70 Ernst & Ernst, Cleveland, OH, audit staff. 1970-84 Midland Ross, Cleveland, OH, executive vice president finance. 1984-present Harris Corporation, senior vice president finance and chief financial officer.

FAY born 1946. 1968 Duke University, Durham, NC, BA; 1974 Villanova University, Villanova, PA, BS; and 1978 Drexel University, Philadelphia, PA, MBA. 1968-72 IBM Corporation, systems engineer. 1972-78 Certain-Teed Corporation, corporate financial analyst and cash systems and operations manager. 1978 to present Harris Corporation; manager, corporate finance and cash management; 1981 controller, bipolar digital division; 1984 director, sector financial operations; 1985 treasurer.

SULLIVAN born 1932. Graduated from John Carroll University, bachelor's degree in business administration, Harvard Business School MBA. 1962-71 Chrysler Corporation. 1971-present Harris Corporation, named senior vice president administration 1986.

BALLANTYNE. BS engineering and MBA from University of Connecticut. JD from George Washington University. Prior to starting here held various management and legal positions with Compugraphic Corporation, Good Hope Industries and Itel Corporation. Also held position of vice president-general counsel and corporate secretary at Prime Computer, Inc. 1989-present vice president-general counsel and secretary here.

CANTRELL. Graduate of Southern Tech, Marietta, GA. Prior to joining Harris, spent more than 30 years with Lanier Business Products, where he held various positions, including exec v pres and national sales manager. 1985-present with Harris Corporation. 1987 named president and CEO of Harris/3M Document Products Inc. 1989 elected officer of Harris Corporation. President and CEO of Lanier Worldwide, Inc (subsidiary of Harris).

FARMER. Graduated Duke University, BA degree. Prior to joining Harris, held various management and technical positions with General Electric for 20 years. 1982 began here as vice president-general manager of the Government Support Systems Division. 1986 vice president-Palm Bay Operations, Government Systems Sector. 1988 senior vice president-sector executive, Government Systems Sector. 1989 elected president of the Electronics Systems Sector. 1991 elected executive vice president.

HENRY born 1940. 1972-present, Harris Corporation. Elected to present position in 1991.

-----OTHER OFFICERS-----

FAYETTE BROWN III, vice president-corporate development; W PETER CARNEY, vice president-corporate relations; NICK E HELDRETH, vice president-human resources; HERBERT N MC CAULEY, vice president-information management; DAVID S WASSERMAN, vice president-treasurer; PHILLIP MIGHDOLL, vice president quality and new products and JAMES L CHRISTIE, vice president-internal audit.

-----DIRECTORS-----

COLEMAN, chairman and chief executive officer, Lubrizol Corporation (specialty chemical products).

DE NUNZIO, president, Harbor Point Associates, Inc.

GRAYSON, chairman, American Productivity & Quality Center (educational research in productivity).

RAAB, retired chairman and chief executive officer, A M P Incorporated (manufacturer of electrical devices).

CIZIK, chairman and chief executive officer of Cooper Industries, Inc (diversified manufacturing company).

BOYD, chairman and chief executive officer, Fairchild Space and Defense Corporation.

HUBER, retired executive vice president, Commercial and Consumer Sector, Minnesota Mining and Manufacturing Company.

TROWBRIDGE, president, Trowbridge Partners, Inc.

HARRIS CORPORATION
PAGE 6 OF 7

SUBSCRIBER:

DIONNE, chairman and chief executive officer, McGraw-Hill, Inc.
AFFILIATES: The following are related through common principals and/or financial interest (securities ownership follows name of affiliate).

Harris Broadcast Systems (Nigeria) Limited (Nigeria/40% of voting securities owned by Harris Corporation); Harris Saudi Arabia Limited (Saudi Arabia/49% of voting securities owned by Harris Corporation); Harris Iberica SA (50% of voting securities owned by Harris Corporation BV, a wholly-owned subsidiary of Harris Corporation) (a joint venture) and Harris Iberica Servicios SA (50% of voting securities owned by Harris Corporation BV).

Related companies are principally engaged, or are active in, augmenting the primary business activities of Harris Corporation and/or subsidiaries. Intercompany relations are confined to merchandise and service transactions on Net 30 day terms and loans and advances payable at the discretion of management.

PUBLIC FILINGS

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * SUIT(S) * * *

FILING NO.: 904405
SUIT AMOUNT: \$20,000
PLAINTIFF: DONALD G ALLEY
DEFENDANT: HARRIS CORP, BELLEVUE, NE
WHERE FILED: DOUGLAS COUNTY DISTRICT COURT, OMAHA, NE
STATUS: Judgment entered
DATE STATUS ATTAINED: 02/27/1992
DATE FILED: 02/27/1992
LATEST INFO COLLECTED: 03/10/1992

* * * LIEN(S) * * *

A lienholder can file the same lien in more than one filing location. The appearance of multiple liens filed by the same lienholder against a debtor may be indicative of such an occurrence.

DOCKET NO.: 92134031
AMOUNT: \$2,517
TYPE: State Tax
FILED BY: STATE BOARD OF EQUALIZATION
AGAINST: HARRIS CORPORATION, SAN CARLOS, CA
WHERE FILED: SAN MATEO COUNTY RECORDERS OFFICE, REDWOOD CITY, CA
STATUS: Released
DATE STATUS ATTAINED: 05/05/1993
DATE FILED: 08/19/1992
LATEST INFO RECEIVED: 05/18/1993

DOCKET NO.: B91P10709
AMOUNT: \$11,750
TYPE: State Tax
FILED BY: COMMONWEALTH OF VIRGINIA
AGAINST: HARRIS CORP, ALEXANDRIA, VA
WHERE FILED: ALEXANDRIA CITY CIRCUIT COURT, ALEXANDRIA, VA
STATUS: Open
DATE STATUS ATTAINED: 12/04/1991
DATE FILED: 12/04/1991
LATEST INFO RECEIVED: 06/26/1992

There are 163 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

Supplier Evaluation

SUBSCRIBER:

FEDERAL GOVERNMENT

(As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 15

Activity Summary:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - NO
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - N/A
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier PAYDEX	PRIOR 4 QTRS				CURRENT, 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL
	65	68	68	70	70	68	69	69	68	68	67	66	66	65	66	67
Industry (Based on 510 establishments in SIC 366X) PAYDEX																
P ORT	74	74	75	75	74				75			75			75	
MEDIAN	69	69	70	70	69				70			70			70	
LO QRT	61	62	63	64	64				64			63			64	

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$18,608	PAYDEX		PAYMENT
Highest Credit:	\$1,000,000			
Placed for Collection:	1	100		ANTICIPATE
Cash Experience(s):	-	90		DISCOUNT
No. of Trade Experience(s):	874	80		PROMPT
		70		SLOW TO 15
		50		SLOW TO 30
		40		SLOW TO 60
		30		SLOW TO 90
		20		SLOW TO 120
		UN		UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 03-253-3788

DATE PRINTED:
JAN 25 1994

SUMMARY

LINEAR TECHNOLOGY CORPORATION

1630 MC CARTHY BLVD
MILPITAS CA 95035-0000
TEL: (408) 432-1900

CONTROL	1981
SALES F	\$150,867,000
NET WORTH F	\$162,515,000
EMPLOYS	872 TOTAL
	625 HERE

CHIEF EXECUTIVE: ROBERT H SWANSON JR,
PRES

PRIMARY SIC NO. 3674
MFG LINEAR INTEGRATED CIRCUITS

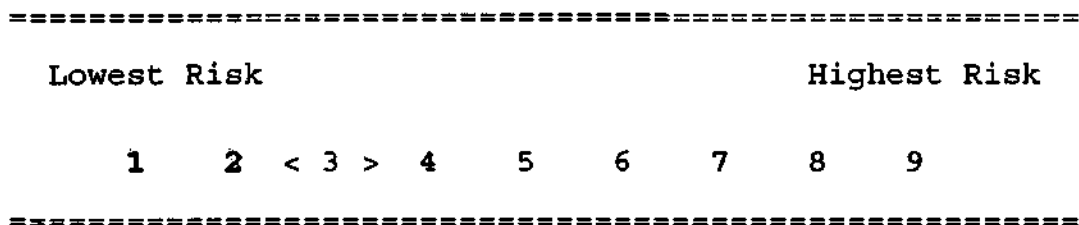
SPECIAL EVENTS

01/21/94 EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended January 2, 1994 are as follows: sales of \$93,067,000 and net income (loss) of \$24,907,000 compared to sales of \$69,248,000 and net income (loss) of \$16,026,000 for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 3

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS A RELATIVELY LOW RISK.



Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
- Sales for the Fiscal year ending JUN, 1993 are Up by 26.3%.
- Net worth for the Fiscal year ending JUN, 1993 is Up by 31.6%.
- Average Payments are 12 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 06/27/93 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Jose, CA.
- Under present management control 13 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Jun. 27, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
 (Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	22.4	5.2	1.4	130.2	20.9
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	1	1	2	4	1

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
 Industry norms based upon 196 establishments.

OPERATION

10/21/93

Designs, manufactures and markets high performance linear integrated circuits.

Terms are net 30 days for domestic accounts and letters of credit and net 60 days for international accounts. Has 300 account(s). Sells to distributors and original equipment manufacturers. Territory : Domestic (60% of fiscal 1993 sales); and export to Europe (24%), Japan (7%) and other (9%).

Nonseasonal.

EMPLOYEES: 872. 625 employed here.

FACILITIES: Owns 40,600 sq. ft. in one story concrete block building in good condition. Leases an adjacent 43,000 square foot

building and another 40,000 square feet in neighboring buildings to house testing, shipping, administration, circuit design activities, regional sales staff and receiving functions.

LOCATION: Industrial section on well traveled street.

BRANCHES: Leases a 25,600 square foot plant in Singapore to perform offshore product test, assembly and finishing. The company is also constructing a 50,000 square foot manufacturing facility in Singapore which is scheduled to be completed in the second half of calendar year 1994. Sales offices are leased in the metropolitan areas of Boston, MA; Philadelphia, PA; Chicago, IL; Dallas, TX; Los Angeles, CA; London, England; Munich, Germany; Paris, France; Tokyo, Japan; Taipei, Taiwan; and Seoul, South Korea.

.....
GLOBAL ACTIVITY.

The following section is a global summary and is intended to assist D&B's non-U.S. customers when evaluating D&B reports on U.S. companies.

.....
FAMILY TREE SUMMARY.

D&B's global linkage file on this company shows this business has subsidiaries located in Japan (1), Germany (1), France (1).

.....
IMPORT/EXPORT ACTIVITY.

40% of total sales are derived from export.

Over the last three years, international sales have been up.

.....
Based on information in our file, D&B has assigned this company an extended 8 digit SIC. D&B's use of 8 digit SIC's enable us to be more specific to a companies operations than if we use the standard 4 digit code.

36740200 Mfg Integrated Circuits.

.....
GLOBAL NEWSWORTHY EVENTS.

None reported.

SUBSIDIARIES: The company identifies the following subsidiaries, wholly-owned, which operate as sales entities. Intercompany relations consist of operating advances on regular terms. No guarantees or endorsements reported.

Linear Technology K K, Tokyo, Japan; Linear Technology GmbH, Munich, Germany; Linear Technology (UK) Limited, London, England; Linear Technology SARL, Paris, France; Linear Technology Pte, Singapore; Linear Technology (Taiwan) Corporation, Taipei, Taiwan; Linear Technology Korea, Seoul, South Korea; Linear Technology Foreign

Sales Corporation, Milpitas, CA.

Standard Industrial Classification (SIC) Summary:
3674 00 00 Semiconductors and related devices

HISTORY
10/21/93

ROBERT H SWANSON JR, PRES & CEO+ CLIVE B DAVIES, V PRES & CHIEF
OPERATING OFFICER
ROBERT C DOBKIN, V PRES- PAUL COGHLIN, V PRES-FIN & CHIEF
ENGINEERING FINANCIAL OFFICER
SEAN T HURLEY, V PRES-OPER ARTHUR F SCHNEIDERMAN, SEC
DIRECTOR(S): The officers identified by (+) and David S Lee, Glenn M
Mueller and Thomas S Volpe.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 09/10/1981
STATE OF INCORP: California

AUTH SHARES-COMMON: 40,000,000
PAR VALUE-COMMON: No Par Value

AUTH SHARES-PREF: 2,000,000
PAR VALUE-PREF: No Par Value

OUTSTANDING CAPITAL STOCK: 35,673,788 common shares at Jun 27
1993.

Business started 1981 by Robert H Swanson, Brain E Hollins and
Robert C Dobkin.

CONTROL: This is a publicly held company. Common stock is
traded over-the-counter market under the NASDAQ symbol "LLTC". At Jun
27 1993, there were approximately 610 shareholders of record. As of
Sep 9 1993, no shareholder was identified by the company as owning
beneficially more than 5% of the company's common stock. The officers
and directors as a group beneficially owned 2.9% as of that date.

-----MANAGEMENT BACKGROUND-----

R H SWANSON born 1938. 1981 to present active here. 1973-81
National Semiconductor Corporation, Santa Clara, CA, vice president
and general manager of the linear integrated circuit division.
1968-73 National Semiconductor, European Plant, Germany, supervisor.
1963-68 Fairchild Semiconductor, Sunnyvale, CA, production manager.
1959-63 Transitron Electronics, San Jose, CA, engineer. Received a BS
in Industrial Engineering/Management from Northeastern University in
1963.

C B DAVIES born 1943. 1982 to present active here. 1976-82
National Semiconductor Corp, Santa Clara, CA, various positions,
including group director of Advanced Technology, general manager of
overseas assembly operations and business director of standard Linear
integrated circuit operations. He received a BS (Honors) in Physics
in 1964 and a PhD in Physics in 1967 from the University of Reading,
England.

R C DOBKIN born 1944. 1981 to present active here. 1969-81 National Semiconductor Corp, Santa Clara, CA, lastly as director of advanced circuit development. Attended Massachusetts Institute of Technology.

P COGHLAN born 1945. 1986 to present active here. 1981-86 employed by GenRad, Massachusetts and California. 1969-81 Price Waterhouse, Boston, MA. 1966 graduated from Boston College, BA Accounting. 1968 received his MBA from Babson College.

S T HURLEY born 1938. 1989 to present active here. 1973-89 National Semiconductor Corp, Santa Clara, CA, lastly as director of linear operations. Prior to 1973 Applied Material Inc, director of European operations. 1965 received MS in Solid State Physics, and 1961 a BS in Chemistry from the University of London.

A F SCHNEIDERMAN born 1942, not active here. Partner with Wilson, Sonsini, Goodrich & Rosati, Palo Alto, CA.

-----OTHER DIRECTORS-----

D S LEE, not active here. President and chief executive officer of Qume Corporation.

G M MUELLER, not active here. General partner with Mayfield Fund, venture capital investments.

T S VOLPE, not active here. Managing partner of Volpe, Welty & Co, an investment banking firm.

-----OTHER OFFICERS-----

PAUL CHANTALAT, vice president, quality, reliability and service. TIMOTHY D COX, vice president, North American sales. HANS J ZAPP, vice president, international sales. THOMAS D RECINE, vice president, marketing.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * LIEN(S) * * *

DOCKET NO.: 11095492

AMOUNT: \$229,823

TYPE: Mechanics

FILED BY: PARAGON MECHANICAL INC

AGAINST: LINEAR TECHNOLOGY

WHERE FILED: SANTA CLARA COUNTY RECORDER,
SAN JOSE, CA

STATUS: Open

DATE STATUS ATTAINED: 10/16/1991

DATE FILED: 10/16/1991

LATEST INFO RECEIVED: 11/19/1991

There are 6 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated, vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 13

Activity Summary:

Borrower (Dir/Guar): - NO
 Administrative Debt: - NO
 Contractor: - NO
 Grantee: - NO
 Debarred, Suspended or
 Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - YES (1993)
 Small Business: - N/A
 Women-Owned: - N/A
 8(A) Firm: - N/A
 Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	'92	'92	'92		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	
PAYDEX	63	63	73	77	78	78	77	78	78	78	77	77	77	76	67	72	72	
Industry (Based on 1,044 establishments in SIC 367X)																		
PAYDEX																		
UP QRT	75	75	74	74	74					75			75				75	
MEDIAN	69	69	68	68	69					69			70				70	
LO QRT	61	62	60	62	62					62			63				63	

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$5,535	PAYDEX	PAYMENT
Highest Credit:	\$100,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	125	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90

20
UNSLOW TO 120
UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 09-681-0163

DATE PRINTED:
JAN 25 1994

SUMMARY

MAXIM ENGINEERS, INC

BOX/DRAWER 59902
2342 FABENS LN
DALLAS TX 75229-0000
TEL: (214) 247-7575

CONTROL 1991
SALES F \$10,447,096
NET WORTH \$(550,212)
EMPLOYS 110 TOTAL
100 HERE

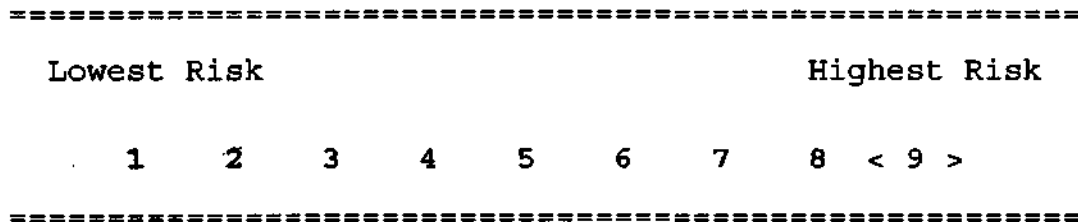
CHIEF EXECUTIVE: JAMES T HANEY, PRES-
CEO

PRIMARY SIC NO. 8744
ENVIRONMENTAL CONSULTANTS &
ENGINEERS

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 9

THE INFORMATION IN DUN & BRADSTREET'S FILE OR THE UNAVAILABILITY OF
INFORMATION TO DUN & BRADSTREET SUGGESTS A CLOSE EXAMINATION OF THIS
SUPPLIER.



Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
- Sales for the Fiscal year ending FEB, 1993 are Down by 6.3%.
- Net worth for the Fiscal year ending FEB, 1993 is Up by 26.6%.
- Business under present control less than five years.
- Average Payments are 23 day(s) beyond terms.
- Average Industry Payments are 8 day(s) beyond terms.
- Firm's debts on 1 occasion(s) have been placed for collection as reported to Dun & Bradstreet.

- UCC Filings present.
- Financing secured.
- Operations reported profitable.
- This business has a deficit tangible net worth.
- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Statement dated 02/28/93 is included in the Risk Rating.
- Statement prepared by Price Waterhouse, Dallas, TX.
- Under present management control 3 years.

FINANCIAL PROFILE

(Based On A Fiscal Statement Dated Feb. 28, 1993.)

The Financial Appraisal Ranking of the Supplier = 3
 (Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	-	1.2	1.0	37.9	-
Industry Median	28.1	1.6	1.4	31.6	120.7
Quartile Rank (Supplier)	4	3	3	3	4

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
 Industry norms based upon 62 establishments.

OPERATION

01/10/94 Operates as environmental consultants and engineers, specializing in the areas of asbestos management, engineering and geotechnical materials testing.

Terms are net 30 days. Has 600 account(s). Sells to general contractors, architects, property owners, real estate developers, and government agencies. Territory : United States.
 Nonseasonal.

EMPLOYEES: 110 which includes officer(s) and 1-2 part-time.
 100 employed here.

FACILITIES: Owns 25,000 sq. ft. in two 1 story steel and stucco buildings. The company owns 2.6 acres on the property.

LOCATION: Industrial section on side street.

BRANCHES: The company operates branches with same operations in Austin, Fort Worth, and Houston, TX. Locations are leased with sizes ranging from 1,000 sq. ft. to 6,000 sq. ft.

Standard Industrial Classification (SIC) Summary:
8744 00 00 Facilities support services

HISTORY
01/10/94

JAMES T HANEY, PRES-CEO WALTER MCMULLIN, CHB+
DANA W SWINDLER, EX V PRES
DIRECTOR(S): Gary Forbes, Alexander H Massad, C A Rundell Jr, and B
William Bonnivier.

CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY
OF STATE OR OTHER OFFICIAL SOURCE AS OF 09/10/1993:

BUSINESS TYPE: Corporation - DATE INCORPORATED: 02/14/1979
Profit STATE OF INCORP: Texas

Business started Mar 1979 by Walter McMullin and others. Present control succeeded Feb 28 1991. 45% of capital stock is owned by Walter McMullin. Purchase price was \$1,900,000, financed by the issuance of subordinated debt. The shares are reflected on the balance sheet as treasury stock.

STOCK: 30% of the stock is owned by Equus Corporation International (Inc), Houston, TX. The remaining 30% of the stock is owned by the officers and directors with no one individual owning a 10% or more stock interest.

ACQUISITIONS: In Feb 1991 the company acquired operating assets and assumed the liabilities of MP Investments, a general partnership.

JAMES T HANEY born 1945. 1967 graduated with BS Degree in Chemical Engineering and 1969 graduated with MS Degree in Chemical Engineering/Environmental Control from Clemson University, Clemson, SC. 1969-70, 1974-76 and 1978-80 employed by Lockwood Greene Engineers, Spartanburg, NC and Dallas, TX. 1970-74 U S Air Force. 1976-78 employed by Midrex Corporation, Charlotte, NC. 1978-81 officer of U S Lend Lease Corp, Dallas, TX, resigned orderly. 1981-82 officer of J L Williams Co, Dallas, TX, resigned orderly. 1982-89 vice president of Transwestern Property Company (Inc), Dallas, TX, resigned orderly. 1989-92 officer of Cura Inc, Dallas, TX, resigned orderly. 1992-93 president of John Brown Environmental, Houston, TX, resigned orderly. 1993-present here.

WALTER MCMULLIN born 1936. 1957-67 C H Lacey Company, Dallas, TX, as engineer. 1967-79 employed by Roan Engineers, Arlington, TX, as engineer. 1979-present active here and with related concern.

DANA W SWINDLER born 1959. 1982 graduated with BA Degree from the University of Washington, Seattle, WA. 1982-89 employed by Carlisle Property Company and Transwestern Property Company (Inc), Dallas, TX. 1989-92 employed by Cura Inc, Dallas, TX. 1992-present active here.

GARY FORBES born 1948, not active here. Outside director. Owns no stock. Currently active with Equus Corporation International (Inc), Houston, TX.

ALEXANDER H MASSAD born 1925, not active here. Outside director. Owns no stock. Retired from Mobil Corporation after 40 years of service. Currently retired and on the board of numerous companies. Currently resides in Austin, TX.

C A RUNDELL JR born 1934, not active here. Outside director. Owns no stock. Currently president of Rundell Enterprises, Dallas, TX.

B WILLIAM BONNIVIER born 1945, not active here. Outside director. Owns no stock. Currently active with Princeton Packaging, Inc, Dallas, TX.

RELATED CONCERN: The following company is a 30% stockholder EQUUS CORPORATION INTERNATIONAL (INC), Houston, TX. Started 1978. DUNS: 02-149-0172. Manages investment funds and rents equipment. Intercompany relations consist of a occasional service transactions on regular terms. No loans were reported by management. Financial information dated Dec 31 1992 indicated net worth \$1,032,000.

The following is related through Walter McMullin: CBX Corporation, Dallas, TX. No intercompany relations were reported by management. No DUNS number or financial information was on file as of Oct 21 1993. No further information was available from management.

PUBLIC FILINGS

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * SUIT(S) * * *

DOCKET NO.: CC90-05922-3

SUIT AMOUNT: \$25,099

PLAINTIFF: MULINS ENVIRONMENTAL TESTING CO
INC

DEFENDANT: MAXIM ENGINEERS INC

CAUSE: Debt, non-payment

WHERE FILED: DALLAS COUNTY RECORDERS OFFICE,
DALLAS, TX

STATUS: Pending

DATE STATUS ATTAINED: 06/12/1990

DATE FILED: 06/12/1990

LATEST INFO COLLECTED: 10/22/1993

On 12/04/91, Bert Strahan, Chief Financial Officer, MAXIM ENGINEERS INC, stated that the suit has been dismissed.

There are 40 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated, vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 03

Activity Summary:

Possible Candidate for Socio-Economic Program Consideration:

Borrower (Dir/Guar): - NO
 Administrative Debt: - NO
 Contractor: - YES
 Grantee: - NO
 Debarred, Suspended or
 Ineligible Contractor: - NO

Labor Surplus Area: - N/A
 Small Business: - N/A
 Women-Owned: - N/A
 8(A) Firm: - N/A
 Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	MAR	JUN	SEP		DEC	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
PAYDEX	53	50	49	53	54	54	56	55	59	60	60	59	58	61	58	59		
Industry (Based on 133 establishments in SIC 8744)																		
PAYDEX																		
UP QRT	79	78	80	80	79				80			80				80		
MEDIAN	73	74	75	76	77				76			77				75		
LO QRT	66	66	66	65	67				68			68				68		

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

		PAYDEX	PAYMENT
Average High Credit:	\$1,164		
Highest Credit:	\$5,000		
Placed for Collection:	1	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	45	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90

20
UN

SLOW TO 120
UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

DUNS: 09-681-0163

DATE PRINTED:
JUL 23 1993

SUMMARY

MAXIM ENGINEERS, INC
BOX/DRAWER 59902
2342 FABENS LN
DALLAS TX 75229-0000
TEL: (214) 247-7575

CONTROL	1991
SALES F	\$11,154,098
NET WORTH F	\$(370,256)
EMPLOYS	133 TOTAL
	100 HERE

CHIEF EXECUTIVE: JAMES T HANEY, PRES-
CEO

PRIMARY SIC NO. 8748
ENVIRONMENTAL CONSULTANTS

SPECIAL EVENTS

03/29/93 According to published reports, Maxim Engineers Inc has named
James T Haney president/CEO.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 9

THE INFORMATION IN DUN & BRADSTREET'S FILE OR THE UNAVAILABILITY OF
INFORMATION TO DUN & BRADSTREET SUGGESTS A CLOSE EXAMINATION OF THIS
SUPPLIER.

Lowest Risk

Highest Risk

1 2 3 4 5 6 7 8 < 9 >

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
 - Business under present control less than five years.
 - Average Payments are 24 day(s) beyond terms.
 - Average Industry Payments are 8 day(s) beyond terms.
 - Firm's debts on 1 occasion(s) have been placed for collection as reported to Dun & Bradstreet.
 - Change in chief executive reported.
 - Special events have been reported.
 - UCC Filings present.
 - Financing secured.
 - This business has a deficit tangible net worth.
 - Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
 - Financial information from a Fiscal Statement dated 04/30/93 is included in the Risk Rating.
- Under present management control 2 years.

Supplier Evaluation

Dun & Bradstreet
Information Services

MAXIM ENGINEERS, INC
PAGE 2 OF 4

SUBSCRIBER:

FINANCIAL PROFILE

(Based On An Unaudited Fiscal Statement Dated Apr. 30, 1993.)

The Financial Appraisal Ranking of the Supplier = 3
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	-	1.0	0.9	34.1	-
Industry Median	17.4	1.5	1.2	43.2	122.1
Quartile Rank (Supplier)	-	4	4	1	4

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 72 establishments.

OPERATION

06/24/93

Operates as environmental consultants, specializing in the areas of asbestos management, and engineering and geotechnical materials testing.

Terms are net 30 days. Has 600 accounts. Sells to general contractors, architects, property owners, real estate developers, government agencies. Territory: United States. Nonseasonal.

EMPLOYEES: 133 including officers. 100 employed here.

FACILITIES: Owns 25,000 sq. ft. in one story stucco and metal building in good condition. The company owns 2.6 acres and occupies two buildings on the property.

LOCATION: Industrial section on side street.

BRANCHES: Branches are maintained in Phoenix, AZ, where the company leases 2,000 sq. ft.; Austin, TX, where the company leases 1,000 sq. ft.; Fort Worth, TX, where the company leases 4,000 sq. ft.; Houston, TX, where the company leases 4,000 sq. ft.; and San Antonio, TX, where the company leases 300 sq. ft. Branch operations are the same as headquarters.

BANK: Texas Commerce Bank, 2200 Ross Ave; Analytical-SAB

Standard Industrial Classification (SIC) Summary:
8748 99 05 Environmental consultant

HISTORY

06/24/93

WALTER MCMULLIN, CHB+
DANA SWINDLER, EX V PRES
DIRECTOR(S): Gary Forbes, Alexander H Massad, C A Rundell Jr, and B William Bonnivier.

GARY ANDREWS, V PRES-SALES+

CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY
OF STATE OR OTHER OFFICIAL SOURCE AS OF 04/29/1993:

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 02/14/1979
STATE OF INCORP: Texas

Supplier Evaluation

SUBSCRIBER: .

Business started Mar 1979 by Walter McMullin and others. Present control succeeded Feb 28 1991. 45% of capital stock is owned by Walter McMullin. Purchase price was \$1,900,000, financed by the issuance of subordinated debt. The shares are reflected on the balance sheet as treasury stock.

30% of the stock is owned by Equus Corporation International (Inc), Houston, TX. The remaining 30% of the stock is owned by the officer and directors with no one individual owning a 10% or more interest.

WALTER MCMULLIN born 1936. 1957-67 C H Lacey Company, Dallas, TX as engineer. 1967-79 Roan Engineers, Arlington, TX as engineer. 1979-present active here.

GARY ANDREWS born 1957. 1978-84 employed by Maschinenfabrik Andritz, Lubbock, TX. 1980 received BS in chemistry from Texas Tech University, Lubbock, TX. 1984-86 vice president Gebruder Becker, Dallas, TX, and Denver, CO; resigned orderly. 1986-present active here.

DANA SWINDLER born 1959. 1980-82 self employed as a carpenter under own name, Seattle, WA. 1982 graduated from the University of Washington, Seattle, WA. 1982-89 employed by Carlisle Property Company and Transwestern Property Company, Dallas, TX. 1989-92 employed by Cura Inc, Dallas, TX. 1992-present active here.

GARY FORBES, not active here. Outside director. Owns no stock. Currently active with Equus Corporation International (Inc), Houston, TX.

ALEXANDER H MASSAD, not active here. Outside director. Owns no stock. Retired and currently resides in Austin, TX.

C A RUNDELL JR, not active here. Outside director. Owns no stock. Currently resides in Dallas, TX.

B WILLIAM BONNIVIER, not active here. Outside director. Owns no stock. Currently active with Princeton Packaging, Dallas, TX.

RELATED CONCERN:

EQUUS CORPORATION INTERNATIONAL (INC), Houston, TX. Started 1978. DUNS number 02-149-0172. Manages investment funds, rents equipment, and operates a cattle ranch. Intercompany relations consist of a 30% stock interest in Maxim Engineers, Inc. Financial information is not available.

PUBLIC FILINGS

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * SUIT(S) * * *

DOCKET NO.: CC90-05922-3

SUIT AMOUNT: \$25,099

PLAINTIFF: MULINS ENVIRONMENTAL TESTING CO
INC

DEFENDANT: MAXIM ENGINEERS INC

CAUSE: Debt, non-payment

WHERE FILED: DALLAS COUNTY RECORDERS OFFICE,
DALLAS, TX

STATUS: Pending

DATE STATUS ATTAINED: 06/12/1990

DATE FILED: 06/12/1990

LATEST INFO COLLECTED: 07/12/1990

On 12/04/91, Bert Strahan, Chief Financial Officer, MAXIM ENGINEERS INC, stated that the suit has been dismissed.

There are 52 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available

Supplier Evaluation

Dun & Bradstreet
Information Services

ENGINEERS, INC
PAGE 4 OF 4

SUBSCRIBER:

by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 03

Activity Summary:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - YES
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - N/A
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier PAYDEX	PRIOR 4 QTRS				'92 AUG	CURRENT 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN		'92 SEP	'92 OCT	'92 NOV	'93 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL	
	45	52	53	50	48	49	51	53	53	53	54	54	56	55	59	58	

Industry (Based on 356 establishments in SIC 8748)
PAYDEX

UP QRT	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
MEDIAN	74	74	74	73	73	73	73	73	73	73	74	74	74	75	75	75
LO QRT	66	65	65	67	65	65	65	66	66	66	66	66	66	67	67	67

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$1,001	PAYDEX	PAYMENT
Highest Credit:	\$5,000	-----	-----
Placed for Collection:	1	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	40	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUBSCRIBER:

DUNS: 09-260-9585

DATE PRINTED:
JUL 23 1993

SUMMARY

MICREL, INCORPORATED
+MICREL SEMICONDUCTOR1849 FORTUNE DR
SAN JOSE CA 95131-0000
TEL: (408) 944-0800

CONTROL	1978
SALES F	\$18,330,621
NET WORTH F	\$7,170,657
EMPLOYS	144 TOTAL
	144 HERE

CHIEF EXECUTIVE: RAYMOND D ZINN, PRES

PRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUITS &
SEMICONDUCTOR WAFERS

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 2

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS A RELATIVELY LOW RISK.

Lowest Risk

Highest Risk

1 < 2 > 3 4 5 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending DEC, 1992 are Up by 29.2%.
- Net worth for the Fiscal year ending DEC, 1992 is Up by 21.7%.
- Average Payments are 11 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- UCC Filings present.
- Financing secured.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Statement dated 12/31/92 is included in the Risk Rating.
- Under present management control 15 years.

FINANCIAL PROFILE

(Based On An Unaudited Fiscal Statement Dated Dec. 31, 1992.)

The Financial Appraisal Ranking of the Supplier = 2
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

PROFITABILITY SOLVENCY SHORT TERM EFFICIENCY DEBT UTILIZATION

Supplier Evaluation

Dun & Bradstreet
Information Services

INCORPORATED
OF 4

SUBSCRIBER:

	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	16.2	2.3	1.1	62.6	60.1
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	2	3	3	1	3

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

OPERATION 04/29/93

Manufactures integrated circuits (68%), semiconductor wafers (30%) and operates as a semiconductor testing laboratory (2%). Terms are net 30 days for domestic customers. Net 30 days or letters of credit for international accounts. Has 3-400 accounts. Sells to a variety of industries, including computer, consumer products, military, automotive, power and telecommunications industries. Territory: Domestic (70%) and International (30%). Nonseasonal.

EMPLOYEES: 144 including officers. 144 employed here.

FACILITIES: Leases 58,000 sq. ft. in a two story concrete building in good condition. Premises neat.

LOCATION: Industrial section on side street.

BRANCHES: 639 N Pastoria Ave, Sunnyvale, CA, in the process of being closed.

ANALYST: CC

BANKING: Bank of the West, San Jose, CA

Standard Industrial Classification (SIC) Summary:

3674 00 00 Semiconductors and related devices
3674 02 13 Wafers (semiconductor devices)

HISTORY 04/29/93

RAYMOND D ZINN, PRES

WARREN MULLER, V PRES, SEC &
TREAS

DIRECTOR(S): THE OFFICER(S) and Steven Kottmeier.

CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY
OF STATE OR OTHER OFFICIAL SOURCE AS OF 07/02/1993:

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 07/21/1978
STATE OF INCORP: California

Business started 1978. Relocated Jan 1993 from Sunnyvale, CA. 31% of capital stock is owned by Raymond D Zinn. 28% of capital stock is owned by Warren Muller. 23% of capital stock is owned by Felix Charpentier. 18% of capital stock is owned by employees.

None of the employees owns as much as 10% of the capital stock.

ZINN born 1937. 1978 to present active here. 1975-78

Electromask, Woodland Hills, CA, regional sales manager. 1973-75 Monographic, Mountain View, CA, vice president and general manager; resigned in good order. 1972-73 Nortec, Santa Clara, CA, director of operations. 1971-72 Iomec, Santa Clara, CA, product assurance manager. 1968-71 Teledyne Semiconductor, Mountain View, CA, quality assurance manager. 1963-68 Fairchild, Mountain View, CA, product assurance manager. 1960-63 United Technologies, Sunnyvale, CA,

Supplier Evaluation

SUBSCRIBER:

process engineer. 1968 MBA San Jose State University. 1955-60 Brigham Young University, Industrial Engineering Degree.
MULLER born 1939. 1978 to present active here. 1971-78 Electronic Arrays, Mountain View, CA, process development manager. 1964-71 General Instrument, New York, NY, member of technical staff. Graduated from Clarkson University, Electrical Engineering degree.
KOTTMEIER born 1942, not active here. Attorney with Hopkins & Carley, San Jose, CA.
CHARPENTIER born 1937, not active here. 1977 to present Charp Systems Services Inc, Sunnyvale, CA, president. 1965-77 Fairchild Camera and Instrument, San Jose, CA, field engineer. 1958-65 Columbia University, received a degree in Engineering.
RELATED CONCERN:
Charp Systems Services Inc, Sunnyvale, CA. Started 1977. Operates as an electronic equipment repair shop. Related through Felix Charpentier as a stockholder. There are no loans, guarantees, endorsements or other intercompany relations. D-U-N-S Number 09-261-5061.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 13 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 16

Activity Summary:

Borrower (Dir/Guar):	- NO
Administrative Debt:	- NO
Contractor:	- YES
Grantee:	- NO
Debarred, Suspended or Ineligible Contractor:	- NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area:	- YES (1993)
Small Business:	- YES (1993)
Women-Owned:	- N/A
8(A) Firm:	- N/A
Minority Owned:	- N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL

Supplier Evaluation

Dun & Bradstreet
Information Services

INCORPORATED
OF 4

SUBSCRIBER:

PAYDEX 55 62 66 70 71 71 71 71 74 73 73 74 74 74 73 73
Industry (Based on 1,057 establishments in SIC 367X)
PAYDEX

UP QRT	74	74	75	75	74	74	74	75
MEDIAN	68	68	69	69	68	68	69	69
LO QRT	59	60	61	62	60	62	62	62

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$2,924	PAYDEX	PAYMENT
Highest Credit:	\$40,000	100	ANTICIPATE
Placed for Collection:	-	90	DISCOUNT
Cash Experience(s):	2	80	PROMPT
No. of Trade Experience(s):	66	70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

DUNS: 18-691-7969

 DATE PRINTED:
 JUL 23 1993

SUMMARY

MICROCHIP TECHNOLOGY INCORPORATED

 2355 W CHANDLER BLVD
 CHANDLER AZ 85224-0000
 TEL: (602) 786-7200

CONTROL	1989
SALES F	\$88,652,000
NET WORTH F	\$43,836,000
EMPLOYS	1,070 TOTAL
	450 HERE

CHIEF EXECUTIVE: STEVE SANGHI, PRES-CEO

 PRIMARY SIC NO. 3674
 MFG SEMICONDUCTORS

SPECIAL EVENTS

07/15/93

In a published news release dated Jul 13 1993, the company reported net sales for the first quarter of fiscal 1994 were \$27.1 million, up 36% from the \$20.0 million reported in the year earlier's first quarter, and up 12% from the \$24.2 million reported in the fourth quarter of fiscal 1993. Net income for the first quarter was \$2.7 million, up 467% compared to \$476,000 in the year earlier's first quarter, and up 46% from the \$1.9 million reported in the fourth quarter of fiscal 1993.

At Jun 30 1993 order backlog was \$44.9 million. The company reported that this was up 66% from the year earlier figure of \$27.0 million and up 43% sequentially from the Mar quarter-end backlog of \$31.3 million.

Microchip Technology Inc. also announced that due to demand for its stock, the company and its representative underwriters, are releasing approximately one-third of the shares held by investors previously subject to lock-up restrictions in connection with the company's initial public offering in Mar 1993.

07/14/93

EARNINGS UPDATE: According to published reports, comparative operating results for the 3 months ended March 31, 1993 are as follows: sales of \$20,010,000 and net income (loss) of \$476,000 compared to sales of \$27,096,000 and net income (loss) of \$2,721,000 for the comparable period in the prior year.

04/28/93

EARNINGS UPDATE: According to published reports, comparative operating results for the year ended March 31, 1993 are as follows: sales of \$88,700,000 and net income (loss) of \$4,200,000 compared to sales of \$73,100,000 and net income (loss) of \$360,000 for the comparable period in the prior year.

04/05/93

According to published reports, Microchip Technology Inc has announced an initial public offering on March 19, making available 1.5 million shares of common stock for \$13 per share. Of the shares being offered, 1.3 million were sold by the company and 200,000 by several stockholders. The stock is being traded on the NASDAQ national market system. Its stock symbol is MCHP.

The company expects that after expenses, it will net about \$14 million from the sale. Half is budgeted for capital expenditures during the next year, including the purchase of equipment used in research, development, testing and fabrication at its headquarters and wafer-production facility in Chandler. The other half will be used for working capital and reducing some of its short-term debt, which totaled more than \$8 million at the end of 1992.

02/05/93

According to published reports, Microchip Technology Inc announced the filing of a registration statement with the SEC for an initial public offering of 1.5 million shares of common stock. Of those shares, 1.3 million shares are being offered by the company and 200,000 shares are being offered by selling stockholders.

02/92

According to published reports, subject has hired Philip Chapman as chief financial officer.

SUBSCRIBER:

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk					Highest Risk				
1	2	3	4	< 5 >	6	7	8	9	

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Net worth for the Fiscal year ending MAR, 1993 is Up by 143.1%.
- Business under present control less than five years.
- Average Payments are 22 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- Firm's debts on 1 occasion(s) have been placed for collection as reported to Dun & Bradstreet.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 03/31/93 is included in the Risk Rating.
- Under present management control 4 years.

FINANCIAL PROFILE

(Based On An Unaudited Fiscal Consolidated Statement Dated Mar. 31, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/Sales)%	(Total Liab/Net Worth)%
This Supplier	9.6	2.2	1.5	86.8	75.5
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	2	3	2	2	3

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

MICROCHIP TECHNOLOGY INC
PAGE 3 OF 6

SUBSCRIBER:

OPERATION
07/15/93

Manufactures semiconductor products which consist of CMOS non volatile memories and programmable micro controllers and peripheral devices.

Terms: Net 30 days for domestic sales and letter of credit for international sales. Has 10,480 accounts. Sells to OEM's and distributors. Territory: International. 60% Of Sales Are To International Accounts.

Nonseasonal.

EMPLOYEES: 1,070. 450 employed here.

FACILITIES: Owns 142,000 sq. ft. in 2-one story concrete block buildings.

LOCATION: Industrial section on main street.

BRANCHES: Sales offices for manufactured product are leased in Los Angeles and San Jose, CA; Atlanta, GA; Burlington, MA; Arlington Heights, IL; Hauppauge, NY and Dallas, TX.

SUBSIDIARIES: Microchip Technology Incorporated has 4 active subsidiaries as follows. The extent of ownership is shown in parenthesis following the company name. Separate figures are not available on the subsidiaries.

KAOSHIUNG ELECTRONICS CORPORATION, Kaohsiung, Taiwan (100%). Chartered in 1984 and acquired in 1989. Assembles semiconductor products in an owned 88,700 square foot facility.

ARIZONA MICROCHIP TECHNOLOGY U K LTD, Buckinghamshire, England (100%). Chartered 1989. Active distributing parent company products.

ARIZONA MICROCHIP TECHNOLOGY GMBH, Munich, Germany (100%). Chartered 1989. Active as a distributor of parent company products.

ARIZONA MICROCHIP TECHNOLOGY SARL, Paris, France (100%). Chartered 1990. Active distributing parent company products.

INTERCOMPANY RELATIONS: Merchandise transfers and services cleared at the convenience of management. No guarantees.

BANK: Silicon Valley Bank, Santa Clara, CA

Standard Industrial Classification (SIC) Summary:
3674 02 04 Memories, solid state

HISTORY
07/15/93

STEVE SANGHI, PRES-CEO +

C PHILIP CHAPMAN, VICE PRESIDENT-CFO-SEC

ROBERT A LANFORD, V PRES-SALES

GORDON W PARNELL, CONTROLLER

DIRECTOR(S): The officers identified by (+) and Paul S Brentlinger, William J Harding, Albert J Martinez, Regis P McKenna and Donald Valentine, CHB.

TIMOTHY B BILLINGTON, V PRES-FAB OPERATIONS

ROBERT HACKMEISTER, V PRES-GEN'L

MGR-KAOSHIUNG ELECTRONICS

GEORGE P RIGG, V PRES-LOGIC

PRODUCTS

This is a Delaware corporation licensed in Arizona Oct 21 1992. The Microchip logo and name are registered trademarks of Microchip Technology Inc.

Business started 1978 by General Instrument Corporation (Del). Present control succeeded Apr 1989. 46.8% of capital stock is owned by general public.

Effective Apr 1993 the stock ownership is as follows: 22% is owned by Donald T Valentine; 10.5% is owned by William J Harding PhD; 8% is owned by Regis P McKenna; 7.4% is owned by Paul S Brentlinger; and 3.6% is owned by Steve Sanghi.

22% is owned by Sequoia Capital; 10.5% is owned by J H Whitney & Co; 7.5% is owned by Kleiner Perkins Caufield & Byers V; 5.9% is owned by First Small Business Investment Company of California; 7.4% is owned by Morgenthaler Venture Partners II.

53.2% is owned by the director and executive officers as a group.

SUBSCRIBER:

NASDAQ/NMS symbol is "MCHP". The company completed a common stock offering in Apr 1993 whereby 1,500,000 shares of stock were offered at \$13 per share. The proceeds are to be used for capital equipment and working capital.

This business operated under the control of General Instrument Corporation (Del), New York, NY from 1978 to Apr 13 1989. A former subsidiary, Arizona Microchip Technology Ltd, Hong Kong, discontinued operation in Jun 1991 with all bills paid.

The Microchip logo and name and PIC are registered trademarks of Microchip Technology Incorporated.

STEVE SANGHI born 1955. MS degree in electrical engineering from the University of Massachusetts in 1978. 1978 to 1988 employed by Intel Corporation, Santa Clara, CA as general manager of the Programmable Memory Products Division. May 1988 to Feb 1990 employed by Waferscale Integration Inc, Fremont, CA as senior vice president-operations. No ownership interest. Feb 1990 joined this company as senior vice president-operations. President-CEO in May 1990.

TIMOTHY B BILLINGTON born 1943. BS degree in marketing from Abilene Christian University. From 1984-1986 employed by Intel Corporation, Chandler, AZ as manufacturing manager. From 1987-1989 employed by PMT Technology, Inc., a consulting firm. Joined this company in Jun 1989. Elected vice president of Fab Operations in Apr 1991.

C PHILIP CHAPMAN born 1953. MBA degree from Harvard Graduate School, Cambridge, MA. BS degree in accounting and managerial finance from University of California. Joined the company in Sep 1992 as chief financial officer. Elected secretary in Dec 1992. From 1988-1992 executive vice president, finance and operations and chief financial officer for Syntellect Inc. From 1984-1988 vice president, finance and chief financial officer for Medical Systems Support, Inc. Prior to 1984, controller for Motorola Information Systems and Spectra-Physics, Inc.

ROBERT J HACKMEISTER born 1930. MBA degree from Xavier University and a BS degree in industrial supervision from Wilmington College. 1959-1984 employed by RCA Corporation, New York, NY, lastly as vice president of the regional headquarters in The Philippines. No ownership interest. 1984 to present vice president-general manager of Kaohsiung Electronics Corporation, Kaohsiung, Taiwan.

ROBERT A LANFORD born 1941. Graduated from Arizona State University, Tempe, AZ in 1964. BS degree. 1965-1970 employed by Motorola Inc, Phoenix, AZ. 1970-1971 employed by National Semiconductor Corp, Tempe, AZ. 1971-1974 employed by Fairchild Semiconductor Corporation, Scottsdale, AZ. 1974-1981 employed by Signetics Corporation, Sunnyvale, CA. 1981-1985 employed by Integrated Device Technology, Inc, Cupertino, CA as vice president sales and marketing. Sold his interest. No unpaid bills. 1985-1986 employed by Cirrus Logic Incorporated, Fremont, CA as vice president sales and marketing. No ownership interest. 1986-1987 employed by Electronic Designs Incorporated, Modesto, CA as vice president sales and marketing. No ownership interest. 1987-1990 employed by AIM Technology Inc, Santa Clara, CA as vice president sales and marketing. No ownership interest. 1990-1991 employed by Specialty Development Corporation, Anaheim, CA as vice president marketing. No ownership interest. Apr 1991 vice president-sales of Microchip Technology Incorporated.

GEORGE P RIGG born 1939. BS in physics from Manchester University in England. 1965-70 employed by National Cash Register Corporation, New York, NY. 1970-77 employed by Signetics Corporation, New York, NY. 1977-78 employed by Synertek, Inc, Santa Clara, CA. 1978 to 1980 employed by Rodenstock Instrument Corporation, Danbury, CT. 1981 to 1989 employed by Advanced Micro Devices, Inc, Sunnyvale, CA as division vice president. Jun 1989 to present with this company.

GORDON W PARNELL born 1949. Accounting degree from College of Commerce, Edinburgh, Scotland, 1973. A fellow of certified accountants in the United Kingdom. 1973-87 General Instrument Corporation (Del), New York, NY, employee. 1988-present active with

SUBSCRIBER:

this company and the predecessor. Controller in Apr 1989.
PAUL S BRENTLINGER born 1928, not active here. 1984 to present general partner in Morgenthaler Ventures, Cleveland, OH. Prior to 1984 senior vice president of finance at Harris Corporation. Elected a director Mar 1991.

WILLIAM J HARDING born 1948, not active here. General partner from 1985 to present with J H Whitney & Co, San Jose, CA. From 1976-1985 employed by Amdahl Corporation as director of systems planning. Prior to 1976, systems performance analyst for Honeywell Information Systems, Inc. Elected a director in Mar 1989.

ALBERT J MARTINEZ born 1945, not active here. Since 1987, president and CEO of Applied Micro Circuits Corporation. Prior to 1987 employed for twenty years in the semiconductor industry, holding senior management positions at the LSI Products Division of TRW Incorporated, Burr-Brown Research Corporation and Motorola, Inc. Elected a director in Oct 1990.

REGIS P MCKENNA born 1940, not active here. Chairman of Regis McKenna, Inc. since 1970 and is a venture partner with Kleiner Perkins Caufield and ByersV, a venture capital firm. Elected a director in Aug 1989.

DONALD T VALENTINE born 1933, not active here. General partner from 1974 to present with Sequoia Capital (Inc), Menlo Park, CA. Elected a director Mar 1989 and CHB in Jan 1993.

RELATED COMPANIES: The following companies hold a minority stock interest in this company. Intercompany relations are confined to funds invested in this company. No guarantees.

SEQUOIA CAPITAL (INC), Menlo Park, CA. DUNS number 077238962. Started 1966. Active as a venture capital company. No figures available.

MORGENTHALER MANAGEMENT CORP, dba Morgenthaler Ventures, Cleveland, OH. DUNS number 081766636. Started 1968. Active as a private venture capital company. No figures available.

J H WHITNEY & CO, New York, NY. DUNS number 001794163. A partnership started 1947. Active as a private investment company. No figures available.

KLEINER PERKINS CAUFIELD & BYERS, San Francisco, CA. DUNS number 068841576. Active as a venture capital company. No figures available.

SECURITY PACIFIC CAPITAL FUND, Costa Mesa, CA. Active as a venture capital company. No figures available.

WALDEN VENTURES, San Francisco, CA. Active as a venture capital company. No figures available.

ASSOCIATES VENTURE CAPITAL, INC, San Francisco, CA. Active as a venture capital company. No figures available.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 97 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

public record items contained in this report may have been paid, terminated, vacated or released prior to the date this report was printed.



SUBSCRIBER:

FEDERAL GOVERNMENT

(As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 01

Activity Summary:

Possible Candidate for Socio-Economic Program Consideration:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - NO
Grantee: - NO
Debarred, Suspended or Ineligible Contractor: - NO

Labor Surplus Area: - N/A
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier PAYDEX	PRIOR 4 QTRS				CURRENT, 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL
	57	57	57	53	54	54	55	54	54	57	56	57	56	58	60	60

Industry (Based on 1,057 establishments in SIC 367X)
PAYDEX

UP QRT	74	74	75	75	74	74	74	75
MEDIAN	68	68	69	69	68	68	69	69
LO QRT	59	60	61	62	60	62	62	62

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit: \$9,360
Highest Credit: \$200,000
Placed for Collection: 1
Cash Experience(s): 2
No. of Trade Experience(s): 120

PAYDEX	PAYMENT
100	ANTICIPATE
90	DISCOUNT
80	PROMPT
70	SLOW TO 15
50	SLOW TO 30
40	SLOW TO 60
30	SLOW TO 90
20	SLOW TO 120
UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 09-312-0871

DATE PRINTED:
JAN 25 1994

SUMMARY

MICRON TECHNOLOGY INC
2805 E COLUMBIA RD
BOISE ID 83706-0000
TEL: (208) 368-4000

CONTROL 1978
SALES F \$828,270,000
NET WORTH F \$709,488,000
EMPLOYS 4,900 TOTAL
4,400 HERE

CHIEF EXECUTIVE: JOSEPH L PARKINSON,
CHB

PRIMARY SIC NO. 3674
MFG SEMICONDUCTOR MEMORY COMPONENTS;
PERSONAL COMPUTERS; SEMICONDUCTOR
TESTING EQUIPMENT

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 4 < 5 > 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending SEP, 1993 are Up by 63.6%.
- Net worth for the Fiscal year ending SEP, 1993 is Up by 25.1%.
- Average Payments are 17 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- UCC Filings present.
- Financing secured.
- Operations reported profitable.

- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 09/02/93 is included in the Risk Rating.
- Statement prepared by Coopers & Lybrand, Boise, ID.
- Under present management control 16 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Sep. 02, 1993.)

The Financial Appraisal Ranking of the Supplier = 3
 (Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	16.3	2.1	1.0	116.6	51.0
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	2	3	3	4	2

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
 Industry norms based upon 196 establishments.

OPERATION

01/06/94

Through subsidiaries, the company designs, manufactures and markets semiconductor memory components primarily used in various computer applications. The company produces dynamic random access memories (DRAMs), static random access memories (SRAMs), specialty DRAMs, including video RAMs (VRAMs), and specialty SRAMs. The company also produces a line of memory-intensive modules and board-level products (solid state memories) for personal computers and peripheral products. The aforementioned accounted for approximately 96% of net sales in fiscal year 1993. The company's Micron Computer, Inc subsidiary manufactures a line of IBM-compatible desktop personal computers, which comprised approximately 4% of consolidated net sales in fiscal 1993. Also, in Nov 1993, the company formed Micron Systems Integration, Inc (a wholly-owned subsidiary) which designs and manufactures semiconductor testing equipment. Sells on net 30 day terms. Has 1000+ account(s). Sells to distributors and manufacturers. Territory : Worldwide. Export sales were 30% of fiscal year 1993 net sales. Nonseasonal.

EMPLOYEES: 4,900. 4,400 employed here.

FACILITIES: Owns 983,000 sq. ft. in a complex of buildings, building in good condition. Premises neat. The complex consists of principal semiconductor manufacturing, engineering, administrative and support facilities located on a 665 acre site.

LOCATION: Industrial section on side street. In addition, the company owns a 18,000 square foot building on leased land in Nampa, Idaho housing a portion of Micron Computer, Inc's personal computer manufacturing operations. The company has initiated construction of a central implant building and an additional central utilities plant, encompassing approximately 209,000 square feet at the Boise, ID semiconductor operations site, both of which are expected to be operational late in fiscal 1994.

GLOBAL ACTIVITY.

The following section is a global summary and is intended to assist D&B's non-U.S. customers when evaluating D&B reports on U.S. companies.

IMPORT/EXPORT ACTIVITY.

030% of total sales are derived from export. Major countries of export are United Kingdom, Taiwan, Singapore.

Over the last three years, international sales have been up.

Based on information in our file, D&B has assigned this company an extended 8 digit SIC. D&B's use of 8 digit SIC's enable us to be more specific to a companies operations than if we use the standard 4 digit code.

36740209 Mfg Random Access Memory Devices.
35719904 Mfg Personal Computers.
38250226 Mfg Semiconductor Testing Equipment.

GLOBAL NEWSWORTHY EVENTS.

None reported.

SUBSIDIARIES: MICRON COMMUNICATIONS, INC, Boise, ID. Started 1993. 91% owned. Involved in research and development of radio frequency identification products.

MICRON CONSTRUCTION, INC, Boise, ID. Started 1991. 98% owned. Provides construction management services to outside and internal facility owners and developers. According to management, percentage contribution to the company's total consolidated annual net sales is negligible.

MICRON COMPUTER, INC (formerly EDGE TECHNOLOGY, INC), Nampa, ID. Started 1991. 77% owned. Manufactures a line of desktop personal computers.

MICRON INVESTMENTS, INC, Boise, ID. Formed in 1993 to make

private equity investments in firms with the potential for attractive returns on investment. 100% owned.

MICRON SYSTEMS INTEGRATION, INC, Boise, ID. Its formation was announced in Nov 1993. Designs and manufactures semiconductor testing equipment. 100% owned.

The following three subsidiaries are Delaware corporations, started in 1992, which were formed for the purpose of affecting the restructuring approved by the company's shareholders on Jan 27 1992 (see "History - Restructuring").

MICRON SEMICONDUCTOR, INC, Boise, ID. 100% owned. Assumed the operations of the company's semiconductor business, including the design, manufacture and marketing of semiconductor memory products. Has two wholly-owned subsidiaries, MICRON EUROPE LIMITED, a United Kingdom corporation which principally provides sales services in the United Kingdom and Europe, and MICRON SEMICONDUCTOR (DEUTSCHLAND) GmbH which provides sales support services primarily in Germany.

MICRON CUSTOM MANUFACTURING SERVICES, INC, Boise, ID. 100% owned. Produces memory-intensive modules and board level products.

MICRON DISPLAY TECHNOLOGY, INC, Boise, ID. 92% owned. Designs and develops new technologies relating to field emission flat panel displays.

Intercompany relations: Sales transactions.

Standard Industrial Classification (SIC) Summary:

3674 02 09 Random access memory (RAM)
3674 02 04 Memories, solid state
3571 99 04 Personal computers (microcomputers)
3825 02 26 Semiconductor test equipment

HISTORY
01/06/94

JOSEPH L PARKINSON, CHB-CEO+
REID R LANGRILL, V PRES FINANCE-
TREAS-CFO+

JAMES W GARRETT, PRES-COO+

DIRECTOR(S): The officers identified by (+) and Thomas T Nicholson, Allen T Noble, John R Simplot, Don J Simplot and Gordon C Smith.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 04/06/1984
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 100,000,000
PAR VALUE-COMMON: \$0.1000

ISSUED CAPITAL STOCK: 40,099,156 common shares on Sep 2 1993.

BACKGROUND/CONTROL: The present Delaware corporation succeeded an Idaho corporation (founded in 1978). In 1982, the company became a subsidiary of Simplot Financial Corporation, Boise, ID. On June 1 1984, the company completed a public stock offering of 2,400,000 shares. At that time, 30,000,000 shares of stock held by Simplot Financial Corporation were retired. The company then ceased to be a

subsidiary of Simplot Financial Corporation and became a publicly held company.

The company's shares are traded on the New York Stock Exchange under the symbol "MU". At Sep 23 1993, there were 2,421 shareholders of record. As of Dec 2 1993, those shareholders identified by the company as owning beneficially 5% or more of the outstanding shares were FMR Corp, 82 Devonshire Street, Boston, MA (5.80%); J R Simplot Company, 999 Main Street, Boise, ID (11.77%); and John R Simplot (8.44%); with the officers and directors as a group beneficially owning 23.92%.

Subsequent to Nov 29 1991, Simplot Financial Corporation was reportedly merged into its parent, J R Simplot Company.

Business started 1978 by Ward D Parkinson, Joseph L Parkinson and Douglas Pitman.

RESTRUCTURING: At the annual meeting held on Jan 27 1992, shareholders approved a plan to restructure the company as a holding company by transferring substantially all of the company's assets to three newly-formed, wholly-owned subsidiaries of the company. Those subsidiaries are Micron Semiconductor, Inc, Micron Custom Manufacturing Services, Inc and Micron Display Technology, Inc. The company reported that the restructuring did not materially affect the company's consolidated financial position and results of operations.

.....MANAGEMENT BACKGROUND.....

PARKINSON born 1945. 1978 to present active here. 1980-84 director for Parkinson, Lojek and Penland, a law firm, Boise, ID. 1977-80 partner in law firm of Lloyd and Parkinson, Boise, ID. 1963-77 attended college and was active as a practicing attorney.

GARRETT born 1948. 1985 to present active here. 1983-85 principal in Wescom Marketing. 1978-83 Pat Fralia & Associates, vice president sales. 1973-78 Brice Company, manufacturers representative. 1973 and prior attended University of Houston.

LANGRILL born 1960. 1984 to present active here. Prior to 1984 a student.

.....OTHER OFFICERS.....

NANCY M SELF, vice president, administration. CATHY L SMITH, corporate secretary. JILL L DEVEREAUX, assistant corporate secretary.

OUTSIDE DIRECTORS: NICHOLSON, Vice President of Honda of Seattle, President of Mountain View Equipment, and Partner of CC&T Land & Livestock; NOBLE, President, Farm Development Corporation; JOHN R SIMPLOT, Chairman of the Board of Directors of J R Simplot Company; DON J SIMPLOT, Vice President of J R Simplot Company; and SMITH, President and CEO of J R Simplot Company.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the

official record. Certified copies can only be obtained from the official source.

There are 85 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 02

Activity Summary:

Borrower (Dir/Guar): - NO
 Administrative Debt: - NO
 Contractor: - NO
 Grantee: - NO
 Debarred, Suspended or
 Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - N/A
 Small Business: - N/A
 Women-Owned: - N/A
 8(A) Firm: - N/A
 Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

T Supplier PAYDEX	PRIOR 4 QTRS				'93 FEB	CURRENT 12 MONTH TREND												'94 JAN
	'92 MAR	JUN	SEP	DEC		MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
	67	74	70	76	68	67	66	66	66	67	67	67	67	67	67	68	68	

Industry (Based on 1,044 establishments in SIC 367X)
 PAYDEX

UP QRT	75	75	74	74	74	75	75	75
MEDIAN	69	69	68	68	69	69	70	70
LO QRT	61	62	60	62	62	62	63	63

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$46,015	PAYDEX	PAYMENT
Highest Credit:	\$5,000,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	1	90	DISCOUNT
No. of Trade Experience(s):	252	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 60-245-2393

DATE PRINTED:
JAN 25 1994

SUMMARY

QUALITY SEMICONDUCTOR INC
851 MARTIN AVE
SANTA CLARA CA 95050-0000
TEL: (408) 450-8000

CONTROL 1988
NET WORTH F \$5,203,670
EMPLOYS 140 TOTAL
135 HERE

CHIEF EXECUTIVE: CHUN CHIU, PRES

PRIMARY SIC NO. 3674
DESIGN & MFG OF QUALITY LOGIC &
MEMORY-BASED COMPONENTS

SPECIAL EVENTS

01/10/94 According to published reports, the company has filed a registration statement with the Securities and Exchange Commission with respect to a proposed initial public offering of 1,800,000 shares of common stock. The net proceeds to the company will be used for general corporate purposes, including working capital.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 4

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 < 4 > 5 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
No financial statement information was used to calculate the Risk Rating.

RISK COMMENTARY

- Net worth for the Fiscal year ending SEP, 1992 is Down by 33.4%.
- Average Payments are 8 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Firm's debts on 1 occasion(s) have been placed for collection as reported to Dun & Bradstreet.
- Special events have been reported.
- UCC Filings present.
- Under present management control 6 years.

FINANCIAL PROFILE

(Based On A Fiscal Statement Dated Sep. 30, 1992.)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	-	1.7	-	-	-
Industry Median	13.2	1.9	1.1	54.2	53.0
Quartile Rank (Supplier)	-	3	-	-	-

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 122 establishments.

OPERATION

08/11/93

Design and manufacture quality logic and memory-based components for workstations and other computer systems.

Terms are net 30 days and letters of credit. Has 200+ account(s) Sells to the computer and telecommunications industries. Territory : United States (80%) and International (20%).

Nonseasonal.

EMPLOYEES: 140 which includes officer(s). 135 employed here.

FACILITIES: Leases 50,000 sq. ft. in a one story concrete building in good condition.

LOCATION: Industrial section on well traveled street.

BRANCHES: Sales offices located in Irvine, CA; Framingham, MA; Plano, TX and in the United Kingdom.

Standard Industrial Classification (SIC) Summary:

3674 00 00 Semiconductors and related devices
3674 02 01 Computer logic modules
3674 02 04 Memories, solid state

HISTORY

08/11/93

CHUN CHIU, PRES+

MANOHAR MALWAH, SR V PRES-TECH &
MFG+DIRECTOR(S): The officers identified by (+) and M Shinya, W Ko,
Robert Puette and Peter Thomas.-----
CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY
OF STATE OR OTHER OFFICIAL SOURCE AS OF 01/07/1994:BUSINESS TYPE: Corporation -
ProfitDATE INCORPORATED: 10/05/1988
STATE OF INCORP: California

Corportate file #01624248.
Business started 1988. Relocated Apr 1991 from 2946 Scott Blvd.
100% of capital stock is owned by officers and several outside
investors. The officers are the only shareholders that own more than
10% of the capital stock.

CHUN CHIU born 1941. 1988 to present active here. 1980-88
co-founder of Integrated Device Technology, Santa Clara, CA; sold in
good order. 1976-80 Hewlett-Packard Company (Inc), Cupertino, CA.
1973-76 AMI, Santa Clara, CA. 1971-73 Cal Tec Semiconductor, Santa
Clara, CA. 1969-71 Minnesota Mining & Manufacturing Corporation,
Santa Clara, CA. Prior to 1969 attended school. Received MSEE from
Oregon State University and BSEE from Waseda University, Tokyo, Japan.

MANOHAR MALWAH born 1947. 1988 to present active here. 1981-88
Integrated Device Technology, Santa Clara, CA. 1979-81 Signetics,
Sunnyvale, CA. 1978-79 Hewlett-Packard Company (Inc), Cupertino, CA.
1977-78 Texas Instruments, Dallas, TX. 1974-77 AMI, Santa Clara, CA.
1973-74 professor with the University of Texas, Austin, TX. Prior to
1973 attended school. Received his PhDEE from the University of Texas
at Austin and MS Degree in Physics from Punjab University, India.

M SHINYA, not active here. Active with Kanematsu Semiconductor
Corp.

W KO, not active here. W K Investment Fund.

ROBERT PUETTE, not active here. Active with Apple Computer Corp.

PETER THOMAS, not active here. Active with Institutional Venture
Partners.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

Excluding UCC Filings that may be listed below, there are no
Liens present in D&B's file.

The following data is for information purposes only and is not the
official record. Certified copies can only be obtained from the
official source.

There are 16 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 15

Activity Summary:

Borrower (Dir/Guar): - NO
 Administrative Debt: - NO
 Contractor: - NO
 Grantee: - NO
 Debarred, Suspended or
 Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - YES (1993)
 Small Business: - YES (1993)
 Women-Owned: - N/A
 8(A) Firm: - N/A
 Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	MAR	JUN	SEP		DEC	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
PAYDEX	71	71	71	71	64	65	65	65	65	65	70	70	71	69	76	75	75	

Industry (Based on 872 establishments in SIC 367X)
 PAYDEX

UP QRT	74	74	74	74	74	75	75	75
MEDIAN	68	68	68	68	68	69	70	70
LO QRT	62	62	61	61	61	62	63	64

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$1,014	PAYDEX	PAYMENT
Highest Credit:	\$5,000	-----	-----
Placed for Collection:	1	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	28	80	PROMPT

70	SLOW TO 15
50	SLOW TO 30
40	SLOW TO 60
30	SLOW TO 90
20	SLOW TO 120
UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 00-133-9159

DATE PRINTED:
JAN 25 1994

SUMMARY

RAYTHEON COMPANY (INC)
D.C. HEATH DIVISION
141 SPRING STREET
LEXINGTON MA 02173-0000
TEL: (617) 862-6600

CONTROL 1922
SALES F \$9,058,216,000
NET WORTH F \$3,790,013,000
EMPLOYS 61,400 TOTAL
450 HERE

CHIEF EXECUTIVE: DENNIS J PICARD, CHB

PRIMARY SIC NO. 3812
MFG ELECTRONIC SYSTEMS & EQUIPMENT,
AIRCRAFT & MAJOR HOME APPLIANCES

SPECIAL EVENTS

- 01/18/94 According to published reports, Enserch Corp has closed the sale of the principal operating assets of its engineering and construction subsidiary, Ebasco Services, to Raytheon Engineers & Constructors. Enserch is retaining the bulk of Ebasco's accounts receivable. Enserch also is retaining and will operate Ebasco's environmental division, which will be known as Enserch Environment. The purchase price was \$210 million in cash.
- 1/18/93 According to published reports, Raytheon Company announced that Raytheon Engineer & Constructors has entered into an agreement for the purchase of the principal operating assets of Ebasco Services, Inc, the engineering and construction subsidiary of Enserch Corp for \$210 million in cash. The purchase is expected to close by Dec 31, 1993.
- 11/09/93 According to published reports, subject announced it would lay off 1,150 workers in Massachusetts during November 1993 because of cutbacks in military spending.
- 10/15/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 9 months ended October 3, 1993 are as follows: sales of \$6,685,000,000 and net income (loss) of \$507,600,000 compared to sales of \$6,663,000,000 and net income (loss) of \$465,100,000 for the comparable period in the prior year.
- 09/29/93 According to published reports, Raytheon Co announced that it was merging its Submarine Signal Division, Portsmouth, RI, with its Equipment Division, Marlborough, MA. The company has no plans at the present time to relocate existing work between facilities in Rhode Island and Massachusetts.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk					Highest Risk				
1	2	3	4	< 5 >	6	7	8	9	

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
- Sales for the Fiscal year ending DEC, 1992 are Down by 2.3%.
- Net worth for the Fiscal year ending DEC, 1992 is Up by 16.6%.
- History indicates business or management.
- Average Payments are 17 day(s) beyond terms.
- Average Industry Payments are 14 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 12/31/92 is included in the Risk Rating.
- Statement prepared by Coopers & Lybrand, Boston, MA.
- Under present management control 72 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Dec. 31, 1992.)

The Financial Appraisal Ranking of the Supplier = 2
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	16.8	1.8	0.4	66.4	57.3

Industry Median	8.5	2.1	1.0	79.6	108.7
Quartile Rank (Supplier)	1	3	4	2	2

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 134 establishments.

OPERATION

09/27/93

Raytheon is a diversified, international, technology based company engaged in four business segments: Electronics, Energy and Environmental, Aircraft Products and Major Appliances. Total backlog was \$7.273 billion at Dec 31 1992 compared with \$7.969 billion at the end of 1991.

ELECTRONICS (55% of 1992 sales): Sales to the United States and foreign governments include ship and land based radar systems for surveillance, target identification tracking, fire control, navigation, air traffic control and weather observation; sonar systems; communications systems; electronic countermeasures systems and electronic components.

Electronic products sold to commercial customers include: Marine collision avoidance systems; marine radiotelephones, radars and "Fathometer" depth sounders; microwave industrial heat processing systems; medical diagnostic equipment; industrial laser systems; power supplies and voltage regulators; and components such as X-ray tubes, power tubes, microwave tubes, semiconductor devices, transistors, diodes, integrated circuits, electric power cables, fine wire, switches, jacks and plugs.

Raytheon's D.C. Heath Division publishes school and college text and reference books and educational software.

ENERGY AND ENVIRONMENTAL (19% of 1992 sales): Through its subsidiaries, Raytheon designs, constructs and maintains petroleum, petrochemical, chemical processing, electrical generating and industrial plants and conducts worldwide exploration and related services for the oil and gas industries.

In addition, designs and manufactures a wide range of stationary and portable aggregate producing equipment and asphalt paving equipment and mixing plants serving the road building and heavy construction industries.

Raytheon Service Company offers worldwide engineering, installation, operation, maintenance, resource recovery and training services and supports and maintains other complex military and industrial systems, and also provides maintenance and engineering services for many Raytheon air defense, commercial air traffic control and marine radar systems.

AIRCRAFT PRODUCTS (14% of 1992 sales): Beech Aircraft Corporation, a wholly-owned subsidiary, designs, manufactures and sells a broad range of single-engine, twin engine (including turboprop) and jet airplanes for the general aviation market. Aircraft Products backlog amounted to \$1.028 billion at the end of 1992 versus \$1.141 billion at the end of 1991.

MAJOR APPLIANCES (12% of 1992 sales): Manufactures, through its

subsidiaries Amana Refrigeration, Inc, Caloric Corporation and Speed Queen Company, refrigerators, freezers, central heaters and air conditioners, "Radarange" microwave ovens, gas and electric ranges, combination microwave and electric or gas "ME" ranges, washing machines and dryers (including household and commercial applications), other laundry products and other home appliances.

The standard industrial classification categories selected represent the company's six primary functions in approximate order of annual sales generation.

Terms: Government work is performed under both cost reimbursement and fixed price for prime contracts and subcontracts and other lines vary in keeping with industry practices. Has 5,000+ account(s). Sells to U S government (51.5% of 1992 sales were to the U S government), commercial, industrial, utilities and construction industry. Territory : Worldwide.

Nonseasonal.

EMPLOYEES: 61,400 which includes officer(s). 450 employed here.

FACILITIES: Owns 150,000 sq. ft. in three story brick and glass building in good condition.

LOCATION: Suburban business section on well traveled street.

BRANCHES: The company operates numerous plants and laboratories in 38 states plus the District of Columbia. Overseas subsidiaries and affiliates are located in numerous foreign countries. Raytheon's manufacturing, engineering, research, administrative, sales and storage floor space aggregated approximately 29,600,000 square feet, more than 90% of which was located in the U S. Of this, 61% was owned, 24% was held pursuant to long-term leases, 10% was held pursuant to short-term leases and 5% was Government-owned.

GLOBAL ACTIVITY.

The following section is a global summary and is intended to assist D&B's non-U.S. customers when evaluating D&B reports on U.S. companies.

FAMILY TREE SUMMARY.

D&B's global linkage file on this company shows this business has subsidiaries located in United States (69), England (10), Canada (6), Mexico (3), Germany (2), Bermuda (1), Korea (1), Libyan Arab Republic (1), Nigeria (1), Saudi Arabia (1), Spain (1), Switzerland (1), Scotland (1). The file also indicates this company has branches located in United States (266).

IMPORT/EXPORT ACTIVITY.

13% of total sales are derived from export.

Based on information in our file, D&B has assigned this company an extended 8 digit SIC. D&B's use of 8 digit SIC's enable us to be more

specific to a companies operations than if we use the standard 4 digit code.

38120306 Mfg radar systems.
36630106 Mfg marine radio communications equip.
36749916 Mfg transistors.
16290500 Industrial plant construction.
37210101 Mfg aircraft.
36329904 Mfg refrigerators.

.....
GLOBAL NEWSWORTHY EVENTS.

None reported.

SUBSIDIARIES: The company has numerous wholly-owned subsidiaries which are engaged in the consolidated operations described above. Intercompany relations consist of merchandise transactions on regular terms.

Standard Industrial Classification (SIC) Summary:

3812 03 06 Radar systems and equipment
3812 03 07 Sonar systems and equipment
3812 04 01 Fathometers
3812 05 02 Warfare counter-measure equipment
3663 01 06 Marine radio communications equipment
3674 99 16 Transistors
3674 01 02 Diodes, solid state (germanium, silicon, etc.)
3674 02 06 Microcircuits, integrated (semiconductor)
1629 00 00 Heavy Construction, NEC
1629 05 01 Chemical plant and refinery construction
3721 01 01 Airplanes, fixed or rotary wing
3632 99 04 Refrigerators, mechanical and absorption: household
3632 99 01 Freezers, home and farm

HISTORY
09/27/93

DENNIS J PICARD, CHB-CEO+
GEORGE W SARNEY, SR V PRES
SHELDON RUTSTEIN, SR V PRES-CFO

MAX E BLECK, PRES+
HERBERT DEITCHER, SR V PRES-TREAS
JOHN R PASQUARIELLO, V PRES-
ENVIRONMENATAL QUALITY

DIRECTOR(S): The officers identified by (+) and Charles F Adams, Harvey Brooks, Francis H Burr, Theodore L Eliot Jr, Barbara B Hauptfuhrer, Richard D Hill, Ferdinand Colloredo-Mansfeld, James N Land Jr, Thomas L Phillips, Warren B Rudman, Joseph J Sisco, and Alfred M Zeien.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 05/22/1928
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 200,000,000

PAR VALUE-COMMON: \$1.0000
AUTH SHARES-PREF: 3,000,000
PAR VALUE-PREF: No Par Value

OUTSTANDING CAPITAL STOCK: At Dec 31 1992, there were 135,660,000 common shares (after deducting shares in treasury of 41,808,000) issued and outstanding as a stated value of \$135,660,000. No preferred shares issued. At the same date additional paid in capital was \$273,559,000.

BACKGROUND/CONTROL: Originally incorporated as Raytheon Manufacturing Co (Inc) to acquire certain assets and business of QRS Co, an Illinois corporation and certain assets of Raytheon Inc, a Massachusetts corporation, incorporated in 1922 under the name American Appliance Co. The remaining assets were acquired in 1933. The present name was adopted on Apr 23 1969.

This is a publicly owned company whose common stock is traded on the New York, Midwest and the Pacific Stock Exchanges. At Dec 31 1992 there were 23,200 stockholders of record. As of Feb 26 1993, officers and directors as a group beneficially owned 1.25% of the common stock, Invesco MIM PLC, London, England 5.65%, with the balance owned by the public.

RECENT EVENTS: In Aug 1993, the company completed the acquisition of the Corporate Jets business from British Aerospace for \$372 million in cash. The new company will be called Raytheon Corporate Jets.

During the first half of 1993, the company acquired the assets of Harbert Construction Company, the assets of Menumaster Inc, three engineering businesses from Gibbs & Hill Inc, and Applied Remote Technology Inc, San Diego, CA.

In Apr 1993, the company consolidated the operations of its United Engineers & Constructors International Inc and The Badger Company Inc subsidiaries and formed a new company, Raytheon Engineers & Constructors Inc.

In Sep 1992, the company agreed to pay the U S Government \$2.75 million to settle charges the company falsified labor estimates on Navy missile contracts.

ITALIAN SUBSIDIARY BANKRUPTCY: In 1956, Raytheon acquired a 14% equity interest in ELSI S.p.A., Palermo, Sicily. Over the years its investment increased and in 1967 amounted to 98%. The other 2% was owned by Raytheon's wholly-owned domestic subsidiary, The Machlett Laboratories Inc. The subsidiary operated unprofitably and had an operating loss of \$4,430,000 in 1967 and \$615,000 in the first quarter of 1968, according to a published report. These losses were included in Raytheon's earnings statement for those periods. Manufacturing was stopped on Mar 29 1968. It was the stated intention of the company to place the subsidiary in "orderly liquidation." On Apr 2 1968, the Mayor of Palermo requisitioned the plant and on Apr 26 1968, as required by Italian law, the subsidiary filed a voluntary petition in bankruptcy. The company was adjudicated bankrupt on May 16 1968, by the Tribunal of Palermo. A curator was appointed. The plant equipment has since been sold to an Italian government agency for \$6,400,000, enough to satisfy the secured creditors and to leave a small amount for the unsecured ones. All guaranteed and unguaranteed

obligations of the subsidiary company have been discharged by the Italian court as of Jun 30 1985.

-----MANAGEMENT BACKGROUND-----

PICARD born 1932. Graduated 1962 Northeastern University, BBA. 1951-1953 U S Air Force. 1955-present Raytheon Company, senior vice president, 1985 general manager, missile systems division, Aug 1989 president, Mar 1991 chairman and chief executive officer.

BLECK born 1927. Graduated 1950 Rensselaer Polytechnic Institute, BSME; State University of New York at Buffalo, MSME. 1951-1962 Stanley Aviation Corp. 1962-1975 Cessna Aircraft Co. 1975-1984 Piper Aircraft Corp. 1985-1991 Beech Aircraft Corporation. Mar 1991-present Raytheon Company, president.

SARNEY born 1939. Graduated from University of Buffalo, BSME; Polytechnic Institute of Brooklyn, MSEE, PhD. 1961-1986 General Electric Company, vice president since 1981. 1986-present Raytheon Company, senior vice president and group executive Energy and Environmental Group.

DEITCHER born 1933. Graduated 1955 Siena College. BBA; 1969 Boston University, MBA. 1956-1959 United States Army. Prior to 1954 Ira Apple, auditor. 1954-1956 Simon, Sharpe & Lutz, auditor. 1955-1956 United States Army Audit Agency Auditor. 1958-present Raytheon Company, 1979 vice president international financing, 1983 vice president and treasurer, 1989 senior vice president and treasurer.

RUTSTEIN born 1934 married. Graduated 1956 University of Massachusetts, BSBA. 1956-1958 United States Army. 1958-present Raytheon Company, Aug 1981 controller, Dec 1981 vice president and controller, 1989 senior vice and controller, Feb 1992 senior vice president and chief financial officer.

PASQUARIELLO born 1929 married. Graduated 1951 Lehigh University, BA; 1952 BS. 1952-1954 United States Army. 1955-1956 Bendix Aviation Corp. 1957-1958 American Bosch. 1958-present Raytheon Company, 1979 vice president manufacturing, 1990 vice president manufacturing and environmental quality, Sep 1992 vice president environmental quality.

-----OUTSIDE DIRECTORS-----

ADAMS. Retired chairman, Raytheon Company.

BROOKS. Benjamin Peirce Professor of Technology and Public policy (Emeritus), Harvard University.

BURR. Of counsel, Ropes & Gray, law firm.

ELIOT JR. Dean Emeritus, The Fletcher School of Law and Diplomacy, Tufts University.

HAUPTFUHRER. Director of a number of companies.

HILL. Retired chairman, Bank of Boston Corporation and the First National Bank of Boston.

COLLOREDO-MANSFELD. Chairman and chief executive officer, Cabot Partners.

LAND JR. Financial advisor.

PHILLIPS. Retired chairman, Raytheon Company.

RUDMAN. Former United States Senator.

SISCO. Partner, Sisco Associates.

ZEIEN. Chairman and chief executive officer, The Gillette Company.

ADDITIONAL OFFICERS: PHILLIP W CHENEY, v president engineering;

STANLEY L CLARK, vice president group executive, Commercial Electronics Group; PETER R D'ANGELO, vice president and controller; DAVID S DWELLEY, v president strategic business development; S ROBERT FOLEY JR, v president special projects; JOHN F HARDING, vice president contracts; CHRISTOPH L HOFFMAN, vice president, secretary and general counsel; E LEONARD KANE, senior vice president human resources; CHARLES MILLER, senior vice president; EWALTER H PALMER, v president external affairs; ROBERT A SKELLY, vice president administration, environmental quality and procurement; GERARD A SMITH, vice president Washington operations; ROBERT L SWAN, senior vice president and group executive, Appliance Group; FRANK D UMANZIO, vice president human resources; ARTHUR E WEGNER, senior vice president; and EDMUND B WOOLEN, vice president government marketing.

AFFILIATES: Through stock ownership of 50% or less, Raytheon Company has numerous affiliated companies which are engaged in similar operations of Raytheon. No intercompany relations.

Corporate Jets.

PUBLIC FILINGS

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * JUDGMENT(S) * * *

DOCKET/WARRANT: EO525539

JDGMT AWARD: \$9,233

JDGMT TYPE: Judgment

AGAINST: RAYTHEON CO
and OTHERS

IN FAVOR OF: NYC DEPT OF FINANCE

WHERE FILED: NEW YORK COUNTY SUPREME COURT,
NEW YORK, NY

STATUS: Unsatisfied

DATE STATUS ATTAINED: 01/16/1992

DATE ENTERED: 01/16/1992

LATEST INFO RECEIVED: 02/04/1992

DOCKET/WARRANT: 51777967

JDGMT TYPE: Judgment

AGAINST: \$600-RAYTHEON CORP, MELVILLE,
NY

IN FAVOR OF: INDUSTRIAL COMMISSION

WHERE FILED: SUFFOLK COUNTY SUPREME COURT,
HAUPPAUGE, NY

STATUS: Unsatisfied

DATE STATUS ATTAINED: 10/08/1991

DATE ENTERED: 10/08/1991

LATEST INFO RECEIVED: 11/13/1991

DOCKET/WARRANT: 5177796

JDGMT TYPE: Judgment

AGAINST: \$600-RAYTHEON CORP, MELVILLE,
NY

IN FAVOR OF: NYS COMMISSIONER OF LABOR

WHERE FILED: SUFFOLK COUNTY SUPREME COURT,
HAUPPAUGE, NY

STATUS: Satisfied

DATE STATUS ATTAINED: 06/15/1992

DATE ENTERED: 10/08/1991

LATEST INFO RECEIVED: 08/10/1992

If it is indicated that there are defendants other than the report subject, the lawsuit may be an action to clear title to property and does not necessarily imply a claim for money against the subject.

* * * SUIT(S) * * *-----
CASE NO.: SM9300415900

SUIT AMOUNT: \$204

PLAINTIFF: MICRO COMPUTER RENTALS

DEFENDANT: RAYTHEON, HUNTSVILLE, AL

WHERE FILED: MADISON COUNTY SMALL CLAIMS
COURT, HUNTSVILLE, AL

STATUS: Pending

DATE STATUS ATTAINED: 09/14/1993

DATE FILED: 09/14/1993

LATEST INFO RECEIVED: 12/01/1993

DOCKET NO.: 92 Dec 3654

SUIT AMOUNT: IN EXCESS OF \$50,000

PLAINTIFF: LAZAR, MILDRED, PHILADELPHIA,
PADEFENDANT: LAZAR, HAROLD, PHILADELPHIA, PA
RAYTHEON COMPANY, MARLBOROUGH,
MA
and OTHERSWHERE FILED: PHILADELPHIA COUNTY COMMON
PLEAS COURT, PHILADELPHIA, PA

STATUS: Pending

DATE STATUS ATTAINED: 12/30/1992

DATE FILED: 12/30/1992

LATEST INFO RECEIVED: 01/06/1993

DOCKET NO.: CL 56659

PLAINTIFF: LOE H KARN

DEFENDANT: RAYTHEON COMPANY (INC)
and OTHERSCAUSE: Negligence
Personal injury - non-deathWHERE FILED: POLK COUNTY DISTRICT COURT, DES
MOINES, IA

STATUS: Pending

DATE STATUS ATTAINED: 06/05/1992

DATE FILED: 06/05/1992

LATEST INFO COLLECTED: 07/23/1992

CASE NO.: CV9200207100

PLAINTIFF: INTERNATIONAL INC

DEFENDANT: RAYTHEON COMPANY, BURLINGTON,
MA
and OTHERSWHERE FILED: JEFFERSON COUNTY CIRCUIT
COURT-BIRMINGHAM, BIRMINGHAM,
AL

STATUS: Pending

DATE STATUS ATTAINED: 03/13/1992

DATE FILED: 03/13/1992

LATEST INFO RECEIVED: 05/12/1992

DOCKET NO.: 91E125

SUIT AMOUNT: \$ 0

PLAINTIFF: ELISA S PRESTON

DEFENDANT: RAYTHEON CO, NASHUA, NH

WHERE FILED: ROCKINGHAM COUNTY SUPERIOR
COURT, EXETER, NH

STATUS: Pending

DATE STATUS ATTAINED: 05/27/1991

DATE FILED: 05/27/1991

LATEST INFO COLLECTED: 01/08/1993

DOCKET NO.: 91 E 125

PLAINTIFF: PRESTON, ELISA

DEFENDANT: RAYTHEON COMPANY, NASHUA, NH

WHERE FILED: ROCKINGHAM COUNTY SUPERIOR

STATUS: Dismissed

DATE STATUS ATTAINED: 08/24/1993

DATE FILED: 02/26/1991

COURT, EXETER, NH

LATEST INFO RECEIVED: 11/15/1993

DOCKET NO.: 91 11 SC 0611

SUIT AMOUNT: IN EXCESS OF \$500

PLAINTIFF: T C I/IRON EMUS, BILLERICA, MA

DEFENDANT: RAYTHEON, ANDOVER, MA

CAUSE: Debt, non-payment
Breach of collective bargaining
agreement

STATUS: Dismissed

DATE STATUS ATTAINED: 05/13/1991

DATE FILED: 02/05/1991

LATEST INFO RECEIVED: 11/30/1993

WHERE FILED: MIDDLESEX COUNTY DISTRICT COURT
OF LOWELL, LOWELL, MA

DOCKET NO.: 0268 91

PLAINTIFF: RANKIN, SHELDON

DEFENDANT: RAYTHEON COMPANY, PORTSMOUTH,
RIWHERE FILED: PROVIDENCE SUPERIOR COURT,
PROVIDENCE, RI

STATUS: Pending

DATE STATUS ATTAINED: 12/24/1990

DATE FILED: 12/24/1990

LATEST INFO RECEIVED: 11/05/1992

DOCKET NO.: 91 CV 00121 WDS

SUIT AMOUNT: IN EXCESS OF \$5,000

PLAINTIFF: CHARLES BRYANT III & STEPHANIE

DEFENDANT: RAYTHEON COMPANY (INC)

CAUSE: Personal injury - non-death
Product liability

STATUS: Pending

DATE STATUS ATTAINED: 02/12/1991

LATEST INFO RECEIVED: 02/27/1991

WHERE FILED: U S DISTRICT COURT, EAST SAINT
LOUIS, IL

* * * LIEN(S) * * *

A lienholder can file the same lien in more than one filing location. The appearance of multiple liens filed by the same lienholder against a debtor may be indicative of such an occurrence.

BOOK/PAGE: 666/1335

AMOUNT: \$3,149

TYPE: Mechanics

FILED BY: DUDLEY ACOUSTICS INC

AGAINST: RAYTHEON, MOUNTAIN VIEW, CA

WHERE FILED: SANTA CLARA COUNTY RECORDER,
SAN JOSE, CA

STATUS: Open

DATE STATUS ATTAINED: 03/15/1993

DATE FILED: 03/15/1993

LATEST INFO RECEIVED: 03/25/1993

DOCKET NO.: 90-58755

AMOUNT: \$88,254

TYPE: County Mechanics

FILED BY: HERBERT C SHEARER PLASTERING

AGAINST: RAYTHEON CO, GOLETA, CA

WHERE FILED: SANTA BARBARA COUNTY RECORDER,
SANTA BARBARA, CA

STATUS: Open

DATE STATUS ATTAINED: 09/05/1990

DATE FILED: 09/05/1990

LATEST INFO RECEIVED: 10/15/1990

There are 19 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available

by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated, vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 07

Activity Summary:

Borrower (Dir/Guar): - NO
 Administrative Debt: - NO
 Contractor: - YES
 Grantee: - NO
 Debarred, Suspended or
 Ineligible Contractor: - NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area: - YES (1993)
 Small Business: - N/A
 Women-Owned: - N/A
 8(A) Firm: - N/A
 Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	'92	'92	'92		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
PAYDEX	69	66	66	69	68	66	67	67	66	66	66	66	66	72	68	68		

Industry (Based on 1,816 establishments in SIC 38XX)
 PAYDEX

UP QRT	76	76	76	76	76	76	76	76
MEDIAN	71	71	71	71	71	71	71	71
LO QRT	65	65	64	65	65	66	65	65

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

		PAYDEX	PAYMENT
Average High Credit:	\$25,294		
Highest Credit:	\$1,000,000		
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	874	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30

40	SLOW TO 60
30	SLOW TO 90
20	SLOW TO 120
UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUBSCRIBER:

DUNS: 00-825-5523

DATE PRINTED:
JUL 23 1993

SUMMARY

ROCKWELL INTERNATIONAL CORPORATION

2201 SEAL BEACH BLVD
SEAL BEACH CA 90740-0000
TEL: (310) 797-3311

CONTROL	1928
SALES F	\$10,909,700,000
NET WORTH F	\$2,208,300,000
EMPLOYS	76,977 TOTAL
	275 HERE

CHIEF EXECUTIVE: SAM F IACOBELLIS, CHB

PRIMARY SIC NO. 3721
MFG AIRCRAFT, SPACE VEHICLES &
ENGINES, ELECTRONIC AIRCRAFT
CONTROLS & DEFENSE SYSTEMS, VEHICLE
PARTS & PRINTING PRESSES

SPECIAL EVENTS

07/19/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 9 months ended July 30, 1993 are as follows: sales of \$7,996,000,000 and net income (loss) of \$411,900,000 compared to sales of \$8,021,000,000 and net income (loss) of \$(1,174,100,000) for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 4 < 5 > 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
- Sales for the Fiscal year ending SEP, 1992 are Down by 8.5%.
- Net worth for the Fiscal year ending SEP, 1992 is Down by 39.7%.
- Losses reported.
- History indicates business or management.
- Average Payments are 19 day(s) beyond terms.
- Average Industry Payments are 12 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated

SUBSCRIBER:

- 09/30/92 is included in the Risk Rating.
- Statement prepared by Deloitte & Touche, Pittsburgh, PA.
- Under present management control 65 years.

FINANCIAL PROFILE

(Based On An Audited Fiscal Consolidated Statement Dated Sep. 30, 1992.)

The Financial Appraisal Ranking of the Supplier = 3
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/Sales)%	(Total Liab/Net Worth)%
This Supplier	-	1.6	0.9	>999.9	314.9
Industry Median	9.9	1.7	0.7	45.9	97.7
Quartile Rank (Supplier)	4	3	2	4	4

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 37 establishments.

OPERATION
06/24/93

Rockwell International Corporation is engaged in the research and development, manufacture and sale of many products for commercial, industrial and government markets. The company's operations are conducted in the following business segments: Electronics, Aerospace, Automotive, and Graphics.

Principal activities consist of the manufacture and development of combat aircraft (fixed wing); Space Shuttle orbiter; main engines for the National Aeronautics and Space Administration (NASA); electronic aircraft controls and defense systems; axles and brakes for heavy duty commercial and military vehicles; and commercial printing presses.

In addition: Develops and manufactures other rocket propulsion systems; development of the Global Positioning Satellite System; Peacekeeper missile; manufactures radio transceivers for military applications, ground and airborne high frequency communications and electronic equipment and systems; programmable controllers for industrial automation and newspaper production systems.

Additionally through Rockwell International Finance Corporation (subsidiary), operates a captive finance company.
Terms: US Government: Cost-type, firm-fixed price and fixed-price-incentive; balance principally net 30 days. Has 20,000+ accounts. Sells to a wide range of industrial and commercial accounts and US Government agencies (43% of fiscal 1992 sales). Territory: Worldwide. Foreign and export sales accounted for 25% of fiscal 1992 sales.
Nonseasonal.

EMPLOYEES: 76,977 including officers. 275 employed here.

FACILITIES: Rents premises in 11 story office building in good condition. Occupies the 6th-11th floors.

LOCATION: Central business section on main street.

BRANCHES: At Sep 30 1992, the company and its subsidiaries operated 145 plants and research and development facilities throughout the United States, and in Australia, Brazil, Canada, Europe, Far East, and Mexico. It also has approximately 300 sales offices, warehouses, and service centers.

SUBSIDIARIES: Rockwell International Corporation has a number of

SUBSCRIBER:

direct and indirect wholly-owned subsidiaries engaged in the consolidated operations described above. Intercompany relations consist of merchandise transactions on regular terms and advances to certain subsidiaries with regular settlements made.

Standard Industrial Classification (SIC) Summary:

3721	01	01	Airplanes, fixed or rotary wing
3721	99	02	Research and development on aircraft by the manufacturer
3761	99	05	Space vehicles, complete
3761	99	02	Guided missiles and space vehicles, research and developme
3764	99	03	Propulsion units for guided missiles and space vehicles
3764	99	04	Rocket motors, guided missiles
3764	99	02	Guided missile and space vehicle engines, research & devel
3812	02	01	Aircraft control systems, electronic
3714	02	03	Axles, motor vehicle
3555	00	00	Printing trades machinery

HISTORY
06/24/93

DONALD R BEALL, CEO+
SAM F IACOBELLIS, EX V PRES

KENT M BLACK, EX V PRES-COO
ROBERT L CATTOI, SR V PRES-RES-
ENG-MFG PROCESSES

CHARLES H HARFF, SR V PRES-GC-SEC
The officers identified by (+) and
Richard M Bressler, John J Creedon, Robin Chandler Duke, James
Clayburn La Force Jr, William T McCormick Jr, John D Nichols, Bruce M
Rockwell, Ross D Siragusa Jr, William S Sneath and Joseph F Toot Jr.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 12/06/1928
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 600,000,000
PAR VALUE-COMMON: \$1.0000

AUTHORIZED STOCK: The company has 600,000,000 shares of common stock and 200,000,000 shares of Class A common stock, each with a \$1 par value. In addition, the company has 12,000,000 shares of preferred stock, no par value.

OUTSTANDING CAPITAL STOCK: At Sep 30 1992 there were 209,500,000 common shares issued and 46,700,000 class A common shares issued at a combined stated value of \$256,200,000. There were also outstanding at Sep 30 1991, series A preferred stock and series B preferred stock at a stated value of \$1,700,000. At the same date additional paid in capital was \$145,200,000 and there were 35,900,000 common shares held in the treasury at a cost of \$869,100,000.

BACKGROUND/OWNERSHIP: Business originally started in 1928 under the name North American Aviation Corp. Name changed in 1967 to North American Rockwell Corporation; 1973 to Rockwell International Corporation. This is a publicly owned company whose common shares are traded on the New York, Boston, Midwest, Pacific, Philadelphia and certain foreign exchanges under the symbol "ROK". There is no trading market for the class A common shares, but they are convertible into common shares. At Nov 30 1992 there were 83,890 shareholders of the company's common stock and 66,771 shareholders of the company's class A common stock. As of Nov 30 1992, officers and directors as a group beneficially owned 0.5% of the common stock and 1.6% of the class A common stock, with the balance owned by the public.

RECENT EVENTS: In Mar 1993, the company acquired Sprecher + Schuh AG of Switzerland for \$109 million, funded by available cash balances and short-term borrowings.

In Apr 1993, Sundstrand Corporation terminated negotiations with the company for the sale of Sundstrand's Data Control Division since a mutually acceptable definitive agreement could not be reached.

LITIGATION: On Jun 1 1992, the Court approved an agreement entered into on Mar 26 1992 between the company and the Office of the United States Attorney for the District of Colorado pursuant to which the company (i) entered a plea of guilty to five felony and five misdemeanor violations of the Resource Conservation and Recovery Act and the Clean Water Act for unpermitted storage of wastes at the Rocky Flats Plant and unpermitted discharges of polluted water within the plant site and (ii) paid a fine of \$18.5 million, including \$2.0 million paid to the State of Colorado, to settle potential state and federal criminal and civil claims arising out of the government's investigation.

On Jul 21 1992, the United States District Court for the Northern District of Iowa approved a settlement agreement between the company and the United States Attorney for that district under which an indictment returned against the company on Oct 31 1991 relating to alleged mischarging on NASA contracts performed in the early to mid-1980's by one of the company's Cedar Rapids, Iowa divisions is to be dismissed with prejudice in Jul 1993 provided the Division does not prior thereto intentionally commit criminal violations of federal procurement laws. Under the agreement, which provides that the settlement is not an admission or adjudication that any false claims were made, the company paid \$1.425 million in settlement of all disputed issues, which amount included amounts offered by the company as voluntary contract adjustments in 1987.

On Jan 20 1989, the company pleaded guilty to reduced criminal fraud charges, including one count of conspiracy and one of contempt, in connection with a double-billing scheme on an Air Force contract and was fined \$5.5 million. The company conditioned its plea on the right to appeal.

On Nov 29 1982 the company signed a consent decree after the Justice Department alleged that the company fraudulently mischarged costs on its space shuttle contract. The company didn't admit or deny guilt in signing the consent decree but agreed under its terms to pay the government \$500,000 in compensatory damages and to spend \$1,000,000 toward the cost of installing a computerized time-keeping system to prevent further abuses.

In Oct 1978 a federal grand jury in Philadelphia, PA indicted the company on charges of conspiring to fix the prices of gas meters in the United States from May 1973 until Nov 1977. The company pleaded guilty to the charges. Jan 25 1979 Federal Judge Edward W Cohn, fined the company \$525,000.

-----MANAGEMENT BACKGROUND-----

BEALL born 1938. Graduated 1960 San Jose State College, BS. University of Pittsburgh, MBA. 1961-1968 Philco Ford Corp. 1968-present Rockwell International Corporation, various management positions, 1976 vice president and president electronics operations, 1977 executive vice president, 1979 president and chief operating officer, 1988 chairman and chief executive officer.

BLACK born 1939. Graduated 1962 University of Illinois, BS in electrical engineering. 1962 Collins Radio, subsequently acquired by Rockwell International Corporation, various management positions. Years-present Rockwell International Corporation, 1986 corporate vice president and president of Rockwell's defense and commercial electronics businesses, 1989 executive vice president and co-chief operating officer, Jun 1993 executive vice president and sole chief operating officer.

IACOBELLIS born 1929. Graduated 1952 California State University, BS in mechanical engineering. University of California, MS. 1952-present subject, various management positions, 1984 president of North American aircraft operations, 1988 president of aerospace operations, 1989 executive vice president and co-chief operating officer, Jun 1993 relinquished the title of co-chief operating officer.

CATTOI born 1926. Graduated University of Wisconsin, BEE. 1950-present Rockwell International Corporation, various management positions, 1984 senior vice president-research and engineering, currently senior vice president research, engineering and

ROCKWELL INTERNATIONAL CORP
PAGE 5 OF 10

SUBSCRIBER:

manufacturing processes.

HARFF born 1929. Graduated Colgate University. Law degree from Harvard University and Fullbright Scholar at University of Bonn, Bonn, Germany. 1955-1984 New York law firm of Chadbourne, Parke, Whiteside, Wolff, 1964 partner. 1984-present Rockwell International Corporation, senior vice president, general counsel and secretary.

CRAMER born 1945. Graduated 1967 Pennsylvania State University, BS. 1968 Southern Methodist University, MBA. 1968-1969 Jones & Laughlin Steel Corp, auditor. 1969-1973 Price Waterhouse & Co, accountant. 1973-present Rockwell International Corporation, various management positions, 1981 treasurer, 1988 vice president and treasurer.

-----OUTSIDE DIRECTORS-----

ALLEN JR. Chairman, The Charles Stark Draper Laboratory Inc.
ANDERSON. Former chairman and chief executive officer, Rockwell International Corporation.

BRESSLER. Chairman, Plum Creek Management Company.
CREEDON. Retired president and chief executive officer, Metropolitan Life Insurance Company.

DUKE. Chairman, Population Crisis Committee.
LA FORCE JR. Dean, John E Anderson Graduate School of Management, University of California.

MCCORMICK JR. Chairman and chief executive officer, CMS Energy Corporation.

NICHOLS. Chairman and chief executive officer, Illinois Tool Works Inc.

ROCKWELL. Senior vice president, First of Michigan Corporation.

SIRAGUSA JR. President, Game Time Inc.

SNEATH. Retired chairman and chief executive officer, Union Carbide Corporation.

TOOT JR. President and chief executive officer, The Timken Company.

ADDITIONAL OFFICERS: WILLIAM M BARNES, senior vice president finance and planning and chief financial officer; LAWRENCE J KOMATZ, vice president and controller; RICHARD R MAU, senior vice president communications; JAMES A MCDIVITT, senior vice president government operations and international; ROBERT H MURPHY, senior vice president organization and human resources; WILLIAM A SANTE II, general auditor; and CHARLES C STOOPS JR, general tax counsel.

AFFILIATES/JOINT VENTURES: The company has a number of affiliates and several joint ventures (20% to 50% owned). Among the more significant are: Tokyo Buhin Rockwell, Tokyo, Japan, a producer of brake products for the Japanese and United States markets; Rubery Owen Rockwell Ltd, Darlaston, England, markets truck trailer parts in the United Kingdom. Intercompany relations consist principally of merchandise transactions settled as agreed.

PUBLIC FILINGS

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

***** JUDGMENT(S) *****

DOCKET NO.: LA 18526
JDGMT AWARD: \$660,000
JDGMT TYPE: Judgment
AGAINST: ROCKWELL INTERNATIONAL CORPORATION
IN FAVOR OF: RICHARD BARSKE
MARK BEISKER
DANIEL BROWN
PERNELL BUMP

STATUS: Set aside
DATE STATUS ATTAINED: 01/12/1993
DATE ENTERED: 10/14/1992
LATEST INFO COLLECTED: 01/18/1993

ROCKWELL INTERNATIONAL CORP
PAGE 6 OF 10

SUBSCRIBER:

WHERE FILED: SHERMAN BURNS
LINN COUNTY DISTRICT COURT,
CEDAR RAPIDS, IA

DOCKET NO.: 75828
JDGMT AWARD: \$828
JDGMT TYPE: Judgment
AGAINST: ROCKWELL INTERNATIONAL
CORPORATION
IN FAVOR OF: AQUARIUS SPRINKLER, MARION, IA
WHERE FILED: LINN COUNTY SMALL CLAIMS COURT,
CEDAR RAPIDS, IA

STATUS: Unsatisfied
DATE STATUS ATTAINED: 09/03/1992
DATE ENTERED: 09/03/1992
LATEST INFO COLLECTED: 01/07/1993

DOCKET NO.: 8,613
JDGMT AWARD: \$14,880
JDGMT TYPE: Judgment
AGAINST: ROCKWELL INTERNATIONAL
CORPORATION
IN FAVOR OF: PAUL F THEISEN/DEA/THEISEN
STEEL ERECTORS, EPWORTH, IA
WHERE FILED: LINN COUNTY DISTRICT COURT,
CEDAR RAPIDS, IA

STATUS: Unsatisfied
DATE STATUS ATTAINED: 07/03/1990
DATE ENTERED: 07/03/1990
LATEST INFO RECEIVED: 09/10/1990

If it is indicated that there are defendants other than the
report subject, the lawsuit may be an action to clear title
to property and does not necessarily imply a claim for money
against the subject.

* * * SUIT(S) * * *

DOCKET NO.: 93-02298-269
PLAINTIFF: JAMES B. HAMMACK, SR.
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION, DOWNEY, CA
and OTHERS
WHERE FILED: HARRIS COUNTY CIVIL DISTRICT
COURT, HOUSTON, TX

STATUS: Pending
DATE STATUS ATTAINED: 01/15/1993
DATE FILED: 01/15/1993
LATEST INFO COLLECTED: 05/13/1993

DOCKET NO.: 93-02298-269
PLAINTIFF: JAMES B. HAMMACK, SR.
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION, DOWNEY, CA
and OTHERS
WHERE FILED: HARRIS COUNTY CIVIL DISTRICT
COURT, HOUSTON, TX

STATUS: Pending
DATE STATUS ATTAINED: 01/15/1993
DATE FILED: 01/15/1993
LATEST INFO COLLECTED: 05/13/1993

DOCKET NO.: LA 22746
PLAINTIFF: CARL HARTMAN, IA
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION
and OTHERS
CAUSE: Breach of contract
WHERE FILED: LINN COUNTY DISTRICT COURT,
CEDAR RAPIDS, IA

STATUS: Pending
DATE STATUS ATTAINED: 12/14/1992
DATE FILED: 12/14/1992
LATEST INFO COLLECTED: 01/28/1993

DOCKET NO.: 75828
SUIT AMOUNT: \$828
PLAINTIFF: AQUARIUS SPRINKLER CO
DEFENDANT: ROCKWELL INTERNATIONAL, CEDAR
RAPIDS, IA
CAUSE: Debt, non-payment
WHERE FILED: LINN COUNTY DISTRICT COURT,
CEDAR RAPIDS, IA

STATUS: Pending
DATE STATUS ATTAINED: 09/03/1992
DATE FILED: 09/03/1992
LATEST INFO COLLECTED: 10/09/1992

DOCKET NO.: LA 21608
PLAINTIFF: JUDY GORDON
DEFENDANT: ROCKWELL INTERNATIONAL

STATUS: Pending
DATE STATUS ATTAINED: 04/03/1992

Supplier Evaluation

SUBSCRIBER:

CAUSE: CORPORATION
WHERE FILED: Breach of contract
LINN COUNTY DISTRICT COURT,
CEDAR RAPIDS, IA

DATE FILED: 04/03/1992
LATEST INFO COLLECTED: 05/14/1992

DOCKET NO.: 14072-91
SUIT AMOUNT: \$200,000
PLAINTIFF: GREENE, KEVIN M
DEFENDANT: DELTA INTERNATIONAL MACHINERY
CORP A DIV OF ROCKWELL
INTERNATIONAL CORPORATION &
BROCK, J C CORP
and OTHERS
WHERE FILED: ERIE COUNTY SUPREME COURT,
BUFFALO, NY

STATUS: Pending
DATE STATUS ATTAINED: 01/31/1992
DATE FILED: 01/31/1992
LATEST INFO RECEIVED: 02/05/1992

DOCKET NO.: 72563
SUIT AMOUNT: \$2,000
PLAINTIFF: JAMES S TETH, ROCKFORD, IL
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION
CAUSE: Breach of collective bargaining
agreement
WHERE FILED: LINN COUNTY SMALL CLAIMS COURT,
CEDAR RAPIDS, IA

STATUS: Pending
DATE STATUS ATTAINED: 12/03/1991
DATE FILED: 12/03/1991
LATEST INFO COLLECTED: 01/08/1992

DOCKET NO.: 912-01979
PLAINTIFF: SHAWN R CLIPPER
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION
and OTHERS
CAUSE: Personal injury - non-death
Product liability
WHERE FILED: ST LOUIS CITY CIRCUIT COURT,
SAINT LOUIS, MO

STATUS: Pending
DATE STATUS ATTAINED: 06/21/1991
DATE FILED: 06/21/1991
LATEST INFO COLLECTED: 06/26/1992

DOCKET NO.: SC 69027 0391
SUIT AMOUNT: \$1,000
PLAINTIFF: AIRLINE INDUSTRIAL SERVICES
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION
CAUSE: Debt, non-payment
WHERE FILED: LINN COUNTY SMALL CLAIMS COURT,
CEDAR RAPIDS, IA

STATUS: Pending
DATE STATUS ATTAINED: 04/02/1991
DATE FILED: 04/02/1991
LATEST INFO COLLECTED: 04/24/1991

DOCKET NO.: CJ91-1279
PLAINTIFF: D L GRIFFITH
DEFENDANT: ROCKWELL INTERNATIONAL
CORPORATION
CAUSE: tort-personal
WHERE FILED: TULSA COUNTY DISTRICT COURT,
TULSA, OK

STATUS: Pending
DATE STATUS ATTAINED: 03/19/1991
DATE FILED: 03/19/1991
LATEST INFO COLLECTED: 03/22/1991

* * * LIEN(S) * * *

A lienholder can file the same lien in more than one filing location. The appearance of multiple liens filed by the same lienholder against a debtor may be indicative of such an occurrence.

DOCKET NO.: 931142011
AMOUNT: \$48,247
TYPE: Mechanics
FILED BY: DANDANELLA ELECTRIC CORP OF SANTA
ANA
AGAINST: ROCKWELL INTERNATIONAL CORP,
PALMDALE, CA

STATUS: Open
DATE STATUS ATTAINED: 06/15/1993
DATE FILED: 06/15/1993
LATEST INFO RECEIVED: 06/22/1993

SUBSCRIBER:

WHERE FILED: LOS ANGELES COUNTY RECORDERS
OFFICE, NORWALK, CA

DOCKET NO.: 93736198

AMOUNT: \$3,720

TYPE: Mechanics

FILED BY: KOOL STAR

THREE STAR REFRIGERATION

AGAINST: ROCKWELL INTERNATIONAL CORP,
CANOGA PARK, CA

WHERE FILED: LOS ANGELES COUNTY RECORDERS
OFFICE, LOS ANGELES, CA

STATUS: Open

DATE STATUS ATTAINED: 04/20/1993

DATE FILED: 04/20/1993

LATEST INFO RECEIVED: 04/27/1993

DOCKET NO.: 93349690

AMOUNT: \$687

TYPE: Mechanics

FILED BY: STAROW STEEL CO

AGAINST: ROCKWELL INTERNATIONAL, NEWBURY
PARK, CA

WHERE FILED: LOS ANGELES COUNTY RECORDERS
OFFICE, LOS ANGELES, CA

STATUS: Open

DATE STATUS ATTAINED: 02/24/1993

DATE FILED: 02/24/1993

LATEST INFO RECEIVED: 03/16/1993

DOCKET NO.: 93303452

AMOUNT: \$2,770

TYPE: Mechanics

FILED BY: US RENTALS/HARTLEY NIXON

AGAINST: ROCKWELL INT'L CORP, CANOGA PARK,
CA

WHERE FILED: LOS ANGELES COUNTY RECORDERS
OFFICE, LOS ANGELES, CA

STATUS: Open

DATE STATUS ATTAINED: 02/18/1993

DATE FILED: 02/18/1993

LATEST INFO RECEIVED: 03/09/1993

DOCKET NO.: 93-02040

AMOUNT: \$15,505

TYPE: Mechanics

FILED BY: ARSENEAU, LARRY

CONSTRUCTION/ARSENEAU, LARRY,
MANTENO, IL

AGAINST: ROCKWELL INTERNATIONAL CORPORATION
and OTHERS

WHERE FILED: KANKAKEE COUNTY CIRCUIT COURT,
KANKAKEE, IL

STATUS: Open

DATE STATUS ATTAINED: 02/05/1993

DATE FILED: 02/05/1993

LATEST INFO COLLECTED: 02/22/1993

VOLUME/PAGE: 92100-589

AMOUNT: \$5,655

TYPE: State Tax

FILED BY: STATE OF TEXAS, DALLAS, TX

AGAINST: ROCKWELL INTERNATIONAL CORP,
PITTSBURG, PA

WHERE FILED: DALLAS COUNTY RECORDERS OFFICE,
DALLAS, TX

STATUS: Open

DATE STATUS ATTAINED: 05/20/1992

DATE FILED: 05/20/1992

LATEST INFO COLLECTED: 06/12/1992

BOOK/PAGE: 02159/1997

AMOUNT: \$5,655

TYPE: State Tax

FILED BY: STATE OF TEXAS

AGAINST: ROCKWELL INTERNATIONAL CORPORATI,
PITTSBURGH, PA

WHERE FILED: HARRIS COUNTY RECORDERS OFFICE,
HOUSTON, TX

STATUS: Open

DATE STATUS ATTAINED: 05/18/1992

DATE FILED: 05/18/1992

LATEST INFO RECEIVED: 07/27/1992

DOCKET NO.: 92245191

TYPE: Mechanics

FILED BY: INDUSTRIAL ASPHALT

AGAINST: ROCKWELL INTERNATIONAL CORP, SEAL
BEACH, CA

WHERE FILED: ORANGE COUNTY RECORDER OF DEEDS
SANTA ANA, CA

STATUS: Released

DATE STATUS ATTAINED: 10/26/1992

DATE FILED: 04/15/1992

LATEST INFO RECEIVED: 01/12/1993

SUBSCRIBER:

DOCKET NO.: 92161081
AMOUNT: \$17,093
TYPE: Mechanics
FILED BY: PACIFIC BUILDING SPECIALTIES
COMPANY
AGAINST: ROCKWELL INTERNATIONAL CORPORATION
ANAHEIM, CA
WHERE FILED: ORANGE COUNTY RECORDER OF DEEDS
SANTA ANA, CA

STATUS: Open
DATE STATUS ATTAINED: 03/17/1992
DATE FILED: 03/17/1992
LATEST INFO RECEIVED: 06/01/1992

DOCKET NO.: 92312841
AMOUNT: \$30,543
TYPE: Mechanics
FILED BY: ABSAMS INC
AGAINST: ROCKWELL INTERNATIONAL COMPANY,
PALMDALE, CA
WHERE FILED: LOS ANGELES COUNTY RECORDERS
OFFICE, LOS ANGELES, CA

STATUS: Open
DATE STATUS ATTAINED: 02/26/1992
DATE FILED: 02/26/1992
LATEST INFO RECEIVED: 03/13/1992

There are 180 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

There are additional Suits, Liens or Judgements in D&B's file on this supplier available by contacting 1-800-DNB-DIAL.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 45

Activity Summary:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - YES
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Possible Candidate for Socio-Economic
Program Consideration:

Labor Surplus Area: - N/A
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL
PAYDEX	63	64	65	66	66	65	65	66	64	64	63	65	65	66	65	65

Industry (Based on 1,577 establishments in SIC 37XX)
PAYDEX

	UP QRT	77	77	77	77	77	77	78	78
MEDIAN	71	71	71	71	71	71	72	71	72
LO QRT	63	63	63	63	63	63	64	64	65

PAYDEX scores are updated daily and are based on up to 13 months of trade

SUBSCRIBER: .
ISA .

experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

Average High Credit: \$23,733
Highest Credit: \$800,000
Placed for Collection: -
Cash Experience(s): -
No. of Trade Experience(s): 874

KEY TO PAYDEX

PAYDEX	PAYMENT
100	ANTICIPATE
90	DISCOUNT
80	PROMPT
70	SLOW TO 15
50	SLOW TO 30
40	SLOW TO 60
30	SLOW TO 90
20	SLOW TO 120
UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

PAGE 1 OF 5

SUBSCRIBER:

DUNS: 06-446-9679

DATE PRINTED:
JUL 29 1993

SUMMARY

SILICON SYSTEMS, INC
(SUBSIDIARY OF T D K U S A
CORPORATION, PORT WASHINGTON, NY)

CONTROL
SALES
EMPLOYS

1989
\$260,000,000 (Proj)
2,100 TOTAL
900 HERE

14351 MYFORD ROAD
TUSTIN CA 92680-0000
TEL: (714) 731-7110

PRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUITS

CHIEF EXECUTIVE: ALAN V KING, PRES-COO

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 8

THE INFORMATION IN DUN & BRADSTREET'S FILE OR THE UNAVAILABILITY OF INFORMATION TO DUN & BRADSTREET SUGGESTS A CLOSE EXAMINATION OF THIS SUPPLIER.

Lowest Risk

Highest Risk

1 2 3 4 5 6 7 < 8 > 9

Dun & Bradstreet's Risk Rating Calculated On 07/29/93 At Your Request.
No financial statement information was used to calculate the Risk Rating.

RISK COMMENTARY

- Suits, Liens, and/or Judgments are present.
- Business under present control less than five years.
- Average Payments are 9 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- UCC Filings present.
- Financing secured.
- Under present management control 4 years.

FINANCIAL PROFILE

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	-	-	-	-	-
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	-	-	-	-	-

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30021 000017

SILICON SYSTEMS, INC
PAGE 2 OF 5

SUBSCRIBER:

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

OPERATION
05/10/93

Subsidiary of T D K U S A Corporation, Port Washington, NY started 1978 which operates as (through subsidiaries) a wholesaler of magnetic tapes and electronic parts and components. Parent company owns 100% of capital stock. Parent company has 9 other subsidiaries. Intercompany relations: Have not been specifically defined.

As indicated above, subject is a subsidiary of T D K U S A Corporation, Duns #09-946-8720, to which reference is made for information on its management. Financial information on T D K U S A Corporation is not available.

T D K U S A Corporation, in turn, is a wholly-owned subsidiary of TDK Corporation, Tokyo, Japan, started 1935, which on a consolidated basis manufactures components for use in electronic equipment and machinery. It has numerous other subsidiaries. Intercompany relations with the top parent have not been fully defined.

Other subsidiaries include: T D K Corporation of America; T D K Electronics Corp; Saki Magnetics; T D K Electronics Corp, GA; T D K Components USA Inc; T D K Ferrites Corporation; T D K Texas Corporation; Discom Inc and Synektron Corporation.

Designs, develops, manufactures and markets custom and standard integrated circuits (ASICs or "application specific integrated circuits") for use in the microperipheral, telecommunications, and industrial markets.

Terms are net 30 days. Has 250 accounts. Sells to the microperipheral, telecommunications and industrial markets. Territory: the Far East (65%), Domestic (30%), Europe and other (5%). Nonseasonal.

EMPLOYEES: 2,100 including officers. 900 employed here.

FACILITIES: Leases 140,000 sq. ft. in the two story concrete tilt-up building in good condition. Premises neat.

LOCATION: Industrial section on main street.

BRANCHES: Company owns a 175,000 square foot facility with same name in Grass Valley, CA. An engineering center with same name is located in San Jose, CA where the company owns 15,000 square feet. A sales and engineering office with same name is located in Santa Clara, CA. Sales offices with same name are located in Carson, CA; Atlanta, GA; Chicago, IL; Brighton, MI; Detroit, MI; Salem, NH and Richardson, TX. Company leases a 4,000 square foot design center in Santa Clara, CA and a 85,000 square foot assembly, test and design facility in Singapore under the same name. Also owns a 82,000 square foot building in Tustin, CA operating under the same name.

SUBSIDIARIES: The company has four subsidiaries, wholly owned. (1) Silicon Systems, Singapore, started 1985. Product assembly/test design. There is no Duns number or financial information available.

(2) Silicon Systems International Inc, started 1985. Foreign sales corporation. There is no Duns number or financial information available.

(3) Myford Road Corporation, Tustin, CA, started 1988. Owns interest in land and building. Currently inactive. There is no Duns number or financial information available.

(4) Santa Cruz Properties Inc, Tustin, CA, started 1988. Owns interest in land and building. There is no Duns number or financial data available.

Intercompany relations consist of occasional loans, advances and guarantees but no general endorsements.

Standard Industrial Classification (SIC) Summary:
3674 02 06 Microcircuits, integrated (semiconductor)

SILICON SYSTEMS, INC
PAGE 3 OF 5

SUBSCRIBER:

HISTORY
05/10/93CARMELO J SANTORO, CHB+
FREDRICK GOERNER, SR V PRES
DIRECTOR(S):ALAN V KING, CEO-PRES-COO
WILLIAM BENDUSH, SR V PRES-CFO+
The officers identified by (+) and Sho Masujima.BUSINESS TYPE: Corporation -
ProfitDATE INCORPORATED: 04/01/1987
STATE OF INCORP: DelawareAUTH SHARES-COMMON: 20,000,000
PAR VALUE-COMMON: \$0.0100
AUTH SHARES-PREF: 2,000,000
PAR VALUE-PREF: \$0.0100-----
Corporate file #01583517.
Business started 1972. Present control succeeded May 23 1989.
100% of capital stock is owned by T D K U S A Corporation.
Prior to coming under the present control, this was a publicly
held company. Shares were traded on the New York Stock Exchange under
the symbol "SIL".On Apr 14 1989, TDK Corporation, a publicly traded company
headquartered in Tokyo, Japan, commenced a cash tender offer for all
outstanding shares of the company's common stock at \$20.00 net per
share, through TDK Acquisition Corp, a wholly-owned subsidiary. By
mid-May, TDK had acquired over 90% of the company's shares, and on May
23 1989, TDK Acquisition Corp was merged with and into Silicon
Systems, Inc. Silicon Systems, Inc was subsequently made a direct,
wholly-owned subsidiary of T D K U S A Corporation (A wholly-owned
subsidiary of TDK Corporation, Tokyo, Japan), headquartered in Port
Washington, NY.Martin H Jurick retired as senior vice president in Feb 1992.
CARMELO J SANTORO born 1941. 1963 Manhattan College, Bronx, NY,
BS degree. 1968 Rensselaer Polytechnic Institute, Troy, NY, PhD.
1968-76 Motorola Inc, Schaumburg, IL. 1976-80 American Microsystems
Inc, Pocatello, ID. 1980-82 RCA, New York, NY. 1982-present active
here.ALAN V KING born 1935. 1965-83 Signetics Corp, Irvine, CA.
1983-85 Crystalvision Inc, Torrance, CA, president and Chief Operating
Officer. Maintained no stock interest. 1985-86 Avanter, Los Angeles,
CA, vice president and general manager. Maintained no stock interest.
1986-90 Precision Monolithics Inc, Santa Clara, CA, executive vice
president. Maintained no stock interest. 1990-91 Analog Devices,
Inc, Norwood, MA, vice president and general manager, Precision
Monolithics Division. Maintained no stock interest. 1991-present
active here.FREDRICK GOERNER born 1948. 1970 State University of New York,
Buffalo, NY, BSEE. 1970-82 Signetics Corporation, Irvine, CA.
1982-present active here.WILLIAM BENDUSH born 1949. 1971 graduated from Northern Illinois
University, Urbana, IL, BS in accounting. Prior to 1973 public
accounting. 1973-78 Gould, Inc, Arlington Height, IL. 1978-81 A M
International, Inc, Chicago, IL. 1981-85 involved with two small
local start-up companies. 1985-present active here.SHO MASUJIMA born 1929, not active here. Currently active with T
D K U S A Corporation, Port Washington, NY.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

The following data is for information purposes only and is not the
official record. Certified copies can only be obtained from the

SILICON SYSTEMS, INC
PAGE 4 OF 5

SUBSCRIBER:

official source.

* * * LIEN(S) * * *

DOCKET NO.: 92260129
AMOUNT: \$75
TYPE: State Tax
FILED BY: EMPLOYMENT DEVELOPMENT DEPARTMENT
AGAINST: SILICON SYSTEMS INC
WHERE FILED: ORANGE COUNTY RECORDER OF DEEDS
SANTA ANA, CA

STATUS: Released
DATE STATUS ATTAINED: 09/17/1992
DATE FILED: 04/21/1992
LATEST INFO RECEIVED: 11/12/1992

On 10/21/92, Bill Konther, director of treasury, SILICON SYSTEMS INC, stated he was unaware of this lien filing.

There are 17 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 47

Activity Summary:
Possible Candidate for Socio-Economic Program Consideration:

Borrower (Dir/Guar): - NO
Administrative Debt: - NO
Contractor: - NO
Grantee: - NO
Debarred, Suspended or
Ineligible Contractor: - NO

Labor Surplus Area: - N/A
Small Business: - N/A
Women-Owned: - N/A
8(A) Firm: - N/A
Minority Owned: - N/A

PAYMENT TRENDS
SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL
PAYDEX	62	66	60	61	60	64	67	69	69	75	73	73	73	75	74	74

Industry (Based on 1,057 establishments in SIC 367X)
PAYDEX

UP QRT	74	74	75	75	74	74	74	75
MEDIAN	68	68	69	69	68	68	69	69
LO QRT	59	60	61	62	60	62	62	62

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY
KEY TO PAYDEX

Average High Credit: \$12,360 PAYDEX PAYMENT

This report, provided under contract solely for use by subscriber as one factor in subscriber's credit, insurance, marketing or other business decisions, contains information compiled from sources D&B does not control and whose information, unless otherwise indicated in the report, has not been verified. In providing this report, D&B does not assume any part of the user's business risk, does not guarantee the accuracy, completeness or timeliness of the information and shall not be liable for any loss or injury resulting from reliance on this report. This report may not be reproduced in whole or part in any manner whatever. ©1993 Dun & Bradstreet, Inc.

30021 000020



SUBSCRIBER:

Highest Credit:	\$1,000,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	215	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 01-093-8538

DATE PRINTED:
JAN 25 1994

SUMMARY

SUPERTEX, INC

1350 BORDEAUX DR
SUNNYVALE CA 94089-0000
TEL: (408) 744-0100

CONTROL	1976
SALES F	\$23,752,000
NET WORTH	\$23,080,000
EMPLOYS	250 TOTAL
	250 HERE

CHIEF EXECUTIVE: DR HENRY C PAO, PRES

PRIMARY SIC NO. 3674
MFG SEMICONDUCTOR COMPONENTS

SPECIAL EVENTS

01/21/94 EARNINGS UPDATE: According to published reports, comparative operating results for the 9 months ended January 1, 1994 are as follows: sales of \$18,978,000 and net income (loss) of \$1,901,000 compared to revenue of \$18,037,000 and net income (loss) of \$1,346,000 for the comparable period in the prior year.

10/19/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended October 2, 1993 are as follows: sales of \$12,271,000 and net income (loss) of \$1,048,000 compared to sales of \$12,319,000 and net income (loss) of \$993,000 for the comparable period in the prior year.

09/10/93 Business address is correctly reported as 1350 Bordeaux Dr, Sunnyvale, CA.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 7

THE INFORMATION IN DUN & BRADSTREET'S FILE OR THE UNAVAILABILITY OF INFORMATION TO DUN & BRADSTREET SUGGESTS A CLOSE EXAMINATION OF THIS SUPPLIER.

=====

Lowest Risk								Highest Risk			
1	2	3	4	5	6	< 7 >	8	9			

=====

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending MAR, 1993 are Down by 8.7%.
- Net worth for the Fiscal year ending MAR, 1993 is Down by 0.5%.
- Average Payments are 25 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Business moved.
- Special events have been reported.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 03/31/93 is included in the Risk Rating.
- Statement prepared by Coopers & Lybrand, San Jose, CA.
- Under present management control 18 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Mar. 31, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	7.3	6.0	4.7	114.7	18.0
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	2	1	1	4	1

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 196 establishments.

OPERATION

09/10/93

Manufactures semiconductor components utilizing advanced double diffused MOS (DMOS) and high voltage CMOS (HVCMOS) process technologies. Principal products are DMOS power transistors and high voltage HVCMOS integrated circuits.
Terms are net 30 days. Has 685 account(s). In fiscal 1993 one

customer accounted for 11% of net sales. Sells to medical, data processing, military, telecommunications, instrumentation and consumer product industries. Territory : United States (57%), Western Europe and the Far East (43%).

Nonseasonal.

EMPLOYEES: 250 which includes officer(s). 250 employed here.

FACILITIES: Leases 34,000 sq. ft. in a one story concrete building in good condition. Leases an additional 38,000 sq. ft. at 1225/1231 Bordeaux Dr, Sunnyvale, CA.

LOCATION: Industrial section on side street.

BRANCHES: Manufacturing facilities located at 1225/1231 Bordeaux Dr (1 block away from headquarters), Sunnyvale, CA, (38,000 square feet). Sales offices: Englewood Cliffs, NJ and Fort Worth, TX.

SUBSIDIARIES: In fiscal 1992, the company formed an undisclosed number of foreign sales subsidiaries. Intercompany relations consist of service and merchandise transactions.

Standard Industrial Classification (SIC) Summary:

3674 99 16 Transistors

3674 02 05 Metal oxide silicon (MOS) devices

HISTORY

09/10/93

DR HENRY C PAO, PRES+
BENEDICT C K CHOY, SR V PRES-
TECH DEV & IC PRODUCTS & SEC+
EDWARD MAC KENNA, V PRES-DMOS
PROCESS ENGINEERING

RICHARD E SIEGEL, EXEC V PRES+
MICHAEL V BOND, V PRES-DMOS
PRODUCTS
RICHARD BIRK, V PRES-WAFER FAB
OPER

DIRECTOR(S): The officers identified by (+) and Frank C Pao, Yunni Pao and Peter de Roethth.

CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY
OF STATE OR OTHER OFFICIAL SOURCE AS OF 01/07/1994:

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 10/30/1975
STATE OF INCORP: California

Business started 1976 by Dr Henry C Pao and Benedict C K Choy. The company's common stock is traded in the over-the-counter market. NASDAQ Symbol: SUPX. Shareholders that beneficially owned more than 5% of the outstanding stock as of mid-1993 were as follows: Yunni Pao 16.54%, Frank C Pao 9.56% and Henry C Pao 15.29%. The officers and directors as a group owned 47.04%.

DR HENRY C PAO born 1937. 1976 to present active here. 1973-76 Fairchild Semiconductor, Palo Alto, CA, senior member of research staff. 1969-73 Raytheon Missile Systems Division, Bedford, MA, principal engineer. 1966-69 Sperry Rand Research Center, Sudbury, MA, member of research staff. 1962-66 University of Illinois, Urbana, IL, research assistant and assistant professor. 1960-62 IBM, Components Division, Poughkeepsie, NY, associated engineer. Graduated with a PhD

in Electrical Engineering from the University of Illinois. Son of Yunni Pao and brother of Frank C Pao.

RICHARD E SIEGEL born 1945. 1981 to present active here. 1972-81 Signetics Corporation, Sunnyvale, CA, Eastern U S sales manager. 1970-72 Fairchild Semiconductor, Palo Alto, CA, field sales engineer. 1968-70 Ford Instrument Company, New York, NY, product marketing engineer. 1966-68 Grumman Aviation Corporation, Beth Hope, NY, system engineer, advanced systems group.

BENEDICT C K CHOY born 1945. 1976 to present active here. 1973-76 Fairchild Semiconductor, Palo Alto, CA, senior process development engineer. 1971-73 National Semiconductor, Santa Clara, CA, product engineer. 1969-70 Fairchild Semiconductor, Mountain View, CA, device engineer. 1966-68 Raytheon Company, Mountain View, CA, device engineer. 1967 graduated with BSEE, University of California, Berkeley, CA.

MICHAEL V BOND born 1940. 1982 to present active here. 1968-82 National Semiconductor, Santa Clara, CA, operations manager. 1964-68 Transatron Electronics Corporation, United Kingdom, European Marketing Coordinator. 1961-64 ITT Semiconductor, United Kingdom, applications engineer. 1961 graduated with BSEE, University of London, United Kingdom.

EDWARD MAC KENNA born 1933. 1978 to present active here. 1967-78 Fairchild Semiconductor, Palo Alto, CA, engineering and management in research and development. 1961-67 Raytheon Semiconductor, Mountain View, CA, member of applied research group.

RICHARD BIRK born 1939. 1991 to present active here. 1979-91 IMEL, Cupertino, CA, president; discontinued in good order. 1973-79 Four Phase Systems, Cupertino, CA, director of semiconductor operations. 1967-73 National Semiconductor, Santa Clara, CA, director of the semiconductor group.

FRANK C PAO born 1946, not active here. President and chief executive officer of Business System Technology Corporation, Poughkeepsie, NY. Son of Yunni Pao and brother of Henry C Pao.

YUNNI PAO born 1915, not active here. 1958 to present industrialist, financier and managing director of Oriental Textiles Ltd and Supreme Knitting Factory Ltd, Hong Kong. Father of Henry C Pao and Frank C Pao.

PETER DE ROETHH, not active here. President of Account Management Corporation, Boston, MA.

FEDERAL GOVERNMENT

(As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 15

Activity Summary:

Borrower (Dir/Guar):	- NO
Administrative Debt:	- NO
Contractor:	- NO
Grantee:	- NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area:	- YES (1993)
Small Business:	- YES (1993)
Women-Owned:	- N/A
8(A) Firm:	- N/A

Debarred, Suspended or
Ineligible Contractor: - NO

Minority Owned: - YES (1994)

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	'92	'92	'92		'93	'93	'93	'93	'93	'93	'93	'93	'93	'93	'93	'93	
PAYDEX	MAR	JUN	SEP	DEC	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN		
	56	55	54	57	69	68	75	76	59	60	58	57	58	56	57	57		

Industry (Based on 1,044 establishments in SIC 367X)
PAYDEX

UP QRT	75	75	74	74	74	75	75	75	75	75	75	75	75	75	75	75		
MEDIAN	69	69	68	68	69	69	69	69	69	69	69	69	69	69	69	69		
LO QRT	61	62	60	62	62	62	62	62	62	62	62	62	62	62	62	62		

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$4,020	PAYDEX	PAYMENT
Highest Credit:	\$100,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	77	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

Supplier Evaluation

Dun & Bradstreet
Information Services

PAGE 1 OF 5

SUBSCRIBER:

DUNS: 02-118-8396

DATE PRINTED:
JUL 23 1993

SUMMARY

V L S I TECHNOLOGY, INC
1109 MC KAY DR
SAN JOSE CA 95131-0000
TEL: (408) 434-3000

CONTROL	1979
SALES F	\$428,498,000
NET WORTH F	\$185,008,000
EMPLOYS	2,400 TOTAL
	1,250 HERE

CHIEF EXECUTIVE: ALFRED J STEIN, CHB

PRIMARY SIC NO. 3674
MEG INTEGRATED CIRCUITS; SOFTWARE

SPECIAL EVENTS

07/20/93

EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended June 26, 1993 are as follows: revenue of \$245,266,000 and net income (loss) of \$805,000 compared to revenue of \$208,936,000 and net income (loss) of \$(3,729,000) for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 6

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1 2 3 4 5 < 6 > 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending DEC, 1992 are Up by 3.7%.
- Net worth for the Fiscal year ending DEC, 1992 is Up by 14.5%.
- Losses reported.
- Average Payments are 15 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 12/26/92 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Jose, CA.
- Under present management control 14 years.

Supplier Evaluation

Dun & Bradstreet
Information Services

TECHNOLOGY, INC
OF 5

SUBSCRIBER:

FINANCIAL PROFILE

(Based On An Audited Fiscal Consolidated Statement Dated Dec. 26, 1992.)

The Financial Appraisal Ranking of the Supplier = 3
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	-	2.0	1.4	85.9	99.0
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	4	3	2	2	3

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

OPERATION 06/28/93

Primarily manufacturers and markets highly complex custom and semicustom integrated circuits for the application specific integrated circuit (ASIC) market. Through its COMPASS Design Automation, Inc subsidiary, provides integrated circuit computer-aided engineering and design application software. Terms are net 30 days. Has 500 accounts. Sells to original equipment manufacturers. Territory: U S (74.3% of 1992 net revenues), Europe (22.3%), Japan (3.4%). Nonseasonal.

EMPLOYEES: 2,400. 1,250 employed here.

FACILITIES: Leases 287,950 sq. ft. in 1 story concrete block building in good condition. Premises neat.

LOCATION: Industrial section on well traveled street.

BRANCHES: Technology centers are located in Tempe, AZ; Boston, MA; Dallas, TX; Chicago, IL; Princeton, NJ; Fort Lauderdale, FL; Irvine, CA; San Jose, CA; Encino, CA; Atlanta, GA; Baltimore, MD; Durham, NC; Bellevue, WA; Milton Keynes, United Kingdom; Paris, France; Sophia Antipolis, France; Milan, Italy; Munich, Germany; Tokyo, Japan; Osaka, Japan; Taipei, Taiwan; and Hong Kong. Sales and executive offices and testing facilities are located in Phoenix, AZ. A newly constructed wafer fabrication facility is located in San Antonio, TX.

SUBSIDIARIES: As of Dec 26 1992, the company identified the following wholly-owned direct and indirect subsidiaries which are engaged in the company's consolidated operations. Intercompany relations consist of merchandise transfers. Date of incorporation is shown in parentheses following location.

- (1) V L S I Technology GmbH, Germany (1984).
- (2) V L S I Technology France SARL, France (1985).
- (3) V L S I Technology Ltd, United Kingdom (1985).
- (4) V L S I Technology K.K., Japan (1986).
- (5) V L S I Asia Limited, Hong Kong (1987).
- (6) V L S I Technology Italia SRL, Italy (1990).
- (7) V L S I India, Inc, India (1992).
- (8) COMPASS Design Automation, Inc, Delaware (1991).
- (a) COMPASS Design Automation EURL, France (1986).
- (b) COMPASS Design Automation, GmbH, Germany (1991).
- (c) COMPASS Design Automation International B.V., The Netherlands (1991).
- (d) COMPASS Design Automation Italia, Italy.
- (e) COMPASS Japan K.K., Japan (1992).

SUBSCRIBER:

assembly and test company.

BONELLI. Chief executive of Sema-Metra, a software, consulting and market research firm.

DILWORTH. President and CEO, Metricom Incorporated, an electronic metering and communications systems company.

TSIANG. Chief executive officer of First International Computer, Inc headquartered in Taipei, Taiwan.

OTHER CORPORATE OFFICERS: DONALD L CIFFONE, vice president and general manager, VLSI product divisions. L DON MAULSBY, vice president, worldwide sales and technology center operations.

An additional 27 vice presidents of divisions and subsidiaries were listed in the company's 1992 annual report.

RECENT EVENTS: On Aug 25 1992, Intel Corporation and VLSI Technology, Inc announced the closing of a \$50 million minority equity investment by Intel to acquire approximately 5.4 million shares of VLSI common stock and a three-year warrant to purchase approximately an additional 2.7 million shares of common stock pursuant to the agreement. As a result of this transaction, Intel (as of Aug 25 1992) owned approximately 16.4% of the company's outstanding shares (22.4% as of Mar 5 1993). In addition, on Jul 8 1992, VLSI and Intel entered into a technology and manufacturing agreement. Pursuant to the technology agreement, the two companies will work together to manufacture and VLSI will design, market and sell chips that will enable manufacturers to build hand-held computers.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 157 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT

(As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 16

Activity Summary:

Borrower (Dir/Guar):	- NO
Administrative Debt:	- NO
Contractor:	- YES
Grantee:	- NO
Debarred, Suspended or	
Ineligible Contractor:	- NO

Possible Candidate for Socio-Economic
Program Consideration:

Labor Surplus Area:	- YES (1993)
Small Business:	- N/A
Women-Owned:	- N/A
8(A) Firm:	- N/A
Minority Owned:	- N/A

PAYMENT TRENDS

report, provided under contract solely for use by subscriber as one factor in subscriber's credit, insurance, marketing or other business decisions, contains information obtained from sources D&B does not control and whose information, unless otherwise indicated in the report, has not been verified. In providing this report, D&B does not assume any part of the user's business risk, does not guarantee the accuracy, completeness or timeliness of the information and shall not be liable for any loss or injury resulting from reliance on this report. This report may not be reproduced in whole or part in any manner whatever.

Supplier Evaluation

SUBSCRIBER:

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier PAYDEX	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91 SEP	'91 DEC	'92 MAR	'92 JUN	'92 AUG	'92 SEP	'92 OCT	'92 NOV	'92 DEC	'93 JAN	'93 FEB	'93 MAR	'93 APR	'93 MAY	'93 JUN	'93 JUL
	66	59	65	64	63	58	61	68	65	64	68	68	71	71	70	70
Industry (Based on 1,057 establishments in SIC 367X) PAYDEX																
UP QRT	74	74	75	75	74				74			74			75	
MEDIAN	68	68	69	69	68				68			69			69	
LO QRT	59	60	61	62	60				62			62			62	

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

Average High Credit: \$20,306
Highest Credit: \$1,000,000
Placed for Collection: -
Cash Experience(s): -
No. of Trade Experience(s): 226

KEY TO PAYDEX

PAYDEX	PAYMENT
100	ANTICIPATE
90	DISCOUNT
80	PROMPT
70	SLOW TO 15
50	SLOW TO 30
40	SLOW TO 60
30	SLOW TO 90
20	SLOW TO 120
UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUPPLIER EVALUATION

DUNS: 11-816-8293

DATE PRINTED:
JAN 25 1994

SUMMARY

XILINX, INC

2100 LOGIC DR
SAN JOSE CA 95124-0000
TEL: (408) 559-7778

CONTROL	1984
SALES F	\$177,998,000
NET WORTH F	\$123,299,000
EMPLOYS	544 TOTAL
	458 HERE

CHIEF EXECUTIVE: BERNARD VONDERSCHMITT,
PRES

PRIMARY SIC NO. 3674
MFG PROGRAMMABLE LOGIC DEVICES &
RELATED DEVELOPMENT SOFTWARE

SPECIAL EVENTS

01/13/94 EARNINGS UPDATE: According to published reports, comparative operating results for the 9 months ended January 1, 1994 are as follows: revenue of \$181,005,000 and net income (loss) of \$29,141,000 compared to revenue of \$127,754,000 and net income (loss) of \$19,230,000 for the comparable period in the prior year.

10/15/93 EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended October 2, 1993 are as follows: revenue of \$114,501,000 and net income (loss) of \$18,470,000 compared to revenue of \$81,563,000 and net income (loss) of \$12,249,000 for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 2

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS A RELATIVELY LOW RISK.

Lowest Risk

Highest Risk

1 < 2 > 3 4 5 6 7 8 9

Dun & Bradstreet's Risk Rating Calculated On 01/25/94 At Your Request.

A Fiscal Consolidated Statement was used to calculate the Risk Rating.

RISK COMMENTARY

- Sales for the Fiscal year ending MAR, 1993 are Up by 31.0%.
- Net worth for the Fiscal year ending MAR, 1993 is Up by 13.5%.
- Average Payments are 11 day(s) beyond terms.
- Average Industry Payments are 15 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 2 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated 03/31/93 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Jose, CA.
- Under present management control 10 years.

FINANCIAL PROFILE

(Based On A Fiscal Consolidated Statement Dated Mar. 31, 1993.)

The Financial Appraisal Ranking of the Supplier = 2
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	22.1	3.8	1.6	91.5	32.1
Industry Median	7.2	2.2	1.2	87.5	71.3
Quartile Rank (Supplier)	1	1	2	3	2

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 196 establishments.

OPERATION

08/31/93

Designs, develops and markets CMOS (complementary metal-oxide-silicon) programmable logic devices (integrated circuits) and related development system (application) software. The company's complex programmable logic product lines include field programmable gate arrays (FPGAs) and electrically programmable logic devices (EPLDs).

Terms are net 30 days. Has 3,000 account(s). International terms net 45 to 60 days. Sells to computer, communications, industrial control and instrumentation, and military and aerospace industries. Territory : Domestic (70% of fiscal 1993 revenues) and international (30%) (primarily to customers in Europe & Japan).
Nonseasonal.

EMPLOYEES: 544. 458 employed here.

FACILITIES: Leases 144,000 sq. ft. in a two story concrete block building in good condition. The company recently committed to an adjacent facility of 84,000 square feet effective Jul 1 1992 which is leased.

LOCATION: Central business section on side street.

BRANCHES: Maintains sales offices in the metropolitan areas of Boston, MA; Chicago, IL; Dallas, TX; Denver, CO; Los Angeles, CA; and Philadelphia, PA. International sales offices are located in the metropolitan areas of London, England; Munich, Germany; and Tokyo, Japan.

SUBSIDIARIES: Xilinx, Ltd, United Kingdom, started 1987. 100% owned. Operates as a sales entity for the parent. Intercompany relations consist of merchandise transactions on regular terms.

Xilinx KK, Tokyo, Japan, started 1988. 100% owned. Operates as a sales, service and purchase support office. Intercompany relations consist of merchandise transactions on regular terms.

Xilinx GmbH, Germany, started 1990. 100% owned. Operates as a sales entity. Intercompany relations consist of merchandise transactions on regular terms.

Standard Industrial Classification (SIC) Summary:

3674 02 05 Metal oxide silicon (MOS) devices

7372 99 01 Application computer software

HISTORY

08/31/93

BERNARD VONDERSCHMITT, PRES-CEO+ GORDON STEEL, V PRES-FIN & CFO
G WESLEY PATTERSON, EXEC V PRES

& CHIEF OPERATING OFFICER

DIRECTOR(S): The officers identified by (+) and Harry A Marshall and Philip T Gianos.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 02/05/1990
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 50,000,000
PAR VALUE-COMMON: \$0.0100

AUTH SHARES-PREF: 2,000,000
PAR VALUE-PREF: \$0.0100

The present Delaware corporation succeeded a California corporation by the same name (chartered in May 1985) in Apr 1990.

Business started 1984 by Bernard Vonderschmitt, James Barnett and Ross Freeman.

BACKGROUND/CONTROL: The company operated as Xilinx, Inc from Feb 1984 until Nov 1985, when as part of a reorganization to eliminate a limited partnership, this company changed it's name to Xilinx Research and Development Corporation. A new corporation (incorporated May 15 1985), originally incorporated as New Xilinx, Inc, changed it's name to Xilinx, Inc in Nov 1985. Then on Mar 22 1988 Xilinx Research and Development Corporation was merged into Xilinx, Inc. There was no control change involved, simply a restructuring of corporate entities.

On Jun 12 1990, subject completed its initial public offering of 1,096,515 shares of common stock with net proceeds to the company of \$10,197,590. Simultaneously, the company sold 3,411,772 shares of common stock, realizing gross proceeds of \$37,529,492 from Advanced Micro Devices (AMD), prior to a \$5,000,000 payment to AMD, for the suspension of AMD's rights to use certain of the company's patents, return of certain assets and a covenant not to compete in the area of SRAM based FPGAs. This transaction together with 1,359,389 shares of common stock issuable upon conversion of preferred stock and upon exercise of common stock warrants held by AMD, resulted in AMD's ownership of 20% of the voting securities of the company on an as-if-converted basis. In Nov 1991, AMD sold 3,500,000 shares which resulted in AMD retaining ownership of approximately 6% of the outstanding voting securities of the company.

The company's common stock is traded on the NASDAQ National Market System under the symbol "XLNX". As of Mar 31 1993, there were approximately 589 holders of record of the company's common stock. The only shareholder identified by the company as beneficially owning more than 5% of the company's common stock is Morgan Grenfell Capital Management, Inc with 9.8% (as of Dec 31 1992). The officers and directors as a group beneficially owned approximately 5% of the outstanding common stock as of Jul 11 1993.

.....MANAGEMENT BACKGROUND.....

VONDERSCHMITT born 1923. 1984 to present active here. 1981-84 Zilog, Campbell, CA, vice president of component division. 1959-81 RCA, Somerville, NJ, vice president of the solid state division.

STEEL born 1944. 1987 to present active here. 1984-87 Pyramid Technology, chief financial officer. 1980-84 Evotek, chief financial officer. 1977-80 Impell Corp, treasurer. 1973-77 Quantor, division manager. 1971 received MBA from Stanford University. 1967 received BA Degree from Pomona College.

PATTERSON born 1947. 1985 to present active here. 1981-85 VLSI Technology, director of cell based products. 1974-81 Motorola, operations manager for 8-bit microprocessors. 1968-74 Honeywell, design engineer. 1974 received PhD, 1972 MSEE from Arizona State University. 1969 received BSEE from Michigan State University.

.....OTHER DIRECTORS.....

MARSHALL. General partner, J H Whitney & Co.

GIANOS. General partner, Interwest Partners.

.....OTHER OFFICERS.....

R SCOTT BROWN. Vice president, sales.

ROBERT C HINCKLEY. Vice president, strategic plans and programs, secretary.

C FRANK MYERS. Vice president, operations.

WILLIAM S CARTER. Vice president, product development engineering.

LEE D FARRELL. Vice president, marketing.

JACOB S JACOBSSON. Vice president, software products.

NICHOLAS KUCHAROWSKI. Vice president, EPLD Division.

RAY F MADORIN. Vice president, human resources.

PUBLIC FILINGS

There are no Suits or Judgments present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 75 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT (As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 15

Activity Summary:

Borrower (Dir/Guar):	-	NO
Administrative Debt:	-	NO
Contractor:	-	NO
Grantee:	-	NO
Debarred, Suspended or		
Ineligible Contractor:	-	NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area:	-	YES (1993)
Small Business:	-	N/A
Women-Owned:	-	N/A
8(A) Firm:	-	N/A
Minority Owned:	-	N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

Supplier	PRIOR 4 QTRS				'93	CURRENT 12 MONTH TREND												'94
	'92	MAR	JUN	SEP		DEC	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
PAYDEX	69	68	60	67	70	70	69	66	66	73	74	75	75	75	75	75	73	

Industry (Based on 1,044 establishments in SIC 367X)
 PAYDEX

UP QRT	75	75	74	74	74	75	75	75
MEDIAN	69	69	68	68	69	69	70	70
LO QRT	61	62	60	62	62	62	63	63

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$5,559	PAYDEX	PAYMENT
Highest Credit:	\$70,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	66	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE

SUBSCRIBER:

DUNS: 07-631-4459

DATE PRINTED:
JUL 23 1993SUMMARY

ZILOG INC

210 E HACIENDA AVE
CAMPBELL CA 95008-0000
TEL: (408) 370-8000

CONTROL	1973
SALES F	\$145,666,000
NET WORTH F	\$109,907,000
EMPLOYS	1,449 TOTAL
	300 HERE

CHIEF EXECUTIVE: DR EDGAR A SACK, CHB-
PRESPRIMARY SIC NO. 3674
MFG INTEGRATED CIRCUIT PRODUCTS

SPECIAL EVENTS

07/19/93

EARNINGS UPDATE: According to published reports, comparative operating results for the 6 months ended July 4, 1993 are as follows: sales of \$97,614,000 and net income (loss) of \$12,235,000 compared to sales of \$62,681,000 and net income (loss) of \$6,684,000 for the comparable period in the prior year.

04/19/93

EARNINGS UPDATE: According to published reports, comparative operating results for the 3 months ended April 4, 1993 are as follows: sales of \$48,021,000 and net income (loss) of \$5,790,000 compared to sales of \$29,381,000 and net income (loss) of \$3,150,000 for the comparable period in the prior year.

RISK SUMMARY

THE DUN & BRADSTREET RISK RATING = 5

THE INFORMATION IN DUN & BRADSTREET'S FILE ON THIS SUPPLIER
SUGGESTS RELATIVELY MODERATE RISK.

Lowest Risk

Highest Risk

1	2	3	4	< 5 >	6	7	8	9
---	---	---	---	-------	---	---	---	---

Dun & Bradstreet's Risk Rating Calculated On 07/23/93 At Your Request.
A Fiscal Consolidated Statement was used to calculate the Risk Rating.RISK COMMENTARY

- Sales for the Fiscal year ending DEC, 1992 are Up by 32.3%.
- Net worth for the Fiscal year ending DEC, 1992 is Up by 73.0%.
- Average Payments are 9 day(s) beyond terms.
- Average Industry Payments are 16 day(s) beyond terms.
- Special events have been reported.
- UCC Filings present.
- Operations reported profitable.
- Financial Appraisal Ranking is 3 based on a scale of 1 (Highest) to 4 (Lowest) compared to the industry. The appraisal is a calculated average based on the firm's quartile ranking in the available ratios.
- Financial information from a Fiscal Consolidated Statement dated

- 12/31/92 is included in the Risk Rating.
- Statement prepared by Ernst & Young, San Jose, CA.
 - Under present management control 20 years.

FINANCIAL PROFILE

(Based On An Audited Fiscal Consolidated Statement Dated Dec. 31, 1992.)

The Financial Appraisal Ranking of the Supplier = 3
(Calculated average based upon the supplier's quartile ranking in the available ratios. 1 = highest through 4 = lowest)

	PROFITABILITY	SOLVENCY	SHORT TERM	EFFICIENCY	DEBT UTILIZATION
	(Return on Net Worth)%	(Current Ratio)	(Quick Ratio)	(Assets/ Sales)%	(Total Liab/ Net Worth)%
This Supplier	14.6	2.4	0.7	100.8	33.6
Industry Median	9.3	2.5	1.3	87.2	55.1
Quartile Rank (Supplier)	2	3	4	3	2

Key to Quartile Rank: 1 = top quartile through 4 = bottom quartile.
Industry norms based upon 120 establishments.

OPERATION
02/26/93

Manufacturer of application specific standard integrated circuit products (ASSPs) for the datacommunications, intelligent peripheral controller and consumer product controller markets. Terms are net 30 days. Has 1,500 accounts. Sells to original equipment manufacturers. Territory: Domestic (50% of 1992 net sales), Far East (33%), Europe (12%) and other (5%). Nonseasonal.

EMPLOYEES: 1,449. 300 employed here.

FACILITIES: Leases 80,000 sq. ft. in a two story concrete block building in good condition. Premises neat.

LOCATION: Industrial section on well traveled street.

BRANCHES: Owns a 77,000 square foot manufacturing facility in Nampa, Idaho and an adjacent 128,000 square foot building that the company anticipates will be used for additional manufacturing capacity. Owns a 54,000 square foot assembly and test facility in Manila, the Philippines. In addition, as of Dec 31 1992, the company leased sales offices around the world in the United States, Canada, the United Kingdom, Germany, Korea, Japan, Hong Kong, Singapore and Taiwan.

SUBSIDIARIES: Subsidiaries are all 100% owned and operate as sales and distribution centers, except Zilog Philippines Inc which is a manufacturing facility.

- 1) Zilog U K, London, England. Started 1975.
- 2) Zilog Europe, Munich, Germany. Started 1975.
- 3) Zilog Philippines Inc, Manila, Philippines. Started 1975.
- 4) Zilog Japan KK, Tokyo, Japan. Started 1978.
- 5) Zilog Asia Ltd, Hong Kong. Started 1983.

Intercompany relations consist of loans, service transactions and similar management. There are no endorsements.

Standard Industrial Classification (SIC) Summary:
3674 02 06 Microcircuits, integrated (semiconductor)

HISTORY

SUBSCRIBER:

02/26/93

EDGAR A SACK, CHB-PRES-CEO+

WILLIAM R WALKER, SR V PRES-FIN
& ADMIN-CFO+

J PHILLIP DOWNING, SR V PRES-
TECHNOLOGY

MICHAEL J BRADSHAW, SR VP-
WORLDWIDE OPS

DIRECTOR(S): THE OFFICER(S) and William H Janeway, Henry Kressel and
Thomas J Connors.

CORPORATE AND BUSINESS REGISTRATIONS REPORTED BY THE SECRETARY
OF STATE OR OTHER OFFICIAL SOURCE AS OF 07/02/1993:

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 09/17/1973
STATE OF INCORP: California

Authorized 75,000,000 shares common stock, no par value,
5,000,000 shares Class B common stock, no par value, and 190,000
shares preferred stock, no par value.

ISSUED CAPITAL STOCK: 14,350,996 shares common stock and
2,100,000 shares Class B common stock at Dec 31 1992.

The company affected a 3-for-2 stock split to shareholders of
record on Feb 1 1993, paid on Feb 15 1993.

Business started 1973 by Frederico Faggin and Ralph Ungermann.

BACKGROUND/CONTROL: In 1975 the company was purchased by Exxon
Enterprises, New York, NY, a wholly owned subsidiary of Exxon
Corporation. In 1981, Exxon Enterprises Inc was merged with the
parent Exxon Corporation.

Zilog Acquisition Corporation was organized in California on May
11 1989 by Warburg, Pincus Capital Company, L.P. and the company's
management to acquire Zilog, Inc, then a wholly-owned subsidiary of
Exxon Corporation. The acquisition of Zilog, Inc was completed in Jun
1989 for a purchase price of approximately \$49.0 million. In
connection with the transaction, the company sold \$19.4 million in
equity securities and incurred \$33.0 million in bank debt. On Jun 20
1989, Zilog Acquisition Corporation was merged into Zilog, Inc (the
survivor).

In Feb 1991, the company sold 2,300,000 shares of common stock to
the public in an underwritten offering resulting in net proceeds to
the company of approximately \$23,221,000. In Jan 1993, the company
sold 667,000 shares, generating net proceeds to the company of
approximately \$23 million. The company's common stock is traded on
the NASDAQ National Market System under the symbol "ZLOG". At Dec 31
1992, there were approximately 359 shareholders of record.

As of Mar 4 1992, those shareholders identified by the company as
beneficially owning 5% or more of the outstanding shares of common
stock were Warburg, Pincus Capital Company, L.P. 466 Lexington
Avenue, New York, NY (45.6%) and Robert Fleming Inc (5.0%). The
officers and directors as a group beneficially owned 6.4%.

RECENT ACQUISITION: In Apr 1992 the company announced its
acquisition of the majority of the assets of Avant Inc, Irvine, CA.
Terms were not disclosed.

MANAGEMENT BACKGROUND
EDGAR A SACK born 1930. 1984 to present active here. 1969-84
General Instrument Corp, senior vice president. 1954-69 Westinghouse,
general manager. Holds BS, MS and PhD degrees in electrical
engineering from Carnegie-Mellon University.

WILLIAM R WALKER born 1941. 1984 to present active here.
1964-84 Exxon Corporation, New York, NY, finance. Prior to 1963
student. Holds a BS degree in economics from the University of
Wisconsin, an MBA degree from the University of Maryland and is a
certified public accountant.

J PHILLIP DOWNING born 1940. 1989 to present active here.
1973-89 employed by Advanced Micro Devices, Sunnyvale, CA as vice
president of integrated technology. Holds BSEE and MSEE degrees from
the University of California at Berkley.

MICHAEL J BRADSHAW born 1949. 1985 to present active here.

Supplier Evaluation

Dun & Bradstreet
Information Services

INC
4 OF 5

SUBSCRIBER:

1979-85 with General Instrument Corp, active lastly as vice president of operations, planning and control. 1977-79 with Mostek Corp, director of worldwide planning. 1973-77 with Texas Instruments Incorporated. 1972-73 with Pennzoil Co. Completed a BS degree in engineering mathematics at the University of Missouri at Rolla (1971) and holds master's degrees in business administration and science administration from the University of Houston (1977).

OTHER DIRECTORS

WILLIAM H JANEWAY, not active here. Managing director of Warburg, Pincus Ventures, ad affiliate of E M Warburg, Pincus & Co Inc, New York, NY.

HENRY KRESSEL, not active here. With Warburg, Pincus Ventures, an affiliate of E M Warburg, Pincus & Co, New York, NY.

THOMAS J CONNORS, not active here. Principal of TJC Investments, an independent consulting firm which works with companies in the semiconductor and semiconductor related industries.

AFFILIATE: Through capital stock ownership interest, subject is related to Warburg, Pincus Capital Company, L.P., New York, NY, DUNS #19-702-7576. Started in 1986, operates as a venture banking firm. No financial details are available. There are no other known intercompany relations.

PUBLIC FILINGS

There are no Suits or Judgements present in D&B's file.

Excluding UCC Filings that may be listed below, there are no Liens present in D&B's file.

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

There are 3 Open and/or closed UCC's in Dun & Bradstreet's file that Dun & Bradstreet has matched to this supplier at this address. Details are available by calling 1-800-DNB-DIAL.

The public record items contained in this report may have been paid, terminated vacated or released prior to the date this report was printed.

FEDERAL GOVERNMENT

(As reported to Dun & Bradstreet by the Federal Government and other sources.)

Congressional District: 15

Activity Summary:

Borrower (Dir/Guar):	- NO
Administrative Debt:	- NO
Contractor:	- NO
Grantee:	- NO
Debarred, Suspended or Ineligible Contractor:	- NO

Possible Candidate for Socio-Economic Program Consideration:

Labor Surplus Area:	- YES (1993)
Small Business:	- N/A
Women-Owned:	- N/A
8(A) Firm:	- N/A
Minority Owned:	- N/A

PAYMENT TRENDS

SUPPLIER VERSUS INDUSTRY PAYDEX

SUBSCRIBER:

Supplier	PRIOR 4 QTRS				CURRENT 12 MONTH TREND											
	'91	'91	'92	'92	'92	'92	'92	'92	'92	'92	'92	'92	'92	'92	'92	'92
PAYDEX	SEP	DEC	MAR	JUN	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
	59	54	54	66	68	68	66	66	74	74	74	74	74	75	75	74
Industry (Based on 1,057 establishments in SIC 367X)																
PAYDEX																
UP QRT	74	74	75	75	74				74			74			75	
MEDIAN	68	68	69	69	68				68			69			69	
LO QRT	59	60	61	62	60				62			62			62	

PAYDEX scores are updated daily and are based on up to 13 months of trade experiences from the Dun & Bradstreet trade file.

PAYMENT SUMMARY

KEY TO PAYDEX

Average High Credit:	\$27,796	PAYDEX	PAYMENT
Highest Credit:	\$2,000,000	-----	-----
Placed for Collection:	-	100	ANTICIPATE
Cash Experience(s):	-	90	DISCOUNT
No. of Trade Experience(s):	125	80	PROMPT
		70	SLOW TO 15
		50	SLOW TO 30
		40	SLOW TO 60
		30	SLOW TO 90
		20	SLOW TO 120
		UN	UNAVAILABLE

Accounts are sometimes placed for collection even though the existence or amount of debt may be disputed.

SUPPLIER EVALUATION COMPLETE