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# GLOBAL ELECTRONICS INFORMATION NEWSLETTER

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## SINGAPORE PERIPHERALS

Singapore appears to be developing as a center for the offshore assembly of mini-disk drives, the memory devices sold with microcomputers. Chatsworth-based Micro Peripherals, which has been operating there more than 19 months, employs 400. Tandon (see issue no. 18) has been producing for several months. Now Seagate, headquartered in Scotts Valley, in the Santa Cruz Mountains near Silicon Valley, has announced plans to invest US\$30 million in Singapore. The plant will produce printed circuit boards, motors, and magnetic head arms, all of which will be shipped back to the U.S. for final assembly into Winchester disk drives. (*Electronics News*, August 9 and September 6, 1982)

## TAIWAN EXPORTS

United Microelectronics Corp., Taiwan's first commercial semiconductor wafer fabricator (see issue no. 21) plans to produce state-of-the-art chips for export. Under license from Silicon Valley-based Weitek, UMC will produce 64K Read Only Memories (ROM's). In addition, UMC has established a U.S. marketing arm, National Microelectronics Corp. (*Semiconductor International*, August, 1982)

## PAKISTAN

Itac, a Silicon Valley-based offshore assembly contractor, is opening a video-game assembly plant in Rawalpindi, Pakistan. Already operating in a temporary facility there, Itac plans to employ 600 people in a 25,000 sq. ft. facility and as many more in another factory to be opened within the next two years.

Though Pakistan has a plentiful supply of cheap labor and an adequate supply of skilled professionals, it has no major electronics plants other than government-run telephone factories. Itac decided to pioneer Pakistan's industrial environment after being approached by a non-profit Pakistani foundation, the Fauji Foundation, which is a partner in the operation. (*Peninsula Times Tribune*, September 29, 1982)

## LATE AGAIN

Since we have been busy moving our office since the middle of August, we missed publication of the August newsletter. So, this is issue no. 24. Since subscriptions are for twelve issues, as opposed to twelve months, all subs are automatically extended. We are sorry for the delay.

## OPEN HOUSE

PSC will hold an open house at its new offices at 222B View Street, Mountain View, on November 13, 1982, from 5:00 to 7:00 p.m. Refreshments will be provided. The new office is wheelchair accessible.

The open house will follow a one-day conference called "What's Next? A Working

Conference for Silicon Valley Peace Activists," sponsored by PSC and its "office-mate," the Mid-Peninsula Conversion Project. MPCP is also participating in the open house. The conference, which begins at 9:00 a.m., will be at Carpenters Hall, 701 Stierlin Road, Mountain View.

## REPORT AVAILABLE

In September, PSC staff prepared a "Background Report on Silicon Valley" for the U.S. Civil Rights Commission, in conjunction with the Commission's hearings on "The Growth Industries." The 100-page report reflects the Commission's present emphasis on "business development," but it also includes important new data on the racial and sex stratification of the high technology workforce.

The table below, one of several in the report, is based on industry responses to Federal surveys, tabulated as "1980 EEO1

Summary Reports of Selected Establishments," from the Technical Services Division, OSP, Equal Employment Opportunity Commission. This particular table covers Standard Industrial Classifications 357 (computers/office machines), 366 (communications equipment), 367 (semiconductors and other components), and 381-383 (instruments). The total number of employees covered by survey responses was 1,572,757.

Photocopies of the report are available from PSC for \$5.00.

### U.S. High-Tech Mass Production Workforce, 1980

	Male	Female	White	Black	Span.	Asian	Indian
Total	58%	42%	81%	8%	6%	3%	<1%
Managers (11%)	89%	11%	94%	2%	2%	2%	<1%
Professionals (17%)	87%	13%	91%	3%	2%	4%	<1%
Technicians (11%)	82%	18%	86%	5%	4%	4%	<1%
Sales Workers (1%)	76%	24%	95%	3%	1%	1%	<1%
Clerical (12%)	22%	78%	87%	7%	4%	2%	1%
Craft Workers (10%)	75%	25%	83%	7%	7%	2%	<1%
Operatives (32%)	32%	68%	73%	13%	10%	4%	1%
Laborers (4%)	34%	67%	71%	11%	14%	3%	1%
Service Workers (2%)	72%	28%	75%	15%	8%	2%	<1%

## PHILIPPINES

The Philippines, already a booming site for offshore electronics assembly, is taking steps to encourage more investment. In addition to the anti-strike rules promulgated by President Marcos in July (see issue no. 23), the government has eased taxing provisions and eliminated a requirement that large firms grow grains to feed their employees. In addition, the government has announced its intention to organize a massive, industry-wide training program.

In 1981, semiconductors outpaced coconut products and sugar to become the country's leading export for the first time. Chip exports reached \$632.2 million. Semiconductor companies employed about 40,000 people. The eleven U.S. chip firms currently assembling in the Philippines are Advanced Micro Devices, American Microsystems, Deltron/Sprague, Fairchild (Schlumberger), Intel, Motorola, National Semiconductor, Raytheon, Signetics (Philips), Texas Instruments, and Zilog. Signetics is presently the only foreign-owned plant with a recognized union.

Synertek (Honeywell) and Analog Devices have both announced plans for Philippines facilities as well. Raytheon recently took over Philippine-owned Carter Semiconductor (originally a British affiliate) following a month-long strike there. Raytheon had accounted for more than 90% of Carter's work.

Of the eight non-captive assemblers in the Philippines, locally controlled Stanford Microsystems and Dynetics account for 75% of the contract assembly capacity. Stanford, the largest contract assembler, employs 6,000 workers at its "super plant" at Pasig (metropolitan Manila).

In addition to the chip-makers, computer builder Data General produces printed circuit board and other assemblies in the Philippines and Timex assembles watches. (Ron Iscoff, "Philippine Update," **Semiconductor International**, August, 1982; **Asian Wall Street Journal**, July 26, 1982)

## ZILOG WORK DESIGN

U.S. semiconductor companies organize production along traditional, hierarchical lines. In wafer fabrication, work is fragmented vertically (between engineers, technicians, and operatives) and horizontally (between operatives conducting different operations). Each employee is familiar only with his or her particular function.

In the belief that this organizational form hinders productivity, Zilog, the merchant semiconductor producer wholly owned by Exxon, undertook to design an alternative socio-technical system when it established its Nampa, Idaho wafer fabrication plant in 1979. Zilog formed autonomous production teams, in which each member is expected to know how the entire production process fit together. Teams not only analyze production quality and quantity, but by consensus they set hours and hire new team members.

Rather than focus on distinct operations, Zilog's goal is to maximize the yield of good chips. "In fact, the plant manager prefers to call the plant a 'die generation' rather than a 'wafer fab' facility." Reportedly, yields at Nampa exceed those at comparable plants by 25%.

Zilog also reports annual employee turnover of only 6% in its first two years, compared to 50% to 100% at Silicon Valley chip plants. Other remote semiconductor plants do not have turnover as high as in Silicon Valley, but they reportedly approach Silicon Valley figures.

Zilog considers the Nampa experiment a success, and it plans to apply similar concepts to some of its non-manufacturing operations in its Cupertino (Silicon Valley) headquarters. (Paul Gustavson and James C. Taylor, "Socio-technical Design and New Forms of Work Organization: Integrated Circuit Fabrication," prepared for the International Labor Office, January 6, 1982)

## CONTROL DATA KOREA

In late July, Control Data permanently closed its Seoul, Korea disk drive sub-assembly plant. The company promised severance pay above that required by South Korean law. At closing, the plant employed 350 workers, primarily women, down from a peak of 1,200 employees in 1977. Control Data has operated in Seoul for fifteen years.

The shutdown followed months of labor strife (see issue no. 22). Following union demonstrations in June, anti-union male worker physically attacked union leaders. Five women, including two pregnant workers, were hospitalized. Reportedly, government security agents prevented the Ministry of Labor and Control Data from settling the dispute with the workers.

Control Data says that labor problems only accelerated the plant closure. The company cites obsolete assembly procedures and a rising wage base as the fundamental reasons for phasing out Korean production. (**Asian Wall Street Journal**, July 26, 1982; **Electronics News**, August 16, 1982)

Thus, the union's fight for higher wages may have been the result of the subsidiary's declining profitability, with management resisting a country-wide trend toward higher pay, not the cause. This is the general dilemma of offshore assembly platforms. Korea, Malaysia, the Philippines, etc. can attract and keep U.S. electronics assemblers only as long as they can hold down wages.

## SUBSCRIPTIONS

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