Librazette

June 1990

Librascope Corporation, Glendale, California

Major Integrated Circuit Design Effort Passes Test Hurdle

Recent lab tests have confirmed that all of the design goals of the BSY-2 Graphics Engine have been met. The Graphics Engine is the key element of the Combat System Display Console (CSDC), being built by Librascope under contract with GE for installation on the new SSN-21 class of attack submarines.

"Designing the Graphics Engine was one of the most technically challenging engineering projects ever undertaken by Librascope," said Ed Arnold, Director, Product Engineering. "Its function is to process massive amounts of incoming data into high resolution displays understandable to the console operator.

"The concept was simple. Our task was to militarize, under license, a successful commercial design. This approach was carried throughout the design making it possible to design computer software to operate the commercial Graphics Engine and be confident that the militarized Graphics Engine would operate identically."

Militarizing the design was as difficult as the concept was simple. Mechanical constraints made it essential to shrink each circuit card module by 40%. This could only be accomplished by the extensive use of application specific integrated circuits (ASICs).

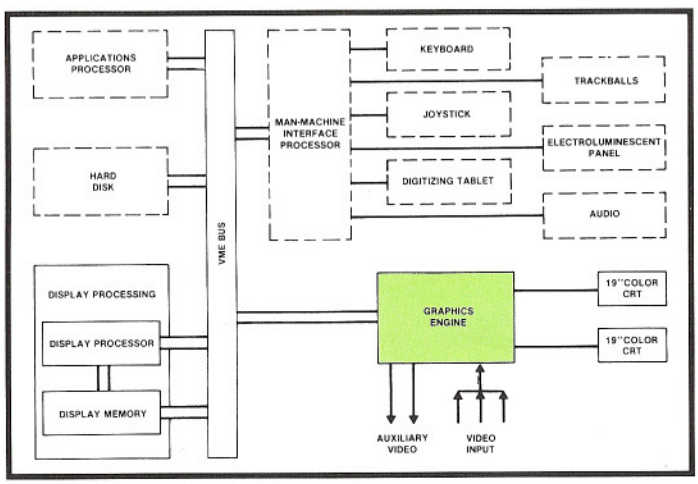
ASICs are very large custom-designed integrated circuits (ICs) built to special order from one of the ASIC vendors. Their advantage is that each ASIC contains a very large number of digital circuits. *(See insert on Pg. 2, ASIC: How Complex?)*

Ten areas in the commercial design were found that could be placed in ASICs to produce the required size reduction. This necessitated ten unique ASIC designs. It also required a complete overhaul of the electronic engineering design procedures, since ASICs on this scale had never been previously designed at Librascope.

To successfully design complex ASICs requires the use of computer-aided engineering (CAE) tools. Otherwise, there is simply too much opportunity for human error in designing them, and an impossibly large amount of hand analysis to perform.

Numerous computer work stations with CAE software were

Continued - Pg. 2



This Architectural Diagram shows that the high performance Graphics Engine is an integral part of the Combat System Display Console (CSDC).

NEWS BRIEF

Link-Miles Division Sold . . .

Bicoastal Corporation, of which Librascope is a subsidiary, has agreed to sell its Link-Miles aviation subsidiary to Thomson-CSF for $100 million.

Bicoastal's Link-Miles Division, based in Lancing, England, develops and produces simulators for worldwide military and commercial applications.

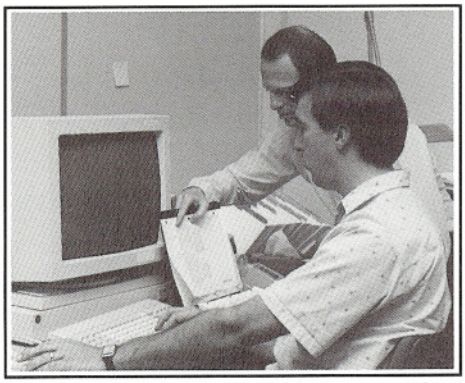
Librascope's Combat System Display Console (CSDC), which uses the Graphics Engine, is a militarized, multifunction processor and display console which provides color graphics, digital optronics, and controls for shipboard applications.

Circuit Design Effort Passes Test

- Continued-

installed in the engineering area. This gave the engineers the tools necessary to create the ASIC designs and to simulate their performance

Simulation is extremely important in ASIC design because redesign is so costly. Not only will the ASIC vendor charge as much for the second batch of ASICs as



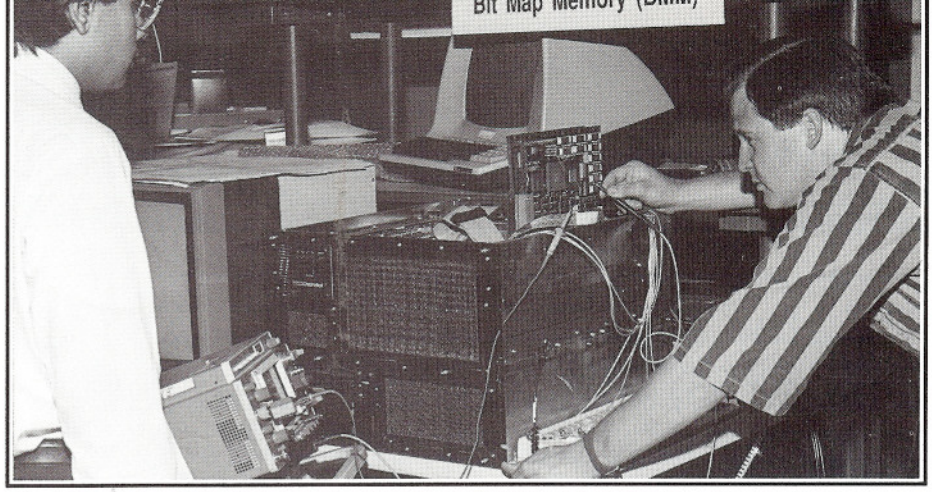
Ray Cammilleri, Sr. Engineer, left, and Mike Tucker, Engineer, use a workstation to perform a digital simulation on an ASIC.

for the first, there are also weeks of delay for each cycle.

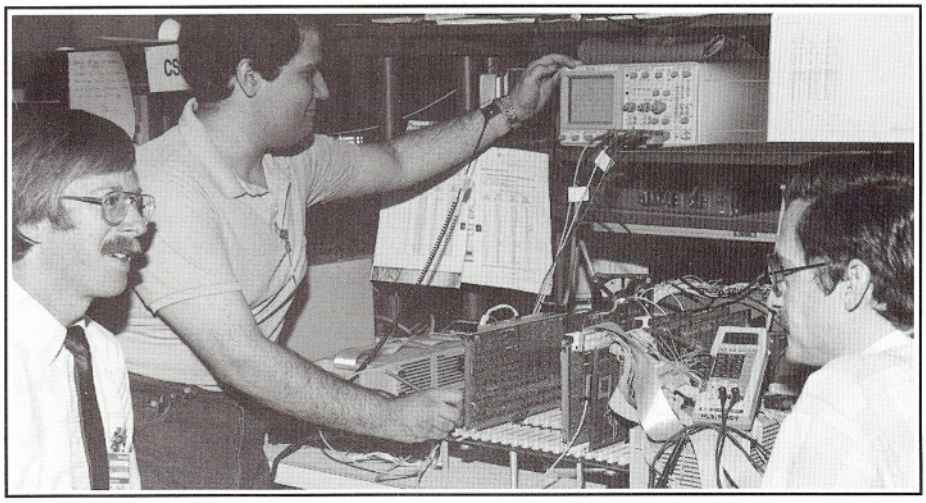
Librascope's approach was to use extensive simulation to get each ASIC right the first time. Simulation was not only peformed on each ASIC but the ASICs in turn were simulated working with other parts of the system. Only after complete success under simulation, were the ASICs actually ordered.

This approach was successful, when the entire Graphics Engine was tested with all ten ASICs installed. None of the ASICs required redesign. Just as satisfying was the knowledge that the project could not have succeeded except as a genuine team effort.

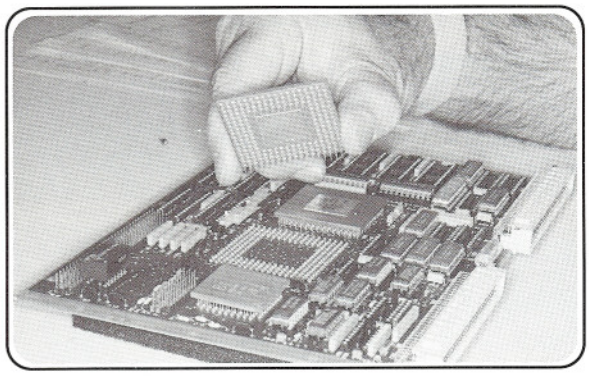
"Everyone on the design team did a remarkable job of exchanging information and helping each other to make the individual parts work together," said Bruce Perkin, Mgr., Electronic Engineering. "The same teamwork was also effective in bringing the CAE tools on line and debugging them." ■



Joel Voelzke, Sr. Engineer, right, and Nitin Mistry, Engineer, test a military card in a commercial Graphics Engine.



From left, Jim Fults, Staff Engineer, George Aluzzi, Engineer, and Richard Rizzo, Sr. Engineer, check out brassboard of the complete Graphics Engine.



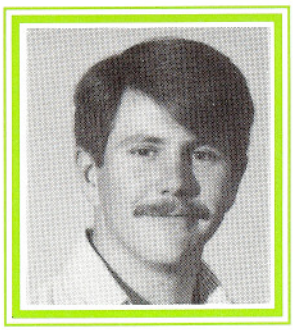
Moment of Truth. . . plugging ASIC into circuit card for test!

ASICs: How Complex?

So much digital control and computation can be crammed into a modern ASIC (application specific integrated circuit), that some prospective is in order to illlustrate how advanced they are. Back in the early-to-mid 60's Librascope produced for the FAA and the Air Force some large mainframe computers. They were housed in cabinets 6 feet high, 9 feet long, and 3 feet deep. The digital logic circuits inside had a complexity equal to approximately 6 to 9 thousand gates.

That level of complexity is about the average for an ASIC used in the BSY-2 Graphics Engine. But all of the digital logic of an ASIC is embedded in a slab of silicon less than one centimeter on a side. Fully packaged by the vendor ready for our use on a printed circuit board, the ASIC is about the size of a matchbook. And, most of that space is used simply to connect it.

Meet A Hero!



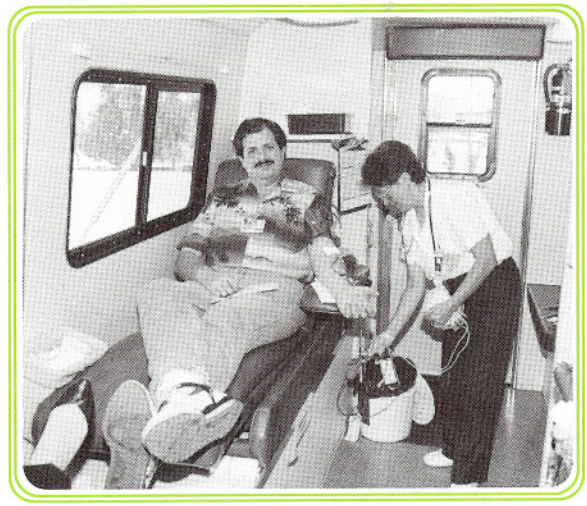
David "Casey" Jones, a Sr. Installation Engineer in Logistics Engineering, has been hailed a hero after he and a friend saved the lives of three persons from a fire in an apartment building in Arcadia.

Jones and his friend, Henry Amparan, were alerted to the fire when they heard screaming and the sound of breaking glass from the apartment building next door to where they live.

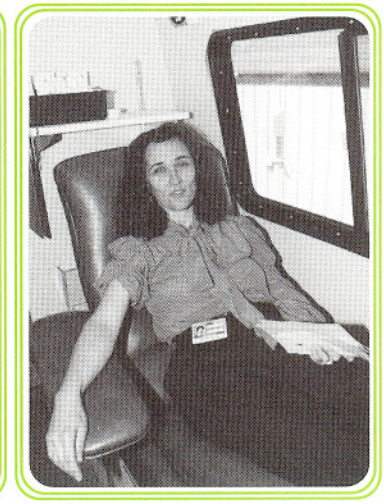
When Jones and Amparan arrived at the scene, one resident had already jumped from his bedroom window. The two men used a ladder to rescue one woman who was hanging by her fingers from a windowsill, as well as two other men waiting to be rescued from the second floor.

According to Arcadia Fire Captain, Wayne Crabb, it was the quick work of both Casey and Henry that helped divert a disaster. "If they hadn't done what they did, those people would have suffered severe smoke inhalation or possibly died. ■

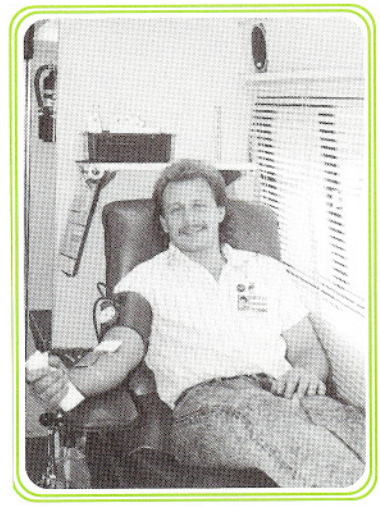
Employee Spotlight on Librascope Blood Donors. . .



Tim Grouell, Instrument Inspector
Final Assembly & Test Inspection



Avima Yaffe,
Senior Engineer,
Hardware System Design



Ricky Caputo, Designer
Mechanical Design

Kathryn Erskine, right, Secretary,
Programs Management Administration

"The Defense Never Rests" is Theme of NSIA Campaign

Recognizing that employees of companies conducting business with the defense industry can be effective ambassadors, the National Security Industrial Association(NSIA) has developed a seven-month campaign of monthly posters to instill employee pride in the defense industry. The theme is "The Defense Never Rests."

Beginning this month, posters will be displayed throughout Librascope covering such topics as quality, commercial spin-offs, technology and reliability.

The material is designed to inform employees about the positive contributions of the defense industry toward advancing the national and economic security of the nation. ■

A Few Steps in the Right Direction: Walking Tips. . .

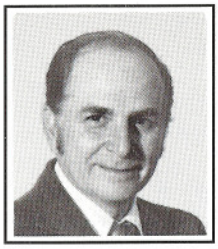
The popularity of walking as a safe and effective way to get and stay in shape continues to grow. It can be done almost anywhere and is inexpensive, but any exercise program involves some planning.

Walking is an excellent way to lose or maintain weight, manage stress, or to stay in shape.

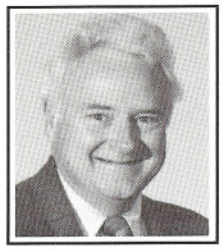
If the purpose of your walks is cardiovascular fitness, ***pace*** is important. If your goal is weight loss, ***distance*** is more important than speed.

Choose shoes that are designed for walking or running. Aerobic shoes should not be worn for walking. Be sure to look for a snug fit that leaves room inside to spread and wiggle your toes, and a well-cushioned heel that is elevated slightly above the sole to prevent strain to the back of the leg. ■

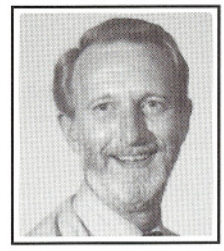
Libravets thru June



Dom Vennari
30 Years
Value Liaison
Engineering



Jerry Mundy
25 Years
Programs Mgmt.
Administration



Roger Mahoney
25 Years
Engineering
Design Services

New Employees

Brad Kobayashi, Programming Research Specialist; **Matthew Wagner**, Engineer; **Michael Ward**, Programming Systems Specialist; **Kathryn Erskine**, Secretary; **Oai Nguy**, Senior Engineer; **Stacy Pickett**, Administrative Secretary; **Carol Demeter**, Sr. Quality Control Engineer; **Lealon Watts**, Engineer; **Julie Kohorst**, Budget Financial Analyst; **Roger Graham**, Associate Engineer; **John Reaves**, Sr. Staff Engineer; **Richard Matuschek**, Programming Systems Specialist; **Charles Ward**, Programming Systems Specialist; **Jesus Hernandez**, Mail & Records Clerk; **Dana Thompson**, Sr. Word Processor Operator; **Marissa Tullio**, General Clerk; **Wendy Clawson**, Quality Assurance Software Coordinator; **Timothy MacAndrew**, Quality Assurance Software Coordinator; **Shari Pickett**, Secretary; **Shirley Haines**, Technical Librarian; **Harriet Kaufman**, Administrative Assistant. ■

MORE LIBRAVETS. . .

10 Years:
Adriana Simplicio, Karen Kramer, Ed Wanek, Lee Arnold, Julia Simmons, Richard Tilden

5 Years:
Greg Gonzalez, David Dion, Kim Prudlo, John Benson, Daniel Padilla, Sheila Pina, Stanley Yue, Jim Nicoson, Marguerite Kolar, Benoit Thibodeau, Floyd Smith, Edward Millner, Mary Lee, Sal Molina, Neil Gilbride, Michelle Ruzicka, Mark Subido, David Sertich, Shirl Schnieber, Pete DiGuiseppe, Eugenia Ribic, Ronald Sweeney, Kevin Lindemann, William Teragawa, Sam Elfgen, Tim Cooke, Chin Leung, Richard Pierce, Eric Scherff, James Washington, William Dodge, Gail Schneider, Albert Leung, Elizabeth Booth, Marc Dominguez, Harriet Englander-Moore, Pat Boyd, Peter Klein, Jim Kennington, Jim Berry, David Davis, Antonio Pescante, Kim Dettman, Dennis Lanheady, Paul Talewsky, Susan Muenzenberger, Andrew Nowakowski, Victor Cruz, Kim Wells, Gerald Heigel, Lori Eliason, Kong Wong, Tri Vu, Daniel Gowanlock, Denise Martinez, Raymond Morgan, Pat McCormick, Lube Micev, Michael Nagy, Richard Martin, Cheryl Martin. ■

Promotions

Andrew Gardner — from Enginner to Sr. Engineer
David Friedland — from Engineer to Sr. Engineer
Mark Petterson — from Associate Accountant to Accountant

Retirements

Norma Babcock, 31 years, *Final Assembly, with Richard Johnston, Supvr., Memory Products.*

Walt Gilys, 30 years, *Electromechanical Engineering, with retiree, Joe Szentivanyi.*