

GO Club Supports...

Guide Dogs for the Blind



By Margaret Finlay

Just close your eyes for a few moments and try to imagine what it must be like to live in a world of darkness...then stretch out your hand and touch the warmth and comfort of a faithful companion.

Guide Dogs for the Blind provides such a companion whenever needed. Their main facility, in San Rafael, California, houses the breeding kennels, training areas, administrative offices, veterinary clinic, and blind student housing. A non-profit program, *Guide Dogs* has served and helped over 6,000 blind people since it first began in 1942. Now, there are 2,000 dogs in service.

The guide-dog puppies born in this San Rafael facility are weaned, selected, and assigned to 4-H Guide Dog Puppy-Raiser applicants. This 4-H Club is a national organization that, in Santa Barbara, is channeled through the Co-Op Extension at UCSB. The raisers must be between 9 and 19 years old and receive the puppies when they are 2 to 3 months old. The puppies are taken into the raisers' homes where they get lots of love and attention while learning basic obedience and discipline in home surroundings.

To help initiate the puppies into the "real" world, their training includes trips to stores and restaurants, riding in elevators, climbing stairs, walking on busy streets, and, particularly, being exposed to loud or sudden noises. An important aspect of the success of this program is the fact that the puppies are raised in loving homes rather than in kennels. *Guide Dogs* realized years ago when establishing their program the importance of teaching an animal love.

When the puppies are 16 to 20 months old, they are ready to return to San Rafael. There, they are put through another 5- to 6-month program with the actual guide-dog trainers who are California State licensed instructors. After completing this training, the dogs are matched with blind persons enrolled at the school. This person-dog unit completes an intensive 28-day in-residence course at the Guide Dog School. This course culminates in a formal graduation ceremony at which the 4-H puppy raiser presents the dog to the new graduate. There are currently 800 puppies in this "puppy-raiser" process in ten Western states, and the actual cost or value placed on the whole process is in the neighborhood of \$12,000 per guide dog.

SBRC employee **David Harms** is very proud of his son, Peter, who, over the past several years, has raised not just one, but two Labrador retriever puppies.

Raising a guide-dog puppy is a great commitment of time, effort, and emotion. Yet, it is one of the most rewarding and educational experiences a young 4-H raiser can undertake. Parting with the puppy after a close re-

(continued, next column)

Hughes Technology Center Holds Open House

By Carrie Ericksen

What a success! The Hughes Technology Center (HTC) in Carlsbad held an open house on Saturday, October 20 with more than 1800 employees and family members attending. HTC's Bill Sewell coordinated the event.

Open-house visitors were encouraged to take the self-guided tour through the entire HTC facility. Ongoing videos, visual aids, and helpful staff provided information along the way. A particular favorite among visitors was Lab No. 6, which had a working platinum silicide camera sporting a 488 x 640 array. The camera enabled visitors to see images of themselves in the infrared.

Other attention-grabbers included hands-on displays in the focal plane array test lab and the microelectronic processing lab, the scanning electron microscope demonstration, and the aircraft/automobile heads-up display. The tour continued through the CAD computer center, the teleconferencing room, the stellar sensor subsystem manufacturing area, the integrated circuit processing display area, and the wafer inspection and process measurement labs.

Carlsbad employees lined up to see SBRC's display of Thematic Mapper photographs, Earth Observing System posters, IR wall charts, and *The Future is Now* video.

The self-guided tour ended with a display of a variety of Hughes products, such as the TOW, the Maverick Missile, an ADCAP Torpedo, and a mock-up of the Hubble Telescope.

Outside in the parking lot were 1991 GM concept cars, classic cars, plenty of grilled hamburgers to go around, and pony and train rides for the kids.



No, this isn't the line waiting to see the SBRC display—understandably food caught people's interest as well.

GO Club, continued

lationship of a year-and-a-half can be heart wrenching, but the emotional rewards of handing it over to the blind person at graduation time is immeasurable. As you can imagine, there are lots of tears as well as smiles.

The *Guide Dogs* organization is very appreciative of SBRC's GO Club support. That support makes such a tremendous difference, bringing light into an otherwise darkened world.



January 1991

Dr. Phillips Reviews Strategic Plan

Where do we stand now in relation to our Strategic Plan? What have been our accomplishments?

As you may recall, the development and evolution of the Strategic Plan was described in some detail in the April *SBRC News*. Then, in September, every employee received a copy of the Strategic Plan booklet, which spelled out our vision, values, objectives and how we plan to implement those objectives.

Enough time has passed now for us to be able to reflect on our Strategic Plan objectives and ask, "Are we on track?"

I believe we are. I say this because I see ample evidence of the Strategic Plan being realized throughout the company. A few examples can remind us of how far we have come and assure us that we are indeed on track toward fulfilling our objectives.

Our first task has been for management to provide a solid framework for each of the Strategic Plan's five objectives. We have begun that process, which I will briefly highlight below.

Ray Frazier, *Director of Product Assurance*, is heading a group conducting a company-wide "self-assessment" to determine areas of strength and weakness in the company; preliminary results are expected next month. Ray has also formed a committee to review the company policies and practices, which will be simplified wherever possible. **John Bowen**, *Director of Human Resources and Administration*, has established a CMI Advisory Council to help sustain and develop the "CMI culture" throughout the company, including the implementation of team-based manage-

ment and training. **Guy Wood**, *Director of Operations*, and **Don Merchant**, *Director of Materiel*, are finding ways to streamline the signature authority process. Their results are expected next month. Guy is also pushing to revitalize the Cost Improvement and Performance Improvement Programs; a CIP/PIP administrator, **Dave Johnson**, has been hired. **Rich Thom**, *Director of Technology*, is coordinating the creation of meaningful roadmaps for each of our major technologies. **Mac McNeil**, *Director of Information Services*, is also forming a committee that will develop an integrated business system.

One very important point to keep in mind as we review our current status is that the Strategic Plan is a long-term commitment. That is its strength.

Additional articles on our Strategic Plan will appear in future issues of the *SBRC News*, providing in-depth perspectives from diverse areas—

Phil Phillips
SBRC President

Product Assurance Introduces Change in Internal Evaluation System

By Carol Jones

A change is underway in Product Assurance that, soon, will probably affect most departments at SBRC.

Internal audits, which previously were conducted by Product Assurance alone, will increasingly become the responsibility of each department. Product Assurance will still be there, but in a new role to offer guidance in the self-evaluation process. The goal is to make each organization/department responsible for conducting its own internal audits, rather than having a Product Assurance Auditor come in for that purpose.

The Calibration and Materiel Departments will be the first to try the new Product Assurance self-evaluation system. Product Assurance chose those groups based on *Manager of Calibration Bob Anderson's* and *Director of Materiel*

(continued on page 2)

INSIDE:

Carrie Ericksen reports on the Hughes Technology Center's Open House and SBRC's display (page 8)



Anniversaries

The following employees have received service pins for the month of **January 1991**:

5-year pins

Gregory P. Aakhus
MTS—Cmp Sci/Math
Information Services

Mark R. Brooks
Sup Facilities Engrg
Operations

Dennis E. Trimble
Instmn Tec Sr
Systems Division

Nuno Bandeira
Sr Staff Eng
Systems Division

Terrence Buchheit
MTS—Cmp Sci/Math
Systems Division

Joseph A. Valentino
Sup Illustration Svcs
Operations

Bernadett Banuelos
Production Prsr B
Detector Division

Kelly L. Darby
Admv Services Ast I
Detector Division

Richard Villalpando
Engrg Dsgnr Sr
Systems Division

Kevin E. O'Connell
Vacuum Tech Chf Ld
Systems Division

10-year pins

Martin A. Frith
MTS—Mechanical
Detector Division

John W. Pringle
Staff Assistant
Systems Division

Neil J. Therrien
Systems Engineer
Detector Division

Peter J. Georges
Sup Production I
Manufacturing Division

James E. Randolph
MTS—Electronics
Detector Division

Cindy S. Tierney
Computer Oper Sr
Information Services

John F. Guyton
MTS—Electronics
Systems Division

Steven P. Sorensen
Production Ctl Coor I
Detector Division

Meg M. Wilson
Program Ctls Admr Sr
Detector Division

15-year pin

Celina Guthrie
Stores Clerk Sr Ld
Detector Division

20-year pin

Claudia R. Whitney
Employee Ben Rep Sr
Human Resources

25-year pin

Donald A. Rowley
Sr Staff Engineer
Systems Division

30-year pin

Stuart K. Haney
Project Engineer
Detector Division

Welcome to SBRC

Juan Carrillo, Custodian 2, Operations; Tom Evans, MTS—Mechanical, Detector Division; Ramon Gutierrez, Custodian 2, Operations; Craig Harris, Facilities Planner, Operations; Kathy Minor, Assembler B, Manufacturing Division; Pauline Stevens, Assembler A, Manufacturing Division

The SBRC News—published in the interest of the employees of
SANTA BARBARA RESEARCH CENTER
A subsidiary of Hughes

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Paula Morris • Steve Walker • Sarah Wingren
Advisor: John Bowen

Product Assurance, continued from page 1

Don Merchant's support of and confidence in the audit system change.

There are several benefits to "bringing home" audit responsibilities, which Anna Currie, *Product Assurance Supervisor*, and Carol Jones, *Product Assurance Auditor*, saw first-hand during their visit to Hughes Tucson last September, where the internal evaluation system is already in place. For example, the evaluations are more accurate when a department audit is conducted internally (i.e., by department employees), rather than externally (i.e., by a Product Assurance Auditor, who naturally is not as familiar with the day-to-day operations of a given department); employees within a self-evaluation group become much more aware of the "what" and the "why" behind an audit through active participation; and deficiencies are discovered by the very people who will be expected to correct them, so that resultant corrections and improvements become personally meaningful to the employees effecting the changes. Increased customer confidence in our audit system is an additional benefit. All of these benefits translate into greater efficiency and lower costs.

The purpose of an internal Quality audit is to determine compliance with customer requirements and applicable "command media" (e.g., company policy and practices manuals, instruction manuals, DOIs, JOIs). An internal audit involves developing compliance objectives, outlining a methodology for implementing those objectives, and completing a compliance checklist.

Product Assurance's internal evaluation program is part of what is happening throughout Hughes. Already we have a very successful Business internal evaluation program at SBRC—the Material Management and Accounting System (MMAS).

SBRC's commitment to continuous measurable improvement (CMI) is at the heart of these changes. In step with CMI's team-building philosophy, employees will work together to conduct audits within their departments. They will also perform their own follow up.

Once a department has fully demonstrated implementation of internal evaluations, Product Assurance will periodically monitor that department's activity to ensure ongoing implementation as well as effective corrective action for cited deficiencies.

Various SBRC departments will be approached, one at a time, for their support of and involvement in the internal evaluation system. We, in Product Assurance, are looking forward to working with you.

Santa Barbara Scholarship Foundation's "Golden Key" Award Goes to SBRC

By Jack Weber

The Santa Barbara Scholarship Foundation (SBSF) presented its 1990 "Golden Key" award to SBRC in a ceremony recently held at the Santa Barbara Sheraton Hotel. The award was given to SBRC in "recognition of your sustained commitment to the support of the higher education goals for needy and capable Santa Barbara area students as evident through your ten years of support of the SBSF."

Last year, the Foundation awarded scholarships to 368 deserving young students.



Former and current SBRC presidents, Dr. Robert Talley (left) and Dr. Fletcher Phillips, accept Santa Barbara Scholarship Foundation's "Golden Key" award for SBRC.

Pagano Goes Back to School—This Time as Educator

On December 11, the Dos Pueblos High School Math Club benefited from a visit by Tom Pagano (far right), Systems Engineer, who made a lunch-hour presentation to club members on the technical work environment. Tom answered students' questions about his daily work routine and what job opportunities exist for young technical professionals. After the presentation, the students had plenty of food for thought on technical career choices.



McRae Children Turn In Impressive Performance on Cross-Country Track

By Gage Ricard

Sharon and Russ McRae's ten-year-old twins Ryan and Heather are off and running...in local and national cross-country track meets. They made an impressive showing in the 1990 Nationals in Omaha, Nebraska—Ryan placed 10th, and Heather placed 39th. In that highly competitive meet they ran against 200 of the best young runners in the country. They also ran in almost the worst weather and field conditions: the race-time temperature was 35°F, and the course was covered with mud and snow.

The twins just started competing in cross-country track in 1989. They are now regularly running 3K (1.85 miles) races in the Bantam age group (9 to 10 year olds). Prior to and during the cross-country season they run between 15 and 20 miles per week, including meets.

Both Russ and Sharon spend a lot of time with their children. Russ, who doubles as Ryan and Heather's coach, said, "Cross-country has been a great family activity. We are all closely involved. It's admittedly trying at times



1990 Cross-Country Meet Highlights:

National Championships, Omaha, NE: Ryan, 10th place; Heather, 39th place. Regional Championship, El Centro, CA: Ryan, 2nd; Heather, 7th. District Championship, San Pedro, CA: Ryan, 2nd; Heather, 7th. West Coast Classic (state meet), Hayward, CA: Ryan, 1st; Heather, 1st; Ventura Invitational, Ventura, CA: Ryan, 1st; Heather, 1st

because of the intense training required before cross-country season begins and the frequent weekend travel. But, because we work at this together as a family, we share a great deal of time together, which is invaluable."

Sharon added, "We want Heather and Ryan to have a broad base of experience and a variety of interests. And, we don't want them to burn out on running. So, it's up to the kids as to how long they continue concentrating on cross-country track. For now, they enjoy it and are personally rewarded by their successes."

Your Vons Cash Register Receipts Can Help Students

Receipts brought in before January 30 go toward "purchase" of Apple computers for schools

By Margaret Finlay

Last September, Vons markets introduced a program to help schools purchase Apple computers. The schools can "purchase" an Apple computer with Vons green register receipts totalling \$225,000. All of the schools in our area have been enthusiastically collecting the Vons green register receipts, which are donated by neighbors, friends and families. Many of the schools are getting close to reaching the \$225,000 goal, but, even if this goal is not met, the receipts can be used to "buy" other computer equipment.

Dos Pueblos High School, our adopted school, is very close to qualifying for a free computer. The deadline for register receipt donations is January 30, 1991. If you shop at Vons and do not need your receipts for your own child's school, please help our adopted school, Dos Pueblos, by giving your receipts to the SBRC Employees Association Office, or mailing them to the EA Office (B27/74) or to Margaret Finlay (B27/76). Please turn in the entire tape. They are not acceptable if cut. Also, please do not highlight or staple.

In a recent school newsletter, the students, faculty, and staff thanked SBRC employees for helping them get closer to the \$225,000 goal.

SBRC Sponsors the Blister Bowl

SBRC co-sponsored the popular, annual Blister Bowl—the aptly named sport of football played from a wheelchair. As a sponsor of Blister Bowl XI, SBRC was asked to send a representative to participate in the awards ceremony at the conclusion of the two-day event (October 20-21). Mac McNeil, Director of Information Services, presented the awards for "Most Inspirational Rookie-of-the-Year" and "Most Valuable Player."

The Blister Bowl, started by the City's Adaptive Programs Department in 1980, is made possible by the joint sponsorship of the City of Santa Barbara and private individuals and businesses like SBRC. The Bowl is a striking example that disability need not mean inactivity and loss of opportunity.



Bob Welsh (left) receives "Most Inspirational Rookie-of-the-Year" award from Mac McNeil.

SBRC Supports United Way Fund-Raising Campaign

By Jack Weber



On behalf of SBRC, John Bowen (right, in photo), Director of Human Resources and Administration, presented a check for \$10,000 to Paul Didier (left), Executive Director, United Way of Santa Barbara, for the 1990 United Way Fund-Raising Campaign.

While thanking John for the contribution, Paul once again expressed his appreciation for the generous contribution made last year for Painted Cave fire victims and for again providing United Way with a Loaned Executive to help run its 1990 campaign drive.

Applications Available for SBRC Fellowship/Scholarship Program

By Nick Garrison

The SBRC Fellowship/Scholarship Awards Program assists qualified and deserving employees as they start or continue their formal education in specific fields that will benefit both the employee and the company.

Employees may participate in the program as either full-time or part-time students. Full-time students may continue to work up to 8 hours a week, while part-time students work between 20 and 36 hours each week.

Awards are designed to cover educational expenses (tuition, books, etc.) as well as to provide an additional stipend to assist with normal living expenses associated with obtaining the degree.

Applicants are evaluated on previous academic achievement, applicability of the degree to the future needs of SBRC, recommendations of management, employment record, and career objectives.

Over the last few years, over 20 employees received awards and participated in the program at a variety of educational institutions.

SBRC Fellowship/Scholarship Award applications for the school year beginning fall 1991 are available from Personnel Development in B27 (extension 7010). The application deadline is March 29.

City Library Exhibits Bert Buenik's Photos



Bert Buenik, Accounting Assistant, exhibited a selection of his best photographs at the Santa Barbara Public Library in November. The thirteen-print show displayed a cross-section of his photographic interests—natural and man-made environments, ballooning, and objects up close.

The library sponsors one-person shows for aspiring local artists. Bert hopes to continue photography as a hobby and possibly put together a second show for a local gallery.

GM/H Stock Share Values

The GM/H stock share values in effect as of November 30, 1990:

Average Purchase Price: 17.6830997657
Month-End Price: 17.8663

Retiree News

From Hans Thielemann

We moved to northeastern California where we bought a home on 20 acres of mixed forest (pine and oak) with a view of Mount Shasta. For Hans it was quite a step up from "delineation saw and 1-mil-diameter gold wire" to "chain saw and one-foot-diameter oak trees" (for firewood).

On December 15, we had our first snow (about six inches), which transformed our "Black Forest" into a winter wonderland...just in time for Hans' birthday. We realized, by looking at all the tracks in the snow, just how diverse the wildlife is on our property. The mountains, including Mounts Shasta and Lassen, were most impressive in their splendid winter coat. We certainly live in a wonderful area, and we enjoy it tremendously.

Hans and Jan Thielemann
Whitmore, CA 96096

Employee Counseling Corner

By David Root

We have all made...kept...and broken NEW YEAR'S RESOLUTIONS. So, let me suggest some ways to make these resolves for change more fruitful:

Inventory of life for 1990. Make this an honest, careful process. Be a fair witness to yourself. Acknowledge what you have done right. Write down what you have accomplished, areas of your life in which you have grown, people you have touched in positive ways. Also, honestly inventory how you've fallen short. Admit the wrongs you have committed toward others, and, toward yourself. Look at what are sometimes called your "sins of omission"—things you ought to have done, but did not; and "commission"—things you ought not to have done, but did.

Share your inventory with at least one other person. Ask this person just to listen, not to judge or comfort.

Write down a year's plan. Include in that plan all the major areas of your life (work, relationships, education, finances, spirituality, personal growth, health, etc.). List some of the ways you would like to grow and improve in these areas. Note some activities and exercises that might aid that growth.

May 1991 truly be a good year for you, and may you stretch and grow in satisfying ways.

For help: call (805)733-1916. Help is only a call away!

Santa Maria Group Benefits from CMI Team Concept

Array Fabrication Lab employees team up to enhance communications, troubleshoot, and tackle large workload

By Gage Ricard

"The good news is that we won every manufacturing proposal we went after—such as DT635, DT636, and BFVS; the challenge for us now is to meet an extremely demanding production schedule. To do so we must make continuous measurable improvement a part of our day-to-day work routine and employ such tools as statistical process control or else we won't be able to keep up with the increased production demands," said **Lauri Dahlin**, *Manufacturing Program Manager*. That, in a nutshell, summarizes the special challenge faced by employees of the Array Fabrication Laboratory in Santa Maria.

The sudden surge in business necessitated new hiring, but with the burden of keeping costs down, the hiring has been kept to a minimum, putting the emphasis back on meeting new production goals by improving yields, which is where continuous measurable improvement (CMI) is helping.

The CMI Array Fabrication team was formed last May. Because approximately half of the 67 team members are relatively new employees, the team's first priority was education—to provide each employee with an overview of *what* is being produced (the detector array) and *how* it is produced. Eight subteams were formed: Lap and Polish, Photoprocess I, Photoprocess II, Evaporation, Test, Saw-M/S, Supervision, and Array Coldshield/Wedge. A leader was selected within each subteam. These leaders represented their group in another "core" team called the Array Fab Lab team composed of the eight subteam leaders, a steering committee representative, an executive committee representative, and two Quality representatives. These subteam leaders and representatives participated in a two-week course led by **Valerie Randall**, *Process Engineer*, who reviewed the steps involved in fabricating an array detector. After gaining an overview of the final product, the subteam leaders communicated to their respective groups what they had learned. Each group then looked at the major steps in the complex production process leading up to the fabrication of a detector array, seeing where their group fit in and how they interrelated with other Array Fab groups. After gaining this schematic overview, cross-tours were scheduled so that each group could tour the other six areas in the Array Fabrication Lab. Subteam leaders gave tours of their group's activities to the other lab employees.

Robert Barnett, leader for the Lap and Polish subteam, said, "The cross-touring was very helpful. I benefited from seeing the other areas, particularly because I'm new. And, as I presented information on the Lap and Polish area to touring subgroups, I found other people in the lab were curious. A lot of questions were asked." Within two weeks, each subteam had toured all six areas, and many questions were answered in the process.

Team leader **Lois Huff** observed, "Since the introduction of CMI teams, product knowledge has greatly increased. The Array Fab operators are now more aware of problems that can occur in processing and what causes rejections."

Another team leader, **Dave Garnett**, added, "The increased feedback and overall understanding between manufacturing processors have helped target some trouble areas that once were inadvertently overlooked."

Now, the next step is for each subteam to examine its own particular challenges by tracking problems, collecting data, prioritizing tasks, posting goals, and using statistical process control (SPC) charts to improve yield and work flow.

Charts are posted on the wall so that everyone, at a glance, can answer the questions "what are our production goals?" and "where are we in relation to those goals?"

No quality inspector is necessary. Every operator is his or her own quality inspector. "Because we have SPC," said team leader **Leoni Laguna**, "all of us are aware of any recurring defects and we work together as a team to solve them."

CMI is the philosophy; employee satisfaction and company productivity are the results.

Savings Plan Unit Values

The unit values in effect as of November 30, 1990:

Fixed Income Fund: 4.4582017100
4.4582
Equity Fund: 5.6066427730
5.6066
Balanced Fund: 4.8236685619
4.8236

ARRAY FABRICATION LAB TEAM BY SUBTEAMS

LAP AND POLISH
Robert Barnett,
team leader
E.S. Gonzales
M. Mendoza
A.T. Mueller
T.M. Razo

EVAPORATION
David Garnett,
team leader
D.K. Bentley
M.U. Fangauf
M.E. Hedrick
C.N. Steel
G.B. Wiseblood
S.M. Witczak

**ARRAY COLD-
SHIELD/WEDGE**
Leoni Laguna,
team leader
T.A. Balderama
E.C. Berry
L. Canillo
R.A. Delarosa
M.A. Gee
S. Guerrero
V.K. Randall
B.J. Villegas
M.I. Walker
R.L. Watson

PHOTOPROCESS I
Luz Carigo,
team leader
D.K. Bentley
C.G. Bertoldo
V.D. Dulay
S.A. Fugate
D.L. Guerrero
B. Merelos
D.R. Riojas
A. Rodriguez
K.A. Watson

PHOTOPROCESS II
Jill Kenyon,
team leader
N.C. Dagdagan
D.L. DeBruyn
C.S. Dionisio
E.D. Dolphin
J.C. Harris
V.K. Randall
M.J. Reese
M.J. Whaley
J.B. Wise
S.M. Witczak

TEST
Elenda Betita,
team leader
R.D. Brimhall
J.A. Bruno
R.R. Castillo
S.A. Colegrove
M.P. Henke
S.H. Hibar
A.J. Hudgins
L.D. Montoya
D.A. Murillo
M.J. Ogana
M.A. Ohlrogge
M.A. Perez
O.A. Ramiro
G.J. Reed
J.A. Sagisi
J.V. Villanueva

SAW, M/S
Lois Huff,
team leader
E.O. Arandia
E.T. Betita
L. Galarza
C.V. Marana
P.K. Murphy
V.K. Randall

SUPERVISION
Lois Huff,
team leader
S.H. Hibar
A. Rodriguez
B.J. Villegas
G.B. Wiseblood
S.M. Witczak

ARRAY FABRICATION LAB

Valerie Randall,
team leader
R.A. Barnett
E.D. Betita
L.R. Carigo
R.C. Churchman

L.A. Dahlin
J.T. Dillen
D.A. Garnett
L.M. Huff
J. Kenyon
L.C. Laguna

Ethics Questions?

Call SBRC *Ethics Administrator* **Jack Murray** on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office at (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail to:

P.O. Box 2321
Santa Barbara, CA 93118

\$50 U.S. Savings Bonds Go to Nine Employees with Perfect Timecards

By Ron Gibbons

Congratulations to the first nine SBRC employees to win \$50 U.S. Savings Bonds in the Perfect Timecard Award drawings. To date, three employees from Santa Maria (**Darrel Redley**, **Connie Steel**, and **Vic Thomas**) and six employees from the Goleta facility (**Patricia Bushman**, **Kevin Chew**, **William Elliott**, **Kevin Gull**, **Steven Lindgren**, and **Cherie Topper**) are the lucky winners.

The Perfect Timecard Incentive Plan, put into place in October 1990, will continue through 1991. To qualify for the drawings, employees must maintain their timecard in accordance with our new *Timekeeping Manual* and pass a timecard audit. A Perfect Timecard Award certificate will be issued at the time of the audit to those who pass. Each month, those who have received certificates will be entered in the Perfect Timecard Award drawing and three employees will be chosen, each winning a \$50 U.S. Savings Bond. Good luck!



Goleta Timecard Award winners (names in boldface) with Accounting staff members participating in award presentation, from left, standing, **Cherie Topper**, **Scott Denison** (Controller), **Rosalind Montgomery** (Auditor), and **Jeanette Davis** (Auditor), **William Elliott**, **Kevin Gull**; seated, from left, **Kevin Chew**, **Steven Lindgren**, and **Patricia Bushman**.



Santa Maria Timecard Award winners (names in boldface) with Accounting staff members/representatives participating in award presentation, standing, from left: **Glenn Minnich** (Manager, Manufacturing Programs), **Vic Thomas**, **Darrel Redley**; sitting, from left, **Pam Thomas** (Auditor), and **Connie Steel**.

Superior Performance Saluted: Bettencourt and Henry

By Dottie McKiddie

What qualifies a person to be called a superior performer? It could be a flash of inspiration that leads to the development of a new technology, resolves a problem, or improves a product or process. For others, it is leadership, creativity, or a combination of both attributes. Usually, it is the self-motivated person who consistently puts forth his or her best effort and sustains a high level of performance.

Each year the SBRC Corporate Superior Performance Award Committee selects two SBRC employees who excel in their jobs and who, by doing so, contribute to the company's commitment to quality and its legacy as "the leader in technology."

In February, at special presentations, Dr. Phillips honored **Arlind Bettencourt** and **Blake Henry**, SBRC recipients of the 1990 Corporate Superior Performance Award.

When **Arlind Bettencourt**, a Member of the Technical Staff, Electronics, in the Production Test Engineering Department of Product Assurance, Santa Maria, came to SBRC in 1984, he listed as some of his attributes: "enjoy intensive, interesting work; extremely adaptable; work well under pressure; people oriented."



According to his supervisor, "never has a self-assessment been more accurate. Arlind has demonstrated all of these characteristics to a high degree, culminating in a total quality effort on his part throughout 1990."

Last year, Arlind was production test engineer (PTE), responsible for three major programs, DSU-19/DSU-15, RAM, and Element 6. In August, due to manpower shortages, he also substituted as PTE for three other programs. Thus, Arlind single-handedly performed the duties of PTE on six Santa Maria programs. He ably handled this extremely heavy workload in an efficient, cheerful manner. He has a good working knowledge of test set requirements on all Santa Maria programs and readily moves between detector and fuze program problems on a daily basis.

Arlind has gained the confidence and respect of all persons he deals with due to his technical ability combined with his "team" attitude toward resolving problems. His superior performance is a credit to the Product Assurance Organization and SBRC.

Blake Henry, a Developmental Engineer, in the Integration and Test Department, Detector Division, came to SBRC in September 1987.

Blake's long-standing interest in electronics and software resulted in his assignment to the Test Support Section in the Electronics Design and Integration Laboratory. Blake immediately utilized his test support electronics tasks, as well as his own time, to build a good working knowledge of hardware and software design principles. He readily established himself as an innovator and hard worker who enjoyed the challenge of finding solutions to technical problems.

Blake's responsibilities as a developmental engineer for Focal Plane Array (FPA) electronics have included a variety of programs; among them, the HEADSTART Command and Control Electronics (C&CE) program. Blake's primary responsibility was to develop the software that controls the C&CE. However, in addition to software, Blake voluntarily committed a lot of his time to become involved with all aspects of the project, working very closely with the MTS design team. The team continually commented on the quality of Blake's work and on his willingness to work in solving problems that usually were in addition to his assigned tasks. The HEADSTART effort was a success and earned SBRC the Army's Outstanding Contractor Award.

After completing HEADSTART, Blake had gained sufficient knowledge to be the responsible engineer for the fabrication, testing, and delivery of the C&CE for the subsequent FPA-D program. Blake did another fine job, meeting the technical and schedule requirements of the program at 80% of budget. He also traveled in support of hardware integration and debugging at the customer facility, for which the customer expressed gratitude for Blake's successful assistance and for his overall contributions to the program. On FPA-D, Blake continued to distinguish himself as an individual who combines excellent skills with a strong team emphasis.

Blake's enthusiasm, skill, knowledge, dedication, innovation, and team spirit have contributed to every project with which he has been involved. He consistently makes key contributions and does so in a manner that earns him the respect of co-workers, management, and customers alike. He has surely earned the Corporate Superior Performance Award.



February 1991

SBRC Hams Relay Messages to Gulf Troops

By Frank Crowe

Amateur radio operators ("Hams") throughout Hughes Aircraft have organized to send free, telegram-like messages to Army and Air Force troops in Saudi Arabia.

This message system is limited, though, by two requirements—the recipient *must* have an **APO New York address** and a **zip code starting with "09----**"

Short messages are being collected at each of the Hughes facilities and then sent to a central collection point via "Packet" radio. Packet radio uses a computer system to send written messages in digital format, thereby guaranteeing accuracy.

Local messages are sent to Los Angeles from the SBRC Amateur Radio Station in Building B1. There the messages enter the Army MARS (Military Affiliate Radio Service) system and are sent across the United States, the Atlantic, and on to Saudi Arabia via short-wave radio. At the receiving end, the messages are printed out on a "message" form and delivered to the recipients within as little as 36 hours.

MARS is an organization of volunteer amateur radio operators who have been handling free messages for military service personnel for decades.

Guidelines for message format and length are: Messages must be 30 words or less with no abbreviations. Rank, full name, serial number, and



Ham radio operator Mike Rogers at SBRC's Packet Radio Station in B1.

full APO NY address, including "09--" zip, must be given. Messages will be sent with no punctuation.

Within SBRC, messages may be sent to **MARS Messages**, B32, MS49. Messages may also be dropped off at the SBRC Amateur Radio Station in B1, Room F833, near the East Lobby. Please leave your name and a phone number where you may be contacted for questions or a reply. For further information, contact Frank Crowe at extension 3018, or 684-7568; or Don Fuller at extension 7531 or 968-0335.

(Note: Also, see *Hughesnews*, February 8, for information.)

Chambers Interviewed about Fire Sensors' Life-Saving Role in Gulf War

By Gage Ricard

On January 17, KEYT-TV's Paul Vercammen interviewed **Greg Chambers**, Project



Manager, about the fire sensors' role in protecting our ground soldiers serving in Operation Desert Storm. Our fire sensors are on all M1 and Bradley tanks; they are also on some of the Marine's P7s, an amphibious assault vehicle (AAV).

Greg, who works in SBRC's Fire Sensing and Suppression group, pointed out the benefits the fire sensor offers. "The fire sensor is beneficial from several viewpoints. Most importantly, it saves lives. SBRC's fire sensor senses a fire and extinguishes it before temperature, smoke, and pressure can harm the tank's occupants. Our soldiers know this, which gives them a big psychological advantage over Iraq's soldiers. The fire sensor also saves equipment. For example, in live fire tests, we fired into a vehicle seven times and each time the vehicle could be driven off the field. In time of war, this vehicle recovery capability is a force multiplier." Accordingly, the government and government contractors have increased their orders for our fire sensors.

(continued on page 7)

Implementing the Strategic Plan through Training

By Kim McKinnon

A goal in Personnel Development and Training (PD&T) for 1991 is to tie all training and development activities to appropriate parts of SBRC's *Strategic Plan*. Programs and courses have been re-worked, revised, and modified to better fit the direction outlined in that plan.

Some specific actions already taken are noted below.

- In support of the company's objective to "continually improve quality in all our endeavors," PD&T fully supports the company-wide "Cmi Advisory Council," under the direction of **John Bowen**, *Director of Human Resources and Administration*. This council meets regularly to identify specific cmi training needs and to determine ways to further support cmi teams.

In the area of cmi training, PD&T will continue to offer courses in "Statistical Process Control," "Design of Experiments," "Quality Function Deployment," and "Cycle Time Management"; a new course will also be offered in "Competitive Benchmarking."

PD&T will also emphasize a skill-based program in team building to further support the cmi team concept. Team members will be able to receive training in "Specifying Team Charters," "Effective Group Process," and "Effective Team Meetings."

- In support of the company's objective to "recognize and encourage increased employee authority and responsibility," PD&T has designed a new program that focuses on the supervisor's role as "primary trainer of their people." This program, called "Training and Developing Employees," will first be offered in March. The course focuses on how supervisors and managers can improve their skills in orienting, training, and mentoring employees.

Another way supervisors and managers are being encouraged to become more effective trainers is through the use of "Training Assignments," which are given during supervisory training classes. When appropriate, supervisors are given specific points to teach their employees upon return to their work area.

A company-wide Training Council has also been established. This Council has shown us, in PD&T, the great benefit that can come from involving others. The Council, through its team members, represents all major operating areas of the company and has been instrumental in providing direction and increasing the effectiveness of training at SBRC.

Employee training accomplishments are better recognized now through our new, updated Training Records System. Source code managers are receiving regular reports that list employees' names and the courses they have completed. Employees can be confident that their efforts in self-improvement and professional development will not go unnoticed.

(continued next column)

Employee Counseling Corner

By David Root

The Gulf War is on the minds of us all. I remember the words of Franklin D. Roosevelt as the U.S. entered WWII: "I hate war. Eleanor hates war. We all hate war." And, so do we! Whether for or against U.S. involvement in this war, we all wish it did not have to be. The experience is especially difficult for those of us who have loved ones and friends in the Gulf. In this article let me suggest some of the things people face in relation to the Gulf War.

News overwhelm. We have unending reports on the war. As never before in history, hardly a move is taken without TV reports on it. We are plunged, willy nilly, right into the sights and sounds and feelings of the war. We are taken on a roller coaster ride of emotions that leaves us drained.

Anxiety. We are not sure how all this is going to come out. We fear for life and limb of loved ones and friends in the Gulf. We fear the unpredictability of Saddam Hussein, who operates from a different set of values than most of us.

Powerlessness. We feel powerless to protect our loved ones. We feel powerless to control elements in our own lives. We fear for our children, or other friends and loved ones who may be called to war.

Poor concentration. So preoccupied do some of us become, it is hard for us to concentrate on work. We are prone to accidents at work, on the road, at home. We do not produce as well as we usually do.

Nightmares. Many people are invaded even at night by the war. They suffer nightmares.

How do we cope with these experiences? Read about this in the next *SBRC News*. If you are having trouble coping with the effects of the Gulf War, call your Employee Counselor. Help is only a call away. Call: 733-1916.

Training, continued

This summary indicates some of the actions that have been taken to implement the objectives and strategies outlined in the *Strategic Plan*. The plan is a very effective framework upon which to focus our efforts to ensure that employee training becomes an even greater competitive advantage.

Basketball Courts Open to SBRC

Our adopted school, Dos Pueblos High School, has once again opened its Basketball gym for us to use. It is open to SBRC employees *only* on Wednesday nights from 7 to 9 p.m. on the following dates:

March 6, 13, 20, 27; **April** 10, 17, 24;
May 1, 8, 15, 22 and 29.

For more information, call Craig Gensler at extension 2864 or 2461, or Margaret Finlay at extension 7010.

The SBRC News—published in the interest of the employees of

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Editor-in-Chief—Tom Ball
Editor—Gage Ricard
Editorial Advisor—Rosalie Brelend
Advisor: John Bowen

STAFF

Cheryl Halfhill • Greg Krueger • Jerry LaPisto
Paula Morris • Steve Walker • Sarah Wingren



Santa Maria Facilities Hazardous Materials Spill Team: From left, Keith Christenberry, Manufacturing, Mark Ostertag, Safety, Al Rodriquez, Manufacturing, Hector Leon, Manufacturing, Manual Ruiz, Manufacturing, and Isaac Serna, Manufacturing.

discusses pre-plans (the "what if" scenarios), and continues to familiarize itself with our facilities: What are each building's sectors of air; Where might vapors migrate through our ventilation system? Also, after every emergency response, the team gets together to critique its performance. Members discuss what went well, but, more importantly, what went wrong. How could they improve performance and response time? One suggestion that is popular among team members is to hold training sessions with the local emergency response groups, such as County Fire and County HazMat. "Because we respond together, we should train together," said Jeff, who is also a volunteer firefighter with the County Fire Department.

SBRC's Hazardous Materials Spill Team must work well with all of the outside emergency response groups. "We are building upon our already good working relationship with them," said **Don Bates**, *Head, Environmental Health and Safety*. "Because we know our operations better than anyone else, the county emergency groups value our assistance and knowledge. They have been extremely impressed by our internal capabilities to handle a hazardous spill."

Those abilities are greatly enhanced when our hazardous materials team knows in advance exactly what the spilled material is. "We must know what we're dealing with," said team member **George Whiteman**, *Detector Division Safety Engineer*. "If we're not told, then we have to go in and get a sample, test it, and devise our plan of action accordingly. We lose a lot of very valuable time this way."

If you are reporting a hazardous material spill, please provide the following information:

Your name*
Location of the spill
Type of material spilled
Quantity of material spilled
Are there any injured people?

*Because it is very important to have access to the person who originally reported the spill, be prepared to be told where to wait while clean-up operations are going on.

"Proper handling of hazardous materials is an ongoing area of attention at SBRC," said Paul. "Employee safety training at the usage level is our first line of defense against an accident occurring."

Welcome to SBRC

John Carter, *Facilities Engineer Sr, Operations*; **John Connolly**, *Research Assistant B, Detector Division*; **Nathaniel Gamblin**, *Assembler B, Manufacturing Division*; **Michael Gordon**, *MTS—Physical Science, Detector Division*; **Mark Harrison**, *Assembler B, Manufacturing Division*

Ethics Questions?

Call SBRC *Ethics Administrator Jack Murray* on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office at (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail to:

P.O. Box 2321
Santa Barbara, CA 93118

Savings Plan Unit Values

The unit values in effect as of December 31, 1990:

Fixed Income Fund: 4.4888309786
4.4888
Equity Fund: 5.7472746475
5.7472
Balanced Fund: 4.9313716292
4.9313

Fire Sensor, continued from page 1

Greg can appreciate the fire sensor's capability both from the customer's perspective and ours, as the supplier. Before coming to SBRC, Greg was the *Operations Officer* for the Amphibious Vehicle Test Branch in the Research, Development and Acquisition Division of the Marine Corps. In that job, Greg specifically tested SBRC's fire sensors in the AAV 7A1s (which includes the P7s). Currently, Greg manages SBRC's *AAV 7A1 Fire Sensor Program*, overseeing follow-through and ensuring that the Military has a product specifically suited to its needs. "We strive to stay in step with the Military's needs, and so far we've done an excellent job," said Greg. "But, we're always looking ahead to future programs based on modifications in tank design."

SBRC Forms New Hazardous Materials Spill Team Team responds to spill in B3

By Gage Ricard

A new team has formed at SBRC—the Hazardous Materials Spill Team. It brings together nineteen employees from diverse areas of the company who are specially trained to respond to a hazardous materials spill.

The government's job safety agency OSHA (Occupational Safety and Health Administration) now requires certain companies that use hazardous materials to have an emergency response group in place trained to handle hazardous materials. This coincided with SBRC's Environmental Health and Safety group's efforts to establish such a team. In October, the team was formed and training began. Individuals, all volunteers, were selected based on their knowledge of lab or chemical processes, materials, and safety procedures. Two subteams were then formed: one group responsible for the Santa Maria facility and the other group responsible for the Goleta facility.

Team members received 40 hours of hazardous materials training from Chemicals Safety Associates, an emergency response specialist. They learned how to form a pre-plan, deploy the team, neutralize/clean up a spill, and decontaminate protective gear and equipment affected by the spilled material.

Training also included many simulations that increased everyone's confidence in their ability to respond to a true emergency situation. To assist in the evaluation of each person's performance, the instructor videotaped and photographed team members



Goleta Facilities Hazardous Materials Spill Team: From left, John Meagher, Safety, Stephanie Clemons, Safety, Pam Friedman, Safety, George Whiteman, Detector Division, Leslie Putnam, Instructor, Larry Capdeville, Plant Services, Jeff Schneider, Detector Division, Joe Foxx, Plant Services, Greg Mahaffey, Plant Services, Jose Del Campo, Detector Division. Not pictured, David Leyva, David Ivory, and Don Bates.

as they responded to simulated emergencies.

"Throughout the training, team members' safety was emphasized," said Paul Rabolini, Manager of Human Resources Programs. "Hazards were explained, teamwork was stressed, and proper handling of safety equipment demonstrated. The whole idea of the team is safety."

On February 4, the team had an actual emergency call. It was called in to neutralize and clean up an acid spill in B3. "Based on the hours of training and numerous simulations, I felt confident in each person's ability to handle the situation," said Pam Friedman, Environmental Health and Safety Engineer, Sr. "Everyone knew what to do to neutralize the B3 spill."

"The team spirit is very much present," said Paul. "I am very impressed by how well these indi-

viduals have come together. In a larger context, this is one more example of the positive benefits of teamwork encouraged in our Strategic Plan."

All of the volunteers bring valuable knowledge to the group, in such areas as B1 clean-room protocol, facilities layout, electrical systems, air ventilation systems, chemical properties, logistics, and, industrial hygiene. Team member Jeff Schneider, Research Assistant, said, "We all have specific tasks to do, based on our skills and experience. But, you never know who will be available to respond to an emergency call, so we all must be ready to handle a task not normally assigned to us."

Close communication and practice is essential. The team meets twice a month and runs through simulations,

PMIRR Team Delivers Cooler to NASA for Mars Observer

By Gage Ricard

In December, SBRC delivered a radiative cooler to NASA's Jet Propulsion Laboratory (JPL) that will fly aboard the Mars Observer, scheduled for launch in October 1992. The cooler will be mounted on the Pressure Modulator Infrared Radiometer (PMIRR), one of seven instruments that will be collecting data during the approximately two-year mission.

"I'm proud of the instrument we delivered to JPL," said Wayne Speth, Program Manager. "We based our design on the already space-proven Thematic Mapper (TM) cooler, tailoring it to the stringent and technically challenging NASA specs for the Mars Observer. Starting with a TM cooler, we cut 40% off the cooler's weight and significantly increased the cooler's performance, in addition to other modifications per NASA's requirements."

"We were faced with severe government budget constraints," said Don Kuyper, Project Engineer. "We didn't even have funding to build an engineering model, so we had to skip that step. Because of the budget deficit, NASA had a hard sell to Congress and consequently came away with very limited funding for the Planetary Observer series, of which the Mars Observer is the first.

"This mission is particularly exciting," Don continued, "because, due to the Observer's polar orbit, it might help answer a perplexing question: Where did Mars' water go? All past missions to Mars have collected data from an equatorial orbit; now, for the first time, data will be collected from a polar orbit, thus, providing completely new information."

There is ample evidence that water once flowed throughout Mars long ago, but now no liquid water flows on the Martian surface. Where did it go? Some scientists speculate that the water is frozen at the polar regions and covered by dust. But, because no previous mission to Mars has entered into a polar orbit, no data exists to prove or disprove the theory. The Observer may have some answers.

The Observer's PMIRR instrument will measure dust and condensates in the atmosphere, as well as profiles of temperature, water vapor, and dust opacity as they change with latitude, longitude, and season. The instrument is being built by JPL. SBRC's radiative cooler mounted on the PMIRR will cool five of the instrument's eleven infrared detector channels to about 73K.

SBRC pioneered development of the multistage, passive radiative cooler, which takes advantage of the near absolute zero (4K or -453°F) temperature of space to cool the infrared detectors.

(continued next column)

Thank You SBRC Employees

By Jackie Wheeler

A very special "thank you" to all SBRC employees who donated to the Council of Christmas Cheer! Through your generosity, children were given clothing and toys, the elderly and handicapped were remembered, and many families in our area had a wonderful holiday season.

Your generous donations of food, toys, clothing and miscellaneous gift items, in addition to checks totaling \$215 and 41 turkey/ham certificates, were greatly appreciated. This year the Council was really short on food supplies and your response was great.

The Council of Christmas Cheer worked especially hard this year because they did not have the Marines to help them due to Operation Desert Shield.

Thank you to Chaz Venzor and the employees in the SBRC Transportation Department who helped coordinate this effort.

PMIRR, continued

In addition to supplying the cooler for the PMIRR, SBRC is also supplying another Mars Observer instrument—the thermal-emission spectrometer (TES). Both instruments, the PMIRR and TES, will help fulfill the science objectives to explore the Martian atmosphere and surface material.



PMIRR Team: From left, Chuck Lucey, Mechanical Engineering Technician, Bill Anaya, PC/MC Analyst, Don Dascomb, Responsible Manufacturing Authority, Wayne Speth, Program Manager, Don Kuyper, Project Engineer, and Chuck Herman, Project Quality Engineer.

The Year in Review

1990 in review ❖ 1990 in review ❖ 1990 in review ❖ 1990 in review ❖ 1990 in review

1990 in review ❖ 1990 in review ❖ 1990 in review ❖ 1990 in review ❖ 1990 in review

❖ jan



The Santa Maria Cold Finger Team was just one example of several continuous measurable improvement (CMI) teams formed during 1990.

The 1989 Superior Performance Award recipients were:



David Gamett and...



Sal Ortega.



Santa Maria and Goleta got into the recycling habit. The Santa Maria Association for the Retarded offered recycling services to our Santa Maria facility.

❖ feb



SBRC's Advanced Laser Warning System was chosen as the 1990 Engineering Project of the Year for National Engineers Week. Ed Clement was the Lead Project Engineer (right).

❖ SBRC received the Army's Outstanding Contractor Award for work on the Headstart Program.

❖ SBRC's first on-site job fair was a huge success—over 700 people attended.



Eight lucky SBRC employees collectively won \$231,000 in the lottery (Miguel Unzueta, Kathy Norton, Leona Gonzalez, Vivien Finch, Norma Unzueta, Jo Thorbjomson, Linda Voyer and Sal Barone).



Retirees stayed in touch by meeting at the Sizzler on the first Wednesday of every month.

❖ march

❖ Several SBRC employees (Al Soenke, Ken Ando, Ed Gudgeon, Paul Norton, Craig Cook, Russell Mack and Carl Schueler) taught students about various professions during Career Day at San Marcos High School.

❖ Richard Ruiz and Matt Weinberg contributed their professional insights for Carpinteria High School's Career Day.

❖ Bob Meyer, Security Assistant at the Santa Maria facility, received Pinkerton's Officer of the Year Award.



Bobby Thompson and Frank Martinez hand-carried 48 HARM units to customer in Texas.

❖ april



SBRC had one of the best displays for Earth Day at Santa Barbara City College. Still Chase, Jack Lansing, Tom Pagano, Rick Whitaker, John Thunen and Jack Weber volunteered to staff our booths.

❖ Dos Pueblos High School received science award scholarship funds from SBRC.

❖ GO Club reached its goal of 70% employee participation.

❖ Joe Vergara and Jose Del Campo won first place in the Peck-Sugino Memorial Golf Tournament.



In April, the CAD/CAE Automated Information System 018 Team received the 1990 Security Team Award (above).

❖ SBRC's Strategic Plan was presented to employees.

Crane School's Spectacular Science Day benefitted from SBRC's participation (left).



❖ may



Over the Memorial Day weekend, SBRC sponsored a "square" at the I Madonnari Italian Street Painting Festival. Dos Pueblos High School students filled in our square.



The G-Van, an electric vehicle, was on loan to SBRC, courtesy of Southern California Edison.

❖ Allan Hancock College received a \$1,000 donation from SBRC to support the Mobile Ham Radio Project.

❖ june



SBRC's technology sharing program brought educators Chris Odell (above, right), with Jim Weston, Mary Gastil, and Millie Krause to SBRC for the summer.

❖ june



The June 28 fire affected many employees. Human Resources helped coordinate Company assistance.

❖ Dr. Phillips presented the President's Award and check to Eliot Bates, a Dos Pueblos High School senior with a 4.3 GPA.



The GO Club helped many organizations, as did employees, like Joe Humphrey, who volunteered their time to agencies.



SBRC employees provided some stiff competition in the Hollister Cup.

❖ The Standard Item Procurement System (SIPS) was introduced.

❖ july



SBRC's new class-100 clean room in B1 opened for business.

❖ SBRC presented its third \$10,000 check to Santa Barbara City College's Building Fund for the new library and learning resources center.



Bev Brown, Pam Herrera and Bob Cinzori hold the 100,000th fire sensor produced by the Fire Sensing and Suppression Systems Product Line.

❖ Training was offered in CMI techniques (such as statistical process control), team-building, and becoming a facilitator.



In September, SBRC's Goleta facility won the prestigious Cogswell Award for demonstrating a superior level of security consciousness and cooperation. SBRC's Security staff (left) worked hard to make the award possible.

In August, the Penguins-in-bondage broke out long enough to grab the 1990 Softball championship against the Scumbittendirtbaggers, 13-10 (right).

❖ august

❖ Elaine Fragosa, a San Marcos High School junior, spent her second summer working at SBRC through the Santa Barbara Academy Electronics Program.



Steve Halsted, Bob Ginn, and Adam Lewis received the Hughes corporate Superior Team Award.



Tom Murray gave minority youths a tour through the Goleta facility. The youths were participating in a summer program sponsored by the Alliance for Community Development.

❖ Space Sensors, a 24-page brochure, was published.



❖ sept



GO Club sponsorship helped put Mark Ostertag on the road for a 150-km, two-day bike ride to help the Multiple Sclerosis Society.

❖ Wes Sargent was elected Vice Chair of the School Improvement Plan (SIP) Council at our adopted school, Dos Pueblos High School.

❖ Congressman Lagomarsino visited SBRC for a business briefing.

❖ The new Hughes benefits package, Spectrum, was introduced.

❖ Sandra Williams and Rich Prohaska hosted an open house introducing the new full-motion, video teleconferencing system to employees.

In September, SBRC's Goleta facility won the prestigious Cogswell Award for demonstrating a superior level of security consciousness and cooperation. SBRC's Security staff (left) worked hard to make the award possible.



❖ oct



Two winners of the annual pumpkin carving contest were Kelly Ripa (above, standing) and Dan Hanevich (seated).

❖ Lowell Rosendahl was another winner in October. He won two Amtrak tickets in the Rideshare Week drawing.

❖ Two groups won the Security Team Awards—Technical Publications and Facilities Services.

❖ Dottie McKiddie and Lupe Martinez traveled to an Indian village in Mexico to serve as volunteers for Aeromedicos, a non-profit medical relief agency.

❖ SBRC co-sponsored the annual Blister Bowl.

❖ Perfect Timecard Incentive Plan introduced.



Hilary Perlin's slogan, "Soar on Drug-free Wings," won SBRC's contest organized to promote National Drug Awareness Week. In photo above, Hilary (left) is shown with Margaret Finlay.

❖ nov



The opening of the Credit Union's new facilities was heralded with an open house, which delighted Michelle Walker.

❖ The "Clean Air Express," a new commuter bus, helped SBRC long-distance commuters and the environment.

❖ The SBRC Personal Computer Support Committee was established.

❖ Jack Naylor retired after 37 years with Hughes.

❖ The Santa Maria Personnel Association selected Chris Mangini as the Outstanding Human Resources Professional of the Year for 1990.

❖ Local artists, through the Santa Barbara Art Association, exhibited their works at SBRC on a rotating basis. Joe Valentino was our resident curator of exhibitions.



In August, Thomas Matherly (above) won a \$1,000 U.S. Savings Bond in the SBRC Annual Savings Bond Drive Drawing.

❖ dec



Tom Pagano (left) and Dick Julian could finally relax after the last back-up set of the MODIS-N proposal was packed for shipment to the customer.

❖ Dr. Phillips announced organizational changes at the top—Jerry Molitor was appointed Executive Vice President; Ray Calderon, Vice President and Manager of Product Operations; and Aram Mika, Vice President and Manager of Systems Division.

❖ Property Management introduced changes that increased employee participation and standardized the Property Management system.

❖ The Production Control Council was formed at SBRC to provide training and help employees receive certification.

all best wishes for a happy 1991!

Employee Counseling Corner

By David Root

Co-dependency is a much used term in pop psychology circles these days. Although overused at times, it is a useful idea. Co-dependency is, at bottom, *addictive* behavior toward others.

Often, the person behaving co-dependently sacrifices his or her *needs* for the wants and needs of others. The significant other may be chemically dependent, abusive, severely negligent or dysfunctional in some other way. The co-dependent tries, in various ways, to make up for the other person's dysfunctional behavior. He may lie to cover her irresponsibility, be superman to compensate for all she is *not* doing, or pour himself into the relationship to try and get the other person to "love" him.

There is help for the co-dependent. If you think you may be co-dependent, you may want to read *Co-Dependent No More*. Several self-help groups might be helpful: Al-Anon, ACA (Adult Children of Alcoholism), Naranon, CODAC (specifically for co-dependents). Call Helpline to get meeting times and places:

Santa Barbara 569-2255
Santa Maria 928-5818
Lompoc 734-2711

Your Employee Counselor is prepared to discuss this and other issues. Call 733-1916. Help is only a call away!

SBRC Now a Smoke-Free Workplace

SBRC received a Clean Air Award from the American Lung Association of Santa Barbara County.

The award is given to businesses and organizations that provide a 100-percent smoke-free workplace. SBRC became a smoke-free business May 1.

Academic Achievement, continued from page 1



Joi Tyler, daughter of Linda Tyler

Joi is in ninth grade at San Marcos High School. "Right now, she is divided between marine biology and law as possible career choices," said Linda. In addition to her academic interests, Joi enjoys athletics and participates in the junior varsity teams in basketball, softball, and tennis.

SBRC also received recognition at the awards ceremony. *GO Club President Ricardo Garcia*, accepted a plaque in recognition of SBRC's GO Club contributions. "It's great to see SBRC involved," said Linda, who was also Chairperson for this year's achievement award program. "There has been a strong community response and I hope it will continue."

CFC, continued from page 4

save the division several thousand dollars this year.

Long-term elimination efforts have begun with research into new technologies and chemical substitutes to replace CFCs. The effects of substitute chemicals and related process modifications must be carefully assessed so the quality of delivered flight hardware is not degraded. Engineers from each product line have been selected to support these evaluations because of their expertise in evaluating and implementing material and process changes while maintaining product quality and reliability. (continued next column)

CFC, continued

Manufacturing Division has taken a proactive stance on CFC elimination under the guidance of **Jeff Simpkins, Process Engineer I**. A target reduction goal of 20% has been set for 1991. This goal is well on its way to being achieved with the help of an innovative and environmentally aware Process Engineering Group in Santa Maria. Cleaning processes calling out the use of freon are being evaluated. The division is shutting down under-utilized vapor degreasers, which use CFCs, and is looking into modifying high use degreasers for greater solvent efficiency.

Systems Division's Fire Sensor Program has eliminated a 50-gallon annual use of 1,1,1-trichloroethane and a degreaser. This was achieved by shifting responsibility of cleaning to the parts supplier.

The B8 Instrumentation Lab has identified aqueous cleaning as a good candidate for eliminating the freon they use to clean vacuum pumps. The lab is investigating options for treating the oily wastewater that is generated by aqueous cleaning.

Carlsbad Technology Center has formed a CFC Elimination Committee to coordinate activities at the site. This group brings together process engineers from the Technology Center and Industrial Products Division, Facilities, and Quality Assurance. A CFC use survey is being prepared so that a CFC data collection program can be started in June. This data will help focus the group's activity on the major uses of CFCs at the site. A defluxing solvent is currently being evaluated to replace the freon-based solvent that is currently being used.

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Advisor: John Bowen
STAFF

Greg Krueger Jerry LaPisto
Steve Walker • Sarah Wingren • Kate Yarbrough

Address comments or stories for the newsletter to: Gage Ricard, B31/MS1, ext. 4947



Good Luck, SBRC athletes, in the Hollister Cup!

June 1991

Outstanding Academic Achievers

Daughters of Bev Jackson and Linda Tyler win awards

The children of two SBRC employees received Outstanding Academic Achievement Awards at the fourth Annual Black Achievement Awards Ceremony for the 1990-91 school year, sponsored by the Endowment for Youth Committee of Santa Barbara.

J'Don Anderson, daughter of **Beverly Jackson, Sr. Stores Clerk, Instrumentation**, and Joi Tyler, daughter of **Linda Tyler, Tactical Production Programs Business Manager**, accepted their awards on April 13 at UCSB's Campbell Hall.

J'Don is in first grade at McKinley Elementary School, where she has won several awards as Outstanding Reader. "She loves school and is doing very well there," said Beverly. "I'm very proud of her." (continued on page 12)



J'Don Anderson, daughter of Beverly Jackson

President's Address

Where we are & where we are going

By Gage Ricard

On May 14 and 15, *SBRC President Dr. Fletcher Phillips* made four presentations to employees throughout the company.

Dr. Phillips began his address with strong praise: "During the last six months, there have been a number of events that together lead to one firm, undeniable truth about SBRC, and that is we are the world's leader in civil Earth remote sensing and in second-generation focal plane technology."

He tempered his praise with an analogy. Although we are on top of the mountain, the mountain's sides are not gentle slopes, but steep cliffs. "So as we appreciate the success we've had, we have to realize the disaster that's just a mis-step away."

That tone of praise and caution remained throughout the President's address.

Although sales increased by 10% this year, there are continuing pressures on our profits. "ETM (enhanced thematic mapper) has continued to drain our profits, but there is a silver lining: we really are conscious of the quality of our products." And, thanks to recent wins (MODIS-N, SeaWiFS, AAWS-M, DSU-21), we have a record number of new orders, giv-

ing us a record backlog going into 1992.

Dr. Phillips indicated that, in the face of an anticipated 10% increase in business, employees will be challenged to meet a heavier work load, while staffing levels remain relatively constant. Current SBRC head count is 1940.

We can do this successfully, Dr. Phillips said, with continuous measurable improvement (cmi). "Our competitors are using it, our customers expect it, and we need it.... This year we've formed 61 cmi teams, involving 496 employees. We're training facilitators in each division. We're going a long way toward empowering people through facilitators and team training."

As employees redefine their work habits through cmi team-building initiatives, managers and supervisors will need to re-examine their role in this changing culture. In a flattened management structure, fewer opportunities will exist for employees to ascend the traditional vertical career ladder. Supervisors and managers will need to suggest and open up alternative paths to their employees for job enrichment and personal fulfillment.

(continued on page 10)

Anniversaries

The following employees received service pins for the months of:

April 1991

25-year pins

Leroy Barncastle
Mgr Program
Detector Division

David C. Lowry
Hd Property Admin
Operations

20-year pins

Judith A. Savio
Subcontract Admr
Materiel

Sandra J. Williams
Hd Telecom
Info Services

15-year pin

Marie C. Kirkby
Production Tech A
Mfg Division

10-year pins

Laurie A. Blum
Research Tech A
Detector Division

Daniel E. Coke
Hd Procurement
Materiel

"MARCH" ANNIVERSARY CORRECTION:

Mark A. Goodnough
Sr Scientist
Detector Division

Pauline Rodriguez
Research Ast B
Detector Division

Ernestine Budek
Laboratory Prsr Sr
Detector Division

5-year pins

Ana B. Cruz
Admv Svcs Ast Sr
Finance

Janet C. Harris
Production Tech B Ld
Detector Division

Michael J. Mazzetti
Devmt Engineer Splst
Systems Division

Thomas B. Curran
Instmn Splst
Systems Division

Arianna Harrison
Mfg Engrg Planner 1
Mfg Division

Samuel R. Mitchell
Telecom Sys Tec Sr
Info Services

Larry N. Dotson
Prdtn Ctl Adm Sr
Mfg Division

James D. Kersey
Production Ctl Coor 1
Mfg Division

R. Gage Ricard
Technical Editor, Sr
Operations

Margaret D. Finlay
Admv Serv Ast, Sr
Human Resources

Lonnie Kirkpatrick
Sup Production 2
Mfg Division

Gerald B. Shepherd
Mgr Technical Dept
Systems Division

Kent E. Guzzi
MTS Electronics
Systems Division

Wayne H. Klapp
Instmn Tec Sr
Systems Division

May 1991

30-year pin

Arthur A. Eneim
Mgr Project
Detector Division

20-year pins

Joseph A. Banach
Mgr Major Program
Detector Division

Lawrence E. Shaw
Technical Artist Sr
Operations

10-year pins

William L. Ahlgren
Staff Physicist
Detector Division

Alice Hernandez
Admv Ast Sr
Human Resources

Joseph F. Selman, Jr.
Calibration Ctrl Clk
Product Assurance

Daniel D. Beckman
MTS Electronics
Systems Division

Catherine J. Leyva
Test Tech Elinc A
Detector Division

Christopher Tacelli
MTS Physical Sci
Detector Division

Peter D. Gheno
Admv Svcs Ast Sr
Materiel

Peter A. Oleson
Contracts Negr Sr
Contracts

Michael J. Torojan
Mfg Liaison Engr 2
Materiel

Phyllis Gordinier
Secretary Admv
Detector Division

Jonathan D. Price
Research Ast. B
Detector Division

5-year pins

Karen A. Clare
Computing Specialist
Information Services

Jill Kenyon
Production Prsr Sr
Detector Division

Carl T. Pettersen, Jr.
Devmt Engineer Sr
Systems Division

Neinita C. Dagdagan
Production Prsr B
Detector Division

Walter L. Lacy, Jr.
MCS-3 Business
Information Services

Sandra L. Rogers
Accountant 1
Finance

Gina L. Decoutere
Secretary
Manufacturing Division

Henry S. Larsen
MTS Mechanical
Systems Division

Roger E. Simpson
Devmt Engineer Sr
Systems Division

Debbie R. Fangauf
Admv Clk A
Manufacturing Division

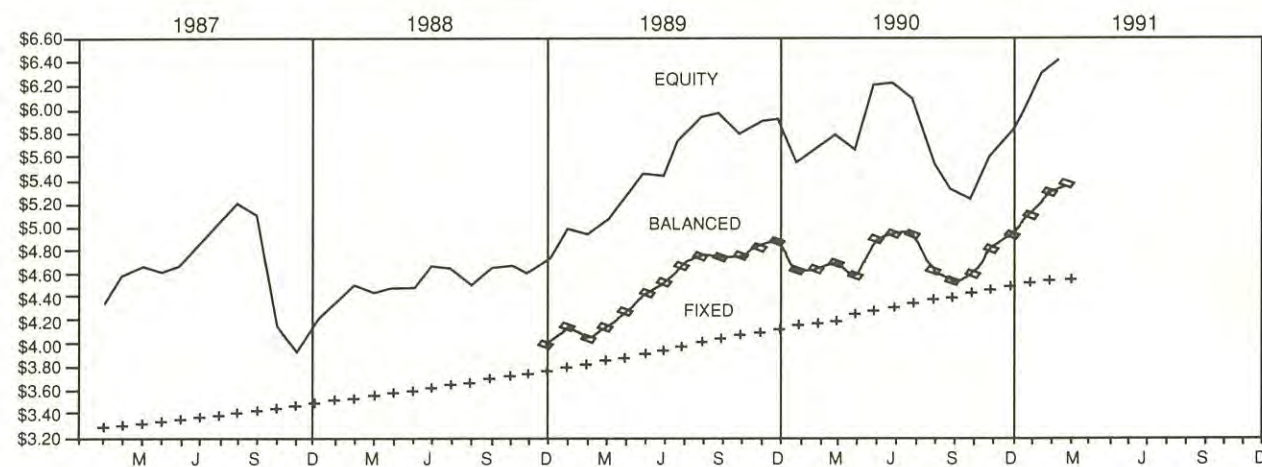
Esther McKay
Production Tech A
Manufacturing Division

Jose M. Velez
Research Tech A
Detector Division

Scott L. Gensler
Production Ctrl Admr
Detector Division

John R. Napoli
Expeditor
Manufacturing Division

Hughes Aircraft Company Savings Plan



GM/H Stock Share Values

The GM/H stock share values in effect as of March 31, 1991:
Average Purchase Price: 19.624

Savings Plan Unit Values

The unit values in effect as of April 30, 1991:
Fixed Income Fund: 4.6050
Equity Fund: 6.7119
Balanced Fund: 5.4406

"April" Perfect Timekeepers Win \$50 Bonds

By Charlene McGinnis

Three happy guys took the Perfect Timekeeping awards for April. Fifty dollar U.S. Savings Bonds were awarded to Detector Division's **Joe Rosbeck**, Detector Lab, and **Tom McWaid**, Product Engineering; and **Tim Markonis**, Design Services, Systems Division. Congratulations! Keep up the good timekeeping practices.

Remember, to be eligible for the monthly drawing you must maintain those timecards in accordance with the Timekeeping Manual and pass a Timekeeping Audit. Good luck.

President's Address,
continued from page 10

Our diversification efforts are on track. SBRC's fire sensor, originally developed for military tanks, is now aboard an increasing number of transit buses. Dr. Phillips was optimistic about SBRC's chances of winning Southern California Rapid Transit District's competition for fire sensors to be installed on 103 new buses.

SBRC is also continuing to diversify into new products for GM, such as the magneto resistor. Dr. Phillips said, "We are in the process of delivering approximately 50 of our prototype magneto-resistor units per month to GM for use in traction control and crankshaft speed monitoring systems."

In conclusion, Dr. Phillips expressed confidence in SBRC's future. "With our collective skills, our willingness to accept new challenges while retaining our old values, I'm confident that in the year 2000, SBRC will still set the standard by which other companies and their products are judged."

Retiree News

From Richard Tinberg

We have returned from a trip east taking in the vacation sights. On February 15, 1991, we celebrated our 50th wedding anniversary. Currently, we live in Tonganoxie, Kansas where we have been operating *Almeda's Bed and Breakfast* since 1983—*Tonganoxie, Kansas*

An excerpt from the Tinberg's B & B brochure:

"Guests may sip a cup of coffee by the unique stone bar, in the room once used as a bus stop back in the thirties, which was the inspiration for the movie *Bus Stop*....In 1983 a dedication was held on July 10, making this hotel an historical site."

Almeda's Bed & Breakfast
220 So. Main Street
Tonganoxie, Kansas

From Jack Tatjes

Had lots of fun for 10-1/2 months getting projects and landscaping done on a recently built house, also training a golden retriever puppy.

One afternoon I got a call from my old boss from Automotive/Motor Sports at Delco to see if I was interested in coming back as a Mini-Systems contract employee. I said 'sure', so I am back doing a lot of fun things similar to what I had done while on loan to Delco prior to my retirement from SBRC—*Santa Barbara*

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) *Ethics Administrator Jack Murray* on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

PIPs Approved in March

From Dave Johnson

Laura Acosta revised motherboard/heated transfer unit alignment data sheets to better identify specific records; **Terri Adams**, **Jim Shonka**, and **Alice Yee** reduced the number of pages in the "Head Count versus Budget" report; **Teri Amador**, **Bonnie Baldwin**, **Trudy Bern**, **Ann Campbell**, **Michelle Correll**, **Brandie Franklin**, **Sherri Lyon**, **Madalyn McGuire**, **Vicki Shimuzu**, and **Connie Speer** drafted letter for new hires detailing paid time-off benefits; **Laura Ayonayon** and **Shawn Gamblin** improved the measuring accuracy of operation 530 of WI 10494 by using a depth micrometer; **Bonnie Baldwin** eliminated form duplications for all medical limitations restraints; **Rick Barnes** implemented the use of a portable dry box to transport and hold units during cut-open operation; **Arlind Bettencourt** and **Carol Jones** revised engineering procedure 1.11, "Program/Project Instructions"; **Charles Christian** changed SBRC's policy on purchasing masks; **Andrew Deane** and **James Turner** recommended installing water-saving faucets in restrooms; **Brandie Franklin** and **William Williamson** eliminated the supervisors' Weekly Time and Attendance Log by using information directly from the ADC daily report; **Craig Harris** installed a line to reclaim the bleed-off DI water in B1 clean room; **Monty Jantzen** and **Alan Martin** recommended retrofitting all R.O. units with standard size tubes and membranes; **Carol Jones** suggested using personnel knowledgeable of SBRC operations for producing technical training videos; **Robert Leite** redesigned Manufacturing Engineering Computer Room for optimal utilization; **Lisa Luciano** developed a request for audit form for subcontract audits, and established a new backlog report and buyers' code for more accurate tracking of purchase orders; **Lucille Luciano** created a new "check-out" form for processing redline indexes (PADOC), and streamlined the bonded quality stamps storage systems; **Christopher Mangini** revised H.R. Practice 3-0-28, "Overtime Eligibility and Compensation"; **Carlton Petterson** developed an analysis archive file for the reliability engineering lab; **Richard Rodriguez** modified filter fittings on the 400774 at 419 coldfinger assembly; **Jose Sagisi** created a table with pre-calculated values for responsivity (RA) criteria; **Rose Vasques** improved the Work in Process tracking system; and **Dolores Worden** suggested using white ink on polyimide boards for easier serial number visibility.

Students Get Chance to Tour SBRC

By Sheryl Rosness

On March 25, SBRC hosted a half-day tour for nine Cal Poly San Luis Obispo (SLO) students who belong to the SLO chapter of IEEE (Institute of Electrical and Electronics Engineers).

IEEE is the world's largest technical professional organization, with over 52,000 students and a total of 320,000 members. The technical objective of the IEEE is to advance the theory and practice of electrical, electronics, and computer engineering, and computer science. IEEE sponsors more than 700 student branches worldwide as well as scholarships and awareness programs, technical conferences, symposia, and local meetings.

Because the tour was coordinated through our Employment Department, the first stop was Human Resources in B27. **Sheryl Rosness, Head, Employment**, showed a video introducing SBRC, discussed the Engineering Rotation Program, and gave students literature on SBRC.

The group then went to the Detector Processing Laboratory where **Jane Tu, MTS, Electronics**, and **Scott Kilcoyne, MTS, Rotation**, presented an overview of IR detectors and applications, provided insight into the types of challenging assignments given to entry-level engineers, and outlined the benefits of the Engineering Rotation Program.

To gain a more thorough understanding of the engineering processes involved at SBRC, the students then went to the B1 clean room, where they were shown how to fabricate IR detectors step by step.

Next stop was the SCA (sensor chip assembly) Test Laboratory where **Tom Koch, Sr. Staff Engineer**, demonstrated how an SCA is tested before shipping, how to evaluate its performance, and how we package SCAs using state-of-the-art techniques.

The last part of the tour was hosted by **Jim Kodak, Manager, Technical Department**, who highlighted the op-

(continued next column)

SBRC Employee Art & Photography Show

The first **SBRC Employee Art & Photography Show** is on exhibit June 5 through August 2 in the B1 and B32 conference rooms and in the hallways of B1. The show is sponsored by the Employees Association.

Remember to vote for your favorite painting and photograph. Votes must be in by July 19. Ballots are in the B1 and B32 conference rooms, and also in the EA Office (B27).

Student Tour, continued

erations of the Systems Division. Students viewed the electronics, optics, and mechanical laboratories in B32 as well as the B32 clean room.

This kind of team effort is needed to support SBRC's commitment to maintaining positive college relations. Students commented that "tours and summer jobs make the coursework much more meaningful." In addition to recruiting at colleges and arranging tours, SBRC's Employment Department actively participates on Minority Engineering Program Advisory Boards and coordinates guest speakers for student technical groups at both the college and pre-college level.



Jim Kodak (far right) hosted the Systems Division portion of an SBRC tour for Cal Poly SLO IEEE students.

President's Address, continued from page 1

Dr. Phillips stressed that the changes we've seen in the DoD are not cyclical. "Therefore," he said, "the key to success for our core business is to continually improve our market share, even though the total market size is shrinking. That's a very challenging task.

"Another real challenge is the Property System," Dr. Phillips continued. He very pointedly outlined the problem and his expectations. "I want to be specific here so you realize this is not an abstract thing that involves other people. The company is spending \$2 million per year trying to get our Property System into shape. This is an unconscionable drain on our overhead resources. I expect, I demand, your cooperation and participation to get this system fixed. The government has done nothing more than to ask us to be proper custodians of its materials which it has provided us. I think that's a reasonable demand. I can't overemphasize the importance of everyone's help in getting this system approved and on-line so we can move on to the other challenges this company faces."

According to Dr. Phillips, future prospects look good, based on recent proposal wins and anticipated civil space program wins. "We have not lost a single significant award that we have sought in the last year-and-a-half," he said.

(continued on page 11)

Profiles in Excellence

From Dottie McKiddie

This is a continuing series of articles profiling excellent performers at SBRC. Kurtis Slaght was nominated by his management for the 1990 Corporate Superior Performance Award.



photo: Craig Cook

Kurtis Slaght, Reliability Engineering Assistant 2, Systems Division, has been with SBRC more than eight years. Over the past few years, Kurtis has excelled in the technical and engineering areas associated with fault isolation and failure analysis of defective production hardware.

Last year he demonstrated his high level of technical excellence on many difficult, and sometimes complex, problems associated with the Common Module and Element Six programs.

Kurtis not only effectively works with MTS (Members of the Technical Staff) and other engineering level personnel to promptly resolve technical problems, but has also often assumed a lead role in the problem solutions. He has provided solutions by conducting analyses of test equipment and test methods and/or examination of manufacturing processes for possible subtle changes that may be responsible for hardware failures.

In his efforts to improve product reliability and SBRC's general business position, Kurtis insists on the implementation of effective corrective action to problems. This can, in part, be seen by the submittal and approval of four Performance Improvement Program (PIP) awards this year and three last year.

The influence of Kurtis' cooperation and professional attitude are clearly vis-

QA/benefits

This is the first in a continuing series to inform employees about benefits and procedures. The questions below are among those employees frequently ask of Benefits representatives.

Employees who have questions they would like answered in this column may submit them to: *Benefits Questions, B27, MS81.*

Q. My dependent tried to make an appointment with our doctor/dentist, and was told he wasn't eligible for insurance coverage. What do I do?

A. Call a Benefits representative (ext. 7124 or 7112) and be prepared to provide your social security number and information regarding the problem. The representative will investigate the problem and correct any error with the plan administrator and the insurance carrier.

Q. I'm extremely dissatisfied with my medical provider. May I change offices or plans?

A. All requests for medical plan or HMO provider changes must be submitted to a Benefits representative in writing, along with documented justification. Requests to change medical plans are reviewed by the health plans administrator at Hughes Corporate, with changes allowed only for extremely compelling reasons (IRS regulations limit the ability to change plans during the year). In order to request a primary provider change within an HMO, employees must complete and submit to Benefits a "Primary Medical Group Transfer Request" form (available in the Benefits office). Requests to change providers are reviewed by the HMO, and the decision regarding a change is made by the HMO administrator.

ible across the various programs he has supported, having received several personal letters of commendation for superior performance from management this past year. Kurtis' most recent accomplishment, for which he received a commendation letter, was in support of the latest C-NITE test-set analysis effort, which resulted in the successful (on-time) test and shipment of November's product commitments.

Kurtis Slaght is a valued SBRC employee with a "can do" attitude. This is evidenced by his sensitivity and respon-

Q. I have some questions about my provider's bill. Whom do I call?

A. Because Benefits does not have visibility over billing claims, it's best to call the Business Office of your health plan carrier directly for answers to specific billing questions. The numbers to call are:

Health Net (800) 522-0088
Santa Barbara Medical Foundation Clinic
 All Branches (805) 964-6935
 Services, Hospital referrals or
 Emergencies outside the Foundation
 (800) 248-4442
 Country Clinic (805) 688-3440
Cottage Independent Physicians Association
 (805) 682-1579
Hughes Medical 8-978-6430 or
 (714) 978-6430
Maxicare (213) 742-9955
Lincoln National
 (800)543-7325
HELP (213) 568-6363
CPHP (800) 464-2747 or (213) 568-6363
Vision Services (800) 852-7600
Hughes Dental 8-978-6430 or
 (714) 978-6430
DeltaCare (800) 325-4529

If you need further assistance, call SBRC's Benefits Department at extension 7124.

siveness to program costs and schedule needs. He frequently develops troubleshooting techniques that salvage hardware (for production use) otherwise destined for the scrap pile. He often works overtime, ordering his priorities to conform to the most pressing needs, in order to ensure that any suspended hardware that has been processed through his fault-isolation area has received prompt and thorough analysis. These are the qualities and accomplishments that exemplify a superior performer.

SBRC Reduces Water Usage

New Waste Treatment Plant & Grey Water Make Savings Possible

By Dale Wenzinger

Water conservation is not a new problem for SBRC. The main campus area (B1-2-3) contains wet chemistry laboratories served by two company-owned wells. The water from these wells requires considerable processing, including reverse osmosis, to bring the water to California standards for potable water. SBRC's Water Plant is operated by *Facilities Operator Monty Jantzen*.

When the Water Plant was placed into operation, existing buildings (B1-2-3) were retrofitted to operate with a grey-water system whereby flush water for the toilets in the laboratory buildings was provided from the reject water stream of the reverse-osmosis system to provide for better operating economy and water conservation. The grey-water is high in dissolved solids and requires additional filtration to remove precipitates; it is also dyed for visual identification as non-potable water.

SBRC has reduced water usage by other means, as well. In January, SBRC installed a "scrubber water recirculation system" for the fume hoods using the effluent from our new Process Water Treatment Plant (WTP). The effluent from the final carbon filter bed of the WTP is pumped to a storage tank and then distributed to 24 scrubbers. The water is metered to the scrubbers and excess water above evaporative consumption is returned to the WTP for recycling. Evaporative losses are approximately ten gallons per minute on a normal humidity day. This is about one-half of the flow to the WTP from process operations.

On the basis of recycling from the WTP, the California Department of Health Services is in the process of issuing an exemption from the State Health and Safety Code Hazardous Waste permitting process eliminating the associated permitting fees. Cost

FACILITIES WATER TERMS

savings will also be realized from greatly reduced water treatment chemical costs, reduced maintenance, and well-water pumping and treatment costs. Overall scrubber performance is expected to be improved due to the constant recycling and retreatment of the scrubber water.

Currently Facilities is planning to recycle deionized water from valve bleeds in the new B1 clean room. This project will reclaim 11,500 gallons of deionized water per day and will reduce pumping from the well systems by 6 million gallons, or 18.4 acre-ft per year. This reduction amounts to about a 30% decrease in our current annual pumping rate from the wells.

REVERSE OSMOSIS: a technique used in desalination and water treatment; high pressure is applied to the surface of a saline solution that forces pure water through a membrane that will not pass sodium or chloride ions.

PROCESS WATER: Ultra-pure, deionized (DI) water that is used in the processing of our "chips" (the chips are rinsed with DI water to remove process chemicals and other contaminants from the surface). Future recycling of DI water is being investigated and may be necessary if water shortages continue and/or worsen.

SCRUBBER WATER: Acid- or base-laden air pulled from fume hoods in the laboratories is exhausted through a scrubber system whereby the air is cleaned and discharged into the atmosphere. Chemicals are removed from the fume hood exhaust and become dissolved in the water. The water is then returned to the Waste Treatment Plant for removal of acids or bases and then recycled back to the scrubbers.

CFC Elimination Program Update

By David McKinley, Jeff Simpkins, Milt Weiss, Michael Weitz, & George Whiteman

SBRC's goal is to eliminate the use of chlorofluorocarbons (CFCs) by the end of this decade. Achievement of this goal is critical because continuing pressure is being exerted to accelerate the production phase-out of these materials.

The production phase-out date first established in the Montreal Protocol was accelerated when it was incorporated into the Federal Clean Air Act at the end of last year. The current phase-out schedule will end the production of freons, halons, and carbon tetrachloride at the end of 1999. Production of 1,1,1-trichloroethane will cease at the end of 2001. Production of hydrochloro-fluorocarbons (HCFCs) will end no later than 2040, and as early as 2020, if necessary.

Detector Division is pursuing Phase I of its elimination plan. This phase is focused on eliminating CFCs where safe alternatives exist; implementing conservation measures, and restricting new operations that would have increased CFC use. One area has cut its 1,1,1-trichloroethane use by 50% while another area is extending the time between degreaser solvent changeouts. It is estimated that these process improvements already will *(continued on page 12)*

The need to end the production and use of CFCs stems from the role they play in the destruction of the stratospheric ozone layer and global warming. Loss of the protection provided by stratospheric ozone will have negative human health effects. Atmospheric warming has the potential to shift global weather patterns and raise the level of the world's oceans.

Attention SBRC Employees

TEST YOUR ETHICS SAVVY

From Jack Murray

There are many aspects of our work for SBRC that may create ethical dilemmas. In this article of "Test Your Ethics Savvy," we provide brief scenarios that cover some of the topics in your "Integrity" booklet (page numbers in parentheses refer to page numbers in the booklet).

Standards of Conduct: Gifts and Entertainment (Page 4)

1. A vendor offered me Dodger season tickets 1 week before a contract award. I naturally refused them—politely. After the contract was awarded, I came back after lunch to find the Dodger tickets on my desk. What should I do?

Standards of Conduct: Contract and Timecard Charges (Page 5)

2. Do I have a responsibility to report someone who is falsifying his or her timecard? What if the Supervisor signs the card, knowing it is incorrect. What should I do?

Business Conflicts (Page 6)

3. I am aware that the company is about to make a significant external acquisition. May I buy stock in the future subsidiary prior to announcement of the acquisition? This does not involve Hughes stock.

4. Recently, I was asked to serve on the Board of Directors of a Hughes supplier. May I accept this honor?

Protecting Information (Page 12)

5. At a department social event last week, I ran into a recent retiree who was formerly program manager on the program to which I am currently assigned. The retiree asked me a question regarding the program, and I know that the answer is both Classified and Company Proprietary. I said I'd get back to him. Did I do the right thing?

6. Your officemate recently returned from contract negotiations with a U.S. military customer. He told you, confidentially, that he was inadvertently given a document marked "For Official Use Only—

Competition Sensitive." Your officemate shared this with you in confidence and you don't really know if the information will be misused. What should you do?

Answers

1. The principles of "nominal value," "undue influence," and "the appearance of misconduct" are your guides in this area. You did the right thing to refuse the tickets. Their "mysterious" appearance does not make the tickets any more acceptable. First, notify your Supervisor, then return the tickets with a note explaining the Company's ethics policy.

2. On page 3 of the "Integrity" booklet, employee responsibilities are outlined as follows:

"Each employee has the obligation to report possible violations of Company rules and regulations to his or her immediate Supervisor, or directly to an Ethics Administrator."

There is no way to view timecard discrepancies as an ethical practice. If you feel uncomfortable discussing the violations with your Supervisor, you may notify another manager within your organization or contact your Group Ethics Administrator, or you may call the Corporate-wide Ethics Hot Line (1-800-423-6010).

3. This is considered "insider" information, which, like other issues discussed, is not

only unethical, but illegal. This company-sensitive information may not be used for personal gain. The fact that your insider information would make you want to buy non-Hughes stock does not make this action any less unethical or illegal.

4. No. This places you in a position to be unduly influenced. Page 6 of the *Integrity* booklet states that an employee "is not permitted to have... a professional affiliation with a company with which Hughes does business."

5. You did the right thing, in part, by not providing an answer to him. In addition, you should have told him that you could not answer his question because it is Classified and Proprietary information. You should also report the retiree's request to your management and, because the information is Classified, to Security Administration. An assessment will be made to determine if further action is required.

6. Information marked as described must not be accepted from any source. Your officemate's retention of the document may subject him or her, and the Company, to legal action and disqualify Hughes from consideration. Advise your management of your situation and, in order to protect the Company's interest as well as your co-worker's, you must also inform Legal Counsel for appropriate action.

Give Once Club

GO Club Supports...

FoodBank of Santa Barbara County

By Rudy Gruber

The drought, freeze, and recession are making unprecedented demands on the services of our local FoodBank. Last month a record 262,000 pounds of food were distributed to the 83 agencies that the FoodBank serves.

Facing a cutback in federal food programs for the poor, the FoodBank has now become more dependent on local businesses, growers, foundations, and private donors, such as the SBRC GO Club, for their support.

Without volunteers, the FoodBank would not be able to keep its commitment to feed more than 22,000 hungry people in Santa Barbara County. Next month, the FoodBank celebrates *Christmas in July*. Volunteers are needed to share a smile with shoppers, distribute flyers, and encourage people to drop some cans of food in barrels. This canned-food drive will be during the weekend of July 13 and 14.

You can volunteer

Christmas in July will take place at all Vons and Lucky stores in the Santa Barbara area. The goal is to collect more than 20,000 pounds of food. Volunteers are needed to offer two hours between 9 a.m. and 5 p.m. either on Saturday or Sunday.

Yes, you can make a difference and help your needy neighbors throughout the county. Please call Louise Polis at 967-5741 for sign-up information and store locations. Hope to see you there!

A Letter of Thanks from Klein Bottle Youth Programs

One of the organizations supported by the SBRC GO Club is Klein Bottle Youth Programs. Klein Bottle Youth Programs is a nonprofit organization in its 19th year of operation. Klein Bottle's goal is to provide young people with the necessary skills and values to enter adult life, and to provide parents with the tools to assist young people in this process.

One means of funding was through the Bowl for Kids' Sake. Bowl for Kids' Sake is a fund-raiser created by Big Brothers/Big Sisters of America (a service offered by Klein Bottle). Through

this fund-raiser, thousands of bowlers throughout the country bowl for the benefit of local Big Brothers and Big Sisters Programs. This bowl-a-thon raises funds to support local volunteer recruitment efforts, to screen adult volunteers who will work with children, and to provide professional staff to monitor matches.

Klein Bottle Youth Programs sends its thanks to all SBRC employees who continue to support their efforts. SBRC takes pride in being part of the Klein Bottle network of support.

"I can't put on paper the feeling I get when my little brother, who has never known his father, tells me that since I wasn't in a gang he won't be either."

Big Brother volunteer

"Thank you for helping to reunite our family. Your services are vital because they offer immediate help when a cool head and a warm heart are needed."

A parent

"Numerous parents would credit Klein Bottle's School-Home Liaison for saving their child."

A local school principal

"Without the help of my Klein Bottle counselor I don't think I'd be in school. She is someone I can talk to and confide in and I always trust her to guide me in the right decision."

A client

Dear Mr. Garcia and Friends,

At least once a week I get a phone call or a letter of thanks for the services provided by Klein Bottle. What is most heartening is to run into a happy and productive young adult whom we helped through a crisis of drug addiction five years ago. I share this and the above comments with you because of your recent contribution awarded by the GO Club. This donation continues to include the GO Club friends as a part of the Klein Bottle network of support, providing our children with understanding, encouragement, and clarity during the challenging trials of adolescence.

Thank you for your generosity and support.

Sincerely,

David Edelman
Executive Director
Klein Bottle Youth Programs

TDM Demand Management

By Dottie McKiddie

The TDM ordinance was developed by the city and county of Santa Barbara in response to a 1987 Air Quality Attainment Plan written to meet Federal ozone levels. The objective of TDM is to reduce traffic congestion, air pollution, and parking demand, and improve the quality of life by regulating the percentage of commuters in the region who drive alone to or from work during the peak hours (7:15 to 8:45 a.m. and 3:59 to 5:59 p.m.).

The most significant effects on employees may eventually be in their work schedules. To comply with participation and ridership goals of the program, many work groups may have to shift arrival and departure times and some may go to compressed workweeks. This approach has to be balanced against the fact that *too* many different work schedules actually inhibit use of carpools or vanpools. However, if enough employees do not use alternative commute modes/carpooling, then the company probably will have to shift work schedules to comply with the law.



Q. When does TDM take effect?

A. Later this year, on a three- to five-year implementation schedule.

Q. How many employees would have to participate in alternative commuting means, such as carpools, for the Company to satisfy the goals of the ordinance?

A. The ordinance seeks a participation rate of 65% of all day-shift employees. This figure includes not only those who use alternative commute options, but also all employees who arrive at and depart from work outside of the "peak periods."

SBRC Initiates Hazardous Waste Minimization Efforts

By Bob Spielman

A working team has been formed to develop a comprehensive hazardous waste minimization plan for SBRC in order to meet compliance requirements of California's Hazardous Waste Source Reduction Review Act, commonly known as Senate Bill 14 or simply SB14.

The Act requires that generators of hazardous chemical and solid wastes prepare a "Waste Source Reduction Plan" and a "Waste Performance Report" by September 1, 1991 and every four years thereafter.

The Plan is a prospective document that includes such things as an estimate of the quantity of hazardous wastes generated, an evaluation of potential waste reduction approaches, and a timetable for implementing selected reduction measures.

The Performance Report is a retrospective document that assesses the effect of SBRC's waste reduction activities implemented since 1990.

The company fully endorses waste minimization as part of an overall goal of reducing the quantity of hazardous materials used in business operations. This goal emphasizes both safety and environmental protection.

The SBRC SB14 Working Team is chaired by the Environmental Health and Safety Office and consists of members from each division and operations. Each of these groups has, in turn, formed sub-teams to develop specific hazardous waste reduction plans for

their division/organization.

The company strategy focuses on waste reduction by eliminating the generation of waste at its source. Processes, materials, and procedures will be evaluated to determine the most efficient and effective means of reducing the volume of hazardous waste that is generated.

Possible reduction options will be identified for each business operation that generates significant waste. After evaluation, the most viable reduction measures will be selected for implementation.

In addition to making good environmental and safety sense, waste reduction ideas frequently provide opportunities to improve operating efficiency as well as reduce material costs. During 1990, the company cost of chemical purchases and waste disposal amounted to \$750,000.

In many industrial facilities that have initiated ongoing hazardous materials minimization programs, simple administrative controls, such as minimizing inventories, attention to quantities purchased, and better utilization of raw materials, have realized over 30% annual savings.

Experience has shown that many of the most effective reduction ideas come from the people who operate processes using hazardous materials. The SB14 Team encourages all employees to share their ideas with their supervisor and their team representative.



photo: Bob Casper

Members of the SBRC SB14 Team are, from left, Bob Spielman, Environmental Health and Safety; Milt Weiss, Systems Division; John Young, Operations; Jeff Simpkins, Manufacturing Division; George Whiteman, Detector Division. Not shown: Norma Schroeder, Santa Maria, Environmental Health and Safety, and Dave Kendrick, Detector Division.



photo: Matt Weinberg

"There's never a dull moment as Executive Assistant to the President," Nancy Ashton told students during her presentation on secretarial and office careers.

Career Day

By Margaret Finlay

Santa Barbara High School

On March 27, seven SBRC employees took time out of their busy schedules to take part in an important community education event, Career Day. Nancy Ashton, Craig Cook, Ed Gudgeon, Lucy Thoms-Harrington, Russell Mack, Paul Norton and Al Soenke were speakers at this Career Day, which is an annual event sponsored by the Santa Barbara Industry Education Council (SBIEC), the Office of the County Superintendent of Schools, and the Santa Barbara High School District.

Career Day is designed to help young men and women make the right vocational and educational choices. The event rotates annually among the three Santa Barbara area high school campuses and is a won-

derful example of how partnerships between schools and businesses can assist students before they start college or enter the working world.

Every student had the opportunity to meet with working professionals with expertise in areas ranging from athletics to zoology. These professionals discussed the training needed to enter a career field, entry-level positions open to new graduates, and the nature of the daily job routine. Nine of the sessions were conducted in Spanish, with over 95 career opportunities represented in all. Approximately 120 business and industry participants took part in this educational effort, which strengthens bonds between generations. By sharing our business resources and experience, we all help students make decisions that could have a lasting impact on their lives.



photo: Matt Weinberg

Paul Norton explained how physics can lead to a career in a high-technology company, such as SBRC.



photo: Matt Weinberg

Russell Mack discussed workforce needs for the 90s and beyond. "Workers will need to be multi-skilled with advanced education," said Russell.

Carpinteria High School

On March 17, Bob Casper, Photographer, and Tom Pagano, Engineer, represented their respective professions by participating in Carpinteria High School's Career Day. Tom talked with the students about career opportunities in the aerospace field, while Bob held a popular session on photography. There were approximately 115 career sessions for the 800 students who took part in this Career Day. Both Bob and Tom made a positive contribution by giving students that "motivating spark" to pursue life-long goals.



photo: Matt Weinberg

Al Soenke discussed trends and opportunities for electronic technicians. He particularly emphasized educational requirements.

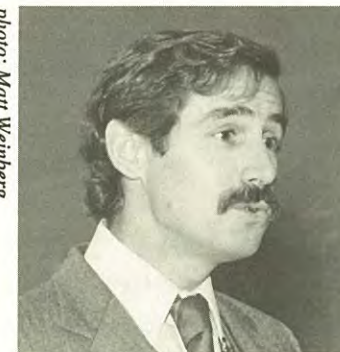


photo: Matt Weinberg

Ed Gudgeon shared his expertise in electrical engineering, covering such topics as work environment, daily routine, and salary.



photo: Matt Weinberg

Lucy Thomas-Harrington talked with students about the exciting world of international marketing.

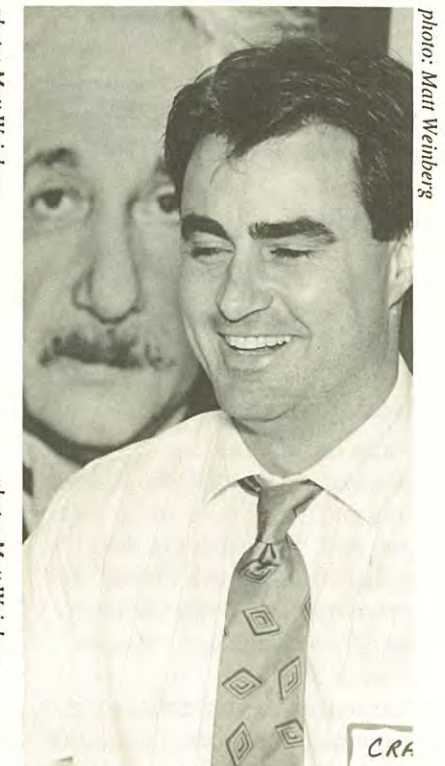


photo: Matt Weinberg

Craig Cook, in his presentation on technical photography, said the key to success is understanding and getting along well with others—your clients, peers, and vendors. Einstein backed Craig up on this.

Hewitt Shows Then-Prime Minister Thatcher BSTS Focal Plane Technology

Over the past five years, hundreds of SBRC engineers, technicians, and administrative personnel have worked to successfully produce and develop the focal plane technology necessary to support Lockheed's Boost Surveillance and Tracking System (BSTS) concept.

Because of this involvement in the BSTS program, last August, **Mary Hewitt**, *Technical Director* and *BSTS Program Manager*, met then-Prime Minister Margaret Thatcher at a special Strategic Defense Initiative (SDI) briefing in Colorado Springs.

Mary staffed Lockheed's BSTS display, which featured SBRC's focal plane array. "The Lockheed BSTS team singled out our focal plane array as the key technology development to be demonstrated, which was a great honor," said Mary.

Only a dozen contractors were re-

quested to contribute to the SDI displays. Among those chosen were Lockheed and Grumman, who both displayed their BSTS concept, and Honeywell and IBM, who exhibited their data processors and Brilliant Pebbles concept.

Mary explained the Lockheed display to the Prime Minister and her party, which included *SDI Director* Henry Cooper, and England's Ambassador to the U.S. The Lockheed display centered around a model (designed by **Paul Straede**) of SBRC's BSTS focal plane, accompanied by photos and scrap hardware. The Prime Minister was impressed by the increased sensitivity and detector density we had demonstrated on the BSTS program.

During the week-long SDI briefing, the displays were reviewed by over 500 people working at the Falcon Air Force Base, or NORAD.



Mary Hewitt was selected to host Lockheed's Boost Surveillance and Tracking System (BSTS) display, which featured SBRC's focal plane technology, at the Strategic Defense Initiative briefing held in Colorado Springs last August.

SBRC Employee Art & Photography Show

More than 50 paintings and photographs are on display through August 2 in the B1 "mailroom" hallway. This first **SBRC Employee Art & Photography Show**, sponsored by the Employees Association, is well worth the trip.

GM/H Stock Share Values

The GM/H stock share values in effect as of April 30, 1991:

Average Purchase Price: 19.592

Savings Plan Unit Values

The unit values in effect as of May 31, 1991:

Fixed Income Fund:
4.6321

Equity Fund:
6.9833

Balanced Fund:
5.5498

EE Bonds

Market-based interest rate for Series EE Bonds issued between May 1 and October 31, 1991:

Interest Rate: 6.57%

The SBRC News—published in the interest of the employees of
SANTA BARBARA RESEARCH CENTER
A subsidiary of Hughes

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NEWS

SANTA BARBARA RESEARCH CENTER

July 1991

Team-Building Dynamics: Add Facilitator + Understanding of Team Concepts

By Chris Mangini

When the MODIS-N contract award was recently announced, there was a collective sigh of relief from SBRC employees. The unspoken tension prior to the announcement is indicative of the global competitive nature that now characterizes our business in aerospace.

For SBRC and Hughes Aircraft to be competitive into the 21st-century, cmi must become the order of the day. As Dr. Malcolm Currie, Chairman and CEO of Hughes Aircraft Company, says, "Continuous measurable improvement is our form of Total Quality management. It's fundamental to our success."

One method of integrating the cmi initiative into standard practice is through teams. Therefore, team building and facilitating now have the spotlight at SBRC. In this article, our new Team Facilitators will first be introduced and then some important team concepts will be defined.

Facilitators Complete Training, Ready to Help

Trained team facilitators are now available to support team activity throughout the company.

Twenty-seven employees participated in a three-day facilitator training seminar held in May. Interact Performance Systems, a team-training consultant, conducted the seminar.

Facilitators are now prepared to train and assist cmi teams in establishing group dynamics and chartering team purpose.

All areas of the company are now represented by team facilitators—Contracts, Finance, Human Resources and Administration, Product Assurance, Operations, Detector Division, Manufacturing Division, and Systems Division.

Team leaders and members are encouraged to contact a facilitator from their organization (see photo below). (continued on page 12)



photo: Craig Cook

Organizations/Areas Represented by CMI Team Facilitators—

from left, Mike Bailey, Manufacturing Engineering, Santa Maria; Bob Anderson, Product Assurance; Tom Pedersen, Human Resources; Tom Emery, Property Management; Jim Bell, Systems Division; Chuck McKenney, Systems Division; Chris Mangini, Human Resources; Adele Sommers, Systems Division; Alan Soenke, Engineering Lab; Nick Garrison, Human Resources; Steve Price, Detector Lab; Jack Hennessey, Contracts; Dan Rinehart, Manufacturing Engineering; Rosalie Breeland, Publications; Darrel Lamb, Information Services; Ken Lovingood, Manufacturing; Randy Churchman, Quality, Santa Maria; Russell Mack, Facilities; John Bouregy, Detector Lab; Steve Thomas, Information Services; Doug Winter, Manufacturing; Peggy Peffley, Product Assurance; Brenda Smith, Manufacturing, Santa Maria; Marilyn Kinsky, Product Assurance; Ron Gibbons, Finance; Jeff Toogood, Quality; and Deborah Van Dyke, Information Services.

Fire Sensing and Suppression System

FSS Product Line Makes Transition into Commercial Market

By Gage Ricard

The FSS product line's transition into the commercial market successfully illustrates one of the directives in the *Strategic Plan*: "Diversify into business areas where our resources and technologies provide a natural linkage."

Once solely produced for military vehicles, such as the Bradley and M-1 tanks, our fire sensing and suppression system can now be found on city transit and school buses. "This could become our main line of business," said Jack Senik, Marketing Manager, FSS.

"The commercialization of our FSS system has caused a tremendous change in the design of the sensor, and manufacturing and purchasing procedures," said Jack.

"The cost has come down because the design complexity has been reduced as compared to military design. For example, the control electronics are now built into the sensors, reducing the number of parts. Overall, the design has been simplified and the system has been computerized.

"Not only has the marketing changed, but also how we do business. Breaking into the commercial market

with our products is a major step forward at this time of military build-down."

The timing is particularly good, too, for commercialization efforts now. As cities are seeking ways to comply with the Federal Clean Air Act, they are turning to alternative fuels, such as methanol.

Methanol is a clean-burning fuel, but produces a barely visible blue flame, difficult to detect by the human eye. This significantly decreases the chance of discovering a bus fire early, endangering passenger lives. Our fire sensing and suppression system, though, will detect and extinguish such a fire in a fraction of a second, protecting lives and equipment.

On Friday, October 13, 1989, we had a chance to prove it. In Los Angeles, a Southern California Rapid Transit District methanol-fueled bus caught fire while passengers were on board. SBRC's dual-spectrum FSS system put the fire out instantaneously. "This fire, if it had spread, would have set the alternative-fuel program back substantially," said Jack.

This dramatic demonstration has opened many doors. SBRC has been selected as a qualified fire-protection supplier by Transportation Manufacturing Corporation (TMC) for their methanol-fueled transit buses used in the Denver Regional Transportation District, Phoenix Transit System, and

Southern California Rapid Transit District. (TMC is the bus manufacturing company owned by Greyhound.)

Other recent marketing successes include selection of our equipment for SCAT's (South Coast Area Transit, Ventura/Oxnard) methanol-fueled buses and for Gillig Corporation's methanol, compressed gas, and liquefied petroleum gas fueled buses for the Orange County Transit District. Both Houston Metro and Miami Dade Metro have specified SBRC technology for their alternative fuel buses. Our FSS system has also been recommended for the Phase-I California School Bus Program.

The FSS Marketing Department staff has been very busy talking to the California Energy Commission, California Highway Patrol, California General Administration Office, Urban Mass Transit Administration and National Highway Traffic Safety Administration in Washington, DC; and attending transit/school bus conferences and seminars. "They know who we are now," said Jack. "We've laid the foundation for even more future commercial transit and school bus business."

"There are other infrared and thermal fire detection and suppression systems, but they don't offer the speed of response, the reliability, and the false-alarm immunity that we do. The fire has to find their sensor; our sensor finds the fire"—Jack Senik

Before heading down to San Diego for an Energy Convention, appreciative SCAT employees drove their alternative-fueled bus to SBRC, specifically to B21, to show our employees the FSS system installed on a model bus. "There was a lot of enthusiasm about actually seeing a bus here with our system on it," said Jack Senik.



photo: Bob Casper

Recognition of the stages by a team provides increased understanding of the process.

Stage 1: Forming: This is a stage of transition from individual to member status, and of testing the leader's guidance.

Stage 2: Storming: Impatience and frustration are abundant at this stage of teaming. The inexperienced team members rely on their personal and professional experience and resist the need for collaboration with other team members.

Stage 3: Norming: During this stage, members reconcile competing loyalties and responsibilities. Members accept the team rules and norms, and their roles on the team.

Stage 4: Performing: By this stage, the team has settled its relationships and expectations. It can now begin to perform—diagnosing and solving problems, and implementing improvement plans.

Key Players on the Team

All team members are critical to team success. The effectiveness of the team is directly linked to how well those associated with the team perform their jobs.

Team Members have a key role. As members, active participation is required. It is expected that members will share and contribute from personal experience for the welfare of the team. It is imperative that members accept and complete action items and understand the team process enough to foster a productive environment.

Team Leaders are full fledged team members, too. Typically team leaders schedule meetings, keep team records, and coordinate meeting minutes. The leader plays an important role by communicating team status with management and the Guidance Team.

The **Guidance Team** consists of organization management personnel. It has the important task of providing

Revised Property Practices Manual Now Available

By Beverly Nusser

Property Management and the many other SBRC organizations that are part of the Property System have worked together to rewrite the *Property Practices* to better describe how we safeguard and maintain Government property at SBRC.

If an employee is involved in the procurement, use, maintenance, movement, storage, or disposal of material or equipment, he or she is part of the Property System.

Everyone on the Property System Team needs to be familiar with the new *Property Practices*.

Reading all of the *Property Practices* (14-X-XX) is the best way to ensure your understanding of the requirements, the procedures, and the many organizations involved in the Property System.

Many employees are "requestors" or "custodians" of property, or are part of a "performing organization" using property for contract work. The *Property Practices* apply in all of these cases.

Employees can request a complete or excerpted copy of the *Property Practices* manual.

Excerpts from *Property Practices* have been organized by topic, such as "Custodial Organization," and "Requesting/Performing Organizations." Additional topics are listed below:

- Contracts and Pricing*
- Custodial Organizations*
- Engineering*
- Facilities*
- Instrumentation Support*
- Material/Production Control*
- Matériel*
- Product Assurance*
- Product Assurance Calibration*
- Product Assurance Inspection*
- Program Management*
- Receiving*
- Requesting/Performing Organizations*
- Shipping*
- Stores*
- Warehouse*

If you are interested in getting a complete copy of the *Property Practices*, send an AVO signed by your department manager to **Claudia Whitney**, B27/81. To obtain one of the special topic excerpts, contact **Beverly Nusser** by phone (extension 2922), or by mail (B1/63).

feedback, resources, and support to teams while assisting the implementation of team activities. The Guidance Team ensures that team activity and achievements are made visible and appropriately rewarded.

Team Facilitators, also called quality advisors, have an important role to play. Though not a team member, the facilitator is asked to assist teams in the "team process." Facilitators assist teams by analyzing needs, coordinating training, and developing resources. In addition,

facilitators can help teams formulate implementation plans, document activity, and present team status to management.

Can Teams Work?

Yes. There is little question that teaming will work when and where opportunities are available.

Teaming is an integral part of our *Strategic Plan*. It is up to each of us to examine our work area for ways to make teamwork and quality our way of doing business.

Team Dynamics

(continued from page 1)

“

Interact's Facilitator Training provided some skills on how to obtain a consensus from a group of diverse people. As a facilitator, I will be able to create a "safe" environment where everyone's participation and problem-solving are encouraged.

Rosalie Breeland

I believe that the cmi training has been helpful in providing some tools for dealing with teams. I have seen many instances of team effort here and most show a real gain. The facilitator training we received can only help make the teams even more effective. Al Soenke

I very much appreciated the emphasis placed on group process and interpersonal skills. Before, I didn't know the techniques that help a group work in a focused, cooperative manner toward a common goal. As a member of Hughes' Variable Reduction Committee, my previous training stressed the analytical approaches to cmi.

Lynn Kinsky

”

Team Concepts Defined

Teaming and the Strategic Plan

Teamwork is prominently mentioned in SBRC's *Strategic Plan* as a means of improving product quality through increased employee authority and responsibility. Truly, teamwork is a vehicle to the "win-win" situation for the company and its employees. Teams provide the avenue for employees to make decisions that improve the processes they are most closely associated with. Improved processes result in better product and service performance.

SBRC's *Strategic Plan* is the company's translation of Dr. Currie's cmi initiative. It is our roadmap. Through its five objectives, the *Strategic Plan* articulates strategies, which, when implemented, will result in a more effective and competitive company.

Strategic Plan Objectives

Continually improve quality in all our endeavors

Recognize and encourage increased employee authority and responsibility

Improve profitability

Enhance technological leadership position in focused areas

Implement management and administrative systems to facilitate SBRC's productivity

What is Teaming?

Teaming is defined as "a small group of interdependent individuals who share responsibility on certain outcomes."

There are three key thoughts in this definition:

Interdependence: each team member contributes and all other members depend on those contributions.

Share responsibility: many of us have thought of our organization as a team, but in fact, the responsibility is almost always held solely by the manager.

Outcomes: 'outcomes' identifies the focus for a team's activities and includes both services and products.

Types of Teams

At SBRC, there are two types of teams—**overlay teams** and **intact teams**.

An *overlay team* is one that is overlaid on the structure of the organization enabling it to have multiple focuses. This type of team is usually characterized by an effective leader, a specific task, and a specified task-completion date.

The *intact team* is a permanent, natural work group that produces an identifiable product or service. The team leader performs the duties of a member as well as schedules and conducts meetings, coordinates with groups outside the team, and helps the team grow toward self-direction.

Stages of Growth

The team development process takes commitment and patience on everyone's part. Authorities on the "team process" suggest that a team goes through developmental stages.

SBRC in the Community

I. Madonnari Italian Street Painting Festival



Over the Memorial Day Weekend, SBRC sponsored an 8 x 12 foot "square" at the I. Madonnari Italian Street Painting Festival at the Santa Barbara Mission. Art students from Dos Pueblos High School, our adopted school, filled in our square. Twenty-five students participated, creating a magnificent rhinoceros, or Perissodactyl Mammal, its official name. The students were inspired by Albrecht Dürer's famous sixteenth-century woodcut, "Rhinocerate"—Margaret Finlay

GM Auto Show at Delco



An estimated 5,000 people showed up for the Delco Systems Operations "We're GM Proud" Auto Show to see GM vehicles and Delco/Hughes technology exhibits. The SBRC/Hughes Technology Center (HTC) display was a big hit. HTC's Bonnie Brenner (far right in photo), graphic artist, went those extra miles (from Carlsbad) to display HTC's technology at the Auto Show. Russ Granneman, Richard Brody, Mike Sullivan, and Paul Sherman's infrared camera display was a real crowd pleaser. And, Carrie Ericksen and I were on hand to answer the many questions posed by visitors—Jack Weber

More Outstanding Academic Achievers



Overlooked in last month's article about children of SBRC employees who received awards at the fourth Annual Black Achievement Awards Ceremony were, from left, *Production Assistant Lead Enedelia Hicks'* three children, 3rd-grader Noni at Isla Vista School, 7th-grader Khary at La Colina Junior High, and 9th-grader Aisha at San Marcos High School. All three received Outstanding Academic Achievement Awards.

Also, *Production Supervisor Claudette Childress-Johnson's* daughter, Raquel, won the Most Improved Student Award. She is in 3rd grade at St. Raphael's.

Pilots Recount Gulf War Experiences

SBRC products are praised

By Gage Ricard

In Santa Maria on Saturday, May 18, four Air Force A-10 pilots, just back from the Persian Gulf, told an enthusiastic crowd of SBRC employees that SBRC products, such as the Maverick detector, really did make a difference in the Gulf War—saving hundreds, if not thousands, of Allied troops' lives. SBRC Santa Maria makes the infrared detector that forms part of the Guidance Control System in the Maverick missile.

The pilots were in town thanks to Santa Maria SBRC employee **Dave Renuart**, *Maverick Manufacturing Project Manager*. His brother, Lt. Col. Gene Renuart, agreed to come out to Santa Maria along with pilots Capt. Eric Salomonson, Capt. Tim Saffold, and Lt. Darren Hansen, all from the 76th Tactical Fighter Squadron, to describe their experiences in the Gulf and show their aircraft. The A-10s carried Maverick Missiles just below the wings. **Wes Sargent**, *Maverick Detector Program Manager*, organized the event, which took place at the Santa Maria Airport and the



photos: Craig Cook

Air Force pilot Tim Saffold's right hand is resting on the Guidance Control System (GCS) for the Maverick Missile. SBRC's Maverick detector is located inside the GCS, just below Saffold's hand.



On the side panel, below the cockpit, this aircraft shows the number of confirmed hits by category: artillery piece (16), tank (13), armored personnel carrier (5), truck (11) and scud launcher (1).

Santa Maria Airport Hilton. Approximately 500 people attended.

"When the pilots came down from their aircraft," Wes said, "and started walking toward the hotel where everyone was waiting, the crowd broke into a spontaneous

cheer. It was a real thrill for me to witness that—all the cheering, yelling and clapping...it was great."

This special event coincided with an SBRC milestone: the delivery of the 15,000th Maverick detector to Hughes Georgia.

"May" Perfect Timekeepers Win \$50 Bonds

Would You Like to Win a \$50 U.S. Savings Bond?

By Charlene McGinnis

To be eligible to win a \$50 U.S. Savings Bond, you must maintain your timecard in accordance with SBRC's Timekeeping Manual and receive a "Perfect Timecard Audit Award."

Each month, names of those receiving a "Perfect Timecard Audit Award" are entered in the U.S. Savings Bond Drawing—three names are drawn.

The three lucky winners in May were two from the Product Assurance Division: **Ruth Edgington**, *Quality Control*, "Oh, my goodness, that's terrific news. I've never won anything before," and **Connie Mendoza**, *Program Quality Engineering*, "That's wonderful. Thank you so much. Please put my grandson's name on the Bond also."

Our third winner was from the Manufacturing Division, **Michael Wegemer**, *Production Engineering*, "I'm so excited. That's really nice."

Congratulations to the winners, and good luck to the rest of you.

Timekeeping auditors make the rounds on a regular basis, so be prepared!

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) *Ethics Administrator Jack Murray* on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

QA/benefits

This is part of a continuing series to inform employees about benefits and procedures. The questions below are among those employees frequently ask of Benefits representatives.

Employees who have questions they would like answered in this column may submit them to: *Benefits Questions, B27, MS81.*

Q. What is a major life event?

A. It is an event that changes a family status and consists of:

- The employee's marriage or divorce
- Death of spouse or child
- Birth or adoption of a child
- The employee's child is no longer eligible for SPEC-TRUM coverage
- The employee's spouse begins or ends employment, regardless of where he or she works, or a significant change in the spouse's coverage occurs because of a change in employment status.

Q. Which plans does a major life event affect?

A. The following pre-tax plans are affected:

- Medical
- Dental
- Voluntary Accidental Death and Dismemberment
- Flexible Spending Account

Q. What action needs to be taken when a major life event change occurs?

A. The only time employees may change their pre-tax coverage (that is, enroll in applicable plans for the first time, change dependent coverage level, or drop their coverage during the calendar year) is if they experience one of the major life

events that **changes their family status.**

When a major life event occurs, employees will have **31 days** to notify the Benefits Office of additions or deletions of dependents—spouse and/or child(ren)—or to change their FSA election amount. Additions of dependents require documentation, such as a copy of a birth certificate or marriage license. Employees may not change their choice of medical or dental plans during the plan year unless they move out of the service area of the HMO/Prepaid Dental Organization in which they are enrolled.

When an employee reports a major life event, a new SPEC-TRUM Credit/Option form will be sent to the employee showing only the current allowable options with credits and pricetags expressed on a per pay-period basis.

Election changes made by an employee following a major life event will become effective on the first day of the month coinciding with or next following the date on which the employee enters the new election. The telephone enrollment system will record the election changes.

If you need further assistance, call SBRC's Benefits Department at extension 7124.



photo: Craig Cook

At 84%, Administration attained the highest U.S. Savings Bond participation rate in the company. 'Administration' includes Human Resources (HR), Contracts, Corporate Staff, Finance, and Information Services. Because HR had the highest participation rate (95%) within Administration, HR employees accepted the plaque for Administration. Accepting are, from left, Dottie McKiddie, HR Bonds Coordinator; Marge Ewen, Bond Canvasser; John Bowen, Director of Human Resources and Administration; Sheryl Rosness, Bond Canvasser; Pat Styer, Bond Canvasser; and Sheila Balok, Bond Canvasser.

\$avings Bond Participation Rate Doubles

SBRC just concluded its most successful U.S. Savings Bond Campaign ever—doubling our participation rate!

Now, 62% of SBRC employees are enrolled in the Bond program, thanks to an additional 38% who enrolled during the drive.

But **Jack Weber**, Chairman of the 1991 Bonds Campaign at SBRC, feels there is much more to the success of the campaign than just numbers.

"The campaign made many of our employees stop and think about their future and take steps to make it more secure," said Jack. "I believe that was the true success of this campaign; that's what made the hard work of those involved in the campaign so important and rewarding."

Although the campaign is now over, it is never too late to start saving for your future. Payroll deduction cards for U.S. Savings Bonds may be obtained in Benefits (B27), or by calling Dottie McKiddie at extension 7236.

The \$500 U.S. Savings Bond winners were, from left, Jill Isbell, Production Technician, Detector Division; Darrel Redley, Technical Supervisor, Systems Division, Santa Maria; and Jim George, Supervisor, Industrial Engineering, Manufacturing Division. All said they would use the bonds for their children's education, and all agreed that bonds are a "great" way to prepare for the future.



photo: Matt Weinberg



Ed Gunn, Santa Maria Plant Manager, and Maggie McGuire, Santa Maria Bond Coordinator, got the 1991 Savings Bond Campaign off on a patriotic start. Before it was all over, the Santa Maria facility had more than doubled its participation, from 27% to 60%.



In addition to company-wide prizes, the Bond Campaign offered many Division prizes as well. Shown here are the Detector Division prize winners: from left, Jim Bradshaw, Linda Tyler, and Fran Gesswein.

photo: Craig Cook



Pilots and Maverick line-assemblers pose together with Dave Renuart (far left) and Wes Sargent (front, left). The assemblers are, from left, next to Wes, Dorothy Rookerson, Janice Buckelew, and Cathy Delgado; the pilots are, from left, next to Dave, Lt. Col. Gene Renuart, Lt. Darren Hansen, and Capt. Tim Saffold.



The climb was worth the effort. Pilots sat inside two of the A-10s to answer questions.



Inside the Santa Maria Hilton, Lt. Col. Renuart and Lt. Hansen described their area of operation to SBRC/Hughes employees during the hour-long briefing.



Lt. Col. Renuart gives Bradley Cook a short course on Maverick imaging. The screen Renuart is pointing to displays to the pilot what the Maverick "sees."



"I've been in this business more than 30 years and this was a real high point in my career. To meet these pilots whose lives depended on systems I had worked very closely on—TOW, Maverick, F-15 radar, and A-6 TRAM—was a tremendous thrill for me."

Wes Sargent

SBRC and MSG Win High Performance Team Award

Communications and business processes significantly improve

By Sandy Goe

SBRC and the Missiles System Group (MSG) received MSG's High Performance Team Award for their outstanding accomplishments in improving their business relationships.

MSG and SBRC work together on a number of programs, such as AAAM, AMS-H, ASRAAM, Brilliant Pebbles, LEAP, Maverick, NLOS, and UAV.

Over the course of time and events, sensitivities had developed between MSG (located in Canoga Park and Tucson) and SBRC.

MSG viewed SBRC as lacking cost disciplines and notoriously over-running programs, and failing to notify MSG of cost and program status prior to over-run.

SBRC viewed MSG as lacking administrative disciplines, and no-

toriously failing to follow-up informal "work authorization and delegation" (WAD) forms with formal authorizations, and failing to provide the correct funding. Consequently, authorizations were incomplete, delaying payments, and SBRC slid into budget "overruns" due to underfunding. As SBRC's invoices became "delinquent," cash flow problems developed.

Both groups traced their problems back to their organizational differences in administrative and financial practices.

For example, SBRC and MSG operate on two different financial systems: MSG is on the Hughes Cost Information System (CIS), in which invoices are paid electronically between divisions; SBRC is on the Finance Information System

(FIS), in which payment must be received by customer check.

The root problem was further exacerbated by poor communication, occasional miscommunication, and undocumented verbal orders.

To develop a mutually agreed upon standard of business practices between the two groups and to improve communication, a new team was formed—the **MSG/SBRC Business Transactions Committee**.

The team members understood that they could overcome their differences only by developing a better understanding of each other's system, acknowledging each other's area of concern, understanding each other's perspective, and coordinating their troubleshooting activities as problems were identified.



The MSG/SBRC Business Transactions Committee Team: From left, Rudy Gruber, Dan Putnam, Lynn Hyatt, Jerry Hughes, Virginia Eberle, Jim Scorso, Barbara Cassity, Lore Miranda, Debbie Molina, Alan Armstrong, Marianne Rose, Linda James, Sandy Goe, Ron Gibbons, Mary Ann White, Barry Gabrielson, Jill O'Grady, Sandy Smith, Tom Cross, Janice Levasheff, Gary Cadwallader, Jerry Ford, and Jerry Molitor.

photo: Jim Muntz



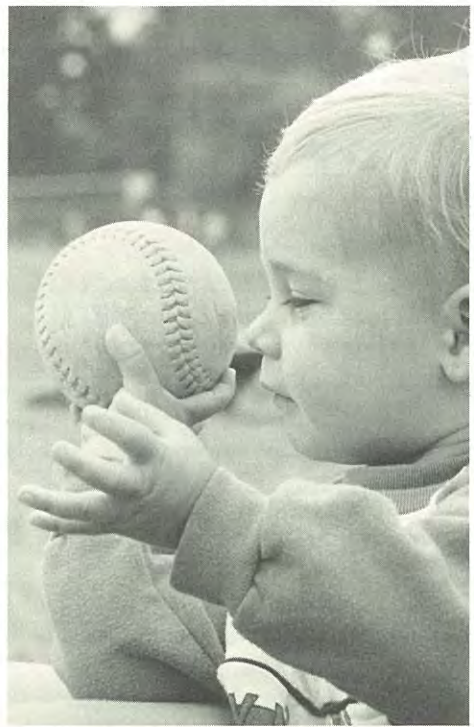
JUNE 1991
HOLLISTER
C • U • P



photos: Bob Casper



J U N E 1 9 9 1
HOLLISTER
C • U • P



Overall Company Standings

Company	Total Points	Place
Delco	30.5	1st
AMC	28.5	2nd
SBRC	24	3rd
GRC	19	4th
Raytheon	18	5th

SBRC STANDINGS BY EVENT

Event:	Biking	Golf	Running	Swimming
Place:	1st	2nd	2nd	3rd
Event:	Volleyball	Softball	Basketball	Tennis
Place:	3rd	4th	4th	5th



Profiles in Excellence

From Dottie McKiddie

This is part of a continuing series of articles profiling excellent performers at SBRC. Victorina Gonzales was nominated by her management for the 1990 Corporate Superior Performance Award.



photo: Craig Cook

Victorina S. Gonzales is an Assembler Senior, Lead on the DSU-19 HARM Target Detector (TD) Manufacturing team. She has led the HARM TD production efforts for more than two years. Her team is now completing the last of the contract's 1480 units.

"Vicky has truly applied her thorough knowledge of the product line," says **Project Manager David Renuart**. "The reduced hours per unit have been indicative of her ability to allocate available resources in a most cost-conscious manner. Additionally, she has contributed to unparalleled levels of quality as measured by the successful completion of 20 LATs (Lot Acceptance Tests), representing over 2500 units, during the past 14 months of an extremely ambitious production schedule."

Even though the HARM, DSU-15, and RAM TD product lines will shut down shortly, Vicky, along with other FUZE production staff members, looks forward to the October 1991 start-up of a recently awarded contract for 2072 units—the DSU-21. Good luck!

At SBRC, **Sandy Goe**, *Contracts Administrator for MSG Detector Division contracts*, **Janice Levasheff**, *Contracts Services Administrator*, and **Jeff Klein**, then *CIS Coordinator*, first examined the problems that were repeatedly coming up with MSG WADs. (WADs are contractual documents among the various Hughes divisions; they are based on the CIS system.)

Sandy, Janice, and Jeff contacted their counterparts at MSG, who were very receptive to working together to resolve the problems. MSG initiated the "team" concept, and encouraged the development of the MSG-SBRC working team, which became the MSG/SBRC Business Transactions Committee.

MSG selected its Division 5G as the test case for the improvement of all MSG WADs and other business relations with SBRC. The accomplishments made between MSG Division 5G and SBRC will be used as a model for the remaining MSG divisions. MSG is producing a new Company Practice as a result of administrative accomplishments made between MSG and SBRC.

Goal-oriented communications developed within SBRC and across divisions: between SBRC's CIS Coordinator (Jeff Klein) and MSG's CIS Coordinator (Gary Cadwalader), between SBRC's Control Point (Janice Levasheff) and MSG's Control Point (Jill O'Grady), between SBRC's Financial Administrator (**Mary Ann White**) and MSG's Finance personnel (Marianne Rose and Debbie Molina), between SBRC's Program Cost Administrator (**Tom Cross**) and MSG's Business Operations (Linda James and Jerry Hughes), and between SBRC's Contracts Administrator (Sandy Goe)

and MSG's Business Operations (Linda James and Jerry Hughes).

As business issues were examined, the team expanded to include representatives from additional, relevant areas adding insight, and the necessary levels of authority to make significant system changes.

The team grew to include SBRC representatives **Lynn Hyatt**, *Head of Detector Division Contracts*, **Nancy Swetka**, *Systems Contracts Administrator*, **Jim Scorso**, *Program Manager*, **Rudy Gruber**, *Head of Program Controls*, **Steve Halsted**, *Program Manager*, **Ron Gibbons**, *Manager of Accounting Operations*, and **Rick Slack**, *CIS Coordinator and Head of Contracts and Pricing Services*. Participants will continue to vary depending on the current issues.

The MSG/SBRC Business Transactions Committee will meet on a quarterly basis and as necessary.

MSG, in presenting the High Performance Team Award to the MSG/SBRC Business Transactions Committee, acknowledges the team's many accomplishments.

MSG/SBRC Business Transactions Committee

Accomplishments

Opened communications between MSG (Division 5G) and SBRC

Opened communications within each division: among business, program, finance, and contracts offices

Cleared up major misconceptions and misunderstandings between MSG and SBRC

Identified administrative and financial concerns of each division

Developed cooperative solutions

Follow-up on advance WADs significantly improved (90%)

Improved MSG payment cycle-time

SBRC Wellness Program

By Emily Garcia

The Benefits Office is working with various organizations to promote preventative health care for SBRC employees. These organizations include, but are not limited to, the American Heart Association's Heart at Work Program, American Cancer Society, and Health Net's Aim for Wellness Program. The goal of this program is to provide employees with the knowledge needed to lead healthy life-styles. This will be accomplished through noon-time speakers on health issues, educational literature, and on- and off-site activities. Employees will receive information regarding events as they are planned.

Part of leading a healthy life-style includes a commitment to an exercise program. Whether you are just starting out, or are simply looking for a change in your exercise routine, Santa Barbara County offers a variety of programs to help accomplish this goal.

Sports for Life: Health for Life is a brochure that lists a variety of exercise/sports classes available in Santa Barbara. If you have ever wanted to take a class in dance, golf, rockclimbing, or even windsurfing, this brochure outlines the local activities available. These classes are offered at a variety of times and locations in the community. Brochures are available in the Benefits Office in B27 and also at the nurse's office in B5.

Numerous fitness facilities throughout Santa Barbara County were contacted regarding the possibility of membership discounts for SBRC employees. The following discounts are being offered at this time. Please contact the various facilities directly for further information.

NOTE: Publication of this discount list does not imply SBRC's endorsement of any program or facility. This list is for information purposes only. Employees are encouraged to review facilities and programs prior to enrollment.

Gold's Sports & Fitness Center
427 S. Fairview 21 W Carrillo
Goleta, CA Santa Barbara, CA
964-0556 965-0999

A total fitness center offering a variety of aerobic, nutrition and weight training programs for men and women of all ages. Discount of 15% off enrollment fee on any continual membership program. Contact gym directly for details.

Nautilus of Santa Barbara
2285 Las Positas, Santa Barbara, CA
Current special \$99 for a one-year membership plus an enrollment fee.

Feminine Fitness Gallery
81778 S. Broadway, Santa Maria, CA 928-9119

Health club for women offering 35 aerobic classes per week, both free-weight and circuit-weight training, tanning facility, and cardiovascular equipment (Lifecycles and Stairmasters).

Regular Membership
Initiation Fee Free (normally \$99.00)
Monthly Dues \$25 (normally \$29.50)

Gold Card Membership**
Initiation Fee Free (normally \$99.00)
Monthly Dues \$35 (normally \$39.50)

**Includes tanning (1 session per day), computerized body fat testing and body composition analysis, 15% discount on Fitness Boutique items, and 10% discount at local participating businesses.

Goleta Valley Athletic Club
170 S. Los Carneros, Goleta, CA 968-1023

Offering aerobics, weight training, racquetball, and pool.

Initiation Fee 1/2 off \$125 (normally \$250)
Monthly dues \$ 48 (normally \$ 58)
Monthly dues for spouse \$ 21 if signs up with employee

Jazzercise—Santa Maria
Vanna Medley 922-0609

Two types of discounts:
- 15% off for a two-month registration
- For groups of 5 or more, 20% off per person per month
Four different locations. Call for location near you.

Jazzercise—Santa Barbara
566-8900

Eight classes for \$20. Must show company badge to receive discount. Call for a listing of classes offered in Santa Barbara.

Cathedral Oaks Club*
5800 Cathedral Oaks Rd., Goleta, CA 93117
Jeffrey Jacobs 964-7762

Highly acclaimed for its tennis and swimming programs. Programs available for adults and children. Shown by appointment only.

Permanent Full Privilege Tennis Membership

	Family*	Single**
Initiation Fee	\$1500	\$1200
Monthly Dues	\$ 108	\$ 80

Includes use of fitness center, aerobics, tennis courts, locker rooms. Privileges to cafe, massage, lessons, and Pro Shop.

Annual Full Privilege Tennis Membership

	Family*	Single**
Annual Fee	\$ 450	\$ 300
Monthly Dues	\$ 107	\$ 71

Includes same as above but pay an annual renewal rather than a one-time initiation fee.

Annual Health Membership

	Family*	Single**
Annual Fee	\$ 300	\$ 200
Monthly Dues	\$ 77	\$ 50

Includes use of fitness center, aerobics and locker rooms. May play tennis at a \$10 court fee. Privileges to cafe, massage, lessons, and Pro Shop.

* Includes unmarried children to age 21 living at home.
** Twenty-two years and over for Full Privilege Membership. Nineteen and over for Health Membership.

Sheraton Hotel Health Club
1111 E. Cabrillo Blvd., Santa Barbara, CA 93103
Kim Taylor 963-0744 (call for tour)

Offers full use of facilities and swimming pool. One-year membership is \$200 (normally \$250). Space is limited.

Santa Barbara Athletic Club†
520 Castillo St., Santa Barbara, CA 966-6147

Offers racquetball, aerobics, weight room, pool, spas, and sauna.

One-time registration fee \$375 (normally \$750)
Monthly dues without courts \$ 64 (normally \$ 76)
Monthly dues with courts \$ 74 (normally \$ 89)

Santa Maria Athletic Club
330 W. Carmen Ln., Santa Maria, CA 928-2305

Offers fitness and diet counseling, 2400 square-foot free-weight center, 1600 square-foot circuit-training center, aerobic center, cardiovascular equipment, and racquetball.

Two types of membership available:

Executive Use	Initiation Fee	Monthly Dues
Family	\$0 (normally \$250)	\$60
Couple	\$0 (normally \$225)	\$50
Single	\$0 (normally \$150)	\$35

Includes full Club use

Fitness	Initiation Fee	Monthly Dues
Family	\$0 (normally \$175)	\$50
Couple	\$0 (normally \$150)	\$40
Single	\$0 (normally \$100)	\$25

Includes full Club use without racquetball

Walnut Pier Health Club
"A" & Walnut St., Lompoc, CA 736-3494

Offers aerobics, weight training, pool, cardiovascular equipment, tanning bed, free child care, jacuzzi, sauna, and fitness boutique.

Two types of discount programs:

- Group discounts for groups of 6 or more
Annual membership \$276 paid in full
Continual membership \$ 25/month
Add spouse \$ 15/month

- Corporate Memberships

Employees	Paid in Full	Monthly Payments
20-30	\$225	\$21.50
31-40	\$210	\$20.50
41-99	\$200	\$19.50
over 100	\$180	\$18.50

If you are interested in obtaining a corporate membership, call Emily Gonzales at ext. 7096. At least 20 employees need to call to obtain the above discounted rate. A spouse counts as an employee.

YMCA—Santa Maria
3400 Skyway Dr., Santa Maria, CA 937-8521

They are in the process of establishing a corporate discount program. Currently their rates are as follows:

Adult only	\$26/month	+ one-time \$5 insurance surcharge
Couple	\$34/month	
Family	\$40/month	

For a booklet of activities, call Vickie at ext. 5419 or Emily at ext. 7096.

YMCA—Santa Barbara
36 Hitchcock Way, Santa Barbara, CA 687-7727

No corporate rates are offered. Listed below are rates as of this writing:

	Joining Fee	Monthly Dues
Adult	\$100	\$38
Family	\$125	\$57
Single Parent Family	\$100	\$45

For a booklet of activities and a guest pass, call Emily at ext. 7096.

† Brochure available at Benefits Office, B27



August 1991

Top DoD Official Visits SBRC for Briefing on AAWS-M Program

By Will Van Dyke and Carrie Ericksen

The Honorable Donald J. Yockey, Under Secretary of Defense for Acquisition, visited SBRC on Thursday, July 18, to review the Advanced Anti-Armor Weapon System, Medium (AAWS-M) Program at SBRC. SBRC is currently under contract to Martin Marietta in Orlando to build the detector dewar assembly for the missile seeker. The AAWS-M missile is launched by an infantryman at a tank or other armored vehicle. Development of this capability is the Army's number one priority.

The AAWS-M Program has been

under early development by Texas Instruments for several years, and is now in full-scale development. Martin Marietta was selected as the second source for this program, and it in turn selected SBRC as the supplier of detector assemblies. The other supplier has had trouble producing detector assemblies that meet specification, so the Department of Defense has focused its attention on SBRC as the primary detector assembly supplier.

Mr. Yockey came here to ensure that SBRC has the capability to pro-

duce affordable detectors that meet performance requirements.

SBRC's initial array production meets all of the Army's requirements, and, because of this, an additional quantity of 60 units has been ordered, with an option for another 160 units. Thus, SBRC will provide most of the detectors for the missile firing tests during the full-scale development phase of the program. Low-rate production will follow, representing a key first step in transitioning our production base from first-generation to second-generation technology.

SBRC President and CEO Dr. Fletcher Phillips welcomed the visitors and gave them an overview of SBRC and its products. Dr. Kevin Riley presented SBRC's enabling technologies, and then Dr. Steve Halsted, Dr. Adam Lewis, and Dr. Jay James each gave a separate review of SBRC's technical and production capabilities for the AAWS-M Program. Finally, the guests were given a tour of the B1 Clean Room.

Mr. Yockey stated as he left SBRC that there is no doubt SBRC has the technology required to perform on this program.



From left, foreground: Dr. Fletcher Phillips, SBRC President and CEO; the Honorable Donald Yockey, Under Secretary of Defense for Acquisition; Commander Shaw Cohe, Military Assistant to the Under Secretary of Defense for Acquisition; Richard Brandes, Hughes Senior Vice President and Group President (EDSG), and Chairman of the Board (SBRC); Dr. Kevin Riley, SBRC Assistant Division Manager, Detector Division. Background: SBRC Senior Scientists Dr. Jay James, Head, Array Processing, and Dr. Adam Lewis, AAWS-M Technical Director.



Photo: Matt Weinberg

A Better IDEA

Concurrent Engineering Effort Finds Ways to Cut IDEA Program Costs by 38%

DFMA (Design for Manufacturing/Assembly) is the name given to the inter-divisional Hughes concurrent engineering brainstorming sessions held at SBRC in June

By Gage Ricard

A 38% cost reduction is attainable on the IDEA Program by implementing a few low-risk ideas. That was the conclusion reached by 44 Hughes employees who participated in an intense four-week concurrent engineering (CE) effort. Hughes senior management heard how the 38% could be achieved at a formal presentation on June 28.

What these Hughes employees participated in, though, happens to be CE by another name and acronym—DFMA (Design for Manufacturing/Assembly).

"More specifically, DFMA is a tool to make concurrent engineering work," said **Tom Pavliscak**, *DFMA facilitator*. "It's a method of looking at a product and analyzing that

product's design, establishing a baseline cost and providing DFMA participants with the means to identify what cost alternatives there are. To assist in that process we have facilitators working with the DFMA groups so the participants don't spend more time discussing what DFMA is than actually doing it."

Electro-Optical and Data Systems Group (EDSG) was the first Hughes group to pick up the DFMA concept, which came from GM. EDSG has been facilitating DFMA efforts since 1989, with impressive results. This particular DFMA at SBRC, though, was unusual because it was the longest Hughes DFMA (four weeks, instead of one to two) and the most inter-divisional.

A multi-disciplined group was formed of employees from five Hughes groups—EDSG, Electron Dynamics Division (EDD, Torrance), Connecting Devices Division (CDD, Irvine), Microelectronics Circuits Division (MCD, Newport Beach), and SBRC

"The purpose of this DFMA was to find ways to meet all of our cost objectives," said SBRC's **Dennis Maloy**, *IDEA Program Manager*. "Prior to the DFMA, we had struggled unsuccessfully to meet our cost commitments. Now, as a result of this DFMA, we have several good ideas on how to drive the costs down."

"The 38% savings we're looking at," added SBRC *DFMA facilitator*



Photo: Bob Casper

IDEA Program Manager Dennis Maloy presented the DFMA group's encouraging results to Hughes management, which included Jerry Molitor, SBRC Vice President; Dick Seaberg, Corporate Vice President; Harry Bevington, HNVS Program Manager; Mike Irvine, EDSG Manager; Bernie Skehan, EDSG Group Vice President and Manager; Walt Siender, Manager, CDD; Erling Illokken, Manager, EDD; Bob Sendall, Director, Infrared Technology Development, EDSG; and Elliot Axleband, EDSG Group Vice President and Manager, Tactical Avionics Division.

CHRISTMAS IN JULY

Margaret Finlay, Rudy Gruber, and Denise Homan donned unseasonal outfits on July 13 and 14 to encourage the spirit of giving among area shoppers.

Their efforts during the "Christmas in July" campaign helped the GO Club supported Foodbank net 7,500 pounds of food, totaling more than \$15,000, plus \$250 in cash donations. This campaign took place in front of local Vons, Williams Brothers, and Luckys Stores. The Foodbank will distribute the donated food to the 83 agencies it serves.



Photo: Colin Finlay

Employee Counseling Corner

By David Root

HELP—Hughes Employee Life-line Program—is available to all SBRC employees and members of their families covered by their medical insurance (whether HMO or Hughes comprehensive).

What is HELP? It is a professional assistance program for persons with substance abuse problems and emotional/relationship problems. HELP offers treatment by approved providers for outpatient psychological counseling, and for inpatient or outpatient substance abuse treatment.

How much does HELP cost the employee/family member? Substance abuse treatment, in an approved facility, is 100% covered, once in a lifetime. Psychological assistance, by approved providers, is 100% covered for the first five sessions. Approved sessions beyond the first five involve a co-payment on your part (see the HELP packet or call Benefits).

How does one access HELP? There are two ways to get assistance from HELP providers:

1. *Call Employee Counseling.* This is often the best way, since it helps you sort out your issues and decide on the best course of action.

2. *Contact approved HELP providers directly* (listed in the Psychological Counseling Directory of the Substance Abuse Treatment Directory, contained in the HELP packet).

For assistance with HELP, call (805) 733-1916.

Help is only a call away!

Are Your Favorite Charities on the GO Club Distribution List?

If not, Submit Your Suggestions

Currently, 65% of SBRC employees contribute to the Give Once (GO) Club through the weekly payroll deduction program.

Last year, \$126,521 in employee donations was distributed to non-profit, charitable organizations through the GO Club. That's a powerful force for good in the community.

Periodically, the GO Club Committee reviews new solicitations for support, including nominations from employees. But, nominated organizations must meet specific criteria. Funds may only be donated to a recognized non-profit group organized for charitable and human services needs that qualifies as an exempt organization under section 501(c)(3) of the Internal Revenue Code.

If you are aware of a qualified organization that you believe should be considered by the committee, please complete the form below.

Please consider the following organization for GO Club Support:

Organization: _____

Contact Person: _____

Address: _____

Telephone Number: _____

Return by August 15 to: D. McKiddie, B27/MS75

Give Once Club

Letters of Thanks

CITY OF SANTA BARBARA

June 27, 1991

Dear Mr. Garcia:
On behalf of the Santa Barbara Parks and Recreation Department I want to take this opportunity to express our sincerest thanks and appreciation for the approval of funding by the Santa Barbara Research GO Club for our Summer Science Camp Program. Your cooperation and support, along with the Endowment for Youth Committee and others, will afford a large number of minority youth with the opportunity to become exposed to science in greater depth.

Santa Barbara Cottage Hospital Foundation

June 28, 1991

Dear Friends at Employees Give Once Club:
The Development Office has informed me of your recent donation to the Santa Barbara Cottage Hospital Foundation.

This gift will assist us with the expansion of our neonatal intensive care unit from 8 to 20 beds. The unit has cared for more than 900 infants from throughout the Santa Barbara County since it opened in December of 1987. Now that the Neonatal Transport Vehicle is in operation, the use of the unit will continue to increase.

Thank you for your interest. Cottage Hospital is fortunate to have strong community support, and it is friends like you that allow Cottage to stay in the forefront of providing the best medical care.

Sincerely, James L. Ash
President and Chief Executive Officer

29 June 1991

Dear Mr. Garcia,
We received the award granted by the Santa Barbara Research Center Employees Give Once Club and are most grateful. Be assured it will be used as designated in our request.

It is through interested groups as the GO CLUB that we are able to continue to service our many visually impaired borrowers.

Again, on behalf of the Board of Directors of the Santa Barbara Unit for Recording for the Blind, my sincere thanks.

Sincerely,
Dee MacGillivray, Chairman

Your GO Club Committee has been busy this year distributing funds to a diverse group of charitable organizations. They have been very appreciative as indicated by their letters (see below). Your generosity is much appreciated.

THE ADOPTION CENTER

May 28, 1991

Dear Ricardo and Members of the GO Club,
On behalf of the entire staff of The Adoption Center, I thank you for your vote of support for the services of The Center.

Adaptive Programs

May 21, 1991

Dear Ricardo:
This note is to thank the Santa Barbara Research Center "Give Once" Club for the wonderful tax-deductible donation that will help three campers attend the upcoming Santa Barbara Junior Wheelchair Sports Camp. It will be held at the University of California, Santa Barbara on August 20-24, 1991.

We expect about 45 children this year. I have been in touch with five new children who will truly benefit from this program.

Because of this type of program, we had three children who competed in the Far West Nationals in Arizona last month and they came home with gold and silver in their division in track and swimming events. Three children are attending college, one at UCSB.

If you or anyone at Santa Barbara Research Center has a chance to visit the camp, please feel free to drop by.

Thank you again for your support, and for being part of the 6th Junior Wheelchair Sports Camp.

Sincerely yours
Mariana de SENA
Recreation Supervisor

Dear Mr. Garcia:

Thank you for your check for the Integrated After School Program for substantially handicapped elementary school age children. It was a nice surprise to open your letter!

We will keep you posted on the progress of this program. Again, thank you for your support.

Sincerely,
Katharine R. Humphreys
Program Coordinator-Member of the ERA Group

Santa Barbara Council on Alcoholism and Drug Abuse
An Affiliate of the National Council on Alcoholism and Drug Dependence, Inc.
P.O. Box 28 • Santa Barbara, California 93102 • (805) 963-1433 • FAX (805) 963-4096

June 11, 1991

Dear Mr. Garcia:
The Santa Barbara Council on Alcoholism and Drug Abuse and all participants in the Fighting Back effort can be thankful that the Santa Barbara Research Center's Employees "Give Once" Club has chosen to support the Fighting Back Project.

Fighting Back is a community initiative of the entire South Coast to determine and address the problems associated with drug and alcohol abuse. Individuals, agencies, businesses and others have joined together to create a comprehensive plan to deal with the problems of Greater Santa Barbara. Your support helps ensure the success of the project.

Once more, thank you for your generosity, and for your concern for the health, well being and quality of life along the South Coast.

Sincerely,



GOLETA UNION SCHOOL DISTRICT

June 27, 1991

Dear Ricardo:
As school is over I reflect back over my first year at La Patera. One of the biggest boosts to our school and our educational program was the gift from the GO Club of SBRC toward our Outdoor Science Program. Again, THANK YOU. Your donation serviced 20 students and made it possible for every child to attend who wished to go. Without your contribution this would not have been possible. We fund-raised until "blue in the face," but many children did not have the financial resources and/or available community support to make much of a dent in the final cost.

Your support is appreciated.

Sincerely,
Dennis Naiman
Principal

June 13, 1991

Dear Mr. Garcia,
On behalf of the Board of Directors, Staff, Volunteers, and Recipients of Operation Outreach I would like to thank you for your donation received June 11. As a community outreach program we now help more than 100 families per week with food, clothing, temporary living care, and many other services. Your contribution helps make all of this possible.

Again, we wish to thank you for your support of Operation Outreach.

In His Service,
Sandy Fleischer, Executive Director
Santa Ynez Valley Operation Outreach

Barbara Ceriale, "is based on the low risk design options, not the high risk options. So, what we are proposing to implement won't significantly affect the design."

IDEA stands for Integrated Detector Electronics Assembly. This assembly, produced by SBRC, is the "eye" of the Hughes Night Vision System (HNVS). According to Dennis, the IDEA detector is unique because the electronics are integrated with the detector. We then deliver that product to EDSG for integration into the larger night vision system. The HNVS is used on the F-18, on military helicopters, and for search and rescue operations.

The IDEA DFMA was necessary to curb the growing IDEA program costs. "We're in the process now of looking at all the different suggestions that were made during the DFMA," said Dennis. "We're going to select the ones we think are the most viable cost reduction ideas we can implement right away because we need those savings now. Then, we'll submit a proposal to EDSG to fund the implementation costs."

IDEA Systems Engineer Gary Barnett stressed follow-through: "About every six months, we need to bring everybody involved on the program together—engineers, operators, etc.—and ask them 'What's bothering you? What's taking time? What isn't working right?' Then, take those action items and go work them."

"DMFA is not a one shot effort on a program," said Barbara, "especially if it's done very early in the development stages. You learn a lot when you're designing a product and also when you build your first unit. So, follow-up DFMA's are very helpful."

SBRC now has four DFMA facilitators—Barbara, Mike Makowski, Bob Jensen, and Bob Leite. They will be doing their first DFMA solo (without the help of EDSG facilitators Bill Coe, Ed Torres, and Ron Carmichael) this month for the STRIX Program.

“ “ “ “

The DFMA process is instantaneous. If you don't have an instantaneous answer, it's not worth spending the time on it. That's what really motivates people. They can get answers quickly.

—Dennis Maloy,
IDEA Program Manager

Can't beat a Hughes-Hughes team.

—Dick Seaberg,
EDSG Vice President

There is a key linkage between cmi and DFMA—both empower individuals and teams to make changes to their products, services, and processes, which create measurable improvements.

The recent IDEA DFMA is a superb example of cmi.

—Jim Brill,
EDSG Assistant Manager,
Division 73

In three days you can come up with a whole new design and have it all costed out. The cost analysis is real enlightening. There are a lot of estimates, but there's a lot of basis in fact there. That's an incredible accomplishment in such a short time.

—Barbara Ceriale,
DFMA Facilitator

” ” ” ”

A videotape of the IDEA DFMA final presentation is available by calling Video Services at extension 4983.

Calvin & Wilson Ace New Certification Exam

Theresa Calvin, Supervisor, Configuration/Data Management, and Margaret Wilson, Configuration/Data Management Administrator, Sr., passed a rigorous 8-hour exam for configuration and data management certification.

This was the first exam of its kind, which was administered by American Defense Preparedness Association (ADPA) in Arlington, Virginia on May 13.

As a result of their high scores, Theresa is now certified as a Data Management Specialist and Margaret is certified as a Configuration Management Specialist. Both Theresa and Margaret are proposal/contract compliance experts in the Configuration/Data Management Office.

More About CDMO

The Configuration/Data Management Office (CDMO) is part of the Systems Division Engineering Services Laboratory. CDMO staff is responsible for implementing our configuration and data management systems in support of customer solicitations and contractual requirements. They are among the first and the last to participate in the life-cycle of our products.

What about configuration baselines, ECPs, RD/W, change effectivities, CRBs, CDRLs, DIDs, as-built lists, traceability, interchangeability, usage effectivity, item dispositions, data banks, software control items? Ask someone in CDMO.

Questions about contract requirements, DOD/MIL standards and specifications? Go to CDMO.

"Without CDMO we would soon lose sight of configuration and data requirements, and would have to guess at what we designed, built, and delivered to our customers, and why," said John Watson, CDMO Manager.

More About ADPA

The ADPA represents the interests of both government and industry. It has just recently initiated a program offering study guides and examinations for award of ADPA Configuration Management and Data Management Certificates.

SBRC in the Community

SALUTE TO OUR TEACHERS



Photo: Bob Casper

During the week of May 6, thanks and appreciation were bestowed upon the unsung heroes and heroines in our community, the teachers, who day in and day out play such an influential and important role.

In celebration of this eventful week, our lit display depicting SBRC's state-of-the-art technology, including our new clean-room facilities as well as our involvement in the Galileo and Hubble projects, was placed in Dos Pueblos High School's Library. Presenters **Jana Devine** (center in photo above), **Carrie Ericksen**, **Linda Fulton**, **Alan Hoffman** and **Tom Pagano** all shared their expertise and knowledge with the students.

Because Dos Pueblos (our adopted school) celebrates its 25th anniversary this year, it was especially significant to present to the teachers and staff a silver-etched coaster with the SBRC and DP logos and the inscription "Creating Futures Together."

SBRC wishes to thank ALL teachers for their positive and caring contributions—Margaret Finlay

SBRC FUNDS SCHOLARSHIP



Photo: Craig Cook

On behalf of SBRC, **Margaret Finlay**, (center, left) Adopt-A-School liaison, presented a check to **Jane Maxwell** (center, right), principal of Dos Pueblos High School. Also participating in the check presentation were **John Bowen** (right), Director of Human Resources and Administration, and **Chris Mangini** (left), former Head, Personnel Development. SBRC's donation funds the President's Award Scholarship and contributes to other school programs.

Dos Pueblos High School has been SBRC's adopted school since 1983. The Adopt-A-School Program was established by the Industry Education Council (IEC). SBRC's relationship with Dos Pueblos was the first of its kind in the Santa Barbara area. Over 45 Adopt-A-School partnerships now exist between public schools and businesses in Santa Barbara County

—Margaret Finlay

"June" Perfect Timekeepers Win \$50 Bonds

You, too, Could Win a \$50 U.S. Savings Bond

By Charlene McGinnis

Are you ready? Do you maintain your timecard in accordance with the *Timekeeping Manual*? Have you passed a timekeeping audit this month? If so, you're eligible for the monthly drawing for a \$50 U.S. Savings Bond. There are three winners every month.

June's winners include two from the Manufacturing Division—**Mary Nunez**, *Fabrication and Assembly* ("You're kidding! How exciting! Thank you!") and **David Brumble**, *Production Control* ("Alright! I can't believe it. It's the first thing I've ever won in my life."). Detector Division's **Lee Ruzicka**, *FPA Integration and Test Department*, also won ("Gosh, thank you.").

Remember, the timekeeping auditors make the rounds on a regular basis, so be prepared. You may be one of the next big winners!

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) *Ethics Administrator Jack Murray* on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

Benefits Fair *coming soon*

September 24, 25, and 26
more information in the September newsletter

Q & A / benefits

This is part of a continuing series to inform employees about benefits and procedures. The questions below are among those employees frequently ask Benefits representatives. Employees who have questions they would like answered in this column may submit them to: *Benefits Questions, B27, MS81.*

Q. How much basic life insurance do I have?

A. All employees have company-paid core Basic Life Insurance of \$50,000.

Q. May I have more than the \$50,000 life insurance?

A. Yes. You may choose Optional Life Insurance in the amount of 1/2, 1, 1-1/2, 2, 3, 4, or 5 times your annual flex salary. If you did not sign up for this benefit during the last open enrollment, you may purchase the insurance upon approval of an "Evidence of Insurability" form completed by you and submitted to the insurance carrier by the Benefits Office. The carrier will either approve or disapprove your request and may check your medical history. Call extension 7124 or come by the Benefits Office to get the form. If approved, coverage begins on the first of the month following the approval. Rates for this coverage differ depending upon age and smoking or non-smoking status. There will NOT be an annual open enrollment for optional life insurance.

Q. What is the Voluntary Accidental Death and Dismemberment (VAD&D) benefit?

A. This benefit covers unexpected death only from unintentional accident or dismemberment. Death from disease or illness is not covered. Premiums depend upon the level of benefit and who is covered. You may select benefit levels from \$10,000 to \$500,000 for accidental death, and you may cover

yourself, yourself and family, yourself and spouse, or yourself and children. The cost varies by benefit amount and coverage level. Changes in coverage (decreases and adding or dropping dependent coverage) may only be made following a major life event or during open enrollment. VAD&D is a pretax option. Employees may purchase VAD&D using the SPECTRUM credit allowance on a pre-tax basis.

Q. What other life insurance do I have?

A. Travel accident insurance is a company-paid basic policy of \$200,000. It covers every employee who dies while traveling on company business.

Q. I just married and would like to insure my spouse with life insurance. What are the dependent coverage amounts?

A. You may insure the life of your spouse for \$5,000, \$10,000, \$15,000, \$20,000, or \$25,000 within 30 days of marriage. Contact the Benefits Office for instructions on what needs to be done to ensure your spouse obtains appropriate benefits.

Dependent life insurance for spouse and children may be cancelled at any time, but there will NOT be an annual open enrollment for dependent life insurance.

If you need further assistance, call SBRC's Benefits Department at extension 7124.

May Award Recipients

On May 16, 1991, a large group of inventors and authors assembled to receive their awards presented by SBRC's *Director of Technology, Rich Thom*. Earning awards in May were:

For published papers: Bill Ahlgren, Patricia Bruington, Joan Chia, Ri-Pen Chou, Lloyd De Armond, Ricardo Garcia, Bill Hamilton, Jeffrey Hanson, Richard Herald, Paul Herning, Amy Hjortland, Peter Honor, Jay James (3 papers), Scott Johnson, Millard Livermore, David A. Olson, Dana Price, Bill Radford, Michael Ray, Ronald Risser, Mitra Sen, John Stannard, Andy Stevens, Paul Thurlow, Steven Tighe, Tse Tung, Peter Villa, Devin Walsh, and Charles Weston.

Invention Disclosure Awards: Bill Ahlgren, Gary Barnett, Russ Granneman, Bill Hamilton, Art Hardy, Jr., Lloyd Ingle, Adam Kennedy, John Koontz, Jim McDonald, Paul Norton (two awards), and Ralph Ruth.

Trade Secret Awards: Bill Ahlgren, Bill Hamilton, Adam Kennedy, and Ralph Ruth.

Patent Application Awards: Steve Propst and Geoff Walter.

Issued Patent Awards: Bill Ahlgren (two awards), Russ Granneman (two awards), Mike Moroz, and Paul Norton (two awards).

Earning Issued Patent Plaque Awards in May were: Bill Ahlgren, John deBruin (two plaque awards), Tom Casselman, Art Cockrum, John Davis, Jr., Will Frye, Paul Herning, Mary Hewitt (two awards), Murray Kalisher, Tom Koch, Nevil Maassen (two awards), Aram Mika, Len Peck, Jim Phillips (two awards), Tim Romano, Wes Sargent, and Eric Schulte. Don Salzer, recently retired, also earned two patent plaques.



photo: Craig Cook

Receiving Published Paper Awards in May were: (seated, from left) Richard Herald, Jay James, Paul Thurlow, Paul Herning (standing, from left) Ricardo Garcia, Steven Tighe, Jeff Hanson, David Olson, Tse Tung, Bill Hamilton, John Stannard, Michael Ray, Lloyd De Armond, and Scott Johnson. (See "May Award" text for the names of other award recipients not present for the photograph.)



photo: Craig Cook

Receiving Invention Awards in May were: (seated, from left) Paul Herning, John deBruin, and Will Frye (standing, from left) Mary Hewitt, Adam Kennedy, John Davis, Jr., Murray Kalisher, Jim MacDonald, Tom Koch, Russ Granneman, Bill Hamilton, Ralph Ruth, and Tim Romano. (See "May Award" text for names of other award recipients not present for the photograph.)

Innovation Corner

In an *Innovation Corner* in future issues, we'll focus on specific inventions in addition to the inventors and published papers. We'll highlight selected innovations and how they are likely to benefit the company. We'll also take a look at how SBRC invention disclosure and issued patent statistics compare with other Hughes groups and the industry.

Strategic Plan Update

Peggy Peffley Discusses the importance of the Malcolm Baldrige National Quality Award and Benchmarking

By Gage Ricard

A freer exchange of ideas and information is part of the cultural change that is going on throughout the company. Think of cmi, Total Quality, teaming, CALS, concurrent engineering, the Malcolm Baldrige Award, and benchmarking—these are taking root at SBRC, at Hughes, and at companies across the country.

Peggy Peffley, Manager, Product Assurance, recently returned from a Malcolm Baldrige Regional Conference in Atlanta that underscored the importance of this cultural change.

The Malcolm Baldrige National Quality Award is an annual award to recognize U.S. companies that excel in quality achievement and quality management.

"The Baldrige Award is getting national acclaim," said Peggy. "Companies are realizing that even if they don't compete, or do so and lose, just going through the process is very valuable. They can identify their strengths and weaknesses, and determine very specific areas to work on."

"At the conference," Peggy continued, "attendees were able to ask the winners lots of questions directly—'How did you attain your high level of quality to be selected as a world class organization? How did you get there? Who did your Baldrige assessment? How did you do it? How did you fund it? etc.'"

According to the Malcolm Baldrige winners, the keys to success were total commitment, involvement, and a good dose of blind faith. The winners had commitment from management to follow through with the cultural change;

"By identifying who's the best, by identifying your strengths and weaknesses, you find out how to improve."

—Peggy Peffley

involvement from the employees to make the cultural change happen; and then blind faith that this indeed would work, because tangible results don't appear immediately. Peggy added, it takes a financial commitment, too, but not to focus on the money issue, or when benefits can be quantified. That defeats the process. In the end, the results will exceed everyone's expectations.

Another bit of advice from a Baldrige winner: "steal shamelessly." Don't struggle to accomplish what

has already been accomplished. Shop for the best from other companies, integrate those ideas into your own company, and move forward from there. This is, in essence, what benchmarking is all about.

During the past year, SBRC has assessed itself based on the Baldrige criteria. In March, **Ray Frazier**, Director, Product Assurance, described that process and published our "score" in the *SBRC News*. That score established our baseline. The SBRC Baldrige Self-Assessment group will reconvene later this month to conduct the assessment again. The group will compare our new scores against the baseline—did we improve? As we look at our internal performance, we'll be looking externally, too, and establishing benchmarks. How do we compare to world-class organizations? To our competitors?

Benchmarking is key to the Baldrige process, especially in evaluating customer satisfaction. "It takes a lot of time and financial resources to benchmark," said Peggy. "First you must research your own company's strengths and weaknesses. We have done this using the Baldrige criteria for self-assessment. Then, you need to research other companies, by asking 'Who's the best overall? Who's the best in our weakest areas?' This will help us realize our objective as stated in the *Strategic Plan*: "To continually improve quality in all our endeavors."

For more information on Benchmarking and the Malcolm Baldrige Self-Assessment Criteria, contact Peggy Peffley, extension 7434.

Profiles in Excellence

From Dottie McKiddie

This is part of a continuing series of articles profiling excellent performers at SBRC. Gage Ricard was nominated by Operations Group management for the 1990 Corporate Superior Performance Award.



photo: Craig Cook

Gage Ricard, Senior Technical Editor, Publications, has been with SBRC for more than five years. Most of you know her as the editor of this *SBRC News*. Because of limited staff, Gage has had to devote most of her time to proposal activities. Until recently, she juggled proposals, reports, technical papers, and classified presentations in addition to the *SBRC News*. Lately, Gage has devoted full-time effort to the *SBRC News*, which has resulted in its improved design and in-depth content. She has developed the role of the *News* to facilitate communication between employees and management, and to keep all of us informed of current company news, employee benefits, and community involvement.

Gage has also made major contributions to proposal efforts resulting in new contract awards, among those, AAWS-M, MATHSFA, and MODIS-N. Her excellent organizational skills and efficiency enable her to manage production of large documents and presentations in a timely manner. She worked diligently on these projects to ensure timely completion and submission, organizing material, establishing formats, and conducting team meetings with support groups in the Publications Department.

Affirmative Action Office Introduces **forums**

Women & minorities are invited to form meaningful networks

By Sarah Weinberg

SBRC, like all companies in our industry, has entered the age of the diversified employee base. This diversification brings with it an opportunity to change the existing perceptions of various employee groups within the business environment.

Female and minority forums or networks are dedicated to the development of a progressive environment that will foster growth, utilization, and recognition of all employees at SBRC.

Forums, chartered under the SBRC Employees Association, offer an opportunity to meet and network with employees from all organizations within the company who share similar interests.

If you are interested in participating in a forum or network at SBRC, contact **Sarah Weinberg, Affirmative Action Administrator**, extension 7035.

GM/H Stock Share Values

The GM/H stock share values in effect as of May 31, 1991:

Average Purchase Price: 19.119

Savings Plan Unit Values

The unit values in effect as of May 31, 1991:

Fixed Income Fund:
4.6321

Equity Fund:
6.9833

Balanced Fund:
5.5498



Recycle Your SB Telephone Books

By Al Noel

In cooperation with the Community Environmental Council (CEC) and the Solid Waste Management Division of Santa Barbara County, the SBRC/Goleta custodial staff will be collecting old Santa Barbara telephone books for recycling. This will take place in conjunction with the distribution of the new books during the last two weeks in August.

Employees may leave their old phone books on the floor next to trash barrels that are marked "RECYCLE PAPER." A special custodial team will collect the books each night and take them to a central location where the CEC will pick them up.

During 1990, the Telephone Book Recycling Program diverted over 60 tons of old phone books from the landfill. The county-wide goal for this year is 100 tons. Please do your part by contributing to this important drive.

If you have any questions, or if you would like to arrange for a special pickup, please call **Al Noel, Custodial Supervisor**, at extension 4307. Thank you in advance for helping to make this year's program a success.

The SBRC News—published in the interest of the employees of
SANTA BARBARA RESEARCH CENTER
A subsidiary of Hughes

Editor-in-Chief—Tom Ball
Editor—Gage Ricard
Editorial Advisor—Rosalie Breeland
Advisor: John Bowen
STAFF

Greg Krueger • Jerry LaPisto • Paula Morris
Steve Walker • Sarah Wingren • Kate Yarbrough

Address comments or stories for the newsletter to: Gage Ricard, B31/MS1, ext. 4947

1990 Published Paper Award Recipients:

Seated, from left: Bill Hamilton, Michele McNamee, Judy Slager, and Scott Johnson. Standing, from left: Ken Kosai, Art Cockrum, Jay James, Ralph Ruth, Bill Payne, Bill Radford, Bill Ahlgren, Mike Moroz, Alan Hoffinan, Devin Walsh, Chris Hougen, Paul Norton, Jerry Wilson, and Lane Rubin. (See listing on page 7 for names of other recipients of Published Paper Awards not present for the photograph.)



photo: Craig Cook

Receiving Invention Disclosure Awards in 1990 were:

Seated, from left: Charles Christian, Jeff Peterson, Herb Hettich, George Chapman, and Paul Norton. Standing from left: Tim Romano, Vince Liguori, Adam Kennedy, Art Eneim, Ichiro Kasai, Karl Neumann, Steve Lawrence, Mike Jack, Bill Radford, and Jerry Wilson.



photo: Craig Cook

Recipients of Issued Patent Awards Last Year Included:

Seated, from left: Tom Tourville, Will Frye, Jim Phillips, George Chapman, and Paul Norton. Standing, from left: Bill Ahlgren, Tim Romano, Len Peck, Tom Pagano, Steve Ferry, Bob Turtle, Fred Neitzel, Michael Ray, Mike Jack, and Ken Kosai.



photo: Craig Cook

Ten SBRC Inventors Receive Their Awards for Issued Patents in January 1991:

Seated, from left: Bob Turtle, Fred Neitzel, Michael Ray, George Chapman, and Mike Jack. Standing, from left: Mike Moroz, Len Peck, Joe Santana, Tim Romano, and Lloyd Ingle.



photo: Matt Weinberg

Photo, left: Prolific inventor Mike Jack (left) received his Plaque Award from Director of Technology Rich Thom for issued patent No. 4,927,773, "Method of Minimizing Implant-Related Damage to a Group II-VI Semiconductor Material." Co-inventors were George Chapman and Michael Ray, also from the Detector Division's Advanced Development Laboratory.



photo: Matt Weinberg

Photo, right: Mike Moroz proudly holds his plaque for issued patent No. 4,914,495 for a trapping mode photoconductor. Paul Norton and Carol Talley were co-inventors.



photo: Matt Weinberg



1990 A Banner Year

Based on the first half of this year, 1991 award activity may be on its way to equalling or bettering last year's record. 1990 was a banner year for both published paper and invention awards. Indeed, award ceremonies held in July and September last year, and again in January this year, could barely keep up with the pace of earned awards.

As shown by the accompanying photos, SBRC has no short supply of creative, technical talent. Because not all award recipients could attend the ceremonies, many more earned awards who, unfortunately, do not appear in these photographs.



photo: Matt Weinberg

Len Peck (left) and Fred Neitzel submitted their disclosure for an integrated detector dewar cryoengine way back in 1985. Their patent, 4,918,308, issued in 1990, proves that good things are worth waiting for.



photo: Matt Weinberg

Systems Division's Bob Turtle (left) earned his Plaque Award for U.S. Patent 4,929,040, for a five mirror, two perpendicular plane image derotator, co-invented by Tom Pagano. Rich Thom (right) presented the plaque to Bob.

SBRC INVENTORS & AUTHORS

1990 AWARDS 1991

By Rich Thom

SBRC inventors are creating their new ideas at a record pace, and SBRC authors are just as active in publishing the results of our technological advances. These many technical contributors are helping in a key way to achieve the company's Vision, the cornerstone of our Strategic Plan, which reads: "Through Technology and Innovation, to be a Premier Producer of Electro-Optical Devices, Sensors, and Specialized Semiconductor Components."

"Enhancing technological leadership" is one of the five objectives of SBRC's Strategic Plan. A company's long-term success in meeting this objective can be assessed by metrics such as its win record of competitive technology development contracts, as well as the strength of its new business forecast. Invention disclosures, issued patents, and technical papers and presentations, however, also provide a good thermometer for measuring technical leadership. By all of these measures, SBRC's future will remain bright indeed.

SBRC Invention and Published Paper Awards Presented July 1990 Through January 1991

Published Paper Award	Invention Disclosure Award	Patent Application Award	Issued Patent Award	Issued Patent Plaque Award
W. L. Ahlgren*	G. A. Bunson	J. E. Clement	W. L. Ahlgren*	W. L. Ahlgren
H. W. Bailey*	P. T. Charles	C. A. Cockrum	P. R. Bratt	G. R. Chapman
S. H. Black*	J. K. Chia	R. E. Eck	T. N. Casselman*	R. E. Eck
C. A. Cockrum*	C. E. Christian	A. A. Eneim	G. R. Chapman	S. J. Ferry
E. L. Divita	A. L. DeForrest	A. H. Hardy, Jr.	C. A. Cockrum*	M. D. Jack
J. A. Finch*	A. A. Eneim	M. D. Jack*	J. A. Davis, Jr.	K. Kosai
B. Gin	R. D. Granneman*	A. M. Kennedy	J. B. deBruin*	M. Moroz
W. J. Hamilton, Jr.*	A. H. Hardy, Jr.	J. S. Lee	S. J. Ferry*	F. J. Neitzel
A. W. Hoffman	H. L. Hettich	N. Q. Maassen	W. H. Frye	P. R. Norton
C. A. Hougen*	A. W. Holmes	K. H. Neumann	A. H. Hardy, Jr.	T. S. Pagano
J. B. James*	M. D. Jack*	P. R. Norton	P. E. Herning	L. E. Peck
S. M. Johnson*	I. Kasai	L. E. Peck*	M. J. Hewitt*	M. Ray
M. H. Kalisher*	K. Kosai	W. A. Radford	L. D. Ingle	T. S. Romano
K. Kosai*	A. M. Kennedy	T. S. Romano*	M. D. Jack*	J. E. Stannard
A. J. Lewis*	C. J. Kent	J. L. Vampola	M. H. Kalisher	T. W. Tourville
M. C. McNamee	S. L. Lawrence	R. E. Zahuta	T. L. Koch	R. R. Turtle
M. Moroz*	V. Liguori		N. Q. Maassen*	
P. R. Norton*	N. Q. Maassen*		A. M. Mika	
W. J. Payne	F. R. Malinowski		J. M. Myrosznyk	
W. A. Radford*	W. O. McKeag		F. J. Neitzel	
L. H. Rubin*	K. H. Neumann		P. R. Norton	
R. P. Ruth*	P. R. Norton*		T. S. Pagano	
E. F. Schulte	E. A. Patten		L. E. Peck*	
J. H. Slager	L. E. Peck*		J. D. Phillips*	
J. E. Stannard	J. M. Peterson		M. Ray	
D. D. Thornton*	S. H. Propst*		D. R. Rhiger*	
D. T. Walsh	W. A. Radford		T. S. Romano*	
J. T. Williams	M. Ray		J. P. Rosbeck	
J. A. Wilson	T. S. Romano*		E. E. Russell	
	C. L. Shock*		D. E. Salzer (R)*	
	P. S. Sugino		J. A. Santana	
	G. A. Walter*		W. P. Sargent	
	J. A. Wilson		E. F. Schulte*	
	R. E. Zahuta		P. S. Sugino	
			R. D. Thom	
			R. R. Turtle	
			J. A. Wilson	

*Received multiple awards during this period.
(R) - Retired.

Award Programs

The company recognizes the significance of the invention process and professional publications through its Invention Award and Published Paper Award programs. These programs are intended not only to reward inventors and authors financially but also to provide widespread, well-earned recognition of their achievements. In awards presentations held several times a year, award checks for published papers and inventions, and plaques for issued patents, are presented to the inventors and authors.

Inventors are recognized at several stages in the process of securing a U.S. Patent. After submitting an invention disclosure, inventors receive an Invention Disclosure Award if, based on the assessment of the company's Invention Evaluation Committee, the inventor's idea has merit, and sufficient facts and data have been collected to proceed with processing of the invention. At that time the company elects to either pursue filing of the invention with the U.S. Patent and Trademark Office, protect the idea as a trade secret, or take other action such as, for example, referring the disclosure to another Hughes Group if the invention is outside the scope of SBRC's technical or business areas. Another award is given when the patent application for the invention is filed with the U.S. Government. A third award is made when the major event occurs—issuance of the patent. Finally, an attractive plaque which reproduces the first page of the patent is also presented to the inventor a few months after the Issued Patent Award.

The company may also elect to give Trade Secret Awards, based on the invention disclosure.

Awards are also given for the publication of professional papers and books outside the company on subjects meaningfully related to our business.



Congratulations to the winners of the first annual Employees Art & Photography Show, sponsored by the Employees Association. Also, thanks to all the participants—because of you the overall show was judged a success!

If you have any comments on this year's show, or recommendations on how we can make next year's show even better, please send your comments to: SBRCEA, B27, MS124.

For "Best Painting"



1st – Jesse Garcia, "CLOWN"

photo: Craig Cook

For "Best Photograph"



1st – Dick Julian, "WINTER FOREST"

photo: Craig Cook



2nd – Helen Buller, "BOAT IN A COVE"

photo: Craig Cook



2nd – Craig Cook, "UNTITLED" (Otter)

photo: Matt Weinberg



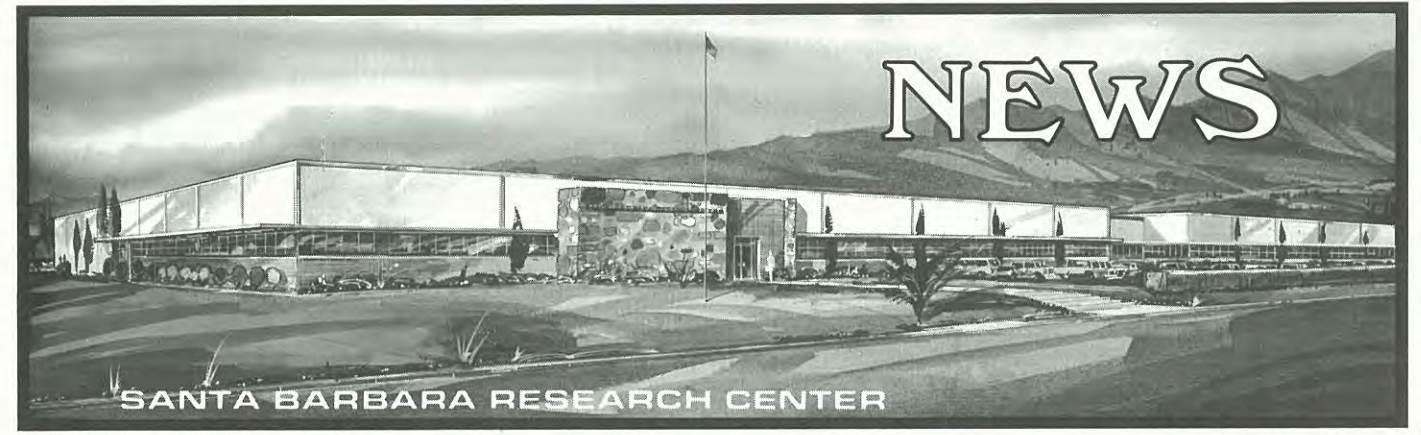
3rd – Timothy Markonis, "RIVER VISTA"

photo: Craig Cook



3rd – Rich Thom, "MIDDAY REST"

photo: Craig Cook



September 1991

NASA Selects SBRC for Negotiations on Two New Contracts: EOSP Hardware Phase and TRMM/VIRS Study

By Gage Ricard

Based on two new contracts, currently being negotiated, SBRC's instrument contribution to NASA's Mission to Planet Earth recently grew to include the Earth Observing Scanning Polarimeter (EOSP) and, potentially, the Tropical Rainfall Measuring Mission's Visible Infrared Scanner (TRMM/VIRS).

On July 22, SBRC received word from NASA's Goddard Space Flight Center that SBRC had been selected for final negotiations for the EOSP Phase C/D hardware contract. The contract is expected to be awarded by the end of this year.

SBRC's Ed Russell, *Senior Scientist*, and Jerry Brown, *Program Manager*, are key members on NASA's EOSP science team, which is led by Goddard's Dr. Larry Travis.

"EOSP's function is twofold," said Aram Mika, *Vice President and Manager of the Systems Division*. "It will characterize the atmosphere, measuring such things as optical thickness, aerosol distribution, and particle size. That characterization, in turn, will be used to correct measurements made by other Earth Observing System (EOS) instruments, such as

MODIS-N. Knowing these measurements, scientists can remove the effects of the atmosphere from their data."

SBRC also received word that it will participate in the Phase-B Study of TRMM/VIRS, another Earth observing instrument.

(continued on page 8)

MODIS-N Update: It's official! SBRC President Dr. Fletcher Phillips signed the contract for the \$179.6 million program on August 21.



News Debuts on Recycled Paper

The *SBRC News* is now printed on recycled white paper so that it, in turn, can be recycled (only after you have finished reading it, though).

The *News* is printed on Halo-paque 70# Text, which is a 50% recycled paper with 10% post-consumer waste. This is a start in the right direction. Post-consumer waste is "used" home or office paper (the stuff we particularly want to re-use); the balance of the recycled materials are typically paper mill scraps.

So, read it and reap again by recycling the *News*.

Recycling Symbols



This symbol is used on paper that has been recycled, e.g., the SBRC News' paper.



This symbol is used on unrecycled paper that can be recycled.

SBRC in the Community

President's Award

By Margaret Finlay

Dr. Phillips presented a plaque and check to SBRC President's Award recipient, Eric Poolman, the outstanding Math/Science student at our adopted school, Dos Pueblos High School (DP).

Each year a committee selects the student best qualified to receive this award to help further the winner's college education.

In a school award ceremony at DP, Eric also received an inscribed perpetual plaque. This plaque, bearing the names of all of the SBRC President's Award recipients since 1983, is prominently displayed in the hallway of the school.



photo: Bob Casper

Dr. Phillips presents the President's Award to outstanding high-school student Eric Poolman.

and qualifications, unbeknownst to Eric. As a recipient of this award, Eric will fly to New York and stay at the Waldorf Astoria Hotel for four days. He will attend a dinner with former presidents, star athletes, Nobel Prize winners, and

Eric excels in many areas and has won many awards. According to a White House news release, Eric was among the few who advanced to become a finalist in the 1991 Presidential Scholars Program (competing against 2.5 million graduating high school seniors).

Additionally, he received the American Academy of Achievement Golden Plate Award. The La Cumbre Merchants Association forwarded his name

other high achievers.

A 4.5-grade point average student, Eric is also the recipient of the Bausch and Lomb Science Award, the Bank of America Plaque for science and mathematics, the David S. Jordan Scholar Award from Stanford University (where he will attend in the fall), as well as numerous math and science awards for superior achievement from UCSB and Westmont College.

Participating in the Mock Trial Team, Eric was a member when Dos Pueblos won the California Mock Trial competition (1990 and 1991).

A theater buff, Eric enjoys performing the lead in DP's plays, the Improvisational and Children's Theater Troupes, and was on the Western region's runner-up troupe in the Bravo Television National Theater Competition. As a member of the school varsity swim and water polo team, he swam his way through many winning competitions, including the Water-Polo League Champions (1989-90, 1990-91).

This summer, Eric is working at UCSB in the Center for Quantized Electronic Structures (QUEST). QUEST is a program on the cutting edge of science and technology that ties together the chemistry, physics, and engineering departments on campus.

Whatever Eric is involved in, you can be sure that he will bring zest and excellence to each endeavor.

RETIREE NEWS



photo: Craig Cook

If you see George Christner's car, you'll know what he's been doing for the past six months. He drives a very stylish Heritage 500K replica of a 1934 Mercedes Benz that he built himself. The car turns heads as George turns corners. The authentic look of the model belies its 350 V-8 Chevy engine and modern luxury features, such as cruise control, power windows, tilt wheel, and tape deck. George drives the car regularly, so there's a good chance you'll see his elegant white vintage vehicle in motion.

GO Club Distribution Statement

1991 year-to-date disbursements help over 125 organizations

Revenue

Employee Deductions (PR009)	64624.10
Interest Savings (bank statement)	267.70
Interest Checking (bank statement)	315.87

Total Available for Disbursement	65207.67
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GO Club Goleta No Preference (6/27/91)	28666.30
GO Club Santa Maria No Preference	4527.43

Preference Disbursements, Santa Barbara & Santa Maria

Access Theatre	148.88
Afro-American Community Center	73.22
After-School Program (YMCA)	107.88
Alpha Training Center	83.32
Alzheimer's Disease Assoc.	356.95
American Cancer Society	1678.40
American Diabetes Assoc.	746.08
American Heart Assoc.	508.42
American Lung Assoc.	188.65
American Lupus Society	150.86
American Red Cross (SM)	278.00
Arthritis Foundation	428.98
Big Brothers/Big Sisters of SB	169.03
Blue Jackets Teenage Club	61.88
Boy Scouts, Del Norte District	26.00
Boy Scouts, Mission Council	272.54
Boys Club, Carpinteria	169.00
Boys Club, Goleta	598.54
Boys Club, Santa Barbara	235.66
Call Line	140.56
CALM	1039.64
Camp Fire, Lompoc Council	78.00
Cancer Foundation of SB	506.40
Casa Serena	330.06
Catholic Charities, Lompoc	82.50
Catholic Charities, Santa Maria	104.00
Catholic Social Services	785.49
Centro Familiar	13.00
CHA (Combined Health Agencies), SM	9.50*
Child Protection Council, SM	52.00
Children's Health Disability	19.50
Children's Home Society	417.94
Children's Home Society, SM	149.93
City of Hope	345.54
Civil Air Patrol	272.66
Combined Health Agencies Drive	611.22
Community Environ. Council	52.00
Cottage Hospital, Neonatal Care	109.00
Council of Christmas Cheer	358.18
Devereux Foundation	13.00
Drug Abuse Prevention Center	600.60
Easy Lift Transportation	207.45
Food Bank	217.16
Friends of St. Vincent School	180.70
Friendship Center	200.44
Girl Scouts Tres Condados	109.06
Girls Club, Carpinteria	26.00
Girls Club, Goleta Valley	94.88
Girls Club of Greater SB	136.66
Girls Club of Lompoc	140.54
Goleta Valley Comm. Hospital	13.00
Good Samaritan Shelter	143.00
Guide Dogs for the Blind, Inc.	408.29
Hospice	994.78
Hospice of Lompoc	32.50
Hospitality House	6.50
Humane Society	1139.68

Independent Living Resource Ctr.	91.00
Int'l Assoc. of Cancer Victors & Friends	13.00
Isla Vista Youth Project	117.00
Klein Bottle SAY	41.50
Klein Bottle SAY, SM	58.50
Klein Bottle (shelter for delinquent children)	255.10
Let Isla Vista Eat, Inc.	26.00
Living Workshop	24.00
Lompoc Rape Crisis	401.66
Los Padres Search & Rescue Team	136.00
Lupus Found. of America	191.66
March of Dimes	130.98
Meals on Wheels	1195.16
Mental Health Assoc., SB	118.06
Mothers Against Drunk Drivers	251.65
Multiple Sclerosis Society	404.69
National Council on Alcoholism	130.00
New House	308.12
Operation Outreach	195.00
Pacific Institute for Education/Ethics in Life Science	232.24
Parents of GATE	27.83
Planned Parenthood	743.65
Rape Crisis Center	492.97
Real Help Program	26.00
SB Amateur Radio Club	65.00
SB Cystic Fibrosis Foundation	130.00
SB Night Counseling Center	32.50
SB Pregnancy Counseling Center	227.00
SB ROTC	110.50
SB Recreation Department	13.00
SB Rescue Mission	1800.05
SB Science Discovery Center	209.50
SB Youth Men's Christian Assoc.	42.60
SB Youth Employment Services	1.00
SB Youth Symphony	125.93
Salvation Army	679.33
Salvation Army, SM	91.72
Sansum Clinic Research	250.22
Santa Maria Assoc. for Retarded	124.00
Santa Maria Humane Society	255.50
Santa Maria Meals on Wheels	232.45
Shelter Serv. for Women	828.05
Shelter Serv. for Women, Lompoc	150.50
Shelter Serv. for Women, SM	134.95
South Coast Special Olympics	71.50
St. Vincent's Special Olympics	130.00
Surgical Eye Expeditions, Int'l	13.00
The Holiday Project, SB Chapter	52.00
Transition House	292.50
Transitional Ctr Women & Children	65.00
United Way, Lompoc	249.00
United Way, SM	177.76
United Way Agencies	1235.23
Villa Majella, Inc.	1030.74
Visiting Nurse Assoc.	198.52
Visiting Nurse Service, Lompoc	39.00
Visiting Nurse Services, SM	122.00
Wings of Love Christian School	29.00
WORK, Inc.	89.70
Work Training Program	18.20
Zona Seca (Community Health Task Force)	78.00

Total 'Preference' Disbursements Santa Barbara & Santa Maria	31430.37
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*Defunct agency. Funds reallocated to American Red Cross (SM)

No-Preference Disbursements, Santa Barbara

Girls Inc. of Greater Santa Barbara	1000.00
Klein Bottle Youth Programs	1300.00
Santa Barbara Visiting Nurse Assoc.	1000.00
Ellwood PTA	300.00
Multiple Sclerosis Society	1000.00
Project Interdependence	600.00
La Patera School	1000.00
Gifts of Dance DBA SB Dance Alliance	400.00
Santa Barbara Birth Resource Center	1000.00
Santa Barbara FoodBank	725.00
Santa Barbara Parks & Recreation Dept. Adaptive Program	1275.00
The Adoptive Center	1000.00
Family Services Agency	1000.00
Goleta Valley Community Center	1000.00
Tri-Counties Assoc. for Developmental Disabled	500.00
Santa Ynez Operation Outreach	1000.00
Fighting Back (SB County Council of Alcohol & Drug Abuse)	1200.00
SB Cottage Hospital Foundation (Neonatal Unit)	2000.00
SB Parks & Recreation/Summer Science Program	700.00
American Lung Assoc. of SB County	750.00
Cachuma Lake Foundation, Inc.	600.00
Community Action Commission (Isla Vista Food Distribution)	800.00
Westside Center Summer Youth Experience (Girls, Inc.)	700.00
Klein Bottle Youth Programs	500.00
Mothers Against Drunk Drivers	700.00
SB Unit for Recording for the Blind	562.50
Santa Barbara Rescue Mission	900.00
Sonflower House	405.00
4H Hearts	1000.00
Infant Day Care Nursery of the First Presbyterian Church	750.00
Isla Vista Youth Projects	1000.00
National Multiple Sclerosis Society	750.00
SB Zoological Gardens	1143.00

Total 'No-Preference' Disbursements, Santa Barbara as of 7/9/91	28560.50
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Carry forward to third quarter	689.37
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No-Preference Disbursements, Santa Maria

Life-long Learning Institute	300.00
Transition Center for Women & Children	500.00
Boys & Girls Club of Santa Maria	400.00
Visiting Nurses	324.10
Meals on Wheels	500.00
Alliance for Mentally Ill	200.00
Donati House (Smile)	300.00
American Lung Association	300.00

Total 'No-Preference' Disbursements, Santa Maria	2824.10
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Carry forward to third quarter	1703.33
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Submitted by: *Charlene D. McGinnis*
Charlene D. McGinnis, Treasurer
SBRC Employees Give Once Club
Date: 8/9/91

photo: Michael Burns



According to TES Program Manager Jerry Brown (left) and Project Engineer Steve Silverman, TES will be ready for delivery in late September.

"There were four bidders for two studies," said Aram. "The successful bidders were SBRC and Westinghouse. SBRC will now conduct a detailed Phase-B Study to conduct design trade-offs, define the design of the instrument, and analyze its performance. NASA will then choose either SBRC or Westinghouse to proceed with the hardware phase (Phase C/D) to actually build the instrument."

According to Dr. Carl Schueler, Manager, Advanced Development Programs, TRMM is a joint mission between the U.S. and Japan, which will measure rainfall and latent heat release in the Earth's intertropical convergence zone. It is one of the Earth Probes (EP), which are part of Mission to Planet Earth. These economical Earth Probes will provide early data and enhance mission reliability—NASA avoids having all of its instruments in one giant EOS basket. TRMM is scheduled to be launched in 1995.

Other Systems Division Program Updates

Other news in the Systems Division includes updates on ETM, SeaWiFS, TES, GOES-Next and GOES-2000, TIROS 2000, and EOSDIS.

On August 12, ETM was shipped to General Electric in New Jersey for integration into Landsat 6. Once final integration and testing are completed,

the satellite will be shipped to Vandenberg for a July 1992 launch on a Titan II rocket.

SeaWiFS, scheduled for a 1993 launch, is still on track. Like TRMM, SeaWiFS (Sea-Viewing, Wide-Field-of-View Sensor) is an Earth Probe instrument. SBRC continues to successfully work within the program's ambitious schedule and cost constraints.

TES (thermal-emission spectrometer), a Mars Observer instrument, is expected to be delivered to NASA's Jet Propulsion Laboratory in September for the Observer's October 1992 launch. "TES is a very exciting instrument," said Aram. "It will provide detailed spectral data on the surface and atmosphere of Mars."

Closer to home, important data about the Earth's weather may be lost if a weather satellite 'gap filler' is not put into place soon. SBRC may be asked to help provide an interim solution.

"The essence of the problem is that the current GOES-Next weather satellite contractors are experiencing many technical and schedule problems," said Aram. "The launch is now scheduled for the 4th quarter of 1992, which is three years late. Because of the delays, there is a concern that there will be an outage of the familiar weather pictures on the 6 o'clock news. Those pictures have been and are still provided by SBRC instruments, which have fortunately lasted well beyond their expected life cycles.

"There are many proposals for so-called 'gap fillers' on the table right now to determine how best to cope with a potential outage. These include borrowing satellites from the Europeans, or borrowing a Hughes-built GMS-5 spacecraft from Japan on an interim basis while the GOES-Next development continues.

"There are also other possibilities, such as the Government procuring additional spacecraft from Hughes based on the proven GOES-7 design. The Department of Commerce, specifically the National Oceanic and Atmospheric Administration, will make the decision."

Regardless of the outcome of the current GOES-Next crisis, SBRC should be in an excellent position to bid on the GOES-2000 future generation of weather satellites.

Just as there is a GOES 2000, which represents the next major upgrade of the geostationary satellites, there is a TIROS 2000, representing the next major upgrade of the polar orbiting satellites. SBRC will bid for both the TIROS (television infrared observation satellite) imager and TIROS sounder. "We expect to compete for Phase-B Studies on both of those instruments, and these will ultimately lead to a hardware (Phase C/D) competition," said Aram.

SBRC is also supporting Hughes Information Technology Corporation on a proposal for EOSDIS, the Earth Observing System Data Information System.

"EOSDIS is probably the most ambitious data management and distribution system ever envisioned in the civilian arena," said Aram. "What this system will do is collect, process, and distribute the data from all of the EOS instruments and from all of the meteorological satellites' instruments to create one central, easily accessible data base of virtually all of the important measurements on the condition of the planet."

So, including MODIS-N, all Systems are go!

JULY'S Perfect Timekeepers Win \$50 U.S. Savings Bonds

By Charlene McGinnis

Three happy gals took the Perfect Timekeeping awards for July. Fifty dollar U.S. Savings Bonds were awarded to: **Mary Dowler**, Focal Plane Array Systems Engineering, Detector Division, "That's great! That's wonderful! Thank you!"; **Jacqueline Nacapuy**, Manufacturing Engineering Systems, Detector Division, "Alright, that's good. Thank you."; and **Linda Ward**, Business Management, Systems Division, "What a treat. What fun to win one; I worked on the Savings Bond Drive. Thank you."

Are you ready? Do you maintain your time card in accordance with the Timekeeping Manual? Have you passed a timekeeping audit this month? If so, you're eligible for the monthly \$50 Savings Bonds Drawing. There are three winners every month.

Remember, the timekeeping auditors make the rounds on a regular basis, so be prepared. You may be one of the next big winners!

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) Ethics Administrator **Jack Murray** on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

Q & A / benefits

This is part of a continuing series to inform employees about benefits and procedures. The questions below are among those employees frequently ask Benefits representatives. Employees who have questions they would like answered in this column may submit them to: Benefits Questions, B27, MS81.

Q. How much interest am I earning on my 401(k) Hughes Thrift and Savings Plan?

A. The Hughes Thrift and Savings Plan is not an interest-bearing account. The way that an individual makes money on their Thrift and Savings Account is through the Company match on contributions and also through gains earned by increases in investment-option unit values.

Q. What is the Company match?

A. Employees may contribute up to 12% of their weekly base rate of pay on either a before-tax 401(k) or an after-tax 401(a) basis. The Company adds to your savings by matching contributions on the first 7% of your base rate of pay. (The company matches 100% of your contributions on the first 3% of your base rate of pay contributed to the plan, which is directed to GM-H stock. For the next 4% of base-pay employee contributions, the Company matches 75 cents of each dollar, which is invested in employee-designated funds.) Employee contributions between 8% and 12% of base rate of pay do not receive a Company match.

Q. What is meant by gains earned on increases in investment-option unit values?

A. Employees must designate how they want their contributions invested in the Thrift and Savings Plan. There are four options: Equity, Fixed, Balanced, and GM-H stock.

Thrift and Savings Plan Accounts are given a value in "units" or "shares." Units represent investment in Equity, Fixed, and Balanced Funds. Shares represent investments in GM-H Stock. Separate accounts are kept for the Equity Fund, Fixed Fund, GM-H Stock, and Balanced Fund. Over time, unit and share values change, depending on the market value of the investments in each option. Each fund is valued on the last business day of each month. This month-end unit value can be used to determine the gains on your investment.

Example:

Employee's contribution per year (\$)	Value of units(\$)	Units bought
100	1	100
100	2	50
100	3	33.3
100	4	25
<u>400</u>		<u>208.3</u>

Then, take the total number of units bought over the four-year period and multiply it by the current unit value:

$$208.3 \times \$4 = \$833.20$$

\$833.20 is the total value of your contributions plus the gains earned on your investment. It does not include the Company match, which can be added to this figure to compute the account dollar balance. This is an optimistic view of how the market will progress. Unit and Share values will continue to change in the future, and they can go down as well as up.

Q. What is a Fund Transfer?

A. A Fund Transfer allows employees to transfer funds between investment options once during every plan quarter (the Savings Plan Year begins on December 1 and ends November 31 of the following year). For example, an employee who has a \$4000 balance in the Fixed Fund may request to have from 10% up to 100% of the \$4000 transferred to one of the three remaining funds.

Transfers made by the 20th of the month are valued at that month's rate. If the 20th of the month falls on a Saturday, Sunday, or holiday, the cutoff date is the preceding business day. After the cutoff date, the transferred funds are valued at the following month's rate.

The Company-matching contribution that is made in GM-H stock may be transferred only after it has been in the employee's account for two full plan years. For example, the matching share credited to an account in plan year 1991 can be transferred to other investment funds within plan year 1994, which begins on December 1, 1993.

If you have questions about the Thrift and Savings Plan, or would like to obtain Fund Transfer Forms, call extension 7096 or extension 7112, or drop by the Benefits Office in B27.

JULY 11, 1991

Corona: The sun's glowing outer atmosphere.

Photos by Jack Brooks

SBRC Employees Head South for the Total Solar Eclipse

By Gage Ricard

To experience one of the major astronomy events of the century, the recent total solar eclipse, you had to get out of town and travel to what were fortunately easily accessible and vacation-friendly locales, such as Hawaii, the southern tip of Baja, and Mazatlan.

SBRC's Jack Brooks, John Figoski, Lupe Martinez, and Jack Weber did just that. Each traveled separately to various southern locations for their umbra-bathed, solar-eclipsed vacations.



Diamond Ring Effect: A burst of sunlight shining through a lunar valley.

Although not actually an eclipse chaser, **Jack Brooks** has seen three total eclipses now. The first one, in Boston, was under very poor circumstances. "It started raining 20 minutes prior to the eclipse. Yet, it was still dramatic."

Weather again threatened his second eclipse viewing in the Pacific Northwest. That time, though, in 1979, he accompanied real eclipse chasers—members of the Eclipse Chasers Club—on their specially outfitted, chartered 727. "To get above the clouds, we had to climb to 39,000 feet, which also happens to be the service ceiling maximum for a 727. It was essentially a three-minute eclipse, but we gained an extra minute by flying with it."

Jack had been anticipating the occurrence of this most recent eclipse years in advance. "It was obvious to me that this would be the eclipse of the century in terms of its duration (up to 6 minutes and 54 seconds) and accessibility." And, this time, the weather cooperated. There were no clouds to obscure the sun's easily obscured corona, or "crown," which appears as a gauze of light wrapped around the sun. (See Jack's photos.)

In contrast, the weather made a dramatic appearance on **John Figoski's** eclipse-sighting trip. John and his family decided to combine astronomy with the pleasure of a cruise. They made reservations a year-and-a-half in advance on the regularly scheduled Carnival cruise ship from Los Angeles to Mazatlan. On the morning of the eclipse, just off Mazatlan, the dismaying sight of an expanding canopy of clouds was somewhat mitigated by the more disturbing sight of a tornado just a mile off the ship. "Fortunately, we had the advantage of mobility. The ship headed farther out to sea, away from the cloud build-up. Although our weather conditions were not ideal, we could see the entire event from start to finish, and the full effect of totality was quite evident."

Lupe Martinez's vacation to Hawaii was not for the eclipse, she just happened to be in the right place at the right time. Again, weather played havoc with eclipse viewing, but, again Lupe happened to be in the right places at the right times. Unlike many on the island of Maui, Lupe saw most of the eclipse thanks to two brief clearings that appeared overhead as she was resignedly driving back to her vacation residence to view the eclipse on television. The experience was memorable. "Even though you know what to expect, you've been told what to expect, until you're actually there, you can't really com-

prehend its impact. One astronomer said 'I know what's going on, I know what I'm looking at, but the first time I saw a total eclipse, I got chicken skin'."

Jack Weber, who saw the eclipse in Kona, Hawaii, expressed similar feelings: "As I looked at the eclipse, I thought of how primitive peoples must have experienced the eclipse and I realized that, although we're in the 20th century and know exactly what's happening, our experience of it is probably not that different from theirs."

"Where I was, the eclipse was met in a variety of ways, ranging from gasps of amazement to reverent whispers."

John also observed the emotional impact of the eclipse, "During the eclipse, everyone was yelling and cheering, expressing a lot of emotion. But, when the eclipse was over, there was almost a sense of anticlimax. Like an emotional roller-coaster, though, the excitement built back up again and everyone really began to appreciate what we had seen, that everything had worked out, and that we were really there. So, there was the anticipation, the excitement of it happening, the let-down afterwards, and then the re-appreciation of the fact that it all really happened."

Jack Weber found that after the eclipse was over, people were reluctant to break the eclipse's spell and depart without exchanging names and addresses. Many began forming plans for their next eclipse adventure. "See you in Bogata in '94" became a common parting refrain as former strangers sought to reconnect with those to whom they had become so close simply by experiencing those few minutes of the eclipse together. Jack, who plans to see the next "local" total solar eclipse, which will be in Colombia, said with a grin "See you in Bogata in '94."

Prominences: Huge looping red arcs of superheated gas around the edges (difficult to see in this black and white reproduction.)



"Even though you know what to expect, you've been told what to expect, until you're actually there, you can't really comprehend its impact."

Lupe Martinez

cmi
is
working...
in
Product Assurance

By Gage Ricard

A Product Assurance Administration team has cut proposal preparation costs in half by creating computer templates of cost narrative forms (including routine cost proposal calculations) and publishing a company-wide estimating guide for Quality level 3 and 4 programs.

Team dynamics made these accomplishments possible, and the cost savings were documented in keeping with cmi (continuous measurable improvement) philosophy.

Team members **Kathy McFadden, Susan Scriven, Dan Koski, Pat Bushman, and Cindy Young** met regularly to first analyze the proposal preparation process in Product Assurance and then to generate ideas on how to improve it and measure progress. Historical data and the computer were recognized as invaluable tools.

"Team members went back and pulled information from the past several years on different kinds of programs, different quality levels, and different kinds of product lines to develop standards so a computer template could be created," said **Peggy Peffley, Manager, Product Assurance Administration.**

"We know that there are certain tasks we have to do on every program," said team member **Kathy McFadden**, "so, we developed several models for different levels of programs based either on actuals or on engineering estimates. Now, we just open the template on the computer, change a few things, then print it; whereas before, we had to sit down and start from scratch every time. Someone had to compose the narrative, take it to the computer, input the information, proofread it, make the corrections...the time it

**1.9.9.2
GM Cars
on Display
at SBRC**

October 21 & 22
in the B5 parking lot
all day

Fourteen cars will be on display—two from each of the seven GM Divisions. District Sales Managers from each division will be available between 11 a.m. and 1 p.m. to answer your questions and to distribute brochures.

took was really significant."

Team members also created a reference guide, *Estimating Models for Product Assurance Efforts*. They distributed this guide, which consists of cost narrative models for quality level 3 and 4 programs, to other project control administrators (PCAs), and held training sessions so that the PCAs could complete future cost quotes themselves.

According to Kathy, now when the Program Office staff gets a Request for Quote for a level 3 or 4 program, they can use the reference guide to help them generate the quote.

"Normally, if they use the guide, the Quality Assurance Manager only has to review the quote and sign it," said Kathy.

Overall, team work has saved a lot of time and has worked out really well for us."

**SBRC Detectors
Help NASA Study
Stratosphere**

By Gage Ricard

SBRC detectors are currently at work helping NASA in its first systematic study of the Earth's stratosphere.

The Space Shuttle Discovery, launched on September 12, carried NASA's Upper Atmosphere Research Satellite (UARS) into orbit with SBRC's photovoltaic mercury-cadmium-telluride detectors on board. SBRC built these detectors for the Halogen Occultation Experiment (HALOE)—one of ten instruments on the satellite. UARS is part of Mission to Planet Earth, a multiyear global research program directed by NASA.

According to **Dave Randall, HALOE Program Manager**, HALOE is designed to monitor the vertical distribution of a number of key upper atmosphere trace gasses, including HF, HCL, CH₄, H₂O, NO₂, O₃, and CO₂. Highly sensitive and uniform detectors are essential for the measurement of these gases.

The performance requirements were extremely difficult to meet. In fact, our competitor, whom NASA had selected, could not meet the requirements. "Instead, NASA put our prototype HALOE detector on the satellite after our competitor had tried to produce flight hardware and failed," said Dave. "It was a real feather in our cap."

Key members on the HALOE team in addition to Dave are **Mark Langell, Detector REA, Chris Tacelli, Packaging REA, Dave Nelson, Testing, Patsey Carey, Testing, and Peter Bratt, Project Scientist.**



October 1991

**GO Club
Kicks off
Campaign**

Between October 28 and November 8, SBRC is holding a special membership drive to inform all employees of the nature, function, and goals of SBRC's GO Club.

All we ask is 50¢. Our goal is to inspire each noncontributing employee to start contributing at least 50¢ per pay period to the GO Club; and we hope current GO Club members will increase their contributions by 50¢ or more. As the demands and operating costs of the various nonprofit support groups increase, so must the financial support of each concerned employee.

Approximately, two-thirds of all SBRC employees are now enrolled in the program and as you read the GO Club articles in this newsletter we are sure you will see why. The GO Club is dedicated to identifying and providing support for the most crucial needs in our community. Last year, the GO Club reached out to over 140 local, nonprofit organizations to provide financial support.

The organizations qualified to receive funds are identified by the GO Club Committee. The committee is composed of SBRC employees who represent all contributing members. Each member of the committee is voted in during annual elections. Monies are distributed by the committee or as designated by the employees on enrollment cards.

You will be hearing more about the 1991 GO Club drive through enrollment packages to be mailed to each employee. We encourage you to consider this outstanding program and see how each of you can make a difference in our community.



Leona Gonzalez (left) shows her daughter Christina the special equipment at Cottage Hospital's Neo-Natal Intensive Care Unit that was required to help her when she was born.

**GO Club Organizations Are
There When You Need them...
Ask Leona Gonzalez**

I support the SBRC GO Club because it provides me with an easy way to donate to the community organizations of my choice on a regular basis. I especially appreciate the opportunity to support the Neo-Natal Intensive Care Unit at Cottage Hospital. This unit not only provides care for premature babies and babies whose mothers were substance abusers, but it is also available for unexpected emergency situations.

In my case, I experienced complications during delivery, so the Neo-

Natal staff was called in to assist. When my daughter was born, they immediately were able to examine and rush her to Intensive Care. Had this facility not been available here, she would have been flown to Ventura or possibly Los Angeles depending on bed space availability.

I'd like to encourage all SBRC employees to support our community through the GO Club—
Leona Gonzalez,
Subcontract Administrator, Materiel

Popular Infrared Wall Chart Gets Revised

SBRC's infrared wall chart, which is frequently requested by our customers, received some much needed revision, just in time for the IRIS Specialty Group Meeting in Boulder, Colorado in July.

SBRC traditionally displays pertinent graphs and data related to infrared detectors on a color spectrum background wall chart. But, because the chart had not been revised since 1984, it was out of date.

To bring it up to date, a Marketing Team was formed, consisting of **Ken Ando**, Marketing Director, **Carrie Ericksen**, and **Frank Huerta**, with support from **Peter Bratt**, **Mostyn Gale**, **Alan Hoffman**, **Paul Norton**, and **Jim Phillips**.

The revised *SBRC Infrared Wall Chart* will be on display in the B1 west lobby. If you are interested in receiving a copy of the chart or know of a customer who would be interested, please contact **Karen Kuster**, Corporate Marketing, at extension 2242.



Photo: Matt Weinberg

Illustrations Supervisor Joe Valentino (left) worked closely with Carrie Ericksen (center) and Frank Huerta (right) to revise SBRC's infrared wall chart.

REVISIONS/ADDITIONS TO THE CHART

Ichiro Kasai prepared PV HgCdTe and PV InSb D* vs. wavelength curves; **Paul Norton** added a representative D* vs. R_A chart; and **Paul Lommen** revised an atmospheric transmittance graph. The wall chart also includes figures of merit, frequently used constants, and selected blackbody radiation formulas.

Savings Plan Unit Values

The unit values in effect as of August 30, 1991:

Fixed Income Fund: 4.7128
Equity Fund: 7.1615 **Balanced Fund:** 5.7216

GM/H Stock Share Values

The GM/H stock share values in effect as of July 31, 1991:

Average Purchase Price: 17.8098

Cost Improvement and Performance Improvement Programs

By Dave Johnson

Cost Improvement Program (CIP)

Employees' Cost Improvement Program ideas saved the company \$420,616.25 in the Second Quarter of 1991:

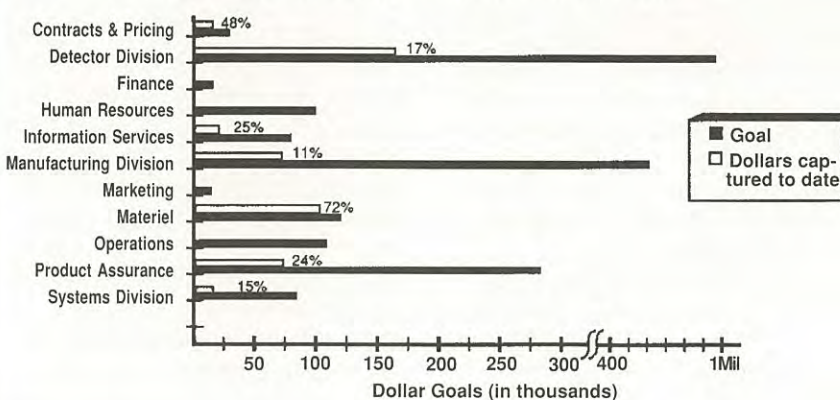
No. of participants	27
No. of CIP ideas	13
Total Savings	\$420,616.25

Performance Improvement Program (PIP)

Employee participation in the Performance Improvement Program is averaging about 18% of total headcount.

No. of participants	263
No. of ideas approved	197

SBRC's 1991 CIP Savings—End of Second Quarter



SBRC Business and Engineering Rotation Program

By Nick Garrison

Welcome

SBRC welcomes four new Business and four new Engineering Rotators into the program. The Business Rotators will have a one-year rotation, which consists of spending six months in their present home departments, and then two months in three other business areas. The four rotation areas are Materiel, Contracts, Finance, and Human Resources.

The Engineering Rotators have a two-year rotation that entails four six-month rotations allowing them to work on varied SBRC projects. They will complete their rotations in 1993.

Our new rotators are, from left, **Conrad Wells**, Engineering (MS, Optics, University of Rochester) in Systems Division; **Geoff Loui**, Engineering (MS, Mechanical Engineering, Stanford) in Systems Division; **Paula Nishimori**, Business (BS, Business Administration, Cal Poly, San Luis Obispo) in Finance; **Michael Veesart**, Business (MBA, Cal Poly, San Luis Obispo) in Contracts; **Nicole Adams**, Business (BA, Political Science, UCSB) in Human Resources; **Todd Case**, Business (BS, Human Resources, University of Arizona) in Materiel; **Emily Lo**, Engineering (BS, Mechanical Engineering, Cal Tech) in Product Assurance; and **Joe Rios**, Engineering (BS, Mechanical Engineering, Cal Poly Pomona) in Manufacturing Division.



Photo: Bob Casper

Congratulations!



Our 1991 program graduates include, from left, Business Rotators **Stephanie Clemons** (BS, Environmental and Occupational Health, California State University at Northridge) in Environmental Health and Safety; **Robert Morales** (BS, Human Resource Management, Cal Poly, San Luis Obispo) in Materiel; **Janet Helser** (BS, Finance, Cal Poly, San Luis Obispo) in Finance; **Lisa Baldarrama** (BA, Economics, UCSB) in Contracts; and Engineering Rotator **Frank Huerta** (BS, Physics, Harvard), who is currently pursuing a graduate degree at Stanford.

Photo: Bob Casper

Profiles in Excellence

From Dottie McKiddie

This is part of a continuing series of articles profiling excellent performers at SBRC. Natalie Chrisman was nominated by her management for the 1990 Corporate Superior Performance Award.



Photo: Bob Casper

Natalie Chrisman (formerly Natalie Simon), *Contracts Services Administrator 2*, has worked in Contracts Services for five years. Natalie's thorough working knowledge encompasses Work Authorization preparation, contracts closure, Non/Pre-Contractual Authorizations, Host and Inventory Accounts, and the integration of Property requirements in contracts and Work Authorizations. Her innovations in automating processes supporting these activities have improved the overall effectiveness of the Contracts Administration and Pricing Directorate.

She consistently demonstrates a personal dedication to producing results of superior quality in all tasks, many of which are pursued on her

Wallbangers Catch '91 Softball Championship



Photo: Greg Krueger

The Wallbangers slid into first this season and walked away with the 1991 SBRC Softball League Championship trophy. The champs are, from left, Dave Calhoon, John Napoli, Kent Anderson, Doug Jones, George Lemire, Kris O'Connell, Wayne Klapp, Jon Diaz, Robbie Holmes, Kerri Churchill, Tom Segura, Kevin O'Connell, and Paul Reinacher. Not pictured: Liz Calhoon, Diane Lacy, Lori Segura, Denise Telles, Dennis Trimble, Steve Walters, and Linda Voven.

own initiative. Natalie makes the extra effort to meet schedules, and she has worked long hours to meet milestones. This dedication, coupled with her expertise in data systems/programming, has allowed her to be entrusted with extremely complex assignments that are considered essential to SBRC.

One example is Natalie's current assignment to identify past and present contracts that qualify for a sales tax refund from the State of California based on specific contract terms and conditions. Further effort will involve determining what portion of any refund should be reimbursed to the Federal Gov-

ernment. This recently initiated Hughes-wide effort involves a great deal of written coordination within Hughes/SBRC and with SBRC customers.

Natalie has been designated the Directorate's Computer Network Administrator (Novell 286/Appletalk LAN). She is a Certified Novell Netware V2.1 System Manager. Natalie continually promotes computer automation and has frequently upgraded the Contracts Services Information System. She has assisted other organizations to enable their speedy access to and refinement of desired information from the Contracts data base.

INNOVATIONS IN TECHNOLOGY

SBRC Researchers Win Best Paper Award

By Rich Thom

Continuing SBRC's record of technical leadership in the field of infrared detectors and materials, SBRC authors have once again earned a Best Paper Award at an Infrared Information Symposium (IRIS) Specialty Group Meeting.

At the August meeting of the IRIS Specialty Group on Infrared Materials held in Boulder, Colorado, SBRC's **Dr. William Ahlgren** accepted one of two Best Paper Awards for papers given at the 1990 meeting of the Specialty Group. The title of the winning paper was *Silicon-Based Composite Substrates for Liquid-Phase Epitaxy (LPE) of HgCdTe*. Bill's co-authors on the paper were **Scott Johnson, Murray Kalisher, William Hamilton, Jay James, and Vincent Liguori**, all from SBRC, and two co-authors from the Emcore Corporation of Somerset, NJ, who collaborated on the development. In addition to the authors, other contributors to the work included **Walt Konkell, Virginia Harper, Jonathan Price, Michael Boyd, Ralph Ruth**, and many others.

The development of silicon-based composite substrates has been underway in the Detector Division's Advanced Development and Detector Laboratories to reduce the cost and improve the reliability of infrared focal plane arrays. In this new approach, layers of HgCdTe detector material are epitaxially grown by LPE on silicon substrates, rather than the cadmium zinc telluride (CdZnTe) substrates currently used. The silicon detector substrates, available in larger sizes and at lower cost than CdZnTe, offer advantages in production and, further, match the thermal expansion coefficient of the silicon readout inte-



Photo: Craig Cook

Recipients of the IRIS Best Paper Award are, from left, front row, Bill Ahlgren and Jay James; back row, Scott Johnson, Vincent Liguori, Murray Kalisher, and William Hamilton.

grated circuits to which the detector arrays are later hybridized. Lower cost, more rugged hybrid FPAs are therefore made possible.

Due to the difficulty of direct epitaxial growth of HgCdTe thin films on silicon, intermediate layers of GaAs and CdZnTe are employed as buffer layers between the silicon and HgCdTe. Silicon substrates with grown GaAs layers are purchased commercially as starting material, then the CdZnTe is grown by metal organic chemical vapor deposition (MOCVD) in the Detector Division's Materials Research Department. Two layers—base and cap layers—of HgCdTe are subsequently grown by SBRC's proven LPE technique, with some minor modifications to accommodate the composite substrate characteristics.

Since the presentation of the award-winning paper last summer, progress has continued rapidly during 1991 and exciting new results were reported by Bill Ahlgren and his colleagues at this year's Boulder meeting. Using the composite substrates, the largest-ever staring arrays

to date have been successfully processed in HgCdTe: long-wavelength 640 x 480 format arrays. These arrays are key enabling components for a major Hughes Electro-Optical and Data Systems Group thrust to develop a line of next-generation staring sensors, ultimately intended to displace the mechanically scanned sensors used today. The composite substrate 640 x 480 LWIR HgCdTe arrays were produced well ahead of the need date in the product development plan, in fact many months in advance of the availability of matching readout ICs. Our large array work is not only leading the rest of Hughes, but the industry as well.

SBRC is marketing this new advance in detector technology as *EPIC™ substrates*, for Economic and Producible Infrared Composite substrates. Stay tuned, as this development will not only enable a number of new focal plane products, but is likely to garner more professional recognition as well.

1991 GO Club Committees



Represent Your Organization on the GO Club Committee

Our company supports the spirit of the fund-raising activities of the GO Club. Your contributions to the community can have greater impact if donations are made through the GO Club, rather than individually.

Each GO Club Committee has a personality of its own. The current term of the committee is drawing to a close, and we need your involvement to begin the new term with a new team.

Do you qualify to be a member of the GO Club Committee? Each member of the committee is elected, represents a division or organization, has approval from his/her supervisor to be a member of the committee, and is an enrolled, contributing GO Club member. Our election campaign for committee members will be held in November.

If you are interested in serving on the 1992 GO Club Committee, please fill out the form below. For further information, contact Dottie McKiddie at extension 7236.

I am interested in becoming a GO Club Committee member

Name: _____

Source Code: _____

Extension: _____

Building/Mail Station: _____

Return to Dottie Mc Kiddie
B27/75



Goleta GO Club Committee members are, from left, back row, June Rochlin (Secretary), Bob Forbes, Suzi Bright, Dottie McKiddie (Management Advisor), Margaret Finlay, Rudy Gruber, and Bob Krauss; front row, Ricardo Garcia (President), Kathy Christoferson (Secretary), and Charlene McGinnis (Treasurer). Not shown: Jim Scorso (Vice President), Ellie Cassels, Leona Gonzalez, and David Merrill.



Santa Maria GO Club Committee members are, from left, Joanna Bruno, Pam Harrell (President), Jim Kersey, Joe Humphrey (Treasurer), Al Duarte (Vice President), and Debbie Fangauf (Secretary).

Join the 1% Club

You become a member of this extraordinary club when you donate one percent of your weekly salary to the charity/charities of your choice through the GO Club. Currently, 84 SBRC employees contribute 1% or more of their salaries to GO Club supported charities. You are invited to join...enrollment cards will be included in your GO Club Campaign packet.

August Perfect Timekeepers Win \$50 U.S. Savings Bonds

Systems Division makes a clean sweep

By Charlene McGinnis

Maintain your timecard in accordance with the Timekeeping Manual and pass a timekeeping audit and you may be the winner of a \$50 U.S. Savings Bond, too.

August winners were **Russell McRae**, *Production Reliability*, "Hey, all right! Great! Thanks a lot!"; **Alice Scherrer**, *Engineering Standards*, "Great! That's wonderful! I'm really excited!"; and **Paul Sugino**, *Advanced Tactical Sensors Labs*, "No kidding? How about that! Thank you."

Be prepared. The timekeeping auditors make the rounds on a regular basis. You could be one of the next big winners.

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) **Ethics Administrator Jack Murray** on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

The SBRC News—published in the interest of the employees of
SANTA BARBARA RESEARCH CENTER
A subsidiary of Hughes

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Address comments or stories for the newsletter to: Gage Ricard, B31/MS1 (ext. 4947)
75 Coromar Drive, Goleta, CA 93117



The SBRC News is printed on recycled paper

QA/benefits

This is part of a continuing series to inform employees about benefits and procedures. The questions in this series are among those employees frequently ask Benefits representatives. Employees who have questions they would like answered in this column may submit them to: *Benefits Questions*, B27, MS81.

Q. Spectrum Open Enrollment is almost here again—what will be different?

A. The following highlights some of the new features included in the next open enrollment (October 21 through November 15) for 1992 benefit plans.

"Opt Out" Provision

You may elect to "opt out" of medical plan coverage for 1992. If you do "opt out" you will also give up vision, dental, and mental health coverage, but will receive some cash back for the cost of the services you've given up.

New Income Insurance Option

There are now two options in case a participant becomes disabled and cannot work. The current benefit is 60% of base-rate of pay (after a 180-day waiting period) until age 65. The new option is 60% of base-rate of pay (after 180 days) for 5 years, instead of until age 65. The rates will be set in ten-year increments of age for both options.

New Dental Provider

There will now be three categories with choices in each category: the Hughes Scheduled Plan and Hughes Core Plan; the Prepaid Plans with Safeguard and Delta Care; and now the PRU Dental Plan. The PRU Dental Plan offers two choices to give the employee more flexibility. The first Pru option is the same concept as a prepaid plan using a network dentist, no deductible, and covering most basic costs at 100%. The PRU Scheduled Plan offers the flexibility to see any dentist, anywhere (a real advantage with dependents living out of the area). With the PRU Dental Plan the employee can switch between the two options monthly with some restrictions.

HAC Medical Changes

The new mental health provider will be Preferred Health Care which takes the place of CPHP (California Psychological Health Plan) and combines inpatient, outpatient, and substance abuse programs that were previously separate. A call to the Preferred Health Care 800 number will link the employee to a trained counselor with nationwide access who will assess the problem and refer the employee and the family to the appropriate specialist. This is a real advantage if dependents are out of the area.

PINs

During the annual open enrollment period, each employee will be assigned an individualized Personal Identification Number (PIN). This PIN will not change during the year and must be used when accessing the telephone enrollment system during the open enrollment period and during the year. The employee will be able to change any or all of his or her benefits, as allowed, by making one call. Prudential will send the necessary paperwork to effect the change(s).

Spectrum Open Enrollment will take place between October 21 and November 15, 1991. You will receive information about all the health care options and plans prior to the open enrollment period. Call the Benefits Office if you have any questions.

SBRC Wellness Program

By Emily Gonzales

Nutrition News

We received a fantastic response in September for nutrition events sponsored by the American Heart Association. Over a period of three lunch hours, 140 employees viewed the video *Supermarket Savvy* to become more informed on how to read food labels and make intelligent food choices. Unfortunately, the number of employees requesting to view the video exceeded seat availability. So, for those of you unable to attend, the video will be presented again in November. Dates and times will be announced.

For those employees still "thirsty" for nutrition knowledge, the Benefits Office will present the video *The Fat Film* on October 30 in Santa Maria (in the cafeteria); and on October 25, 28, 31 and November 1 in Goleta (B27 training room). This video shows viewers how and why diets high in fat are injurious to their health. Special tips for kids are included, as well as suggestions for cooking, baking, and eating out. Goleta employees must return a registration slip to reserve a seat. Call Emily Gonzales at extension 7096 to check availability.

The American Heart Association Diet Guide is Here

This eating plan can help you start a new lifestyle, one that aims at reducing one of the major risks of heart attack—high blood cholesterol. Developed by the American Heart Association, this plan describes the latest recommendations of medical scientists and provides a step-by-step guide to eating with your heart in mind. To obtain your guide, call extension 7096 in Goleta or extension 5419 in Santa Maria.

Coming Events

Fitness Tests

Between October 15 and 26, you can learn about *your* level of fitness by participating in a complimentary series of fitness tests. The tests cover blood pressure, body fat and lean muscle mass analysis, determination of your ideal body weight, muscular strength and flexibility, cardiovascular capacity, and recommendations on how you can incorporate exercise into your lifestyle. Staff from the Cathedral Oaks Club and Santa Barbara Athletic Club and volunteers from Cottage Hospital will conduct the tests. Call Emily Gonzales at extension 7096 for more information.

Great American Smokeout

Next to Thanksgiving, it's the most famous Thursday in November. It's the American Cancer Society's Great American Smokeout. November 21 is your opportunity to quit smoking for 24 hours or to lend a hand to someone who's trying to quit. Make the Great American Smokeout an important holiday on your calendar. More information to follow!

Employee Counseling Corner

By David Root, MFCC

BE ALL YOU CAN BE—Recently, I was asked to make a proposal for a business seminar. The topic: "How to Manage for High Productivity and Low Stress." I am fascinated by this topic. Let me explain.

The way the topic is worded would seem to imply that high productivity in a company (or, in life) and low stress are inherently contradictory. If a manager pushes employees toward high productivity, he or she, *ipso facto*, produces high stress, so the reasoning would seem to go. Is it possible to have both high productivity and low distress? My answer is an unqualified YES!

Let me clarify my answer. Stress is an inevitable part of life. I look at it as the energy of life. Like electricity or solar power, this energy can do good things and bad things. The energy is neutral, neither good nor bad. What one does with the energy makes all the difference in the world and in your life. You can't *not* have stress and be alive.

The issue then becomes this: How do I maximize good stress (*eustress*) and minimize bad stress (*distress*)? Notice, I have quietly changed the topic. We must aim, I argue, whether managing our own life or employees at work, to encourage *eustress*, with a minimum *distress*. This, I believe, is eminently "do-able."

The challenge: to empower ourselves and our employees as effectively as we can. As individuals, this means owning our personal power, rather than assuming a passive, victim role. As managers and employees, it means empowering one another to do our very best job. More of this in subsequent articles. Meanwhile, capture the energy of life as fully as you can. Be an empowered person—at home, at work, in all of life.

Need Help? Call your employee Counselor at 733-1916.



Photo courtesy of the American Cancer Society

GO Club: It's a Great Way to Share



Photo: Joe Humphrey

I give to the GO Club because I really enjoy helping and giving to those who are in need. I want them to know that others care.

—Tina Sanchez



Photo: Joe Humphrey

Through the GO Club, several small contributions add up, making a large, positive impact on our society. The money we give from our hearts makes its way directly to the hearts and lives of those in need. This is a wonderful opportunity.

—Ron Bengs



Photo: Craig Cook

I contribute to the GO Club because it gives to organizations like Hospice. As my mother's fight against melanoma cancer drew to a close in July, the Hospice organization offered its support. Hospice volunteers made several house calls a week in order to administer pain killers and provide basic medical needs. This allowed by mother to spend most of her remaining time in the comfort of her own home, rather than in a hospital. My father and I are very appreciative of the help we received from the Hospice organization.

—Scott Nalick



Photo: Craig Cook

I donate to my favorite charities through the GO Club because the payroll deduction plan is convenient. I also know that the GO Club Committee carefully reviews the organizations that are included on its distribution list, so that my dollars really count. Part of my contribution specifically goes to organizations in Lompoc, where I live. It's great to know that the GO Club reaches out to help organizations in each employee's community.

—Sheila Balok

**THE SBRC
GO CLUB**
It's a good deal
that does a
great deal.

100%
goes to the
charity of
your choice

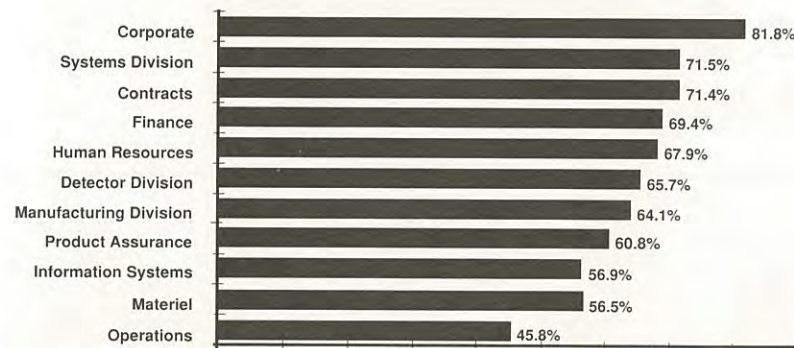
No other community charitable organization can offer you, the SBRC employee, the options available through the GO Club. One hundred percent of your deduction will be forwarded to the charity of your choice, or to the GO Club Committee for disbursement.

Your GO Club not only provides a unique service to the SBRC employee, it also fills a vital niche in the

tri-counties charitable organization community. The GO Club funds many local charities that need emergency funding for special projects or money for continuation of basic services.

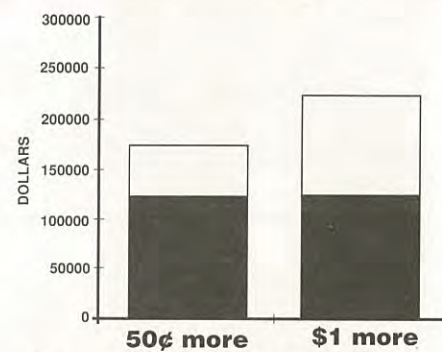
Together, GO Club employees contributed \$126,521 to 145 non-profit organizations. Because of your generosity, thousands of disadvantaged people are better off today—thank you!

Current GO Club Participation by Major Organizations



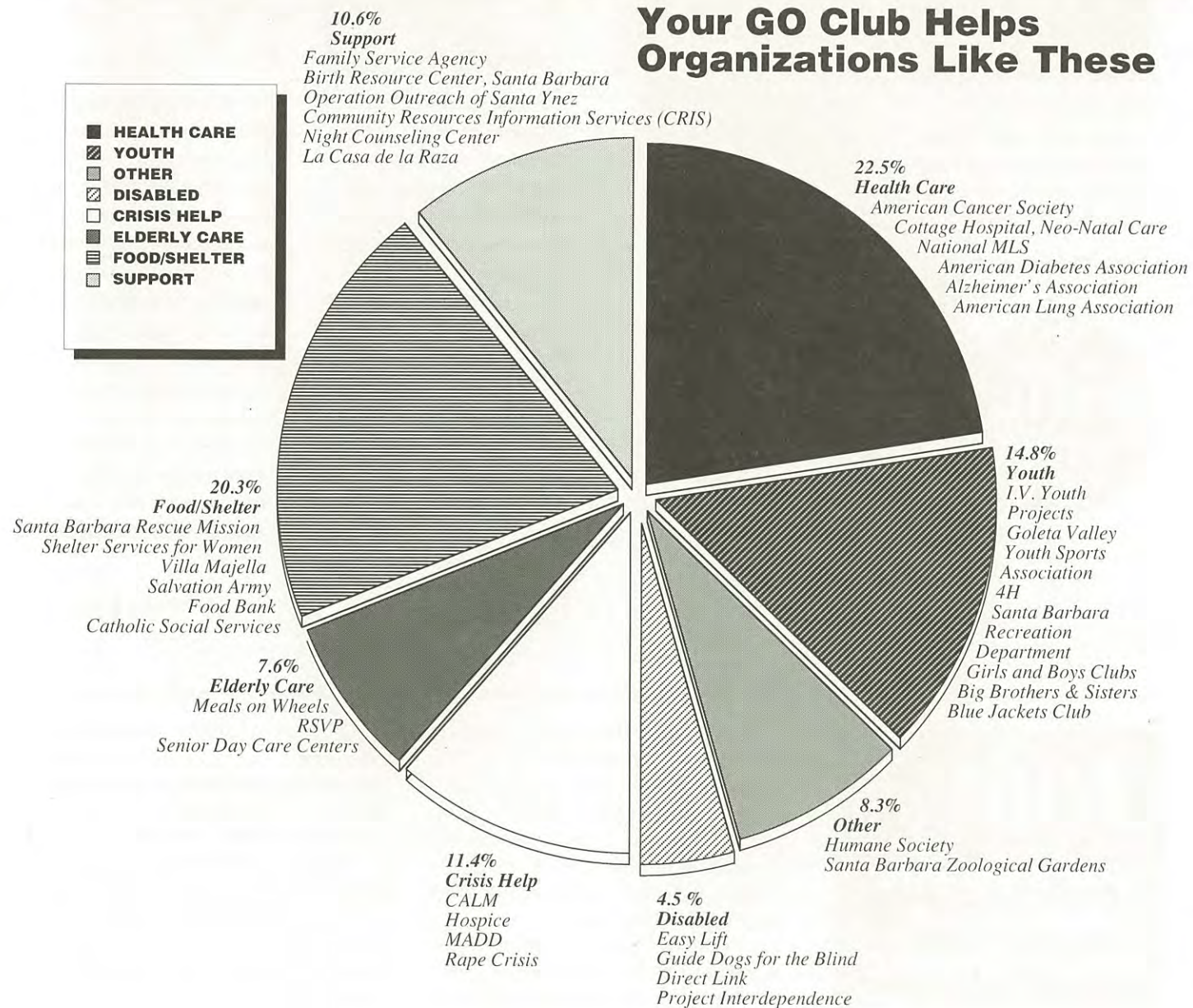
Company-wide Employee Participation: 64%

50¢ More



If every employee contributed 50¢ more per week, we could raise an additional \$50,102 for local charities.

Your GO Club Helps Organizations Like These



SBRC in the community

Company Match Doubles Your Giving Power to Education

Contributing to your alma mater? You could be doubling your donations by using the Hughes Academic Gift Matching Program.

The Company matches an employee contribution up to a maximum of \$2,500 per calendar year to qualified institutions, which are defined as any accredited, nonprofit, four-year college or university in the free world or any accredited, nonprofit junior college or secondary school in the U.S. or its possessions.

Employee contributions are not to be used for payment of dues, alumni or other fees, tuition, or any other purpose of personal benefit to the employee.

A Hughes academic gift-matching form is available in the Human Resources Office in B27. All checks must be received by Corporate Human Resources by December 1 to ensure processing by year-end.

"Participation with Industry" Visit

By Nick Garrison



The Participation With Industry visitors were, from left, Capt. Gregory Ulsh, Capt. Michael Vecera, Capt. Leslie Wilford, Capt. Martain Bushey, Capt. Kit Boyd, Capt. Thomas Rosensteel, and Capt. Susan Grubb; SBRC's host was Nick Garrison.

As part of Hughes continuing involvement in the Participation With Industry Program, SBRC hosted seven military officers on September 5.

The program is presented in cooperation with the United States Air Force Institute of Technology (AFIT), Education With Industry (EWI) Program, and the Department of the Army's Training With Industry (TWI) Program. As a sponsor, Hughes is serving as host for U.S. Army and U.S. Air Force officers between September 1991 and June 1992. These individuals will interview for location assignments after their five-week orientation period this year.

U.S. Air Force participants included Captains Kit Boyd, Thomas Rosensteel, Michael Vecera, and Leslie Wilford. The Army participants were Captains Martin Bushey, Susan Grubb, and Gregory Ulsh.

During the first five weeks of the program, these individuals will be given tours and orientations at most

of the Company's sites to facilitate an understanding of the significant functional areas within Hughes. Specifically, the activities scheduled throughout this period permit the individuals to meet Hughes' management, become acquainted with the Company's technical programs, develop a knowledge of Hughes' business operations, and to develop an appreciation of private industry.

United Way Gets Boost from SBRC



SBRC President Dr. Fletcher Phillips expressed encouragement and wishes for success to an enthusiastic audience at the Cabrillo Arts Center on September 17 for the kick off of the 1991 United Way Campaign. Dr. Phillips helped get the campaign off to a successful start by presenting an \$11,500 company contribution to United Way.

RFR: Request for Receipts

Your cash register receipts from either Vons or Lucky's can help local schools purchase computers, calculators, software, and athletic equipment. Send your saved receipts to the school of your choice.

If you are not already affiliated with a local school, please consider saving your receipts for SBRC's adopted school, Dos Pueblos High School (DPHS). You can mail your receipts for DPHS to Margaret Finlay (B27/76) or to the EA Office (B27/74).

Profiles in Excellence

From Dottie McKiddie

This is part of a continuing series of articles profiling excellent performers at SBRC.

Joe Kleeburg, Staff Engineer, Systems Division, is an outstanding contributor to the outstanding team that recently completed final tests on the Mars Orbiter Thermal Emission Spectrometer (TES) and delivered this flight instrument to our NASA customer.

Like others on the team, he worked long and hard during the program to maintain or improve delivery schedules. Joe worked diligently to provide control system support during optical and instrument tests, and participated extensively in Instrument Integration and Checkout, even though this latter activity was not a part of his normal program responsibilities.

The TES Power Supplies in particular had a potential for serious impact on both program schedule and instrument performance because portions of the Flight Supplies malfunctioned upon initial assembly. Although Joe had not designed the Power Supplies, he applied his expertise in control system design and identified modifications to correct the problems without resorting to a revision of the PWB layout. Joe's work directly resulted in delivery of the Power Supplies at least three weeks earlier than would have occurred otherwise, providing great savings to SBRC and our customer.

Swingers Jacobs and West Are 1991 Golf Champs

By Warren Lotz

Thursday Night Community League champs **Dick Jacobs** (right) and **Jim West** (left) won the 1991 SBRC Golf League Team Championship on September 28 at the year-end Tournament held on the Rancho Maria Golf Course in Santa Maria.

Their names have been inscribed on the League Champions perpetual trophy, which is on display in the B1 East Lobby trophy case.

Dick and Jim successfully swung their way to the top, beating tough competition provided by the winners of the other five weeknight leagues—Tuesday night's **Gary Gensler** and **Bill Cushman** at Sandpiper; Wednesday night's **Conrad Anderson** and **Ken Jordan** at Twin Lakes; Thursday night's **Greg Lewis** and **Dave Gosselin** at La Purisima; Friday night's **Tom Curran** and **Mike Pavlov** at Community; and Santa Maria's **Doug Georges** and **Bill Williamson**.



Photo: Bob Casper

GM Car Show: Picture Yourself in This



Photo: Craig Cook

The 1992 GM Car Show drew an inquisitive and admiring crowd of employees from SBRC and Delco to the B5 parking lot on October 21 and 22.



November 1991

ETM

The Enhanced Thematic Mapper for Landsat-6 is Delivered

By Richard Ruiz

The Systems Division made a significant space hardware delivery in August of the Enhanced Thematic Mapper (ETM) for the Landsat Satellite series.

The ETM is an improved version of the instruments previously provided for this program. Improvements to the system include the addition of a 32-channel panchromatic band with 15-meter resolution and redundant subassemblies and circuits to

improve the overall reliability of the system.

The Landsat Satellite System gathers data to monitor and manage agriculture, forestation, water resources, mineral resources, and land use. Additionally, the ETM has provided imagery and data on the oil spill in the Persian Gulf, monitoring the oil well fires in Kuwait to prioritize firefighting efforts, as well as

(continued on page 3)



Photo: Craig Cook

After the trucks were loaded, the ETM crew was ready to take a well deserved break. From left, front row (crouching) Program Manager Richard Ruiz and Rick Whitaker, (standing) Grace Ingram, Doug Butler, Greg Hughes, Bobby Thompson and Don Adams; back row, Kelly Ripa, George Stark, Kevin Connor, Steve Schiefen, Chuck Lane, and Steve Walters.

Team ESL Garners Praise from Corporate

Bob Williams impressed by SBRC's team-building activities

By Gage Ricard

Lines of communication have dramatically opened up within the past year in the Engineering Services Lab (ESL) since the lab adopted the team approach.

To hear first-hand how Team ESL evolved, **Dr. Robert (Bob) G. Williams**, Corporate Director of Employee Research, Education, and Development, visited SBRC on October 4 to personally meet with Team ESL members.

In response to what he heard that Friday afternoon, Bob told the Team ESL members assembled, "Your group is a model for all of Hughes. When others ask me where positive change is happening, I can point to SBRC and this group as an example.

"I know how much Mal Currie [Hughes CEO] values improved communications throughout Hughes. I also know that he believes good communication doesn't just happen. It is the direct result of employees building involvement, building teams. Your team has participated in that process and achieved improved communications as a result."

(continued on page 10)

SBRC Detector Performed Flawlessly for CIRRIS Program

Following the recent successful conclusion of an SDIO (Strategic Defense Initiative Organization) experiment flown on the Space Shuttle Discovery, Program Manager Tom Sciacca received letters of praise from the U.S. Air Force and Utah State University for the flawless performance of SBRC's detector assembly during that experiment.

SBRC built the detector package for the SDIO multispectral radiometer and interferometer system called CIRRIS-1A (Cryogenic Infrared Radiance Instrumentation for Shuttle). The data obtained from the CIRRIS mission will help the Department of Defense design surveillance systems.

CIRRIS-1A was created by the Space Dynamics Laboratory (SDL) at Utah State University in Logan, Utah, for the Geophysics Laboratory. SDL asked SBRC to provide the detector package.

"The experiment's success was due in part to SBRC's tremendous talents in making detector assemblies," said Tom. "Dick Nielsen, Project Engineer, and Jim Fulton, Test Engineer, were very dedicated and worked closely with the customer, SDL, who was very appreciative."

Savings Plan Unit Values

The unit values in effect as of September 30, 1991:

Fixed Income Fund:	4.7388
Equity Fund:	7.1479
Balanced Fund:	5.7823

GM/H Stock Share Values

The GM/H stock share values in effect as of September 30, 1991:

Average Purchase Price: 18.6048

TES Delivered to NASA



Photo: Bob Casper

The Mars Observer Thermal Emissions Spectrometer (TES) is now in the customer's hands. The instrument was received by NASA's Jet Propulsion Lab at General Electric in New Jersey on October 17. Prior to final assembly and test at SBRC, a few members of the TES team were present during a routine photo session (above). From left, front row, Steve Silverman, Phil Christensen, Nuno Bandeira, and Jim Shields; back row, George Stark, Chuck Herman, Greg Mehall, and Jerry Brown (Program Manager). Steve, Nuno, Greg, and Jerry were with the instrument at GE to conduct acceptance tests and to ensure proper instrument interface with the spacecraft.

Cost Improvement and Performance Improvement Programs—3rd Quarter

By Dave Johnson

Cost Improvement Program (CIP)

Employees' Cost Improvement Program ideas saved the company \$906,800.64 in the Third Quarter of 1991:

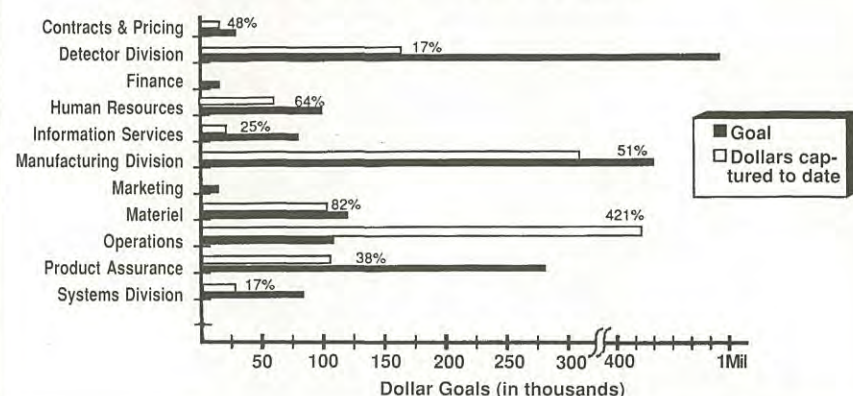
	year to date
No. of participants	40
No. of CIP ideas	30
Total Savings	\$1,356,094.33

Performance Improvement Program (PIP)

Employee participation in the Performance Improvement Program is averaging about 18% of total headcount.

No. of PIPs received	603
No. of ideas approved	441

SBRC's 1991 CIP Savings—End of Third Quarter



"There's a tremendous tendency for management to say 'Oh, what a great job you're doing as a team', and then jump in and take over. That's what I've tried to avoid. My involvement is to know what's going on and to encourage it."

Benefits

What are the advantages to the company and to the employee of team work? "The programs get better support and they get it for less," said John Watson. "Also, employees feel more excited, more enthused about their jobs. They gain a sense of accomplishment and a real sense of contribution."

Team leader Yvonne Wright-Scott, Configuration Data Management Analyst, observed that the benefits of team work extend beyond the immediate lab. "We learned how to communicate with other organizations better, too, such as Product Assurance and Manufacturing Engineering, which improves both how we do things and how they do things."

Chuck gave other examples of benefits realized. "As a team we designed a new cover sheet and charge number verification system. Consequently, suspended labor numbers occur much less frequently, which saves the company money. We've also reassigned file management tasks to free the designers to do the job they were hired to do—engineering design."

"In CDMO, we instituted cross-training in response to numerous requests for such training. The team environment made this possible," said Mary Beth Williams, Configuration Data Management Analyst, a team leader. "Now, in CDMO, we will have the opportunity to know the hardware/software configuration management and data management aspects of our work, which will improve our service to the customer."

"Because CDMO has a broader understanding of the lab, I get more work," said Steve. "When a program needs spec work, they know to direct that work to me. Often, I can use an engineering standard, which saves the program and the company money. Too often, engineers and program managers try to write specs from scratch when an engineering standard could have been used. That is an un-

necessary expense, which we, as a team, are minimizing."

"I've noticed that employee relations issues have improved," said Beth. "Now they talk things out among themselves much more easily to clear up misunderstandings. Also, sick leave is down."

Bob noted that these are all examples of the sort of dividends that can be expected when employees feel ownership in their jobs. Feedback, such as Beth's, and customer comments are all valid performance "metrics."

But there are other metrics that should be employed whenever possible by all teams in order to document the benefits for themselves and for the company.

Metrics

Dick Siever, SBRC Manager, Personnel Development, has found that teams often are not getting the credit and recognition they deserve because they didn't get training in an important area of continuous measurable improvement—performance measurement, or metrics. This is a weakness in the current team-building program. Not only do employees need to be trained by facilitators on the team process, but they also need to learn how to document and measure their progress by using such CMI tools as statistical process control, cycle time management, concurrent engineering, quality function deployment, design for manufacturing assembly, etc. That is something that will be emphasized in future training.

"All teams must focus on three things," said Dick. "How can we improve quality? How can we improve schedule? and, How can we reduce costs? Then measure these improvements. When your team reduces costs, document those savings. When your team improves schedule, specify by how much. When your team improves quality, spell out how it has improved quality."

Hurdles

Bob Williams' visit was a high point for the team. But, this was not just a back patting session; Bob wanted to hear about the hardships, too.

Budgetary problems posed a major hurdle and threatened the continuance

of the team. Although there was some overhead money available last year for team meetings, there was none this year. To continue what they had started, team members have scheduled their meetings less frequently and during lunch hours.

Adele, who is a team facilitator, had earlier voiced some of the frustration that facilitators feel in needing to help keep the team vehicle moving when fuel is scarce. "The catch-22 in this situation is that the team members have been empowered to do everything except to make decisions on budget," said Adele, "which directly affects when they can get together and how much time they can spend. That is an Achilles' heel in the process that is so profound it creates an irony that's close to being insurmountable unless we work extraordinarily hard to fix it." And, Adele and the other company facilitators are working very hard to keep things moving along.

Plans for the future

Because of the budget crunch, Team ESL members know that team participation has shifted from company time to personal time. Adele and Steve have planned a series of Team ESL lunch-hour meetings to provide training based on Interact Performance System's team-building series, including sessions on metrics.

Meanwhile, management is offering as much support as possible by stepping back, letting go, and encouraging this activity.

"The lesson here," said George, "is that people at all levels want to participate and want to improve the organization when given the chance."

TEAM ESL MISSION STATEMENT

TO PROVIDE INCREASINGLY
EFFECTIVE ENGINEERING
SERVICES THAT FULLY
MEET BOTH OUR
CUSTOMERS' NEEDS AND
CONTRACTUAL
REQUIREMENTS

Team ESL, cont. from page 1



Photo: Craig Cook

After listening to Team ESL members describe the evolution of their team, Bob Williams (Hughes Corporate Director of Employee Research, Education, and Development) offered feedback, which included extensive praise.

Seated at the table, clockwise, Bob Williams, Dick Siever, Chuck McKenney, John Watson, Maxine Escobar, Alice Scherrer, Mary Beth Williams, Kathy Burford, Yvonne Wright-Scott, Gage Ricard, Adele Sommers, and Steve Myers.

These heartening words were complemented further by Systems Division Assistant Manager **John Calandro's** encouragement and praise: "The members of this team didn't come together to complain about what someone else was controlling or doing; they focused on what they could control and could change. And, very importantly, they asked themselves how they could best serve their customers. The cultural change Team ESL has undergone is indicative of the change that must occur throughout the company. I hope other organizations catch your excitement and enthusiasm. I want that excitement to boil up from the working level, because that's where it must come from if we're going to make the changes we need to make."

What had this team done to catch the attention of Hughes Corporate and SBRC management? It started with a videotape.

Some history

Dr. Jack Pelamati, Manager, Corporate Research and Development, who works for Bob Williams, produced a series of three videotapes on Hughes' vision for change: *A New Direction: Design for Change, Employee Involvement, and Managing Performance in the 1990s*.

SBRC's **Adele Sommers**, Senior Configuration/Data Management Administrator, **Chuck McKenney**, Manager, Engineering Design/Data Services Department, **John Watson**,

Configuration/Data Management Department Manager, and **Beth Sparkes**, Systems Division Personnel Administrator, had viewed those tapes in April 1990 and realized that their message on cultural change would be important for the whole Engineering Services Lab to hear.

To get the most out of this presentation, Chuck and Adele worked hard to create an environment that would foster team-building. Theirs was a pioneering effort because it preceded facilitators training and publication of the company's *Strategic Plan*, with its general emphasis on teams and employee participation from the "grassroots" level.

In this facilitated environment, the tapes, shown in June 1990, did spark change. The ESL employees, inspired by those tapes, pulled together as a team to try for themselves what Hughes seemed to be asking them to do.

ESL was a good candidate for team building. It is a large, diverse lab divided among several buildings. There are 61 employees and three departments— Configuration and Data Management Organization (CDMO), Engineering Standards Specifications and Procedures, and Engineering Design/Data Services. Employees, of course, were familiar with their own particular department, but often knew little, or nothing, about the other departments within their larger lab group. This was

a problem because work was not flowing as efficiently as it could.

"Because of the team experience, the lab communicates with the customer in a much more focused, unified way to address each program's requirements," said John Watson. "In the long run, that's going to be very, very beneficial in terms of cost effectiveness and product effectiveness. Employees are showing feelings of belonging, support, and initiative."

To facilitate closer communications, the large ESL team divided into six subteams, with representatives from each department on each subteam, plus a team leader. The leaders later represented their subteam on an ESL CMI Steering Committee that included lab supervision.

Once the team structure was established, the subteams met to collect ideas on improving production in the lab and to develop team identity and direction. Together they published a booklet stating their charter, documenting their history, and capturing the range of ideas generated by team members; they designed a team logo; and they created a particularly useful implementation tool—a *Strategic Plan* tree—that ensures team implementation efforts are aligned with the company's *Strategic Plan*.

Just establishing good communications throughout the lab, though, was one of the most immediate and gratifying accomplishments the team made.

"Everyone in each department now knows that we all belong to the same lab; that we are all part of one group," said **Alice Scherrer**, Administrative Services Assistant I, a team leader.

"That's what all this really boils down to," said team leader **Steve Myers**, Developmental Engineer, Senior. "Communication. Not only communicating better among ourselves and to management, but management communicating to us what it is they're trying to accomplish so that we can all work toward the same goal. I think this will help immeasurably as time goes on."

Team ESL has been fortunate to have management support, not interference. "My involvement has been little...I think that's the way it's supposed to be," said Engineering Services Lab Manager **George Bunson**.

ETM, cont. from page 1

the detection and monitoring of the nuclear disaster at Chernobyl.

The satellite operates from a 705 km (437 mile) sun-synchronous polar orbit that retraces the same point on earth every 16 days to monitor trends or changes to previously observed points of interest. The Landsat Program is managed by EOSAT Corporation which is a joint partnership venture between Hughes and General Electric.

The ETM and the associated support equipment was loaded aboard two 18-wheel tractor-trailers for the long haul to the General Electric Astro Space Division (GEASD) at Princeton, New Jersey for the performance of spacecraft integration and test in preparation for a scheduled launch from Vandenberg Air Force Base in the spring of 1992.

Two SBRC employees, **Don Adams** and **Steve Schiefen**, followed the vans in a motor home to ensure the safe handling and delivery of the system during the five-day journey. The trip was educational, to say the least, as Don and Steve enjoyed the sights of the countryside, ate at the finest truckstops, and learned the finer points of operating a CB radio to stay in tune with the activities of the truckers.

The ETM has been received at the GEASD facility, and a rigorous post-delivery test series was successfully completed. The initial mechanical mating of the ETM to the spacecraft structure is in progress and will soon be followed by the performance of electrical interface tests as the various spacecraft "black boxes" are made available.

The success of this program is attributable to the dedication and skill of the personnel who have worked on the program and given unselfishly of their time and talent.

Top photo: The trucks are lined up and ready to load the ETM bright and early at the dock of B-32

Center: Rick Whitaker, Kelly Ripa, and Chuck Lane have the computer pallet for the BTCE in tow and ready to load.

Bottom: The ETM is carefully loaded on the truck by Rick Whitaker, Kevin Connor, and Chuck Lane under the watchful eyes of QA Engineer Don Adams, Steve Schiefen, and Program Manager Richard Ruiz.

Update



Photo: Matt Weinberg



Photo: Matt Weinberg



Photo: Matt Weinberg

energy Awareness

Don't Leave Home Without It!

By Andy Deane

In the May issue of the *SBRC News*, the Energy Management Committee asked for your help and received an excellent response from people calling in with ideas and questions.

But energy management is not a one-time effort. Saving energy depends on all of us being constantly aware of how we use energy and of ways to make that use more efficient.

In most cases, the tools to reduce our electrical and natural gas consumption are already in place. It only takes cooperation and commitment to reach our goals.

Remember, saving energy reduces costs, and reduced costs mean that SBRC can be more competitive and ultimately more profitable.

Some important events have occurred in the last few months—

Through the cooperation of Detector, Safety, and Facilities groups, a study of B-1 clean-room wet-station operations was recently completed. This has enabled us to safely reduce the exhaust air-flow rate from the wet stations and hence the amount of conditioned make-up air supplied to the clean room. Savings are estimated at \$40,000 per year.

With the assistance of facilitator **Russell Mack**, a team consisting of Facilities Engineering, Plant Services, and Finance personnel submitted a proposal of energy-saving and energy-cost reducing ideas to senior management under the cost improvement program (CIP). If implemented, the ideas in the proposal could reduce energy costs by 20% and pay for any installation required within one year.

Facilities Engineering has taken advantage of a recent Public Utilities Commission ruling on Economic Practicality whereby lower cost natural gas can be purchased if the purchaser (i.e., SBRC) can prove the ability to operate on an alternative fuel, in our case propane. We were able to do so, and will realize a savings of approximately \$350,000 for the year ending July 31, 1992. It will be necessary to submit a new study for next year for each high-use meter. An additional 5% savings is expected by purchasing well-head gas through General Motors Energy Services and contracting for pipeline transportation from Southern California Gas, our normal supplier.

There are opportunities waiting to be discovered, we just need *you* to help us find them.

Contact **Andy Deane** at extension 2252 if you have ideas, or for further information.

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) *Ethics Administrator Jack Murray* on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

Test Your Ethics Savvy

From Jack Murray

Elizabeth Mattis is a specialist with the Production Controls Section and has realized that in 2 days she is going to need at least 3 of the 12 storage batteries required for critical testing being performed on the Adventure Program.

Getting the batteries ordered from the vendor through Purchasing will require more time than she has, so she has decided to purchase the first 3 with \$200 cash through the petty cash system.

Elizabeth has just arrived at the Cashier's Office with the Petty Cash Request Form and has been advised by the cashier that Elizabeth's manager's approval signature is needed on the form before monies can be released. Elizabeth has walked 25 minutes from her building and forgot to get approval signatures!

Elizabeth steps into the hall to decide what to do. She should:

A. Go back and argue with the cashier for release of the cash. Elizabeth is only trying to get the job done.

B. Delay the process and go get an authorized signature.

C. Sign the form with her manager's signature. He knows the program is hot and will certainly approve the monies.

D. Purchase the batteries with her own money and submit a reimbursement form later. This way she can purchase an extra battery for the overrun Project Intercept and add the cost into the Adventure contract.

Answer:

At least two issues are prominent here—signature falsification and improper contract charges.

Signature falsification may be viewed more as a misconduct issue rather than an ethics issue; however, our Code of Conduct calls for honesty and integrity in our everyday business activities.

Elizabeth needs to seek out the proper authorized signature. Certainly she should do what she can to avoid a delay, but forging someone else's signature is the wrong way to go about it. Doing so constitutes unauthorized use of company records.

Elizabeth may also personally purchase the batteries and submit for reimbursement. This may be the "quick fix," however shifting the Project Intercept battery costs to the Adventure contract is false charging and subjects Elizabeth and the company to violation of Federal law.

SBRC Gives Support to Human Relations Commission on Diversity



Photo: Craig Cook

On September 24 at the County Board of Supervisors Meeting, **Jack Weber** (above right), *Manager, Community Affairs*, presented a check from SBRC to First District Supervisor Gloria Ochoa (above left) for the Human Relations Commission on Diversity Project. This is a public-private partnership aimed at providing a community forum for fostering goodwill, educating people about cultural/racial differences, and providing nonconfrontational methods of conflict resolution. Supervisor Ochoa thanked SBRC for its contribution and recognized SBRC's leadership as one of the first businesses in the community to come forward with support for the project.

RFR: Request for Receipts

Your cash register receipts from either Vons or Lucky's can help local schools purchase computers, calculators, software, and athletic equipment. Send your saved receipts to the school of your choice.

If you are not already affiliated with a local school, please consider saving your receipts for SBRC's adopted school, Dos Pueblos High School (DPHS). You can mail your receipts for DPHS to **Margaret Finlay** (B27/76) or to the EA Office (B27/74).

SBRC in the community

SBRC Adds Extra Dimension to Students' Studies

By Gage Ricard

Seven high school students took an extraordinary route in their quest to add relevance to their studies. SBRC was an important stop along the way.

During summer break, these students participated in a work program at UCSB's Center for Quantized Electronic Structures (QUEST), an interdisciplinary research center that is developing new means of making quantum structures in compound semiconductors.

Through this experience, these students saw first-hand how research is conducted at a university; a complementary component to their education, though, was a look at how research is conducted in industry.

High school teacher **Millie Krause**, who had worked at SBRC under the aegis of the Technology Sharing Program last summer and who was working at QUEST through a similar summer program this year, contacted SBRC to see if these students could be given a tour

of our facility. **Eric Poolman**, our SBRC President's Award recipient, was among the QUEST student group.

The group received an excellent overview of SBRC's Detector operations, including tours of labs and clean rooms provided by **Tom Casselman, Dr. Ralph Ruth, Dr. Mitra Sen, Murray Kalisher, Dr. Bill Ahlgren, Dr. Scott Johnson, Dr. Gerry Garwood, and Jim Myrosznyk.** Systems Division facilities and programs such as TES were

covered by **Dr. Carl Schueler** and **Steve Silverman.**

In thanking SBRC, Dr. Fiona Goodchild, *QUEST Educational Coordinator*, wrote "Our visit to SBRC was much more than we expected. The students were quite astonished to realize that your labs reflected so many of the concepts they had learned at QUEST. I think the credit for this goes to your scientists who were alert to the connections and provided such good examples."

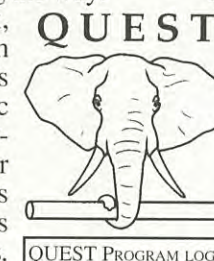


Photo: Craig Cook

During their tour of SBRC, visiting high school students from QUEST found that many of the concepts they had been studying were applied in our labs. From left, front row, **Dr. Carl Schueler, Millie Krause (teacher), student Amy Allina, QUEST Educational Coordinator Dr. Fiona Goodchild, SBRC Coordinator Margaret Finlay;** back row, **students Andy Waniuk, Eric Poolman, Jeff Nason, Wayne Cole (teacher), Ignancio Melendez, Jody Williams, and Diem Dang.**

Direct Deposit Forms and Paychecks Get a New Look

By Gage Ricard

The appearance and quality of the employee Direct Deposit Advice and weekly Paycheck will soon improve dramatically. They may even arrive a day earlier!

SBRC has purchased a machine to fold and seal the new Direct Deposit Advice and Paychecks which will improve overall processing time. And because the new machine, called the InfoSeal, is laser-printer compatible, Finance can now use quality printing equipment already in-house, which will significantly improve readability.

"The new forms for both paychecks and direct deposits will look identical," said **Ron Gibbons**, *Manager of Accounting Operations*. "They will be printed on an 8-1/2 x 11 inch sheet. The text will be easier to read, there will be more information provided, and earnings-deductions descriptions will be written out instead of abbreviated. Information on *Total Hours* and *Actual Net Pay* will be highlighted to make those figures easier to find, and the new forms will show withholding information and your social security number."

The new automated process translates into cost savings, too. Once the addressed payroll forms are sorted and sealed, they go directly to the mail room for distribution to the appropriate departments. "That in itself is a savings because today all the forms come back to Finance where they're sorted. Then department secretaries have to come and pick these forms up. The new system will eliminate those steps."

Because of the processing time saved, Finance just might be able to deliver paychecks and direct-deposit slips a day earlier. "We're always looking for ways to get employee payments out as fast as possible," said Ron.

Photo: Craig Cook



CTM training involves simulating a production line process so that everyone can see the benefits of CTM techniques, such as "balancing" the line, which avoids someone having either too much or too little to do (they get the next unit "just in time"); "pulling" units through, versus "pushing" them through; and reducing inventory on the line at one time, so inventory problems become apparent right away. This eliminates rework and waste. Participants include, from left, Jim Mount, Mary Anne White, Frank Maciel, Jeff Guenther, and Rick Slack.

CTM Training Makes Timely Appearance

By Ron Gibbons

Cycle Time Management (CTM) training at SBRC has received a major boost in importance and awareness during the past few weeks with the emergence of a newly developed two-hour workshop. Thanks to the dedicated work of *Operations Manager Jim Mount*, SBRC personnel can now experience first-hand the benefits and how CTM concepts are applied.

Jim has developed the workshop in such a manner that participants act out the roles of production workers where they are required to "produce" an actual product using Just-in-Time (JIT) manu-

facturing techniques. The lessons to be learned are seen through the dramatic results obtained when CTM concepts are implemented on the mock production line. No fuzzy theory here, it's all very clear and easily understood as to how our own SBRC productivity will be improved when CTM concepts are used.

The workshop is presented in two segments, with the first part dealing with the production line issues discussed above. The second part covers how CTM is applied to office paper flows and concentrates on the elimination of non-value added tasks. In this segment, participants chart and analyze a process and then discuss causes and recommended changes.

This workshop is highly recommended for its ability to take a complex concept and describe applications in easy to grasp terms. In addition to delivering the training himself, Jim has trained several facilitators to provide training. For more information or to sign up for a class, call Jim Mount at extension 2320.

SBRC's Policies & Practices Manual Soon to Be More Accessible with Videotex

By Claudia Whitney

In keeping with SBRC's Strategic Plan, Videotex access to the *SBRC Policies and Practices Manual* will be available by the end of 1991.

The Videotex System provides on-line access to information such as Hughes Corporate and Group Policies and Practices, credit union information, newsletters, and employment opportunities. You can read the information on your terminal screen or print it on a nearby printer. The Hughes Videotex System runs on a VAX computer in Fullerton and can be accessed through the IBM com-

puter, HACNET, or local SBRC VAX systems.

This easy-to-use system affords many advantages. When Videotex access to the *SBRC Policies and Practices Manual* is implemented, paper copy distribution of the manual will be discontinued and savings will be realized in reproduction and distribution costs and filing time, and the currency of directive documents will be better assured.

A Videotex "User's Guide" is available from Information Services and can be obtained by calling the SBRC Office Automation Hotline at extension 7446.

ACCORDING TO MILITARY AFTER-ACTION REPORT "SBRC's Automatic Fire Sensing and Suppression System is Proven Winner"

DESERT STORM TROOPS AGREE

By Greg Chambers

As information trickles in regarding the performance of military equipment used in combat, SBRC's fire sensing and suppression system consistently receives accolades as a life saver. The system is installed on the M1 Abrams Main Battle Tank as well as the M2/3 Bradley Fighting Vehicle. Both saw extensive action during Desert Storm.

After the war, SBRC was given permission by the Army to visit armored vehicle crews who saw combat in Iraq, and to conduct personal interviews in Germany with the troops who were hit by lethal projectiles.

"I'd bet my life on that tank now! I know that tank can take a hit—anywhere—and the crew will survive," said SPC5 Foth, driver of an M1. His tank was shot twice by what was believed to be a T-72 main battle tank SABOT round.

In all, between July 15 and 17,

SBRC's **Jack Senik** and **Greg Chambers** interviewed eight soldiers whose tanks were hit by lethal ordnance that penetrated their tank, causing a fire in the crew compartment. Without the AFSS system, these men probably would not have survived the attack or would have sustained serious burns and other injuries.

"Something hit the tank real, real hard; harder than anything I've ever experienced before. I saw a flash of red...a flash of white... The fire suppression system put that fire out. It was just so fast. It had to be the fire suppression system," said Sgt. Beauchamp, gunner on an M1 that was hit by an Iraqi tank round.

In all, four M1 Abrams tanks are known to have been penetrated, resulting in a fire. Every member of those tank crews survived. "The fire suppression system sensed the burning inside the tank and put the fire out. I woke up on the ground," recalled Captain Andy Meneen after being blown out of an M1 tank that was hit by enemy fire.

In addition to these testimonials by the veterans of the war, the performance of the M1 tank's survivability characteristics was highly praised by the Center for Army Lessons Learned (CALL), a command set up by the Army to evaluate the tank's perfor-

mance during Desert Storm. Major General Tate, *Commanding General for the Center*, while addressing the Armored Vehicle Conference at Fort Knox, made a special point of praising the survival characteristics of both the M1 Abrams and the M2/3 Bradley Fighting Vehicle, stating that both of these vehicles were "clear winners" in the war.

CALL's analysis showed that no M1s or M2/3s were catastrophically killed by first round hits, giving the crew time to evacuate. "Along with the courage and professionalism of our soldiers in combat, the performance of these vehicles was outstanding," said General Tate.

General Tate's comments were followed up two weeks later when the U.S. Army Ballistic Research Laboratory (BRL) presented the findings of its Army Battle Damage Assessment Team at the National Institute for Standards and Technology on September 24. Major Richard Koffinke headed this assessment team for BRL, which went to Southwest Asia during the war to conduct battle damage assessments on equipment that was attacked. "We build great stuff!" was Major Koffinke's final comment, making special note of SBRC's AFSS system in both the M1 Abrams and M2/3 Bradley. "In every tank and Bradley that we inspected where the AFSS should have gone off, it did go off."

The Fire Sensor Group hopes to continue building on its recent product successes in the commercial bus and other mass transit markets. The technology is 100% transferrable from military to commercial applications. With the advent of alternate fuels, there is certainly a need for Automatic Fire Sensing and Suppression, and if the SBRC systems can extinguish catastrophic explosions in M1 tanks, it can certainly protect U.S. citizens riding in buses with the same effectiveness.

The "Fire Sensing and Suppression Gang," from left, front row, Herman Segal, Theresa Rivas, Marva Hudson; 2nd row, Gloria Ortega, Silvia Garcia, Pamela Herrera, Grace Ingram, Beverly Brown, Tom Sortino, Lisa Lugo, Greg Chambers; 3rd row, Deborah Reese, Sam Ryan, Jay Brown, Yolanda Lopez, Gilbert Escoto; back row, Rosemary Flores, Diane Northrup, Betty Crosno, John Vasques, and Bill Anaya. Not present: Lloyd O'Connell.



Photo: Craig Cook

September Perfect Timekeepers Win \$50 U.S. Savings Bonds

By Charlene McGinnis

Manufacturing and Information Systems share the awards this month. Manufacturing winners, both in Manufacturing Engineering, were **David Rapson** ("I never win anything. Gosh, how exciting!") and **Cliff Shock** ("All right! Thanks. That's great.").

Our big winner from Information Systems was **Randall Nelson**, Vax Systems ("Fantastic!").

Has your timecard been audited this year? If not, you may be audited soon. If you have been audited, you could be audited again. Maintain your timecard in accordance with *The Timekeeping Manual*, win a Perfect Timecard Audit Award and you will be eligible for the drawing to win one of the three \$50 U. S. Savings Bonds awarded next month. Be prepared. The timekeeping auditors make the rounds on a regular basis. *You* could be one of the next big winners!

The SBRC News—published in the interest of the employees of
SANTA BARBARA RESEARCH CENTER
A subsidiary of Hughes

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The SBRC News is printed on recycled paper

QA/benefits

This is part of a continuing series to inform employees about benefits and procedures. The questions in this series are among those employees frequently ask Benefits representatives.

Employees who have questions they would like answered in this column may submit them to: *Benefits Questions, B27, MS81.*

Q. Now that I've enrolled for 1992 health benefits, how do I add a dependent?

A. The Spectrum benefits administrator, Prudential, is now responsible for processing major life events, including the addition of dependents. Call Prudential at 1-800-HAC-CALL (1-800-422-2255) within 31 days and state that you want to add a dependent, indicating the changes you want to make to pre-tax benefits. Prudential will send you a "Summary of Requested Changes" form indicating credit allowances, costs, and expiration date for making changes to pre-tax benefits. You will also receive a Health Care Change Request form and a Major Life Event Employee Affidavit, as applicable. Complete and return to Prudential the paperwork sent to you, including supporting documentation such as a marriage certificate. The changes you make during your telephone call to Prudential are held in pending status until Prudential receives and approves the paperwork. If you do not complete and return the forms, the dependent will not be added. If you do not make benefit changes using the telephone enrollment system within the allowed time period, all current benefits will remain in effect.

If a dependent becomes ineligible for benefits coverage, remember that it is the employee's responsibility to notify Prudential by phone of the change within 31 days. Failure to do so may jeopardize the dependent's ability to obtain COBRA continuation coverage for health care benefits. (COBRA cov-

erage provides health care continuation benefits for certain employees and eligible dependents on a self-pay basis at the employer's group insurance rate.)

Q. I have recently stopped smoking and want to pay the lower non-smoker premium for optional life insurance. Can I get the insurance premium lowered now?

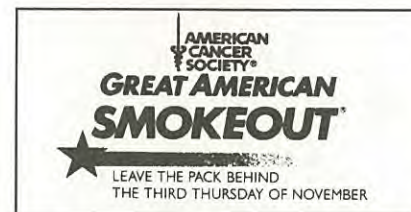
A. In order to change any after-tax benefits (optional life insurance, dependent life insurance, short-term disability insurance and long-term liability insurance), call Prudential at 1-800-HAC-CALL. You may change between smoker and non-smoker rates, decrease the amount or cancel after-tax insurance coverage at any time. If you want to add or increase after-tax insurance coverage for yourself or eligible dependents, evidence of insurability will be required. Prudential will forward to you the necessary forms to add or increase after-tax insurance coverage.

Q. I've misplaced my PIN identification card that I received with the Spectrum open enrollment materials. How do I get a replacement?

A. You will need to have your PIN to make any Spectrum benefits changes throughout 1992. Call the Benefits office at extension 7112 to obtain a replacement PIN card. If you misplace your Benefit Enrollment Confirmation Statement, however, you'll need to call Prudential at 1-800-HAC-CALL to get a replacement copy.

SBRC Wellness Program

By Emily Gonzales



It's one holiday no one has to spend alone. The American Cancer Society's Great American Smokeout is celebrated each year by millions of smokers who try to quit smoking for 24 hours. Millions of nonsmokers join in by giving their support. If you're thinking about quitting smoking, you don't have to go it alone. Make **November 21**, the day of the Great American Smokeout, a big holiday in your life!

If you have not already signed up to participate in the Great American Smokeout activities, call **Emily Gonzales** at extension 7096. Employees who smoke may sign up with a nonsmoking partner who will be their sponsor for the day. If you don't have a nonsmoking partner, we will provide one for you! Each smoker who pledges to stop smoking for the day will receive a "survival kit" as well as other acts of encouragement throughout the day. You too can LEAVE THE PACK BEHIND on November 21!

Your Holiday Gift is Coming

With best wishes from SBRC Management, for your holiday, we hope you will enjoy a delicious Norbest turkey, Dubuque ham, or groceries equal to certificate value. The holiday gift certificates will be distributed with paychecks on December 6, and must be used between December 6, 1991 and January 31, 1992.

What Will Be Your

1992 New Year's Resolution?

If it involves losing weight or exercise, you may want to give Emily Gonzales a call at extension 7096 to obtain a listing of fitness centers in Santa Barbara County that provide **discounts for SBRC employees**. Start planning your strategy now so that you can stick to your resolution. Get into shape for the New Year!

The American Heart Association Diet Plan

This eating plan can help you start a new lifestyle, one that aims at reducing one of the major risks of heart attack—high blood cholesterol. Developed by the American Heart Association, this plan describes the latest recommendations of medical scientists and provides a step-by-step guide to eating with your heart in mind. To obtain your guide, call extension 7096 in Goleta or extension 5419 in Santa Maria.

Volunteer Opportunity

By Jackie Wheeler

The COUNCIL OF CHRISTMAS CHEER's Christmas Unity Shoppe could use your help.

In addition to donating food, toys, clothing, and turkey certificates, which are collected in the boxes placed in our lobbies each year, we can also show our support for this program by volunteering our time to create remembrance boxes for the elderly or to work in the Shoppe. Last

Employee Counseling Corner

By David Root, MFCC

BE ALL YOU CAN BE—In my last article, I suggested that our challenge, in our business life and personal life, is to become *empowered* people. But, what does this mean?

I talk to people regularly who are *victims*. True, some of them have been victimized—by parents, spouses, society, employers. Others have really had pretty fortunate lives, with little trauma involved. In *either* case, it is the **attitude** of the person that makes *all* the difference in the world. If a person refuses to see herself as unempowered, she assumes the "non-victim" mental set. Conversely, if a person stays focused on all the ways others are "doing it to him," he is assuming the "victim" mental set. His life is a perpetual gripe session.

So, it is important for you and me to see how we can empower ourselves—see choices, act on what we see as best, and involve ourselves in the change and growth process.

In our work, it is essential we act to **empower** all employees at every level. This means we give them responsibility and authority to do their job. It means we listen to the input of all employees and act on it, as appropriate. It means we allow conflict to resolve itself into creative solutions.

All of this we **can** do. The only issue is, **will** we? Let's be empowered people—at home, at work!

Need Help? Call your Employee Counselor at 733-1916.

On the Path to Technology: SBRC Employees Talk to Students about Technical Career Options

UCSB freshmen step up for a closer look

By Bob Fiala

SBRC hosted two half-day tours on August 30 and September 6 for 21 incoming UCSB freshman engineering students. The students were taking part in UCSB's Summer Transition to Engineering Program (STEP).

STEP is a three-week summer residential program for incoming freshman students enrolled in the College of Engineering. Under the direction of the Office of Minority Affairs, STEP works to increase the academic preparation of underrepresented students who are beginning their undergraduate work in engineering. At the core of the STEP instruction are small intensive classes designed to strengthen and prepare the students for their particular engineering discipline. In addition, workshops, seminars, and tours aimed at enhancing the students' understanding of the field of Engineering are also provided.

Because the tours were coordinated through SBRC's Employment Department, the first stop on both days was Human Resources in B27. **Bob Fiala, Employment Specialist**, showed a video about SBRC's products and facilities and discussed the Engineering Rotation and Summer Hire Programs. The students were also given introductory literature and brochures on SBRC.

The first (August 30) student group then went to B21 where **Ted Everson, MTS Electronics**, presented an overview of the Fire Sensing and Suppression Systems Product Line. Ted used story-boards to explain the system and show students what the hardware looks like. A tour of the building followed, where Ted provided background information on assembly and testing of the Fire Sensor hardware.

SBRC becomes classroom for minority youths

By Sarah Weinberg

Terry King describes his work with computers to students from the Alliance for Community Development (ACD) summer program. The ACD, a nonprofit social service organization, assists at-risk African-American and Latino youths in developing their talents.

Dick Cobb, Manager, Manufacturing Program, led the tour, which was organized to encourage minority youths to consider technical careers. Earl Pugh, Manager, Manufacturing Program, and Belinda Salazar, Supervisor Production, later showed the students the B8 laboratories. The students were particularly impressed by the "clean-room" environment at SBRC.



Photo: Sarah Weinberg

On September 6, the second group met **Jay James, Senior Scientist**, for a tour of the B1 Clean Room. Jay highlighted many of the unique structural features of the room, which are required to fabricate IR detectors.

The students and UCSB advisors who attended the tours were impressed by SBRC's facilities and our people. Coordinating tours, arranging guest speakers, and participating on advisory boards are just a few of the ways in which SBRC's Employment Department is actively involved with student organizations on college campuses. The tours provided on August 30 and September 6 will serve to strengthen and maintain positive college relations with the Office of Minority Affairs at UCSB and the Minority Engineering Program.

Hispanic high-school girls meet SBRC reps at City College

By Joyce Salda

Jemiah Payton and **Joyce Salda** represented SBRC at the second annual *Adelante Mujer Hispana Conference* at Santa Barbara City College on September 14.

The conference was organized to inform Hispanic high-school girls of the variety of opportunities open to them upon graduation. Representatives from local businesses gave the approximately 120 attendees more specific career information, covering such topics as education, experience, and growth opportunities.

Anniversaries

June 1991

25-year pin

Robert Cooley
Mgr Program
Detector Division

15-year pin

Carolyn Reed
Admv Services Ast Sr
Systems Division

10-year pins

Lawrence Kubecka Jr
Sup Telecomms
Information Services

Mary LaPlant
Admv Services Ast Sr
Human Resources

Doug Stelck
Multi-media Producer
Operations

Nancy Galvin
Financial Analyst Sr
Finance

CL Luke Jr
Calibration Tech Sr
Product Assurance

Patricia Swanson
Admv Services Ast Sr
Operations

Kathleen Mezo
Admv Services Splst
Human Resources

Robert A. Anderson
Hd Product Assurance
Product Assurance

Linda Palacio
Production Tech B
Detector Division

Gretchen Gould
MTS-Cmp Sci/Math
Detector Division

Patricia Fletcher
Secretary Admv Sr
Detector Division

Mostyn Gale
Hd Technical
Detector Division

Keith Solak
Project Engineer
Systems Division

5-year pins

Jeff Neely
MCS-1 Business
Information Services

Charles Venzor, Sr
Sup Motor Transpnt
Materiel

Paul Bryant
MTS-Electronics
Detector Division

Carolyn Brown
Computer Oper Sr
Information Services

Trudy Bern
Admv Services Ast 1
Operations

Rebecca Ruiz
Laboratory Prsr Sr
Detector Division

Curtis Balston
Mgr Div Contracts
Contracts

Gary Fry
Maintenance Spc
Operations

Steven Cable
Production Ctl Adm Sr
Detector Division

Christine Catron
Accountant 1
Finance

Johnny Castanaga
Assembler A
Manufacturing Division

John Millard
Sup Technical
Systems Division

David Gosselin
Security Inspector Sr
Human Resources

Martha Gee
Assembler B
Manufacturing Division

Thomas Segura
Vacuum Technician Sr
Systems Division

Raymond Mumolo
Info Processor 1
Materiel

Andrea Billones
Assembler A
Manufacturing Division

Steven Silverman
Systems Engineer Sr
Systems Division

Rose Ann Cervantez
Materiel Associate
Materiel

Angeli San Gabriel
Administrative Clk A
Manufacturing Division

Jeannette Woo
MTS-Rotation
Systems Division

Vivien Finch
Materiel Ast Sr
Materiel

Kerrie Hanna
Assembler A
Manufacturing Division

Daniel Pelham
Masters Fell MTS
Systems Division

Kathleen Norton
Admv Services Ast Sr
Materiel

John Kuhn
MTS-Electronics
Product Assurance

John Boland
MTS-Cmp Sci/Math
Systems Division

Thomas Cross
Program Ctls Admr
Detector Division

July 1991

30-year pin

George Bunson
Mgr Technical Lab
Systems Division

25-year pin

Edgar Russell
Sr Staff Engineer
Systems Division

20-year pins

Robert Koseluk
Sr Scientist
Systems Division

John Willis
Devmt Engineer Splst
Systems Division

15-year pins

Aram Mika
VP/Mgr Tech Div
Corporate Staff

Mike Jack
Chief Engineer
Detector Division

Francis Gesswein
Process Eng Sr
Detector Division

Robert Anderson
Mfg Liaison Engr 2
Materiel

David Olsen
Conf/Data Mgt Analyst
Systems Division

10-year pins

Lisa Stearns
Reproduction Opr 1
Operations

Kenneth Kosai
Staff Physicist
Detector Division

Bradley Peterson
Project Engineer
Systems Division

Barbara Harris
Info Systems Coor
Operations

Ralph Ruth
Mgr Technical Dept
Detector Division

Bruce Carr
Mgr Mft Bus Mgmt 1
Manufacturing Division

Frederick Metz
Devmtl Machinist Spec
Manufacturing Division

Stephen Gibbs
Project Engineer
Detector Division

5-year pins

William Keese
Hd Computing
Information Services

Marilyn Reyes
Production Ctl Admr
Manufacturing Division

David Burke
Mgr Project 2
Systems Division

Curtis Wilcox
Sr Pricing Staff Spec
Contracts

Martin Garcia
Production Ctl Coor 2
Manufacturing Division

Eric Johnson
MTS-Physical Sci
Systems Division

Sylvin Hom
Contracts Admr
Contracts

Donna Mathews
Inspector B
Product Assurance

George Begin Jr
Engrg Dsgnr Sr
Systems Division

Pamela Friedman
Env H&S Egr Splst
Human Resources

Robert Ginn
Sup Technical
Detector Division

Paige Moore
Engrg Assistant Sr
Systems Division

Gilbert Avila
Stores Clerk 1
Materiel

Naseem Aziz
MTS-Electronics
Detector Division

Linda Ward
Program Ctls Admr Sr
Systems Division

Ireneo Icotanim
Custodian 3
Operations

Ri-Pen Chou
MTS-Electronics
Detector Division

Steve Zook
Production Ast Sr
Systems Division

Kirkman Gardiner
Technical Artist Sr
Operations

Daryl Schmidt
Masters Fell MTS
Detector Division

Geoff Walters
MTS-Electronics
Systems Division

Insanity & Western Railroad

This HO-scale model is just around the bend at "Dutch's" Place

By Gage Ricard



Photo: Craig Cook

Ever heard of Dutch Flats? A town by the name of Insanity served by a railroad called Insanity & Western? Well, they are just minutes away from SBRC. They are the creation of model railroad buff "Dutch" Verkaik, *Maintenance Mechanic*.

After 11 years, construction of this HO-scale model railroad town is still in progress. And in that time it has grown to include approximately 700 railroad cars, over 200 diesels and steam locomotives, 137 hand-made switches, 5,000 trees (many hand-made), 350,000 hand-laid railroad ties, 160 people, and unexpected details, like a polar bear on top of a mountain, a fire hydrant complete with dog, grass made from human hair, a trailer with a

Hughes decal and a tractor-trailer with Santa Barbara Research Center decals.

But, Dutch did not spend long nights crafting his masterpiece railroad village alone. Model railroading is a social activity.

A local group of model railroad hobbyists formed an informal club in 1975. The group, including Dutch, decided to meet every Tuesday evening to work on a member's model set on a rotating basis. In 1980, the group turned its attention to Dutch's set up, which he had just started. The Tuesday night tradition continues and Dutch says his model railroad is about three to four years away from completion. But then again, "you never finish."

What is finished, though, is impressive and Dutch regularly gets requests from family, friends, and friends' friends to see his model railroad set up. Even elementary school teachers ask him to let their classes come over for a tour, which, when granted, is a delight for the kids, es-

pecially during the holidays.

The I&W always seems to capture and hold the imagination of those who schedule a stop at Dutch's Place.

PHOTO CAPTIONS: Top left—There were no "Hughes Aircraft Co." decals, or "Santa Barbara Research Center" decals to buy off the shelf, so Dutch painstakingly hand applied each letter on a tractor-trailer (center in village) and box car (where Dutch is looking) to create those custom decals.

Lower left—SBRC employee Gene Manriquez painted the background mural of the sky. Dutch constructed the buildings in the town center from kits; he pasted storefronts onto hand-cut cardboard for "buildings" set against the mountains.

Lower right—The train on the outer track loops past the container cranes, around the classification yard, and in front of I&W Engineer Dutch, who is engrossed in choreographing the mechanical ballet before him.



Photo: Craig Cook



Photo: Craig Cook

NEWS



SANTA BARBARA RESEARCH CENTER

December 1991

Secretary of Army Impressed by Javelin (AAWS-M) Program Status at SBRC

By Will Van Dyke

The Honorable Michael P.W. Stone, *Secretary of the Army*, visited SBRC on October 25 to review the Javelin Program, formerly called AAWS-M (Advanced Anti-Tank Weapons System—Medium).

While he was here, Mr. Stone was also given a one-hour briefing and demonstration on the THAAD (Theater High Altitude Area Defense) Program by Barry Abrahams of Hughes Missile Systems Group, and was shown a comparison of first-generation (Bradley) and second-generation (Seg II) Forward Looking Infrared (FLIR) systems.

Accompanying Mr. Stone were Dr. Peter Pappas, *Chief Scientist, SDC*, and Dr. Fenner Milton, *Director of Technology* in Secretary Stone's office.

Following introductions by Hughes *Vice President Dick Brandes* and

SBRC President Dr. Fletcher Phillips, the guests were updated on the latest program accomplishments and plans by *Dr. Steve Halsted, Dr. Adam Lewis and Dr. Jay James*. Overall, Mr. Stone was pleased with SBRC's progress on Javelin.

But, while recognizing our good work to date and recognizing that SBRC has little or no control over system costs, Mr. Stone admonished the listeners that, if the program is to survive, there must be no additional cost growth, schedule delays, or weight growth in the program.

Background

In June 1990, Martin Marietta selected SBRC as the second source for Javelin Detector/Dewar Assemblies. Recently, though, because of problems in the manufacture of arrays at Texas

Instruments (TI) (the original first source and designer of the detector assemblies), the Army selected SBRC to supply all 205 of the Engineering and Manufacturing Development test units (formerly called Full-Scale Development test units).

The first detector/dewar assembly was successfully integrated into a missile at TI in October. Our test results were verified by TI, who praised our detector for both its image quality and the cleanliness of the design package. A videotape of the imagery showed excellent results.

The assembly was brought back to SBRC for further characterization and environmental testing before it was formally delivered to Martin in November, six weeks early.

SBRC's Certified Supplier Program Helps Marlow Win Baldrige Award

By Gage Ricard

On October 9, Marlow Industries, an SBRC supplier, won the 1991 Malcolm Baldrige Award in the small-business category, thanks, in part, to SBRC.

Acknowledging SBRC'S help, Raymond Marlow, *President*, Marlow Industries, thanked *Dr. Phillips* and invited him to the formal Baldrige presentation at the Department of Commerce in Washington, DC, on October 29.

How SBRC helped

The benefits of a Total Quality program became apparent to Marlow after completing a supplier certification seminar conducted by SBRC in January 1987. Marlow Industries adopted the Total Quality approach outlined in SBRC's Certified Supplier Program not only in their relationship with us, but also internally. (continued on page 6)

Christmas 1991

I want to express my wishes to you and your families for a joyous holiday season. With these holidays, we share the appreciation of what we have and the expectations of an even better future—one that offers, with all its uncertainties, opportunities for us at SBRC.

Fletcher R. Phillips
PRESIDENT AND CEO

An Easier Way to Document and Track Self-Evaluations? Yes, with E-ATS

A new software program is available to help departments or groups conduct self-evaluations—just call Product Assurance.

Product Assurance Auditor **Carol Jones** worked together with Information Systems' **Otto Schleich** and **Ron Drake** to develop a software program that could be used by all SBRC groups to perform self-audits. The program is called Evaluation Analysis and Trending System, or E-ATS. It is a menu-driven system that runs on the VAX computer using SMARTSTAR for data maintenance.

According to **Anna Currie**, *Product Assurance Supervisor*, this is one of the first detailed audit tracking systems within Hughes.

One of Product Assurance's specifications for E-ATS required the program to be usable not only by SBRC organizations for internal audits, but also by outside organizations, such as other Hughes groups,

customers, and government audit agencies. SBRC now has the potential to accumulate meaningful databases from a variety of sources—property audits, internal department audits, external customer audits, Quality Inspection audits, government and company team In-plant Quality Evaluation (IQUE) audits, government Quality Deficiency Reports (QDRs), Corrective Action Requests (CARs), and Requests for Investigation and Corrective Action (RFICAs).

Anna pointed out that the system can be customized to fit individual departmental requirements. "We didn't want the system to be just for Product Assurance," said Anna, "because the whole move in Hughes is to implement self-evaluations by all divisions and departments. Overall, we have seen better results from self-evaluations."

Some of the advantages the new software program offers are that it

provides trending and historical information for management and teams to evaluate potential problems; lays the foundation for a paperless audit system by increasing our capability to transmit audit reports and receive responses electronically; reduces audit redundancy; simplifies company-wide audits; provides metrics for evaluating continuous measurable improvements (cmi); and supports team functions and Hughes' directive to implement self-audits.

Several groups are already successfully using E-ATS: Internal Quality Audit, Santa Maria Quality Inspection, Operations Surveillance, and Government/Company team IQUE.

Won't you give E-ATS a try? "We want to encourage everyone who is doing internal audits to look into using the new system so that we have a universal company system," said Anna.

For more information contact Anna Currie in Product Assurance Administration, extension 4157, or Otto Schleich in Information Services, extension 7447.

Astronomers Improve Their Vision with New Array

The largest telescope in the world receives the largest, most sensitive IR detector array

"This is the device that astronomers have been waiting for," said **Dave Randall**. The new device is a 256 x 256 indium antimonide (InSb) focal plane array. It is 18 times larger and 8 times more sensitive than our previous infrared astronomy array.

On October 30, Cal Tech astronomers Keith Matthews and Gerry Neugebauer came to SBRC to pick up the array, which they took back to Cal Tech for integration into the Keck Telescope. The Keck will be the world's largest optical and infrared telescope upon its completion (Keck I is scheduled to be completed in April 1992; Keck II in 1996.)

The Keck marks a milestone in astronomy history, according to Dave, and SBRC will be part of that history. "We've delivered a new high-tech array for a new high-tech telescope. There is no other array in existence that is as large and as sensitive as our 256 x 256 array, to be put on the most powerful telescope in the world." Our larger array will enable astronomers to see farther into space and to pick up much fainter objects, providing information not only about the present but also about the past.

"Telescopes are time machines," said Dave. "You are not just looking

out into space, you are also looking back into time. Big Bang proponents are hoping that with these instruments they will be able to look back almost to the beginning of time. According to this theory, after the Big Bang, things started to expand. Well, the faster the objects recede from each other, the more a 'red shift' occurs. Light, as it's stretched out, shifts from the visible to the infrared. The stuff that's back close to the creation is going to be stretched out in the 2.2 micron region. So, astronomers are interested in the infrared because of that effect, and also because the long-

(continued on page 3)



Cal Tech astronomers Keith Matthews (far left) and Dr. Gerry Neugebauer (far right) picked up the 256 x 256 array for the Keck Telescope from Alan Hoffman (center left) and Dave Randall (center right).

Photo: Bob Casper

The GO Club Reaches Out to More Organizations

SBRC employees and the Give Once Club committee have made great strides in identifying numerous additional nonprofit agencies in our local community. Various employees have recommended that the following organizations be included in the GO Club Guide to Charitable Organizations. Three organizations are featured below followed by a complete list of all additional groups recently added to the guide—Ricardo Garcia.

Direct Link for the Disabled (see photo, right) provides one-stop information and assistance for any disability-related question. It helps people find resources to meet their individual needs around the corner or across the country. What it offers, though, is more than a quick list of names. By the time people reach *Direct Link*, they have exhausted the easy answers. *Direct Link* does the research to find answers to tough problems. It serves as a model for what can be done with determination and creativity to make a difference in people's lives.



Photo: Courtesy of Direct Link for the Disabled

Food Pantry of Lompoc provides groceries for families in temporary emergency situations. It helped more than 1200 families and 4400 individuals in April 1991. The families served come from various ethnic groups and are referred to the *Food Pantry* by welfare agencies, churches, and concerned individuals. The *Food Pantry* participates in USDA contributions from the Santa Barbara Food Bank, the South Coast United Way, and in-kind donations from individuals. Community support is appreciated because people needing assistance continue to seek out groups such as the *Food Pantry*.

Additional groups recently added to the GO Club Guide

- The Anacapa School • Association for Retarded Citizens, Santa Barbara Council • The Bach Camerata • Cachuma Lake Foundation, Inc. • Children of the Americas • Community Action Commission of Santa Barbara County • Easter Seal Society of South Santa Barbara County, Inc. • Endowment for Youth Committee • Environmental Defense Center • Essential Leadership Institute • Food Pantry of Lompoc Valley • Four-H Clubs • Four-H Hearts • Friends of the Goleta Library • Friends of the Santa Barbara Public Library • Goleta Valley Community Center • Goleta Valley Youth Sports Association • Jessie Hopkins Hinchee Foundation • KCET • Love Yourself Foundation • Meals on Wheels of Lompoc • The Nature Conservancy • The Pueblo Storyteller, Inc. • Recording for the Blind, Inc. • Santa Barbara Dance Alliance • Santa Barbara Women's Community Center • Santa Barbara Youth Foundation • Santa Barbara Zoological Foundation • Santa Ynez Valley Humane Society • Santa Ynez Valley Senior Citizen's Foundation • Scleroderma Research Foundation • Senior Center of Santa Barbara • Sonflower House • Southern California Adoption Center • Stepfamily Association of America, Inc. • Tri-Counties Association for the Developmentally Disabled, Inc. • United Cerebral Palsy Association of California, Inc. • United Way of the Central Coast • Visiting Nurse Service of Northern Santa Barbara County • Western Addition Services Program, Inc. • World Wildlife Fund, Inc.



Photo: Courtesy of SBWCN

The Santa Barbara Wildlife Care Network (SBWCN)

(see photo, above) is a group of volunteers dedicated to helping individual wild animals in need of assistance. SBWCN members work in their own homes caring for injured and orphaned wildlife. The animals receive specialized diets to facilitate their recovery, and volunteers use special techniques to increase the animals' chance of survival when restored to their natural habitat.

Anniversaries

August 1991

25-year pin

Michael Slonaker
Staff Engineer
Systems Division

20-year pin

John Toman
Mgr Program
Detector Division

10-year pins

Marcia Noell Computing Specialist Information Services	Lisa Schlothauer Secretary Admv Sr Manufacturing Division	Junko Telles Config/Data Mgt Adm Systems Division
Judith Pena Admv Services Splst Human Resources	Sally Vedder-Morley Production Ctl Adm Sr Manufacturing Division	Kenneth Fox Quality Assur Egr Sr Product Assurance
Neville Davison IV Custodian Sr Lead Operations	Linda Anzures Assembler A Manufacturing Division	Ed Clement Sr Scientist Systems Division
Louis Trautwein Hd Technical Product Assurance	Alicia Riotoc Lab Prsr Sr Detector Division	David Durbin Devmt Engineer Sr Systems Division
James West Systems Engineer Sr Detector Division	Janet Purvis Research Tech B Detector Division	Helen Jefferson Config/Data Mgt Adm Systems Division

5-year pins

Eric Pederson Contracts Admr Sr Contracts	John Kiele Research Asst B Detector Division	Gregory Chai Test Engineer 2 Systems Division
Timothy Irwin Chem Stores Clk 2 Materiel	Lawrence Sohasky Devmt Engineer Detector Division	John Thunen Mgr Adv Dev Prgs Systems Division
Sharon Parker Materiel Proj Admr 2 Materiel	Oscar Bohannon Production Ctl Admr Detector Division	John Figoski Sr. Staff Engineer Systems Division
George Chapman MTS-Physical Sci Detector Division	William Hamilton, Jr MTS-Physical Sci Detector Division	Wisner Galbraith Devmt Engineer Splst Systems Division
Alan Holmes Sr. Scientist Systems Division	Adele Sommers Config/Dta Mgt Adm Sr Systems Division	

September 1991

10-year pins

Carmen Nuno Admv Services Ast 1 Finance	Joseph Schamp Maintenance Spc Operations
Elizabeth Weiss Production Tech A Detector Division	Judith Krayk Financial Plng Spc Manufacturing Division
Margaret Varner Secretary Admv Sr Systems Division	Margaret Ames BS Scholar Student Detector Division
Helene Manleitner Lab Prsr Sr Detector Division	

5-year pins

John Chrisman Contracts Advisor Sr Corporate Staff	Chau Tran Production Tech A Manufacturing Division	Margaret Ames BS Scholar Student Detector Division
Ken Ando Director Marketing Corporate Staff	Harold Quintana, Jr Production Ctl Coor 1 Manufacturing Division	Robert Sweeney Test Engineer 2 Systems Division
Dawnita Udall Pricing Analyst Sr Contracts	Albert Ohlrogge Quality Assur Engr 2 Product Assurance	Janice Olson Secretary Admv Sr Systems Division
Robert Fiala Employment Specialist Human Resources	Sharon Bartholomew Inspector A Product Assurance	Susan Ueland Instmn Tec Systems Division
Leona Gonzalez Subcontract Admr Materiel	Ruth Edgington Technical Insp 1 Ld Product Assurance	Gary Wilberger Devmt Engineer Sr Systems Division
Miguel Unzueta Buyer 1 Materiel	Jeffrey Peterson Devmt Engineer Detector Division	Dona Collins Administrative Clk Sr Systems Division
Raymond Oroasco, Jr Chem Stores Clerk 2 Materiel	Bruce Krashefski MTS-Electronics Detector Division	Kenneth Hermansen Engrg Dsgn Checker Sr Systems Division
Charles Hartin Mfg Engineer 1 Manufacturing Division	William Rogatto Mgr Major Program Detector Division	James Kane Mgr Project Systems Division
Paul Zanasco Machine Operator Sr Manufacturing Division	Lee Ruzicka Devmt Engineer Splst Detector Division	Guy Galbois Devmt Engineer Systems Division

Property Audit Teaches Tough Lessons

Final results from recent Government Property Audit are expected in December

By Bob Grow

Over the last few years, SBRC has been learning a tough lesson: we simply must take better care of our customers' property.

Contracts contain specific requirements for such care and SBRC agrees to those terms when we sign each contract. If we don't adequately care for (control) the customer's property, we can be severely penalized.

The words from a current commercial seem particularly appropriate in this case—"Pay me now, or pay me later." Well, we're in the "pay me later" phase when it comes to property management. We weren't paying enough attention in the past, so we are having to pay extra attention, at additional expense, now.

Prior to the recent audit, internal testing disclosed 129 "findings" that still required attention. Resolution of these has been verified by Hughes Corporate analysts, and we are anticipating the government's confirma-

Astronomy, continued from page 2

wave length penetrates dust."

How far back are they looking in time? "Astronomers think they are getting about 90% back in time, or 13 billion years. They achieved that with our 58 x 62 array. With this new one, they'll go back even farther. That doesn't mean they'll pick up that whole 10% that's missing, but they'll get a chunk of it."

Astronomers are also hopeful that they will see a planet in another solar system. "We've never been able to see a planet in a solar system other than our own. Astronomers have deduced that there must be other solar systems, but they've never made a direct observation." Maybe now they will with the powerful combination of our new array and the Keck Telescope.

tion of our system's adequacy.

During their recent survey of our system, government auditors looked at 15 different categories:

MANAGEMENT AND PROCEDURES
IDENTIFICATION
CONSUMPTION
DISPOSITION
MOVEMENT
ACQUISITION
RECORDS
CUSTOMER RETURNS
UTILIZATION
REPORTS
RECEIVING
PHYSICAL INVENTORIES
CONTRACT CLOSURE
MAINTENANCE
STORAGE

As many as 14 auditors were testing our system at any given time.

They were supported by a very dedicated group of facilitators whose responsibility it was to ensure that the auditors got the support needed to accomplish their testing. We've been informed by the auditors that their preliminary impression of our new system was very favorable; however, we don't expect to receive formal written results until later this month.

Property system redesigned

The overall system for control of government property at SBRC has been completely redesigned. We've instituted several changes:

- Adopted Hughes Corporate Property Management System (PMOS) with decentralized input to provide local control
- Conducted training sessions for nearly 500 SBRC employees
- Assigned and placed organizational property coordinators (OPCs) to ensure continuous communication and support to performing organizations
- Converted to "bar code" inventory techniques
- Established independent internal surveillance program
- Adopted and implemented continuous measurable improvement (CMI) philosophy
- Wrote or revised and issued 33 Property Management Practices documenting changes to the system

Through Property's training programs, employees are learning how their specific jobs affect the adequacy of property control, and they're learning that it's just as easy to do it right the first time.

Following the rules isn't just the law, it also makes good sense from a business perspective. Compliance usually has spin-off benefits for SBRC and avoids repeat costs associated with fixing problems later. Taking "short cuts" is not the way to achieve efficiency.

Process simplified

Property Management and Contracts Administration have finished the task of verifying authority for the use of government property. It is now much simpler and straightforward to maintain authorization status. Property is also delegating input capability to user organizations so that they can update the various records systems directly when their property is moved.

Performing organizations have been made aware of their responsibilities in the area of property control. They are actively working toward full implementation of their departmental directives and seeking support and guidance from the property staff to ensure that they are correctly interpreting them. However, recent testing for system discipline indicates the need for continuing efforts to "get the word out."

Property: an ongoing responsibility

What was once viewed as a "back room" activity has emerged as a necessary and contributive portion of SBRC's operation. The increased awareness and knowledge is promoting understanding. The progress made thus far has only been possible because of many people's commitment and teamwork.

But the process and the progress must not end with the government's audit. Continuing effort to adequately take care of our customers' property is the best way to ensure customer satisfaction.

Ethics Questions?

Call SBRC/HTC (Hughes Technology Center) *Ethics Administrator Jack Murray* on the SBRC confidential telephone line, 562-7300, or the Corporate Ethics Office, (800) 423-6010. If you would prefer to write to the SBRC Ethics Office, mail your letter to:

P.O. Box 2321
Santa Barbara, CA 93118

Savings Plan Unit Values

The unit values in effect as of October 31, 1991:

Fixed Income Fund:

4.7641

Equity Fund: Balanced Fund:

7.3650 5.8309

GM/H Stock Share Values

The GM/H stock share values in effect as of October 31, 1991:

Average Purchase Price: 16.9839

Retiree News

"Look me up. I will be working in the cafeteria, Main Lodge, at Mammoth for two to three months starting in November. Think snow!"—*Joe Johnson*
Santa Barbara, CA

Team Process Delivers New CAD/CAM Equipment

By Gage Ricard

Throughout the company, people are working to realize the visions, goals, and objectives articulated in the Strategic Plan. Among the stated strategies in the Plan is one to "develop a flexible information transfer system." Recently, that strategy was implemented through the efforts of a team, the CAD/CAM (Computer-Aided Design/Computer-Aided Manufacturing) Workstation Selection Team.

"In one step, SBRC has obtained the most competitive CAD/CAM system at Hughes that will keep them in the forefront for several years," said a senior manager at EDSG. That step was taken through the successful efforts of a CAD/CAM Workstation Selection Team, which recently won an SBRC Team Achievement Award.

SBRC's new, unified CAD/CAM system includes 81 DEC workstations, 25 Macintosh IIfx's, a Cadence software package for electronic-CAD users, a Pro/ENGINEER software package for mechanical-CAD users, and Cadre Teamworks software for CASE (Computer-Aided Software Engineering) users. This establishes CAD/CAM systems compatibility within SBRC, and lays the foundation for concurrent engineering.

The CAD/CAM Workstation Se-

lection Team formed 14 months ago to fulfill a tough assignment: replace all of the CAD/CAM hardware and software applications at SBRC with new workstations and software to give SBRC a competitive advantage through the decade of the '90s.

"The selection team had some tremendous cultural problems to get through," said **Jim Snell**, Manager, Information Services. To illustrate the magnitude of the challenge, he made an analogy: "Can you imagine trying to get everyone in SBRC to agree on which word-processing package we are going to use? Well, when it comes to which CAD/CAM package and workstation we are going to use, and how we are going to communicate, the Selection Team faced a comparable, major challenge."

Compromise and consensus were the keys to the Selection Team's success. The Selection Team included as many diverse CAD/CAM viewpoints as possible. Through compromise, the team reached a consensus on which CAD/CAM packages would be best for the company as a whole. The team process made this decision possible. "Because it had begun as a team effort, and because there was mutual recognition of all the compromises that were involved, there was a level of enthusiasm here and a lot of

pride in what we did," said **Darrel Lamb, Sr. Computing Specialist**. "It wasn't something that the company pushed on us; it was our decision from the bottom up."

"The team structure was absolutely essential," agreed **Paul Krier**, Head, Technical Systems Support. In the process of choosing software for the electronic-CAD/CAM system, for example, the subteam chafed with making that choice faced a dilemma. Systems Division preferred one software package, Detector Division another. Both groups had compelling reasons for their choices because of the technical differences in their jobs. As a team they were able to reach a consensus, and picked the Cadence software package.

"It was a team decision," said Paul. "They said they'll make it work, and they can. They're making it work today."

Similarly, a mechanical CAD/CAM software selection subteam formed to choose the best package for mechanical-CAD users. That subteam used a new requirements analysis tool called QFD (quality function deployment). "QFD is a tool that helps you analyze what your customers want to make sure that the product you deliver to the customer is what was asked for in the first place. Our customer for the mechanical-CAD evaluation was the engineering community" said Darrel. "What do users out there want? Their voice was expressed by the 80 requirements the Selection Team generated."

Although recently installed, the new CAD/CAM package has already significantly helped. "We've had some great success stories," said Darrel. "For example, we were put on the spot by EDSG to be ready for a critical design review (CDR); we were far from being ready. Program management made a decision to transfer the design from our old tools to the new tool, Pro/ENGINEER, to see if we couldn't somehow make

City College Business Program Receives SBRC Support

By Jack Weber

Upon receiving a \$7,500 check from SBRC presented by **Dr. Phillips** (right), **Dr. Peter MacDougall** (left), President, Santa Barbara City College, thanked SBRC for its continued support of the college and the SBCC Fellowship Foundation.

Dr. MacDougall said the Foundation plans to use the funds to start a new membership-based organization called "Business and Industry Asso-

ciates" to help the college develop business-based programs. The Associates' first project will be to develop intern programs for SBCC students with local businesses.

"This is a program we are very excited about," said **Jim Mino**, Associate Vice President of Development at SBCC. "It promises to be a real asset not only to the students who participate in the program, but also to our entire community."



Photo: Bob Casper

Management Club Scholarship Available

By Wayne Gilbert

January 10 is the deadline for applications for Management Club scholarships, which are awarded to dependents of SBRC employees who will be pursuing a degree at an accredited four-year college or university.

The scholarships are awarded based on school and community service as well as academic excellence. Each candidate must complete an application and submit an autobiographical essay by January 10, 1992. To obtain an application, or for further information, contact **Wayne Gilbert** at extension 4732, or **Grady Bell** at extension 7597.

RFR: Request for Receipts

Your cash register receipts from either Vons or Lucky's can help local schools purchase computers, calculators, software, and athletic equipment. Send your saved receipts to the school of your choice.

If you are not already affiliated with a local school, please consider saving your receipts for SBRC's adopted school, Dos Pueblos High School (DPHS). You can mail your receipts for DPHS to **Margaret Finlay** (B27/76) or to the EA Office (B27/74).

SBRC Helps Promote National Drug Awareness Week

By Margaret Finlay

SBRC joined the community in support of Red Ribbon Week (October 20-27), a national drug awareness campaign. During that week, local businesses and schools distribute red ribbons, pledge cards, buttons, and stickers to show their support of a healthy drug-free lifestyle.

Once again, SBRC participated by holding a slogan contest. Students from our adopted school, Dos Pueblos High School, were invited to create a slogan discouraging others from using drugs.

Peter Gillquist, a 12th-grade student, came up with the winning slogan—"Ride the Drug Free Wave!" Peter received a \$100 U.S. Savings Bond at a special Red Ribbon assembly at Dos Pueblos. Sixteen Honorable Mention certificates were also presented to the runners-up. In all, over 250 entries were received, making the decision a difficult one.

By holding the slogan contest, SBRC helps create an avenue of discussion in the classroom and at home on drug abuse, increasing the students' awareness of this serious problem.



Photo: Bob Casper

Winning sloganeer Peter Gillquist won a \$100 U.S. Savings Bond for his drug-free message, "Ride the Drug-Free Wave!" Margaret Finlay (left) presented the bond and prize ribbon to Peter.

Because the Selection Team won an SBRC Team Achievement Award, each team member received a \$250 check, presented by Dr. Phillips, at the first Team Achievement Award luncheon on October 23.

SELECTION TEAM/PROCUREMENT: From left, Darrel Lamb, Bobbie Humphreys, Dr. Fletcher Phillips (presenter), Jim Snell, and Paul Krier.



Photo: Bob Casper

October Perfect Timekeepers Win \$50 U.S. Savings Bonds

By Charlene McGinnis

Has your timecard been audited this year? If not, you may be audited soon. If you have been audited, you could be audited again.

Maintain your timecard in accordance with the Timekeeping Manual, win a "Perfect Timecard Audit Award," and you will be eligible for the drawing to win one of the three \$50 U.S. Savings Bonds awarded next month.

Be prepared. The timekeeping auditors make the rounds on a regular basis. You could be one of the next big winners!

Detector and Manufacturing Divisions share the awards this month. Detector winners were **Steve Dudock**, *Business Operations, Strategic Programs*, "Oh really! Far out! Thank you very much"; and **Tom Casselman**, *Advanced Devices*, "That's wild. Thank you and SBRC."

The Santa Maria Manufacturing winner was **Teri Amador**, *Manufacturing Production/Material Control*, "You're kidding! I never win anything. I'll save this for my kids. That's great! Thanks."

Good luck to all of you for next month.

The SBRC News—published in the interest of the employees of
SANTA BARBARA RESEARCH CENTER
A subsidiary of Hughes

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The SBRC News is printed on recycled paper

QA/benefits

This is part of a continuing series to inform employees about benefits and procedures. The questions in this series are among those employees frequently ask Benefits representatives.

Employees who have questions they would like answered in this column may submit them to: *Benefits Questions, B27, MS81.*

Q. Should I consider enrolling in Long-Term Disability Insurance?

A. Employees may use up to 180 days of Extended Sick Leave for any single continuing disability. Long-Term Disability provides 60% of base pay, less California State benefits, for employees disabled beyond 180 calendar days. Plan 1 provides coverage until age 65. Plan 2 provides coverage for the first five years of disability.

Q. What must be done when I'm due to report for Jury Duty?

A. All employees must mark their timecards appropriately (Jur1, Jur2, etc.) and must also have the Jury Certification Form SB 1582 completed by the court and returned to their supervisor.

pleted by the court and returned to their supervisor.

Q. Should I consider enrolling in Short-Term Disability Insurance?

A. Short-Term Disability Insurance provides 60% or 70% of base pay for non-work related injury or illness, less California State benefits, for the first 26 weeks of disability. STD is beneficial if an employee does not have sufficient Extended Sick Leave balance.

Q. I just found out that I'm pregnant. Whom should I notify?

A. You should immediately notify your supervisor and the Environmental Health/Safety Office.

Remember the Council of Christmas Cheer!

By Jackie Wheeler

This year, instead of the traditional Christmas trees, poinsettias are in the SBRC lobbies. Near the flowers are decorated boxes where you may place your donations of food, new or nice-as-new clothing, toys or gift items. If you choose, you may donate your turkey certificate or make a donation by check (payable to: Council of Christmas Cheer) and forward it to **Jackie Wheeler, B27/81.**

Many hours are volunteered by over 2000 men and women, mostly retirees, who have been working tire-

lessly to make lap robes, slippers, bed jackets, clothing for babies, children and adults, and beautiful cradles, wheelbarrows and wagons. They have also repaired used bicycles and other toys.

If you would like to volunteer your time before Christmas, you may contact the Council of Christmas Cheer Office at 965-4122. There are red and green flyers on the building bulletin boards indicating dates and times volunteers are needed. Your help is appreciated.

Photos: Bob Casper



SELECTION TEAM/ELECTRONIC CAD/CAM: From left, Mike Goode, Laura Rogers, Dr. Fletcher Phillips (presenter), Jim Snell, Paul Krier, and Fred Gallagher.



SELECTION TEAM/MECHANICAL CAD/CAM: From left, Ron Grabau, Barbara Ceriale, Al Koch, Maggie McMillan, Dr. Fletcher Phillips (presenter), Jim Snell, Darrel Lamb, and Jim Bell. (Not shown: Elaine Welt and Maurice Zimmerman.)

that CDR deadline. And we made it. Not only did we make it, but we impressed our customer so much that they funded us for six months while other suppliers received funding for only one month."

A third subteam formed to focus on procurement. Subteam leaders Darrel and Paul from the mechanical-CAD and electronic-CAD groups worked with Jim Snell and **Bobbie Humphreys, Sr. Buyer**, to negotiate with the vendors. They spent \$940,000 less than what was anticipated and had been budgeted for these major purchases. "That savings is significant, but the most significant thing is the fact that we were able to come together and able to all agree on one approach across the board for SBRC providing the compatibility necessary for concurrent engineering."

After the Selection Team completed its assignment and the equipment was due to arrive, an Implementation Team formed to do the actual set up. "Once the selection and procurement had taken place, it was up to this team, with Paul Krier as team leader, to get the equipment in here, work with the suppliers, set up the equipment, check it out, run acceptance tests, install all the software from the different vendors, and set up the architecture for the software for 81 workstations and 25 Macintoshes, all on a new Ethernet Network. This was exceedingly complex."

According to Jim, this implementation activity began with the first shipment of workstations in early July; as

of the third week of October, almost everything has been installed. "A tremendous team achievement," he said.

This new equipment will prepare SBRC for the decade ahead. "We are anticipating a 30 to 50% reduction in time and costs in areas where the new CAD/CAM equipment and concurrent engineering are used. In addition to that, we have committed to reducing costs of technical computers in Information Services by \$5 million over 5 years. We are ahead of plan in the first year."

Overall, the Selection and Implementation Teams' accomplishments are impressive and the personal rewards are, too "This is the most interesting and exciting thing I've ever done at SBRC," said Paul. "Our team is changing the way SBRC does engineering. How many times in your career do you have a chance to do that?"

IMPLEMENTATION TEAM

This is an attempt to list the people who have played a significant role in the implementation phase of the engineering workstation project. Though not an exhaustive list, each of these individuals has contributed expertise, effort, and talent to the success of this endeavor—
Jim Snell

Karol Banks, Joe Bauer, Jim Becker, Jim Bell, Gary Carnahan, *Mike Clark, John Figoski, Fred Gallagher, Mike Goode, Ron Grabau, Dave Grubbs, *Michael Ha, Marty Hafner, *Hal Hamlett, *Don Hildebrand, *Debbie Janes, Al Koch, Larry Kubecka, Darrel Lamb, Bill Lassere, Tim Maxwell, Chuck McKenney, Maggie McMillan, Sam Mitchell, Millard Morgan, Rod Ontjes, Bob Patrick, Rich Prohaska, Laura Rogers, Nancy Rolland, Chung Shen, *Clark Williams, Sandra Williams, Roger Wolin, Tom Wolverton.

*Digital Equipment Corporation (DEC) employees who helped in the implementation process



Photo: Craig Cook

IMPLEMENTATION TEAM: From left, front row, Paul Krier and Gary Carnahan; back row, Bill Lassere, Jim Becker, Chung Shen, Joe Bauer, Marty Hafner, and Roger Wolin. Additional Implementation Team members' names listed above.

SBRC's Infrared Display at the Natural History Museum Gets a Warm Reception



Photo: Bob Casper

If you rub your hands together real hard and then hold them up to the infrared camera, your hands will show up as bright glowing spots on the TV monitor. Alan Hoffman (background, left) and Paul Schurman (on stage) issued those instructions throughout the day to group after group of impressed youngsters (and adults) at the Santa Barbara Museum of Natural History on November 10. The museum, celebrating its 75th birthday, invited SBRC to set up a technical display for the event-filled day.

Science Discovery Center Moves Uptown

By Sam Pellicori

After more than a year of successful operation at the Santa Barbara Museum of Natural History, the Santa Barbara Science Discovery Center (SDC) has temporarily moved to the Children's Museum in La Cumbre Plaza. Once the Natural History Museum completes renovation of its planetarium, SDC will return to that location.

SDC brings unique hands-on exhibits involving light, color, and visual perceptions to the Children's Museum. SBRC GO Club contributions help support both organizations. Another source of SDC support is through the sales of their *Wonders of the Universe* calendars, which are now available in the Employees Association Office.

from SQA, Materiel, Engineering, and the supplier work together to achieve Total Quality. The emphasis is on working with the supplier and keeping lines of communication open. The supplier, who often has important input regarding parts design, is a member of the larger Total Quality team.

Marlow Industries became certified in June 1988 and has continued to be an important part of our Total Quality team effort. Their demonstrated performance has consistently exceeded agreed-upon quality, reliability, cost, and delivery goals. An attitude of continuous self-evaluation and improvement exists throughout their organization, with an emphasis on preventing problems.

"We inspired Marlow to set up their manufacturing process so that things are done correctly the first time," said Ron. The Baldrige Award affirms that Marlow is, indeed, doing things correctly every time.

Library Offers More Than Books

Tax forms now available at the library

By Susan Gentry

You can pick up your 1991 federal and state tax forms from the SBRC Library (B5, Room B212). And, while you're there, take a look around.

The Technical Library collects, stores, retrieves, and disseminates information and data in the fields of interest of our company. It has a collection of over 5,000 books that may be checked out for a month at a time. Over 63 magazine subscriptions are received and routed throughout the company. A new collection of audio and video cassettes was recently transferred from the Training and Development Department to the library for circulation, and the library is the control point for all technical journals (also known as lab notebooks).

Upon request, the library staff will compile comprehensive bibliographies and conduct state-of-the-art literature surveys. Also, the Library has direct on-line access to the following computer literature search services: DoD/Defense Technical Information Center's DROLS, NASA/RECON, STN. MELVYL, PEGASUS, and DIALOG.

The library will borrow, reproduce, or purchase (with the proper approvals) materials of interest. A number of current awareness bibliographies are periodically distributed, including the Infrared Abstracts.

So check out our library—it's here for you!

For more information, call extension 4482.

Profiles in Excellence

From Dottie McKiddie

This is part of a continuing series of articles profiling excellent performers at SBRC.



Photo: Craig Cook

Barbara Ceriale is a Senior Manufacturing Engineer in the Manufacturing Division at the Goleta facility. In her ten years at SBRC, she has held positions from Industrial to Senior Manufacturing Engineer. Barbara consistently performs her tasks in an efficient and professional manner, regularly exceeding program requirements.

Barbara has many notable recent accomplishments. She was instrumental in the design and production of the prototype laser firing units, which led to the first successful Midgetman launch from Vandenberg. As a Manufacturing Project Engineer on the Thermal Weapons System Proposal, Barbara contributed a major portion of SBRC's inputs to Hughes EDSC for submittal to CECOM (Army Communications—Electronics Command).

Presently, Barbara is Manufacturing Project Engineer on the SADA (Standard Advanced Dewar Assembly) Program. Her responsibilities as the manufacturing representative on the concurrent engineering team include producibility reviews, cost/yield modeling, production process/tooling conceptualization and support of prototype hardware fabrication. (continued next column)

Dr. Phillip's presentation on the Defense Industry is available on videotape

In two lunch-hour presentations to employees, Dr. Phillips described recent world events that have significantly affected the U.S. defense budget and, consequently, the local economy.

His slide-lecture, entitled "Defense/Aerospace Industry Outlook—Implications for the Local Economy," was originally presented at Alan Hancock College on October 5.

His presentation can be seen on video by calling Photo Services, extension 4937.

Barbara is also a DFMA (Design for Manufacturing and Assembly) facilitator and trainer and has conducted numerous DFMA exercises here at SBRC. On top of this already impressive list of accomplishments, she served as a manufacturing representative on the CAD/CAM Workstation Selection Team (see story on page 2), which was part of the Concurrent Engineering Product Operation (CEPO) project. The outstanding effort of this team has laid the foundation for concurrent engineering at SBRC for the next decade.

Barbara's performance and attitude are recognized by her colleagues and management as exceptional, and she can always be relied upon to complete tasks with the highest quality, on time and within budget. All in all, Barbara is an outstanding employee.

CERTIFIED SUPPLIER PROGRAM, continued from page 1

The Hughes-wide Certified Supplier Program was developed at SBRC in 1986 by Bob Isbell, Manager, Supplier Quality Assurance (SQA) Department. Bob defines the program as "a proactive process-based performance system."

Based on SQA's requirements, supplier certification is selectively granted. "Suppliers must demonstrate that they have quality controls in-house that match our own," said Bob. "And their commitment to quality must be demonstrated by objective evidence of an effective system based on management support, process controls, and sound statistical metrics."

The benefits of this certification program for both the supplier and Hughes are better quality, reduced costs, and improved product flow. Inspection redundancies are eliminated, too.

"If, for example, you are the parts supplier, you perform final inspection on your product, package it, and ship the part to us," explained Ron Kelly, Sr. Quality Engineer. "We

open the box, perform the same type of inspection, and then put the approved part into stock. But, if you are a certified supplier, our receiving inspection doesn't need to do the same thing that you have already done. As long as you have demonstrated to us that you have the capabilities and controls in place to ensure quality, why should we duplicate the effort?"

"We gain because we secure a highly reliable and dependable parts supplier. You, as the supplier, gain because we'll go back to you for orders—you've proven the quality of your system and parts." Proving that quality, though, requires a certification process.

To become certified, a survey is conducted by SQA staff to ensure that the supplier not only has a history of producing quality parts, but also has the controls in place to continue consistently making the part right. "It's another pair of eyes looking at their process," said Ron.

The certification process also involves teamwork. Representatives