



## New Research Vessel for the National Science Foundation

The Polar Technology Office of STC, under the leadership of **Jim St. John**, has recently completed the first phase in a multiyear program to procure a new Polar Research Vessel (PRV) for the National Science Foundation (NSF). The feasibility design studies have produced a concept for the new vessel that is intended to replace the *Nathaniel B. Palmer* (NBP) at the end of her charter in 2012. The procurement process will lead to a charter of the vessel and its operation, similar to NBP, but this procurement will complete a design and validate that design through model testing prior to issuing the Request for



Design of Polar Research Vessel icebreaking.

Proposals. The design and testing would be part of the RFP package which should reduce risk to the bidders and therefore reduce cost and increase competition. NSF has signed a memorandum of understanding with the U.S. Maritime Administration (MARAD) to support them in the design and procurement. STC is the ship design consultant to MARAD for the project.

The ship will be capable of operating in the annual ice around Antarctica year round and in the old ice found in some bays. "Polar" is included in the name  
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## STC Edgewood Supports ECBC

STC Edgewood is supporting the U.S. Army's research programs for the detection and identification of chemical/biological threat agents. The Edgewood Chemical Biological Center Point Detection Team in the R&T Directorate at U.S. Army SBCCOM, in existence as an organization since 1917, is chartered to provide research to support the design, development, and production of U.S. military materials, and evaluate technologies for the detection and identification of chemical and biological warfare agents. The Point Detection Team concentrates primarily on point application to develop prototype detectors based on state-of-the-art technologies—gathering, analyzing, and interpreting data, via development of software and its applications, to provide the necessary information to make informed decisions. STC's **Samir V. Deshpande** works as a Programmer/Analyst on this Team.

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## Honors and Awards

### Former STC Scientist Receives 2002 U.S. Army Research and Development Achievement Award

As an STC employee, **Dr. Sanjiv Shah** started working on the U.S. Army Soldier and Biological Chemical Command (SBCCOM) Assay Development project in 1999 for which he received this award. Under this project, he led the optimization of many highly sensitive, specific, and real-time fluorogenic (TaqMan<sup>®</sup>) Polymerase Chain Reaction (PCR) assays on the Smart Cycler<sup>®</sup>  
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### STC Boulder Employees Receive Outstanding Performance Award

**Frank Klein**, STC Project Manager for the STC NOAA Meteorological Research Laboratories contract congratulates three STC employees who were recipients of an Outstanding Performance Award. Dr. William D. Neff, Acting Director, Environmental Technology Laboratory (ETL) presented the awards recently at an ETL awards  
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### STC Recognized by NASA Langley Research Center

On behalf of STC, **Dr. Adarsh Deepak**, President, accompanied by Vice Presidents **Dr. George Wood** and **Tom Pool**, received a Certificate of Recognition from NASA Langley Research Center as Minority Subcontractor of the Year, 2002. STC currently supports Science Applications International  
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From left to right: Frank Klein, Irina Djalalova, Kevin Knott, and Michelle Ryan.



Dr. Adarsh Deepak (with certificate) accompanied by (far left and far right) Vernon Vann and Randy Manning, NASA LaRC Office of Procurement; and (from left) Tom Pool, Dr. George Wood (STC), and Jim Cook (SAIC).

## STC Welcomes New Human Resources Director, Shawn Marston

In January 2003, **Shawn Marston** joined STC as Director of Human Resources. Shawn is responsible for overseeing all human resource efforts and issues relating to headquarters and field personnel, which includes company-wide core service support, compensation and benefits, employee relations, and legal compliance.

Prior to joining STC, Shawn served as Director of Human Resources and General Affairs from 1996 until 2003 with McCord Consumer Direct, a multi-site airline reservation call center, which evolved from a small start-up operation to the 7<sup>th</sup> largest travel services provider in the United States. Through his



Shawn Marston

efforts, McCord Consumer Direct was one of three organizations recognized and honored in 1998 by Governor Jim Gilmore during Virginia Business Appreciation Week as one of the up and coming companies in the State of Virginia. He was the primary architect for creating an on-site childcare and learning center at McCord Consumer Direct, for its employees and the general public to utilize, which through the

Women's Bureau, a branch of the Department of Labor, became a national program for other organizations to model. In 1999, he was presented an award by the Women's Bureau for his initiatives on childcare. In 1999, Shawn was also awarded and named one of the Top 40 Under 40 by *Inside Business Magazine*. In 2001, Shawn was awarded the Entrepreneurial Success Award by the Small Business Administration and the Virginia Peninsula Chamber of Commerce.

From 1994 until 1996, Shawn served as Chief Operations Officer with the Peninsula Institute for Community Health, a non-profit health center providing health care services to a federally designated underserved population. From 1994 to 1996, Shawn also provided human resources development and management services through a consulting firm he formed named HR Concepts. His clients included local non-profit and private organizations as well international organizations overseas such as the United Nations Industrial Development Organization in Vienna, Austria. Before that, Shawn

worked for various organizations in manufacturing and service industries as a human resources professional.

A U.S. citizen, born in Hahn Air Force Base, Germany, Shawn spent most of his youth overseas before his family relocated to Virginia in 1975. He received his B.A. degree in Psychology from Christopher Newport University in 1986 and his M.A. degree in Education and Human Development from George Washington University in 1996. He is fluent in the German language. His hobbies and interest include travel and golf. He is currently a member of The Society of Human Resources Management. He is also a member of the Virginia Peninsula Personnel Association and served as Treasurer in 1996. He is married to Iveta and has a daughter, Anna Maria, who is 6 years old. Shawn currently resides in Williamsburg, Virginia. □

## Frank Klein Transfers Management of Boulder Office

In July, **Frank Klein** will turn over management of the contract with the NOAA Meteorological Laboratories in Boulder to **John Cunning**, who joined STC in June 2003. Frank has been Manager for STC's Boulder Office and the NOAA contract for 11 years. During his tenure STC has provided technical support to six of the NOAA labs in Boulder, and currently supports four of the labs. Frank's leadership was responsible for growing the original effort from just one laboratory, more than doubling the employees, and winning the rebid to extend our support for the NOAA labs in Boulder. Frank joined STC in 1987 after a successful Army career (retiring as a Colonel), and managed the STC portion of a contract (teamed with ARINC) in support of the U.S. Army Space Command for 8 years. Frank will continue with STC for operations in Colorado Springs, Colorado. □



Frank Klein

### In Memory of...

## Dr. Christie Vernon

The STC family was deeply saddened by the sudden death of **Dr. Christie Vernon**, STC Librarian and Newsletter editor, on May 19, 2002.

Christie was born in Flint, Michigan. She graduated from Amarillo High School in Texas and attended the University of Oklahoma at the age of 16. Her education included a Bachelor of Arts in letters in 1949, a Master of Arts in library sciences in 1956, and her doctorate in education in 1977 at the Nova Southeastern University in Florida.



Dr. Christie Vernon

With a long and distinguished career in politics, library administration and teaching, and a sparkling intellect, sense of humor, and personality, Christie filled a special niche at STC. Among many other things, including being the mother of five sons, she was a delegate to several Democratic National Conventions, President of the Virginia Federation of Democratic Women, President of the Virginia Library Association, and chairwoman of the America Library Associations committee on Legislation. Christie attended presidential inaugurations, taught at St. Leo College, and played an active role at Grace Church in Yorktown. For us, she was Librarian and Editor of the STC Newsletter for 10 years—a charming, professional, fun loving, and courageous lady who endeared herself to us all and felt at home among us. □

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Editor: Diana McQuestion  
Layout: AnnaMaria Clack  
(757) 766-5800/Fax (757) 865-1294  
Web site address: [www.stcnet.com](http://www.stcnet.com)

**VESSEL** (continued from page 1)

because the ship will also be designed to operate independently in Arctic ice along the coastal shelf and short forays into the Arctic Basin in summer. The PRV will be capable of extended operation in the Central Arctic Basin with escort by a more capable icebreaker. The ship is 378 ft long, 74.8 ft wide and has a draft of 29.6 ft. The PRV employs a diesel-electric propulsion plant consisting of four main diesel-generator sets, two of 8046 HP and two of 6785 HP with a total brake power of 29,600 HP. This configuration provides great flexibility for varying power demands. All service loads including propulsors, bow thruster,

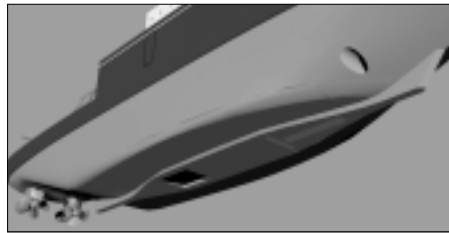


Starboard side aft showing the working deck, helo deck, and A-frames.

winches, cranes, light and general ship service are powered from a common bus/integrated electric system. This AC-AC system uses frequency converters to control the propulsors. Propulsors on the PRV take the form of two azimuthal propeller pods. Each of these two pods contains an 11,200 HP electric motor driving a pulling propeller. The pods are independently steerable through 360 degrees. Each pod drives one stainless steel four-bladed open fixed-pitch propeller measuring 17.78 ft in diameter. A large propeller running at a slow speed of revolution ensures low noise in open water and high thrust for icebreaking.

The PRV design incorporates a number of science features, many of which are not currently supported on NBP. Bottom

mapping during icebreaking operations is made possible thanks to the box keel, which diverts broken ice floes around the forward



Ship's bottom showing the box keel, sonar arrays, moonpool opening, bow thruster opening, and podded propulsors.

sensors and prevents bubble sweep down. The box keel has been sized to accommodate future growth of sensors. Geotechnical drilling is made possible by an enclosed rig within the deckhouse. A completely enclosed moon-pool measuring 20 ft by 16 ft can support Autonomous Vehicles and Remotely Operated Vehicles, diving, ro-

settes for water samples, and Conductivity, Temperature, and Density measurements (CTD), and Ocean Biomass Surveys operations. The lower opening of the moonpool within the box keel and the door to the moonpool staging area where CTD casts can be done over the side by an extending boom through the door are shown at left. In addition, a traditional set of A-frames, winches, and cranes are provided onboard for traditional science operations over the side. □

**RECOGNITION** (continued from page 1)

Corp. (SAIC) on its ASRATTS contract by providing research scientists, engineers, and technicians proficient in atmospheric sciences, and has made significant contributions to major NASA projects for the past 24 years. The presentation was made at Langley's Small Disadvantaged Business/University Opportunities Forum on June 26, 2003. □

## John Cunning Named Project Manager of STC Boulder Operations

During July 2003, **John Cunning** will assume management for the NOAA Meteorological Research Laboratories contract in Boulder, Colorado where he will oversee a 25 to 30 member staff supporting the NOAA laboratories in the Boulder area. John comes to STC after 3 years with CIRA, at the Colorado State University, Boulder, Colorado, where he headed the secretariat for the North American Atmospheric Observing System Program, and for the technical leadership in the MDCRS Program. Prior to retiring from federal service in 1999, John had assignments with the Forecast Systems Laboratory, Boulder, Colorado, where he was responsible for developing programs within OAR and the National Weather Service.

From 1988 to 1992, John was assigned to the U.S. Weather Research Program Project Office, Washington, DC, responsible for working with scientists and management within NOAA, NSF, NASA, universities, and other agencies to develop various programs and field research activities to support the U.S. Weather Research Program.

From 1982 to 1988 John was assigned to the Weather Research Program Office, ERL, Boulder, Colorado, responsible for development of research and field programs

to study mesoscale convective systems and related phenomena.

From 1980 to 1982, at the Office of Weather Research and Modification, Boulder, Colorado, he conducted research on the dynamics of convective storms and their



John Cunning

responses to cloud seeding. He headed up the Airborne Investigation of Mesoscale Convective Systems experiment, the first time research aircraft were used to investigate the structure of mesoscale convective systems.

From 1972 to 1980, John was assigned to the Experimental Meteorology Laboratory, which evolved into the Hurricane and Experimental

Meteorology Laboratory, Miami, Florida, where he conducted research on the dynamics of convective storms and their response to cloud seeding. He was a lead aircraft scientist flying into thunderstorms to test and evaluate weather modification theories.

John received his B.S. degree in Meteorology from Pennsylvania State University in 1969 and his M.S. degree in Atmospheric Science from the University of Miami in 1972. John said that he was very excited to join STC, working with the STC staff, and working to maximize the STC presence in Boulder. Welcome aboard! □

## Contracts

In recent months, STC has received contracts valued at over \$13.5 million from our government and commercial customers, including over \$2.3 million in awards from the U.S. Army, over \$1.45 million in awards from NOAA, an 8-year, \$8.7 million subcontract from Lockheed Martin, and a \$500,000 subcontract from Alion Science and Technology Corporation (formerly IIT Research Institute).

## Meetings Conducted by STC

### • NBC Defense Collective Protection Conference 2002, Orlando, FL, 29–31 October 2002.

COLPRO 02, held at the Rosen Center Hotel in Orlando and attended by over 350 people, was a great success. Chaired by Mr. Michael A. Pompeii, Naval Surface Warfare Center Dahlgren Division, the Conference was organized by the Joint Service Materiel Group (JSMG) in conjunction with the Department of Defense Chemical Biological Defense Program, and in cooperation with the U.S. Navy, Army, Air Force, and Marine Corps. Extra seating had to be provided for the overflowing audience that attended Dr. Anna Johnson-Winegar's (Deputy Assistant to the Secretary of Defense, CBD) Plenary address. The conference had a very full 3-day program with over 60 platform and poster presentations and indoor and outdoor exhibits. Exhibits were shipped and trucked in from states from California to New Hampshire, from Canada, France, UK, and from all five Services. The STC Meetings Services International (MSI) team, led by Diana McQuestion, handled the preconference logistics, on-site arrangements and support, and publication of the proceedings on CD, under contract with NSWCDD and Battelle.

### • The 1<sup>st</sup> Joint Conference on Battle Management for Nuclear, Chemical, Biological, and Radiological Defense, Williamsburg, VA, 4–8 November 2002.

The IJCBM was organized by the Joint Science and Technology Panel for Chemical and Biological Defense in cooperation with the U.S. Army, Air Force, Navy, and Marine Corps, and other Nuclear Biological Chemical organizations. Mr. Kirkman Phelps, SBCCOM, and Mr. David Grenier, Naval Sea Systems Command, were Conference Chair and Deputy Conference Chair, respectively. Dr. Anna Johnson-Winegar (Deputy Assistant to the Secretary of Defense, CBD) presented the Keynote address to set the tone of the conference, which focused on the theme "From Data to Understanding." STC MSI staff supported the conference under contract with SBCCOM.

### ECBC (continued from page 1)

Samir is developing integrated and automated software for rapid bacterial identification using a relational database management system and Electrospray Liquid Chromatography/Mass Spectrometry. The Electrospray LC/MS is used to generate chromatographic profiles of proteins present in a sample along with a software program that automates the data analysis. The software program automates the data collection, peak identification, spectral purification, mass spectral integration of scans in a peak, and assignment of molecular weights for observed proteins by using a deconvolution algorithm. The approach generates a list of biomarkers along with retention time and relative abundance for all masses obtained by the algorithm. The list of masses is stored in a relational database as a reference library including the sample information such as growth conditions and sample run information. The identification of unknown samples is performed by various statistical analyses with the relational

### SHAH (continued from page 1)

for rapid detection and identification of biological warfare agents. In July 2001, Dr. Shah transitioned to a position as a Research Biologist in the Research & Technology Directorate of the Edgewood Chemical Biological Center, SBCCOM. For his significant contributions in assay development, he received the prestigious 2002 Department of the Army Research and Development Achievement Award for Technical Excellence. During his tenure as an STC employee, while working as a contractor in the ECBC Biosensors Team, until accepting a government position, Dr. Shah successfully led many projects in biodefense research. □



Dr. Sanjiv R. Shah, of Biosensors Team, Edgewood Chemical Biological Center, U.S. Army SBCCOM, received the prestigious 2002 Department of the Army R&D Achievement Award for Technical Excellence for contributions to biodefense research. (From left, MG John C. Doesburg, SBCCOM, Dr. Sanjiv R. Shah, and Dr. A. Michael Andrews, Deputy Asst. Secretary for Research and Technology/Chief Scientist).

## AMS/STC Scholarship Award

The American Meteorological Society (AMS) named Lucas M. Harris of Loves Park, Illinois, as the recipient of the STC 2002/2003 Industry Undergraduate Scholarship. This award was presented to him during the annual AMS meeting in January 2003. Mr. Harris attended Northern Illinois University, majoring in meteorology and applied mathematics. He graduated in Summer 2003 with a Dean's Award and University Honors and will be doing graduate work at the University of Washington. □



Lucas Harris

### BOULDER (continued from page 1)

ceremony. **Irina Djalalova** received her award for development of graphical comparisons of model forecasts and observations collected by ETL instrumentation during the New England Air Quality Pilot Study, which led to improvements in NOAA's operational weather forecast models. **Kevin Knott** was awarded in recognition of his diligence in making the designs and concepts of ETL scientists and engineers become reality. Kevin manages and operates the ETL Instrument Shop, which supports not only ETL but also other NOAA laboratories in the David Skaggs Research Center. **Michelle Ryan** was recognized for her dedicated effort in maintaining and manning the C-band radar on the NOAA ship *Ronald H. Brown*. Michelle has spent several weeks in the Pacific Ocean on the research ship. □

database. The approach has been tested for discrimination and identification from mass spectra of mixtures of microorganisms, from spectra of organisms at different growth conditions. Experimental factors such as sample preparation, reproducibility, mass



Samir Deshpande works at a Finnigan MAT GC-ion trap MS Magnum to analyze compounds.

range, and mass accuracy tolerance were also addressed and evaluated. This approach has the potential for reliable and accurate automated data analysis and identification in the shortest time.

The software program is being written to automate updating the raw data files into

an in-house database and then evaluating the data using Multivariate and Pattern Recognition algorithms for faster evaluation without losing any important information. The database, developed in-house, has been designed with interface capability with other Bio-Chemical databases in the market in mind, e.g., Swiss-Prot.

The Point Detection Team, led by Dr. Charles Wick, is comprised of 25 staff personnel, a number of whom have published in ACS and ASMS journals. Samir's work has also been recognized. During the year his work was accepted for poster presentation at the ASMS 51<sup>st</sup> Conference in Canada; the National Institute of Health Symposium "Exploring the Proteome II"; the "Mass Spectrometry in Homeland Security: Past, Present and Future" Workshop sponsored by Oak Ridge National Laboratory; and he worked on data analysis for "Sequencing of Anthrax Protein Biomarkers" presented at the International Mass Spectrometry meeting, Edinburgh, UK. □