

# New cooling technique developed, demonstrated

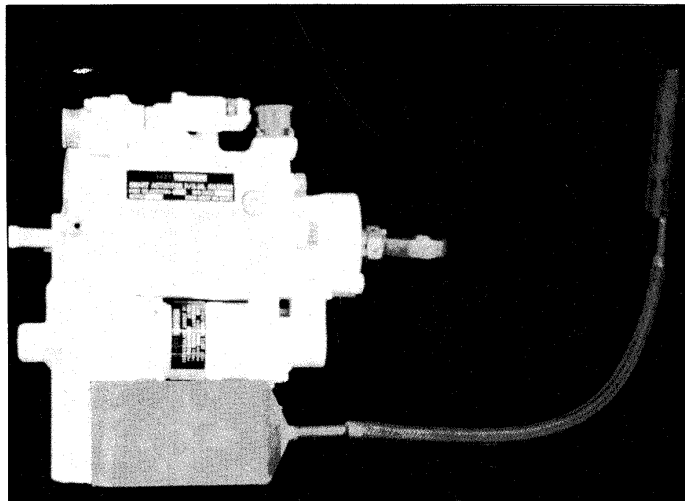


Photo provided by Thermacore

Flexible heat pipe and cold plate connected to flight control actuator.

By Dale Uyeda

The Aero Engineering Division of the Air Vehicle and Crew Systems Technology Department has successfully demonstrated heat pipe technology that can be used to thermally protect flight critical actuator electronics.

NADC scientists and engineers are taking action to improve the reliability of aircraft flight control actuator electronics. Navy aircraft use hydraulic actuators to position control surfaces on the wing, tail, rudder, etc. The feedback and position indication signals for one flight control actuator require dozens of electrical wires between the actuator and the flight control computer. This wire count can be reduced by using loop closures and redundancy management electronics on or near the flight control actuator. Since the actuator's case

temperature routinely exceeds 100 degrees C, the electronic components need to be cooled. If not, their failure rate increases with the temperature. A highly reliable cooling method is necessary to ensure that these flight critical electronics will operate. The heat pipes require only thermal energy to operate and can also be used to cool radars, sensors and other avionics.

This cooling method uses a heat pipe cold plate that interfaces with an integrally connected flexible hose to a nearby heat sink. The flexible section accommodates relative motion between the actuator and the heat sink. The cold plate transferred the 44.5 watt requirement with less than a 5 degree C cold plate-to-condensor wall temperature drop. This power carrying capability exceeded the requirement by as much as 15 watts.

## Technical Highlights

### Upgraded FTAS Operational on CVN-71

The Carrier Based ASW Module Branch successfully completed delivery and systems integration of an Upgraded Fast Time Analyzer System (FTAS), designated AN/UQX-5, to the USS ROOSEVELT (CVN-71). The AN/UQX-5 includes an upgraded acoustic processor with eight electrographic recorders, two CRT displays, two 28-track tape recorders (USH-31's), and the SKR-6 Multi-Channel Acoustic Relay (MCAR) and ARR-75 Sonobuoy Receivers. The system performs fast time (up to 16 times real time) analysis of S-3 acoustic tapes as well as real time analysis of MCAR and sonobuoy data simultaneously.

### Concepts Document Completed For SH-2G MDPS

A Final Development Options Paper for the SH-2G Mission Data Playback System (MDPS) has been delivered to PMA-274. This enhancement to the SH-2G will provide a mission reconstruction capability similar to the Sh-60 capability previously implemented by the Center. This delivery completes the concepts formulation phase of this effort.

### Fat Report Completed on Acoustic Processor for SH-26

A First Article Test (FAT) report for the SH-2G AN/UYS-503 Acoustic Processor has been delivered to PMA-274. It is planned to incorporate the new Acoustic Processor in all SH-2G aircraft after a full systems integration. The AN/UYS-503 is currently undergoing software integration at the software developers integration test facility.

### ETSS Concepts Documentation

The ASW Sensor Integration Program completed a preliminary System Specification for the Enhanced Tactical Surveillance Sonobuoy (ETSS) for PMA-264. A straw-man systems concept document for the ETSS, consisting of a series of white papers, has also been completed and is in review by the PMA. The ETSS is a FAD

II priority effort which will be specified to provide the Navy with an expendable air deployable passive acoustic sensor that will function as a force multiplier in airborne surveillance and large area rapid search operations.

### Technical Report Completed

The NADC technical report on the "Multisensor VHSIC Signal Processor (MVSP) Requirements Analysis" has

been completed. This report is the first of its kind that covers the following sensor areas: air-to-air and air-to-ground radars, electro-optics, EW, CNI and ASW oriented acoustic sensors. This analysis, forms the basis for follow-on MVSP architecture analysis, algorithm simulation and benchmarking, processing element design evolution, evaluation and specification. This is the culmination of

more than two years effort to identify the signal processing requirements for the MVSP that serves as a highly integrated and reconfigurable signal processing resource for all platform sensor applications in a Next Generation Tactical Aircraft for the years of mid-1990's and beyond.

### Navy Combat Identification Program

The Tactical Radar Branch, Microwave Technology Division, MATD developed the Navy Combat Identification Master Plan, and it was presented to OPNAV-352R. The plan for Non-Cooperative Target Recognition (NCTR) addressed both the Shipborne Advanced Radar Target Identification System (SARTIS) and Airborne Advance Radar Target Identification System (ARTIS). Program management office and program element/project numbers were also provided in the OPNAV plan for the next generation electro-optics/fiber systems.

### UHF Relay Radio

In the Communication Technology Division components and modules have been designed and a laboratory model completed of a single channel version of a UHF relay radio for fleet task force communications. Wideband design techniques to allow transition to an eight channel system have been developed.

### USNS MAURY Techeval Completed

The USNS MAURY (T-AGS 39) has successfully completed TECHEVAL of the mission survey system and is now capable of supporting the Ocean Survey Program (OSP) mission requirements. The mission survey system was designed, developed and integrated by Center personnel. The Ocean Survey Program has a BRICKBAT DX priority, the highest priority in the Navy, and develops the navigation, bathymetry, gravity and magnetic data base necessary to provide high accuracy bathymetric and gravimetric navigation charts and other survey

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## SECNAV Antisubmarine Warfare Director visits NADC

By Margaret Vigelis

Rear Admiral Daniel J. Wolkensdorfer, Director Antisubmarine Warfare (ASW) Development, from the office of the Assistant

Secretary of the Navy visited the Center in August for a briefing on AIR/ASW future capabilities. This included a review of technical programs, exploratory development and advanced development related to AIR-ASW.



Photo by NADC Photo Lab

L to R: Rear Admiral Wolkensdorfer, Captain Curtis Winters and TD Guy Dilworth pay close attention during a briefing at NADC.

## Parents and children report

# Summer camp gets great grades

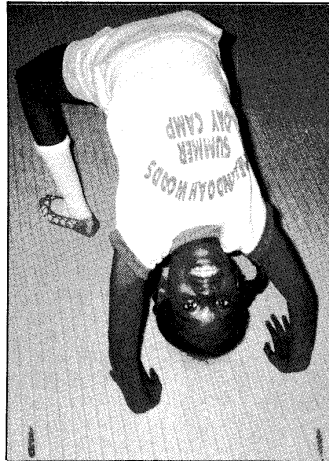
By JoAnn West

Shenandoah Woods Day Camp was the place to be this summer. Nearly 70 kids between the ages of 5-12, military and civilian dependants whose parents work at NADC shared fun-filled days throughout the summer.

Eileen Griffin, whose daughter, Tamika, participated in the Youth Center program, said her little girl is already looking forward to next year. "She really enjoyed it. The counselors really teach the kids and spend quality time with them rather than just letting them run wild. One day when I wasn't going to take her she cried she wanted to go so bad."

The camp's staff outdid themselves this year, creating events, games, programs, field trips and team competitions just to name a few. Swimming, arts, crafts and cooking helped to develop many hidden talents. The staff is hard at work preparing for "Summer Day Camp 1990." Don't miss out . . . look for information coming soon in the Reflector or call 441-7233.

For the first time this year you will be able to contribute to Youth Center activities like the Day Camp through the Combined Federal Campaign.



Tamika Griffin flips over NADC's Youth Center Day Camp.



A budding superstar, perhaps . . . and a captive audience. (Any talent scouts out there?)

(Bottom right and left) Children sit on the new deck area while taking a break from scheduled activities.



## Recreational services highlights

October 20 — Hayride & Barb-b-q  
For an old fashion good time! Bring the whole family, bring a date or just bring yourself! We will be throwing some hay on a cool October evening! After the ride, a bon fire and cookout!

Time: 7:30 to 11pm

Cost: \$5/Age 12 & under

\$7/Age 13 - 16

\$8/Age 16 & above

Registration Deadline: Wednesday  
18 October 1989

October 22 - Wine Tasting Tour

A wine tasting tour of three local wineries and shopping in New Hope, PA. Join us on an autumn colorful drive and enjoy the fruits of nature! Transportation will be provided along with cheese & crackers. Space is limited, so sign up now!

Time: 11:30am to 6pm

Cost: \$5/MIL & DEP  
Registration Deadline: Wednesday  
18 October 1989

Holiday Parties & Banquets at the Crews Rest

Start planning your holiday parties now! The newly renovated Banquet room at the Crews Rest is now taking reservations for the upcoming holiday season. Whether your party is large or small, we can accommodate to your needs. The Crews Rest facilities can include the bar area or close off part of the dining room for your private function or party. The Crews Rest has a variety of menu and beverage selections available to choose from. For more information please call the Crews Rest at 441-7651 and ask for the manager.

## And the nominees are . . .

There are nearly one hundred honorary awards available throughout each year for which NADC's outstanding employees might qualify. However, unless deserving individuals are nominated, these awards will surely elude us. The nominations themselves are a way to recognize dedicated and diligent employees. Those awards accepting nominations through November 1, 1989 are:

- Commander-in-Chief's Installation Excellence Award (Honorary)
- President's Volunteer Action Award (Honorary)
- American Society of Naval Engineers Award (Honorary)
- Women in Science and Engineering Award (Honorary)
- Wise Achievement Award (Lifetime Achievement) (Honorary)

- Captain Robert Dexter Conrad Award for Scientific Achievement (Honorary)

- Common Cause Public Service Achievement Award (Honorary)

For specific information about these are any awards, contact Bettie Simpson Lawrence, Code 031, extension 3079.

## Security Reminder

**HOUSEKEEPING HINTS** — Keep material off the tops of security containers, desk tops, shelves, etc. When there is an accumulation of papers, books and magazines, classified material could easily be intermingled and over looked when locking up at the end of the day.

## Who they are; what they do

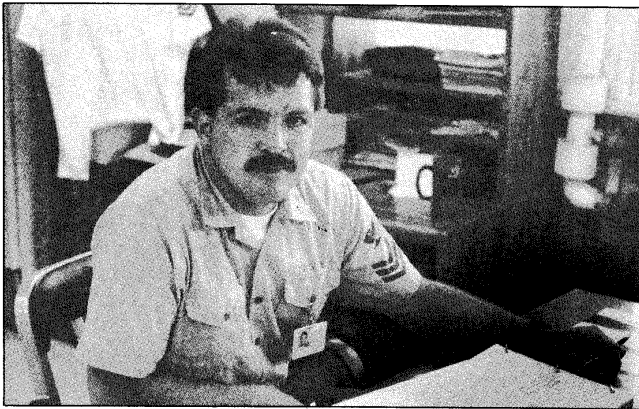
By JO2 Michael A. DelleDonne

The Navy enlisted rating Aviation Ordnanceman appealed to AO1 Kurtis Sawyer. "It really sounded good," said Sawyer. "The idea of working with ordnance around different aircraft just seemed very challenging work."

Originally from Piqua, Ohio, the 29-year-old wears several different hats. I'm the Intermediate Maintenance Supervisor, air crew ordnanceman, range master, armory petty officer and augment security force team leader.

"That's what makes this duty station different than a lot of others," said Sawyer. "You get to work outside your rating quite a bit."

The 11-year Navy veteran, who has been stationed here for over two years thinks highly of the Center. "You get to travel a lot more than you would at a normal squadron but the trips are shorter," he said. "With all the duties I have I get a chance to do so many different things. We get to shoot a lot of weapons. You're just able to do things you wouldn't normally get to do."



AO1 Curtis Sawyer

Photo by JO2 Michael DelleDonne

## Commander Salutes

**Kathleen Gause, Lois Savage, Michael Markle** (Code 03): For exceptional assistance at the 8th annual Philadelphia Area Navy Equal Employment Opportunity Council (PANEC) Manager's Training Forum.

**Brad Cope, Sigmund Rafalik** (Code 60): For assistance to the Naval Air Systems Command during the Modular Stores Management System evaluation.

**Paul Bumgardner, Albert Knobloch, Vince Sieracki** (Code 30): For outstanding support of the CNO Master Plan for Battle Force Command, Control, Communications and Intelligence (C3I).

**Andrew Schwartz, Richard Cline, Russell Donahue, Svend Bernsten** (Code 80): For outstanding performance in support of the Advance development Model demo program for the Airborne Low Frequency Sonar.

**Brian Gale** (Code 50): For professional support to the Anti-submarine Warfare Training Group.

**Scott Perry** (Code 20): For outstanding support to the CNO Tactical Readiness Division target portion of the Navy Training Appraisal.

**Brian Brady, Albert Cavaliere, Robert Swierczynski** (Code 20): For extraordinary efforts on the AQM-127 Guidance and Control and Systems Engineering Support Teams.

**Steven Kern, Paul Poore, Pascual Spensier** (Code 30): For outstanding participation in the AAW Working Group for the Space and Naval Warfare Systems Command.

**Al Kaniss, Hank McCloskey, Otis Johnson** (Code 05): For significant contribution to the recent Naval Surface Warfare Center back-up tests conducted at NADC.

**Joseph Klicka** (Code 50); For assistance to the New Hope-Solebury School District Career Day Program.

## Center Naval Reserves to hold change of command

The two Air Systems Program Naval Reserve Units which mobilize to the Center held their change of command ceremonies at their home station, NAS Willow Grove, on Saturday, 21 October. Captain William Herron relieved Captain Hugh Dyer and Captain James Walker relieved Captain Samuel Greenberg as CO's of NADC 0193 and NADC 0293, respectively. None of these officers are strangers to the Center: Captain Herron was previously the Executive Officer of NADC 0193; Captain Walker was Commanding Officer of VTU 0493 and had previously been assigned to NADC 0193.

In the event of mobilization, these two units would augment the Center with a trained and ready force of managers, engineers, and flight crews. NADC 0193 has 15 officer and 21 enlisted billets, while NADC 0293 has 15 officers. During their regular training, the units drill one weekend a month and perform two weeks of active duty for training each year, normally in their mobilization billets here at the Center. Several members of the units are Center employees or

Lawrence Johnston (Code 10): For exemplary performance as a member of the Source Selection Evaluation Board for the Navy's Standard Desk-top Tactical-Support Computer (DTC-II).

**Anthony Madera, Miriam Laykin, Nina Mullik, Anne McLaughlin, Mary Reingruber, Janice Stribling** (Code 50) and **Margaret Vigelis** (Code 04): For coordinating and assisting with the NSIA Aircraft and Detection/Classification ASW Technical Seminar which resulted in a huge success.

**AW2 Christopher Henderson** (Code 10): For invaluable assistance rendered to Patrol Squadron 45 (VP-45) during their deployment to the Bermuda antisubmarine warfare sector.

**LCDR Neal Hesser** (Code 40): For your exemplary guidance of the P-3 SAR Team which performed admirably under stringent flight requirements.

**Kevin Birney** (Code 40): For your professional direction of the P-3 SAR Team, testing performed was highly successful.

**AOJ Julian Bodie** (Code 40): For your critical performance under stringent flight requirements imposed during SAR Testing.

**James Kingston, JO2 Michael DelleDonne, Nancy Szamborski, ATC David Ader, David Ritho, Joanne West**, (Code 04): For active participation in the Navy's "Night Out Against Crime" program in our military housing area.

## Patent . . .

Continued from page 1

alloy, in Frazier's opinion, is applicable to hot components such as wings and fuselage on virtually any jet engine.

Frazier has worked at the Center for nearly ten years. He began working here in 1980 as a co-op from Drexel University. By 1987 he received his Ph.D. in Materials Engineering from Drexel.

contractors, and there presently are billets available for qualified personnel. The recruiting office at NAS Willow Grove has the details.

Captain Dyer will be assigned to VTU 0493, while Captain Greenberg has assumed command of the reserve unit augmenting the Naval Air Test Center, Patuxent River, MD.

## Letter to the Editor

Continued from page 2

another suggestion I have submitted to Service America. I did not receive any response from the company.

Can you help?

Irene Simmons

Dear Irene:

Your letter has been forwarded to the Food Services Board. We will print the Board's response as soon as it is available.

The Editor

## Technical Highlights

Continued from page 5

products in support of fleet requirements. The OSP survey system includes the following major subsystems:

— The Integrated Navigation System which provides ship's position as a function of time for correlation with depth data and other recorded survey data to produce specialized charts.

— The new Phase IV version of the SONARRY System develops and records high resolution swath sonar depth data as a function of time to map the ocean bottom. This time correlated depth data is combined with post-time refined navigational data to produce Bathymetric Navigation Charts, which constitutes the principal survey product.

— The Sound Velocity System provides water temperature versus depth data which is used with historical data to compute ray bending corrections for the SONARRY System.

— The Narrow Beam Sonar Digitizer System develops and records single beam sonar depth data to monitor and to serve as a backup for the SONARRY center beam depth data.

— The Bathymetric Refinement System refines the raw navigational data utilizing unique Center developed post-time data processing techniques.

— The Current Profiling System is used to collect and record profile data for water currents beneath the ship.

The efficiency of the USNS MAURY, designed and built from the keel up as an oceanographic survey ship,

combined with the latest state-of-the-art mission survey system will provide for enhanced accuracy and a 75 percent increase in survey productivity. Admiral Pittenger, the Oceanographer of the Navy, and Captain Martinek, Commanding Officer of the Naval Oceanographic Office, accompanied the USNS MAURY on her maiden mission survey operations.

### USNS HESS Techeval Issued

Issued the USNS HESS (T-AGS 38) OSP System FY-89 TECHEVAL Report. Major updates included the integration of a new Survey Control Display System, Beltbed Plotters, Frequency Time System updates, and a new computer in the Narrow Beam Sonar Digitizer System to upgrade system capabilities.

### USNS WYMAN Techeval Issued

Issued the USNS WYMAN (T-AGS 34) FY-89 TECHEVAL in port and at sea OSP System TECHEVAL Plan. Major mission equipment upgrades include the replacement of the BOTOSS Sonar System with the SASS Phase IV Sonar Array Survey System, integration of a MK-29 gyrocompass and Ship's Attitude Data Converter and new computers in the Narrow Beam Sonar Digitizer and Current Profiler Systems. New computer programs and firmware were developed to provide new OSP System functional capabilities.



## All star game a success

By Jack Eyth

The NADC Softball League ended with a few playoff surprises and a resoundingly successful All-Star game. First the playoffs.

In the Quarterfinals, the Misfits dispatched the Herasers two games to none. The Eighth Inning had a tough time with the Renegades but finally won two games to one. The Granfalloon, after winning a close opener for the Bandits, eventually bowed out by losing the next two games. But the big story was the topsy-turvy matchup between the first place intimidators and the eighth place Bearcats.

The first game was a blow-out won by the Intimidators 15-0. The next game was close all the way but the Bearcats held on for a 6-5 win. The third game had the Bearcats "a'whoopin" 'n a'hollerin" their way to an amazing 9-0 upset victory which knocked the Intimidators out of the playoffs.

The two Semifinal matches ended in sweeps with the Misfits subduing the

Bearcats 16-11 and 18-1, and the Eighth Inning cruising over the Bandits 4-1 and 19-8.

The Finals, traditionally the highlight of the softball season, got off to an ignominious start when the Eighth Inning could find only 7 players for the first game and wound up forfeiting to the Misfits under "damp and gloomy" skies. For the second game, the Eighth Inning brought in some veteran players off-the-shelf (including Ralph Collins and previously "retired" Fred Kuster) and made the game respectable, though still losing 17-7. The third game of the best-of-five series saw the Eighth Inning, again without pitchers John Bechtel and Bob Larr, take the Misfits into extra innings before losing 11-10. Thus, the Misfits were crowned League Champs, winning their third Championship since 1982.

The real finale of the softball season turned out to be the rejuvenated

Annual All-Star Game. After being rained out once during mid-season, the game attracted nearly a hundred people to see two games for the price of one and to take advantage of complimentary free food and beverages. The opening game pitted a team of NADC's Women's All-Stars managed by Maria Cusanelli (Renegades) and Donna Morgan (Black Russians), against a Men's team made up of League Officials and Team Managers coached by Jack Eyth (Guzzlers). Each team wound up winning one-half of the game. After the women recovered from a shaky start,

they played tough and outscored the Managers over the last four innings of the seven inning game.

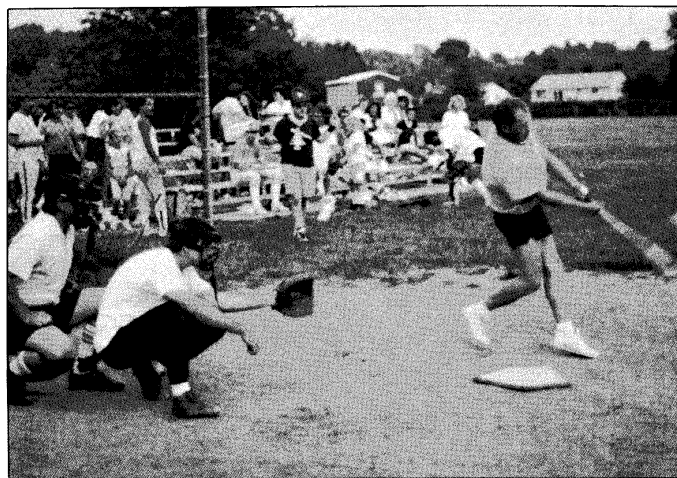
The Regular All-Star game followed in which an "ODDS" team managed by Sharon McKay (Intimidators) challenged an "EVENS" team coached by Dave Whitenack (Bandits). The game was close until the eighth inning when the EVENS pulled away, coasting to a nine-inning 14-7 victory. The game was highlighted by 5 home runs, two by Stan Zajdel (Bandits). Joel Wexler (Misfits) was the winning pitcher for the EVENS.



Fans line up for free hot dogs and hamburgers which attracted as much attention as the two all-star games.



Mark Lilly (Code 6052), who organized the annual all-star extravaganza, gets ready to stroke a single in the women's all-stars vs. league managers opening game. The catcher is Angela Lawson.



Scott Rice (Dyna Corp) bats during the regular all-star game with catcher Jack Connors (Code 6013) and Umpire Bob Bello (Code 1022) looking on.

## Golfers invade Limekiln at 'high noon.'

By Pete Brown

On September 12th, another "High Noon" crush by 68 W&R golfers at Limekiln G.C. sent Curt Simmons to the 19th hole for good! A 1989 season low net record was set by J. Orr, as J "Double-Figures" Bowes "calmed him down" throughout the round. A three-way tie for second at 64 was shared by J. Scott, B. "Too Hot" Wiggs, and R. "8?" Yeager. F. Vaow took gross honors with a solid 75, followed by B. "Mr. Consistent" Harvey, "Relax"

Muller, and Curt "Publinks" Swatchick at 80. Closest to the pin awards went to M. "9-Iron" Mirabella, D. Vrabe, F. Vaow, and J. Orr. John "69" Nottage captured the longest drive with a 278 yard poke on #4.

This tournament concluded the W&R individual and better-ball play for the summer, while the scramble at Locust Valley G.C. in October wraps up the W&R golf calendar for the year. Get out the wool hats and gloves for winter golf!

### Planned your vacation yet?

To help with all of your personal travel arrangements, call SATO Travel, ext. 2729, Mon. thru Fri., 8 AM to 4 PM.