The Reflector

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NADC Retains Fueling Function

Naval Air Development Center civilian employees have shown that they can do the job better and less expensively than commercial contractors, thereby saving the taxpayers almost a quarter of a million dollars over the next three years. In competitive bidding held in accordance with the federal government's Commercial Activities (CA) program, the cost of the Center providing its own in-house Automated Data Processing and Fuel Distribution Services was compared to the cost of similar services offered by private contractors. The competition showed that civil service employees did the work at a savings of over $218,000.

The study took into account the jobs and salaries of twelve NADC employees. Currently the Center employs 2,393 people with an annual payroll of over $83 million.

Cost comparisons between government services and those available from commercial contractors will continue to be made in several other areas including: Transportation, Maintenance, Administrative Services and Ground Electronics Equipment.

The CA program is set up to make sure that taxpayers are getting the best services at the lowest price. When a function such as data processing is identified as a candidate for the CA program, a bid package including a detailed job description is prepared and the function is advertised as "Open for Bid." The bids that are received are screened on the basis of expected performance and price. NADC also develops a bid which, at the time of bid opening, is compared to the bids received from private contractors. If the contractor's bid is 10% less than NADC's cost, then they receive the contract to perform the work.

In both of the cases involving NADC, the Center's bid was lower than the contractor's bid. Captain James Anderson, Commander of the Naval Air Development Center said, "Our employees are providing the best for less."

Barnhart Does Research and Teaches Electrical Engineering at Naval Academy

by Rodney Barnhart

I was informed many times during orientation week activities that the mission of the United States Naval Academy is to: "Prepare midshipmen morally, mentally, and physically to become career officers in the naval service."

During that week when a representative of every major function of the Academy had an opportunity to speak to the newly arriving faculty, I never thought that I could become so involved with the mission, being in spirit, a transplanted NADC'er. Within a week after arriving in Annapolis via the NSTEP sponsorship, I was facing my first class of midshipmen. The encounter was not unlike an old west gunfight standoff, each side carefully weighing the potential of the other. The young men and women, all juniors (2nd class) were facing a new, unidentified civilian prof with no background data in the Mother Bancroft files for a course with one of the hardest repu-

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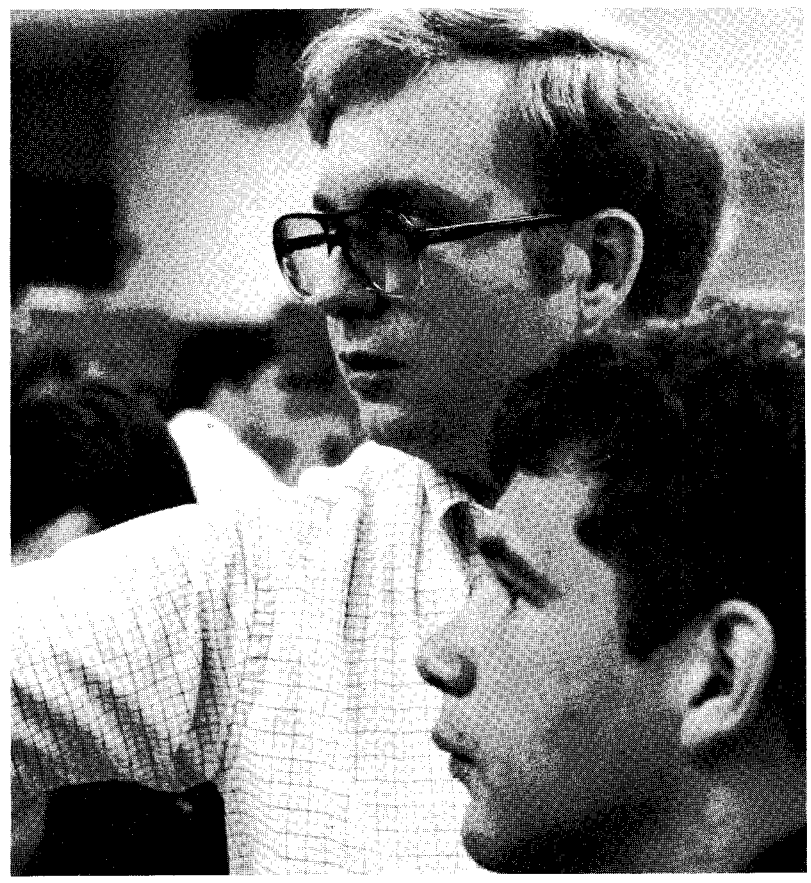
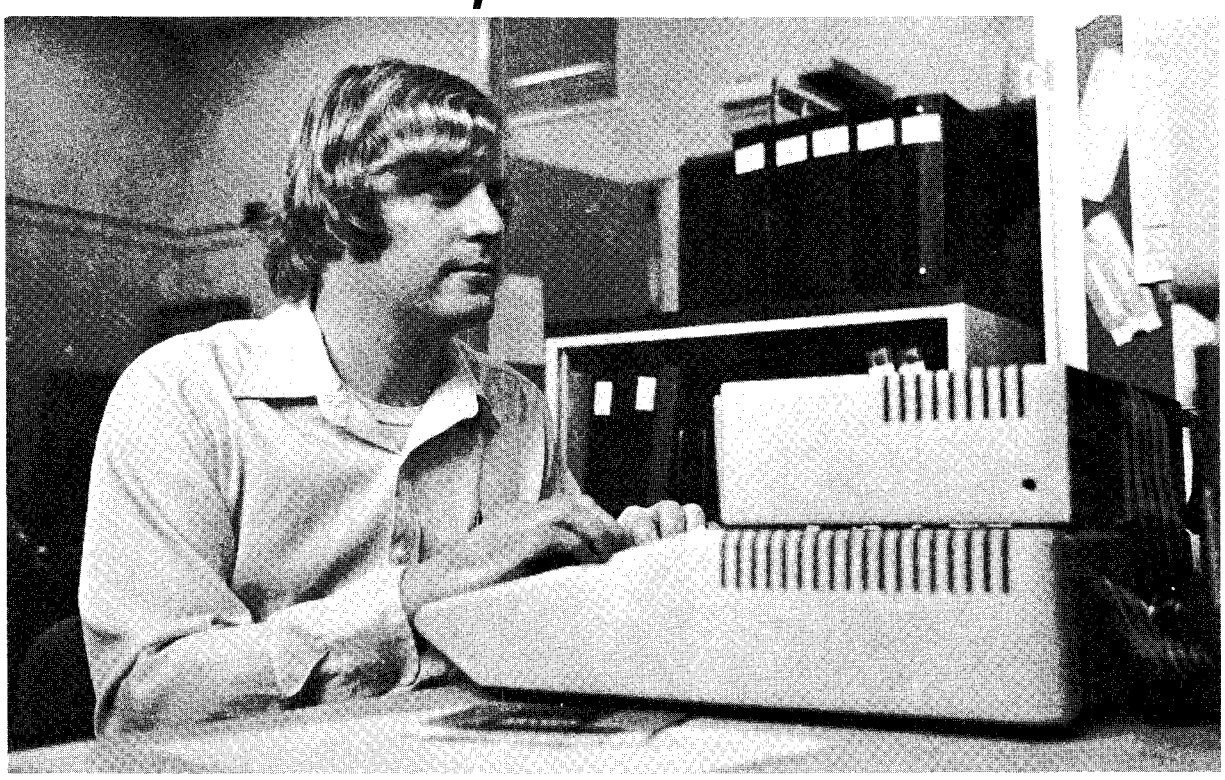


Professor Barnhart and Midshipman Pendola work together in a "WIRES" lab

Compassion Plus a Computer Gives Woman a Voice

Paula Turnbach of Shippensburg, PA was in an automobile accident four years ago that resulted in an almost total loss of sensory usage. On top of that she can now move only one leg and one arm. Paula cannot speak, yet she understands what is being said. She has great trouble seeing. The only way she could communicate was through the use of a hand squeezer that emitted a noise. Paula would use it for yes/no responses only. Her world, as one can imagine, is very limited but through the help of Wayne Phillips, SCD, and Jerry Bortman, NADC's Technology Transfer Coodinator, Paula's world is getting bigger.



Shown working on an Apple Computer, Wayne Phillips developed software for Paula

Bortman received a call from Paula's sister, who works at the Naval Ocean Systems Center in San Diego, California. She had heard of NADC's expertise in the area of voice interactive systems and thought that the Center might be able to help. Bortman in turn contacted Paula's family to find out just what limitations Paula had. He also made an appointment with an eye doctor in this area to evaluate Paula's vision. The examination showed that she could read two inch letters at about five feet.

Next Bortman contacted electronics engineer Wayne Phillips, a member of the NADC's Apple Users Club. Phillips said, "I had been interested in getting involved in a project that would help the handicapped". In talking to Bortman and Paula's parents, Phillips decided to create a program that would generate large characters on the screen so Paula would not have any trouble reading them. Phillips explained that all the available character generating programs produced letters that were too square in appearance, and confusing from a distance. The solution Phillips came up with was to design and program his own characters that were rounded with each letter more recognizable from a distance.

To help Paula use the computer a special switch had to be designed. Since she could only squeeze with her hand she was unable to use a standard keyboard. The switch that Paula now uses is a pressure sensitive switch that sends on/off commands to the computer.

Phillips then created programs using the large characters to help Paula communicate with her family. He explained that her parents would turn the system on and Paula could then select certain "menus" of words. These "menus" are words that denote categories such as "NEEDS". If Paula stopped the program at "NEEDS" a series of words would then be printed on the screen in a time delay sequence. That means that the words roll by on the screen and stop for a certain amount of time, giving Paula a chance to read the words and select the word that fits her need. For example "NEEDS" asks if she is thirsty, hungry, etc.

Phillips also has programmed the alphabet into the system so Paula can select letters to spell words that are not on the menus. Phillips is now

(continued page 2)

Center Gets 21 High Grades

In a message from the Director of Navy Laboratories, Mr. R. M. Hillyer responded to a request by NADC for an increase in high grade ceiling allocations. Hillyer's message stated that NADC would receive an increase of 21 high grades. The unique aspect of this increase is that the entire Naval laboratory system was allocated 28 high grade increases for FY 1983.

According to Thomas Brennan, Associate Technical Director, the reason NADC received the high grade increases was that, "we were able to couple corporate business goals with required personnel needs, thereby showing a good accounting of the significant short falls in the high grade area. Although we still have a significant short fall, this ceiling increase is a welcome step toward additional high grade allocations in the future."

Brennan said that the Center will use the increase to "bolster the technical and project management paths of the Tri-Ladder Career Development Program advocated by Technical Director Robert Buffum." The Director of Navy Laboratories, R. M. Hillyer, has recognized NADC's program as an outstanding initiative toward insuring technical excellence.

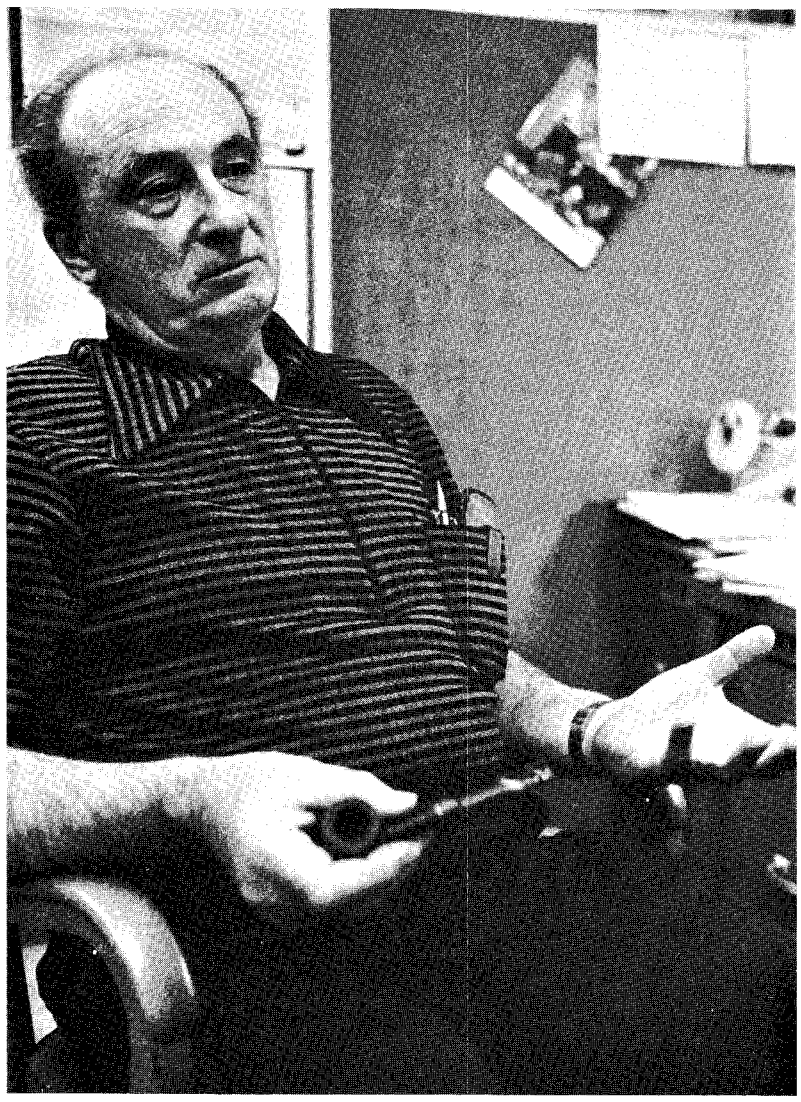
Technician's Invention Receives Patent

During his forty-three years with the Federal government, Electronics Engineering Technician Frank Previti of CNTD has become somewhat of an expert on Inter Communications Systems (ICS). His knowledge and innovative thinking have resulted in a patent being issued for a preamplifier device. Previti explained that his device, called a Balanced Impedance Coupler, is designed to eliminate inherent noise that is present in microphone systems.

Although to the layman the patented circuit sounds rather complicated, Previti said, "It was so simple I wondered why nobody had thought of it sooner". His inspiration came out of his work on shipboard communications systems for the Light Airborne Multi-Purpose System (LAMPS) helicopter. That system used a sound powered microphone. Previti stated that the system was used to provide last minute instructions to the LAMPS aircrew before taking off. Inherent noise caused by mis-matched impedance started Previtti thinking.

What he finally came up with was a circuit using four transistors, nine resistors and three capacitors. In effect, what the circuit does is even out unbalanced voltage containing noise and therefore greatly enhancing the signal. It would replace any expensive and heavy transformers that are now in use.

Besides the uses in microphone systems, Previti's device has spin-off applications. Serious Hi-Fi listeners now spend between $200 and $300 on transformers for moving coil cartridges. Previti says that his circuit could eliminate the transformer. In addition the device, when mass produced, would only cost about one tenth the transformer's price. Furthermore, the device may be envisioned as a cheap, very effective low noise microwave amplifier for satellite receivers.



Frank Previti developed a low cost pre-amplifier

Editorial: Parking Praise

Three cheers for the enforcement of Center parking regulations. The abuse of these regulations by people who have no business parking in spaces that are for Center employees had gone on long enough. While it's true that these measures will not solve the entire problem, because space is at a premium, they go a long way in making the situation more equitable. For the federal employees at NADC it is something of a victory, a small one, but a victory just the same. At a time when we stand to lose much, even the small victories have meaning.

Letters to the Editor:

Clouded View as Employee Tries to Clear Smoke!

Dear Editor

Last January I wrote the Editor of the Reflector with regard to the problems which were being encountered by those who commute to the Center by bicycle. It seems that someone is listening and sympathetic with the Bikie's plight. The other day I received a note from code 80 which indicated that a new locker/shower/bike storage project is in the FY-84 plans. Also, the bike rack has been moved into a visable location in hangar bay 1 to discourage pilfering from bikes.

Since my last letter has met with some success I thought I would try again, this time with regard to office smoking. On every pack of cigarettes there is a disclosure which says that cigarette smoking is hazardous to your health. From recent articles I have been reading, perhaps the disclaimer should state that cigarette smoke is also hazardous to the health of nearby non-smokers. Judging from the smoking habits of individuals in my office area, you would think that smoking was actually the answer to Ponce De Leon's fountain of youth rather than being hazardous to one's health. By 0800 the odor of smoke has already permeated the office surroundings. By 0830 the haze from smoke is already causing eye irritations and throat discomforts which affect work for the rest of the day. The ventilation system would help the situation but it is rarely turned on because of energy conservation measures and noise. I recognize the rights of smokers, but what about the rights of non-smokers to breathe smokeless air? Would it be possible to somehow officially limit smoking to areas or times when there is adequate ventilation in the office areas? Also NAVAIRDEVCEN instruction 6010.1 which specifically prohibits smoking in conference areas is flagrantly ignored. What good are such instructions when there is no enforcement?

Alvin Spector

According to NADC Safety Manager Mike Masington, problems with smoking within work spaces should be referred to your supervisor. A balance, however, needs to be struck between smokers and non-smokers.

There are standards for ventilation in work areas. If the ventilation is adequate, both groups should be able to co-exist. The Safety Office should be contacted for the area to be checked.

As for smoking in conference rooms, it is the responsibility of the conference room manager to enforce the no smoking regulation. Those who fall in this category take note!

Editor

Lunch

I'm not sure if it has been brought up before, but I think it would be a good idea to place benches and tables outdoors so the employees can enjoy their lunch hour outside. There are many available grassy areas where a bench would fit in nicely. I am not sure who I should address this letter to, but I thought you might want to mention this idea in the *Reflector* or at least know who might be able to respond to this suggestion.

Thank you,
Steve Bazow

The Base Exterior Architectural Plan does not presently include an area dedicated to picnic tables and benches. The Base Exterior Architectural Plan will address the area of landscape treatment. However, the plan has not been presented to the Center Commander in its final form. This presentation is anticipated in late April or early May. By that time it is anticipated that the general type of area stated in the letter will be included in the Plan.

Editor

NADC at Annapolis: Teaching and Research

(Barnhart continued)

tations for years standing. The prof was looking at twenty-four future naval officers waiting for the first words to set the tone for all that was to follow, knowing little more about what to expect than the crisp military discipline and the incredible statistics of the Academy admission process that shrinks 12,000 applicants down to 1200 plebes entering each year. The section leader brought the class to attention, stated roll and turned them over to me for 16 weeks of learning and struggling together.

The day-to-day accomplishment of parsing out knowledge at just the right pace would not have been possible without the unique teaching environment at the Academy. The Academy, from its founding, was designed to have a faculty composed of an equal mix of civilian and military instructors, a feature still very much in effect. The exchange of academic and fleet points of view is immediate and reinforcing with a senior fleet officer just transferred in for a tour of duty, or a long standing civilian professor with significant academic experience just a couple of doors away. The atmosphere is rich in tradition amplified by the dynamics of the modern Navy. The Superintendent of the Academy, Vice Admiral Edward Waller, USN, and the Commandant of Midshipmen, Commodore Leon A. Edney, USN, are quick to point out that there are no "duds" at the Academy, either students or faculty.

Coupled directly with the professional atmosphere, are the teaching resources available on campus. Besides ample modern classrooms, there are numerous laboratories in several buildings used for student work and fundamental research in all the fields for which the Academy provides curriculum. Oceanography, physics, math, chemistry, meteorology, engineering, English, history, political science, language studies, and aerospace labs are organized under the four major divisions reporting to the Academic Dean, Dr. Bruce Davidson.

The NSTEP assignment also includes research effort in parallel with the teaching duties assigned under the program. My project is associated with microprocessor signal processing and graphical display of non-destructive ultrasonics testing data and includes work with 16-bit microprocessors, a high resolution color graphics display and the preparation of two papers. I have been able to apply both hardware and software experience and enjoy the opportunity to spend time working on state-of-the-art problems, with state-of-the-art resources.

I can see that there are ways in which the resources and skills of the faculty at the Naval Academy can work with their counterparts at NADC to solve mutual problems and answer technical questions within the naval community in a way that has not been exploited previously.

The assignment continues to be an eye-opener in many ways not possible at NADC, while highlighting the need for labs like NADC in the naval community. I strongly encourage individuals at NADC to seek the opportunity to invest in the NSTEP assignments at the Naval Academy, as the return on the investment is many fold.

Rodney Barnhart

Rodney Barnhart is completing a one year NSTEP assignment in the Electrical Engineering Department at the United States Naval Academy in Annapolis, Maryland and will return to the Software and Computer Directorate in August 1983.

(Compassion from page 1)

working on a voice synthesis program that will allow the computer to talk, greatly enhancing the system's capabilities.

Both Bortman and Phillips, who have devoted a significant amount of their own time, are involved with a program that is rewarding not only for Paula but for themselves as well. It's just one example of what Technology Transfer and caring can do.

The Reflector

Naval Air Development Center

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CAPT James B. Anderson — Commander, NADC
Robert S. Buffum — Technical Director
Joseph P. Cody — Public Affairs Officer
David Polish — Editor

Navy Relief Events Scheduled

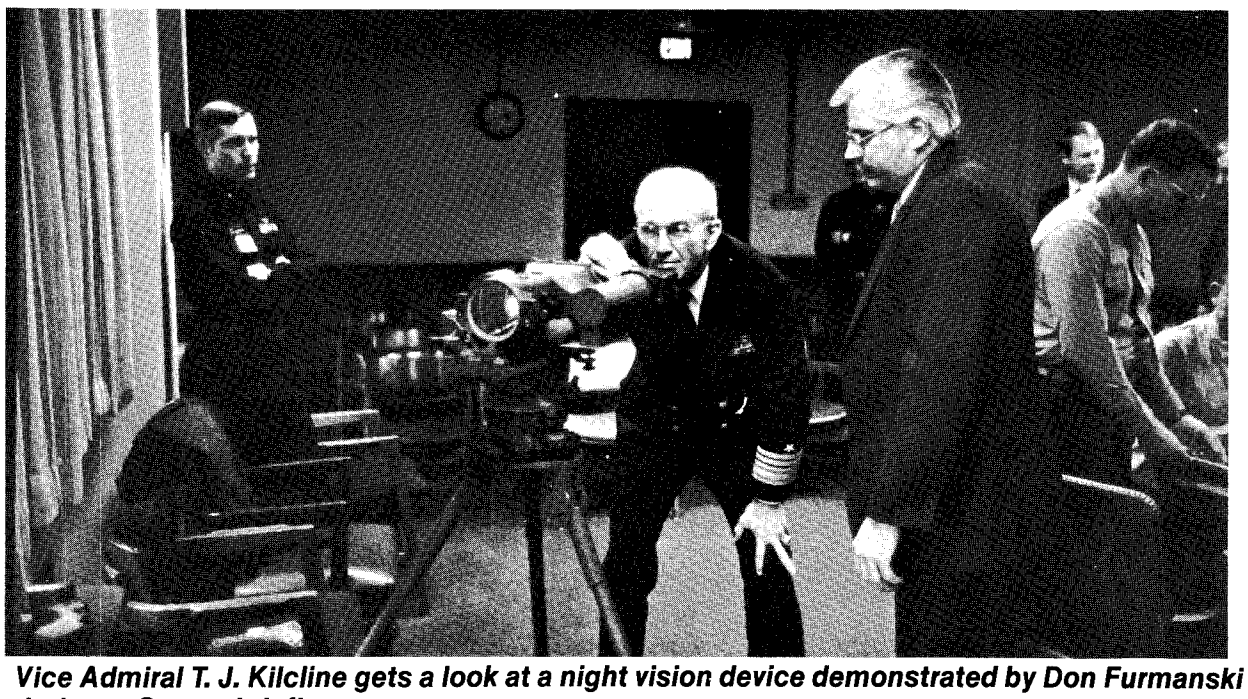
Relief is on the way, Navy Relief, that is! Spring has sprung and the annual drive to support Navy Relief is right around the corner. This year along with the ticket sales, and the SuperStars competition, there will be some special events. On 30 April the Cavalcade of Corvettes will be held. This show brings together over 100 custom Corvettes, several dozen vendors and thousands of visitors. Last year, in return for use of NADC's facility, the Cavalcade of Corvettes donated $3,000.00 to Navy Relief.

A first time event to support Navy Relief will be held on 13 May. On that date a card of professional prize fights will take place in hangar bay #1.

Tickets for the event will cost $20. The profits from the fights will be shared by Centennial Charities, Inc., better known in this area as Kelly's Kids. Kelly's Kids is a group of physically disadvantaged children sponsored by District Justice James Kelly.

The 1982 Navy Relief Campaign raised in excess of $165,000 in our area, an increase of 31 percent over the 1981 drive. Last year the area Navy Relief Office provided $345,000 in loans and $33,000 in direct grants to a client population that increased 47 percent over 1981.

Navy Relief is worthwhile. It helps those Navy personnel who need assistance. They make a sacrifice for the service of this country. We can make a little sacrifice to help them out in time of need.



Vice Admiral T. J. Kilcline gets a look at a night vision device demonstrated by Don Furmanski during a Center briefing

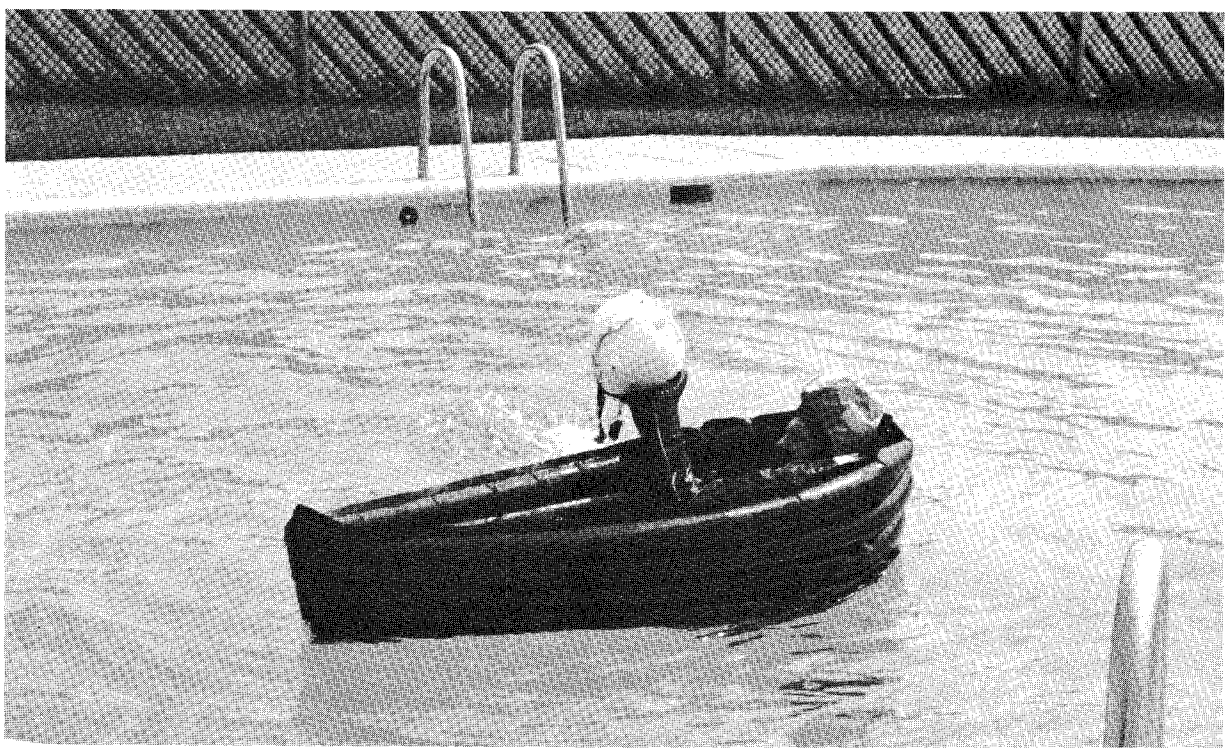
Mini-raft Goes Into Final Testing Stage This Month

One of NADC's many technical advances is about to go into Operational Evaluation (OPEVAL) with a production contract scheduled for 1984. The innovation is the Mini-raft, a twelve inch square by one and a half inch thick inflatable life boat. It replaces the currently used LR-1 life raft which weighs eight pounds. The Mini-raft weighs less than four pounds and its design has many advantages.

George Gillespie, ACSTD project engineer, explained that the Mini-raft can be worn as a back pack. The older LR-1 is worn around the waist and is somewhat cumbersome. The new raft is so compact that it can be easily worn without limiting mobility. This new raft is first intended for deployment with helicopter crews where mobility and compactness is important.

One of the principal features of the Mini-raft is its stability in water. It is actually shaped like a boat with a keel. The keel shape lowers the center mass below the center of buoyancy to create a very stable raft. The older LR-1 has its center of mass above the water causing it to be unstable in rough seas.

The Mini-raft has successfully completed tests with Australian Air Force, Royal Canadian Air Force, US Air Force and the Navy. NADC has compiled a maintenance manual and produced an operator and maintenance training video tape. Gillespie said that the mini-raft is being considered for use in other aircraft such as the E-2C and tactical aircraft.



Mini-raft in the water

Tech Trans Deals with Fortune 500

Several Center products, having commercial potential, were looked over carefully by a group of Fortune 500 companies recently. ARCO Chemical, Monsanto Company, Johnson Wax, Procter and Gamble Company, Amoco Chemicals, Phillips Petroleum, Eaton Corporation and others expressed interest in manufacturing and/or using several corrosion preventive compounds developed at NAVAIRDEVCEN.

The occasion was a Government-Industry Technology Transfer Conference held in Baltimore. The conference was sponsored by the Mid-Atlantic Region of the Federal Laboratory Consortium for Technology Transfer (FLC) and the industrial participants.

Ten Federal R&D Laboratories and Centers described promising technological innovations that might lead to commercially valuable products or processes.

Dr. John DeLuccia (ACSTD) presented information on AML-350, AMLGUARD, WDP (Water Displacing Paint) and the Barnacle Electrode technology. Jerry Bortman (PAR), Regional Coordinator of the FLC, welcomed the participants. After the presentation, almost half of the industrial participants interviewed Dr. DeLuccia regarding potential applications of the corrosion preventive processes and products.

NADC, with MAT-08I sponsorship, is continuing to explore innovative programs to promote commercialization of Navy technology, thus stimulating business and economic development.

Special Family Day Planned

Get ready for NADC Family Day/Open House. This year the Center will host employees and their family members for an afternoon of exhibits and demonstrations. On 8 July, from 1230 to 1530 NADC will open its doors to the families of its Federal employees and full time contractors. One hour of excused leave will be granted for the purpose of leaving the Center to bring back any family that lacks transportation.

It's still some way off but now would be a good time to start thinking about exhibits that would best show what your work is about. Directorate coordinators will be looking for ideas so speak up and let them know. Watch for further announcements as the time gets closer.

Employees and Organizations Given 1982 Safety Awards

Five out of fifteen Center organizations and forty-one individuals have received recognition for completing one accident free year. The Computer Department, Civilian Personnel, Command Projects Directorate, Systems Directorate-Sensors and Avionics Technology Directorate and the people whose names are listed at the end of this article have all been honored for their safe work habits.

Accident free means that during the past year no time had been lost because of occupationally related mishaps. In the past year the Center recorded twenty-five lost time accidents and illnesses resulting in 1648 lost hours due to injury.

When organizations effectively make an effort to reduce potential hazards the results can be seen in increased productivity. Those individuals and organizations that strive for safety can be proud of the records they establish.

These employees received individual safety awards: From 81; Vincent Misticoni, William Siner, Svend Bernsten, John Rudolph and Vincent Morelli. From 84; William Sunday, Harold Hidleburg, John Kuklinski, John Indelicato and Edward Engle. From 83; George Sterling, John Hanson and Edward Linke. From 044; Edward Long and Martin Armstrong.

The following received Material Handling and Construction Equipment Operators' Awards: From 83; Edward Scott, Dale Jackson, Lister Ransom, Herbert Camper, William Walto, Robert Urban, John Boney, Leroy Stover, Joseph McHugh, Julius Newman, Frank Sherard and William Capps. From 84; James Taylor, Joseph King, John McGee, Andrew Hall, Robert Clegg, William Robertson, Kenneth Danser, William Singleton and Harry Tkoch.

Safe Driving awards were received by: Joseph Tarvin, Thomas Ryan, William DeBoer, Michael Beasler and William Zar.

Decade of Disabled

On December 3, 1982, the United Nations General Assembly proclaimed the period 1983-1992 as the Decade of Disabled Persons. The National Office of Disability is heading the decade program in the United States and coordinating its activities among federal organizations and private sector communities.

Despite the progress the Department of Navy (DoN) has made in recent years—the extensive activity of the 1981 International Year of Disabled Persons and the 1982 National Year of Disabled Persons—there is still considerable work DoN can do to improve the representation of disabled persons in the workforce and to assure their participation at all levels of the organization.

The Navy goal is to establish the groundwork for a federal-wide Navy role as the "model" employer of disabled persons. We can begin by identifying barriers and initiating innovative programs to eliminate these barriers or to lessen their impact.

Commander Salutes

NADC's Fire Department and the Senior Watch Officer for their assistance to Warminster General Hospital during the February snow storm.

David Davis, SATD, for his contributions to the Tri-Service Combat Identification Systems Conference.

Super Safety Reduces Danger

by Mike Masington

Myron Muchgut, well known foodaholic, original junkfood junkie, and only person (other than Billy Carter) to receive a personal letter of commendation from the Budweiser Brewing Company, looked deeply dejected as he returned to his office after a visit to his family doctor. Quenton Macho, Myron's right-hand man, had been waiting for his boss to come back and quickly noticed his somewhat less than enthusiastic demeanor. "What's the matter, Myron?" queried Quenton.

The perturbed protein predator peered up peevishly from his prodigious paunch and said, "Aw, my doctor said I'm overweight. He said it's elevating my blood pressure, overworking my heart, and that my spare tire looks like a fugitive from an 18 wheeler." "Wow, that's pretty harsh," replied Macho. "If you think that's bad," continued Muchgut, "he also said if I don't lose forty pounds, he's going to perform a stomach lift on me with a rusty Boy Scout knife."

"Hey, no problem, boss," replied the much muscled Macho. "You've just got to follow the diet the doctor gave you and get some exercise."

"Exercise," snapped the sensitive supervisor. "Just yesterday didn't I walk all the way to Elroy's Ice Cream Emporium for the two-for-one banana split special, and don't I hold the Club record for one-hand beer can crushing?"

"Ah, that's not quite what I had in mind, boss," said his supportive subordinate. "You've got to jog, or bicycle or swim or something to get that fat off."

Muchgut, never one to attack a problem half-heartedly, realized the wisdom of his friend's words and set out on a weight reduction program with grim determination. First, he threw out that "dumb" diet his doctor had prescribed and tried the Dr. Malpractice diet, the Bean Curd diet, and the Sword Swallower's diet before finally settling on one used by his 90-pound teenage daughter. This one consisted of consuming nothing but guacamole dip, yak milk and natural prune juice (it doesn't have much protein, but it greatly enhances your ability to run short distances). In addition, even though he'd been flying a desk for some time, he began a crash program of strenuous exercise including running, weight lifting, calisthenics, etc. He noticed that he often felt a little weak and dizzy, but he kept up the pace and even added an occasional sauna to melt off the pounds. It was during one of these extended periods in the pressure cooker that Myron's overzealous activities finally caught up to him, and he collapsed on the floor.

As luck would have it however, the fastidious aficionado of physical fitness, Super Safety, happened to be in the gym that day, saw Muchgut's plight and pulled him out in the nick of time. As Myron returned to consciousness Safety said, "Myron, what are you trying to do, imitate a giant steamed clam?"

"No, Super," mumbled the groggy Muchgut, "I guess I just fell asleep in there. I have been kind of tired lately, but I've got to lose weight."

You'll lose more than that if you keep this up," continued the concerned caped crusader. "Any major weight reduction program must be carefully controlled. Exercise of course is important, but it should be done gradually and in stages. Proper nutrition is also a necessity. Crash or fad diets seldom supply the full range of nutrients the body needs to sustain itself. Follow your doctor's advice, and eat what he tells you to. You may not shed the weight as fast, but you'll lose it more safely and probably will find it easier to keep off in the future."

Myron had apparently learned his lesson and as they waited for the medics to arrive, the peerless paragon of protection asked if there was anything he wanted.

"Yeah," replied Muchgut, "I could really go for a pepperoni pizza, a root beer float, a jar of dill pickles, a chocolate Ding Dong, a bag of potato chips and a couple of Big Macs. "Oh, on second thought," he recanted, "I'm still on a diet. Instead of a root beer float, make it a Diet Pepsi."

Hal Tremblay, Computer Department Head, explains NADC main computer complex to RADM E. J. Hogan

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Good Bonds Deal

The annual Savings Bond campaign within the Department of the Navy commenced 1 April and will continue through 1 May 1983.

In a message launching this year's campaign, Secretary of Defense Caspar Weinberger stated:

"Today's Savings Bonds are more attractive than ever before. Savings Bonds now offer a variable market-based rate if held for five years or more. That rate is 85 percent of the average return on outstanding treasury marketable securities that mature in five years. The interest rate on Savings Bonds, thus, floats as market rates fluctuate, continuously providing a fair return. In addition, savings are protected from drastic declines in market rates by a guaranteed minimum return.

"I hope you will give the Payroll Savings Plan your careful consideration when you're called on during the campaign. It's an investment in our country, a convenient way to save, and with the new market-based rate, a better investment."

Fraud Charges Filed

A contractor that did work at NADC was indicted on three counts of submitting fraudulent bills by a federal grand jury. The contractor, Environmental Consulting and Testing Services, owned by Nathan Frenkel and located in Cherry Hill, New Jersey, was charged with misappropriating government property and submitting false vouchers in the NADC case. Frenkel's company worked under a subcontract with Cornell & Co. of Woodbury, New Jersey. The work at NADC involved cleaning up mercury contamination during the overhaul of the centrifuge. Frenkel overcharged Cornell for labor. In addition he and his company took a special vacuum cleaner belonging to the Navy.

The other counts involve work Frenkel's company did for Salem County, New Jersey. That work involved an EPA study of septic waste disposal.

Uniform Update

Effective 1 October 1983, service dress blue (coat and tie style) uniforms will no longer be authorized for wear for men in pay grades E-6 and below. On that date, the service dress blue jumper and service dress white jumper will be a prescribable uniform for all men in pay grade E-1 through E-6.

Library Has IEEE Periodicals

The Institute of Electrical and Electronics Engineers, Inc. currently publishes 55 periodicals containing information on every aspect of electrical, electronic, and computer science engineering. The Technical Information Branch holds most of the IEEE periodicals published since the 1950's, as well as the *PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS* (IEEE's predecessor) back to 1929. Due to overcrowding shelves, all IEEE periodicals since 1971 have been received in microfiche. IEEE has begun several new periodicals. Holdings and descriptions of those in the TIB are listed below.

IEEE CIRCUITS AND SYSTEMS MAGAZINE, vol. 5, 1983—Full-length papers of practical use to circuits and systems engineers. Also features tutorials of a light technical nature, book reviews, news and notes and conferences.

IEEE COMPUTER GRAPHICS AND APPLICATIONS MAGAZINE, vol. 3, 1983—Computer graphics hardware and software, display technology, computational geometry, geometric data structures and data bases, industrial applications, human factors for graphics, interactive graphics languages, and distributed graphics techniques.

IEEE CONTROL SYSTEMS MAGAZINE, vol. 1, 1981—Technical articles emphasizing control system applications and experiences, design tools, conference programs, and book reviews.

IEEE ELECTRON DEVICE LETTERS, vol. 2, 1982—Rapid publication of short communications on new results in the fields of electron devices.

IEEE MICRO, vol. 1, 1981—Microprocessor technology, applications, fabrication and computer-aided design, system support software, interfacing techniques, chip design and fabrication, personal computing, draft standards for hardware, software, and interconnections, control hierarchies, and architectures.

IEEE POWER ENGINEERING REVIEW, vol. 3, 1983—Electric power system engineering. Includes one-page summaries of all papers accepted for publication in the *POWER APPARATUS AND SYSTEMS TRANSACTIONS,* selected prize papers, and the *POWER ENGINEERING SOCIETY NEWSLETTER.*

IEEE TRANSACTIONS ON MEDICAL IMAGING, vol. 1, 1982—Medical imaging relating to ultrasonics, x-ray imaging and tomography, and nuclear isotope imaging systems. Image processing by computers, microwave imaging, mathematical tools and analysis of image formation, perception, and display and pattern recognition.

IEEE TRANSACTIONS ON COMPUTER-AIDED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS, will receive beginning 1983—Methods, algorithms and man-machine interfaces for physical and logical design including planning, synthesis, partitioning, modeling, simulation, layout, verification, testing, and documentation of integrated circuit and system designs of all complexities.