April 2000

SPACE TRACKS

...ND BULLETIN ON NAVAL SPACE ISSUES AND INITIATIVES

*Navy Communications
Satellite Deactivated
After 21 Years of Service*

First FLTSAT Begins Research Support Mission

By Mike Joyce

The Naval Satellite Operations Center (NAVSOC) transferred satellite control authority of the longest-orbiting Fleet Satellite (FLTSAT) Communications spacecraft to the Air Force Center for Research Support (CERES) on Feb. 10.

During a brief ceremony at Schriever Air Force Base, Colo., CERES formally took control of the FLTSAT 1 satellite, which was launched into space on Feb. 9, 1978, from Cape Canaveral, Fla. It was the first of eight FLTSAT satellites built for the Navy by TRW Corp. of Redondo Beach, Calif., to provide worldwide, high-priority ultra-high-frequency (UHF) communications between naval aircraft, ships, submarines, and ground stations and between the United States Strategic Command and the national command authority network.

FLTSAT 1 was deactivated on Dec. 1, 1999 and boosted into a super-geosynchronous orbit where it could be used for experimental and testing purposes.

The longevity of this spacecraft deserves notice as the life expectancy of these satellites was designed for five years from the date of launch. To date, three of the eight satellites launched between 1978 to 1989 are continuing to provide communications support to users around the globe.

The FLTSAT spacecraft were initially flown from the Air Force Satellite Control Facility in Sunnyvale, Calif. In 1989, satellite control authority (SCA) was transferred to the 3rd Space Operations Squadron (3rd SOPS) at Schriever AFB, Colo.

NAVSOC, headquartered at Point Mugu, Calif., was given SCA of the entire FLTSAT constellation in June 1996.

The service provided by FLTSAT 1 will be assumed by one of the newer UHF Follow-On (UHF F/O) spacecraft — the next generation of Navy UHF communications satellites built by the Hughes Space and Communications Group in El Segundo, Calif. There are currently nine operational UHF F/O satellites in geosynchronous orbit around the Earth's equator.

At the Feb. 10 turnover ceremony, representatives from NAVSOC, Naval Space Command, CERES, and the Joint National Test Facility were in attendance, as well as many people that had been involved with the FLTSAT program in the past.

Author Mike Joyce is a physicist with NAVSOC's Satellite Engineering Department at Point Mugu, Calif.
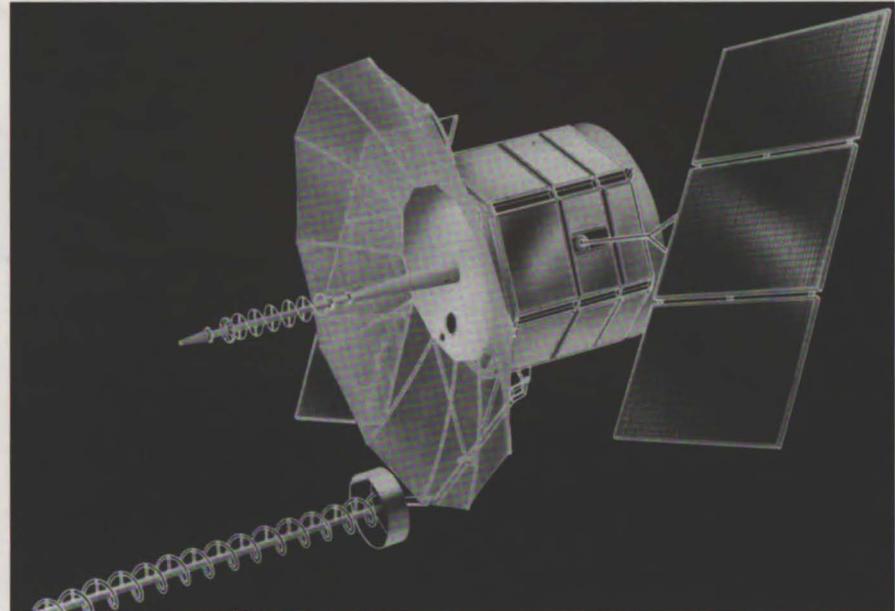
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NAVSPACECOM
DIRECTORY

Naval Space Command provides direct space support to Fleet and Fleet Marine Force operational units around the world, whether for routine deployments, exercises, or actions in response to a crisis situation. We take very seriously our duty of ensuring that our Sailors and Marines understand what products are available from space, how to access them, and how to exploit those products in the waging of war and peace.

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Naval Space Command maintains a home page on the World Wide Web at URL http://www.navspace.navy.mil. Comments or requests for information may be forwarded to the Public Affairs Office via email to gwagner@nsc.navy.mil.

Space Program Pays Big Tax Refund

By Jim Lovell

Tax time is when a lot of Americans pause to ponder the big empty spaces in their wallets and purses. It's also the time of year when many of those same taxpayers are moved to rail against wasteful government spending.

An all-too-frequent target is the space program: "Why are we sending people into space to study space sickness when we've got real problems downtown? What good is it? We should be spending that money on healthcare and education!

Good rhetoric? Yes. Accurate? No. Critics of government largesse should look for another whipping boy.

The reality is that the space program accounts for only a tiny fraction — less than one percent — of the federal budget. And far from a budgetary black hole, the space program directly and indirectly generates billions in income and hundreds of thousands of high-paying jobs.

A Midwest Research Institute study of the macroeconomic effects of the space program has found that for every dollar invested by NASA, seven dollars are added to the gross national product. And another long-term study of NASA R&D expenditures by Chase Econometrics estimated there was a 43-percent return on investment in space-related research and development in the form of productivity improvements.

Spending on space also benefits local communities. For example, a study of the economic impact of the space shuttle program on employment in southern California, conducted by UCLA researchers, found that every space shuttle job sparked the creation of an additional 2.8 jobs.

Likewise, the Johnson Space Center, which employees some 15,000 people, is estimated to have created an additional 36,000 additional jobs in the Houston area alone. The creation of these related jobs is called the multiplier effect.

In short, the space program has been and will continue to be an excellent investment. It makes America more competitive; it generates wealth and provides lots of good jobs.

All told, some 88,000 Americans — four percent of the nation's workforce — work in the aerospace industry. Of them, 59,000 work directly on the development and production of rockets, missiles and spacecraft.

Thousands more space-related jobs are created every year in areas we never imagined. Take, for example, America's constellation of 27 Global Positioning Satellites, which can pinpoint locations on the Earth to within 3 feet. With these satellites, fleet owners can tell exactly where their trucks are, on-board computers in your car can give you driving directions, delivery drivers can find their next stops, lost children can signal their whereabouts. According to government estimates, the GPS system will generate more than 100,000 jobs in the next few years alone. Meanwhile, space-based telecommunications continues to boom.

The space program has been instrumental in the development of much of our modern technology. Many of today's materials, medical procedures, computers and thousands of other products are a direct result of the space program which provides direct and indirect financial support for innovation, assures a level of demand for new products and promotes competition.

Since 1996, private-sector investment in space for industries such as telecommunications and broadcasting has surpassed government expenditures. However, large-scale, private-sector investment never would have happened without a government-sponsored space program first blazing the trail and developing the technology.

In addition to established commercial industries related to telecommunications, remote sensing and launch services, new space-based industries are evolving such as zero-G manufacturing, mining and yes — even travel and tourism. Travel time from New York to Tokyo or London to Sydney will be just a couple of hours thanks to new hypersonic space transports on the drawing board now.

So far, we've talked about making money. But the space program also saves us money. Perhaps the best example is weather forecasting. Modern satellites enable us to monitor and track dangerous weather conditions anywhere in the world and provide people plenty of warning of approaching storms, hurricanes, and floods. We can even keep an eye on abnormal weather phenomena like El Nino and La Nina.

For some of the space program's benefits, there's no way to assign a value. Thirty years ago, people in India and Pakistan were starving. Farmers could not grow enough to eat. Today those countries are net exporters of food and the space program played an important part. With the help of Landsat satellite imaging, scientists were able to study growing regions and then reorganize crops and growing methods. Now those same satellites are enabling developing nations to inventory and make use of their natural resources like oil and mineral products.

The space program is not all white lab coats and formulas. It's also strong backs, skilled hands and common sense. Yet according to a recent study, nearly half of all Americans are unaware that the space program is major part of our national economy.

So, the next time you want to gripe about high taxes, please remember to give the space program a big exemption. Tax dollars spent on space have an amazing habit of finding their way back into your wallet. They improve America's competitiveness, promote investment and create good, high-paying jobs.

Jim Lovell, commander of the Apollo 13 lunar mission, is the Founding Chairman of the Space Awareness Alliance's Advisory Board. Article reprinted with permission.

Information Technology Improves Amphibious Operations

As CEOs of major corporations have increasingly exploited the fruits of information technology to make critical business decisions, so, too, have Navy leaders used its real-time data transfer and communication capability to command squadrons of warships and aircraft at sea. The reality of which is a better way of operating, according to Capt. Steve Jasper, commodore of the USS *Bataan* (LHD 5) amphibious ready group (ARG).

This evolution is rapidly improving military readiness and quality of life.

The *Bataan* ARG and the embarked 22nd Marine Expeditionary Unit (Special Operations Capable) completed their six-month deployment in mid March. During the deployment, the ARG gathered more complete intelligence, garnered increased situational awareness, and made improved operational decisions thanks to its robust information technology package.

The main advantage the *Bataan* ARG had over previous deploying ARGs was more bandwidth to get information to and from its ships.

For flagship *Bataan*, completing its maiden deployment following a 1997 commissioning, the main information "pipeline" to the outside world was Challenge Athena III, a satellite UHF system with 1.5 megabytes (Mbs) transmission capability. Its secondary channel is DSCS (Defense Satellite Communications System), which typically operates at 512 kilobytes (kbs) via VHF, but may allow as much as 1.5Mbs.

Fellow ARG ships USS *Shreveport* (LPD 12) and USS *Whidbey Island* (LSD 41) are outfitted with dual Inmarsat (International Maritime Satellite) high-speed data (HSD), allowing 96kbs UHF satellite transmission speed.

Linking the ARG ships together is DWTS (Digital Wideband Transmission System), a line-of-sight UHF system, also with a speed of 512kbs. And adding to the efficiency of the communication pipelines is ADNS (Automated Digital Network System), which manages the data flow through the available communication channels, essentially routing signals on demand through the path of least resistance. DWTS and ADNS are especially useful during high-demand periods when the ships are operating close together, as they enable *Shreveport* and *Whidbey Island* to use *Bataan's* 2Mbs pipeline to the outside world through Challenge Athena and DSCS.

End users aboard the *Bataan* ARG used network terminals coupled with the Navy's current IT-21 (Information Technology for the 21st Century) network configuration.

With both unclassified and classified networks, IT-21 offers a safe, secure means for data management and communication with other military personnel of units both internal and external to the ARG.

C4ISR Yields Big Dividends

Currently configured with only a partial IT-21 capability, *Bataan* ARG ships will receive full capability following their deployment, which will include a full ATM (Asynchronous Transfer Mode) backbone with more numerous network terminal drops, "smart" or higher-speed switching system, and fully automated Defense Messaging System.

In its entirety, the Navy calls its information technology system "C4ISR" (command, control, communications, computer, intelligence, surveillance and reconnaissance). C4ISR yields big dividends and is considered what military officials typically refer to as a "force multiplier," meaning its use synergistically expands the capability of existing warfighting assets.

Bataan ARG's C4ISR package is as robust, and in some cases more robust, than that of aircraft carrier battle groups, often considered the most technologically advanced U.S. Navy warfighting units.

Equipped with elements of the Navy's new C4ISR information technology suite for a recent deployment, USS Bataan (above) demonstrated greatly enhanced operating capabilities.

"What we have been able to do is leverage our C4ISR architecture to support amphibious operations," said Jasper, noting the Chief of Naval Operations' recently released Naval Amphibious Warfare Plan.

"We used it day-in, day-out, through three major multi/bilateral exercises and real-world operational planning in the Mediterranean and Red Sea theaters. It provided us the information we needed, everything from the most current satellite weather to comprehensive intelligence, to put our embarked Marines ashore and support them in every way possible."

Bataan ARG's C4ISR architecture, designed to be interoperable with other naval, joint, and combined forces, provided a real-time "reachback" capability to national and theater information resources. Using both "push" and "pull" capabilities, it allowed real and near real-time information in any operational environment. With built-in redundancies, the system provides reliability in a variety of tactical scenarios, improving overall mission readiness and capability.

C4ISR improvements are milestones on the road to what naval strategists now call "network centric" capability. In previous years, commanders were very reliant on warfighting platforms that main-

A Space Operations Tutorial

Telemetry, Tracking & Commanding

By Lt. Brad Maas

In the many articles about the Naval Satellite Operations Center (NAVSOC) published in *Space Tracks*, you may have been mystified by a phrase used to describe our mission — telemetry, tracking, and commanding, or TT&C. The purpose of this article is to give a clear, simple explanation of what TT&C is and how that function is performed at NAVSOC.

We recognize that TT&C fundamentals are not commonly understood or widely discussed. Whether you are a space novice completely unfamiliar with satellite TT&C, or knowledgeable of the concept but interested in how it is conducted at NAVSOC, this article should serve as a useful reference.

TT&C operations are the basic functions necessary to keep a satellite functional and on orbit. NAVSOC is currently in control of 20 satellites and three space-based communications payloads. The methods for operating these satellites vary somewhat depending on the type of satellite and the orbit of the spacecraft.

In the interest of simplicity, this article will explain how NAVSOC controls and maintains geosynchronous communications satellites, which comprise 85 percent of NAVSOC's operational loading and have the greatest impact on the Fleet.

Tracking

Yes, describing tracking first is going out of the acronym's order. However, you cannot perform telemetry and commanding operations if you have not tracked the satellite first.

Tracking is performed to determine essential details about the satellite's position and velocity in space. Orbital analysts at NAVSOC use this information to determine whether the satellite is maintaining its correct orbital position. This information is necessary so that both NAVSOC and the satellite's users know where to point antennas in order to use the satellite.

The Naval Satellite Operations Center performs tracking operations from two control nodes (one at NAVSOC headquarters at Point Mugu, Calif., the other at NAVSOC Detachment Delta at Schriever Air Force Base, Colo.) via the Air Force Satellite Control Network (AFSCN), which consists of eight antenna sites dispersed worldwide.

In order to initially acquire — or locate — a satellite in orbit around the Earth, an antenna is pointed at a position determined by previous NAVSOC tracking operations. The NAVSOC operator then directs the antenna to transmit a signal to the satellite. The satellite picks up this signal and returns it to the antenna.

By measuring the time required for a signal to travel to and from a satellite, we determine its distance from the antenna. This signal transmission is repeated once per second. While this signal is being sent, the antenna is also keeping track of any position changes that are occurring. This tracking operation is repeated approximately every 11 hours on each satellite.

Using the distance and position information recorded over a two-week period, NAVSOC's orbital analysts can accurately estimate the position of a satellite for the next several weeks. This information is then distributed to the Fleet and other users so they know where to point their antennas to acquire the satellite.

Telemetry

Telemetry refers to data such as temperatures and voltages of key equipment aboard the satellite. The satellite constantly transmits telemetry data. This data is collected at antenna sites and extensively analyzed by engineers, who determine whether or not the satellite is operating in good "health." Using this information, the engineers determine what changes to the satellite configuration are necessary, and when to apply these changes.

Our primary means of collecting telemetry at NAVSOC is to use our antennas located at Detachment Alfa in

From its two ground stations at Prospect Harbor, Maine (left) and Finegayan, Guam (right), NAVSOC can collect telemetry from all geosynchronous satellites the command is responsible for commanding.

TT&C

Prospect Harbor, Maine, and Detachment Charlie in Finegayan, Guam. From these detachments, we can see all of our geosynchronous satellites at all times.

The antenna at each detachment rotates through all of the satellites, collecting information from each satellite for approximately eight minutes. Approximately every hour and fifteen minutes the cycle repeats itself, and the antenna starts collecting telemetry from the first satellite again.

NAVSOC engineers review telemetry data daily to examine trends in the satellite's systems. Also, if there is any data that is outside of specific limits during the telemetry collection, then our ground system sends an alarm to alert our operators.

If a satellite should experience a problem, such as a catastrophic system failure, engineers could be recalled within the hour to troubleshoot the problem. There is no other Department of Defense TT&C organization that is capable of a response as quick as NAVSOC's due to our ability to frequently collect telemetry.

In addition to the cyclical telemetry collection that NAVSOC performs, we can use the detachment antennas to collect telemetry from the satellites for special events. Examples include the monitoring of a satellite during an eclipse, or the "dumping" of data from a satellite's on-board computer for extensive analysis of the computer's memory.

Commanding

Commanding operations are performed for a wide variety of reasons. Some are routine "housekeeping" functions that are completed on a weekly or seasonal basis. Others are performed in response to a trend that the engineers observed while reviewing telemetry data. This can be quite frequent, if a satellite is old or degraded.

Also, the satellites tend to drift out

Satellite controllers monitor the highly automated satellite control network from a state-of-the-art operations center at NAVSOC headquarters in Point Mugu, Calif.

of position toward "gravity wells" that occur due to irregularities in the Earth's shape, thus requiring us to command the thrusters to "fire" for a limited amount of time so we can maneuver the satellite back to its intended position.

We command satellites from our control nodes at NAVSOC headquarters or Detachment Delta via one of two methods: the AFSCN antennas or, for seven of our satellites, through extremely-high-frequency (EHF) antennas located at Detachments Alfa and Charlie.

For commanding operations, both an operator and an engineer stand watch at the console. This two-person team ensures that commands are transmitted properly to the satellite, and that an expert for that particular satellite is on hand to provide advice to the operators should an unexpected condition occur.

Summary

Satellite TT&C is our core mission. If this mission was not consistently and accurately performed, our satellites would soon be reduced to useless space debris.

Just as the world never stops turning and the satellites never stop flying, NAVSOC operators are on watch 24 hours a day, seven days a week, ensuring that the Fleet has uninterrupted access to its valuable satellite communications resources.

Author Lt. Brad Maas heads the Satellite Operations Department for the Naval Satellite Operations Center.

Bataan

tained all the requisite information, sensor and weapons-launching systems for a specific mission. In other words, they were practicing "platform" centric warfare.

Network centric warfare changes this paradigm. For example, one platform may pull intelligence from theater assets, a second provides targeting information from sensors, while a third serves as the weapons launcher. Linking them together in real-time via an information network provides leverage to effect the desired battle outcome with a limited number of assets on a variety of platforms in various locations.

While improved C4ISR has changed naval warfighting for the better, it has also improved quality of life for forward-deployed Sailors and Marines.

"We used to get letters in the mail, often two to three weeks old with news from home," said Jasper, a 26-year Navy veteran, of his prior deployments. "Now we get news from our families via email or telephone on a daily basis. That means our families can keep closer together by virtual means while they are separated by thousands of miles geographically."

Military personnel at all levels agree — a better quality of life improves mission readiness and retention. "A happy Sailor is a productive Sailor who wants to stick around and do the things they signed up to do," says Jasper.

One remarkable change the Navy has experienced in post Cold War years, especially in information technology, is that it procures more systems that are state-of-the-market commercial systems, yielding significant cost savings over more expensive, military-unique legacy systems.

For more information about USS *Bataan*, go to: http://www.spear.navy.mil/ships/lhd5/index.html. For more information about the 22nd MEU(SOC), go to: http://www.wnalinknet.com/22Meu/. — *Navy Wire Service Report, by Bataan ARG Public Affairs*

NEWS **BRIEFS**

Capt. James Lyons, commanding officer for NAVSOC, presents Kennedy with an award at his retirement.

Gary Kennedy Retires As Technical Director

Gary Kennedy, technical director for the Naval Satellite Operations Center at Point Mugu, Calif., was presented with the Department of the Navy's Superior Civilian Service Award, the second highest honorary award the Navy can bestow upon a civilian employee, at his retirement ceremony on Sept. 30.

Kennedy retired after 38 years of service as a Navy employee, a career which included being honored with three Meritorious Civilian Service awards.

Kennedy began his Civil Service career in 1961 with the Pacific Missile Test Center at Point Mugu after receiving his bachelor's degree "with honors" from North Dakota State University, with majors in mathematics and economics. In 1962 he transferred to what was then known as the Navy Astronautics Group.

Navy Astronautics Group later was renamed to the Naval Satellite Operations Center (NAVSOC). In 1990, he was appointed as the NAVSOC Technical Director.

During Mr. Kennedy's tenure as the command's technical director, he was a key player in the transition of NAVSOC's role of operating the TRANSIT Navigation Satellite System to assuming Satellite Control Authority for the Fleet Communications Satellite (FLTSAT) and Ultra-High-Frequency Follow-On (UHF F/O) satellite constellations. He was also the program manager for the Polar Program.

Navy Instrument Makes First UV Observation of Meteor in Space

Scientists from the Naval Research Laboratory (NRL) report that the first ever far-ultraviolet (UV) image of a meteor has been obtained by the Global Imaging Monitor of the Ionosphere (GIMI) instrument on board the DoD Space Test Program's Advanced Research and Global Observation Satellite (ARGOS).

The image was taken on Nov. 18, 1999, during the annual Leonid maximum, which in 1999, lasted from Nov. 16-18.

Dr. George Carruthers, NRL's GIMI principal investigator, reports the scien-

View is toward North, 26° down from the horizontal, along the ARGOS orbit plane.

tific significance of the observation, saying, "To our knowledge, this is the first observation of a meteor entry to the atmosphere in the far-UV spectral range. Such an entry cannot be observed from Earth's surface or from aircraft because of its absorption by the lower atmosphere.

"Ground-based observations of meteors cannot detect many of the important elements and compounds expected to be present in meteoroids," adds Carruthers.

As civil, commercial and national security use of space continues to in-

crease, natural phenomena that can disrupt satellite operations are causing a growing concern. The Leonid meteor storm is such a phenomenon. NRL's data promises to provide a unique new tool to understand the true composition and structure of these meteors. This information is vital to the prediction and mitigation of future meteor-induced problems to space operations.

Because Earth's lower atmosphere strongly absorbs far-UV radiation in the wavelength range observed by GIMI (131-200 nanometers, or 1310-2000 Angstroms), the scientific team estimates that in order to be observable, the meteor had to have been at an altitude well above 100 kilometers. Since its entry velocity was probably in excess of 60 km/sec (i.e. much higher than Earth escape velocity of 11.2 km/sec), the energy was probably available for producing emission in the far-UV at relatively high altitudes, due to excitation of the atmosphere or meteoric constituents.

GIMI is one of nine primary experiments on the ARGOS mission, which launched into a polar orbit on Feb. 23, 1999 to study space weather. GIMI's principal objective is to obtain simultaneous wide-field FUV/EUV images of ionospheric and upper atmospheric emissions, covering large areas of the Earth from a low-Earth orbit.

The GIMI images will be used to detect disturbances in the ionosphere that are caused by auroral activity, gravity waves and foreign materials from meteors, suspected "ice comets," rocket exhausts and chemical releases. —*NRL News Release*

SPACE BILLETS

OFFICERS The following is a partial listing of officer billets with space missions, whose incumbents are scheduled to transfer between May–December 2000. for specific billet information and actual availability dates, contact your detailer.

Billets With Subspecialty Code XX75 (Space Systems – General)

ACTIVITY	TITLE	BDES	BGRD	BSUB1	BSUB2	AVAIL
OPNAV	DIR NAVY SPACE SYS DIV	1050	CAPT	0075Q		0005
OPNAV	HD SPACE INFO TRANSFER	1050	CAPT	0075P		0006
USSPACECOM	CH READINESS	1050	CAPT	0075S		0007
NAVSOC	EXEC OFF	1000	CDR	0075S		0008

Billets With Subspecialty Code XX76 (Space Systems – Operations)

ACTIVITY	TITLE	BDES	BGRD	BSUB1	BSUB2	AVAIL
CNSC DET VB	AF EXCHANGE OFF	1000	LCDR	0076P		AVAIL
CNSC DET VB	AF EXCHANGE OFF	1000	LT	0076P		AVAIL
JNTSTF JCS WASH	ACTION OFF	1000	CDR	0076S		0004
USSPACECOM	V/DIR INTELL	1630	CAPT	0076S		0004
OSD	DEP DIR TECH COORD	1610	CDR	0076P		0005
USSPACECOM	MILSATCOM	1050	CDR	0076P		0005
USSPACE CB OPSTAF	MLS INT OFF	1700	LT	0076S		0005
USSPACE CB OPSTAF	SPACE CONTROL	1700	LT	0076S		0005
USSPACECOM	SPACE SYS OFF	1700	CDR	0076P		0005
USSPACE CD OPSTAF	SPACE CONTROL	1050	CDR	0076S		0005
USSPACECOM	BMD PLNS OFF	1000	LCDR	0076S		0006
OPNAV	OPINTEL MGT/N632 HD TENCAP	1610	CDR	0076S		0007
OPNAV	SPACE ACQ/N633D ASST IMAGERY	1630	LCDR	0076P		0007
CNSG FT MEADE	CLASSIC WIZ OPS	1610	LCDR	0076P		0007
USSPACECOM	MC&G OFFICER	1800	LCDR	0047P	0076S	0007
NAVSPACECOM	OPS/INTEL	1000	LCDR	0076S		0007
JNSTF JCS WASH	ACTION OFF	1000	CDR	0076R		0007
NSGCD DET POT DC	CLASSIC WIZ OPS	1610	LT	0076P		0008
NAVSPACECOM	PLANS & POLICY	1700	LCDR	0076P		0010
NAVSPACECOM	OPS/INTEL/NSST	1630	LT	0076S		0010
NAVSPACECOM	INTEL BRANCH HD	1630	LCDR	0076S		0010
USSPACECOM	CMD DIR	1050	CAPT	0076Q		0010
NAVSPACECOM	OPS/INTEL	1610	LCDR	0076P		0011
NAVSPACECOM	OPS/INTEL/NSST	1700	LCDR	0076P		0012

Billets With Subspecialty Code XX77 (Space Systems – Engineering)

ACTIVITY	TITLE	BDES	BGRD	BSUB1	BSUB2	AVAIL
SPAWAR SPTECH PG	DPJ ENGCOOR/HD ADV PROG DIV	1510	CAPT	0077P		0005
NAVSOC PT MUGU	ELX ENG/SAT MGR	1510	LT	0077S		0005
SPAWARSYSCOM	MAJ PJ MGR SEL/OM GLOBAL NAV	1510	CAPT	0077P		0006
NAVSPACECOM	SPACE PLANS DIV	1000	LCDR	0077P		0007
SPAWAR	SPACE PJ TECH	1510	CDR	0077P		0008
USNELMT DODPROJ	DIR OPS OSO	1050	CAPT	0077P		0008
USSPACECOM	ELEC ENG	1050	LT	0077S		0009

ENLISTED BILLETS
AT NAVAL SPACE COMMAND
DAHLGREN, VIRGINIA

Following is the allowance for enlisted personnel at Naval Space Command, Naval Surface Warfare Center Dahlgren Division, Dahlgren, Va. Dahlgren is located approximately 50 minutes from Washington, D.C., and three hours from Norfolk, Va. The base is also home to the Aegis Training & Readiness Center and the Navy's only active gun testing range. You will also find a small Navy Exchange, commissary, gymnasium, auto and wood hobby shops, year-round pool, library, chapel, theater, and numerous outdoor recreation facilities. If you would like more information about one of the Navy's "best kept secret" duty stations, or would like a welcome aboard package, feel free to contact Lt.Cmdr. Ray Lewis at DSN 249-5152 or commercial (540) 653-5152 (email address: lewis@nsc.navy.mil) or the Command Master Chief, ETCM Alan Kinder. Master Chief Kinder can be reached at DSN 249-6115 or commercial (540) 653-6115 (email address: akinder@nsc.navy.mil). If you are interested in receiving orders to Naval Space Command, contact your detailer.

CTA:		E7:1	E6:2 E5:2	E4:1
CTR:			E6:1 E5:2	
EA:		E7:1		
ET:		E7:2		E5:4 E4:2
EW:	E8:1			E5:2 E4:2
FC:			E6:1	
IS:		E7:1	E6:2 E5:4	E4:3
NC:		E7:1		
OS:		E7:3	E6:5 E5:3	E4:13
RM:		E7:2	E6:3 E5:9	E4:1
SK:			E5:1	
YN:			E6:1 E5:2*	

*One YN2 billet is TAR.

NEWS BRIEFS

General Ralph Eberhart New CINCSPACE

By Master Sgt. Larry S. Lincoln

General Ralph E. "Ed" Eberhart assumed command of the United States Space Command, North American Aerospace Defense Command (NORAD) and Air Force Space Command in ceremonies at Peterson Air Force Base, Colorado Springs, Colo., on Feb. 18.

Naval Reservists Support Ulchi Focus Lens Exercise

Naval Space Reservists Lt.Cmdr. Thomas P. Spriesterbach from NAVSPACECOM 0766 and Lt. Jim Moeller and IT1 John P. Young from NAVSPACECOM 0266 supported the Joint Space Support Team from U.S. Space Command operating in South Korea for exercise Ulchi Focus Lens held in August 1999.

The Navy Reservists supported the Theater Operations Control Center for theater ballistic missile (TBM) defense. They ensured computers and other equipment were properly connected to a network that maintains the flow of TBM warning information to forces in theater.

Specific duties included monitoring TBM warnings; producing satellite vulnerability assessments, Global Positioning System (GPS) accuracy plots and multi-spectral imagery products; and network and computer troubleshooting.

Lt.Cmdr. Thomas Spriesterbach, IT1 John Young and Lt. Jim Moeller (clockwise from right) review a satellite image produced in support of exercise Ulchi Focus Lens.

The ceremony was presided over by Gen. Maurice Baril, chief of the Canadian Defence Staff, Gen. Hugh Shelton, chairman of the Joint Chiefs of Staff, and Gen. Michael E. Ryan, Air Force chief of staff.

A 1968 graduate of the Air Force Academy, Gen. Eberhart is a command pilot who flew 300 combat missions in Vietnam. He comes to Peterson AFB from an assignment as commander of Air Combat Command (ACC), and replaces Gen. Richard B. Myers who moved on to serve as vice chairman of the Joint Chiefs of Staff.

As NORAD commander, Gen. Eberhart is responsible for the binational Canadian-U.S. organization charged with the missions of aerospace warning and control for the North American continent.

According to Gen. Shelton, the incoming commander has "earned a reputation for dedicated service as a leader," having commanded at every level of the Air Force.

Gen. Eberhart

General Ryan concurred, adding that Gen. Eberhart's experience in back-to-back demanding positions as Air Force vice Chief of Staff and ACC commander would serve well in his new position.

As one of the nation's nine unified commands, U.S. Space Command coordinates the use of Army, Naval, Air Force space forces and civil space to perform the missions of space forces support, space force enhancement, space force application, space force control and computer network defense.

As commander of Air Force Space Command, Gen. Eberhart will oversee the mission of assuring combat forces access to space, and responsibility for the command's intercontinental ballistic missile forces. — *NORAD/ USSPACECOM Public Affairs*

Crawford New Tech Director for NAVSOC

Michael J. Crawford was appointed technical director for the Naval Satellite Operations Center (NAVSOC) in November 1999, succeeding Gary Kennedy upon his retirement from Civil Service.

Crawford has over 30 years of satellite operations experience, all of it at NAVSOC. His experience encompasses the entire gamut of activities related to satellite operations. During his NAVSOC career, Crawford has developed orbit determination and prediction techniques, tested and developed complex software systems, overseen launch and early orbit operations of multiple low-Earth orbiting satellites, managed the health and readiness of operational Navy satellites, and developed satellite control capabilities.

Prior to this appointment, Crawford had been the technical advisor for NAVSOC's Operations Directorate

M. Crawford

since May 1994. In that position, he oversaw the successful operation of the TRANSIT navigation satellite constellation until its operational mission was terminated in January 1997.

In addition, he led the effort to develop NAVSOC's capability to operate the GEOSAT Follow-On (GFO) satellite and led the command's Y2K development, testing and reporting efforts.

Prior to that assignment, Crawford served NAVSOC in various technical and managerial positions.

Crawford holds a bachelor's degree from Dartmouth College, with a major in mathematics and a minor in physics.

Naval Space Command Selects Top Military,

EW1(SW) Sean E. Whiteman
*Headquarters Sailor of the Year
and Shore Sailor of the Year*

As the leading petty officer and acting leading chief petty officer for the Operations Training Branch, Whiteman revamped enlisted training programs, including formal classroom lectures and scenario and curriculum development. He also established an on-line training program for space warning petty officers in the command's Naval Space Operations Center.

Whiteman, an electronics technician, also serves as the command master-at-arms — a role in which he has been a "consistent advocate for professionalism and proper military and Navy customs."

Whiteman competed with Sailor of the Year nominees from NAVSPACECOM detachments and component commands to garner Shore Sailor of the Year honors, and is now in competition for Naval District Washington Shore Sailor of the Year.

Originally from Pasadena, Texas, Whiteman joined the Navy in 1993. In his Navy career he has served on board the destroyer USS *John S. McCain* (DDG 56) as an AN/SLQ-32A(V)2 and MK 36 decoy launching system operator and technician.

Whiteman reported to Naval Space Command in June 1999, where he is currently assigned as supervisor of the Operations Training Branch.

In his off-duty time, he has contributed to command recreational events, serving as vice president on the Welfare and Recreation Committee and organizing functions to include the annual command picnic, holiday party and numerous fundraisers.

OS1(SW) Douglas P. Wagner
Sea Sailor of the Year

As the leading petty officer for the command's Joint Tactical Ground Station (JTAGS) Detachment Echo in Chesapeake, Va., Wagner served as the senior operator and crew chief while deployed to JTAGS Det European Command. His exceptional knowledge of worldwide ballistic missile capabilities helped ensure a 100-percent detection rate for real-world and training missions. He also served as leading petty of-

ficer for a joint Army/Navy contingent in support of Exercise Optic Windmill in Holland.

Wagner is currently stationed in Chesapeake where he operates and maintains JTAGS and provides early warning of any theater ballistic missiles to Pacific Command and European Command.

Originally from Olean, N.Y., Wagner joined the Navy in 1987 and trained as an operations specialist. He was assigned to the destroyer USS *John King* (DDG 3) where he served as a watchstander in the combat information center and assistant chart petty officer.

In March 1988, he volunteered for duty in the Persian Gulf on board minesweepers involved in a six-month crew rotation and transferred to USS *Fortify* (MSO 446). His duties ranged from M60 gunner, 50-caliber gunner, in-port officer of the deck, sounding and security, and fire party team member.

He also operated and maintained the ship's navigation and mine-hunting computers.

Wagner reported to Fleet Surveillance Support Command in Chesapeake, Va., in 1992. He initially served as a watch supervisor and leading petty officer while conducting operations with the Relocatable Over-the-Horizon Radar (ROTHR).

Between his overseas deployments with Detachment Echo, Wagner stays active in the community as a member of two local PTA groups and assistant soccer coach in a peewee league in Chesapeake. He also visits the Veterans Hospital in Hampton, Va., and assists with the adopt-a-spot program in his neighborhood.

IT2 Michael R. Serrato
Junior Shore Sailor of the Year

An information systems technician assigned to the Naval Satellite Operations Center at Point Mugu, Calif., Serrato serves as a duty satellite manager. He is responsible for the management and operation of navigation, communications, altimetry, scientific and special-purpose satellites.
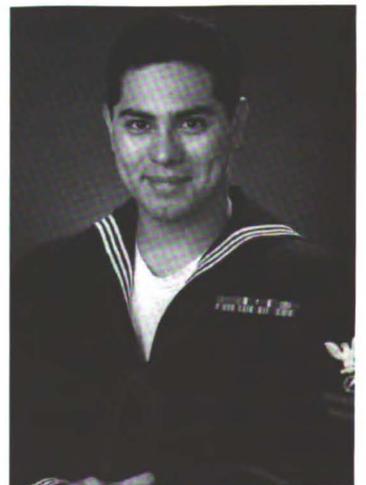
Serrato also oversees the operation of five tracking and detachment facilities, two Fleet

*EW1(SW) Sean E. Whiteman
HQ & Shore Sailor of the Year*

*IS2(SW) Darin M. Kroft
HQ Junior Sailor of the Year*

*IT2 Michael R. Serrato
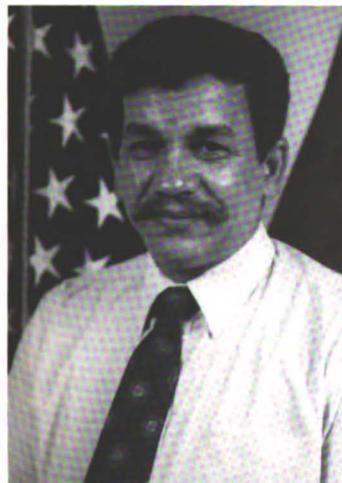Junior Shore Sailor of the Year*

Civilian Personnel as 1999 People of the Year

Diane B. Jacobs
Senior Civilian of the Year

Terri E. Smith
Civilian of the Year

Herbert V. Reynolds
Ops Watchstander of the Year

Satellite (FLTSAT) Extremely High Frequency (EHF) Package Operation Centers (FEPOCs), a communications center and a control center.

His operational functions include managing spacecraft and payload configuration and maintaining space systems to include spacecraft and ground-based components. He completed approximatley 5,000 telemetry and command control supports during 1999.

A native of Austin, Texas, Serrato enlisted in 1993 and completed Data Processing Technician "A" School. He was assigned to the destroyer tender USS *Acadia* (AD 42), homeported in San Diego, Calif., for one year as a member of the ship's decommissioning crew. From there, he transferred to the amphibious assault ship USS *Tarawa* (LHA 1) where he served in the operations department as JMCIS/TIMS system network administrator.

Serrato reported to NAVSOC in 1997. In addition to his responsibilities as duty satellite manager, he serves as the command's Physical Readiness Training (PRT) coordinator and is a member of the Social Activities Committee.

OS2 Marco A. Bonne
Junior Sea Sailor of the Year
Currently assigned to NAVSPACECOM's Detachment Echo in Chesapeake, Va., Bonne operates the JTAGS system to provide early warning of theater ballistic missile launches to Pacific Command and European Command.

Since he transferred to Detachment Echo in 1998, Bonne has spent 70 percent of his tour on deployment to JTAGS PAC. He served as a crew chief and senior operator for his section during Exercise Foal Eagle 99 and was responsible for ensuring all events were detected, tracked and reported with 100-percent missile detection and mission accuracy.

Originally from Elizabeth, N.J., Bonne joined the Navy in 1993 on the delayed entry program and began his recruit training one year later. His first tour of duty was on board the cruiser USS *Belknap* (CG 26). He worked with the deck division and helped decommission the ship in 1995.

Subsequently, Bonne was ordered to Beachmaster Unit Two at Naval Amphibious Base Little Creek, Va., where he was responsible for on and off-loading Marines and equipment on landing craft and air-cushioned landing craft for amphibious landings.

In 1997, Bonne transferred to Naval Station Norfolk, Va., where he worked in the Supply Department as a configuration assistant for ADP. He also served as divisional career counselor, PRT coordinator and as an active participant in the Martin Luther King Committee and Adopt-A-School program.

IS2(SW) Darin M. Kroft
Headquarters Junior Sailor of the Year
An intelligence specialist, Kroft currently serves as an analyst in NAVSPACECOM's Intelligence Branch. He is responsible for maintaining the branch's classified library, and he has prepared and conducted training briefs for command personnel.

In addition, Kroft recently became the first intelligence specialist at the command to qualify as a Space Surveillance Officer, a position normally filled by a mid-grade officer.

A native of Wabash, Ind., Kroft entered the Navy in 1992. His previous tours have been at Naval Air Station Agana, Guam, and on board the aircraft carrier USS *Nimitz* (CVN 68).

He joined Naval Space Command in 1997 and has taken an active role, both in official ceremonies as the command boatswain and in morale, welfare and recreation activities and fundraising events.

Diane B. Jacobs
Senior Civilian of the Year
A space scientist within the Plans and Resources Branch, Jacobs led Naval Space Command's Year 2000 effort to ensure uninterrupted space support to warfighters into the 21st century. She oversaw the development, staffing and approval of plans for augmentation, contingency and continuity of operations.

Furthermore, Jacobs ensured all validation tests and associated reports were com-

People of the Year

(Continued from page 11)

prehensive and sufficient for certification by Commander Naval Space Command, which occurred in August 1999.

As part of this effort, Jacobs coordinated several Department of Defense and Navy Year 2000 inspections and audits, including a comprehensive review by the Department of the Navy Audit Service, which resulted in complimentary letters on the command's readiness and documentation status.

Even with the burden of the Year 2000 effort that began as a collateral duty, Jacobs maintained her role as the NAVSPACECOM liaison for integrated tactical warning/attack assessment (ITW/AA) issues. In addition, she was instrumental in re-establishing a configuration control board to review information technology requirements from command personnel.

Terri E. Smith
Civilian of the Year

Smith's award is based on her performance as a customer product analyst for both NAVSPACECOM's Naval Space Operations Center (NAVSPOC) and the U.S. Space Command. Her responsibilities entail monitoring all customer and product files to ensure prompt and accurate dissemination of data and message traffic to customers in the Fleet and ashore.

Her dedication to fulfilling customer needs has enabled her to greatly reduce customer response times, and has resulted in fewer than one-half of one percent error rate in replying to customer requests promptly and correctly.

As part of the command's Year 2000 preparations, Smith validated a new version of a satellite vulnerability software package developed for Fleet users, wrote updated help files, and prepared over 130 copies of the software for mailing.

In addition, Smith was the subject matter expert for Y2K testing of NAVSPACECOM mission system software related to Fleet support, and was responsible for testing those applications.

Herbert V. Reynolds
Operations Watchstander of the Year

Reynolds was selected for his award based on his performance as a space control analyst supervisor in maintaining watch operations in support of the Fleet and other missions, collecting and analyzing orbital information to provide customers with required data, and processing space events.

Reynolds, a computer specialist, has been a key contributor in the development of the special perturbations space surveillance catalog, assisting day staff and watch personnel in processing conjunction avoidance for the International Space Station.

In addition, Reynolds fills a key role in Naval Space Control Center watch operations. He has demonstrated exceptional expertise in processing complex launches, as well as difficult reentry assessments.

A resident of Milford, Va., Reynolds initially joined the Naval Space Surveillance Center at Dahlgren in 1971.
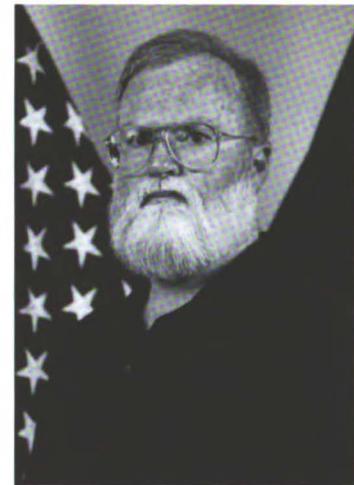
Mitchell W. Gallahan
ADP Watchstander of the Year

Mitchell W. Gallahan
ADP Watchstander of the Year

As a computer operator in the ADP Operations and Maintenance Branch, Gallahan was commended for several contributions over the past year in support of the command's computer systems.

His responses to routine and non-routine system problems repeatedly prevented extensive hardware and software downtime and contributed to the high availability of the command's mission processing systems.

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Carr is FSSC Sailor of the Year

By JO2 Kaye Trammell

OS1(SW) Edward Carr was named 1999 Sailor of the Year for the Fleet Surveillance Support Command (FSSC).

Carr's award recognized his service as leading petty officer for the command's Intelligence Team in the Operations Department, as well as his extensive command involvement and community service. He was instrumental in the success of FSSC's Combined Federal Campaign charity fundraiser, and was active in the command's morale, welfare and recreation programs.

Carr's volunteer work in the community has ranged from the Shriners, to the

OS1(SW) Carr

Food Fest, to yard work for Haven House at the Hampton Roads Day of Caring.

Originally from Abbeville, S.C., Carr says his values play a large role in his daily activities. "The Navy has its core values, but mine really go back to what my parents taught me," said Carr. "They did very well with me by instilling values. I was taught that if you can help someone along the way, you should, because it will come back to you.

"Also, they always told me 'if you want something, you need to go after it,' and 'always do the best that you can.' If you do your best, someone will recognize you."

| YN1 Harshman | IS2(SW) Kroft | Pat Langley | Amy Balmaz | Virginia Stumpf | John Wallace |

NAVSPACECOM Salutes People of the Quarter

Civilian and military personnel at Naval Space Command were recently selected for quarterly awards for October through December 1999.

Petty Officer 1st Class Tena K. Harshman was named Sailor of the Quarter. Her award recognized her performance as Reserve coordinator and enlisted watchbill coordinator. Specifically, she was commended for her work in preparing evaluations and fitness reports for over 100 Reservists, as well as coordinating Annual Training, Active Duty for Training and Active Duty for Special Work.

Outside her demanding work schedule, Harshman completed the Army's 10-Mile Run and fed homeless people at a local shelter, earning praise for her initiative in upholding the Navy's core values of honor, courage and commitment in her personal life.

Petty Officer 2nd Class Darin M. Kroft was named as Junior Sailor of the Quarter. An intelligence specialist, Kroft currently serves as an analyst in NAVSPACECOM's Intel Branch. He is responsible for maintaining the branch's classified library, and he has prepared and conducted training briefs for command personnel.

Patricia S. Langley was selected as the Senior Civilian of the Quarter. She was commended for her performance as head of the command's Manpower and Training Branch. She was cited, in particular, for her contributions to the command's competitive sourcing efforts, in which she has worked to ensure that development of position descriptions, transition planning and training requirements are completed in an accurate and timely manner.

Furthermore, she has made significant contributions toward labor/management negotiations and the resolution of numerous issues regarding civilian employees.

Amy T. Balmaz was named Civilian of the Quarter. As a secretary in the Intelligence/Operations Division, she was commended for her flawless execution of divisional budgets, travel itineraries and administrative schedules.

She was also praised for her contributions to morale through her extensive involvement with the command's MWR committee, and for her efforts to help raise money for the annual Combined Federal Campaign charity fundraiser.

Virginia B. Stumpf was selected as Operations Watchstander of the Quarter. Her award honors her performance as a space control analyst supervisor in the Naval Space Operations Center.

Notable among her recent efforts were two instances in which she provided critical information to U.S. Space Command during a high-profile space event, and helped correct a communications line problem to minimize operational impact.

John A. Wallace was named ADP Watchstander of the Quarter. A computer operator, Wallace was commended for his decisive actions on a number of occasions in which he effectively diagnosed failed equipment and components and worked to restore them to full operational status in minimal time.

Patches Available

Naval Space Command patches are available for purchase. The embroidered emblem is 3½ inches in diameter. To order, write to Naval Space Command, Attn. Public Affairs, 5280 Fourth St., Dahlgren, Va. 22448-5300. Enclose check or money order, payable to "Naval Space Command," for $7 per patch (includes postage and handling).

Tornado In A Bottle

Lt.Cmdr. Brian Baldauf, meteorology and oceanography officer at Naval Space Command, demonstrates a tornado modeling device for students at Washington District Elementary School in Oak Grove, Va. He recently gave a presentation on weather and space to all grades in the school, which is the command's Adopt-A-School partner.

Sailor's Helping Hand Garners Volunteer Service Medal

By JO2 Kaye Trammell

Who said most good deeds go unnoticed? Those words were certainly not spoken by AKC(AW) Steven Metcalfe, a Fleet Surveillance Support Command (FSSC) quality assurance evaluator and recent recipient of the Military Outstanding Volunteer Service Medal.

Metcalfe's effort and dedication to volunteerism made him eligible for an award many Sailors don't even know exists. According to SECNAVINST 1650.1F, the medal is an avenue for commands to recognize Sailors who distinguish themselves through sustained volunteer work and community service. The instruction calls for direct, hands-on community service throughout a three-year period.

For the past three years, Metcalfe has been extremely involved in the FSSC's out-reach effort to the nearby city of Moyock, N.C., in the Adopt-a-School program. His work with the students sparked an interest in pursuing other

AKC(AW) Metcalfe was recently decorated for his volunteer efforts at his command and in the community.

volunteer work.

Subsequently, he became a Royal Ambassador instructor for Moyock Baptist Church. Metcalfe describes the group as a "Southern Baptist Boy Scout-type organization that teaches kids Bible verses to help cope with real life situations." In addition, the boys can earn merit badges for their work with good causes such as aiding the elderly, environmental issues and other community service volunteering.

Metcalfe didn't stop there. When his

next-door neighbor asked for some help in coaching the baseball Little League team where his son played, Metcalfe saw this as an opportunity to not only help the community, but spend time with his son, Gregory.

While Metcalfe's journey to the life of volunteerism was late blooming in his career, he feels the benefits a Sailor can receive are limitless.

"At first I got into the volunteerism to get recognition for myself for promotion," said Metcalfe. "But like anything else, they 'fool you' in that you think you're doing it for yourself and once you get involved and see the benefit that it has for the recipients, you're not just doing it for yourself anymore, you're given a blessing by it."

He continues by saying, "I don't advocate doing something for the award, but I think the lure of wearing something on your chest is worth it in that once you get involved you receive an inner award. Although it is nice to see the external award, I've become a better person for just having volunteered."

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Civilians Recognized at Fleet Surveillance Support Command

By JO2 Kaye Trammell

Fleet Surveillance Support Command (FSSC) in Chesapeake, Va., named Arthur Thompson as Senior Civilian of the Year and Cynthia Holland as Junior Civilian of Year for 1999. Cathy LaMountain was selected as Civilian of the Quarter for October-December.

Thompson, a 23-year Navy veteran and retired Senior Chief, has served as the industrial property manager at FSSC since he joined the command in 1995.

Holland, a budget analyst, has been a member of the FSSC team for nearly a decade. As a regular volunteer, she looks forward to her weekly participation in the command's Adopt-a-School program.

LaMountain has been with civil ser-

vice for 25 years. She has made FSSC her home for the past 13 years since the command's establishment, starting as secretary to the commanding officer. She currently serves as security manager.

Cmdr. Patricia Cole (left center), FSSC commanding officer, recently recognized employees (from left) Cathy LaMountain, Cynthia Holland and Arthur Thompson.

Decorated Service & Special Recognition

Defense Superior Service Medal

CDR Matthew G. Rausch ... for service as executive officer to the director of the Consultation, Command and Control (C3) staff while assigned to the international military staff of the North Atlantic Treaty Organization (NATO) from August 1996 through August 1999.

Joint Service Achievement Medal

IS2 Walter J. Lloyd, Jr. ... for service with the Joint Task Force-Southwest Asia in Riyadh, Saudi Arabia, from June through November in support of Operation Southern Watch.

CTA1 Jeffrey W. Smith ... for service with the National Security Agency's Technical Liaison Office in Ankara, Turkey, from August 1998 to October 1999.

Navy & Marine Corps Commendation Medals

LCDR Catherine J. Varela ... for service as Program Objective Memorandum (POM) coordinator and manager for RDT&E funds from September 1995 through January 2000.

LT Scott A. Johnson ... for service as operations program analyst, training officer and exercise/plans officer from August 1997 to December 1999.

CWO2 Steven M. George ... for service as UHF satellite communications action officer from February 1998 to December 1999.

BUC Rodney A. Gardner ... for service as quality control inspector for U.S. Naval Mobile Construction Battalion 74 from April 1996 through December 1998.

CTR1 Randy S. Otis ... for service as EHF operations petty officer from September 1995 to January 2000.

RM1 Terry D. Delaney ... for service as UHF operations support petty officer in the SATCOM Branch from February 1997 to December 1999.

SK2 Misty A. McLeod ... for service as supply technician from March 1997 to March 2000.

CTR2 Lisa A. Munro ... for service as Space Operations Center Leading Petty Officer from March 1997 to March 2000.

Lt. Roger J. Lucas ... for service as an Atlantic Fleet Space Support Team member from March 1997 to March 2000.

Navy & Marine Corps Achievement Medal

CTA2 J. Bradley Long ... for service as assistant special security officer from February 1997 to November 1999.

IS2 Gary F. Barile ... for service as intelligence analyst from August 1997 to January 2000.

OS2 William J. Bradshaw ... for service as Space Warning Petty Officer and Atlantic Fleet Space Support Team member from May 1997 to March 2000.

CTA2 Tina M. Callis ... for service as administrative assistant for the Tactical Exploitation of National Capabilities (TENCAP) office at Naval Space Command from April 1997 to March 2000.

Good Conduct Medals

CTOC Kenneth Searles (6th)
OSC Thomas Savoy (4th)
IS2 Walter J. Lloyd, Jr. (2nd)
OS2 William Mitchell (2nd)
EW2 Eric Laursen (2nd)
EW1 Sean Whiteman (2nd)
OS2 Rockell Powell (2nd)
CTO3 Nellie D. Robinson (2nd)
CTO3 Yesenia I. Criado (1st)
EW2 Howard A. Miller (1st)

Navy Pistol Sharpshooter Ribbon

CTR2 Donel S. Hall

Navy Expert Pistol Shot Medals

Lt.Cmdr. Bruce R. Demello
OSC Timothy A. Carpenter
Cmdr. Roger D. Wells
Lt.j.g. Robert C. Cooper

Letters of Commendation

Lt.Cmdr. Carl K. Klotzsche
IS2 Gary F. Barile
EW1(SW) Sean Whiteman
IS2 Jeremy Bryan
IS2 William Watson
Herbert V. Reynolds
YN1 Tena K. Harshman
Amy T. Balmaz
Diane B. Jacobs
Patricia S. Langley
John A. Wallace
Virginia B. Stumpf
Terry E. Smith
Mitchell W. Gallahan
IS2(SW) Darin M. Kroft
ET2 William J. Grace

Letters of Appreciation

Lt.Cmdr. Thomas P. Crook
Lt. Roger J. Lucas
Lt.Cmdr. Bruce DeMello
Lt. Danny K. Busch
Lt. Oscar Tequida
Capt. Andrew J. Straley, USMC
CTACM Denise Collins
CTA2 Tina M. Callis
Amy T. Balmaz
CTA1 James E. Lewis
Lt. Mark Fickel

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Civilian Length of Service Awards

Diane Leite

30 Years
Diane Leite

20 Years
Deborah Perini
Ken St.Clair

15 Years
Donna Bowie

10 Years
John Harris

CALENDAR

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C2 Symposium, May 10-12, Quantico, Va. Sponsored by AFCEA Quantico-Potomac Chapter. Call (703) 784-2960.

International Conference on Remote Sensing for Marine and Coastal Environments, May 1-3, Charleston, S.C. Sponsored by ERIM International, NASA and NOAA. Call (734) 994-1200.

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○ Global Command and Control System (Classified), May 8-12 and Nov. 13-17, Fairfax, Va.

○ Military Satellite Communications (Classified), Oct. 30-Nov. 3, Fairfax, Va.

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○ Satellite Communication Systems Engineering, June 20-22, Washington, D.C.

○ Satellite RF Communications and Onboard Processing, June 12-14, Beltsville, Md.

○ Small Remote Sensing Satellites, May 23-25, Beltsville, Md.

○ Small Satellite Design and Technology, May 15-18, Colorado Springs, Colo.

○ Spacecraft Systems Design and Engineering, June 5-8, College Park, Md.

○ Space Mission Operations, June 8-9, Dulles, Va.

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