

**TRA's**

*No Name*

# GAZETTE

**For Space Technology & Mission Systems Retirees**

VOL. XX NO. 7

November 2008

## Finally – Laser Weapon Systems Coming Of Age

### HAPPENINGS AT NORTHROP GRUMMAN

#### Northrop Grumman Corp.(NG)

- LOS ANGELES — NG reported that third quarter 2008 earnings from continuing operations increased to \$509 million, or \$1.50 per diluted share, compared with \$489 million, or \$1.41 per diluted share, in the third quarter of 2007. Third quarter 2007 earnings from continuing operations included an after-tax gain of \$21 million, or \$0.06 per share, for the reorganization of AMSEC LLC. Sales for the 2008 third quarter increased 6 percent to \$8.4 billion from \$7.9 billion in the 2007 third quarter. Cash provided by operations for the 2008 third quarter increased 35 percent to \$1.4 billion compared with \$1 billion in the prior year period.



By Frank Warren

#### Space Technology Sector (NGST)

- REDONDO BEACH — NGST was awarded a contract by the United States Air Force Space and Missile Systems Center to provide technical support for the operational Defense Support Program (DSP) spacecraft, primary infrared sensor and mission analysis. The cost plus award fee contract is valued at \$206 million, which includes the initial year followed by four one-year options. "DSP has provided the nation with robust and reliable early warning and auxiliary mission capabilities for nearly 40 years," said Fred Ricker, vice president of Military Systems Division. NGST built the DSP infrared sensors in Azusa, CA, and integrated them with the DSP spacecraft in Redondo Beach. The DSP support and sustainment will continue at both sites. The first DSP was launched in 1970 and the final DSP was orbited in 2007.

It is always great to see company research and development acorns grow into fruitful systems. Recently, Dan Wildt, Director of Energy Systems in NGST, briefed the National Press Club on pending laser weapon systems founded on NG technology and early systems concept development. He emphasized that NG has finally reached that stage where its high-energy laser technology leadership can be transitioned into operational weapon systems to help the nation address evolving threats.

Starting in the 70's, TRW took the lead in the nation in developing high-energy chemical lasers that could efficiently provide beam energies in the megawatt domain for weapon concept consideration. More recently, as highlighted in Mr. Wildt's presentation, NGST has also been developing under the Joint High-Powered Solid State Laser program 10 to 100 KW solid state lasers with high beam quality, long run time, and quick firing response. Each of these two classes of high-energy lasers enables a useful spectrum of weapon system applications.

Current NGST laser system projects described by Mr. Wildt included the Advanced Track Illuminator Laser for the Missile Defense Agency to illuminate targets from long range and assist in tactical target designation. Ironically, in 1968 TRW's first laser system application contract was for a hand-held YAG-Nd laser target designator for the Naval Ordnance Station at China Lake. Following that first low-energy laser system application, TRW's laser systems interests focused on system concepts incorporating high-energy laser technology. High-energy laser weapon system conceptual and preliminary designs were conducted for all three military services, involving armored vehicle, ship, aircraft, and ground platforms for various mission and target scenarios. A complete ground-based chemical laser weapon system was implemented to demonstrate the viability of a surface-to-air mission. Currently, NG is completing Phase I of the US Army's High Energy Laser Technology Demonstrator, a 100 KW solid-state laser weapon system mounted on a mobile tactical ground vehicle.

As Mr. Wildt pointed out, high-energy laser weapon systems can be effective in intercepting and destroying aircraft, missiles, swarming boats, rockets, artillery, and mortars in flight. This capability has been enabled during the past several decades by enhanced laser efficiencies, packaging and

**Continued on Page 5**

**Continued on Page 5**

### TRA for Northrop Grumman Retirees

TRA (The Retirees Association) welcomes the retirees of both the Space Technology and the Mission Systems Sectors of Northrop Grumman, as well as the Heritage TRW retirees. The No Name Gazette is our official publication. Our offices are in Building E2 at Space Park

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- Betty Stover

### Contacting TRA

**By Mail:**

TRA, P.O. Box 1276, Redondo Beach, CA 90278

**By Phone:**

310-813-7745 (Our office is staffed only a few days a week. Please leave a message and we will get back to you.)

**By E-mail:**

[TRA@tra-spacepark.org](mailto:TRA@tra-spacepark.org) Your e-mails will be routed to the appropriate source. And, if we have your e-mail address on file, we send out special alerts at infrequent intervals. To get on the TRA e-mail list, just send us a brief e-mail requesting to be added to it.

**By Web Page:**

Our web page is at [www.tra-spacepark.org](http://www.tra-spacepark.org). It is an excellent source for the latest news, lists of the new retirees, travel details, party photos (more than get into the NNG), forms of all sorts, personal photographs, and much more. Come in and browse.

**For Membership:**

TRA Membership is open to all NGST & NGMS retirees at \$7 per calendar year. First year free. Application on web page or call 310- 813-7745 and leave a message.

## NG/TRW Retiree Meetings Around the U.S.

GROUP	MEETING LOCATION	TIME & DATE	OTHER INFO	CONTACT
TRA	Bldg. S Park Patio Cafe, Space Park	3rd Thurs. Monthly	Business Meeting 1:30 p.m. E2, Rm 1200.	No reservations needed. All Members Welcome
ATD	Alpine Village, Torrance, CA	11:40 a.m. 1st Monday in November	Social, Nostalgia and Lunch	Don Brown, Sandy Friedfeld, Bob Traylor 310-541-1917 or sandj1@aol.com
Brevard Retirees	Various Locations in Brevard, NC	1st Tues. 8 a.m. 3rd Tues. 5 p.m.	Social	Al & Daughn Connam 828-884-4993 aconnam@yahoo.com
Central Coast Chapter	Various Locations in the Central Coast Area	2nd Monday Various times	Social	George Zaiser 805-343-2631 gzais@msm.com
Huntsville Chapter	Call for Location (It's Complicated!)	2nd Tuesday 11:30 a.m.	Social	Jim Troy 256-534-7136 troys@comcast.net
Las Vegas	Various Locations in Las Vegas Metro Area	Last Tuesday 11:30 a.m.	Social	Carol Noblet 702-889-6773 fiftysumthn@aol.com
Northern Virginia	Squire Rockwell Restaurant Fairfax, VA	3rd Friday 11:30 a.m.	Social	Bill Gehrke 703-759-0527 wgehrke@att.net
Ogden	Cracker Barrel Restaurant Layton, UT	1st Thursday Breakfast	Social	Fred Zeuthen 801-476-0656 fzeuthen@earthlink.net
San Bernardino	San Bernardino Golf Club		Social plus programs of interest	Joe Daruty 909-792-8022 jdaruty@aol.com
SE Chapter	Jekyll Island, GA	October 27-30, 2008	Social/Adventure	Robert Baris 803-648-3142 barisr@atlanticbb.net
San Diego Chapter	Event Dependent	3rd Tuesday	Social or Board Meeting <a href="http://sandiego.tra-spacepark.org">http://sandiego.tra-spacepark.org</a>	Jim Denton 858-385-0150 JWDenton@sbcglobal.net
The Mountain Folks	Various Locations in the Denver Area	First week of each quarter	"We do have fun!"	Carl Winkelman 303-693-0034 winkelman@att.net
TRIN	Bldg E2, Room 1200 Space Park	2nd or 3rd Friday 2:00 p.m.	Investment Info based on monthly newsletter reviews	Mike Pauls 310-379-2707 lmikep@earthlink.net
TRW Retirees of the Desert	Sloan's Steak House Indio, CA	Every Tuesday 1:00 p.m.	Social and Nostalgia <a href="http://trwdesertretirees.blogspot.com">trwdesertretirees.blogspot.com</a>	Joe Clopton 760-342-8171 joeclopton@dc.rr.com
The Ventura County Romeos	Du-Pars Thousand Oaks, CA	1st Tuesday 12:00 noon	Social	Fred Blaich 805-499-0012 harrison_stroud@hotmail.com

# TRAVel News

December 14 - 17, 2008.

## **LAS VEGAS at the MIRAGE**

A four day bus trip to the Mirage Hotel on a deluxe motorcoach. The hotels will all be decorated in their Christmas Splendor. Included are refreshments en route; driver's tip; tax; and baggage handling. The four day trip is value priced at \$203 (ppdo), \$321 (single). A \$50 deposit will hold your space and is refundable until Nov. 1. Tom Tucknott, 310-530-4992

January 17-24, 2009

## **7 DAY MEXICAN RIVIERA CRUISE**

Princess Sapphire from San Pedro to Puerto Vallarta, Mazatlan and Cabo San Lucas, returning to San Pedro. From \$639.00 ppdo (inside), to \$1,029.00 ppdo (balcony). Taxes, govt fees and fuel charges are additional. Early booking may get a reduced price. \$300.00 deposit pp, fully refundable until 01 November. Insurance is recommended. Jay Seidman, 818-343-5171

***Neither smoking nor alcoholic beverages are permitted upon our buses.***

***The Travel Committee meets the 3rd Thursday of each month at 12:30 p.m. in E2/1200.***

We would appreciate it if you would contact the identified coordinator for more information. For comments or suggestions, including specific destinations or events, please contact **Jay Seidman at 818-343-5171 or jayandjerry@sbcglobal.net.**

July 7-18, 2009

## **12 Day Alaska Tour-Cruise**

or

July 12-18, 2009

## **7 Day Alaska Cruise**

**Tour-Cruise:** Anchorage, Mt. McKinley/Denali (3 nts), Whittier (board ship).

**Cruise Only:** Anchorage/Whittier, College Fjord, Glacier Bay, Skagway, Juneau, Ketchikan, Disembark Vancouver. **Cruise/tour** - \$2,625.62 (inside), \$3045.62 (ocean view obstructed), and \$3,765.62 (balcony) ppdo. **Cruise only** - \$1,208.25 (inside), \$1,618.25 (ocean view obstructed), and \$2,388.25 (balcony) ppdo. Includes taxes, fees, transfers and insurance. **Does not include air** (currently about \$650.00). Jay Seidman, 818-343-5171

## **Our future plans:**

January 8, 2009

**Valley View Casino** (near San Diego) — Betty Kay Addis, 310-379-6988

March 9-11, 2009

**Laughlin** — Betty Kay Addis 310-379-6988

## **Important Contacts for Retirees**

### **Northrop Grumman Benefits Center**

[www.benefits.northropgrumman.com](http://www.benefits.northropgrumman.com)

Select "Retiree Connection"

Or by phone: 800-894-4194

Here you can get help on health benefits, pensions, savings, and to report a death. It's all voice activated, so just listen to the instructions and answer the first few questions to reach a representative.

### **Express Scripts (Rx)**

[www.express-scripts.com](http://www.express-scripts.com)

800-655-1971

### **Northrop Grumman Benefits Services (Space Park)**

800-537-7694

One Space Park, S/2451  
Redondo Beach, CA 90278

## **TRA Website Upgraded**

Thanks to the volunteer efforts of Kat Reed, the TRA Website has been upgraded to be both easier to use and contain more useful information for TRA retirees. Give it a try at [www.tra-spacepark.org](http://www.tra-spacepark.org), then send us your comments, suggestions, etc. We can be reached at [tra@tra-spacepark.org](mailto:tra@tra-spacepark.org) or by mail at TRA, P.O. Box 1276, Redondo Beach, CA, 90278.

The No Name Gazette is the official publication of TRA. It is published seven times a year,

Staff:

Al Hausrath, Editor.

Bob Crowe, Roving Reporter.

Frank Warren, Contributing Editor

Tom Carroll, Kathy Hanken, Roger Harmon, Mary Holcomb, and Del Suarez, Photographers.

Lee Rathbone, Athena Christe, and Karin Petersen, Copy Editors.

## Edsel D. Dunford Dies at 73

1935 - 2008



Edsel D. Dunford, former president of TRW Inc. and a leader in the U.S. aerospace industry, died on October 3 in Rolling Hills, California. Dunford played a significant role in the design and development of U.S. space systems, from early missions to the planets to complex communications, command, intelligence, surveillance and reconnaissance

systems. He was renowned for his expertise in military acquisition and procurement, aerospace engineering, space science, and system engineering. He was 73 years old.

Dunford was honored as a member the National Academy of Engineering and a fellow of the American Institute of Aeronautics and Astronautics and chairman of the Aerospace Industries Association. He also served on number of U.S. government advisory groups, including as chair of the U.S. Air Force/National Research Council committee to evaluate the National Aerospace Initiative in 2004.

Dunford started his career at Ford Aeronutronics in 1961. He joined TRW in 1964, and most of his career was spent at its Redondo Beach Space Park facility. He rose through the technical and management ranks throughout a 30-year career with the company. He was appointed executive vice president and general manager of the company's space and defense businesses in 1987. In 1991, TRW's board of directors elected him president and chief operating officer at its Cleveland, Ohio headquarters. He retired from that position in 1994.

After serving in the U.S. Army, Dunford earned a bachelor's degree in Electrical Engineering from the University of Washington and a master's degree in Engineering from UCLA. He also completed the Executive Program at Stanford University. Both UCLA and University of Washington schools of Engineering honored Dunford as Alumnus of the Year. The University of Southern California's Viterbi School of Engineering selected him for the Daniel J. Epstein Engineering Management Award in 1993.

One of Dunford's most passionate and unique professional projects was a documentary "The Cold War and Beyond" which he co-produced and co-authored. The 2-hour film, which included viewpoints from both the U.S. and Russian perspectives, aired in 2003. The film was a finalist at the 2003 Hollywood Film Festival.

Dunford is survived by his wife, Lorie, sons, Wyman, Stan and Philip, daughter Marlo Garrett and step-children Matt Henning & Abbey Greene.

## Pioneers 10 & 11 Still in the News

**TRW's** Pioneer 10 was launched March 2, 1972 from the Kennedy Space Center with a velocity of 32,400 mph on a flight to Jupiter, a new speed record at the time. It was the first probe to travel through the Asteroid Belt and the first to explore Jupiter. On December 3, 1973, it passed Jupiter at 82,000 mph and continued outward, passing Pluto's orbit in 1983. While its science mission ended in March, 1997, NASA's Deep Space Network continued to track it. Today, the spacecraft is about 82 Astronomical Units (AU) from the earth. (One AU is the distance from the Earth to the Sun.)

Pioneer 11, built to be a backup to Pioneer 10, was launched in 1973 and retargeted in flight to fly past Saturn and Jupiter. It is traveling in the opposite direction of Pioneer 10.

However, in 1988, NASA's Dr. Anderson discovered anomalies in the flight paths of both satellites; they were drifting off course, and at the same rate. The discrepancies were less than a few hundred-millionth of an inch per second, but on flights as long as these, the trajectory changes became quite apparent. Neither Newton's theory or Einstein's theory predict such a change in velocity. Scientists have tried for 15 years to explain this anomaly, but have been unsuccessful.

Among the scientists struggling to explain these anomalies was JPL's Dr. Slava Turyshev. He and many other space scientists considered and eliminated the obvious possibilities, such a fuel leaks, the solar wind, planetary influences, and many other ideas.

For 14 years Dr. Turyshev tried to find the cause of the trajectory perturbation. One hunch he had was that asymmetrical thermal radiation could be the cause, but he lacked the data to prove it. Then, in 2002, he discovered 400 computer tapes of Pioneer engineering data on the way to the junk heap at NASA Ames Research Center. These tapes held all the Pioneer mission data, but were unreadable.

In stepped the 6000 member Planetary Society, a space-exploration advocacy group, who donated \$220,000 to translate the data into a digital format compatible with today's computers. After six years of work, Dr. Turyshev's partial analysis indicates that about 30% of the course anomaly can be attributed to asymmetrical thermal radiation from the spacecraft. The remainder is still a mystery. Some of the far-out theories have been the gravity pull of dark matter, the accelerating expansion of the universe, or a breakdown of the fundamental laws of gravity.

The next step in explaining the anomaly is to use the vintage data to create a computer flight simulation of the two Pioneers with a precision never before possible.



# IN MEMORIAM

Name	Date of Death
Ray G. Dawson	August 28, 2008
Edsel D. Dunford*	October 3, 2008
Carrol Hoskins	September 11, 2008
Thelma Mae "Penny" Remore	September 8, 2008
John W. Shuler Jr.	September 24, 2008
Dean Wood*	August 31, 2008

\*Check TRA's web page ([www.tra-spacepark.org](http://www.tra-spacepark.org)) for the obituary of this individual. Scroll down to near the bottom of the web page and you will find "In Memoriam." Inside this section are the obituaries.

The first step in notifying Northrop Grumman of a retiree's death is to call the Benefits Service Center at 800-894-4194. For many retirees, there is a Burial Benefit which will be paid to the beneficiary upon proper notification of death. However, due to privacy laws, the Benefits Center does NOT notify the TRA of the death.

If you know of a deceased retiree that should be included in the "In Memoriam" column in future NNGs, please submit the following by mail or e-mail to the TRA office: name of the deceased; date of death; and name of person submitting the information.

The No Name Gazette continues its new feature called *Memories: It's Hard to Forget* with a memory from John Feneck. We also have a small backlog of other memories slated to be included in upcoming issues of the NNG.

What career related event is fixed in your memory that others might enjoy? Write it up and send it to our editor at [tra@tra-spacepark.org](mailto:tra@tra-spacepark.org) or TRA, Attn NNG, P.O. Box 1276, Redondo Beach, CA 90278.

Since NNG space is limited the editor depends on an informal editorial board to review such suggestions for possible inclusion in future editions. Only "Memories" of 300 words or less will be considered for publication.

## MEMORIES

### IT'S HARD TO FORGET!

#### SI Ramo & Dean Wooldridge

I remember Ramo-Wooldridge in the mid fifties, 1955, 1956 and 1957, when we had lunch rooms, and during our coffee breaks we were served cake. Many times Dr. Ramo and Dr. Wooldridge would sit down at our table just chatting the day events. I believe this X-Y management method is what made the company what it is today. At TRW all employees were encouraged to be entrepreneurial and treated like individuals, in contrast to the huge bull-pens and regimentation typical of the aircraft companies of that day.

John A. Feneck

## Northrop Grumman Benefits Enrollment for 2009

In October, the Northrop Grumman Benefit Center (NGBC) mailed both the 2009 Retiree Enrollment Benefits Guide and the personalized Health and Welfare Enrollment Worksheet. Did you receive yours? If not, it is possible NGBC does not have your current address.

If you plan to keep your current coverage, you do not need to enroll. *If you want to change your coverage, you must enroll between November 5 and November 18, 2008.* Your Health and Welfare Enrollment Worksheet not only shows your monthly rates for 2009 for the same coverage as you have in 2008, but lists the other options available to retirees.

*If you have not received this material, call NGBC immediately at 1-800-894-4194. This office is open Monday through Friday from 9-6, Eastern Time.*

## Laser Weapon Systems

*Continued from Page 1*

powering, improved beam pointers incorporating adaptive optics to correct atmospheric aberrations, and effective target sensing and tracking capabilities. Laser weapon systems provide an advantageous and complimentary capability relative to kinetic energy weapons by providing a more dynamic weapon to target tracking capability and a unique target destruction mechanism. Furthermore, with the Joint High-Powered Solid State Laser under development by NGST, the primary energy source of the weapon platform can also be the energy source for the laser, enabling a variable and extensive magazine reservoir for the weapon system per mission.

In summary, the four decades of NG/TRW research and development in laser weapon technology has finally reached a maturity deserving serious operational implementation.

*Article written by Don Culler, Former Manager of Laser Systems, TRW, using some information from the Spring '08 InfoLink*

## HAPPENINGS

*Continued from Page 1*

### Shipbuilding Sector (NGS)

NEWPORT NEWS, VA — AREVA and NGS, two leaders in the U.S. nuclear industry, have joined forces to build a new manufacturing and engineering facility in Newport News to supply the growing American nuclear energy sector. The joint venture, AREVA Newport News, LLC, with AREVA as the majority owner, will establish a world-class facility to manufacture heavy components for the U.S. Evolutionary Power Reactor (EPR), AREVA's Generation III+ nuclear reactor, thereby supporting the nuclear energy resurgence, fueling domestic economic growth, and meeting the demand for American energy security.

# TRA

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**The next NNG will be mailed  
in late December**

## THE MAIL POUCH

◆◆◆**Florence Hnetko** wins the coveted *Copy Editor of the Month* award both for her eagle eyes while reading the October NNG and an outstanding memory! Her first correction was in **MEMORIES**, a short recollection by Jack Tsu about General Doolittle. He incorrectly identified the General as “our esteemed STL president.” Then in another article about MSD coming back to NGST, we said that “missile development within TRW began with a telephone call . . . from President Eisenhower to Simon Ramo.” Here are the facts relating to these two articles. The Ramo-Wooldridge Corporation was founded in 1953. At almost the same time, a new advisory group was established to advise the Air Force on the urgency and feasibility of developing ICBMs. Not only were Ramo and Wooldridge appointed to this committee, but R-W became the staff for the committee. In 1954, R-W was given a one year design and engineer study for such a weapon. R-W formed the Guided Missile Research Division (GMRD), and were assigned responsibility by the Air Force for systems engineering and technical direction of the Atlas Missile System. In 1958, R-W and Thompson Products merged forming Thompson Ramo Wooldridge Inc., (TRW). GMRD became Space Technology Laboratories, Inc. (STL), a wholly-owned subsidiary of TRW. General Doolittle was



By Al Hausrath

Chairman of the Board of STL TRA could find no reference in the NG Space Technology archives to any phone call from the President to Ramo. Thank you, Florence, for catching these errors◆◆◆**Dave Miller** emails from Sedalia CO that they have a group of TRW retirees in the Denver area who gather each quarter for lunch and chatting re old times. They meet at various places picked to facilitate their abilities to attend. **Carl Winkelman** at 303-693-0034 or [winkelman@att.net](mailto:winkelman@att.net) is the chief coordinator◆◆◆California Girl **Lana Fok** sends “Greetings” from Columbia, MD, attracted there in March 2004 by close proximity of her son and g’kids. She and husband **Raymond** have been travelling not only east to Europe, but up and down the coast to Maine. “Retirement is great,” she announces, but does miss her Palos Verdes sunsets, and seeing her “patients.” (She was the nurse practitioner in Bldg. S)◆◆◆**John Cone** reports from Cypress CA that the NNG pleases him when he reads *The Mail Pouch*, but saddens him to read *In Memoriam*. John is still teaching math and science to 7<sup>th</sup> and 8<sup>th</sup> graders, and he says that it’s almost as much fun as working at TRW. “There’s no money in it, but the rewards come when his students get so excited about being accepted into Advanced Placement math in high school.” Wife **Audrey** is his full time classroom volunteer◆◆◆