



# THE CHINA LAKER

Vol. 10 No. 2

Newsletter of the China Lake Museum Foundation

Spring 2004

## *The Mighty Mouse in History*

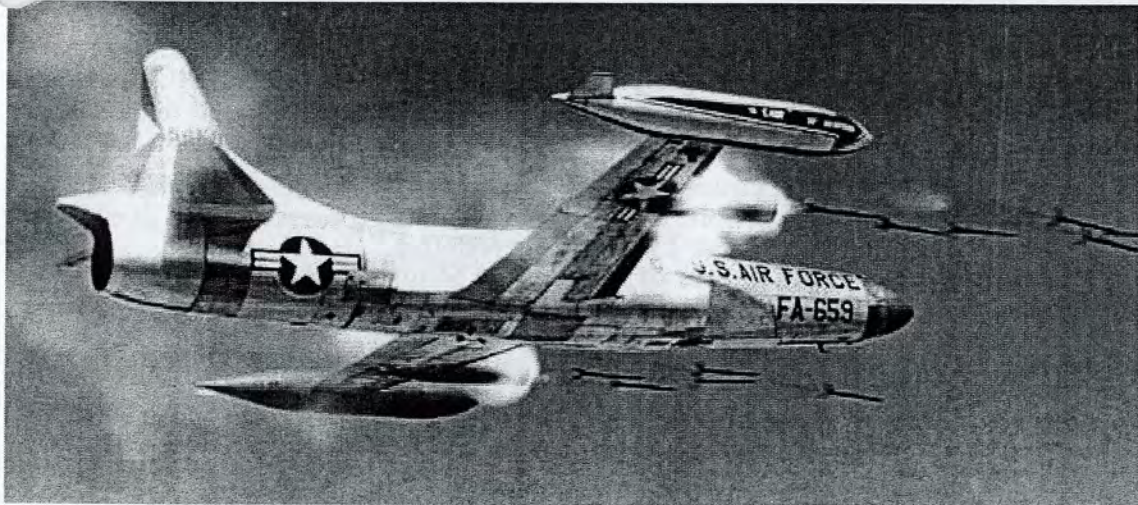
By Harold H. Patton

In histories of China Lake NAWC, (or NOTS as I remember it), there is a chapter often forgotten, or lightly passed over. Prior to the triumph of Sidewinder, to this day the airmen's choice in air-to-air combat, and the massive firing of the 2.75 rockets modified for air-to-ground deployment from helicopters in Viet Nam lies a relatively brief period of about five years when the 2.75-in. FFAR, *the Mighty Mouse*, stood alone as our defense against the Atomic bomb.

When in March 1949 the Soviets detonated their surprise atomic test, our

anger, that the crucial confidence of our nation was never tested, can only be credited to their deterrence, less than to their effectiveness. *Any ordnance engineer will tell you that no weapon can ever achieve a 100% kill!*

The involvement of my psyche evolves from the fact the I, with a devoted group in my Division, later Department (Code 40) took the 2.75 from early experiments with folding fins and with internal burning rockets to the mass-produced 2,75 FFAR, ably abetted by the Pilot Plant's propellant grain and the Nation's



Lockheed F-94C  
launching Mighty  
Mouse Rockets

confidence in our isolation was shattered by the recognition that long-range strategic bombers could, or would soon, be able to blast our country at will. True, WW II experience showed terrible attrition of our bombers, but if only ONE of an attacking wave reached our shores ONE American city would become the next Nagasaki! We needed an aerial weapon system that could promise an early and sure kill!

At this remove my stomach still churns to realize that three hastily developed interceptor aircraft armed solely with our early-production 2.75s and a trouble-prone fire control system became that barrier! That none were ever fired in

production capabilities. From its inception the Mouse had one dedicated mission - to provide a sure kill of hostile bombers. We controlled the dispersion of individual rockets to accomplish a "shot gun" pattern assuring at least one hit in a salvo of twelve rockets. Navy friends will recognize the amazing confidence displayed by the US Air Force in accepting a US Navy weapon to arm their interceptors! We can only give thanks that that confidence was never tested except in less than conclusive gunnery competition at 29 Palms.

(continued on 11)



### China Lake Museum Foundation

P.O. Box 217 · Ridgecrest, CA 93556-0217  
760-939-3530 · clmf@ridgenet.net · 760-939-0564 (FAX)

**Paul Homer, President**

**Wayne Doucette, Treasurer**

**Bill Porter, Director Emeritus**

**Scott O'Neil, Director Emeritus**

**Sharon Goad, Secretary**

**John DiPol, Director Emeritus**

**Jack Russell, Director Emeritus**

**ADM Wesley McDonald, USN (ret.), Trustee**

*Vice Presidents*

**Alice Campbell, Membership**

**Vacant, Public Relations**

**Ray Miller, Facilities**

**Vacant, Fundraising**

*Vacant, Operations*

*Directors*

**Elizabeth Babcock**

**Henry Blecha**

**Dotsy Cronin**

**Sharon Girod**

**Ron Keck**

**John Robbins**

**Jim Serpanos**

**Frank St. George**

**Iris Bachmann**

**VADM. Mike Bowman, USN (ret.)**

**Jason Cushing**

**Burrell Hays**

**Harold Manning**

**Bertha Ryan**

**Jim Simmons**

**Mark Swett**

**Steve Benson**

**Scott Brown**

**Dale Gates**

**Tex Hoppus**

**Thomas Reynolds**

**Betty Seaman**

**Doris Sorensen**

**Charles White**

Barry Lowry, Museum Manager  
760-939-4740/clmf1@ridgenet.net

Dotsy Cronin Volunteer Coordinator  
760-499-1072/760-793-2082 Cell/legachic@aol.com

Bob Campbell, NAVAIR-WD Museum Director

Leroy Doig III, NAVAIR-WD Museum Curator

### President's Report

By Paul Homer

A note of thanks to all – donors, sponsors, Foundation members, and volunteers for the great success of the annual Museum Dinner & Auction. The gross funds raised were almost double that of the 2003 event. The details can be read on page 15 of this Newsletter.

Thanks are due also to Harold Patton, the author of the Mighty Mouse lead article in this issue. Patton had suggested writing such an article a few months ago, and the report is an excellent example of historical articles of interest to the Museum and the Foundation, and we encourage readers to recommend similar articles covering events in the rich history of China Lake.

We were all very saddened to learn of Leroy Riggs death in March, and our condolences to Marilyn and all of the Riggs family. He will be greatly missed.

### Former China Lake Technical Director Leroy Riggs Passes Away

By Liz Babcock, Director

Leroy Riggs, a pioneering China Lake employee who rose all the way from junior professional to technical director during his 26-year career here, died on March 21, 2004, at Scripps Green Hospital in San Diego. He was 77. "Leroy can be proud and rest in peace knowing that he made a significant contribution to the security of the country in providing the services with critical weapons systems and helping to establish the national reputation of China Lake", said

Franklin Knemeyer, a former department head and deputy technical director at the Naval Weapons Center.

"He was a true friend and gentleman", added Bill Davis. I considered it a privilege to work with him. Davis worked with Riggs in several capacities at China Lake, most recently when Davis became the executive secretary for China Lake's 50th Anniversary Steering Committee.

(continued on page 3)



## Former China Lake Technical Director Leroy Riggs Passes Away

(continued from page 2)

Leroy was a major player in the work of the committee, Davis said. He helped tremendously in making the celebration a success. During the course of his career here, Riggs worked on some of the Organization's most significant programs, as well as helping nurture new China Lake programs during a tour in Washington, D.C. He held responsible positions at all levels, up to and including the top civilian position at China Lake.

His success resulted in numerous awards, including the L.T.E. Thompson Award in 1972, and the Navy's Distinguished Service Award the highest award that can be bestowed on a civilian by the secretary of the Navy in 1974.

Born in Riverside, Calif., on Feb. 25, 1927, Riggs attended schools in Riverside, completing high school and a year of college before joining the Navy's flight training program in 1944.

The Navy sent him to Texas, where he attended the University of Texas at Austin and the Chase Naval Auxiliary Air Station near Beeville. After completing training at St. Mary's Preflight School in California, he was released from active duty in 1946, but remained in the Naval Reserves until he retired as a commander in 1967.

In fall 1946, he returned to Texas, this time with his wife, Marilyn (Ditty). He graduated from the University of Texas, El Paso, in January 1948 with a B.A. in mathematics and physics. He then studied statistics as a graduate student at the University of California, Berkeley. One day, he met Dr. Edward Crow, a statistician from China Lake, and after Crow finished describing the Navy's desert lab, Riggs said, "I'd like to work there". He wrote to the then-Naval Ordnance Test Station and was hired in the junior professional program, with his first tour in the Exterior Ballistics Branch of the Ballistics Division. He liked that work so much that he convinced his supervisor to let him stay there for his entire junior-professional year.

During that era he and Ditty acquired a lifelong group of friends. Leroy and his family were very close and cherished friends from the early days of NOTS when China Lake was essentially a self-contained community, said Knemeyer.

Because of Riggs work as a civilian scientist on the development of weapons for the Korean war, he was considered too valuable where he was to be recalled as a naval officer. In the mid 1950s, he became the aeroballistic program director on a nuclear weapon.

After the Soviets launched Sputnik, he spent a year in Washington, D.C., where he was



the first technical director of the Bureau of Ordnance Astronautics Office. In that position, he was able to argue convincingly for support of China Lake's satellite program, NOTSNIK, as well as for the antiradiation weapon, Shrike. Returning to China Lake, he headed the Aeromechanics Division for the next nine years. During this period, he served as the program manager for Shrike, then was in charge of all antiradiation-missile development for both the Navy and the Air Force.

During the Vietnam conflict, he again served as a civilian rather than in uniform, but he still spent time under combat conditions planning missions and training pilots on several aircraft carriers, including USS Midway, USS Ranger, USS Enterprise, USS Constellation and USS Hancock. From 1968 to 1975, he served in several senior management positions at NWC, including as head of the Missile Systems and Electronic Systems Departments, as deputy technical director and as technical director. In 1975 he retired from government service.

He then spent two years as vice president of defense contractor Farnsworth-Cannon, Inc. From 1977-89, he was president of the Aerodyne Corp., which performed studies for the government and major aerospace contractors.

After 1989, he continued to consult occasionally until 1994, when he retired completely and devoted his time to computers,

(continued on page 12)

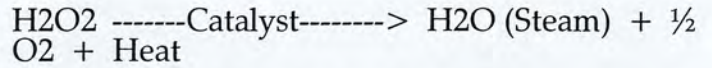


## The Sidewinder-Budweiser Connection

By Steve Benson, Director

Project S.O.S. (Speed of Sound) was conceived and launched in 1976 by Hal Needham, former stunt man and Hollywood film director ("Smokey and the Bandit," "Hooper," "The Cannonball Run") with the goal of building the first car to exceed the speed of sound, regardless of whether official land speed record sanctioning bodies recognized the achievement. After the project was under way, the Budweiser Brewing Company agreed to sponsor the project, and the car was renamed the "Budweiser Rocket Car". The Navy connection to the project included

steam and oxygen resulting in high pressure and temperature gases within the combustion chamber:



Without the added fuel rings, the rocket engine produced roughly 9,000 pounds thrust for about 18 seconds. Many of the early test runs were done with the monopropellant engine alone.



China Lake technical consultation and the use of a Sidewinder Mk 36 Mod 7 solid propellant rocket motor as part of the car's propulsion system.

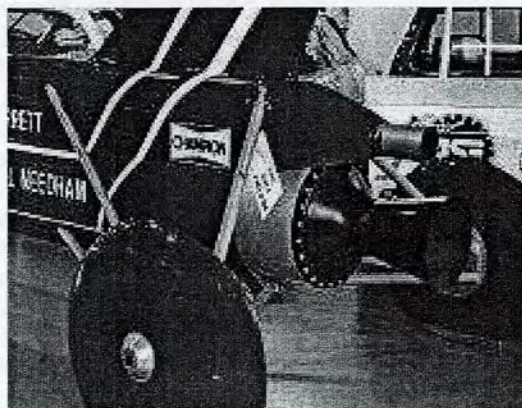
The Budweiser rocket car was designed and built by Bill Frederick, a rocket power consultant to the Aerospace industry and movie special effects consultant in the use of rockets for movie stunts. His streamlined, three-wheeled car, measuring slightly over 39 feet in length and 2 feet wide, was in essence a pressurized fuel tank with two rocket engines (one hybrid and the other solid) strapped to its tail end. It even looked like a missile.

A small cockpit for the driver was located in front of the 9-foot-high tail fin. The car's main propulsion was a hybrid rocket engine using hydrogen peroxide monopropellant augmented with rubber fuel rings. Liquid hydrogen peroxide was fed under high pressure (nitrogen gas) from the fuel tank into a reaction chamber which contained a decomposition catalyst screen. The catalyst causes the hydrogen peroxide to rapidly decompose into

To further improve the main engine's performance, polybutadiene fuel rings were installed to line the combustion chamber. The high-temperature oxygen from the peroxide reaction decomposes the polybutadiene fuel, which autoignites to produce additional combustion gases. These extremely hot, high-pressure gases are expelled through the nozzle to produce thrust. This hybrid engine configuration doubled the thrust level to about 18,000 pounds — unfortunately still not enough impulse to accelerate the car to supersonic velocities. The solution was to install a standard Sidewinder rocket motor, which was obtained with

the help of the Air Force from the Bermite Division of Whittaker Corporation, above the main engine for more thrust.

The Sidewinder motor was to be ignited a few seconds before the main engine shut down, and the experimenters hoped the additional thrust (~3,000 pounds) would be enough to "kick" the car through the sound barrier.



(continued on 12)



## LCDR John E. Darden, Jr., and the Mighty Mouse

By Bertha M. Ryan, Director

Compiled from the *Rocketeer*, Vol. VIII No. 29; July 16, 1952

It was July 10, 1952. A group of 200 members of the Aviation Writers Association had gathered to observe a rocket firing demonstration. Lcdr John E. Darden, Jr., age 30, was flying an F2H-2 Banshee.

He fired a salvo of 14 Mighty Mouse 2.75-inch rockets at a ground target. After he released the rockets, the airplane continued in a dive over the target area, smashed into the earth and exploded in a huge ball of flame. Lcdr Darden died instantly.

Later, sequence camera photographs of the fatal flight, taken as the jet passed over the dust cloud kicked up by the exploding rockets, showed that the wing folded and the airplane spun crazily into the ground where it exploded.

LCDR Darden, one of the Navy's most experienced jet pilots, had been at China Lake only six months at the time of the accident. He served as engineering officer at the Naval Air Facility where he was in charge of Banshee operations.

LCDR Darden joined the Navy in Febru-



LCDR John E. Darden Jr.

ary 1942 when he began flight training at Pensacola. After receiving his wings in November 1942, he served as gunnery officer aboard an aircraft carrier until June 1944 when he returned to the United States as a flight instructor. Later assignments were at Corpus Christi, TX, Milton, FL, Atlantic City, NJ, and the Navy General Line School at Monterey, CA.

He left behind a wife and 4-month-old son as well as his parents, two married sisters and a brother.

LCDR Darden is one of approximately 72 men and women who have given their lives in support of the China Lake mission since 1944. The United States Naval Museum of Armament and Technology will soon honor them officially with a display containing all their names. This display will have a permanent location at the site of the new museum building near the main gate where all who visit the museum will be able to remember and honor these brave men and women who served China Lake, their country and all of us.

Additional information about the cause of the accident described above is available from oral history S-203 of Dr. Emory Ellis conducted by Leroy Doig, Mark Pahuta and Liz Babcock in 1992:

"A wing broke. It just broke at the base. Of course, the plane immediately went in and killed the pilot, and there was always this question: did that plane hit a ricochet and clip the wing off? We had that happen once before. The pilot followed the shot in, and as he pulled up, the head ricocheted up and hit the wing of his Corsair and broke the hinge on the wing where it folded.

"But this pilot went in at the air show, so I got all of the film (a lot of the film) of the firing, and we followed all of the rockets to see if we had a ricochet and counted them to see if we had any hang-ups or any blowups of the rockets in front of the aeroplane or anything like that and couldn't see anything. And I had the physics or the photo section (I don't know who they used

to do the work) measure the accelerations on that aeroplane. They knew enough about the positions on the cameras and so on that so well, you could use the aeroplane as a scale and measure the change in position of the aeroplane over time to see what happened. And again as he crossed the taxiway (there was a taxiway), and it was a hot day, and there must have been quite a bit of thermal air rising there, and when he hit that, he had something like 15 or 18 g, and the wing broke. Well, they were only stressed for 10, I think, and he was well over the limit, so that certainly justified the conclusion that what had happened was just that local turbulence that he hit while he was already pulling out that gave him the extra kick that broke the wing. These are things that kind of make you feel bad. I played those tapes or those pictures back and forth and back and forth, and I'd go home feeling like I'd been in the plane."

[www.chinalakemuseum.org](http://www.chinalakemuseum.org)



**2003-2004 MAJOR DONORS AND MEMBERSHIPS AS OF 1 April, 2004**

**MAJOR DONORS**

**Platinum Donor (\$5,000 and above)**

ATK Tactical Systems  
Atlantic Research  
Carriage Inn, Ridgecrest CA  
DRS Technologies  
**Jacobs Sverdrup Naval Systems Group,  
Ridgecrest CA, annually since 2001**  
Raytheon Company

**Gold Donor (\$3,000 - \$4,999)**

**Silver Donor (\$1,000 - \$2,999)**

Assemblyman Kevin McCarthy, Bakersfield CA  
**Bob & Alice Campbell, Inyokern CA annually since 2001**  
DCS Corporation, Alexandria VA  
William & Fran Fenical, Del Mar CA  
Gary D. Charlon Insurance, Ridgecrest CA  
**Hays Engineers and Scientists, Inc.,  
Ridgecrest CA annually since 1998**  
New Directions Technologies Inc. (NDTI), Ridgecrest CA  
Dr. Lloyd & Bea Smith, Onyx CA  
The Stockdale Group, Bakersfield CA  
Raytheon Company

**BUSINESS MEMBERSHIPS**

**Business Members (\$1,000 per yr.)**

Alta One Federal Credit Union, Ridgecrest CA (since 2001)  
Carriage Inn, Ridgecrest CA (since 2004)  
DCS Corporation, Alexandria VA (Since 2004)  
Hays Engineers and Scientists, Inc., Ridgecrest CA (since 2001)  
Jacobs Sverdrup Naval Systems Group,  
Ridgecrest CA (since 2001)  
Raytheon Company, Ridgecrest CA (since 2001)

**Business Sponsor Members (\$500 per yr.)**

Mickey's Pub & Grill, Ridgecrest CA (since 2003)  
Ridgecrest Moving and Storage, Ridgecrest (since 2003)  
Sierra II, Ridgecrest, Inc.,  
McDonalds of Ridgecrest CA (since 2003)  
Systems Application & Technologies, Inc.,  
Ridgecrest CA (since 2003)  
The Daily Independent, Ridgecrest CA (since 2003)

**Business Contributor Members (\$100 per yr.)**

BIOMEMS, Coto De Caza CA (since 2003)  
Daniel T. Kus, D. D. S., Ridgecrest CA (since 2003)  
DCS Corporation, Ridgecrest CA (since 2002)  
Edward Jones Inc (Vince Avalos), Ridgecrest CA (since 2004)  
Electronic Warfare Associates, Ridgecrest, CA (since 2004)  
Farris' Diner, Ridgecrest CA (since 2004)  
Gary D. Charlon Insurance, Ridgecrest CA (since 2003)  
Der Weinerschnitzel/Tastee Freez, Ridgecrest CA (since 2004)

Jim Charlon Ford, Ridgecrest CA (since 2003)  
MCR/LRI, Inc., Santa Barbara, CA  
Neely Accountancy Corp, Ridgecrest CA (since 2004)  
New Directions Technologies, Inc., Ridgecrest CA (since 2004)  
Rose Garden Inn and Suites, Ridgecrest, CA (since 2004)  
Searles Lake Community Federal Credit Union,  
Ridgecrest CA (since 2004)  
Sears Authorized Dealer - Frank & Terry Bellino,  
Ridgecrest CA (since 2003)  
Swap Sheet, Ridgecrest CA (since 2004)  
TOSS, Ridgecrest CA (since 2002)  
Windows, Walls N Floors, Ridgecrest CA (since 2002)

**GENERAL MEMBERSHIPS**

**Lifetime Members**

VADM Frederick L. & Ercy Ashworth, Santa Fe NM  
Howard & Barbara Auld, Ridgecrest CA  
Eric & Kathy Bengtson, Ridgecrest CA  
Curt & Gretchen Bryan, Ridgecrest CA  
Charlotte Bullard, Greenville TN  
Milton & Jane Burford, Bakersfield CA  
Georgia Cabe, Ridgecrest CA  
Bob & Alice Campbell, Inyokern CA  
Heather Campbell, San Francisco CA  
Jim & Eleanor Campbell, Kernville CA  
Stephen & Suzanne Chapman, Boston MA  
China Lake Women's Golf Club, Ridgecrest CA  
James E. & Joy H. Colvard, King George VA  
Jack Crawford, Ridgecrest CA  
Luke & Julie Crews, Ridgecrest CA  
Anthony & Cynthia Damiano, Ridgecrest CA  
William E. & Grethel M. Davis, Ridgecrest CA  
VADM Vincent de Poix, USN Ret, Albany OR  
C. John & Delores Di Pol, Ridgecrest CA  
Ralph Disch, Boston MA  
Alston Dotson, Ridgecrest CA  
Ron & Nancy Doucette, Clovis CA  
Wayne & Pat Doucette, Ridgecrest CA  
Jack & Nancy Dragovich, Ridgecrest CA  
Fred & Barbara Etoch, Ridgecrest CA  
Cal & Linda Fallgatter, Ridgecrest CA  
Brian & Rhonda Faust, College Station TX  
Frank A. Federico, Inyokern CA  
Mel & Barbara Foremaster, Fallon NV  
Dave & Holly Forseth, Schaumburg IL  
Donald Friedman, Santa Barbara CA  
Ike & Edna Fujiwara, Ridgecrest CA  
Jack & Joy Godett, Ridgecrest CA  
Burrell & Lesta Hays, Ridgecrest CA  
Don & Lela Herigstad, Ridgecrest CA  
Hugh C. Higley, Menominee MI  
Paul B. & Pat Homer, Ridgecrest CA  
Tex & Marti Hoppus, Ridgecrest CA  
Dick & Eleanor Johnsen, Ridgecrest, CA



**Lifetime Members** (continued)

Allen W. & Bonnie J. Jones, Ridgecrest CA  
Mike Kleine, Pacifica CA  
Denny & Mary Jane Kline, Ridgecrest CA  
Franklin H. Knemeyer, Ridgecrest CA  
Lee & Arlee Lakin, Ridgecrest CA  
Robert & Nina Lane, Ridgecrest CA  
D. N. Livingston, Ridgecrest CA  
Gordon & Beverly Lowham, Grand Junction CO  
Jack & Dana Lyons, Ridgecrest CA  
Janet K. Manning, Bakersfield CA  
La V McLean, San Diego CA  
Gerald & Hazel Miller, Fredericksburg VA  
Ray & Minnie Miller, Ridgecrest CA  
Val & Nan Montegrando, Coto De Caza CA  
Richard W. & Virginia Murphy, Sparks NV  
Charles M. & Hazel Nilsen, Ridgecrest CA  
F. Kirk & Annaliese Odencrantz, Reno NV  
Mark Pahuta & Romona Bernard, Ridgecrest CA  
Shirley Pladson, Ridgecrest CA  
Felice Plain-Mueller, Ridgecrest CA  
George & Katy Pomeroy, Ridgecrest CA  
William B. & Marilyn Porter, Ridgecrest CA  
Louis & Geraldine Pracchia, Ridgecrest CA  
Marilyn Riggs, San Diego CA  
Bob & Sheila Rockwell, Ridgecrest CA  
Jeff & Cheryl Roquemore, Ridgecrest CA  
Jack & Electa Russell, Coeur D'Alene ID  
Frank & Jewel St. George, Ridgecrest CA  
Steve & Nancy Sanders, Gardnerville NV  
Gerald & Loretta Schiefer, Pine Valley UT  
CAPT Jim & Betty Seaman, USN Ret., Las Vegas NV  
Leonard & Nancy Seeley, Grass Valley CA  
James & Betty Simmons, Bakersfield CA  
Dr. Lloyd & Bea Smith, Onyx CA  
Representative William Thomas, Bakersfield CA  
Larry & Diane Thompson, Ridgecrest CA  
Ed & Cyndi Townsend, Ridgecrest CA  
Col John T. & Alice D. Tyler, USMC, Ret., Mesa AZ  
WACOM Thrift Shop, Ridgecrest CA  
John & Roberta Ward, Ridgecrest CA  
Edward & Eleanor Winnemore, Ridgecrest CA  
Larry & Sharon Zabel, McAllister MT

**Benefactor Members**

Carlton & Virginia Hamel, Ridgecrest CA

**Contributor Members**

Ed & Cam Alden, Ridgecrest CA  
American Association of University Women, Ridgecrest CA  
Tom S. Amlie, Bethesda MD  
Paul & Jean Amundson, Newport OR  
Kathleen Armstrong, Ridgecrest CA  
Phil & Nancy Arnold, Ridgecrest CA

Elizabeth Babcock, Ridgecrest CA  
RDML Michael & Iris Bachmann, Patuxent River MD  
Ken & Leilani Banks, Ridgecrest CA  
Stan & Kelly Barber, Ridgecrest CA  
Jack & Suzanne Basden, Ridgecrest CA  
Russ Bates, Inyokern CA  
William J. & Ruth K. Berger, Inyokern CA  
Will & Ann Blackburn, Ridgecrest CA  
Hank & Janet Blazek, Ridgecrest CA  
Henry Blecha, Ridgecrest CA  
Robert A. & Darlene Boyack, Ridgecrest CA  
Richard & Bernice Boyd, Ridgecrest CA  
Margaret Breeden & Richard M. Swift, Ridgecrest CA  
David Brindeiro, Ridgecrest CA  
James & Muriel Bryant, Sun City CA  
Woodie & Betsy Chartier, Bakersfield CA  
Catherine F. Chenault, Oceanside CA  
Jay & Peggy Chun, Ridgecrest CA  
CAPT Atlee F. Clapp, USN Ret, Red Bluff CA  
Joseph & Beverly Clavet, Ridgecrest CA  
Jack & Patricia Connell, Onyx CA  
Craig Cozzens, Ridgecrest CA  
Jason & Verity Cushing, Ridgecrest CA  
Ron & Carolyn Dettling, Ridgecrest CA  
Dick & Sophie Dodge, Ridgecrest CA  
Tom & Cathie Doyel, Ridgecrest CA  
Ann Faith, Ridgecrest CA  
William E. Francis, Ridgecrest CA  
Tom & Barbara Frisbee, Ridgecrest CA  
Norma Fritchman, San Diego CA  
Allen & Nancy Gates, Gardnerville NV  
Arold Green & Eva Bien, Ridgecrest CA  
Sterling & LaVonne Haaland, Swan Lake MT  
Floyd & Kay Hall, Ridgecrest CA  
CDR John E. Hammack, USN Ret., Ridgecrest CA  
Leonard & Barbara Haugen, Ridgecrest CA  
La Rue B. Haycock, Twentynine Palms CA  
Hugh Helmick, Ridgecrest CA  
Gary & Carol Hewer, Ridgecrest CA  
Tim & Karen Higgins, Ridgecrest CA  
John M. Holden, Oroville CA  
Nellavan A. Jeglum, Ridgecrest CA  
Ed & Carol Jeter, Ridgecrest CA  
Roy & Joan Johanboeke, Ridgecrest CA  
ADM Bert & Beverly Johnston, Patuxent River MD  
David & Patricia Knudsen, Gray ME  
Warren K. & Phyllis Legler, Lawrence KS  
Tom & Ulla Lipp, Independence CA  
Al & LoraLee Lopez, Ridgecrest CA  
Herbert T. & Eleanor Lotee, Ridgecrest CA  
James Manion, Inyokern CA  
Crill & Theresa Maples, Sparks NV  
William R. and Mary Lee McBride, Ridgecrest CA  
Don & Pat McLean, La Canada CA  
Robert & Berniece Meade, Ridgecrest CA  
Paul & Jeanne Miles, North Las Vegas NV  
Linda Miller, Ridgecrest, CA



**Contributor Members** (continued)

Jack & Linda Murray, Ridgecrest CA  
Chuck & Charlene Newmyer, Ridgecrest CA  
John & Kathleen Nylund, Andover MN  
Paul & Mabel Ellis Ower, Lake Isabella CA  
John & Pauline Patterson, Solvang CA  
Robert & Mary Phillips, Ridgecrest CA  
Paul & Jana Pompier, San Diego CA  
Clifton & Francisca Ransom, Ridgecrest CA  
Gordon & Beverly Reymore, Inyokern CA  
Thomas L. Reynolds, Bainbridge Island WA  
Thomas S. & Ellen K. Rogers, Chester MD  
Edwin B. Royce, Inyokern CA  
Nick Schneider, Ridgecrest CA  
Irwin & Dorothy Jean Shull, Ridgecrest CA  
George & Pat Silberberg, Ridgecrest CA  
Sheldon Simonovich, Ridgecrest CA  
Dr. Robert D. Smith, Ridgecrest CA  
Seldon A. & Frances M. Staniloff, Hackensack NJ  
Robert & Doris Stirton, Ridgecrest CA  
George H. Strohsahl (USN Ret), Kent WA  
CAPT Mark & Allyson Swaney, Pt Mugu CA  
Raymond J. Tapani, Ridgecrest CA  
Barbara Tunget, Ridgecrest CA  
Douglas & Beverly Turner, Arcadia CA  
Bill & Barbara Underwood, Ridgecrest CA  
Bob & Marge Vargus, Ridgecrest CA  
James E. Vasbinder, San Jose CA  
John & Barbara Ward, Makawao HI  
Bernie & June Wasserman, Ridgecrest CA  
Frederick H. Weals, Ridgecrest CA  
Willard P. & Nancy Webster, Ridgecrest CA  
James E. & Mary Weimholt, Ridgecrest CA  
Robert & Betty Wilson, Pagosa Springs CO  
Robert A. & Charlyne Wirkus, Sedona AZ  
Don & Mary Witcher, Ridgecrest CA  
Wayne & Ingrid Zellmer, Ridgecrest CA

**Sponsor Members**

Lynn & Wilma Barker, Yucaipa CA  
George R. Barr, Arlington MA  
BG Julius & Zelime Braun, USA Ret., San Antonio TX  
Leroy & Carol Corlett, Ridgecrest CA  
Garibaldi & Mary Famisaran, Ridgecrest CA  
Cornelia & Jan Flora, Ames IA  
Robert J. Gilliland, Burbank CA  
William B. Haff, Nine Mile Falls WA  
CAPT Doug Henry, USN Ret., Thayne WY  
Jim & Lenore Lemon, Ridgecrest CA  
Laura Lile, Ridgecrest CA  
F.P. "Chic" Maclise, Fallbrook CA  
LeRoy D. & Norma Marquardt, Inyokern CA  
Joe & Phyllis McDonough, Ridgecrest CA  
Robert V. & Carol McKenzie, Ridgecrest CA  
Dave & Naomi Mulhern, Yuma AZ  
Hiroshi & Elizabeth Oishi, Redmond WA

Barry & Babs O'Neal, Ridgecrest CA  
Harold D. Owens, Ridgecrest CA  
Don & Barbara Padgett, Ridgecrest CA  
Leon A. & Margaret Peachie, Inyokern CA  
Edward W. Price, Atlanta GA  
Lois Reed, Ridgecrest CA  
John & Doreen Robbins, Ridgecrest CA  
Bertha M. Ryan, Ridgecrest CA  
John & Dorothy Saitz, Ridgecrest CA  
Robert & Carrol Sewell, Ridgecrest CA  
Thomas W. & Betty J. Sheehan, Houston TX  
Alex & Sondra Shlanta, Ridgecrest CA  
P. J. & Lynda Smith, Ridgecrest CA  
Claudia F. Sound, Ridgecrest CA  
Ruth M. Stewart, Lebanon OR  
David C. & Helena Stoessel, Ridgecrest CA  
RDML David & Bunny Venlet, Ridgecrest CA  
Fred & Peggy Zarlino, Ridgecrest CA

**Enlisted Military Members**

HMI Archie R. Clary, Ridgecrest CA  
PRC Louis "Bart" & Christie Dobbs, Ridgecrest CA  
AME1(AW) Jonathan A. English, China Lake CA  
PR1 Gabbard Gregory, Ridgecrest CA  
PR1 Thomas Henderson, Ridgecrest CA  
PR2 Justin Hodge, Ridgecrest CA  
AZAA Anthony J. Juarez, China Lake CA  
PR2 Seth & Katrina Karnes, Ridgecrest CA  
AO3(AW) Michelle A. Keenan, China Lake CA  
CPL Dominic A. Martinez, Ridgecrest CA  
AOC Michael McMillian, Ridgecrest CA  
MA3 Ricky A. Mullen, China Lake CA  
HM2 Randall N. & Vanessa Oakes, Ridgecrest CA  
AD1(AW) Lyle P. Schlacks, China Lake CA  
PR1 Matt & Yoko Tubolino, Ridgecrest CA

**Regular Members**

A.D. Alexander, Oceanside CA  
Fred & Anne Alpers, Ridgecrest CA  
Charles & Chantal Andrews, Ridgecrest CA  
Keith Armstrong & Sue Hucek Armstrong, Riverbank CA  
Ron & Beverly Atkins, Ridgecrest CA  
Bruce & Ann Auld, Ridgecrest CA  
Gary & Natalie Bailey, Bishop CA  
Mitch Baker, Long Beach CA  
Herb & Carol Barry, Ridgecrest CA  
Les & Zindi Lou Bazemore, Bakersfield CA  
Angela J. Beach, Lake City FL  
Stephen D. Benson, Ridgecrest CA  
Mickie & Billie Benton, Ridgecrest CA  
Bob & Pat Berry, Bishop CA  
Fred & Carole Bien, Carson City NV  
Bud & Cecile Biery, Ridgecrest CA  
Elizabeth B. Bjorklund, Ridgecrest CA  
Ray & Ellie Blackwell, Ridgecrest, CA



**Regular members** (continued)

Bill & Annie Blanc, Ridgecrest CA  
Bryan Blecha, Houston TX  
Ken & Pris Bonin, Ridgecrest CA  
Steve & Mary Boster, Ridgecrest CA  
Thomas & Lahoma Boyd, Ridgecrest CA  
Virginia Boyd, Ridgecrest CA  
Bill & Debby Brickey, Ridgecrest CA  
Mary Ann Brown, Ridgecrest CA  
Lloyd Brubaker, Ridgecrest CA  
Riley & Yoko Burgess, Ridgecrest CA  
Carl E. & Celia R. Burkey Jr., Leggett CA  
Robert D. & Ellen Burkhalter, Ridgecrest CA  
Vernon & Eloise Burklund, Ridgecrest CA  
Dan Burnett, Ridgecrest CA  
Darrell Bymoan, Nogal NM  
Robert A. & Patricia A. Byrne, Bakersfield CA  
Evelyn Callaway, Sun City AZ  
Debbie Campbell, Sevena Park MD  
Roy D. Carter, Ridgecrest CA  
Frank & Miriam Cartwright, Ridgecrest CA  
Don & Agnes L. Casler, El Cajon CA  
Harry & Virginia Charles Jr., Cocoa Beach FL  
Joan Chartier, Ridgecrest CA  
Cheryl Chicky, Ridgecrest CA  
Dawn Chicky, Tucson AZ  
Al & Janet Christman, San Marcos CA  
Marybelle F. Clark, Ridgecrest CA  
Mary Ann Clodt, Inyokern CA  
Richard & Geri Clodt, Inyokern CA  
Don & Thelma Cooper, Ridgecrest CA  
Alma M. Cowan, Silver City NM  
Douglas & Dorothy Cowan, Ridgecrest CA  
Dale W. Cox, Palos Verdes Estates CA  
Mrs. John L. Cox, Ridgecrest CA  
Virginia R. Cozzens, Mesquite NV  
Otis & Barbara Craig, Oakland CA  
Melville & Karen Creusere, Danville CA  
COL William R. & Dotsy Cronin, Ridgecrest CA  
Cecil T. & Lillian Daley, Ridgecrest CA  
Helen Marie S. Dalton, Pulaski VA  
Alphonse J. DeMeerleer, Ridgecrest CA  
Joseph A. Di Pasquale, Ridgecrest CA  
Jim & Rosemary Dixon, Ridgecrest CA  
Muriel Dodge, Poulsbo WA  
Betty K. Doig, Ridgecrest CA  
Leroy Doig III, Ridgecrest CA  
Earl J. & Mary Donaldson, Grants Pass OR  
Catherine M. Donoghue, Cypress CA  
William E. & Linda C. Duncan, Ridgecrest CA  
Pat & Marilyn Dunn, San Diego CA  
Grace L. Ellings, Palos Verdes Estates CA  
Shirley Ellis, Santa Maria CA  
Ed & Ruth Ernsberger, Gainesville FL  
Paul & Sherry Escallier, Ridgecrest CA  
Steve & Dell Etheredge, Ridgecrest CA  
Melvin & Anne Etheridge, Simsbury CT  
Carroll L. Evans Jr., Ridgecrest CA  
James Fallgatter, Long Beach CA  
Don & Marilyn Featherston, Ridgecrest CA  
Louise W. Feist, Ridgecrest CA  
William & Fran Fenical, Del Mar CA  
Andrew & Janet Filo, Cupertino CA  
Dave & Edra Fischer, Ridgecrest CA  
John & Charlotte Freeman, Ridgecrest CA  
Dale & Cheryl Gates, Ridgecrest CA  
Gene W. & Jeri Gibson, Inyokern CA  
Steven & Sharon L. Goad, Ridgecrest CA  
John "Skip" & Denise Gorman, Ridgecrest CA  
Dan & Sally Goss, Silver City NM  
Jim & Vonnie Goss, Roswell NM  
Robert A. Gould, Ridgecrest CA  
Ken & Jane Grant, Eugene OR  
Gordon & Dorothy Greene, Ridgecrest CA  
James & Lillian Gross, Ridgecrest CA  
Carlton & Virginia Hamel, Ridgecrest CA  
Sam & Cheryl Haun, Ridgecrest CA  
Cecil & Julie Hawkins, Visalia CA  
Dave & Diane Heffner, Lake Isabella CA  
Dennis & Starr Henden, Ridgecrest CA  
David Herigstad, Ridgecrest CA  
Alfred & Christine Hernandez, Ridgecrest CA  
John P. & Erin Hessler, Anaconda MT  
Les and Marsha Hill, Ridgecrest, CA  
Gerhard H. & Barbara Hillebrand, Ridgecrest CA  
Andrew & Anna Hinz, Oceanside CA  
CAPT Alex & Joette Hnarakis, Ridgecrest CA  
Jony & Linda Homer, Ridgecrest CA  
Karl & Angie Homer, San Diego CA  
John O. Hooper, Ridgecrest CA  
Elvy R. Hopkins, Ridgecrest CA  
Ann Hoppus and Mitchell McMurray, San Diego CA  
Mark & Skye Hoppus, Rancho Santa Fe CA  
Ruth Hoppus, Corona CA  
Sue Hoppus, Ridgecrest CA  
Clint & April Housh, Ridgecrest CA  
Virginia K. Howard, Talent OR  
Warner & Susan Hueber, Ridgecrest CA  
Richard & Martha Isenberg, Salt Lake City UT  
Dusty & Mary Jacobs, Inyokern CA  
David C. Johannsen, Torrance CA  
Jack & Jean Johantgen, Mammoth Lakes CA  
John M. & Virginia Johnson Jr., Ridgecrest CA  
Elvah Jones, Pensacola FL  
Mitch & Geri Kanowski, DeBary FL  
Ronald A. Keck, Ridgecrest CA  
John King, Ridgecrest CA  
Michael & Jean Marie King, Woodland WA  
Reuben & Doris Klammer, Palos Verdes Estates CA  
Patricia Kleinschmidt, Ridgecrest CA  
Jim & Ruth Knepshield, Ridgecrest CA  
Terry & Jane Kuhlman, Ridgecrest CA  
William & Doris Lalor, Ridgecrest CA  
William C. & Sara Jane Leone, Palos Verdes Estates CA



**Regular Members** (continued)

Albert H. Lepie, Ridgecrest CA  
Bill & Dot Leuallen, Ridgecrest CA  
Larry & Kim Lincicum, Ridgecrest CA  
George & Teresa Linsteadt, Auburn CA  
Thomas Loftus, Ridgecrest CA  
Rodney H. & Carole Lubben, Ft. Collins Co  
Patrick Madden, Alexandria VA  
Donna Malone, Ridgecrest CA  
Harold W. Manning, Ridgecrest CA  
Frank & Joyce Markarian, Ridgecrest CA  
Elizabeth Marquez, Ocheyedan IA  
Wallace & Margaret Martin, Ridgecrest CA  
Joseph & Litha Mattis, Ridgecrest CA  
Charles & Nancy May, Ridgecrest CA  
Bill & Jean McBride, Ridgecrest CA  
Jim McCalester, Ridgecrest CA  
Assemblyman Kevin McCarthy, Bakersfield CA  
Anna K. McDuff, Ridgecrest CA  
James J. & Felice McLane, Ridgecrest CA  
Supervisor Jon McQuiston, Ridgecrest CA  
Arlo & Sandy Mickelsen, Ridgecrest CA  
Ed & Terri Middlemiss, Inyokern CA  
Carter & Betty Miller, Concord CA  
Jenny K. Miller, Ridgecrest CA  
Gloria Morrow, Ridgecrest CA  
Marc & Sue Moulton, Ridgecrest CA  
Jack A. & Ann Myers, Half Moon Bay CA  
Tosh & Sig Nakashima, Ridgecrest CA  
Andrew P. Neilson, Lakewood CA  
John A. & Marilyn M. Newbauer, Brooklyn NY  
Dave & Marie Newman, Prescott AZ  
William & Edith Novascone, Ridgecrest CA  
Robert B. & Sarah S. Olson, Forestville CA  
Lenora J. Palmer, Ridgecrest CA  
Bruno J. & Jean Pannuto, Ridgecrest CA  
Harold H. Patton, San Rafael CA  
Charles & Candace Pierce, Inyokern CA  
A. Lincoln & Virginia Pittinger, Goleta CA  
Harold & Florence Platzek, Ridgecrest CA  
Monsignor Francis J. Pointek, Tehachapi CA  
Bill & Edythe Pool, Clovis CA  
Craig & Carol Porter, Ridgecrest CA  
Bill & Sue Prasolowicz, Ridgecrest CA  
George & Linda Pruitt, Ridgecrest CA  
RADM Paul & Clarine Pugh, Oceanside CA  
Mark A. Ramirez, Oxnard CA  
Ephraim & Lillian Regelson, Orinda CA  
Joan Reinhart, Mountain View CA  
Jacqueline Renne, Ridgecrest CA  
Anthony J. & Barbara Rice, Ridgecrest CA  
Ridgecrest Area CVB, Ridgecrest CA  
Bob Riggs, Ridgecrest CA  
Milton H. & Ethel Ritchie, Sacramento CA  
P.G. & Merle Rivette, Lake Charles LA  
Sandy & Fran Rogers, Ridgecrest CA  
Cyrus W. & Dorothy Roton, Ridgecrest CA  
Brad & Mavis Royer, Ridgecrest CA  
Chris Ruffin, Ridgecrest CA  
Richard W. & Jo Ann Rusciollelli, Ridgecrest CA  
Les & Nancy Saxton, Ridgecrest CA  
Carl & Willa Schaniel, Ridgecrest CA  
Stephen & Dawn Schaniel, Los Gatos CA  
Cathleen Schnatterly O'Neil, Overland Park KS  
Christine Schneberger, Inyokern CA  
Mary G. Seaman, Ridgecrest CA  
John B. & Elizabeth R. Seybold, Ridgecrest CA  
Richard & Linda Shaffer, Ridgecrest CA  
Sheila & Michael Sharpe, Del Mar CA  
Bo & Laureen Shaw, Ridgecrest CA  
Frank & Shirley Sima, Ridgecrest CA  
Karl & Joyce Simecka, Boulder City NV  
Ed & Colleen Simmons, Ridgecrest CA  
Edmund H. Smith, Ridgecrest CA  
Doris K. Sorensen, Ridgecrest CA  
Le Roy & Julie Stayton, Ridgecrest CA  
Ernie & Jo Stevens, Ridgecrest CA  
Rollin Sublett, Ridgecrest CA  
Mark & Kim Swett, Inyokern CA  
Cordia L. Tankersley, Trona CA  
Lovic P. Thomas, Crestview FL  
Thurl P. & LaNelle Thompson, Tehachapi CA  
Glenn & Cathie Tierney, Carson City NV  
Dick & Donna Tolkmitt, Ridgecrest CA  
Nadim & Leila Totah, Ridgecrest CA  
Robert Trail, Yellville AR  
Gerald & Gale Vanderslice, Ridgecrest CA  
Russell & Vivian Van Devender Jr., Inyokern CA  
John P. and Shari Van Guilder, Ridgecrest CA  
Stanley W. & Irene Vejtas, Escondido CA  
Gary Vetesy, Juneau AK  
Bill & Jeri Walters, Ridgecrest CA  
Williams K. and Johannah M. Webster, Ridgecrest CA  
Ray & Louise Wetzel, Spokane WA  
Charles R. & Connie White, Ridgecrest CA  
Gerald C. & Elsie Whitnack, Encinitas CA  
Brad & Lisa Wiitala, Ridgecrest CA  
Evelyn J. Wilcox, San Diego CA  
Robert B. & Patricia Wilson, Brandywine MD  
Don & Kitty Winter, Ridgecrest CA  
Norman & Leah Woodall, Ridgecrest CA  
Dick & Vivian Wright, Ridgecrest CA  
Ina J. Wright, Ridgecrest CA  
William R. & Nancy Wright, Portland CA  
Don & Louise Yockey, Ridgecrest CA  
Elva Younkin, Ridgecrest CA  
Tom & Peggy Zulkoski, Ridgecrest CA



## The Mighty Mouse in History

(continued from page 1)

[Note: Nearly all the following text in quotations is a condensation or direct quote of material from the Internet attributed to Joe Baugher, an aviation historian. I have requested and received his concurrence for this use.

"In the late 1940s, faced for the first time with the possibility of a strategic bombing attack, the US government began a massive effort to develop an effective defense of US airspace. The Northrop F-89 Scorpion was the interceptor of choice (until the supersonic Convair F-102/F-106 could be ready). However problems with the XF-89 prototype led the Air Force to consider alternatives. These included a modified Lockheed TF-80C which evolved into the F-94C Starfire, and a highly modified version of the North American F-86 Sabre."

"The major production version of the Scorpion was the F-89D. The F-89D differed from the C in having the armament of six 20-mm nose cannon *replaced by an all-rocket armament*" "Rocket launching pods for fifty-two 2.75-inch FFARs were housed in the forward third of each wing-tip fuel tank. The nose section was redesigned to house the Hughes E-4/E-6 fire control systems. These systems allowed the F-89D (as well as the F-86D and the F-94C) to make firing passes from a "beam" position which meant that the attacker would be in the target aircraft's defensive zone for only a brief period" It also afforded a larger target. A visual sighting system backed up these electronics which proved to be difficult to maintain."

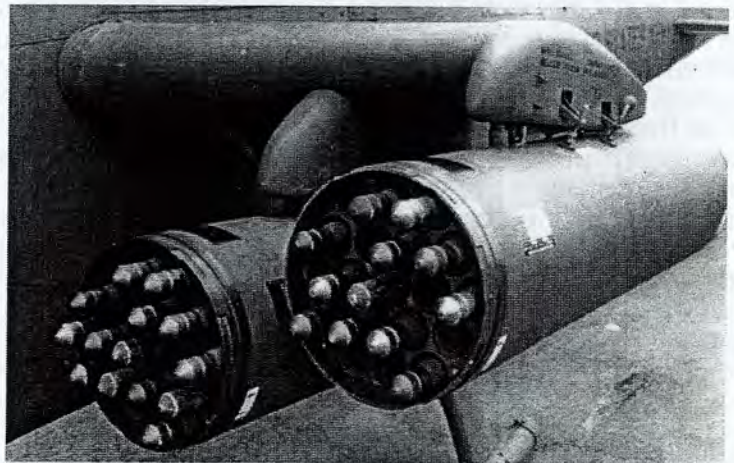
"In March 1949 North American Aviation began design of an all-weather interceptor version of the F-86 fighter. This was the first attempt to build a single-seat all-weather interceptor. An on-board radar-guided intercept system, an automated power plant control system and an after-burning jet engine would provide (the essential features) required." "Plans were for a *battery of twenty-four 2.75-inch Mighty Mouse' rockets* in a retractable tray in the aircraft's belly. A more conventional 20-mm cannon arrangement was studied and abandoned by early 1950. First trials of the twenty-four FFAR's in the belly packet were carried out at China Lake in February of 1951. The pressure of the Korean War led to fears that a Soviet attack on the US mainland could come at any time and orders for the F-86D were dramatically stepped up. By July 1951 a total of 279 were on order, the first production model was delivered in March of 1951."

"The Lockheed F-94A/B all-weather interceptor was considered an interim until more ad-

vanced aircraft could be available. In July 1948 Lockheed proposed a more advanced version of the F-94A concept. This aircraft would feature a new wing, improved fuel capacity, an after-burning more powerful engine *and all-rocket armament* mounted in the nose surrounding a new fire control system. Undeterred by USAF lukewarm response, Lockheed went ahead with construction of a company-funded demonstrator. The Air Force was sufficiently impressed that in February 1950 they purchased the demonstrator and ordered 180 production models of a fully militarized version. In September 1950 the aircraft was designated F-94C and named Starfire by publicists. The first production F-94C was delivered in July of 1951. The all-rocket armament consisted of 24 2.75 FFARs in four groups surrounding a radome in the nose." Beginning with the 100<sup>th</sup> production aircraft a twelve-rocket-pod was mounted on each wing leading edge, doubling the armament. These were later retrofitted to all prior aircraft." An interesting aside: Despairing of giving up space for a complex exhaust system behind the launchers in the nose, Lockheed insisted, *over our strong advice*, to simply close the rear of the nose tubes. In spite of aerial photos showing some closed-breech launched Mice flying nearly sideways, the F-94C won a "gunnery" competition at 29 Palms.

"In the late 1950s the F-86D, F-89D and F-94C interceptors served as the main air defense against Soviet bomber attacks. In retrospect, the threat was proven grossly exaggerated, but it cannot be denied that the presence of these aircraft was an important deterrent.

(continued on page 12)



Mighty Mouse as it is most often seen today, mounted on an attack helicopter.



## The Mighty Mouse in History

(continued from page 11)

"At one time the Air Defense Command (ADC) had 20 F-86D wings, totaling 1405 aircraft. F-86D squadrons served under ADC, the US Air Forces in Europe, and the Far East Air Force, plus later, two squadrons under the Strategic Air Command.

387 F-94C aircraft were delivered between July of '51 and May of '54. Most of these served in continental bases; the 39<sup>th</sup> Squadron served for a time in Japan. The first F-89D Scorpions, after extensive factory rework, became operational with the 18<sup>th</sup> Fighter Interceptor Squadron in January 1954. A total of 682 F-89Ds were accepted, but 350 were modified as F-89Js. 30 of 39 squadrons were based in US or Canada. F-89D squadrons also served in Labrador and the 57<sup>th</sup>

'Black Knights' Squadron in Iceland." Many installations featured car-port-like hangers aligned with a runway with flight-ready aircraft, and attached-flight-crew quarters ready for instant response to an early warning.

China Lake can be proud that our concept, making an advantage of the natural dispersion of unguided rockets in the "shotgun" principle which employed a rapidly fired cluster of rockets, any one of which had been demonstrated to be capable of disabling a strategic bomber. It is a tribute to our reputation for analysis, design, test and evaluation that the defense establishment accepted the US Navy's 2.75-inch FFAR Mighty Mouse for this crucial mission

## Former China Lake Technical Director Leroy Riggs Passes Away

(continued from page 3)

travel, family and genealogy. He was a founding member of the China Lake Museum Foundation. After Leroy moved to San Diego in his retirement, we would usually call each other once or twice every week - usually to solve my computer problems or discuss the complexities of the Washington relationship, Knemeyer recalled.

Riggs is survived by his wife of 57 years, Marilyn (Ditty) Riggs of San Diego; daughters and sons-in-law Fran and Bill Fenical of Solana Beach, and Cindy and Dick Craig of Bend, Ore.;

and grandchildren Scott Fenical, Rebekah Gutman and husband Rick, Rachel Young and Christopher Young. An inurnment and private family memorial service were held Tuesday, March 30, at Fort Rosecrans National Cemetery in Point Loma, San Diego. The family suggests that in lieu of flowers donations be made to the China Lake Museum Foundation, P.O. Box 217, Ridgecrest, CA 93556. Arrangements were by El Camino Memorial Encinitas Chapel in Encinitas.

## The Sidewinder-Budweiser Connection

(continued from page 4)

Several China Lake employees participated in the project. Ray Van Aken, China Lake aeronautical engineer and rocket specialist, served as consultant to the program from its inception and participated in the design and analysis of the vehicle. Additionally, retired China Lake computer specialist Gene Breitenstein performed computer performance calculations for the car. Shortly before the final test runs at Edwards AFB, Tom Hampton of the Sidewinder Program Office and the author (Sidewinder motor engineer) were asked to advise the project on operational details of the Sidewinder rocket motor.

After voicing our opinion that the Budweiser team must be crazy for using a Sidewinder motor in this manner and pointing out that the forward end of the motor was positioned only inches behind the driver's head, we went ahead and advised them of motor operational details

that were important. First, the forward closure had to be secured so it couldn't move when the motor was ignited; second, the motor did not have a mechanical safe and arm system so extreme care needed to be taken to insure firing voltage was not applied until the motor was wanted; and third, upon ignition, the thrust built up very rapidly and the driver would experience quite a physical shock! We were also concerned that, unlike the car's main engine, the Sidewinder motor could not be turned off once it was ignited.

To qualify a run as an official land speed record, the International Hot Rod Association requires two runs in the opposite direction within one hour over a measured mile or kilometer — activities that were impossible for the Budweiser car. First the car did not have enough power to maintain supersonic speed over the measured kilometer, and second,

(continued on page 13)



## The Sidewinder-Budweiser Connection

(continued from page 12)

the car could not be refueled within the required one-hour limit. As a result, the team opted for a single direction speed being measured over a much shorter drag racing "top speed trap" of 132 feet, a distance that was later reduced even further to 52.8 feet. Remember, the officially sanctioned record was not the team's objective.

The much bigger problem they faced was determining where to start the run so that the peak speed was reached in the timing trap. Computer analysis predicted that the rocket fuel would be exhausted 10,800 feet from the start point, and since that would be the point of maximum speed, it was chosen for the official run.

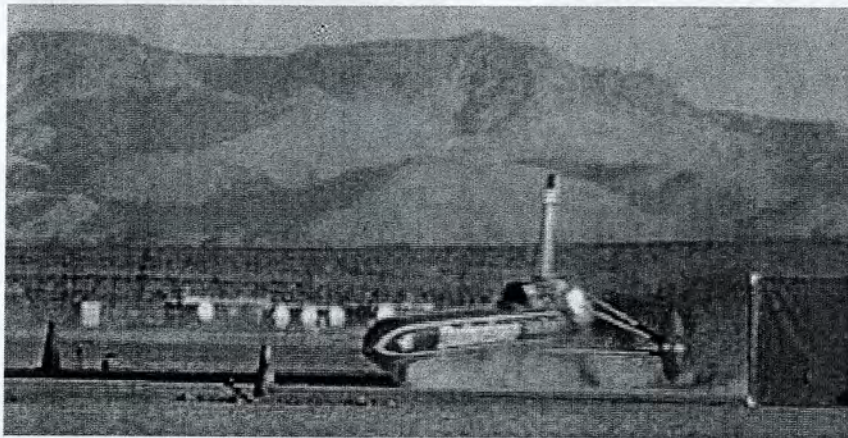
Another member of the Budweiser team, retired General Chuck Yeager, had helped obtain permission to use Rogers Dry Lake and the Air Force ground speed radar tracking system.

At 7:25 a.m. on December 17, 1979, stunt man Stan Barrett, squeezed into the 20-inch-wide cockpit and started the official speed run

second run).

Unfortunately, the car ran out of fuel (maximum speed point) some 900 feet short of the timing trap. In the 1.5 seconds it took to cover that final 900 feet, the speed of the car had dropped to 666 mph. Fortunately, the Air Force ground tracking radar had monitored the run, although it was not an official measurement. After 7 hours of analyzing the data, the Air Force announced: ". . . within the accuracy of the speed measuring devices used, and it is our [Air Force] judgment that the Budweiser car reached a peak speed of 739.666 mp." Since the speed of sound that morning was 731.9 mph, the peak Mach number was computed to be 1.0106, one percent above the speed of sound! Celebrations followed!

Controversy over the success or failure of the Budweiser Rocket Car to break the sound barrier has flourished ever since. Details of the controversy can be found on several websites, in particular:



10,800 feet from the timing trap. The temperature on the lakebed that morning was 20 degrees Fahrenheit which meant the speed of sound was 731.9 mph at the time of the run (the speed of sound varies with temperature and altitude). Barrett ignited the 18,000-pound-thrust hybrid rocket engine, and the car accelerated down the track.

The fully fueled weight of the car at the start of the run was 5,320 pounds resulting in an initial acceleration of over 3 gs. About 4 seconds before the hybrid engine ran out of fuel (about 14 seconds into the run), the Mk 36 Mod 7 Sidewinder motor was ignited. With the additional thrust and the reduced weight of the car, the acceleration was reportedly about 6gs after Sidewinder ignition. When both rocket engines were exhausted, the car's weight had been reduced to 3,190 pounds (2,130 pounds of rocket fuel (over a ton) had been burned during the approximate 18

*Review of Chuck Yeager's Letter of Testimony on the Budweiser Rocket Car (includes Chuck Yeager's Letter) - <http://www.roadsters.com/bud/>*

*Car went supersonic, but record is unrecognized - By DON HALEY, Special to the Valley Press - <http://www.avpress.com/machbusters/drive.sht>*

*Eyewitness account of Budweiser Rocket Car Run - [http://yarchive.net/air/rocket\\_car.html](http://yarchive.net/air/rocket_car.html)*

Regardless whether you believe the Budweiser Rocket Car did, or did not, break the sound barrier that day, it is clear the car would have come nowhere near the sound barrier if it had not been for a boost from the Sidewinder rocket motor!



### The Museum's Youngest Member

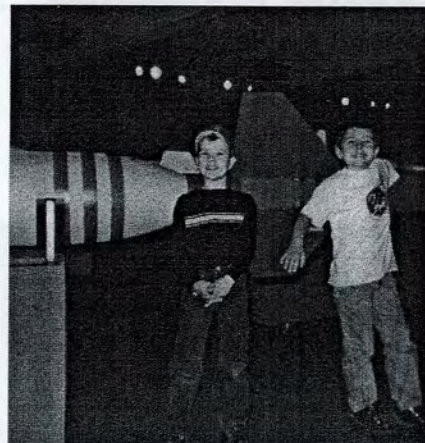
By Tex Hoppus, Director

Mitchell Thomas Baker of Long Beach, California is the Museum's youngest active member. He is seven years old and in the second grade, and has a fascination for airplanes, missiles, and rockets. Mitchell was exposed to the museum through his father, who works for a small engineering company (M4 Engineering, Inc.) in Long Beach that provides support to various China Lake programs. During a recent trip to the museum, Mitchell and his family and friends marveled at the wide range of weapons on display (and he thanks his tour guide – the world-famous Mr. Tex Hoppus!). Mitchell was most interested in the Tomahawk cruise missiles, after hearing stories of the development and testing of the Tomahawk from his grandfather, T. M. Sammon, the Director of Test and Evaluations at General Dynamics during Tomahawk development.

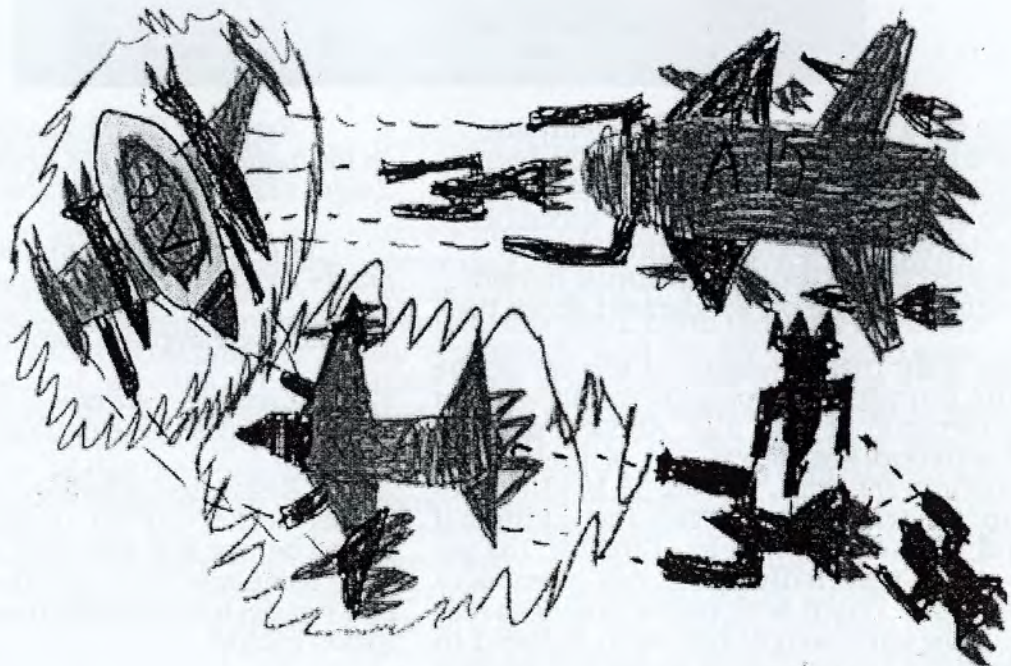
The Museum has been a unique opportunity for Mitchell to see first-hand some fascinating things that most people may only see on a TV show, if at all. We see here a rendition of our country's use of some of the Navy's weapons on display at the Museum. They were rendered, of course, by Mitch. Thanks, Mitch, for your interest in our mission and for your support!



Mitchell and sister Mandy at the museum



Mitchell (right) and his friend Justin during their recent museum visit



An example of artwork from the Post-Museum-Visit movement!



## Museum Happenings

by Barry Lowry, Museum Manager

As you can tell by the "bulk" of this newsletter, there is a lot to be included. One of these items is a report on the fundraising result and good time had at the 4th Annual CLMF Dinner/Auction fundraiser. The CLMF press release on the event is reproduced in its entirety below.

Now on to other news. The museum continues with a staff of one. Some have suggested that I should have roller skates to move about the museum faster but I think I am doing OK as-is. There hasn't been much time lately for special projects, but keeping the museum in good operating condition can be a project itself sometimes. Museum Store sales seem to be on the increase once again after a few slow months. Once the volunteer operation of the store is up to speed the newness of the activity itself should generate some sales interest.

Now that Leroy Doig has been elevated to spending full time on his Museum Curator duties, there are signs of increased activity in terms of exhibit upgrade, rearrangement, and new exhibit planning. As I am writing this there is a

group meeting in the conference room to discuss additional outside aircraft displays that could be installed in the near future. Leroy has also conjured up some very good ideas about an exhibit highlighting the unique community life of China Lake that contributed to the successes of the civilian-military technical teams here about for many years.

I'm not sure how many of you are aware of it but the CLMF received an estate donation of nearly 5,000 boxed plastic model aircraft in late 2003. Board member Henry Blecha arranged this donation and has spent months inventorying it to identify what's really there. This collection represents 40 years of effort on the part of the late collector and contains some truly rare and unique items. If any of you are into model aircraft collecting please contact Henry to see if there might be something in the collection to grab your fancy.

I know that there is a lot more that I could tell you about museum happenings but that will just have to wait for the next issue.

## Fund-raiser nets \$19K for Navy museum

The China Lake Museum Foundation's annual dinner brought 205 people to Ridgecrest's Kerr McGee Center Saturday for an evening of fun and fund-raising led by CLMF President Paul Homer and Auctioneer Extraordinaire Wallace Martin. After the last check was signed and the last donated treasure carted proudly home by its new owner, CLMF volunteers under the leadership of Vice President for Membership Alice Campbell performed a preliminary tally showing that the evening netted more than \$19,000 to support operation of the U.S. Naval Museum of Armament and Technology. "Our committee had set the goal of making \$25,000," Campbell said. "The gross proceeds were nearly that amount." That \$19,000 is still not a final figure, she said. "Walmart has promised to match a percentage of our profits" Campbell expressed her gratitude for all the hard work and donations of money, services and auction items that went into making the event a success. "We want to show our appreciation by holding a reception for all the donors at the China Lake museum," she said. The event, which will feature free beverages and hors d'oeuvres, will be held at a date yet to be determined. After four years of heading up the museum's major fund-raiser, Campbell will turn the leadership of next year's event over to Wayne and Pat

Doucette. Plans are to expand the event to make it a weekend-long celebration that will attract more China Lake alumni from out of town, Campbell said. "We're thinking about things like a wildflower tour and a petroglyph tour." "We'd also like to get more support from major corporations." In recognition of the time these more ambitious plans will take, she said, the committee is not resting on its laurels, but has already started planning for next year's fund-raiser.

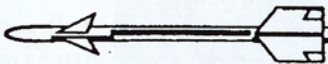


Liz Babcock photo

Auctioneer Wallace Martin gets a laugh out of Cecile



NONPROFIT ORG.  
U.S. POSTAGE  
PAID  
RIDGECREST, CA  
PERMIT NO. 48



CHINA LAKE MUSEUM FOUNDATION  
P.O. BOX 217, RIDGECREST, CA 93556-0217

# Coming this Fall

## A Shrike Museum Event

*Stay Tuned for Event and Exhibit Details*

