



THE CHINA LAKER

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MUSEUM FOUNDATION SPONSORS SIDEWINDER BOOKLET PUBLICATION

Duane Jack Russell

Certainly the most well known China Lake legacy is the Sidewinder missile. Sidewinder is generally regarded as the most effective tactical missile in the



Elizabeth Babcock

Navy or Air Force inventory. The programs for the early versions of Sidewinder have been used as the prime example of how in-house government laboratories should be allowed to operate to develop ordnance for the services.

The stories of Sidewinder's origin are legendary and have certainly been embellished over the years. Liz Babcock has gone a long way to separate fact from fiction in a new booklet she has authored, entitled "Sidewinder: Invention and Early Years". The booklet was largely extracted from her forthcoming Volume III of the history of the Navy at China Lake. It is well

researched and highly entertaining. She has captured the technical breakthroughs along with the social and political climates of that time period.

The China Lake Museum Foundation is sponsoring publication of the booklet. It is available in the Exhibit Center gift shop at \$6.95 per copy, plus sales tax and shipping as appropriate.

OUTDOOR EXHIBITS

Duane Jack Russell

The NAWC Command Historian, Leroy Doig III, had a vision on how to enhance the front area of the Exhibit Center. He presented this vision to the China Lake Museum Foundation (CLMF) Board of Directors last year. It basically entailed the restoration and display of several historically significant weapons and aircraft on the semicircular lawn area in front of the Exhibit Center and on the building itself. Leroy had acquired these Navy-owned items in his role as the Command Historian. The CLMF has provided materials and organized volunteers to work with the SEABEES in implementing Leroy's vision.

Specifically, the individual displays are:

(1) A Polaris A-1 missile shape has been restored and vertically mounted in the sidewalk area between the front entrance and the street.

(2) A BOAR weapon has been mounted onto the wall to the south of the Exhibit Center entryway.

(3) Two world record-setting aircraft, an XF4D-1 Skyray and an F11F-1F Super Tiger, are being restored for placement in the lawn area on either side of the sidewalk.

Why Polaris?

Many of you will ask: "Why Polaris?" The Naval Ordnance Test Station, China Lake had a little-known but highly significant role in the origin of this first submarine-deployed strategic missile. The initial concept by the Navy for a submarine-launched ballistic missile was based on adaptation of the Army's Jupiter missile. However, it was soon realized that Jupiter was too large and heavy for this application.

As a result, in 1956 NOTS undertook comprehensive system studies that examined and projected the technology of every major component necessary for a redefined Fleet ballistic missile, including

the nuclear warhead. For instance, Frank Knemeyer, who was a member of the China Lake team, showed how reentry and nuclear warhead technology could be combined for major weight savings. The studies concluded that it was technically feasible to develop a much smaller and lighter solid-propellant submarine-launched missile on a time scale comparable to the Jupiter. The thoroughness of the studies convinced DOD to approve the shift of the Navy effort from Jupiter to the Polaris system.

Further highly classified NOTS studies included the most comprehensive and detailed analysis that had ever been conducted on the effects of nuclear warheads on enemy cities. This defined the targeting and submarine-deployment software required by the Polaris system.

Unique Team

NOTS went on to assemble the engineers, aerodynamicists, hydrodynamicists and mathematicians necessary to establish the concept of underwater-launching of the Polaris. This was quite possibly the most complex challenge yet. The concept was then demonstrated through full-scale underwater launch tests at NOTS, San Clemente Island and Morris Dam facilities.

Major contributions to the development of the Polaris polyurethane propellant were made at China Lake. These included burn-rate, cook-off and other safety related studies, testing on the SNORT track, and assistance in radiological inspection of the rocket motors. The need for static testing led to the construction of a major solid rocket motor test facility at Skytop.

This particular missile shape will be familiar to anyone who passed through the Recruit Training Center, San Diego, where it stood for many years as a quarterdeck feature.

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OUTDOOR EXHIBITS (Cont'd. from Page 2)

The 30.5-inch Bombardment Aircraft Rocket (BOAR) was developed at NOTS. It was a rocket-propelled ballistic standoff weapon with a nuclear warhead. It was designed to be launched from a high performance aircraft in a low-level loft and escape maneuver. This maneuver, in combination with the weapon's rocket propulsion, would protect the aircraft from the blast of the warhead itself.

NOTS was responsible for the development of the non-nuclear components and the aircraft release computer used in the loft launch technique. This technique was developed by VX-5 at China Lake. Bill Porter, freshly off his Jr. Professional program, worked on the safe separation of the BOAR from the aircraft. He remembers how the loft maneuver pushed the propeller-driven AD aircraft and pilot to their limits. Bill used scale models and a smoke box to study the air flow around the weapon and aircraft. This was verified with tufts of yarn attached to the actual weapon in captive flight.

BOAR was deployed with the Navy in 1956 and was in service until 1963. The weapon now mounted near our Exhibit Center's entry was displayed for 30 years on the front wall of the old Weapons Exhibit Center/Maturango Museum on the Base.



A number of organizations and individuals performed the volunteer efforts that achieved the recent installations. For the Polaris, the SEABEE/Self Help Office under Lt.(j.g.) Manny Hernandez, CEC, with BU2 Dan Rose in the lead, provided heavy equipment operation. Ridgcrest Concrete donated 8 cubic yards of concrete. Volunteers Ed Donohue and Joe Seibold helped with the foundation. They, along with Jerry Morrison, Chris Peterson, Frank St. George, Jack Russell, BU2 Dan Rose and Ryan Doig, restored the exterior of the Polaris. Retired SEABEE Morrison helped relocate the Polaris to China Lake and mount it at its new location.

The BOAR weapon was prepared and mounted onto the Exhibit Center building by Frank St. George, Ron Porter, Ed Brooks, Jack Russell and Jerry Morrison.

Work is underway on restoring the two aircraft and preparing the Exhibit Center grounds for their arrival. These activities will be described in

succeeding newsletters.

An Air Park across the street from the Exhibit Center is in the early stages of planning. This will involve restoration of additional aircraft. Please contact the CLMF if you are interested in participating.



VISIONS COMMITTEE**Paul Homer**

As we approach getting the China Lake Museum of Naval Ordnance, Technology and Science approved as an official U. S. Navy museum, the Visions Committee has been established for the purposes of better defining the mission of the Museum, identifying the displays and exhibits available and those needed, and considering alternate locations for the ultimate Museum building.

The Visions Committee includes Paul Homer, Chairman, Directors Ray Miller, Richard Murphy, and Burrell Hays, and former Director Milt Burford. Efforts have been concentrated during the past six months on estimating the size of the Museum. The estimation process has been based on an analysis of the number of notable exhibits and displays, including most of what is currently available in the Exhibit Center; it has also included the identification of missing projects and future restoration efforts. Ray Miller, assisted by Leroy Doig, has developed a long list of the hardware assets that the ultimate Museum should display, and this amazing list is another testimony to the fantastic productivity of China Lake throughout its history.

We envision a Museum display area much less cluttered than the current Exhibit Center. In addition to the original hardware displays and exhibits, more information will be available via written material and interactive video units. Based on the number of items worthy of interpretation, and accounting for support and service areas, our preliminary analysis indicates a need for a building from 60,000 to 100,000 square-feet in size. This estimate does not include space for outdoor exhibits, such as static aircraft.

Options for the location of the Museum were studied extensively by the China Lake Museum Advisory Committee early in the concept development, and this effort focused on a 110-acre tract of land along the north side of Inyokern road, west of the main gate. Early efforts included documentation directed to the Naval Facilities Command to have this tract of land set aside for eventually use as a building site for the Museum. Apparently this documentation has been lost, and since a good deal of other vacant land now surrounds China Lake, other options for siting the Museum may be available.

Desirable characteristics for the Museum location, assuming a new building is built, include ready access to utilities, access to existing paved roads, a large area for parking vehicles, and a large area for outdoor displays. A great advantage would be to have the main entrance to the Museum accessible to the public without having to get a pass or go through a security gate. This means the building site should be on the periphery of the Navy property, or on the periphery of the security fence. The Inyokern Road site satisfies most of the desirable characteristics. The Committee will continue to investigate other possibilities.

The Visions Committee welcomes comments and suggestions from the Foundation membership on any of these areas of consideration.

PRESIDENT'S MESSAGE

As you know, the quest to obtain official Navy museum status from the Secretary of the Navy has been an ongoing effort. I am very glad to report that we are making progress in two significant areas.

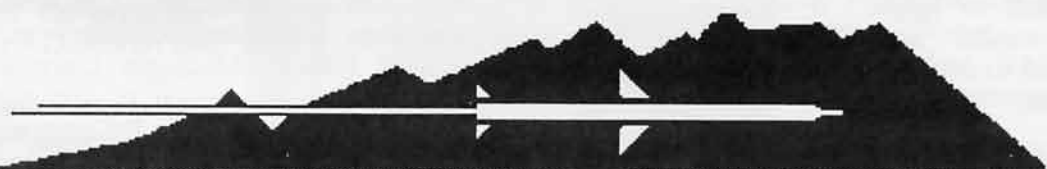
First, Mr. Scott O'Neil, Chairperson of the Naval Air Weapons Station Museum Committee, and his Committee have been very proactive in preparing newly requested documentation and responding to questions from the office of the Chief of Naval Operations. Also, Capt. James R. Seaman, NAWS Deputy Commanding Officer, has undertaken an active role in making the China Lake Museum a reality. Capt. Seaman attended the Museum Foundation's Board of Directors

meeting on 16 December 1999, and provided a report on the status of the NAWS request to the Secretary of the Navy to grant official Navy museum status to the current NAWS Exhibit Center and the proposed NAWS museum program.

At the same Board meeting Capt. Seaman also reported on the second significant area in which progress is being made. He informed the Board members that OPNAV had requested: (1) that additional Navy funding information be provided for SecNav in a cover letter for the request package, and (2) that the cover letter be signed by all of the major claimants. He stated that this letter had been prepared and that he had been as-

sured it would have the required signatures and be delivered to OPNAV before the end of the year. OPNAV has given assurance it will move the package and letter quickly to VCNO and CNO and, with proper endorsements, on to SecNav. Capt. Seaman said he will personally keep close tabs on the package and letter and will ensure quick responses from the NAWS, should they be required.

As Capt. Seaman stated, this could be a very nice New Year's present for the NAWS, to have the request for a museum moving forward smartly with bright prospects for approval. The Directors heartily agree with him and thank him for his personal interest.



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GIFT SHOP NEWS**Liddell Swanson**

We have several new items in the gift shop this season. The introduction of mouse pads has been very successful. We currently stock pads with art work of HARM, Sidewinder and Tomahawk being fired from aircraft.

For Your Bookshelf

Several books are now available: Ron Westrum's "Sidewinder: Creative Missile Design at China Lake"; "Target Hiroshima" by Al Christman; "Sailors, Scientist and Rockets" and "The Grand Experiment at Inyokern" (volumes I and II of the official history of the Navy at China Lake); and Volume 6 of the "Indian Wells Valley Handbook". Let's not forget the Foundation's newest venture in publishing, "Sidewinder: Invention and Early Years", written by Liz Babcock.

T-Shirts and Sweat Shirts

We now have a line of children's T-shirts with the Rabbit Logo and Sidewinder Logo. These come in light blue and a natural color and range in size from x-small to large. Two new logos—Sidewinder and NAWC—have been added to our inventory of adult-size T-shirts.

For this chillier time of year we are now carrying sweat shirts in three separate styles and colors. (Please see the enclosed Gift Shop order blank.)

Topping off our new additions, we have F/18 and Tomcat model assembly kits geared to several skill levels.

**FOUNDATION CO-HOSTS
SIDEWINDER AUTHOR**

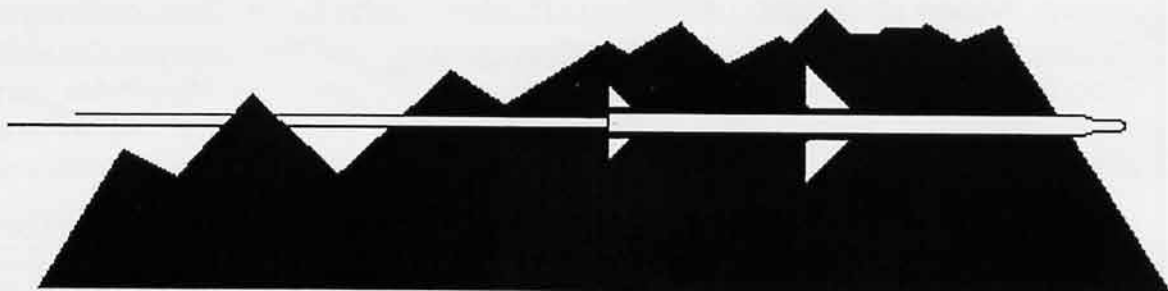
The China Lake Museum Foundation joined forces November 16 with the Historical Society of the Upper Mojave Desert and the High Desert Engineering Association to host a slide-illustrated presentation and book-signing by Dr. Ron Westrum, author of "Sidewinder: Creative Missile Design at China Lake", recently published by the Naval Institute Press.

Ridgecrest City Hall's Council Chambers were nearly filled by the crowd who came to hear Westrum's encapsulated survey of the accomplishment-rich decades at NOTS/NWC that saw the birth and refinement of one of the most brilliant achievements in the history of military weaponry.

"Ideas Came to Life"

Westrum pointed out that a primary thrust of his narrative is that "China Lake created an organizational environment in which ideas came to life." He said his Sidewinder book was prompted by an article he read about Bill McLean in a 1986 edition of the Wall Street Journal. It was clear that Westrum—a professor of sociology and interdisciplinary technology at Eastern Michigan University—relished the stimulation of the ensuing years he spent exploring the personalities and working styles that characterize "the China Lake way."

Copies of "Sidewinder: Creative Missile Design at China Lake" are available at the Foundation's gift shop at \$32.95, plus shipping and handling as appropriate.



CURRENT EVENTS

Frank St. George

The Foundation has hired Mrs. Liddell Swanson to perform the duties of Office Manager. Liddell brings business and broad administrative skills to the position. The Gift Shop has continued to be highly successful in sales over the past seven months that Liddell has been with us.

The Exhibit Center is operated entirely by volunteers. We have about 40 volunteers who are retired from China Lake and are very knowledgeable about the weapon exhibits. On average, the Foundation hosts about 190 visitors a month and, on occasion, supports visits by special interest groups during non-scheduled hours of operation.

On December 16 the Board of Directors hosted the Foundation volunteers at a Christmas luncheon as an expression of appreciation for all the volunteers' efforts. At the same luncheon, Director Emeritus John DiPol was honored for his service on the Board since its founding in 1992.

LETTERS TO THE EDITOR ET AL.

20 Mar. 1999

Dear T.D.,

Received The China Laker today and was overcome with a wave of nostalgia. The Board of Directors certainly has an all-star list of memorable characters.

Please say "hi!" for me, with especially hearty hugs to Patti Lawson, who exemplified those positive characteristics that so many China Lakers had in spades.

Jan and I are well and happy here in New Mexico for six months and in Minnesota for six months. Life is good!

We would love to see you and some of those other great folks.

*Very warm regards,
Jude [Lahr]*



**CHINA LAKE MUSEUM FOUNDATION
INCOME/EXPENSES • FISCAL YEAR 1999
OCTOBER 1, 1998 - SEPTEMBER 30, 1999**

TOTAL INCOME.....	\$31,236.91
Membership.....	6,568.79
Retail Sales.....	16,052.54
Trailer Rent.....	5,400.00
Other.....	3,215.58
 TOTAL EXPENSES.....	 \$27,406.91
Labor.....	13,849.00
Gift Shop Purchases.....	4,726.17
Newsletter.....	3,713.30
Outdoor Displays.....	1,254.39
Other.....	3,864.05
 NET PROFIT.....	 \$3,830.00

NOTE: Gift shop proceeds support the labor for the Foundation as well as new merchandise and restocking of current merchandise.