Shrike, America’s first mass-produced anti-radiation missile, was China Lake’s 2nd major missile development. The Shrike development by China Lake led to an RDT&E acquisition philosophy that was to be followed in subsequent program developments for many years. Though there were a number of alternative ways, the acquisition philosophy adopted and perfected during the Shrike program was one of the most effective processes for missile systems acquisition that has been developed within DoD.

The detailed story of the Shrike Missile System development would require a large book to relate all of the tactical, technical and political aspects that had to be addressed. This overview discusses only the processes and the lessons learned. For whatever reasons, these lessons have been overlooked within the Washington belay.

Many dedicated people contributed to the successful development and deployment of Shrike. For fear of omitting the names of some, only LCDR Moran (now VADM, ret.), a U.S. Navy pilot, is mentioned by name. People involved in the ‘glamorous’ and the ‘not so glamorous’ aspects of the Shrike development were all critical team members in getting Shrike to operational use. No weapon system is ‘completed’ until the war fighter can accomplish his mission each time he is called upon and return home safely.

The Shrike missile system was the product of a dedicated team effort. The Shrike team demonstrated technical creativity in all areas of missile design (guidance, control, S/A, T/DD, warhead and motor) and significantly advanced the technologies of high-frequency strip-line electronic applications and receiver antenna design. While addressing the technical aspects of the system, they also defined an acquisition philosophy that was to be the template for numerous successful follow-on Navy developments at China Lake. Shrike evolved through a level of creativity that often and in many ways exceeded that witnessed in Sidewinder. Moreover, it was accomplished in a shorter time period because of the pressing Vietnam situation.

Concept Formulation

In the early 1950s, during the latter part of the Korean War, U.S. aircraft were increasingly vulnerable to a new surface-based threat: radar-controlled antiaircraft gunfire. The need for an airborne anti-radiation (radar) offensive capability to ensure survival of U.S. aircraft was becoming very apparent. LCDR Bill Moran, an experienced pilot who served in the Korean conflict, was assigned as the Experimental Officer at China Lake. Moran stressed the significance of this emerging radar-controlled threat and the need for an operational capability to counter it.

(continued on page 9)
As summer subsides and we slip into fall, activity at the museum is picking up. This is not to say that the summer months are exactly slow, but they are a bit slower than other times during the year. The Shrike display is beginning to come together in the north exhibit area of the museum under the guidance of Eric Bengston from the TID Awards and Exhibits Branch. Many people have assisted him but his "hands on" support has come largely from volunteer Ronnie Porter pictured below hard at work with Eric. The Shrike documentary video is progressing nicely under the watchful eye of Mark Dahlman from Video Projects with story, scripting and narration by Leroy Doig III Command Historian and Curator of the museum.

She's finding that store operations aren't exactly "rocket science" but the devil is certainly in the details! Another familiar face has returned to the fold by working one morning a week in the museum store. Danny Kline, once the OP for Public Relations on the museum foundation board, has returned to volunteer his time in the store on Thursday mornings. Danny is part of a group of volunteers that Dorothy Cronin is assembling to staff the museum store on a regular basis.

With the end of September comes the end of the foundation's fiscal year. We are again having our books audited by Neely Accountancy Corp. of Granada Hills, CA. This is done not only as a good management practice but is required by various funders such as United Way, Combined Federal Campaign and certain grant making organizations. It also allows us to produce an annual report with confidence in the financial numbers that are reported. An annual report is one of the very best ways of communicating the health and activity of the foundation to people with an interest in the museum and the foundation who may be considering supporting our endeavors.

Your museum manager continues to stay busy operating as a staff of one in the museum supported by many dedicated volunteers. I continue developing the museum's and the foundation's relationship with the local community through my work on the Ridgecrest Chamber of Commerce Board of Directors. The foundation board has helped to expand foundation outreach to the community recently by manning booths at the United Way Family Fun Day in August and at the 10th Annual Desert Community Dinner in September. The foundation and the museum will be represented at the Kern County Air Show on 6 October through a booth shared with the Navy League of the Indian Wells Valley.

Do remember that the Volunteer Christmas Party will be coming up in early December. Rumor has it that Dorothy Cronin is planning the bash for her new home rather than our usual museum conference room event.

Well, once again I am out of space. I hope to see you all at the Shrike Anniversary Memorial Rock Dedication and Alumni Picnic 14-15 October 2004.

Ronnie and Eric

Page 15
China Lake Museum Foundation
Announces for the Annual Dinner an

All New Auction & Dinner Program

5 March 2004

Plan to Attend Now!
Start your Donations of Auction Items Now!
The Dinner and Auction format is new for this Program!

The Foundation’s desire for this year’s Annual Foundation Dinner is to encourage more participation by Foundation members and the public. The new format will lower the price of the tickets from that of previous years and a very relaxed dress code will be suggested. If you come dressed in Desert Casual, you will be at the top of the Best Dressed List for the event.

The plan is to have more auction items with a broader range of prices so everyone can participate in both the Live and Silent Auctions and be able to take part in the broader range of prices so everyone can participate in both the Live and Silent Auctions and be able to take part in the popular $1,000 tables being offered again this year with four Lucky tables winning prizes with a minimum value of $1,000. They are Annual Business or Personal Life Foundation Membership, a framed Sidewinder over Wild Horse Mesa native or a four-day stay at a Mammoth Mountain cabin. There will be special drawings throughout the evening along with raffles and surprise events for everyone present.

Bring donations to the Museum or we will pick them up. If you have ideas on making this more successful, or want to help with the event, please call: Wayne Driscoll at 760-375-5962 or Lesta Hays at 760-375-5239.

Packaged deals at the Carriage Inn will be provided with a night’s lodging, breakfast, Auction Dinner tickets, Petroglyph Tour and Museum Tour, all at discount prices. Participation by out-of-town members and the public is being encouraged, so invite your friends and relatives to share in the fun.

The popular $1,000 tables are being offered again this year with four Lucky tables winning prizes with a minimum value of $1,000. They are Annual Business or Personal Life Foundation Membership, a framed Sidewinder over Wild Horse Mesa native or a four-day stay at a Mammoth Mountain cabin. There will be special drawings throughout the evening along with raffles and surprise events for everyone present.

Please Support Your Museum Foundation
Help preserve and display the irreplaceable legacy of technology and weaponry for Naval aviation’s defense of our Nation. The rich record of China Lake’s achievements, past and present, is a vital part of our Nation’s heritage.

Membership Fees and Donations are the life blood of our Museum operations and growth. And remember: The China Lake Museum Foundation is

Agency 5021
in the 2004-05 IWV
United Way and Combined Federal Campaigns

The China Lake

Fall 2004

Former China Lake Technical Director Walt LaBerge Passes Away
By Liz Babcock, Director

Dr. Walter B. LaBerge, 80, former China Lake technical director, distinguished leader in the Department of Defense and eminent member of the Sidewinder missile development team, died Friday July 16, 2004, in Aptos, Calif. His family was by his side.

Remembering LaBerge as “a great manager, a great engineer and a great father,” his son Philip added, “He helped design the Sidewinder missile, he helped put men on the moon and he helped us all by being such a great role model. “We will miss him deeply.”

He had a wonderful life and did wonderful things,” said Mimi Cartwright of Ridgecrest. She and her husband Frank had shared a condominium in Cannes, France, with LaBerge and his wife Betty since 1993.

Although ill health forced LaBerge’s absence from the big Sidewinder 50th Anniversary party in November 2002, he was there in spirit, with the crowd joining in his televised image in singing “On the Road to Damascus,” one of the best known of the many songs he composed for China Lake parties.

LaBerge was born in 1924 in Chicago, Ill., the eldest child of a Fuller Brush Co. salesman. He was ROTC cadet at Notre Dame University when World War II broke out.

The popular $1,000 tables are being offered again this year with four Lucky tables winning prizes with a minimum value of $1,000. They are Annual Business or Personal Life Foundation Membership, a framed Sidewinder over Wild Horse Mesa native or a four-day stay at a Mammoth Mountain cabin. There will be special drawings throughout the evening along with raffles and surprise events for everyone present.

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He spent most of the war in the Pacific, where he was commanding officer of a minesweeper, USS 165, that under his leadership set a record, sweeping the most mines of any ship of that type. He was promoted to the rank of captain in 1946.

Returning to Notre Dame after the war, he married Patricia Salmon of River Forest, Ill., and started a family.

His wartime experiences gave LaBerge an appreciation for the Navy that led him to the Naval Ordinance Test Station China Lake after he completed his Ph.D. in physics at Notre Dame.

The LaBerges moved to the desert in August 1950 and entered the China Lake social scene with enthusiasm. “It was a whole new life,” LaBerge recalled, “and just a wonderful beginning of a marriage and of a career.”

The tall, striking couple became instigators of costume parties and scavenger hunts calling for little money, but much expenditure of teamwork, imagination, and laughter. And LaBerge brought the same energy to the workplace, where he was a member of the original Sidewinder missile development team.

When Dr. Howard A. Woltz became manager of the Sidewinder program in 1953, LaBerge was his second in command.

In 1956 LaBerge became the Sidewinder manager and head of the Missile Development Division of the Aviation Ordinance Development Department. That same year the California Chamber of Commerce voted him one of the Five Outstanding Young Men of California.

LaBerge left NOTS in 1957 to become Director of Engineering, Western Development Laboratories, Philco-Ford Corporation. There he headed the team that designed and installed the instrumentation at the Manned Spacecraft Center in Houston.

On that role, he worked closely with NASA management and became a close friend of several of the original U.S. astronauts. His return to China Lake and the position of Deputy Technical Director. He became Technical Director of the Naval Weapons Center in June 1973, leaving three months later to accept the position of Deputy Secretary of the Air Force for Research and Development.

In 1976 LaBerge served as Assistant Secretary of NATO for Defense Support in Brussels, Belgium. Returning to the Pentagon in 1977, he served as Under Secretary of the Army. His last government appointment was as Under Secretary of Defense for Research and Engineering in 1980.

Joining the Lockheed Corporation in Sunnyvale in 1981, he retired in 1989 as vice president of the Lockheed Corporation in Sunnyvale in 1981, he retired in 1989 as vice president of

Dr. Walter B. LaBerge in 1953

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Page 3
A Family of Volunteers

What do you do when you are a fanatic about aviation history? Volunteer for an aviation museum, obviously! What do you do when you are a family man and want your family with you? Volunteer them for the museum also! What good fortune for the Naval Museum of Armament and Technology! Bo Shaw, originally from Maryland, discovered California in his Air Force days while stationed at March Field near San Bernardino and Castle AFB at Merced in the mid ’70s. Then he transferred to Edwards AFB in Maine. That is when he decided he wanted to get far away from Laramie as possible.

He saw an advertisement in Aviation Rock and immediately applied for employment at China Lake. After receiving a quick response, he reported for work. Spring through Autumn almost changed his mind but he persevered and became an Acquisition Product Manager for the F-16.

Bo spends just about every flex Friday volunteering at the museum, doing whatever is needed – and whatever is always needed! When asked what the museum needs, the Shaw family had several suggestions. The first was “Volunteers, more Volunteers.” They stressed how much the museum needs a firm volunteer base. They added that there is a need for publicity and raising money. Most of all, they emphasize that the museum needs to move off the counter. The museum needs a firm volunteer base. They added that there is a need for publicity and raising money. Most of all, they emphasize that the museum needs to move off the counter.

When asked why they volunteer for the museum, Bo believes Erica needs some work experience and tells her she has two options – get a paying job or volunteer for the museum. Fortunately, Erica chose the museum.

Timing was perfect for the museum because the person who ran the museum store had just left leaving only one person to run the entire museum. Erica took over the museum store at a time of fire need. She works four hours every day the museum is open – taking care of the store, answering the phone, deciding what items need to be ordered, and generally doing all sorts of useful activities. Laureen, who plans to continue her education, does have a strong interest in math and science and currently is aiming for an Associate of Science diploma with a specialty in Administration of Justice. At this point, subject to change, she plans a career in Forensics.

When asked why she volunteered for the museum, Erica looked at her father and said, “He made me!” Bo believes Erica needs some work experience and tells her she has two options – get a paying job or volunteer for the museum. Fortunately, Erica chose the museum.

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(continued on page 5)
Walt LaBerge Passes Away

Fall 2004

Shrike’s Forgotten Lessons

(continued from page 11)

was in trouble. China Lake undertook the task of fixing the armament systems. In fact, some China Lake personnel went with the RAG aboard the carrier to Hawaii to finish the complete system so that the group would be ready for their CTO (deployment inspection).

During the service life of Shrike some 22,000 missile systems were manufactured. Over 9,000 units were fired in combat and approximately 1,000 were fired in development, testing, and training.

Next ARM Generation

A Tactical Air Armament study chaired by Capt. R. F. Doss of OPNAV was completed in July 1969. It included a recommendation to concentrate our development assets in a single high-speed ARM weapon, small enough to be used freely in saturation attacks against heavily defended targets." In April 1970 a HARM TSOR was issued.

Capt. R. F. Doss of OPNAV was completed in July 1969. It included a recommendation to concentrate our development assets in a single high-speed ARM weapon, small enough to be used freely in saturation attacks against heavily defended targets. In April 1970 a HARM TSOR was issued. China Lake submitted a PTA to NAVAIR in August.

China Lake Museum Foundation website!

www.chinalakemuseum.org

Visit our China Lake Museum Foundation website!

www.chinalakemuseum.org

Walt LaBerge Passes Away

(continued from page 3)

The China Laker

Fall 2004

A Family of Volunteers

(continued from page 4)

Letter To The Editor

Ed note: Joel Premseiler, a retired Navy test pilot, sent this letter as a comment to the article about LT John Darden in the spring issue of this newsletter.

29 June 2004

More than half a century ago, a superb Naval Aviator, John Darden, perished in an aircraft accident out of control. The accident was caused by a pre-existing aerodynamic characteristic of FJ-41-2 Banshees.

During that period, several other aviators and D had been flying Banshee-2s in total ignorance of the "nature of the beast." It was well after D encountered a harrowing experience while dropping an "Eddie" store on "K" Range that D became concerned about the aircraft's peculiarities.

During one of my several visits to the FJ-41-2's manufacturer, McMullen, to discuss the ramifications of replacing the Banshee's wing tip fuel tanks with aircraft rocket launchers each housing nineteen 2.75" Folding Fin Aircraft Rockets (Mighty Mouse), D expressed my concern regarding the Banshee's characteristics.

It was then that D learned that in the higher sub-sonic flight regimes (0.65 Mach), the center of pressure (lift) moved well forward (chordwise) on the wing. This twisted the wing, leading edge upward, along its static spanwise axis increasing its angle of attack.

This, in turn, moved the center of pressure even further forward. A thermally induced upward vertical gust, for which desert regions are noted, will impose and even greater increase in the angle of attack with the consequence of twisting the wing beyond its structural limits. As the threshold of transonic speed (Mach 0.8) is approached, the center of pressure moves aft alleviating the threat. The Banshee-2 may then safely fly to its Mach limit of 0.85.

In summary, conservatively assuming the temperature to be 90 degrees Fahrenheit, the density altitude at which Darden was flying would have been 5,000 feet. At that altitude, Mach 1.0 would be at a true air-speed of about 650 Knots. Pulling out of his dive, Darden would very likely be some bit over 440 knots which, under the assumed conditions, would be Mach 0.68. This phenomenon was shared by Northrop's F-89 Scorpion, affectionately called "Wagon Wheels." D too shed its wings for the same reason. While D was serving a tour of duty with VX-3, Hugh Tate was a squadron mate. Hugh was the only Aviator to safely bolt out of a Banshee-2 after it lost its wings. Yes, he was in the described flight regime when it happened.

Note that dummy ordnance is used during demonstration firings. The dust observed during Darden's accident was caused by the store striking the ground and not by an explosion.

Joel Premseiler LCDR USN (Ret)
China Lake Museum Foundation Memorial
By Robert Campbell, Director, U.S. Naval Museum of Armament and Technology

The China Lake Museum Foundation will hold a ceremony on Friday, 15 October dedicated to the memory of all those military and civilians who have died while working at China Lake. Starting at 11:30 a.m., the ceremony will be conducted at the Museum, just before the China Lake retiree reunion picnic. A large rock slab taken from the China Lake ranges will serve as the memorial. Located directly north of the Museum, it will feature a plaque listing the name of each individual, the date, and the nature of the incident which took his or her life.

The memorial will serve as a reminder that there was and continues to be risk associated with the development, life, and the nature of the incident which took his or her life.

A listing of the names inscribed on the plaque follows:

CHINA LAKE MILITARY AND CIVILIAN ACCIDENTAL DEATHS WHILE ON DUTY

U.S. Naval Museum of Armament and Technology
Memorial Wall

LT. Donald A. Iriss, USN
20 June, 1944
Aircraft Accident

Lt. Douglas J. Walthall, USN
25 June, 1944
Aircraft Accident

RADM Wilson M. Keller, USN
25 June, 1944
Aircraft Accident

Lt. John A. Rourke, USN
17 August, 1944
Aircraft Accident

Lt. Robert A. Dibb, USN
29 August, 1944
Aircraft Accident

TMC William K. Smith, USN
21 January, 1948
Compressor Accident

H. W. Baldwin
6 September, 1948
Parachute Accident

Cdr. Alphonse Mireville, USN
3 February, 1949
Aircraft Accident

Lt(jg) Charles V. Matus, USNR
3 February, 1949
Aircraft Accident

James L. MacDonald, PhD
3 February, 1949
Aircraft Accident

John J. McKinley, PhD
3 February, 1949
Aircraft Accident

Myron K. Kallagg
3 February, 1949
Aircraft Accident

Rodney E. Merrin
3 February, 1949
Aircraft Accident

Joseph Vargus
3 February, 1949
Aircraft Accident

Capt. Robert M. Madison, USAF
4 February, 1949
Aircraft Accident

Lt(jg) John E. Darden, Jr., USN
10 July, 1952
Aircraft Accident

ABH Raymond J. Irons, USN
10 October, 1952
Catapult Accident

Lt(jg) Charles Arthur Duffy, USN
15 February, 1956
Aircraft Accident

Lt. Bennett W. Hooks, USN
5 October, 1956
Aircraft Accident

William Bowles
6 June, 1957
Operational Accident

Pvt. Gerald R. Roberts, USMC
25 March, 1958
Shooting Accident

Lt. Richard M. Hopfinger, USN
24 June, 1958
Aircraft Accident

Jesse Ariel Thomas
13 April, 1960
Aircraft Accident

Capt. Howard C. Casada, Jr., USMC
22 September, 1960
Aircraft Accident

Lt. Howard C. Casada, Jr., USMC
22 September, 1960
Aircraft Accident

Capt. David L. Hess, USMC
28 April, 1961
Aircraft Accident

Lt. Fred J. Wilson, USN
17 September, 1962
Aircraft Accident

Jonathan E. Rice
25 November, 1962
Processing Accident

Maj. Thomas R. Brock, USAF
31 March, 1964
Aircraft Accident

AN Hobart C. Hale, USN
31 March, 1964
Aircraft Accident

AN Edward L. Taylor, USN
31 March, 1964
Aircraft Accident

AN Clarence E. Yates, USN
31 March, 1964
Aircraft Accident

AE3 Donald R. Baker, USN
16 May, 1964
Parachute Accident

Lt. Douglas S. Mayfield, USN
11 June, 1965
Aircraft Accident

Shrike’s Forgotten Lessons

The China Lake Museum Foundation Memorial, fall 2004
By Robert Campbell, Director, U.S. Naval Museum of Armament and Technology

Fall 2004
Shrike’s Forgotten Lessons (continued from page 9)

award fee contract. This proved to be a very effective process. It provided for the sharing of the engineering effort, but left China Lake with technical and financial control. This approach guaranteed the contractor’s legitimate cost plus fee with an additional award fee for competent work. It also provided for continuous correlation of detailed technical milestones with related financial expenditures. This type of contract can be extremely effective, providing that the government has an in-house technical capability in partnership with the contractor. Through competitive bidding, the engineering support contract was awarded to Texas Instruments (TI) in October 1961.

“Testing against multiple simultaneously radiating targets indicated the missile had problems selecting and homing on a single target. On June 62 an angle-gating capability was incorporated into the guidance system so that the missile would select a single radar out of a multi-target scenario.”

On August 62 DRR&E, OSD had reviewed the requirements and missioning of the ARM programs which, in effect, amounted to China Lake’s Shrike vs. the Air Force AM&AR-83, Bull-pup ARM. Based on the results of a rather confrontational review, a SecDef Decision Paper directed the Navy to proceed immediately with development of a dual-band head for Shrike (S&C bands).

In May 63, the Bureau of Weapons (BuWeps, formerly BuOrd) assigned Emergency Support Engineering (ESE) to China Lake in response to the evolving Cuban Missile Crisis. This task requested the delivery of 95 all-up S band missiles with 50 alternate C-band guidance sections within 9-10 months for an estimated cost of $10,000,000. The ESE effort was enhanced with a brilliant national priority.

Development of the S&C guidance section was on schedule, but no concentrated effort had been done on the C-band. Now the stakes were very high and an all-out shared effort with TI was undertaken. For program control, a special “war room” was established that included a detailed schedule of every part of the missile system. It was ‘laid out’ on a wall and went from floor to ceiling. One person was assigned the responsibility of keeping the technical schedule up to date through continuous communications with both China Lake and TI personnel. Each Saturday morning, the project group would gather in the room to review progress and resolve any problems. The group that could best solve a particular problem undertook the task. The team made extensive use of commercial air transportation for shipping components between China Lake and TI. The ESE program was completed in January 64.

“Fifty all-up missile and fifty alternate guidance sections were delivered to MCA at Cherry Point, North Carolina— ahead of schedule and within the cost estimate.”

Engineering development of the S band unit was completed and ready for NTE and pilot production. Shrike was the first program at China Lake to have a formal reliability effort.

Pilot Production

“The Navy Technical Evaluation of Shrike was completed in March 64. TI successfully completed pilot production of 120 units. During this period certain changes were made to the documentation package to enhance production. Based on a successful OT&E with these units, the Navy accepted the missile system for the first full production and deployment. As planned, TI conducted the first full production with the follow-on contracts to be competed. Because of the recent introduction of the Soviet SA-2 missile system in North Vietnam, the earliest possible deployment of the Shrike system was critical to the survival of U.S. aircraft. With one of the units left over from pilot production, the first Shrike was fired immediately on April 3, 1962.”

On April 12, 1964, Dr. Harrell Brown, DRR&E, assigned the Navy specific responsibility for the development of tactical anti-radar missiles.

First Full Production

“First-production Shrike missiles were scheduled for delivery in May 65. BuWeps—in all their wisdom—decided it was not necessary for China Lake to maintain control of the documentation package. The result of that decision was that, for economical reasons, the prime contractor introduced scores of changes into the package during production. There was no verification that these changes would not affect form, fit or function.”

“First, these first-production missiles were deployed. However, in subsequent testing China Lake found these units did not perform satisfactorily and were rejected because of family workmanship. Emotional discussions were held with...”

(continued on page 11)

The China Lake

The Beginnings

Compiled by Bertha Ryan from the Rockefeller Volume VIII, Number 29, dated July 16, 1952

It was the second year in the life of this organization, now familiarly called China Lake. The Naval Ordnance Test Station (NOTS) had set up shop at Harvey Field in Inyokern. During a three-month period in 1942, five men gave their lives in the fulfillment of the mission of the new organization.

The first pilot had a road named after him at the airport in Inyokern. Unfortunately, advancing time has test that road. LT Donald A. Dennis died in late May or early June. With the passage of time, even the exact date is lost.

Ed Note: The Rocketeer did not have an exact date of LT Dennis’ accident. Grand Experiment at Inyokern, Vol. 2, pp 102 & 104 gives the date as June 20, 1944.

The Station was at sea with a shortage of aircraft range facilities, so LT Dennis flew down to the Salton Sea to carry out his firing test. He put his F6F Hellcat fighter into a 15-degree dive. Without warning, the rocket body on his starboard wing exploded prematurely. The airplane went into a spin and crashed into the water.

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SB2C Curtiss Helldiver

Pilot LT John Armitage was flying a Curtiss Helldiver on August 21. He fired an 11.75-inch Tiny Tim rocket. The rocket hit the target and...
Shrike's Forgotten Lessons

China Lake had been experimenting with several projects that were, in part, related to this new threat. Of particular early interest was the technical effort accomplished on a semi-active radar guidance head for the SARTAM version of Sidewinder. Washington, however, had approved the program through other avenues and was banking heavily on the Corvus concept. The Navy believed Corvus would solve all of its anti-ballistic problems.

Meron repeatedly expressed his opinion that Corvus would not solve the tactical problem because of its overall complexity and excessive unit cost. Meron found a sympathetic ear in Code 40, and the Shrike program was initiated. (This is one of many examples where Fleet-experienced officers assigned to R&D laboratories are a crucial part of the team, along with the civilian scientists and engineers, and industrial partners. This was the basic premise in the establishment of China Lake as a full-spectrum Navy laboratory in the early 40s.)

**Technical Feasibility**

In 1957 Meron assisted members of the Aeromechanics Division and the Attack Weapons Branch in developing the basic technical and operational concept of the Shrike system. China Lake was then able to convince RADA’s Rocken. Head of Research at the Bureau of Ordnance (BoO), to support that concept. Rocken contributed an initial $100K to what eventually became the PeT program, to demonstrate the technical feasibility of the concept.

With BoO support, the small China Lake team designed and assembled two experimental missiles with guidance, control and a 'cobbled up' solid rocket motor. These were fired from an F-102 aircraft and validated the technical concept. On one of the units the fiberglass windscreen actually broke during flight, exposing the conical spiral antennas. The missile continued to fly and demonstrated the guidance homing capability. These tests were completed in October 1959, and all the real effort began just as Soviet SA-2 radar-directed SAM systems were being introduced in the Vietnam conflict.

**Engineering Development**

The Shrike development program was formally initiated in October of 1959. The task assignment from BoO to China Lake was simple: “you are assigned the responsibility and delegated the authority to develop an air-to-surface missile to suppress radar-controlled surface-to-air threats in accordance with the current TDP.” Though there was more workage, it was fairly simple to recognize what China Lake’s limits were, such as not going directly to OpNav, etc.

China Lake convinced BoO to assign responsibility for the complete system instead of generating a piece-meal task assignment for each separate component. (Provisionally, a separate task for each component was issued by the respective technical branches within BoO. China Lake was thus obliged to answer to each of those branches, making it difficult to integrate the total system.) The system manager at China Lake was designated as the DAPM (Deputy Assistant Program Manager). This caused a degree of concern within the technical branches of BoO. They now were only advisors to the DPM, by virtue of the DAPM Task assignment. China Lake answered only to the PM.

In developing the engineering concept, tests indicated the need for a leading-edge tracking capability. With that modification, the design concept was finalized in November 1960. The next step was to bring in an engineering support contractor.

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**The China Laker**

**Shrike Missile 50th Commemorative Celebration**

On 14 October, China Lake celebrates 50 years of the Shrike missile world’s first anti-ballistic missile. The celebration gets underway on 14 October at 0900 hrs with the viewing of the 1-hour Shrike documentary film presenting a short history of ARM development from 1903 until now. Immediately following at 1400 hrs will be a live Shrike legacy forum.

Shrike Day continues at 1630 hrs with an official ribbon-cutting ceremony at the US Naval Museum of Armament and Technology. This officially opens the new Shrike display. Several members of the original Shrike team will be in attendance.

The day concludes at the Museum with an "everyone welcome" reception, a chance to meet old friends and tell old war stories.

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**Schedule of Events**

**Thursday, 14 October 2004**

**1000.** Shrike Documentary Center Theater

**1600.** Shrike Legacy Forum Naval Museum

**Friday, 15 October 2004**

**0930.** Technical Brief Michelson Lab

**1200.** Center Picnic

**1300.** Display Ribbon Cutting Memorial Dedication

**1400.** Shrike Legacy Forum Center Theater

**1700.** Reception Naval Museum

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**Contact Information**

**Past Rating:** If you need a base pass to attend this event, if you do not currently have a pass, things will go a lot more quickly if you let us prepare one for you in advance. Please call (760) 939-0978 or send an e-mail message to Donald Cooper at donald.cooper@navy.mil. Be sure to provide your name and Social Security number. A pass will be mailed for the main gate on Thursday morning of the 14th. It will be valid through Sunday the 16th. Be sure to bring a photo identification when you pick up your pass.

**Pre-Paid Picnics:** If you plan to attend the tri-tip dinner picnic, the cost is $8.95 each. A pre-paid check payable to NAOC is required before the event. You can mail the check to the Retired Affairs Office, Code 754000D, Mail Stop 1223, NAOS, NAOS, China Lake, CA 93555-6100.

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**Paid Picnic:** If you plan to attend the ‘all you can eat’ picnic, the cost is $11.95 per person for adults, and $9.95 for children 12 and under. Children 12 and under must be accompanied by an adult. Pre-paid checks payable to NAOC are required before the event. You can mail the check to the Retired Affairs Office, Code 754000D, Mail Stop 1223, NAOS, NAOS, China Lake, CA 93555-6100.

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**Friday, 15 October 2004**

**0930.** Technical Brief Michelson Lab

**1200.** Center Picnic

**1300.** Display Ribbon Cutting Naval Museum

**1700.** Reception Naval Museum