The late 1950s were a fascinating time for the whole world, but especially for the people at the United States Naval Ordnance Test Station, China Lake. The Sidewinder missile had been successfully introduced to the fleet, new Sidewinder concepts were proposed, the Polaris program was getting under way, we had a very competent work force and energetic and enthusiastic management team, and we felt we could accomplish any task given to us. Some of our technical work force was involved in the unclassified U.S. effort in support of the International Geophysical Year (IGY).

The United States had promised the IGY a small satellite in orbit with telemetry capability to send data back to earth. A requirement for this effort was that no military technology was to be used. The rocket motors had to be developed and produced using off-the-shelf unclassified materials and procedures.

This U.S. satellite program was called Vanguard and was under the control of the Naval Research Laboratory (NRL).

Then on 4 October 1957, the USSR launched the SPUTNIK satellite. To say we were shocked and surprised would be a major understatement. NOTS began to look at ways to advance the space program. A crash program was started. The name of the program was "The NOTS Project." It soon became known as NOTSIK and years later was dubbed "Project Pilot" and NOTSEV-1 (Pilot).

The basic idea for the NOTSIK program was to develop a satellite launching capability that would use a high-performance aircraft as a truly recoverable first stage in the launching sequence. This idea makes a great deal of sense. Airbreathing propulsion systems are far more efficient on a weight basis than rocket systems, and the major problem for launching to space is to get the following stages up above most of the atmosphere before accelerating to orbital velocity. Rockets were and are the most practical means of providing this exoatmospheric acceleration.

NOTS made a parametric analysis of propulsion requirements and selected a set of available military rockets for the following stages to enable an aircraft carried multi-staged rocket system to place a 2- to 5-pound satellite into polar orbit. Except for the Allegheny Ballistics Laboratory (ABL) 248 rocket, which had been developed for the Navy, all of the selected rockets were Army rockets. (continued on 9)
President's Report — February 2004
By Paul Homer, President

Everyone is encouraged to attend the 4th Annual Membership Dinner and Auction, scheduled for 20 March 04 at the Kerr-McKee Center in Ridgecrest. The event promises to be exciting and entertaining, with several fine art pieces to be auctioned along with many other interesting items. Details are contained in this newsletter on pages 5 and 7.

The Foundation is pleased to welcome a new board member, Jim Serpanos, who was elected to the board in January. Jim brings a wealth of experience in his activities with the AIAA and HIDEA, and one area that Jim will lead for the Foundation is organizing a Lecture Series. We hope to offer the membership and the public lectures and panel discussions on subjects of interest to the Museum community, on a monthly or bi-monthly schedule. Topic suggestions and potential speakers are requested. This newsletter has the lead article on NOTSNIK, written by Bud Sewell, and follows the previous issue that contained the article on Polaris, written by Frank Knemeyer.

Both of these articles are good examples of the subjects we envision discussing in the Lecture Series.

Don Featherston has resigned from the board of the Foundation, as he assumes new duties as the Chairman of the Board of Directors of the Desert Area Resources & Training (DART). We thank Don for his years of service to the Museum and Foundation, and wish him the best in his new leadership position.

We are pleased to also announce the election of five new members of the board, all elected during the February board meeting. They are: Scott Brown, Dotsy Cronin, Doris Sorenson, Mark Swett, and Charlie White. Welcome aboard all!
A Letter From Your President

Tidbits of the Past

When many of our old timer (retirees) get together, some fantastic tales - mostly true - are recounted about the interesting projects, events and cultural activities that built the reputation of China Lake and this community.

Before these sources disappear, the Museum would like to make a collection of these "tales". Anyone having a favorite topic of interest is encouraged to contact the Museum Manager (Barry Lowry) about getting it documented. - Two to four pages. This collection would provide an interesting source of historical information for the Museum and articles for the news letter.

Paul C. Homee
China Lake Honors Capt. Howard C. Casada Jr., USMC

Compiled from the Rocketeer, Vol. XVI No. 39; September 30, 1960
By Bertha M. Ryan

In our continuing series of members of the Memorial Wall, with this issue we honor Capt. Howard C. Casada, Jr. of the United States Marine Corps.

The 29-year-old flyer died in an airplane crash on September 22, 1960, near the junction of Mt. Wilson and Palmdale Roads in the Angeles National Forest. He was flying a Lockheed F-104 Starfighter.

Captain Casada reported to China Lake in November 1959 and served as a project pilot and Assistant Experimental Officer for Guided Missiles to the Air-to-Air Weapons Division of the Weapons Development Department.

Prior to his China Lake assignment, he was a project pilot for the Electronics Test Division at the Naval Air Test Center, Patuxent River, MD.

He was survived by his widow, Mary Ann, and a 15-month-old son, David Patrick, who lived at 512-B Essex Circle, and by his father, Howard C. Casada, Sr., who lived in Norfolk, VA.

The year 1960 was a long time ago. All of us who were around at that time know how dangerous the F-104 was in those early days and the many pilots’ lives it claimed. Many aircraft in their early days have problems. Nevertheless, these brave men fly them, test them, and understand the risk. Eventually the aircraft becomes an important part of the military inventory.

Our gratitude goes out to all these men and women. They fly and work for the love of it – never questioning that they might pay the ultimate price. However, when they do so, they advance the cause of freedom – protecting those who follow them. We honor all these brave men and women and thank them for their supreme sacrifice.

The U.S. Naval Museum of Art and Technology plans to honor these people with a Memorial Wall of gratitude and recognition. Please send us your ideas and suggestions of how we should do this. Let us know any ideas you have that will help us to provide what will inevitably be an inadequate acknowledgment of their sacrifice. We owe them more than we can ever repay.

Capt. Howard C. Casada Jr.

The China Lake Museum Foundation

is a
United Way
and
Combined Federal Campaign
Agency
Museum Foundation Solicits Auction Items
By Alice Campbell, YP Membership

Mark your calendar for March 20. That’s the date of the Annual China Lake Museum Foundation Dinner Auction, a big yearly event that helps keep the doors of the U.S. Naval Museum of Armament and Technology open. This year’s Dinner Auction will feature the entertaining antics of China Lake employee Wallace Martin as auctioneer and his DJ partner. Hitters will again cater the event. The Dinner Auction committee is asking for donations of quality auction items including works of art, China Lake memorabilia, hobby and home items which can be auctioned off to help the museum.

Several very nice artworks by local artists have already been donated including pieces from Lois Hinman and Betty Spindler. Local businesses are again committing to donate items such as jewelry, sports items and a “Healing Hands” massage to name a few. Mammoth Mountain has kicked in and donated a Season Pass for next year. Last year services such as a gourmet dinner for six including cocktails, and a stay at a home at Mammoth Lakes Resort were popular items. The Montana Trails Art Gallery has donated a print of the Larry Zabel painting, Keel Boat. If you have some quality items please take them to the museum, and while you’re there, enjoy a tour by one of our volunteer docents. The Navy provides the necessary maintenance support for the museum building, but museum operations and activities are funded by the foundation, a 501(c)(3) nonprofit organization. Membership dues and gift shop profits are a big help but are insufficient to pay for all operating expenses, so fund raisers like the dinner auction are critical. An urgent appeal for funds was sent out before Christmas, Current members of the foundation and a few new friends really came through for us, and we very much appreciate their support. Another major source of support is Jacobs Sverdrup, which contributed an additional yearly Platinum Donation of $5,000, along with a $1,000 yearly Business Membership. Recently Carriage Inn joined the exclusive "Platinum Donor Club" by committing $600 per month to support museum operations. Our dinner/auction will be the next key event to ensure that visitors continue to enjoy learning about the history of Navy weapons and China Lake’s role in their development. Once necessary operating funds have been accumulated, the foundation hopes to have enough money available to make more new exhibits along the lines of the new Sidewinder room, a result of the Sidewinder 50th Anniversary celebration. An exhibit focusing on the SHRIKE missile is currently in the planning stages.
New Memberships For October 11, 2003 - January 30, 2004

We would like to “Welcome and Thank” our new and renewing members!

**Business Member ($1000 annually)**

JE Sverdrup Sverdrup Naval Systems Group - Ridgecrest CA
RAYTHEON COMPANY - Ridgecrest CA

**Business Sponsor ($500 Annually)**

SA-TECH - Ridgecrest CA

**Business Contributor ($100 Annually)**

BIOMEMS - Coto De Caza CA
DCS Corp - Ridgecrest CA
Daniel Kus, DDS - Ridgecrest CA
Neely Accountancy Corp - Granada Hills CA

**Lifetime Membership ($1,000)**

*Foremaster, Mel and Barbara - Fallon NV
*Montegrande, Val and Nan - Coto De Caza CA
*Pomeroy, George and Katy - Ridgecrest CA
*Goldett, Jack and Joy - Ridgecrest, CA
Herzog, Don and Lela - Ridgecrest CA

**Contributing Membership ($100 Annually)**

*Bryant, James and Muriel - Sun City CA
*Green, Arol and Eva Bier - Ridgecrest CA
*Manioun, James - Inyokern CA
*McLean, Donald and Patricia - La Canada CA
*Nyland, Kauhtleen and John - Andover MN
*Silberberg, George - Ridgecrest CA
American Association of University Women - Ridgecrest CA
Bachmann, Michael and Iris - Patuxent River MD
Boyd, Richard and Bernice - Ridgecrest CA
Branheiro, David - Ridgecrest CA
Cenault, Catherine - Oceanside CA
Clavat, Joseph and Beverly - Ridgecrest CA
Faith, Ann - Ridgecrest CA
Frischman, Norma - San Diego CA
Holden, John - Oroville CA
Johannese, Roy and Joan - Ridgecrest CA
McBride, William and Mary - Ridgecrest CA
Ower, Mabel Ellis - Lake Isabella CA
Pomplier, Paul and Jana - San Diego CA
Reymore, Gordon and Beverly - Inyokern CA
Reynolds, Thomas - Barnbridge Island WA
Smith, Dr. Robert - Ridgecrest CA
Stroshahl, Jr., George - Kent WA
Tunget, Barbara - Ridgecrest CA
Ward, William and Mary - Ridgecrest CA
Wasserman, Bernie and June - Ridgecrest CA
Weals, Frederick - Ridgecrest CA
Webster, Willard and Nancy - Ridgecrest CA
Winkus, Robert and Charlyne - Sedona AZ

**Sponsor Membership ($33 Annually)**

Blackburn, Will and Ann - Ridgecrest CA
Collett, Carol and Leroy - Ridgecrest CA
Lennon, Jim and Lenore - Ridgecrest CA
Owens, Harold - Ridgecrest CA
Price, Edward - Atlanta GA

Reed, Lois - Ridgecrest CA
Ryan, Bertha M. - Ridgecrest CA
Saitz, Dorothy - Ridgecrest CA
Stewart, Ruth - Lebanon OR

**Regular Membership ($25 Annually)**

Amundson, Paul and Joan - Newport OR
Andrews, Charles and Chantal - Ridgecrest CA
Armstrong, Kathleen - Ridgecrest CA
Armstrong, Keith and Sue Hauk - Riverbank CA
Berry, Robert and Patricia - Bishop CA
Bien, Fred and Carol - Carson City NV
Breeden, Margaret and Swift, Richard - Ridgecrest CA
Brickey, Bill and Debby - Ridgecrest CA
Burke, Jr, Carl and Celia - Leggett CA
Burkland, Vernon and Elise - Ridgecrest CA
Clark, Marybelle - Ridgecrest CA
Cooper, Don and Thelma - Ridgecrest CA
Daley, Cecil and Lillian - Ridgecrest CA
Dalton, Helen Marie - Palaski VA
DeMeerleer, Alphonse J - Ridgecrest CA
Fiko, Andrew and Janet - Cupertino CA
Gorman, John and Denise - Ridgecrest CA
Gould, Robert A. - Ridgecrest CA
Greene, Gordon and Dorothy - Ridgecrest CA
Hall, Floyd and Kay - Ridgecrest CA
Hammack, CDR John E. - Ridgecrest CA
Haun, Sam and Cheryl - Ridgecrest CA
Hawkins, Cecil and Julie - Visalia CA
Helmick, Hugh - Ridgecrest CA
Homer, Linda and Jony - Ridgecrest CA
Hueber, Werner and Susan - Ridgecrest CA
Isenberg, Richard and Martha - Salt Lake City UT
Kleinschmidt, Nick and Patricia - Ridgecrest CA
Leone, William and Sara Jane - Palos Verdes Estates CA
Lepte, Albert - Ridgecrest CA
Leuallen, Bill and Dorothy - Ridgecrest CA
Linstad, George and Teresa - Auburn CA
Manning, Harold - Ridgecrest CA
Maples, Gril and Theresa - Sparks NV
Miller, Linda - Ridgecrest CA
Newbauer, John and Marilyn - Brooklyn NY
Olson, Robert and Sarah - Forestville CA
Patton, Harold H - San Rafael CA
Pittinger, A. Lincoln and Virginia - Goleta CA
Porter, Craig and Carol - Ridgecrest CA
Reinhart, Joan - Mountain View CA
Ribette, PG and Merle - Lake Charles LA
Royer, Brad and Mavis - Ridgecrest CA
Shull, Irwin and Dorothy Jean - Ridgecrest CA
Sima, Frank and Shirley - Ridgecrest CA
Thomas, Lovie - Crestview FL
Tienner, Glenn and Cathie - Carson City NV
Tellkemt, Richard and Donna - Ridgecrest CA
Veijasa, S.W. and Irene - Escondido CA
Walters, Bill and Jeri - Ridgecrest CA
Ward, John and Barbara - Makawao HI
Webster, Williams and Johannah - Ridgecrest CA
Zellner, Wayne and Ingrid - Ridgecrest CA

* Indicates New Member
The China Lake Museum Foundation

Cordially Invites You to Our

Fourth Annual Dinner Dance & Auction

in support of the

The U.S. Naval Museum of Armament and Technology

Saturday March 20 - Kerr McGee Center
5:30 p.m. - Cocktails
6:00 p.m. - Dinner catered by Hitters
7:30 p.m. - Welcome & Auction

Desert Casual Live and Silent Auction Cash Bar

Raffle (must be present for raffle) Music by ???????

Price: $20 members before 10 March, $25 10 - 16 March.
Buy early and save.

No. for dinner x $20 or $25..............................................= $________

Block of 8 tickets purchased from Museum at one time reserves a table for eight.

Event Sponsorship: $200.....................................................= $________

Sponsorship includes 2 Dinner Tickets, Reserved Seating, Name in Program, 10 Raffle tickets

Total Enclosed.....................................................................= $________

Name:____________________________________________________

Address:__________________________________________________

City, State_______ Zip:_______________________________

Telephone _______________________________

Method of Payment (Please no cash or COD)
____ Check enclosed ____ Visa ____ Mastercard

Card # __________________ Exp. Date ______________

Signature__________________________________________________________________________

Or call the Foundation at 919-3530 with your reservation (please have credit card information ready. Tickets can also be purchased at the U.S. Naval Museum of Armament & Technology Gift Shop, Maturozo Museum Gift Shop, Ridgecrest Chamber of Commerce, or Lou's Hallmark.

Mail to:
The China Lake Museum Foundation
P.O. Box 217
Ridgecrest, CA 93556-0217
Adm. Thomas H. Moorer dead at age 91

By Liz Babcock, Director

Former Joint Chiefs chmn. was experimental officer here in the 1950s

Retired Adm. Thomas H. Moorer, former chairman of the Joint Chiefs of Staff, died Feb. 5, 2004, at the National Naval Medical Center, Bethesda, Md. He was 91.

The soft-spoken, decisive officer is remembered by early China Lake employees for his effectiveness as the experimental officer of the Naval Ordnance Test Station from December 1950 to July 1952.

The Korean conflict was then at its height, and Moorer took his role as representative of the warfighter very seriously. He insisted that NOTS send some of its best technical employees to Korea to get direct information about weapon problems experienced by the operating forces.

"That was a good education for [the NOTS engineers]," he recalled in a 1992 interview. "They weren't too keen on going out, and I said, 'Well, you know, this is just like a farmer that hitched his prize bull to the plow. He's got to teach you that there's more to this than just romance. You've got to get out there and see what works.'"

Born in Mt. Willing, Ala., on Feb. 9, 1912, Moorer grew up fascinated with technology. After graduating from high school as class valedictorian at the age of 15, he decided he'd like to go to Georgia Tech, a school that had excellent engineering courses. But that was at the height of the Great Depression, and the family had no money for college.

Investigating the service academies as an alternative, Moorer decided to go to the Naval Academy because it offered more engineering courses than West Point did. He graduated from Annapolis in 1933 near the top of his class.

He completed flight training at the Naval Air Station, Pensacola, in 1935, then served as a naval aviator in carrier-based squadrons and in patrol and bombing squadrons.

He was at Pearl Harbor when the Japanese struck, and he participated in the defense of the

(continued on page 10)
The Station made an informal proposal to the Bureau of Naval Weapons and to the Director of Defense Research and Engineering (DDR&E). Strange things occurred as a result of this proposal. DDR&E indicated interest in the proposal if NOTS could place one or more radiation-sensing satellites in orbit in synchronism with Project Argus, a planned high-altitude nuclear warhead detonation. The Navy said we could try but could not use any Army or Air Force rockets. (Other sources have said that the Army refused to let us use their rockets.)

In the six months that followed, we made a truly fantastic effort. The sensible task of acquiring the desired rocket motors, designing the required mating and separation systems, the support structure, the electronic sequence timing system, the orientation measurement system, the satellite and its telemetry system, and preparing special telemetry receiving stations to be built, manned, and dispersed around the globe, prior to the launch attempts, to record the data from the satellites was made quite "nonsensible" by a "political" decision on the motors.

In addition to all the nonpropulsion tasks, NOTS had to design, build, test, and qualify for carriage on an aircraft three different rocket motors. In less than five months, NOTS made the HOTROC motor (an ASROC motor with the case thinned to the limit), the 8-inch "spherical" motor, and the 2-inch spherical motor.

It was done!

The receiving stations were built, and dispersed. The receivers used a new technology, a "closed-lock-loop" frequency-controlled local oscillator on the ultra-sensitive receivers. This technology made it possible for the tracking stations to receive useable signals from a 2-milliwatt transmitter 2,500 miles away.

In summer - 1958, NOTS made six attempts to put a 2-pound satellite into orbit. The first three launches used a telemetry payload and the last three launches were with the radiation-measuring payloads.

Were there any successes?

This is a question that has plagued us for many years. Calculations made before the launches and continued afterwards indicate that the energy production of the rocket system was at best marginal and at worst deficient. The first and third launches were the only ones that had even a chance. On both of these launches, a report came over the air that the system had exploded on ignition of the second rocket stage. The launch telemetry station at Pt. Mugu shut off their receivers at that instant on both launches.

After the first launch on 25 July 1958, some transmissions at 108-megahertz were picked up sporadically for a week or so.

The second launch on 8 August 1958 failed by the explosion of a HOTROC motor.

On the third launch, on 22 August 1958, the first report back was the same as on the first launch: "Blow up on ignition of the second stage!" About 90 minutes after the launch, China Lake picked up a signal at the correct time for the completion of the first orbit. However, the frequency of the transmitted signal was changing rapidly. It is conjectured that the satellite may have been re-entering the atmosphere at that time.

The attempted launch of the three satellites with the radiation monitors for Project Argus all failed. These attempts were made on 25, 26, and 28 August 1958.

The tracking stations remained in place for an extended period of time and recorded many of the successful and unsuccessful launches of both Vanguard and Explorer.

Many articles have been written about NOTSNIK. Many of them are quite fanciful. One or two are amazingly close to the truth. While a scanning infrared telescope was the first proposed payload, it was not used in any of the six payloads used in the launches. It was the payload proposed in the follow-on program briefed to Dr. Roy Johnson, head of the Advanced Research Projects Agency, in September 1958 by Dr. Bill McLean and others. The program was not bought!

As a matter of interest, after leaving Dr. Johnson's office and returning to Old Main Navy Building, Dr. McLean was informed that the Chinese Nationalists had successfully used Sidewinder in combat.
Adm. Thomas H. Moorer dead at age 91

(continued from page 8)

Philippines against the Japanese invasion with such heroism that he earned the Purple Heart, Legion of Merit, Distinguished Flying Cross, and Silver Star.

During that time he also became acquainted with Capt. Walter V.R. Vieweg — a friendship that would have great consequences for NOTS China Lake.

After the war Moorer became executive officer of the Naval Aviation Ordnance Test Station, Chincoteague, Va., then operations officer of Fast Carrier Task Force 87.

He then requested reassignment to the Naval Academy, where he hoped to learn more about aviation. Instead the Navy sent him to the Air Force University, Montgomery, Ala. No sooner had Moorer gotten situated there than the university closed for a year because of the Korean conflict.

Vieweg, by then commander of the Naval Ordnance Test Station, saw Moorer’s temporary lack of assignment as a great opportunity, and he succeeded in getting the brilliant young Alabaman ordered to China Lake.

Moorer remembered his NOTS days with pleasure, citing the early development and test of the Sidewinder missile and of the Mark 16 fire-control system as highlights of his tour here.

He recalled that during a later assignment as the Navy’s director of long-range objectives, he discovered that his experience at NOTS gave him added credibility with the weapon developers. “The technical people would talk to me because they knew I had been out at China Lake,” he said.

Moorer’s subsequent meteoric rise within the Navy establishment saw him promoted to admiral by the age of 45 — the youngest man to achieve that rank to that date.

In 1965 he became commander in chief of the Atlantic fleet. In 1967 he became chief of naval operations, and in that position of authority he advocated aggressive force to end the Vietnam War.

In 1970 Moorer became chairman of the Joint Chiefs of Staff — the nation’s highest military office.

Significant events during his two terms in that office included the Arab-Israeli War and U.S. arms-limitation talks with the Soviet Union.

Survivors include his wife of 68 years, Carrie Foy Moorer of Bethesda; three sons (two of them born at China Lake); a daughter; two brothers; 10 grandchildren; and two great-grandchildren.
Once again it is time for me to report on a change in museum staff. Pat Brokke, who has been with us for just over one year, has left us for a full-time position at the Alta One Federal Credit Union. We wish her the best in her new position.

As I have said before, it seems that changing foundation Business Officers at the beginning of each New Year has become a tradition (?) around here. This year things are a bit different. The foundation has decided to investigate ways to accomplish the same tasks without hiring another paid staff member. In the interim store operations and bookkeeping are being handled by the museum manager. The membership database is being serviced by Pat Doucette who was handling it prior to Pat Brokke taking it over.

This time of year the museum activity level picks up with the approach of the annual dinner-auction fundraiser. This year is the 4th annual dinner-auction and is continuing the tradition of expansion of activities and participants. Assemblyman Kevin McCarthy has agreed to sponsor a table and may very well attend the event. He has also hinted that there might be an auction donation from Governor Schwarzenegger!

Around the museum itself, we have been undergoing a technology upgrade and expansion. The Business Office computer was getting a bit long in the tooth and was having problems meeting the demands placed on it. Through the generosity of Burrell Hays and his son-in-law Bill Sumners, we have a whiz-bang new computer capable of handling anything we throw at it. Bill Sumners is refurbishing the old computer, which will be used to replace the cash register computer in the store, giving us an overall faster and more capable system. Through generous donations of equipment by board member Jason Cushing and volunteer Bo Shaw, we have two additional computers for use by volunteers. Bill Sumners is refurbishing these machines also and has donated monitors to go with them. Hopefully when it is all said and done, we will be able to network all five of the PC’s in use around the museum in order that essentially any job can be done from any machine.

Museum tour activity continues with recent tours by a group of Boy Scouts from Clovis, CA and a group of seniors from El Dorado County in Northern California. The museum continues to be a popular spot for meetings with foreign dignitaries, and other groups who benefit from being able to see the China Lake “product.”

Museum visits continue to increase from year to year. Recently compiled statistics indicated that we had a 23% increase in visitors from 3,745 in 2001 to 4,624 in 2002, and a 13% increase in visitors from 4,624 in 2002 to 5,214 in 2003. These figures discount the additional 1,302 people that visited the museum over the Sidewinder 50th Anniversary event weekend in November 2002.

With all of the changes taking place in foundation business operations, volunteers are becoming more important that ever. Dotsy Cronin, our fearless Volunteer Coordinator is working closely with the store reorganization committee to understand their volunteer needs. Dotsy was also recently elected to the Board of Directors of the foundation so that she may be closer to the planning and activities that drive our volunteer needs.

In January, the museum staff supported the first ever CPA audit of the foundation’s books. Although an intense and time consuming task it proved beneficial in understanding what we are doing right and what needed improvement in our bookkeeping and finance operations. The auditor concluded that we had no major discrepancies and only made a few suggestions for improvement. This is quite an accomplishment considering it has only been two years since the current bookkeeping system was implemented and less than a year since development of an accounting and finance policy manual was begun.
4th Annual
China Lake Museum Foundation
Dinner/Auction Fundraiser
March 20, 2004
Kerr-McGee Center, Ridgecrest