

SHOOTING STARS

By Ernest Mares, U.S. Navy (Retired)

During the early part of 1965, intelligence reports indicated that the North Vietnamese were installing SA-2 missile capability near Ha Noi. Those of us on Yankee Station at the time were quite concerned over this. We were not allowed to attack these sites as they were being constructed and for political reasons, we were also prohibited from conducting strikes against Haiphong Harbor while Soviet ships were unloading their SA-2 missile cargo.

In early May 1965 an A-4 from the USS Midway was shot down by a SAM. This was the start of Iron Hand which became the buzzword for anti-SAM operations. We were sent out to look for these sites and rules of engagement, ridiculous as they were, allowed us only to attack only the site that shot down the A-4 from the Midway and no others. No one could tell us where this site was located, but nonetheless it was our responsibility to locate and destroy that particular site.

We had no idea of the missile's actual capabilities aside from briefings by our squadron intelligence officer. He promised that anytime we flew higher than 100 feet above the ground, the SA-2 would get us with 100% percent success.

Initially our Iron Hand effort was conducted in the area of Nam Din where we tried to get the Fan Song radar to begin emitting. We even took turns climbing to 10,000 feet acting as bait to entice the missile radar to begin emitting. No Joy!

For the next several months, we frequently flew Iron Hand missions in the areas of suspected missile sites hoping to cause enemy missiles to show their position. We

experienced both the frustration and the futility of using eyeballs to search for missile sites.

However, one thing we did learn from this is that by flying low to avoid the missiles we risked getting shot down by automatic weapons fire. Our squadron lost several aircraft to prove this.

In October 1965, I flew a mission to bomb the Kep Ha Highway and Railroad Bridge located approximately 15 miles northeast of Ha Noi. The first aircraft dropped the bridge and this freed us to hit the secondary target—marshalling yards on the rail line between China and Ha Noi. This virgin target was filled with ammo-laden freight trains and the results were spectacular. We counted 17 SA-2 missiles fired against our strike aircraft.

Two and a half months later in January 1966, I reported for duty at China Lake and was assigned as the assistant project officer at the naval air facility. My primary major project was to support the Shrike program.

I immediately was scheduled to fly several familiarization flights carrying a captive Shrike missile. I received little if no introduction as to how the missile worked. I was simply told to evaluate the display and see if the missile would point me toward any radar in the area. Performance of a captive Shrike missile and its ability to locate various radars in the Indian Wells Valley was very impressive. I had absolutely no problem locating and flying to radars.

After about a month of this, I heard mention that needles were used to display Shrike information to the pilot. This confused me because I was used to looking at the A-4 radar

scope where emitting radars were displayed as light spots on the display and Shrike would go for the centered dot. I never saw any needles.

That's when I found out that I was looking at SIDS which was an acronym for Shrike improved display system. I was one of the few pilots to be exposed to having targeting information displayed on the standard nine-inch APG-53 radar scope installed on the A-4E instrument panel. The reference to needles turned out to be the crossed yellow needles that appeared in the AJB-3 vertical gyro and normally were used for radio navigation.



APG-53A display used with the A-4 search and terrain following radar



AJB-3 needle display used with the A-4 low altitude bombing system

SIDS was a project conducted by a young civilian engineer named Gerald O. Miller whose initials GOM became our pet name for

the improved display system electronic package. SIDS was an obvious improvement over the AJB needle display because it showed relative position of multiple targets whereas the gyro's needles simply wobbled in the presence of several radar targets.

Jerry Miller accompanied me on many flights in the TF-10B aircraft to conduct SIDS testing. It became obvious to us that this new display system was urgently needed in the fleet and more importantly, in Vietnam where the SAMs posed a serious and immediate threat. After the experimental portions of the test program were completed, it became time to overcome the inertia of production funding and get the GOM hardware into production.

We needed to find a way to get this project funded!

★ ★ ★

Vice Admiral Tom Connolly was Commander Naval Air Forces Pacific headquartered in San Diego. The admiral was concerned because of adverse reports surrounding Shrike missile performance in Vietnam and summoned our technical officer, Captain Robert Moore to North Island to brief him regarding this.

During the course of this briefing, Admiral Connolly was invited to visit China Lake to learn more about the Shrike program and was promised an opportunity to fire the missile.

Captain Moore called me and asked if we had an airplane we could use to provide a demonstration flight for the admiral. Our choices were the F-4 Phantom and the TF-10 Skyknight that was being used for SIDS testing. The latter aircraft was the best choice because our F4 was not configured for Shrike or SIDS.

A couple of weeks later, Admiral Connolly arrived at China Lake. Several years earlier Connolly had been stationed at the lake in the capacity of experimental officer. His arrival was greeted by many friends and former associates.

Later that afternoon in the NAF ready room, I conducted a briefing to cover our demonstration flight scheduled for early the following morning. The F-10 was a side-by-side two seat airplane with flight controls available only on the Pilot's side. The Observer could not control the airplane or reach the pickle switch to launch a missile.



The Shrike test platform was a TF-10B aircraft fitted with an A-4E nose section in place of the regular bulbous nose

For this reason it was planned that I would get the airplane airborne and we would climb to 15,000 feet. At that time we would switch seats so the admiral could fly the plane.

Admiral Connelly would have a few minutes to become familiar with the flight controls before we conducted a little radar-hunting exercise to demonstrate how SIDS could be used to locate radar emitters.

Afterwards, we would proceed to the northern part of Baker Range to fire a live warhead missile down the throat at a sacrificial SCR-584 fire control radar parked in the mountain impact area.

When this test was completed I told the admiral that "we'll climb back up to 15,000 feet to switch seats..."

No sooner had I said this when the old man jumped out of his chair wanting to know why we were switching seats. Captain Moore told him it was so I could take the controls for the landing.

Connelly made the comment, "now that's some kind of vote of confidence!"

Admiral Connelly glared at me and said, "tell you what, son, we'll climb back up to 15,000 and if you're uncomfortable with me landing the plane, you have a parachute and you can bail out."

With this remark, Captain Moore and Captain Yount, the only other people in the room, looked as if they both were having heart attacks. They assured the admiral that this was necessary for safety reasons and required because Connelly was not currently qualified to land the aircraft.

Somehow a fist fight did not erupt, but the briefing ended and the admiral was taken to the officer's club for a reception. Meanwhile, both Captains Moore and Yount called me aside and I was given direct orders that under no circumstances could I let that old man land the aircraft.



Shortly after dawn on July 22, 1966, Admiral Connelly and I strapped into TF-10B number 124630. On the starboard wing was an AGM-45 missile with a live warhead gleaming in the morning sun of a typical picture perfect Mojave Desert day.

I looked over at the old man in the right seat and he was smiling like a young boy about to take flight for the first time

After takeoff, we climbed to altitude and switched seats. With the admiral now at the

controls, we began our search for emitting radars and the improved display system worked perfectly. Admiral Connelly was definitely impressed!



The uniquely modified test platform carrying the three-star admiral lifted off Runway 21 to begin its exploration of the airspace in Restricted Area 2508

We worked our way onto Baker Range and again, the admiral easily located our target radar. We made two practice runs to make sure our flight profile was correct. Since this was a demonstration firing, we wanted to be in the heart of the firing envelope—once the missile was in flight, there was no second chance.

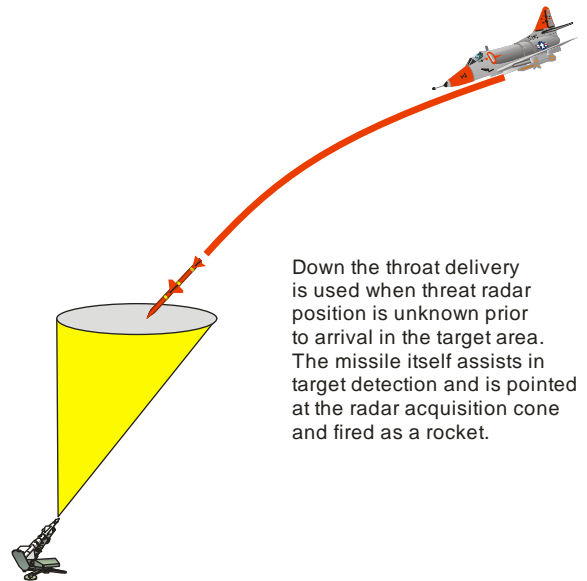
On the firing run, the missile left the launch rail cleanly and we could see it all the way as it accelerated and streaked toward the white-painted SCR-584 target van. When the missile hit the target the resultant flash resembled a mini-nuclear explosion.

By any chance could this have been augmented by a little trinitrotoluene planted by the target crew? We'll never know whether they were watching from a nearby mountain top as the missile flew toward the target and planned to blow up the radar van if the missile missed.

But the missile didn't miss and Admiral Connelly was absolutely euphoric! We made a couple of turns over what was left of the target

and he could hardly stop talking. Finally he asked me do him a favor.

He told me that Dottie Dunn, the Tech Director's secretary, always accused him of screwing up every time he flew a test mission. He wanted me to call Dottie and tell her that he didn't screw up this time!



Graphic shows how Shrike can be delivered down the throat

My response was, "Admiral, enter the pattern downwind at ninety-knots and shoot for eighty-five on final!" His landing was absolutely perfect.

As we taxied back into the chocks, the Technical Officer and the Commanding Officer of the Air Facility were shocked when they saw who was in the pilot's seat.

Apparently their facial expressions did not go unnoticed because just before he shut down the engines, the seasoned naval aviator told me, "Son, if either of those two four-stripers gives you any crap about letting me land this plane—call me and I'll shitcan both of them!"

Somehow we managed to get a few bucks because four months later Jerry Miller and I were sent on a quick trip to Yankee Station under priority one orders to put GOM boxes in the fleet airplanes.