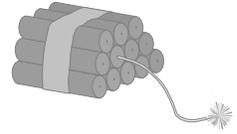


# The Primer



Newsletter of the Golden West Chapter, International Society of Explosives Engineers  
23633 Brewster Drive, Columbia, CA 95310

Volume 22

Summer 2011

Issue 3

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of the ISEE:

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

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## ***President's Message...***

It's hard to believe but we are already deep into Spring with the heat of summer just around the corner. With that said, the Golden west Chapter completed the first scheduled activity of the year. Mike Burneson, our much appreciated host and trainer, provided a very nice spread of BBQ as well as Jerry Fulghum and Gordon Coleman volunteering their time as certified trainers. A big thank you and "Hats Off" to our trainers and to all the participants for making this activity happen.

Our next activity is probably the one that we have all been waiting for. It's our Salmon Fishing trip. It looks like we finally got a season for these great fighters and delicious eating table fare. Please contact me to reserve your spot. I need a non-refundable check in the amount of \$95.00 from you no later than Friday May 27th or I will fill the boat. Please see the flyer on page 3 for Rod Rental, Tackle and license (must bring) details. This is a cash-only trip so once you are on the boat, no credit cards.

Hope to see you June 11th,

Be Safe!

Mike Chiurato

Office (916)645-3377

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## The Primer

### *Editor's Notes....*

This Summer edition of *The Primer* is coming out a bit early, but we want to make sure the Chapter fishing trip is adequately publicized. If you are planning on going along and haven't contacted Mike Chiurato, you need to do so quickly. After May 27th, Mike will be filling out the boat with other than Chapter members.

You folks in California hogged all the rain this past winter. What you didn't use, you sent northeast and missed Arizona completely. My rain gauge in Green Valley only registered 1.44 inches of rain between October 15th and May 1st. It was so dry that my pet frog never did learn how to swim. When I left for the cabin, I outfitted him with a pair of waterwings so that, when the summer monsoon rains come, he wouldn't drown. Looks like a bad fire year and, if we don't get a little more rain before Memorial Day weekend, the USFS will probably close the forest up here in the White Mountains. In the meantime, you guys and gals in California will still be skiing on the Fourth of July.....

Well, in spite of my repeated requests for articles (or suggested subjects for same), the article file box is still empty. As I've mentioned, I've run out of case studies and timely stuff. Having been retired for nine years now (is it really that long?) I'm not up to date on the latest technology either, so I'm having to fall back on personal experiences or events about which to write. Some might be loosely related to explosives, but most probably will not. In this issue, I've written about an airplane that is near and dear to my heart, the Boeing B-47.

When I went in to the Air Force in 1955, I wanted to be a Flight Engineer. I was qualified for FE training, but just before I got there they started phasing FEs out. Airplanes were being developed that didn't require a FE. Some went on to become Navigators while others went into the maintenance field. Being mostly mechanically inclined I opted for the maintenance route and, after training in multiple engine jet bombers, was stationed at Plattsburgh AFB, NY. I worked my way up to assistant crew chief fairly soon and then, when 12 out of 15 crew chiefs in our Bomb Squadron reached the end of their enlistments in a four month period, was promoted to crew chief. I remained in that capacity until I reenlisted in 1959 and transferred to Beale AFB and B-52s. The B-52 was OK, but it wasn't the same as the B-47. It was just a big old lumbering aluminum overcast compared to the B-47. One pilot who flew both told me that flying the B-52 was a bit like flying the box that the B-47 came in.....

Anyway, I hope you enjoy the article starting on page 8. Give me some feedback, good or bad. I don't know which way to go with this newsletter or the articles therein if I don't hear from you.

Later,  
Wes Bender

## ATTENTION BLASTERS



A Salmon Fishing Trip has been chartered for Saturday June 11, 2011 for all members, family, friends and associates of the Golden West Chapter ISEE.

We will meet at the Bodega Bay Sportsfishing Center at 5:30 a.m.  
Port of Bodega Marina  
1500 Bay Flat Road  
Bodega Bay, CA 94923

We can take 30 anglers on this adventure. If you would like to attend you must prepay \$95.00 and your check must be received by May 27, 2011. Make your check out to **Golden West Chapter ISEE** and mail it to:

Alpha Explosives  
P.O. Box 310  
Lincoln, CA 95648  
attn: Mike Chiurato

Call 916-645-3377 to reserve your spot but remember, we must have your check by May 27<sup>th</sup> or we will fill the boat with others. Bring your own food and drink and something to take home your fish in. **Remember to bring your fishing license.** They are not available to purchase. Rod rentals are \$10.00 Tackle Packages are \$25.00. **Bring CASH.** No credit cards or checks can be accepted on the boat.

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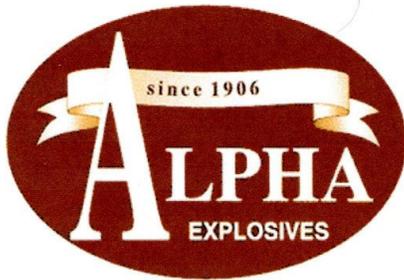
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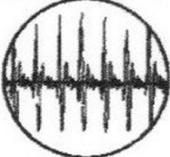


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Newsletter Editor:  
Wes Bender (520) 648-3581

### Chapter Activities - 2011

|  |              |
|--|--------------|
| Ocean Fishing Trip - Bodega Bay          | June 11      |
| Barbecue - Pioneer Park, Nevada City, CA | September 10 |
| Annual Dinner Meeting (to be announced)  | January 2012 |

### Publication schedule for *The Primer*

Fall issue - deadline: August 5 - posting date: August 10  
Winter issue - deadline: Dec 1 - posting date: early Jan 2012  
Spring 2012 - deadline: (open)

## The Primer

### *Flyin' Around...*

*with Wes Bender*

OK, for a change of pace (and as I've threatened several times), we're going to try something a little different and offer you a look into the mid-fifties U. S. Air Force and one of its lesser known, but very important, airplanes, the B-47. I had the privilege of serving as a Crew Chief on a B-47 with the 530th Bombardment Squadron at Plattsburgh AFB, New York from 1956 through 1959. The Boeing-designed B-47 is important for several reasons. First, it was the fledgling USAF's first swept wing jet bomber. It was the predecessor of the B-52 and of Boeing's 707 and subsequent 700 series aircraft. Second, for several years it was the mainstay of the Strategic Air Command's (SAC's) bomber fleet and, until the B-52 was operational and ICBMs were installed in silos, was the main deterrent force during the cold war. Much of what was learned with the B-47 was put to use in designing subsequent aircraft.

Being the first of anything new presents challenges and the B-47 was no exception. For instance, the instruments available at the time had been originally designed for use in prop-driven aircraft. The B-47, however, was normally so free of vibration that the instruments would stick and lag behind what they should have been reading. To solve the problem, instrument panel vibrators were installed to mimic the vibrations of the earlier aircraft. Modern instruments don't have this problem, but we were using WWII technology back then. All the electronics were vacuum tube. Transistors hadn't been developed yet. Jet engines were pretty much in their infancy. The J-47 engines on the B-47 were very slow to accelerate, taking approximately 12 seconds to go from idle to full power. This could be a problem if one needed to add power rapidly for a missed approach at landing. An additional problem when landing was the tendency of the plane to glide for a long distance at shallow angles. There was just not enough wind resistance in its shape to slow it down. Both of these problems were solved by installing an approach parachute that was deployed during or before the downwind leg of the landing pattern. This allowed the engines to be kept near 50% power on final approach, cutting down the time to reach full power and also provided for better control of the aircraft speed as it approached touchdown on the runway. Of course, in an emergency, the chute could be jettisoned, but then wouldn't be available for a subsequent landing. The approach chute is not to be confused with the brake chute, which was much larger and was deployed after the aircraft was on the landing roll. Both chutes would be jettisoned after the aircraft turned off the runway and would be picked up by ground crewmen and returned to the loft to be repacked.

The B-47 had a huge advantage over other aircraft when it was first placed in service. Not only could it fly higher than Russian MIGs (at least until the MIG 19 came along), it also had sufficient speed and maneuverability to avoid being shot down. Missiles weren't yet on the scene. With a service ceiling of about 43,000 feet, it practically owned the airspace above 35,000 feet.

### *Flyin' Around (cont.)...*

The B-47 had a wingspan of 116 feet and a length of 108 feet. The wings were swept back approximately 35 degrees. Empty, it weighed a little over 79,000 pounds. Fully loaded with fuel and weapons, it could weigh up to 230,000 lbs. A normal combat crew consisted of a pilot, co-pilot and navigator/bombardier. There was provision for an additional crew member that would either be the Crew Chief, an Instructor Navigator, a student pilot, or possibly a maintenance technician. The pilot and co-pilot rode tandem under the canopy and sat in upward firing ejection seats. The navigator/bombardier rode in the nose and his ejection seat fired downward.

Propulsion was from six J47-GE-25 jet engines, each capable of providing 7200 pounds of thrust (with water/alcohol injection). These were located on pylons under the wing, with single engines toward the end of each wing and a pair of engines in a common nacelle inboard. These were number from one to six starting from the left wingtip.

Okay, let's go for a ride on a normal training mission. The flight crew would have done all of their pre-flight mission planning the day before. The crew chief and the flight crew would conduct the pre-flight inspection. The crew would board and, after going through the checklists, would start engines and taxi out for takeoff. The fuel load comprises the largest weight variable because



**B-47 s/n 7052 awaiting pre-flight inspection.**

the aircraft had a capacity for a little over 14,600 gallons (95,000 lbs) of JP-4, and takeoff speed would be determined by the aircraft's gross weight. The wing flaps were always fully extended for takeoff. We're going to rendezvous with a KC-97 tanker for mid-air refueling, so we're taking off at a gross weight of only 160,000 lbs. The co-pilot has calculated the takeoff speed to be 146 knots. Because of the normal attitude of the aircraft, it will take off almost by itself at that airspeed.

After lining up on the end of the runway, the throttles are pushed forward and the engines run up to 100% of rated military thrust. After a few seconds to stabilize the the exhaust gas temperatures, the pilot initiates the water/alcohol injection and releases the brakes and starts the takeoff roll.



**7052 shortly after lifting off the runway.**

(Continued on page 10)

## The Primer

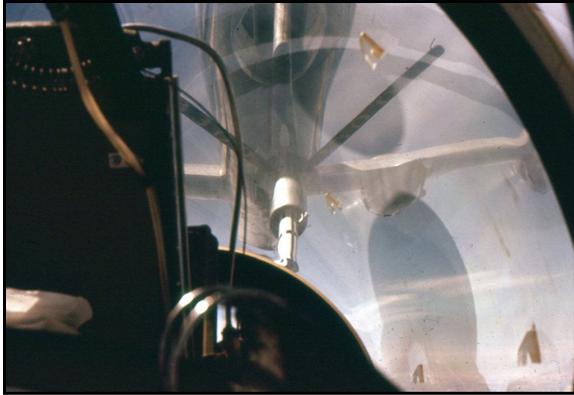
### *Flyin' Around (cont.)...*

Once off the ground, the co-pilot retracts the landing gear (on the pilot's call) and stands by to retract the flaps. Once the aircraft achieves approximately 300 feet of elevation and acceleration is verified, the co-pilot starts retracting the flaps. Often the flaps are stopped at 50% and again at 22% to verify that a positive rate of climb and acceleration is being maintained. The water/alcohol injection runs out about a minute after being initiated. The throttles are pulled back slightly and a climbing airspeed of about 310 knots is maintained.

The B-47 uses considerably more fuel at low altitude, so we continue climbing to the planned altitude for our practice bombing runs. SAC bombers practiced at Radar Bomb Plots that were located at various sites in the U.S. Instead of dropping practice bombs, the aircraft was tracked carefully by ground radar. The aircraft initiated a radio tone that, when terminated, indicated the moment of bomb drop. The Radar Bomb Plot, by knowing the aircraft's track and speed, the direction and velocity of winds aloft, the moment of bomb release and the bomb's trajectory, could plot to within a few tens of feet the accuracy of the drop. This information was then coded for security purposes and radioed back to the bomber. (While I was stationed at Plattsburgh AFB, we often 'bombed' a corner of the state capitol building in Albany, NY. One wonders if any of the politicians therein knew how often they were being targeted.....)

After accomplishing the scheduled high altitude bombing runs, it was time to drop to a lower altitude and rendezvous with a KC-97 tanker. There are numerous refueling tracks around the country. You would be scheduled to meet your tanker at such a track at a given time, altitude and precise location. Until the advent of the KC-135, the military tanker version of the Boeing 707, B-47 pilots had their hands full trying to fly at greatly reduced airspeeds behind a propeller-driven tanker that was flying as fast as he could in level flight. In actuality, the B-47 pilot placed the airplane in an envelope below and behind the tanker. The tanker's boom operator (we called them gas passers) 'flew' the boom into position and extended the inner part of the boom into our refueling receptacle. It would latch in place and fueling would begin. While the B-47 pilot flew the airplane just above a stall, the co-pilot would route the fuel into the various tanks, attempting to keep the balance somewhere near correct. The disconnect was usually called for and executed by the B-47 pilot, although there were disconnect buttons on the control wheels of both the bomber and tanker and at the boomer's station, any of which could disconnect in an emergency. The tanker's boom system also had limit switches that would automatically disconnect the boom if the bomber moved too far left, right, up, down or fore and aft. Needless to say, it was a major accomplishment to fly the aircraft at slow speed and in the downwash of the tankers wings and keep it in a fairly small box. A B-47 pilot's biggest claim to fame was when he had made a night 'one gulper', which meant that he stayed connected to the tanker completely through the scheduled fuel transfer and had no disconnects. In some instances this meant staying connected while the tanker/bomber combination made a 180 degree turn when they reached the end of the refueling track. Having flown with numerous crews on refueling runs, I had a tremendous amount of respect for those who made it look easy.

### *Flyin' Around (cont.)...*



Looking over the pilot's shoulder during hookup.



...and from the Boom Operator's perspective.

After completing the aerial refueling, we climb back up to altitude and fly to a different Radar Bomb Plot for some more simulated bombing runs. We seldom have weather at the higher altitudes and the sky takes on a deep blue color. Upon completion of the last items on the training mission, it's time to head back to base. When flying above 35,000 feet or so, the pilot has been using the machmeter to determine his airspeed. To start the penetration, he pulls the throttles back to idle and points the nose down to maintain .81 mach (81% of the speed of sound) and extends the



landing gear. At 31,000 feet, he switches to the airspeed indicator for reference and reduces speed to 305 knots (or less), which is the structural speed limit of the landing gear when extended. He further reduces speed as he approaches the field. As the speed drops below 195 knots, the flaps are extended. In the meantime, the co-pilot calculates the 'best flare' and landing speeds. These are based upon the gross weight of the aircraft. Since we will weigh approximately 140,000 lbs at landing, he calculates the best flare at 151 knots. The actual touch-down speed will be about 8-10 knots below that. We enter the traffic pattern on the downwind leg and deploy the approach chute. The pilot maintains best flare plus 30 knots, bleeding this off to best flare plus 15 knots as he turns onto final approach. He continues to reduce speed and altitude and crosses over the runway threshold at best flare speed. As the aircraft continues to settle, he holds the nose up slightly resulting in both forward and aft gear touching down at the same time. The co-pilot deploys the brake chute on the pilot's command and we rapidly slow to taxi speed. The B-47 had brakes on all four main wheels, but did not have the speed brakes or thrust reversers that some modern aircraft have.

(continued on page 12)

## The Primer

### *Flyin' Around (cont.)...*

After pulling off the active runway the two chutes are jettisoned and we taxi back to our parking spot. We note in the aircraft records any discrepancies that need fixing and the flight crew heads to debriefing. The crew chief and his ground crew conduct a post-flight inspection, consult the flying schedule for the fuel loading for the next flight and refuel the aircraft. It will be two days before the next scheduled flight, but maintenance on those items needing attention will be started as soon as possible. While most flights are for crew training purposes, it must be remembered that there is a cold war going on and the crews and aircraft have to be ready for any immediate response that might be needed.



**7052 just past touchdown with approach chute**

The B-47s were phased out as newer models such as the B-52, the B-58 Hustler, etc. became operational. By the late '60s they were pretty much all gone. There are several that escaped the graveyard, however, and can be found in museums and displays at various places in the U.S. In the GW Chapter's geographical area, one can be seen (s/n 52-0166) at the Castle Air Museum in Merced. Farther south, another can be found (s/n 53-2275) at the March Field Museum at the March Air Reserve Base near Riverside.

### *How Come???*

In keeping with the preceding article, we offer these aviation truisms:

Airspeed, altitude and brains - Two are always needed to successfully complete the flight.

You know that your landing gear is still up and locked when it takes full power to taxi.

Flying the airplane is more important than radioing your plight to a person on the ground incapable of understanding or doing anything about it.

Basic Flying Rules: Try to stay in the middle of the air. Do not go near the edges of it. The edges of the air can be recognized by the appearance of ground, buildings, sea, trees and interstellar space. It is much more difficult to fly there.

If the wings are traveling faster than the fuselage, you better hope you're in a helicopter.....

..and my favorite truism from a Navy carrier pilot: "There are more planes in the ocean than submarines in the sky."

Drive Safe - Fly Safe - Blast Safe