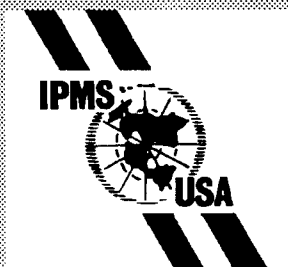


# Seattle Chapter News



Seattle Chapter  
IPMS-USA

April, 1998

## BOMBS AWAY!

### Modern U.S. Aviation Ordnance by Bob LaBouy

Some of you are going to wonder why all the emphasize on aircraft "hardware." In this issue you will find three different articles aimed at increasing your modeling knowledge about aircraft ordnance. Most of it is for U.S. aircraft and some related to British WW II ordnance. Several members have recently mentioned that these types of articles (concerning peripheral items of interest to modelers) are about the only way they learn about such items. I hope you will enjoy this issue and find the articles useful.

#### Introduction

As some of you will recall a few months ago, we reprinted a brief article by Wayne Wachsmuth (August '97, page 5), in which he commented about the importance of paying attention to the many little "things" which we display under and around our finished models. The part which caused me the most concern were his comments about bombs, rockets and missiles.

With that initial thought, I would like to introduce you to modern U.S. underwing ordnance—namely *basic* bombs and a few missile types. I recognize up front that this is a very large topic, one with many associated features and facts. However, I feel there is some added room for knowledge on our parts as modelers, at least those of us who build modern military aircraft. The greatest limitations placed on me are my limited knowledge and the information base upon which I can rely and share with you. Should you have additional information, which you would like to share with us, please contact me and it will be incorporated into added notes. With this caveat in mind then, allow me to share the topic of modern United States military aviation ordnance with you. If we each, as Ted has urged us, treat our models as subparts (and certainly the underwing/fuselage ordnance is such a major subpart), hopefully we will begin to pay greater attention to this detail as well. This article is not intended to be comprehensive—but rather to cover the more commonly used, seen and photographed ordnance. I can't cover it more fully because of the simple constraints of space, time and my limited resources. I am going to omit coverage of guns, gun packs, some of the more exotic missiles and bombs. Entire books have been dedicated to this single subject and I've provided some of the best of those references in the attached brief bibliography. I hope you will find these notes of interest.


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 Boiler Plate: This is the "official" publication of the Seattle Chapter, IPMS-USA. As such, it serves as the voice of our Chapter and depends largely upon the generous contributions of our members for articles, comments, club news, activities, any rumors or facts involving plastic scale modeling and other contributions. Our meetings are normally held each month (see the calendar below for actual dates) at the Washington Army National Guard Armory, off 15th Ave. N.W., just to the west side of Queen Anne Hill in Seattle. Our meetings begin at 10:00am and usually last for 2-3 hours. Our meetings are usually very informal and are open to any interested plastic modeler, regardless of your interests. Subscriptions come with payment of your Chapter dues of \$12.00 (to Norm Filer, our Treasurer). We also highly recommend our members join and support IPMS-USA, our national organization (dues: adult - \$19. and junior - \$9.) Any of the folks listed above will gladly assist you with further information about any aspect of our Chapter or Society. (see the application below)

The views and opinions expressed in this newsletter are just that, and do not constitute the official position of our Chapter or IPMS-USA.

You are encouraged (no, begged) to support and submit material to the Editor for this newsletter. He will gladly work with you to see that your material is put into print and included in the newsletter, no matter what your level of computer or writing experience. Please call Bob at 232-7784; we need your input.

If you use or reprint from the materials contained in this Newsletter, we would appreciate attribution to both the author and source document. We do not copyright our Newsletter. It is prepared with but one concept in mind: this is information for our members and fellow modelers and is prepared and printed in the Newsletter in order to expand the skills of our fellow modelers.

## Meeting Dates: 1998

The IPMS/Seattle 1998 meeting schedule is as follows. To avoid conflicts with already scheduled IPMS events and National Guard activities at the armory please note that some of our meeting days fall on the third Saturday of the month. Because some of us never seem to know when we will meet, we *strongly recommend* that you cut this page out of your newsletter and paste it up next to the recycle, Mariners, Cheers reruns, Husky home game, lemming returns or any other schedules you post in your house. All meetings begin at 10:00am on meeting Saturdays.

1998

APRIL 11, 1998 (2nd Saturday)

JULY 18, 1998 (3rd Saturday)

MAY 16, 1998 (3rd Saturday)

AUGUST 15, 1998 (3rd Saturday)

JUNE 13, 1998 (2nd Saturday)

SEPTEMBER 19, 1998 (3rd Saturday)

## IPMS/USA NEW MEMBER APPLICATION

IPMS No.: \_\_\_\_\_ Name: \_\_\_\_\_

(leave blank)

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Signature (required by PO): \_\_\_\_\_

☐ Adult: \$19☐ Junior (17 years old or younger): \$9☐ Trade Member: \$19 ☐ Canada & Mexico: \$25 ☐ Other Foreign: \$28☐ Family (Adult dues + \$5, one set magazines, # of membership cards required: \_\_\_\_\_)☐ If recommended by an IPMS member,

list his/her name and member number \_\_\_\_\_ (name) \_\_\_\_\_ (IPMS#)

IPMS/USA

P.O. Box: 6138

Warner Robins, GA 31095-6138

## Introducing Our New Editor: ROBERT ALLEN

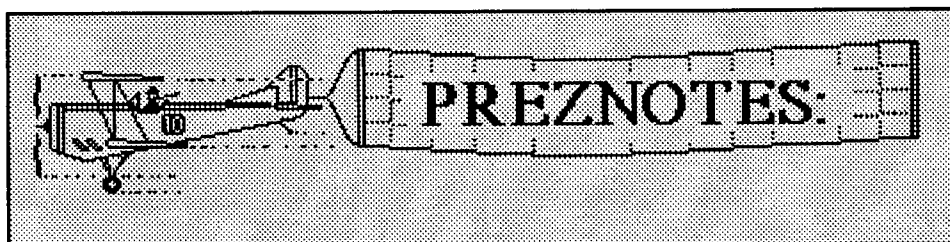
Allow me to introduce our new Editor, Robert Allen. Many of you have seen or met Robert at one of our local Chapter meetings, where he is a usual visitor and participant and I would like to share some insight into his background and "what he's about" as he enters into his editorship of our Seattle Chapter Newsletter.

Robert came to the U.S. from his native home in England, with his family's movement to the Seattle area in 1966, at the age of 9. He grew up in the Redmond area, graduated from the Lakeside School in '75 and the University of Washington in '81, with a BA in English. For the last several years he has been employed in the non-profit organization field, working with senior citizens. In that capacity, he put together a newsletter which is a bit larger than our Chapter effort and also writes for *The Rocket*. Additionally he is the score

keeper for the Husky Basketball team. He is single, but looking.

His modeling interests are largely dedicated toward 1/72nd aircraft and he considers himself "an average modeler." He doesn't build for competition and strives for some improvement in each of his modeling projects.

He is enthusiastic about the Chapter Newsletter and feels that his editorial efforts will be best spent maintaining the current level of quality and hopes his greatest contribution can be toward increasing the number of contributors from the Chapter. He wants to get as many members writing and increase the diversity of our subject material. He works with a DOS computer (Windows '95) and looks forward to working with all of us. Please join with me in welcoming and supporting him as our new Editor!



While viewing the Codex Leicester at the Seattle Art Museum, I was struck by the fact that Leonardo Da Vinci had some tendencies that current day modelers have: he liked to research and study in great depth what interested him but he rarely saw a project through to completion (he finished only 12 paintings in his lifetime). Some of my model projects seem to be that way. I certainly am not comparing myself to Leonardo Da Vinci but I, as well as some others in our hobby, sometimes have a tendency to over research a project that results in a loss of interest in a particular model we are building. Studying the information on a subject reveals that a kit is missing a few important items like interior details or that to be totally accurate you have to scratch build major components. On some projects, details that would render an average model a good model just don't seem worth the effort and sometimes the model will be set aside - sometimes permanently. But the research was fun and we learned a lot about the subject, but until a much better kit comes along, we'll never build one. Maybe I am comparing model builders to Leonardo. Hey, maybe we're all brilliant artisans and creators! Which leads to a deeply weird thought: What would Leonardo build if he was a model builder? My initial thought is that he would be a figure

sculptor and painter, but looking at his sketches and drawings, maybe a diorama builder. And think what he could do with an airbrush(!) Those WW II Regia Aeronautica color schemes (Macchi 202/205 & others) in 1/72nd scale? No problem. He probably wouldn't need to use a decal for any aircraft with nose art - he'd just hand paint it. But, he probably would have many half built projects lying about as he would find something else to whet his appetite immediately after starting anew kit. Today, that is a real problem with one or two kits on the shelves at the local hobby emporium every week! After viewing the Codex, I certainly would not hire him to draft instruction sheets. Well, maybe for Mach II kits...

I had considered the possibility of submitting some of the Codex to "Super Editor" Bob for a series of articles in our newsletter, but with Leonardo Da Vinci's writing style, language, and drawings that would not reproduce well in our newsletter, I decided against it. Also, Mr. Gates probably would not let us borrow the originals.

See you at the meeting.

Terry

## A New Contest Category by Bill Osborn

Well, its happened again, and again and again. Three models and three botched paint jobs.

Number one is a Frog Miles Magister with a lot of time spent on modifications. Now to be fair the paint job (red, white and yellow) did come out great. The problem came with the gloss coat. After four weeks its still tacky. Every time I pick it up to do finish work I leave smudges which I can't polish out. Also the paint is starting to wear off the trailing edge of the wing. For paint I used Model Master Enamel, and Top Coat Aero Master Gloss.

Number two belongs to a deHavilland Dash 8. To be fair the first paint job went very well with the two main colors going on smooth and blemish free. The problem came when I put the decals on. I read in a model magazine that the paint I was using was so fine that a top coat need not be applied before the decals went on. You guessed it, it didn't work. After the top coat went on there was so much silvering that there was only one option.

After removing the decals and sanding and rubbing out the model I washed it down with soap and warm water. When it was good and dry, I repainted the lower surface. Not wanting to hurry the paint, I let it rest for a week. Next I masked off the lower surfaces and painted the rest of the model. It looks good. Wait a couple off hours and remove the masking tape and in the process all the paint under the tape came up with it. Well, now what the h\_\_\_ do I do? I will not trash the model after all the time spent correcting the kit. You'd think that if the paint came off that early the removal of the rest would be a snap. It's not. Paint used was PollyScale. I've used it before and had fair results.

Number three is a Matchbox Canberra. (you'll notice a lack of smarts on my part as to my choice of kits) O.K., I've cleaned the model for paint and the lower color is on. Let it dry and cure for a few days and start to mask for upper colors and what happens...I scrape some paint off with a fingernail. Which means if I had stuck the tape down tight when pulled it off the paint would probably have come off as well. See number two above. Paint used was Model Master with Duracryl DTL 876 lacquer thinner. Any comments Ted?

As it stands now I'm in a six month slump. I think I'll push for a new contest category: "Built But Unpainted" models.

The April meeting and guest speaker will appear on April 11th; our March announcement mentioned two dates -- the correct date is April 11.

(Cont'd from page 1)

Like you I suspect, I have often noticed that some modelers, myself included, have failed to do much research about what weapons or "stores" we put under the wings and from various pylons on modern aircraft. This may be in part due to the fact that by the time we get to "arming" the model, we're exhausted and just want to complete it. But I suspect it is because we often really do not have many resources dealing with the ordnance and are basically unsure of what to place there. I have seen more than one model which displayed just blue bombs under the wing pylons. Talking to the builder revealed that they thought their photos of blue bombs were correct and didn't realize that these were only inert "shapes" placed there for static display purposes. I have also (more than once) seen what I believe to be versions of WW II bombs used on modern aircraft. Are they wrong? The answer is a resounding "maybe." My purpose in this article is to provide you with a short basic introduction to modern ordnance as used by our armed forces, both shapes, assemblies and colors, as I know them and to give you a few added references for you to further research this important topic.

Through most of the formative years of plastic scale models (as I saw them) we were rarely given anything but basic plastic shapes by the kit manufacturers. Some companies clearly gave us the same bomb and missile shapes for any aircraft, often without any regard for the time period and in some instances, the nationality of the aircraft. "Bombs were bombs" and all basically look the same, right? Again, actual use and practice

is not quite so simple.

You have recently seen a few articles we've run covering the specific colors of underwing ordnance from various nations (e.g., Japanese and now British), which even permits us to paint the bombs in their appropriate colors.

What about the shapes themselves you ask? Well, things have improved markedly over the last 10-20 years. It was about 1980 when the Hasegawa company treated us to our first realistic modern ordnance, again in my opinion. Prior to that time (and sometimes still) the kit manufacturers "give" you what could be best described as a "bomb-like" shape and some aren't even that close. Many of the bombs were basic blob shapes and sort of tear shaped, usually with four fin-like devices at the pointy or rear end. These "fins" are normally not the correct shape and if projected into scale would be about 5-8" thick and hardly provide a fair representation of the aerodynamic fins the actual bombs contained. Now, there are fairly decent bomb shapes for WW II, Korea and Vietnam eras in several different shapes and both Allied and Axis powers.

As a direct result of all fine photographic coverage of the Vietnamese conflict, the kit manufacturers started paying attention to the basic underwing ordnance used by the U.S. Aside from their previous crude models of Sparrows and Sidewinder missiles, they now presented them in much greater detail and a variety of actual configurations and in both 1/72nd and 1/48th scales. Their aircraft weapons sets provided such a variety, for example, that the modeler could choose from

anyone of the *five* AIM-9 Sidewinder missiles in use. Shortly thereafter, we were further rewarded by more accurate weapons (including those of Soviet block forces) from Italeri, Fujimi, Revell, Monogram and many fine after-market parts from such companies as AeroMaster, KMC, PP Aeroparts to name a few. And with some of the brass sheets available, there are beautiful fins available to put onto the bombs themselves, which largely correct the width and shape problems encountered previously. You can also now get a wide variety of bombs, fins, fuses and assemblies used by front line U.S. units to display with your models.

### Bomb Markings

This may be a bit confusing as you look over photos from the WW II, Korean and Vietnam wars. The reason is because there were changes between the conflicts and more importantly, because the bombs themselves overlapped in their usage. For example, you will often see the WW II boxed fin style bombs used in both Korea and Vietnam. This is simply a matter of supply and demand. As the country's ability to produce these bombs gained momentum near the end of WW II, later Korea and then during the Vietnamese wars, there were the inevitable shortages of some types of bombs, but more importantly, a large number of "surplus" bombs were held in the military's storage depot system. As a personal observation (to illustrate this point), I was issued small arms ammunition in the early 90's which was still in depot level storage that were loaded in 1942 in the Denver arsenal; there are still lots of WW II vintage small arms ammunition available in quantity. While aboard the

Table 1: Basic U.S. Ordnance Markings - Korean War and Later

Type of Bomb	Color of Body	Identification Bands				Color of Marking
		Color	Number of bands and location			
			Nose	Center	Tail	
GP, LC, Frag; AP, Depth & SAP	Olive drab	Yellow	1	none	1	Black
GP (composition B loaded)	“	“	2	“	2	“
GP & LC (triton loaded)	“	“	1 narrow band between 2 wide bands	“	1 narrow band between 2 wide bands	“
Target ID & Photoflash	Gray	---	none	“	none	“
Practice	Blue	---	“	“	“	White
Drill	Olive drab or Gray	Black	1	“	1	Black
Chemical - Smoke	Gray	Yellow	1	1	1	Yellow
Chemical - Incendiary	“	Purple	1	1	1	Purple
Chemical - Persistent gas	“	Green	2	2	2	Green
Chemical - Nonpersistent gas	“	Green	1	1	1	Green
Chemical - Irritant gas	“	Red	1	1	1	Red

USS Nimitz in 1990, I saw and photographed fins being assembled onto bombs which were dated in 1957. I suspect there is still a lot of Korean war vintage ordnance stored at depot levels and very likely still some WW II bombs. We are also aware from the news about the destruction of WW II artillery shells, just now being planned in several of the government's ordnance depots. I say these things to call to your attention to the fact that when it comes to ordnance the modeler shouldn't rush to judgment as to which bombs and fins are and are not proper for a given aircraft. My rule of thumb is to try to build using photos as references. You will also be able to "read" many of these bomb types by using the color and strip indications, using the Table 1 data.

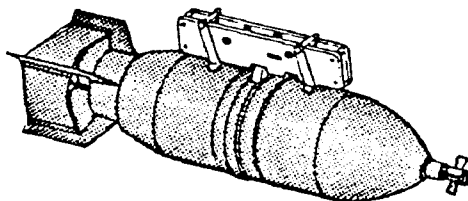
WW II bomb shapes were hardly "aerodynamic" shaped, at least as needed for high speed or level delivery, when compared to the more modern ballistic shapes. These differences are reasonably clear when looking at pictures of underwing ordnance (see Drawing A for several illustrations). I am aware of several current government ordnance manuals which specify that certain types of bombs (the boxed fin variety for example) were not used during Vietnam or later. As you can see from photos and several of the reference shots below, this simply wasn't true. To some degree the bombs used were chosen not only because of available stockpiles, but also because of the speed of the delivery aircraft. For example there was no fear in using the older style boxed finned bombs on A-1s, T-37s and several other types of a/c in Vietnam. Notes from ordnance manuals also point out the older styled "high speed" (referred to as "series 60") bombs, which were introduced in the early 50's were still being used by both the Navy and Air Force throughout the Vietnam war. You will see many photos of these bombs being loaded and dropped (e.g., in the intro. photo for this article from an early B-52 over North Vietnam). The bottom line is that you may see a variety of ordnance hanging under the wings of U.S. military aircraft, all the way up through the middle east conflict.

### WW II Bombs

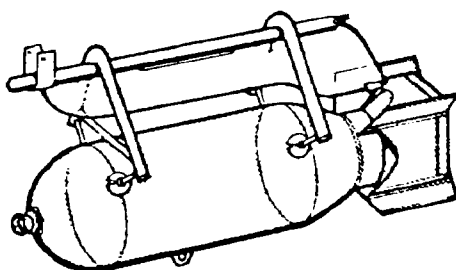
I have also, at the end of this article, included a reprint entitled "U.S. AVIATION ORDNANCE (UNGUIDED WEAPONS AND GUIDED WEAPONS)", which originally appeared in the early 70's in the Tidewater Chapter's Newsletter, *Model Topics*. [please refer to pages 12 for that article] I have done this to provide you with as much information as possible about this subject. My reading and interpretation of this data is that that article covered mostly WW II and Korean war

ordnance. You will notice some small differences from the data show below, which was taken from both U.S. Air Force and Navy publications. What accounts for the differences? Time and changes in ordnance

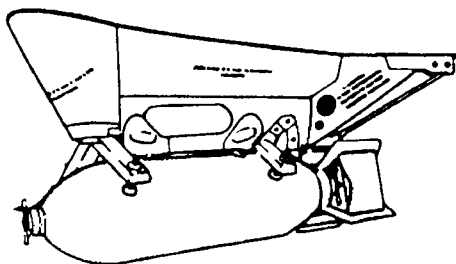
Drawing A:



WW II style, boxed fin bomb (about 500 lbs.) shown on Navy underwing bomb rack.



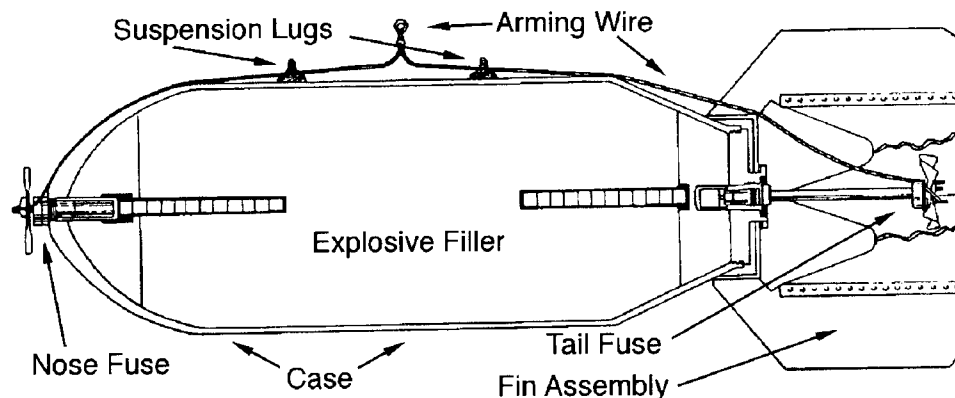
WW II style, boxed fin bomb (about 500 lbs.) shown on Navy fuselage bomb rack (most likely a F4U Corsair).



WW II style, boxed fin bomb (about 500 lbs.) shown on Army Air Corps underwing bomb rack (probably a P-47).

Drawing B:

Basic aircraft bomb parts:



manuals. Again, I like to refer to actual photos and recommend this method of authenticating your models.

### Korean War Bombs

As noted, the following chart is taken from available U.S. Air Force publications from the Korean War era, and based on photos I have seen, is believed to be accurate for that period and for the Vietnam war period.

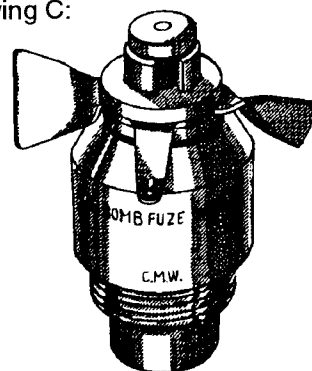
### Common Bomb Parts

In Drawing B, the most common parts illustrated.

### Fuzes

As you begin to pay closer attention to the photos of actual bombs, you will quickly notice a few aspects which I failed to see for some time. Most are fused at both ends and the connecting safety wire which normally runs from the bomb pylon runs to both the front and tail fuses on the bomb (see Drawing C). These safety wires are there to prevent premature arming (and activation) of the bomb

Drawing C:



Basic aircraft bomb fuse (nose type, but basic design and shapes are same for either end):

(see sketches below). While I don't intend to go into detail on bomb fuses, most of the bomb fuses are commonly set to detonate the bomb in one of two ways: (a) primer-detonation (when the strike the target). This may be timed with a preset delay in the fuse itself or immediately on striking the target. These fuses are often "armed" by the time they hit the target because of the number of revolutions counted by the little "propeller" device you see on the fuse (called an arming vane). The other common types are (b) proximity fuzes, which may detonate based on approaching the target, on automatic release, radio or electronic transmission.

You should notice the tail fuzes also usually contain arming vanes. For most uses, these fuzes are included to preclude a dud bomb from not going off due to an ineffective nose fuze.

The final aspect of fuzing which I would like to point out are the extensions commonly used on bombs. These were often seen in Vietnam era photos and were used to detonate the bomb at a certain distance above the ground. This was done to increase the destructive power of the bombs. These fuze extensions are commonly seen in three lengths: (ca.) six inches, two feet and three feet. You will see these longer extensions in at least two of the accompanying photographs.

### Bombs Shapes

As the U.S. built higher speed aircraft (and delivery speeds for ground ordnance), the basic shapes of our bombs and fins both changed accordingly. As we began deploying major forces and weapons into Vietnam, the shear numbers forced us into almost a total redesign of our bombs. As the Southeastern Asian war began to widen, our country's bombing efforts resulted in dropping of over 70,000 tons of bombs per month! This not only resulted in the utilization of much of our previous depot stockpiles of bombs, but forced us into producing added weapons at a rate

exceeding 73,000 tons each month and resulted in a need to maintain a constant stockpile of at least 200,000 tons in Vietnam.

As Vietnam heated up, several additional needs were foreseen. Not only did the aerodynamics of the bomb carcass need to be improved for bomb delivery accuracy, but also to reduce the drag on the bombs. This was important due to the effect of drag on delivery, the increasing need to carry additional bombs under our aircraft, increase loiter time above the targets and to increase the overall speed and economy of the aircraft themselves. Decreased drag resulted in huge fuel savings alone. When you realize the early B-52 missions were carrying up to 108 bombs, an F-111 would could carry 48 bombs and an A-6, 24 bombs, you can more clearly see the associated needs. As a result we saw the older WW II style of short, wide diameter bombs (M117) replaced by the slim Mk 80 series. At the same time, weight and drag were driving the design of the bomb casings themselves, the nature of our targets and delivery needs in Vietnam (i.e.; close-in and low level ground support) required our aircraft to clear the target without damage from our own ordnance and become more accurate in the bombs delivery. This resulted in increased deployment time over the target, once the bomb was dropped. Notes below provide some further insight into this issue of retardation. In Gulf War photo coverage, some of the older M117 style bombs were still being used there as well.

The newer general purpose bomb series contains the following standard bomb models.

### Napalm Bombs

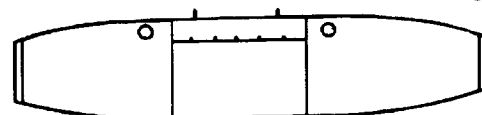
Napalm, the much feared liquefied jelly fire bombs, are almost always carried in the same types of containers. During Vietnam, these were usually more tear shaped and most recently, more "barrel" shaped. In both instances, they were basically a silver colored

container. The few I've seen appear to be stainless steel and not really silver or aluminum in color. These basic shapes are shown in Drawing F, as are the newer, the fuel-air explosive. These weapons explode, prior to impact with the target and spread a large fog-like mist of very small particles of fuel and air mixture. As this mist is spreading over a very large area (estimated to be as much as 75-100 yards), the mist is exploded with devastating results.

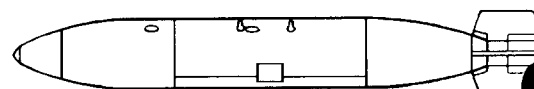
### Cluster Bombs

These stubby bomb-like containers are just that, containers full of smaller munitions. Usually these containers carry several hundred anti-armor or personnel munitions. As the bomb is dropped (prior to hitting the ground), the bomb container opens and hundreds of the sub-munitions are spread around over a wide area. Many of these anti-personnel or

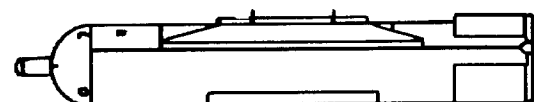
Drawing F:



Mk 77 Napalm Canister



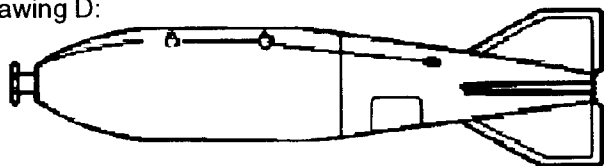
BLU 77 Napalm Bomb



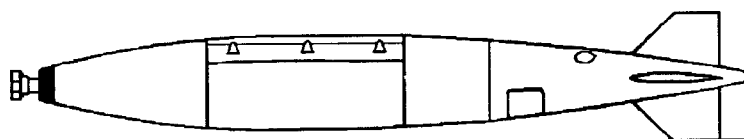
CBU-55/72 Fuel-Air Explosive

-equipment bomblets are set to explode on impact, some are timed for later detonation and some may be proximity types (which lay on the ground unexploded until something touches them). While seemingly small, this bomblets can quickly spread destruction over a very wide area.

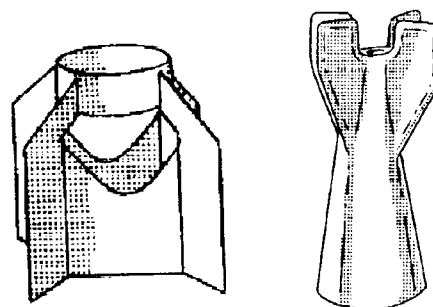
Drawing D:



Basic aircraft bomb fuse shapes: the older (WW II & Korea) style (M117), with the newer style fins and (below) the newer high speed, low drag (Vietnam) style (Mk 80 series):



Drawing E: Basic aircraft bomb fin shapes: the older square or boxed style (WW II) and on the right, the newer conical style, used from the Korean War forward. Still seen on some M117 bombs today.



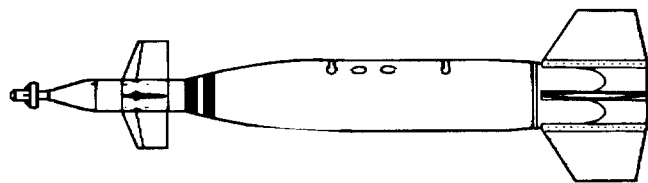


**Laser-guided bombs**

Another important contribution from the Vietnamese conflict in our modern arsenal of aircraft weapons are the laser guided bombs or LGBs as they are often called (Drawing G). While much was made about the fact that these "smart" weapons appeared only recently during the Gulf war and Desert Storm, that is far from true. While reporters and the television media may have just picked up on them, they were used (though in earlier versions) starting in late '69 and throughout the later years of our involvement in Vietnam. They came from the Air Force's program of precision avionics vectoring equipment (abbreviated and called the "PAVE" system, of which there are a number of sub- "pave" projects and programs). Basically what happens is the seeker head of the LGB tracks or "guides" onto the target using a laser designated beam. The LGB actually flies toward or locks onto this laser beam and homes into the designated target, as it is illuminated by the laser beam. As a result, the probability of the bomb results are almost always very high, certainly much better than with "dumb" bombs. A reasonably accurate depiction of this was shown recently in the Tom Clancy movie, "Clear and Present Danger" (though the bomb type itself is purely fictional—as far as I know).

**Drawing G:**

Mk 82 (500 lbs.) HE bomb, with LGB guidance head and fins.



Mk 84 (1000 lbs.) HE bomb, with LGB guidance head and fins. The two strips also indicate this is fire protected

To say that the bomb is a laser guided bomb is a bit of a misnomer. The completed bomb package or assemblies are guided bomb units (GBU's) and contain several major components, which come together as a kit. The bombs themselves are usually either the Mk 82, 83 or 84 bombs and combined with the computer-control group (the seeker head) and the air-foil group (front wing assembly and rear guidance fins). I won't attempt to go into the numerous combinations and LGB packages, since there are so many. Vietnam also saw the first use of the electro-optically guided bombs (EOGB), which were effectively bombs guided through the use of a small television

camera in the nose of the guidance portion of the bomb. The only model of this I am aware of is the GBU-8 (guided bomb unit) in the Hasegawa weapons sets. In both instances, while the initial training began in 1968, the units of the 8th TFW at Ubon RTAB began to use these new "smart" weapons in 1969 and 1970 and both were made even more reliable because of the advent of the Air Force's ability to more closely navigate to their eventual targets using the latest Loran D equipment. This capability is usually seen on F-4s flown by the 8th TFW as a white bar antenna on top of the fuselage spine (they were called "towel bars"). Today the GBU-15 is the standard 2000 lbs. guided bomb following either a electro-optical or infrared guidance source.

Color references throughout the LGB series are reasonably similar. Most of the LGBs are made up of olive green painted components, with the bomb being either a single stripped (HE) or double stripped (thermally protected) type (depending again upon the end user). The actual seeker head has a large glass lens, which is clear and can be made by placing a drop of clear epoxy on the bomb's guidance head, representing the lens. The rear fin assemblies while usually still composed of olive green components, may also be seen with a light gray fin assembly as well.

I recommend following the Hasegawa color suggestions and believe they are the most accurate ones I've seen in print to date, though it should be noted that anytime you have a photograph which displays another color—go with your photo evidence. Some of these latest LGB assemblies contain a rocket assisted delivery package in the tail section as well. This is the combination I have seen aboard Navy carriers during my last two visits. I have also seen a number of the current LGBs in various shades of olive drab in color photos taken of ground launched aircraft during and since Desert Storm.

New to the inventory during the Desert Storm conflict were the "bunker busting" bombs. Those often seen included the BLU 109 series, which included the GBU 12 guidance section (for 1000 lbs. bomb) and GBU 24 (for 2000 lbs. bombs), both of which used the BS-84 tail fin assemblies. The Air Force also uses a GBU-18 (w/ B-4) 4700 lbs. GBU, which is commonly called "deep throat." The initial lot of these bombs were all hand crafted at a government arsenal, using unissued cannon barrels for the bomb casings. These bombs are specifically designed to penetrate deep into sand protected shelters prior to

explosion. The AF ordnance appears to be painted in overall olive drab, while the Navy uses a combination of o.d. bomb casings while the guidance section (and sometimes the fin area) may be gray or o.d. All of these I have seen personally have had both the fins and guidance section painted in a "navy gray" color.

**Bomb Fins**

As a result of the Mk series 80 bombs' development the older style fins were replaced by the conical, higher speed, shaped fins used today (Drawing E). These bombs are referred to as low drag, general purpose bombs (LDGP) and often just called "slicks." This same bomb series are the basic components for most of today's optically guided and other special ordnance bomb assemblies as well. You will notice whenever you see the older M117 bombs, the Air Force also has a newer, high speed fin for them as well, the M904 fin. As an example, you will see several photos here with older M117, fitted with newer conical fins, being loaded onto B-52s (also seen dropping from the lead photo, from an early "tall tail" B-52 over Vietnam). As previously noted, these older M117 bombs were still be dropped by at least B-52s, over Iraq during the Gulf War, as is evidenced by numerous photos taken during that short conflict.

As previously mentioned, the need to also accurately deploy the bombs and allow the delivery aircraft to depart the area before the explosion brought about another need in fin design. Hence the development of the high drag or retarded bombs. Douglas aircraft developed the "snakeye" fins (Mk 14 for the Mk 81 bomb, Mk 15 SE fin assembly on the Mk 82 bomb). These fins can be seen as an assembly which contains four separate deployable flaps (Drawing H). These "w" shaped flaps pop open after dropping and deploy like an umbrella, slowing or retarding the bombs deployment. In the last several years, the latest development in retarded delivery has been the development by Goodyear Aerospace of the "balloon" bomb (the BSU 85 and 86 fin assemblies). This newest retardation system is a container, mated to the rear of the Mk 80 series bomb, which pops open on deployment and deploys a 4 foot diameter pear-shaped "ballute" to slow and stabilize the bombs' delivery. You may have seen some great color footage of these bombs being delivered from B-1 and B-2 aircraft during recent WINGS shows.

Comparative drawings of both the bombs and fins are shown below for comparison (Drawing E). It should also be noted that while these drawings are not drawn to scale, I have provided sufficient dimensional data and hopefully these drawings will allow you to more closely model and paint these bombs and

missiles.

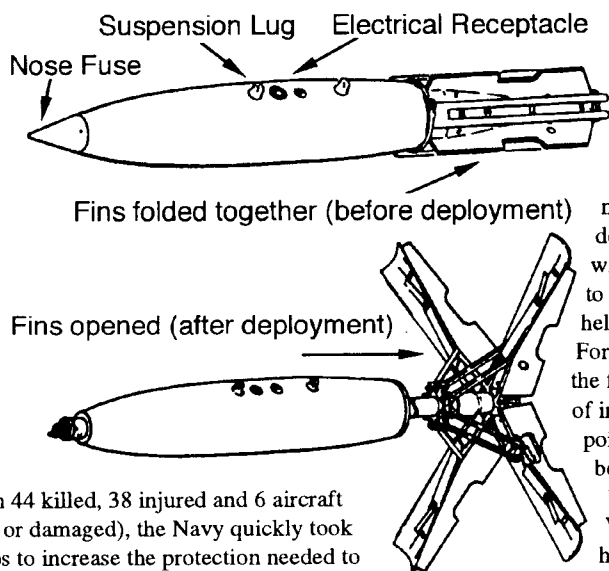
### Bomb Markings

Most, if not all of the markings shown above (re: Korean War ordnance) are still valid. There are two basic very significant additions (in markings) during the Vietnam war. The first are those Mk 80 series bombs with only **one yellow strip** (approximately 3 inches in width). This is an indication that the bomb is and contains a high explosive filler (HE).

The second, seen only on naval weapons and aircraft (to the best of my knowledge) is that related to thermally protected bombs in the Mk 80 series. As a result of the several devastating accidental ship-board fires on the Forrestal (07-29-67 fire with 134 killed, 62 injured and 21 aircraft lost), Enterprise (01-14-69, fire with 27 men killed, 344 injured and

15 aircraft lost) and Oriskany (10-26-66, fire

### Mk 82 LDGP "Snakeye" Bomb (500 lbs.)



with 44 killed, 38 injured and 6 aircraft lost or damaged), the Navy quickly took steps to increase the protection needed to keep naval ordnance from "cooking off" during ship fires or accidents. This additional protection is readily identified by the **double yellow strip** (each 3 inches in width) around the nose of the Mk 80 bombs. You can easily see the thermal protection coating on the bomb in photos. It is a thick, rough external finish, which results in the bombs ability to burn in a fire, rather than quickly exploding. The entire bomb system (fuses and components) are also protected. Bombs without this ablative coating are no longer allowed aboard our carriers.

### Missile Markings

With the excellent notes provided by the accompanying *Model Topics* article as well as those from our most recent IPMS-USA

*Journal*, there appears little more to add to the markings and colors for most of the modern missiles. In recent years there have also appeared several beautiful sheets of decals to specifically provide the various stripes and markings for a variety of modern U.S. military aircraft missiles. The sheets I have used and recommend include those by Lloyd Jones' *Scale Master* sheets and those by *Precision Scale Graphics*.

### References:

Unlike a few years ago, when there were few photographic references and almost no written material available regarding our ordnance, there are now an increasing number of references available. I have outlined my favorites below and recommend them to you. Additionally there are several excellent reference sources which display their own web pages on the internet. I obtained much of what I owe not only to personal observation and photographs, but to a number of unnamed

former Naval Aviation Ordnance Specialists. They have never tired of answering my endless

questions. These are the well known "red shirts" who are the real experts. They service the Navy's aircraft, just as do the Air Force ordnance specialist. These are the guys (and now gals) who really see that this nations military aviators are able to deliver the ordnance, where, when and as needed. I also want to thank Norm for generously helping based on his earlier Air Force experiences. While each of the following provides something of interest for the modeler, I should point out that few, if any even begin to approach Jim Wogstad's 1974 effort in *Replica In Scale*. While these fine publications have been out of print for a good number of years now and

probably all are now worthy of collecting, this particular issue is an absolute must if this topic is at all of interest to you as a serious modeler of U.S. underwing ordnance. It is now beginning to show its' age (due to the number of later weapons developments), but in my opinion it is a "must have" reference.

Anthony M. Thornborough, *Airborne Weapons of the West*, Motorbooks International, Osceola, 1992.

Berger, Carl, Editor, *The United States Air Force in Southeast Asia, 1961-1973*, U.S. Government Printing Office, Washington, 1977.

Donald, David & Jon Lake, *U.S. Navy &*

*Marine Corps Air Power Directory*, Aerospace Publishing Ltd; London, 1992.

Francillon, René J., *Tonkin Gulf Yacht Club, U.S. Carrier Operations Off Vietnam*, Naval Institute Press, Annapolis, 1988.

Gunston, Bill, *The Illustrated Encyclopedia of Aircraft Armament*, Salamander Books Ltd; London, 1988.

Jantscher, Steve, "USAF/USN Missile Paint Schemes," *IPMS-USA Journal*, January/February, 1998, page 36.

Kinzey, Bert, *U.S. Aircraft & Armament of Operation Desert Storm*, Detail & Scale Series, Number 40, Kalmbach Books, Milwaukee, 1993.

Mikesh, Robert C., *B-57 Canberra At War 1964-1972*, Charles Scribner's Sons, New York, 1980.

Morse, Stan, Editor, *Gulf Air War Debrief*, Aerospace Publishing Ltd; London, 1991.

Ripley, Tim, *Bombs Gone! Modern Aircraft Ordnance In Action*, Wings Series Number 9, Windrow & Greene, Ltd; London, 1994.

Rotramel, Jim, "U.S. Mk 82 Bombs," *Fine Scale Modeler*, January, 1997, pages 42-44.

Scutts, Jerry, *Wolfpack Hunting Migs Over Vietnam*, Airline Publishing Ltd; Shrewsbury, 1988.

Uhlrig, Frank, *Vietnam The Navy Story*, U.S. Naval Institute, Annapolis, 1986.

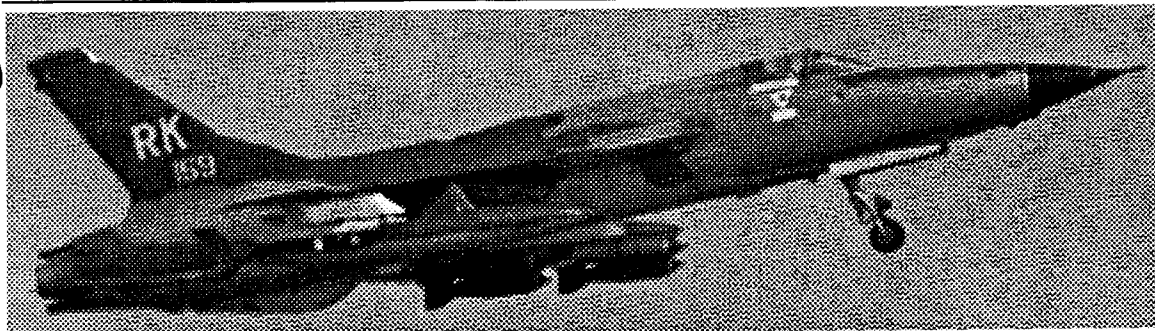
Wogstad, James & Phil Friddell, "American Aircraft Bombs, 1917-1974," *Replica In Scale*, Vol. 2, No's 3&4, Spring-Summer, 1974, pages 126-149.

### Photographic References:

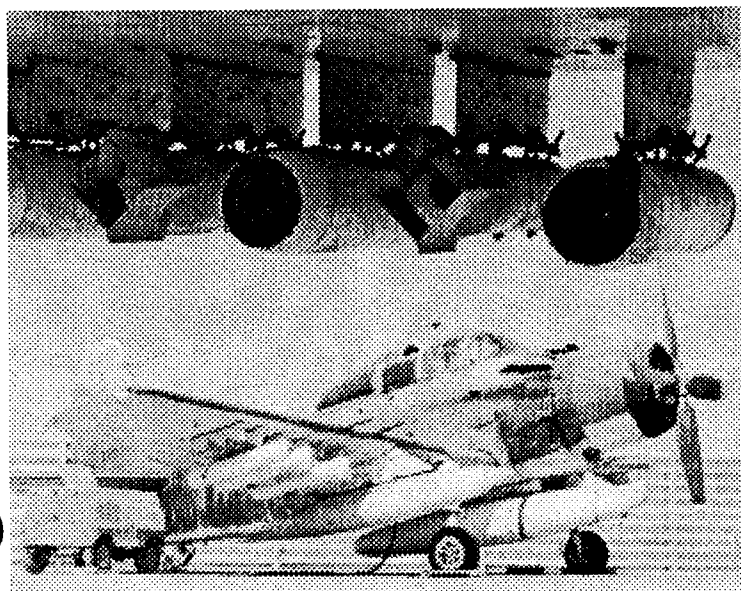
The following few pages contain some photos, intended to illustrate some of the ordnance discussed above. I realize some of them do not print very well, due to both the quality of the original print and the photocopy process we use to print the Newsletter. However, I hope they at least give you some ideas and further wet your interest in this fascinating and very important of building modern scale model aircraft.



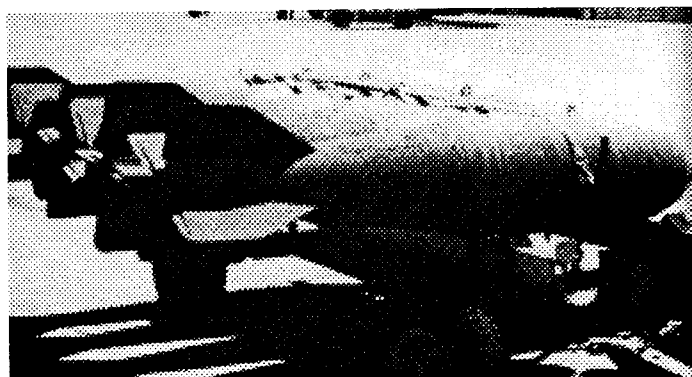




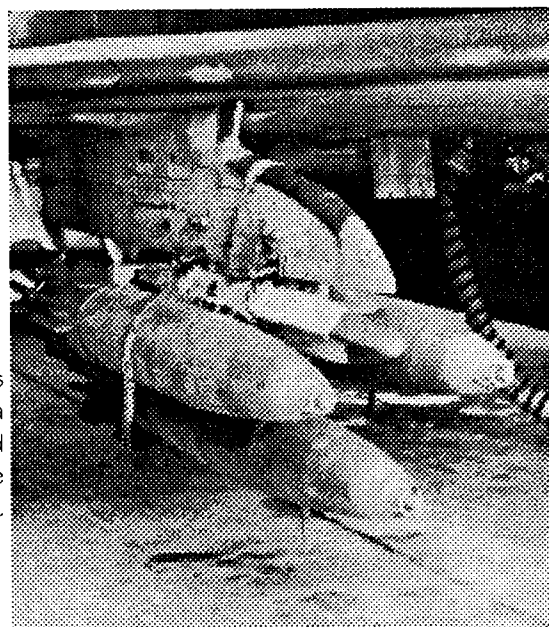
The F-105 shown is departing, with a center line triple ejection rack (TER) with six M117 GP bombs.



The AF A-1 Skyraider shown above is included because it now only shows the heavy load she was capable of, but from under the wing in the foreground, you can see at least two small WW II box fin type bombs--still being used in Vietnam.

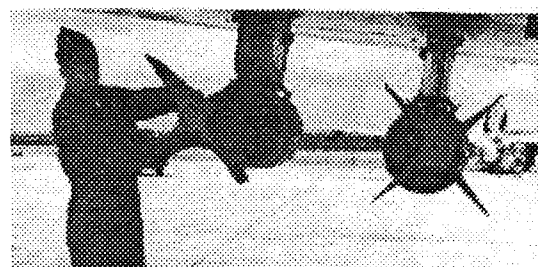
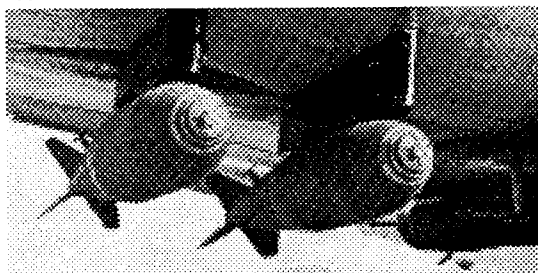


The bomb cart/trailer shown below contains six M117 GP bombs.

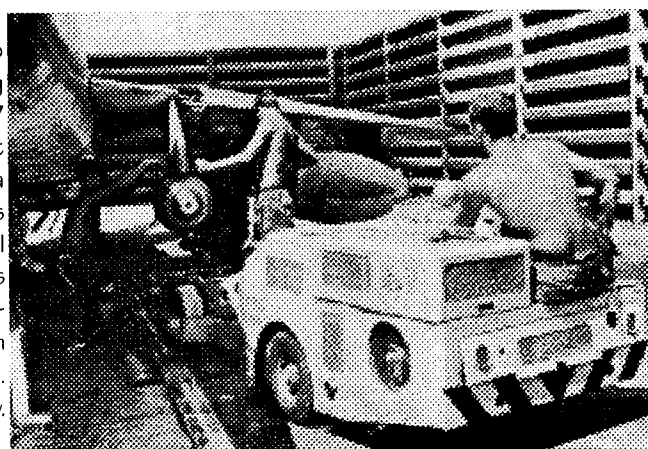


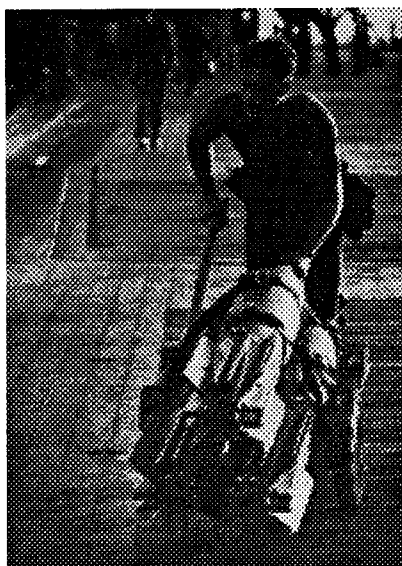
This starboard wing pylon is on an F-4 and illustrated a typical ground support load of three Mk 82 Snakeye bombs on a TER.

These two photos (below) are not great, but both show the two wing pylons on B-57s, carrying one M117 (750 lbs.) bombs each, from both front and rear views.



The F-100 shown to the right is being loaded with a M117 bomb on its port wing pylon, in a revetment. This is the one of the typical F-100 loads "fragged" as indicated by our March speaker, Lt.Col. Korminsky.

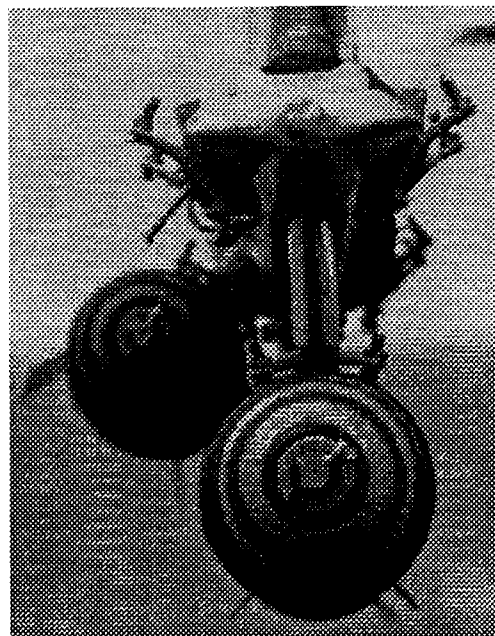




The two photos (left) both show Aviation Ordnancemen (AOs) moving Mk 82 Snakeye bombs into positions (onto a bomb elevator and across the flight deck) to be loaded onto waiting Navy carrier aircraft.



The red-shirted "ordie" on the left is shown installing a nose fuse, setting the timing on the fuse and inserting the arming safety wires on a Mk 82 bomb aboard a Navy carrier.

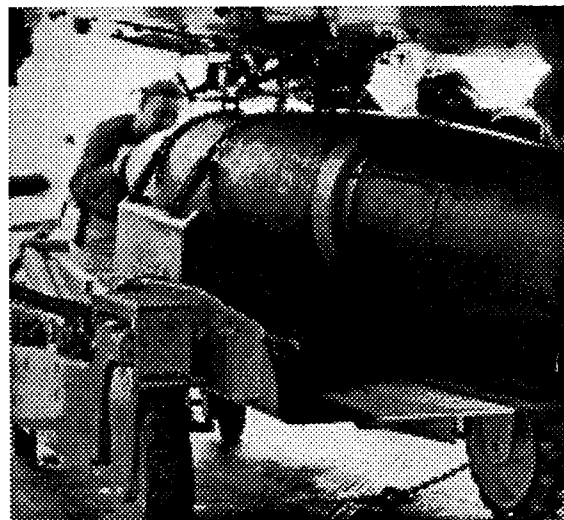


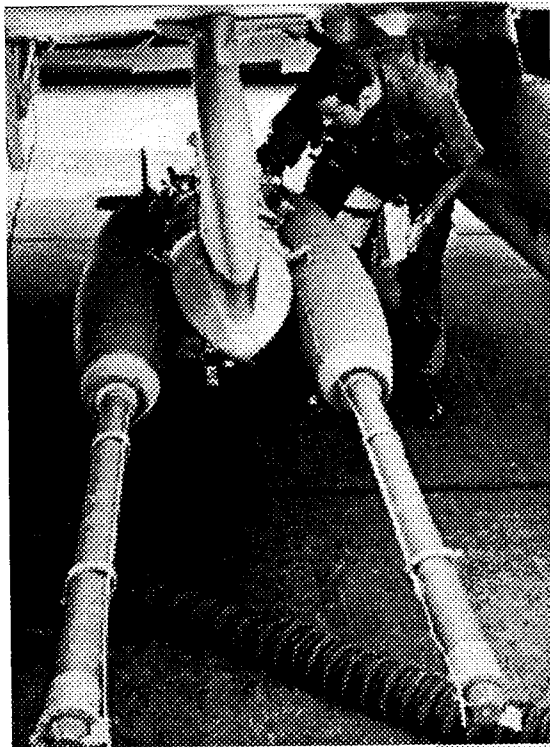
This shot illustrates two Mk 82 "slicks" loaded onto an A-7 TER, showing some of the nose fuse detail and the two stripes indicating the bomb has the fire retarded, rough finish.

The shot below shows AF ordnance specialists loading M117 bombs onto the wing stations of an F-100 in an early Vietnam revetment scene.



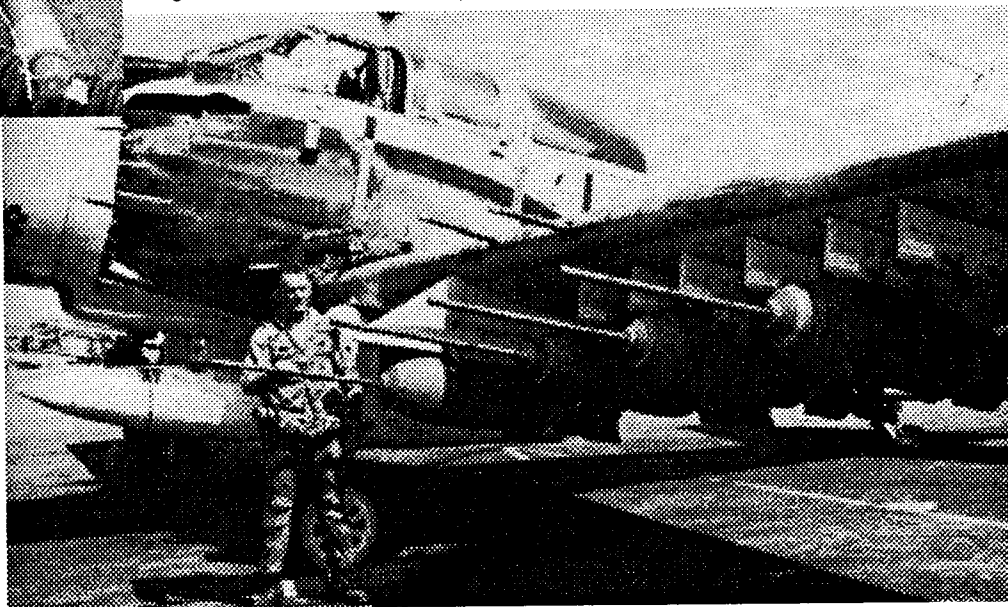
The photo below depicts a AO crew loading a centerline station with a Mk 84 (2000 lbs.) bomb. You'll notice that until the bomb is fully attached to the rack and tensioned down with the anti sway fittings, it is kept fully attached (chained) to the bomb cart. These precautions are common aboard carries, guarding against any movement by ship.



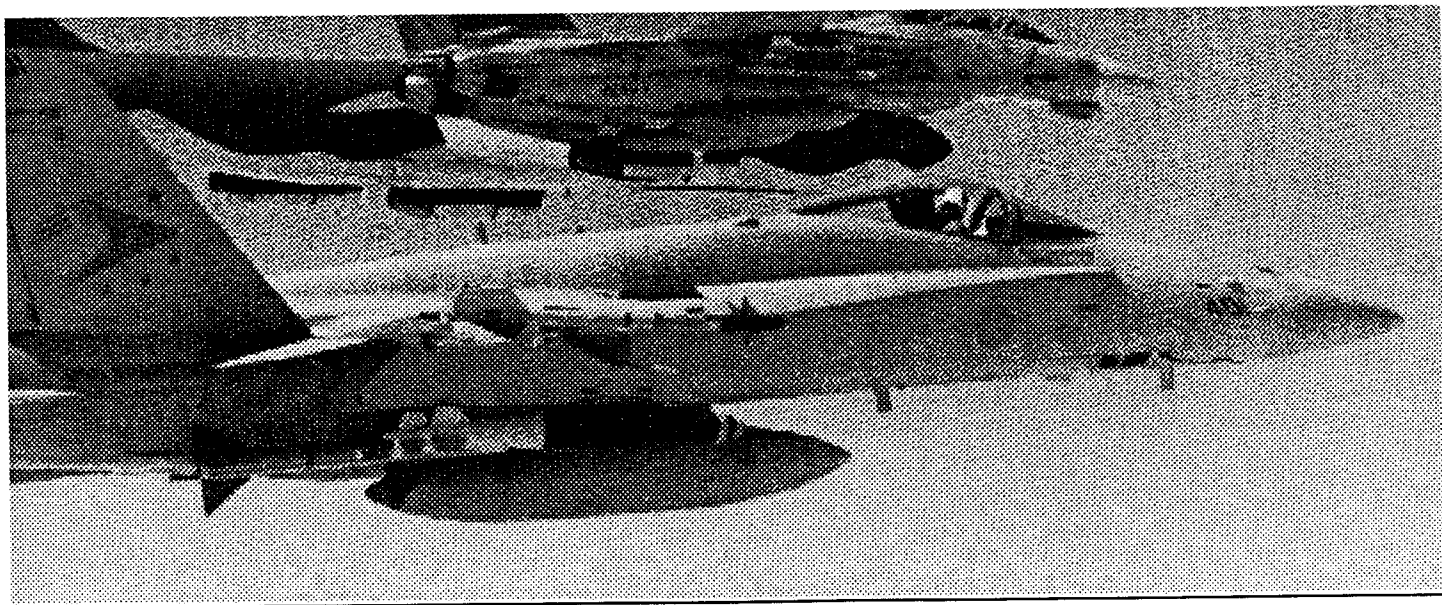


The shot to the left illustrates an F-4 driver performing his pre-flight, inspecting a TER with two Mk 82 slicks and 36" fuse extensions. This also shows the arming safety wires running clear along the extensions out to the nose fuses at their ends.

The photo below shows several aspects of armament. This pilot is also performing his final pre-flight, and inspecting these M117 (750 lbs.) bombs with fuse extensions ("daisy cutters"). As you can see from the early Vietnam era shot of this "Sandy," it is being loaded for close-in ground support and even though it appears the a/c has already had 8 bombs loaded onto it's wings, it still has at least six wing stations free for other types of ordnance!



The shot below illustrates a full load of 4 Mk 83 (1000 lbs.) LDGP bombs inbound to share with one of Saddam's crack units. As you can see from the two bombs on the starboard wing station, they are both fire retarded (two stripes) and as commonly see recently on Navy aircraft, the conical fin assemblies are painted a gray color rather than olive drab.



## U.S. AVIATION ORDNANCE

by L.S. Wilcox & Jim Walls

### UNGUIDED WEAPONS

Ammunition is painted to prevent rust and to provide, by the color, a ready means of identification as to type. The exact markings have changed from time to time but the color assignments have changed little since WW I. The Military Modeler should examine photographs of the ammunition item and determine: 1. Whether the item is camouflaged or not, and 2. The size and type of markings. In general, during periods of combat, ammunition items are camouflaged in the combat areas only and the items used for training in the U.S. are not camouflaged. The "Bands" on ammunition items are in general equal in width to one-half the caliber or diameter of the item. Some items have a band of diamond or circular shaped figures in lieu of a solid band. The background color (overall body color) may be white on current Navy items to match the underside of aircraft. The charts and illustrations provide a general idea of how the marking system works and the colors used. The exact shades of the various colors have changed from time to time and that is another story. In general non-camouflaged items are semi-gloss and camouflaged items are lusterless (flat). Nose fuzes are normally natural metal color. Ammunition items (cannon shells, etc.) have brass cases with the projectile painted a color representing the type, i.e., A 20mm high explosive round would have a brass case and yellow painted projectile. Armor piercing would be black projectile. The Federal Standard No. 595 colors are referenced below; these are the current colors.

COLOR	NAME	REGULAR	CAMOU FLAGE
Yellow	23538	33538	
(Orange Yellow)			
Brown	20117	30117	
Black	27038	37038	
Light Green	24558	34558	
Light Red	21158	31158	
Blue	25109	35109	
White	27875	37875	
Aluminum	17178	17178*	
Olive Drab	24087	34087	
Orange	22246	32246	

\* Fed. Std. 595 does not contain semi-gloss or lusterless aluminum

### GUIDED WEAPONS

With the rise in interest in Viet Nam based aircraft and with the growing production of kits of these types I feel it might be timely to discuss the different types of ordnance and

their coloring. In this and following articles I will try to cover most of the types carried by United States aircraft. In part I, I will cover guided weapons, that is air to air to surface guided missiles. In part II will be free fall weapons; bombs, napalm, etc. and lastly in part III will be gun packs and unguided rockets.

I would like to begin this part with the Philco Sidewinder (Fig 1) which is one of the older and more reliable air to air guided missiles. It is an infrared heat seeker of approximately 1 mile range. It is 108" long, has a span of 30" and a diameter of 4 1/2". It is painted gloss white overall with two 1" yellow bands at 18" and 24" (which is the warhead). Aft of this is the influence fuse which has a material metal band 1" wide (Fig 1A). The rudders are anodized (brass colored) and come in two types. The older type (Fig 1B) and the newer type (Fig 1C). The Navy has a semi-active radar homing type which is the same except for an olive drab guidance unit (Fig 1D). The sidewinders are carried by the F-4s on the inboard pylon on a double mount. The F-8 carries two on each side of the fuselage. The F104 and F5 carries them on the wing tip on what is called in the Air Force as a Red Dog launcher. The F100 sometimes carries them on the inboard pylon (only one per pylon).

Next is the Sparrow III (Fig 2) which has a semi active radar homing with approximately a 3 mile range. It is 145" long and 8" in diameter with a span of 40". They are painted white over all with three black bands around the fuselage. A 1" thick band at the 43", and 1 1/2" thick band at 59", and a 1/2" band at 90" and at last a 1" brown band at 81". On the nose there are four or five digit numbers prefixed with the letter R in 3" high letters in black. These serial numbers are carried where they can be seen from under the aircraft, The sparrow is only carried on the F-4 in recesses under the fuselage.

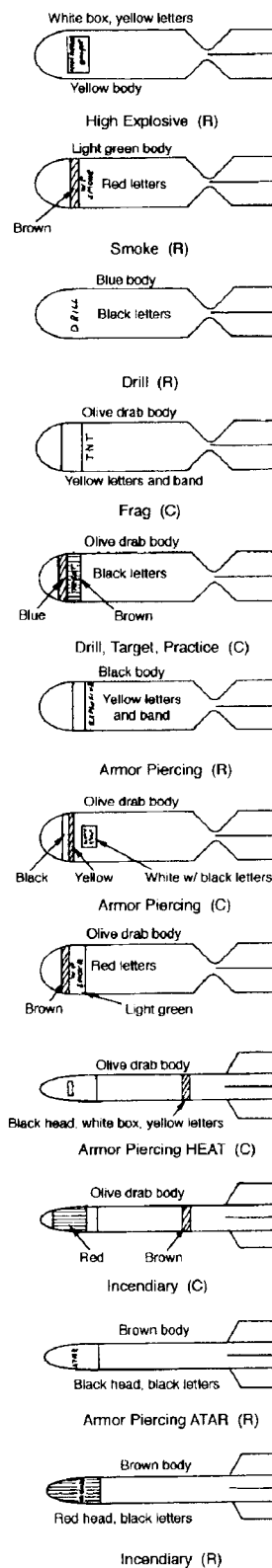
Next is the Bullpup C which is a radio control air to ground guided missile. It is 126" long and 12" in diameter and has a span of 36". They are gloss white over-all with two 1" black bands at 40" and 60" with a 1" brown band at 55" with no other markings

The Bullpup C is carried on the inboard pylon of the F-11, F-105 and A-4s. The next generation of the Bullpup is the D model which is the same as the C but bigger and more sophisticated. It is 162" long and 18" in diameter with a span of 40" and painted gloss white with two black bands 1 1/2" wide at the 81" and 118" mark. The Bullpup D is carried by the A-4 and on the F-105 inboard pylons.

Lastly is the AIM 4G Falcon which is an infrared heat seeking missile of approximately 16 mile range. It is 77" long and 5" in diameter with a span of 24". They are painted international orange for the aft and gloss white for the 35" nose section. The fin has a 1/2" white

leading edge. The Falcon was designed to be carried on the F-102, F-106 and the F-101, but it is now carried on the F-4 in the same position as the Sidewinders.

[This article was adapted from articles by L. S. Wilcox and Jim Walls appearing in the NORCAL Newsletter and reprinted from the *Model Topics*, newsletter of the Tidewater IPMS Chapter]





PRIMARY USE	Key:	BODY	BAND(S)	MARKINGS
HIGH EXPLOSIVE	R C	Yellow Olive Drab	N/A Yellow	Yellow or Black Yellow
LOW EXPLOSIVE (Rocket motors Bursting Charges)	R C	Brown Olive Drab	N/A Brown	N/A N/A
ARMOR PIERCING	R C	Black Olive Drab	Yellow Black and Yellow	Yellow Yellow
SMOKE	R C	Light Green Olive Drab	Brown Light Green and Brown	Light Red Brown
PRACTICE (Drill, target, dummy, inert)	R C	Light Blue Olive Drab	N/A Light Blue and Brown	Black Black
ILLUMINATING (Flares etc.)	R C	White Olive Drab	Brown White and Brown	Black White
INCENDIARY (Liquids, solids, jellies)	R C	Light Red Olive Drab	N/A Light Red	Black Light Red
COUNTERMEASURE (Leaflets, radar echo, chaff, etc.)	R C	Aluminum Olive Drab	Aluminum and Brown	Brown Black Black
TRACKING OR RECOVERY	R C	N/A N/A	Orange Orange	N/A N/A

Key: N/A = Not applicable (may be any other color other than that listed)  
R = Regular or not camouflaged  
C = Camouflaged

Sidewinder II

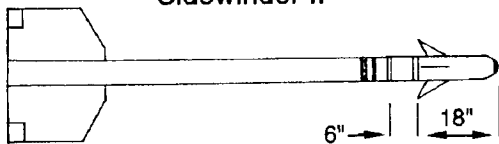


Figure 1

Sidewinder Tails

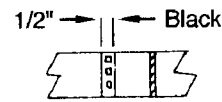


Figure 1a



Figure 1b



Figure 1c

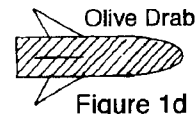


Figure 1d

Sparrow III

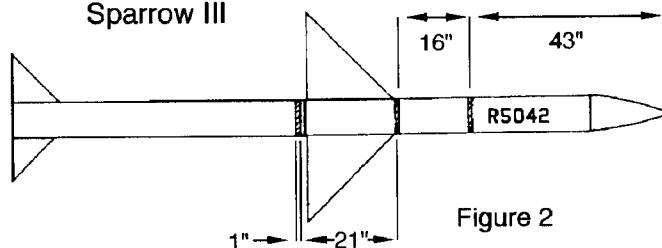


Figure 2

Bullpup C

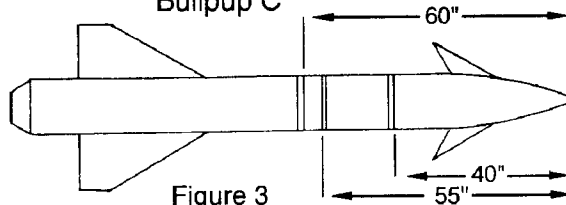


Figure 3

Bullpup D

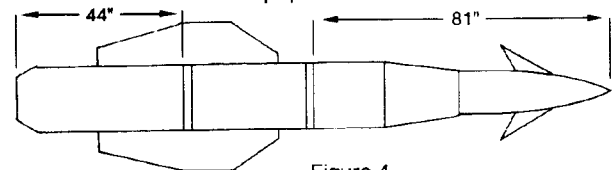


Figure 4

Falcon AIM 4G

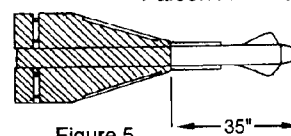


Figure 5

## BRITISH ORDNANCE

by D. M. REMINGTON

### TORPEDOES:

Pre-war: Bright yellow was the standard so they could be found earlier after being dropped, but colors varied, depending what paint was handy.

WW II: Again color varied, but the standard was: Heavy torpedoes painted semi-gloss black. Marked in white on both sides "HEAVY" - up on forward part 3/4 ways down. Contact point: Silver. See Fig. 1. Practice torpedoes were usually white, green, yellow, although like anything else many different colors were used. See Fig. 2. Regular torpedoes were usually dark grey, dull silver with warheads dull brick red or black. See Fig 3.

### BOMBS:

1914-1918: Bombs were medium grey with various color coatings which denoted the variety of fillings.

1920s; Mid 1930: The 20, 112 and 550 lb. bomb were bright yellow overall, and practice bombs were black with yellow bands. A red one inch thick band three inches from the contact point meant the bomb was filled and yellow crossed on the red band meant first grade amatol for hot climates.

Pre-war: All high explosives were to be yellow, smoke were to be green and incendiary red. H.E. had a green band around the thickest part of bomb and a red band around nose meant it was filled. One white band next to the red band meant it was semi-piercing- a white band on either side of red meant armour piercing.

WW II: Dark green became the standard for all bombs. The large drum-like 2, 4, 8 and 12,000 lbs bombs were dark green, but had a light green band two inches wide, two feet from the nose and red bands to indicate variations. Blue bands indicated American manufacture.

Modern: The 1000 lb H.E. bomb painted dark green, Yellow or red/blue band on nose — sometimes blue with rear part black. See Fig. 4. The 750 lb bomb is green with yellow band. See Fig. 5. The 1000 lb low drag GP bomb is painted pale blue with black rear section and the 1000 lb retarded GP is painted pale blue with back rear section in black. See Fig 6a and 6b,

[This article was reprinted from the *Model Topics*, the newsletter of the Tidewater IPMS Chapter]



H.E. 10,000 Lbs.



Dark Green, Yellow or Red/Blue band, sometimes Blue with rear part black

750 Lbs.



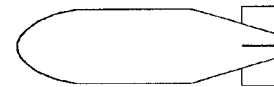
Green with Yellow band

1000 Lb. Retarded GP



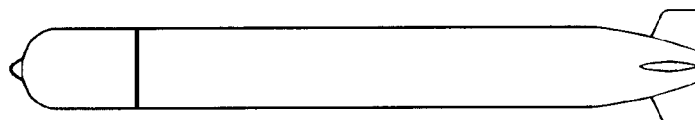
Pale Blue with Black rear section

1000 Lb. Low Drag GP



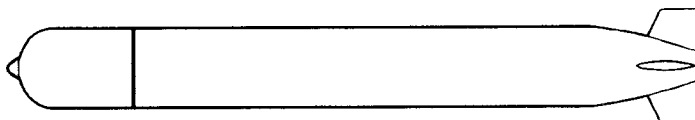
Pale Blue with Black rear section

### Practice



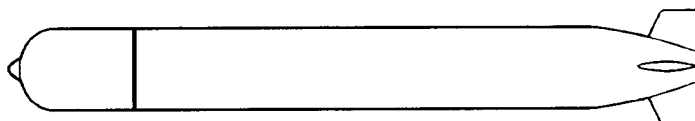
White, Green, Yellow, etc.

### Heavy



Overall Semi-gloss Black

### Regular



Warhead: Dull Brick Red or Black  
Body: Dark Grey or Silver



## DETAILS, DAMNED DETAILS...

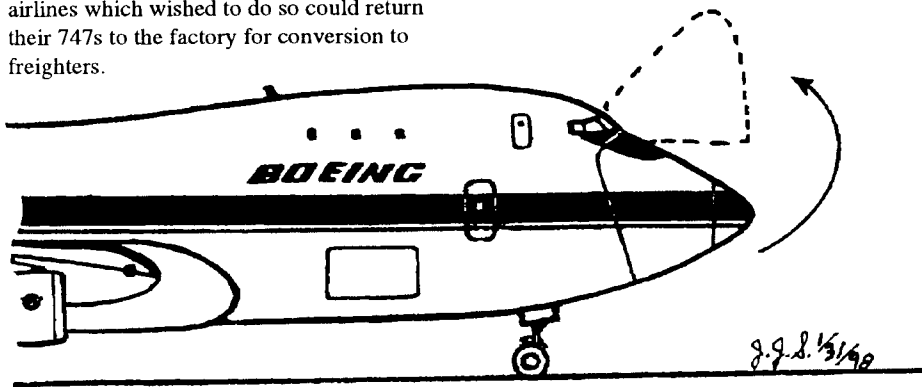
by Jim Schubert

### That Hump Over The 747 Cockpit:

And now.... for the rest of the story. The reason given for the hump in last issue's cartoon is not, of course, the real reason.

Back in the mid 1960's everyone was certain the future of air travel lay with the Anglo French Concorde, the Boeing 2707 and the Tupolev Tu.144 "Concordski".

When Boeing's entry lost the USAF's CX-HLS (Cargo Experimental - Heavy Logistics System) (C-5A) competition to Lockheed, Boeing scrambled to salvage some benefit from all the effort they had sunk into the CX-HLS. The idea was floated and adopted, of building it as a low wing civil freighter. At that time, however, the air freight business was not big enough for the airplane, so the decision was taken to design the airplane as a freighter, but build and operate it as a passenger airplane in the interim until the SST's went into service, at which time those airlines which wished to do so could return their 747s to the factory for conversion to freighters.



To facilitate freight operations Boeing placed the cockpit above the main deck so that freight could be loaded straight into the fuselage via a large nose door rather than having to be turned ninety degrees through a conventional side door. This door, hinged at the top, is so shaped that when fully open it does not restrict vision from the cockpit enabling the airplane to be taxied with the nose door open.

Ultimately, of course, the common wisdom of the 1960's was proven wrong. The 2707 was canceled after a budget and specification killing redesign from a swing-wing to a tailed fixed wing delta, "Concordski" crashed publicly out of contention and Concorde was/is a commercial disaster in spite of being an astonishing technical tour de force.

To Cut, Or Not No Cut? That is the question; whether 'tis nobler to keep all those old magazines intact or to cut 'em up and keep only the good stuff; the stuff you're really interested in. John Amendola put me onto this in the late 1960's as a way to conserve space. If you're like me you will cut and save about 10-20%, average, from your magazines. Recycling the other 80-90% saves a lot of space.

Some mags are, of course, way too nice to cut; publications like Windsock, Narrow Gauge and Short Line Gazette, Wings of Fame, WW I Aeroplane, Aeroplane Monthly, Automobile Quarterly etc. so you'll wind up cutting only some of your mags like Wings, Airpower, Air Classics, Model Railroader, Model Shipbuilder, Autoweek, etc.

Now, what do you do with the cuttings? First, in the interests of good scholarship and future referencing, note on each cutting the name and issue of the publication from which it came and second, file the cuttings in a logical manner. I use ordinary 9 by 11 1/2 inch manila file folders. Bob LaBouy prefers legal size folders so that he does not have to trim

European A-4 size magazine pages to fit the American standard folder. I prefer the smaller file because it sits better on a shelf made from a nominal 12 inch board, which is a true 11 inches wide. Take your pick. I label the file with the subject. Some labels are very specific; as "Sopwith Pup", "Sopwith Camel", etc. Some are more broadly labeled as "Sopwith General"; that's where the material on the "Dove" and "Churchill" is filed. There will obviously never be enough material available to me to justify separate files on those esoteric subjects. Some subjects such as the North American P-51 Mustang are so thoroughly covered that you'll have Parts one, Two and maybe even Three, files just to keep the file folders to a manageable size.

I note other references on each subject

on the inside front leaf of each file folder for ease of reference. Thus the feature article on the P-51 in Wings of Fame, Volume One, which is one of the magazines I don't cut up, is listed on the inside leaf of Part One of the Mustang file. If you're really thorough, you'll also list all of your books that contain useful references to the subject of each file along with the relevant page numbers and a brief note describing the contents of that particular reference. I keep these notes very short: "Color", "Dwg.", "Color Photo(s)", etc. I did not initially list my books, but am backing into it now by doing it each time I use a file. What's the use of having the information if you can't find it when you want it?

My files, books, etc. are available for loan to any responsible researcher. If you don't have a copy of my file index and would like one, please let me know and I'll provide it.

Which brings up a related subject: loaning/borrowing material. Keep a list of what you have loaned out, to whom and when and keep another list of what you have borrowed, from whom and when. Put your name on all of your stuff for identification. **NEVER** place borrowed material on your own bookshelf or in with your own files. Doing so masks the fact that it is not yours and you will inevitably forget to return it. I recently retrieved a treasured issue of National Geographic that had been gone for over ten years when a friend told me about this 1933 issue that he had with an article about the first flight around Everest. I challenged him to look inside the front cover and bet him a beer that he'd find my name there. He took the bet and called me when he got home to tell me he owed me a beer and how embarrassed he was. Do not hesitate to either loan or borrow, but be responsible about it.

Don't Throw Anything Away...until you've disassembled it and thoroughly examined all the parts for potential modeling material. Motors and electrical devices of all kinds can yield good fine wire in various metals and sizes. Small gears, rods shafts, sheet metal shapes, etc. can all be gleaned from household and personal throw-aways. Broken toys are a frequent source of stuff you can use in model building.

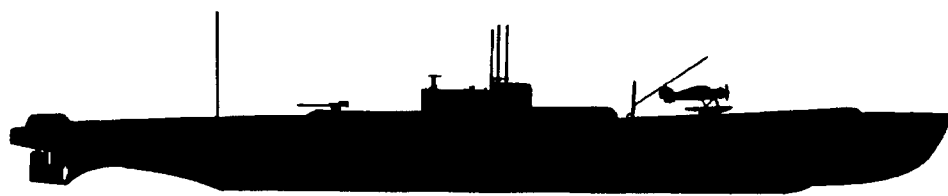
As an example of successful scavenging, I've a lifetime supply of fine stainless steel screen from the inside of worn out fuel nozzles from jet engines.

Don't throw anything away and be imaginative in evaluating the bits and pieces of

(Cont'd on page 20)

## SUBMARINE Samurai by Jim Schubert

Nobuo Fujita, 86, retired owner of a metal parts fabricating factory outside Tokyo, the Warrant Officer pilot of the only enemy aircraft to drop a bomb on the U. S. mainland during WWII, died September 30, 1996 of lung cancer at his home in Tsuchiura northeast of Tokyo. Fujita became obsessed with the idea of directly attacking the U. S. with submarine launched airplanes as retaliation for the Doolittle raid of April 18, 1942, which killed a flying colleague of his. He wrote a letter, endorsed through channels, to the IJN (Imperial Japanese Navy) High Command proposing submarine launched mass incendiary bomb raids on the U. S. west coast. Several other IJN aviators also proposed similar plans. In the event only Fujita's ship, submarine T-25\*, was assigned the task on a much reduced scale of undertaking.



**T-25**

Length:	356'
Displacement:	2,200 tons
Range:	16,000 nm
Crew:	100

Prior to December 1941, T-25 along with eight other IJN subs had scouted the west coast of North America observing harbor and waterfront traffic, commerce, and defenses. T-25 was stationed at times off the Golden Gate and within the Strait of Juan de Fuca observing Victoria, Vancouver and Puget Sound. By mid January 1942 all nine of these large ocean cruising subs had returned to their base at Kwajalein.

In April 1942, shortly after the Doolittle Raid, T-25 departed Yokosuka as part of the Second Submarine Group Patrol to observe and to harass the west coast of North America. Enroute T-25 sank U.S.S. Grunion with a torpedo. On June 20 she torpedoed a cargo vessel off the mouth of the Columbia River and on June 21 she fired 17 rounds from her 5.5 inch deck gun into the waterfront of Astoria; having gotten, detected but unchallenged, past the U.S. Army's heavy, triangulated, coastal defenses at Forts Canby, Columbia and Stevens to proceed about nine miles into the mouth of the Columbia River to Astoria. By the time the Army was ready to fire their guns, T-25 had finished her attack and regained the safety of the open sea.

September 9, 1942 Fujita and his observer, Petty Officer 2nd Class Shoji Okeda, were catapult launched from T-25 in their Watanabe-built Yokosuka E14Y-1 Type O Small Reconnaissance Seaplane (GLEN). They flew east about six miles to cross the Oregon coast near Cape Blanco, flew inland ten miles, turned south for 50 miles and dropped two 76Kg special phosphorous incendiary bombs into the dense forest east of Brookings. September 28 they repeated this performance dropping their bombs into the forest near Port Orford. In both cases the bombs started small fires that were slow to develop, due to the constantly damp conditions in the coastal forest, permitting U.S. Forest Service crews to easily extinguish them. T-25 carried only six of the special bombs for an intended three strikes upon the forests.

Fujita and T-25's Captain, Commander Meiji Tagami, were at odds over how hard to press these air strikes. The Captain chose to

T-25 was sunk by U.S.S. Patterson (DD-3923 in the Solomons on September 3, 1943.

The net results of the IJN submarine activity off the west coast in 1942 were negligible. The sub activity was too little in scope, not very aggressive and not an integrated part of a well thought out strategic plan. The IJN High Command waffled between pursuing offense on all fronts and offense in the west and defense in the east.

Enroute home on October 11, 1942, Tagami spotted two submarines cruising north about 500 miles off Cape Flattery and one of them with his last torpedo. It turned out to be the Russian sub L-16, which with L-15, was transiting from Vladivostok to the Baltic. Russia and Japan were not then at war. (!)

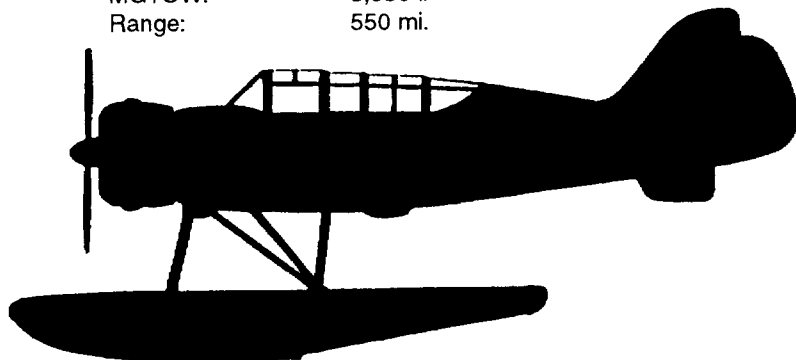
Nobuo Fujita ended the war with over 4,000 flying hours in the GLEN, scouting and bombing from T-15 class subs.

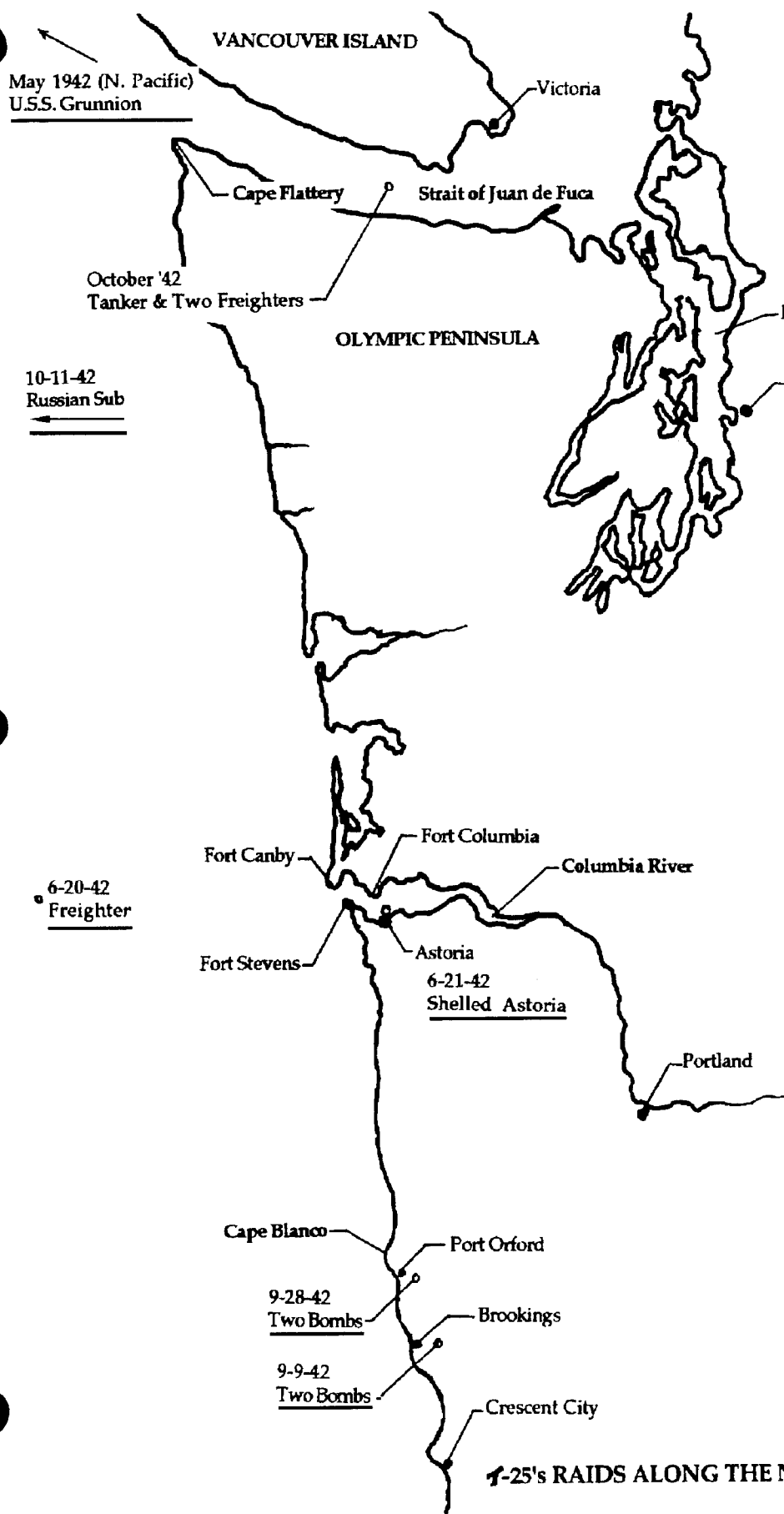
In 1962 Fujita and his family were invited to be honored guests at the annual Brookings Lily Festival. On this visit he gave his family's 400 year old Samurai sword to the city of Brookings where it was displayed in the mayor's office. He was surprised by the friendly reception and made several subsequent visits. In 1992 he ceremonially planted a redwood tree in the Siskiyou National Forest near where he dropped his first bomb in 1942. In 1995 he placed his family's Samurai sword in a special display case in the newly built Chetco Community Public Library in Brookings for all visitors to see in commemoration of his first visit 50 years earlier.

In late 1993 I began to research T-25 and Fujita's GLEN to better build the Fujimi 1/700th scale waterline kit, #0817, of the T-15 Otsu Ocean Class, Type B-1 submarine. Ultimately the only kit parts I used were the hull, sail and deck gun, all extensively modified. The 700th scale GLEN, wingspan 5/8" (16mm), was scratch built. To enliven the model I posed 14 crew on deck preparing the GLEN for launch. Fujita, Okeda and Tagami

**"Glen"**

Span:	36'
Length:	28'
MGTO:	3,530 #
Range:	550 mi.





are standing in front of the hangar reviewing a map. The model was finally finished in February 1994 and won first in class in the 1996 IPMS-USA National Contest. The Fujimi kit also includes a T-46 class "Kaiten" carrying sub, which I am researching for a full hull model.

#### SOURCES:

A: The Japanese Submarine Force and World War II: C. Boyd & A Yoshida, Naval Institute Press, Annapolis, 1995, ISBN 1-55750-080-0.

B: Model Art magazine: an unrecorded\*\* mid 1970's issue, in which the Nichimo 1/200th scale T-15 kit was reviewed in depth.

C: Scale Models International magazine: unrecorded\*\* mid 1970's issue with a single photo and single paragraph review of the Nichimo kit.

D: IPMS-USA Quarterly: 12Q1, January 1976 article and drawings by Jack Potter.

E: Humboldt Times newspaper: March 11, 1962; long multi page article about Fujita's war and his first post war visit to Brookings area.

F: Bellevue Journal-American newspaper: (Associated Press), May 27, 1995, article and photo on donation of sword.

G: IPMS-USA Journal: 7J3, March/April 1995, half page review of MPM 72nd scale kit by Bill Paul

H: Seattle Times newspaper: October 2, 1997; obituary. I: Air & Space magazine: 12-97/1-98; obituary.

J: Personal visit to Brookings in August 1997

K: Submarines of the Imperial Japanese Navy: D. Carpenter & N. Polmar, Naval Institute Press, Annapolis, 1986, ISBN 0-87021-682-1

At this writing MPM kit #72111 is the only injection molded 72nd GLEN on the market. It is to be shunned, for although the GLEN's aft fuselage, wings and tail group were all fabric covered, MPM shows no stringer or rib indications whatsoever on their kit. Wait for the new 72nd Fujimi kit due in early 1998. I know of no 48th GLEN kit.

\* I have herein used the italicized Roman letter "T" as a substitute for the Kana figure ㊦ designation, which is pronounced "ee".

\*\* Cut and filed before I became thorough in recording sources; sorry about that.

## 1998 IPMS-USA National Convention Santa Clara, Calif. July 2, 3 & 4, 1998

As I was discussing "web surfing" with our two resident "Johns" (Alcorn and Amendola as you know are both cyber-surfers....), I noticed there are those among us who are not quite (*...how shall I say it diplomatically...*) "up to speed" technologically speaking. So what's it to us, you ask? There is a great deal of really useful and interesting information currently available about this year's IPMS-USA National Convention. Much of this information will allow you to lay out better plans for your '98 Convention trip and in some cases may just peak your interest to the point that you will decide this is one convention worth not missing. I have, in the following few pages, picked out some of the material, facts and history which are of interest to me and share it in the hope that it will be of mutual interest.

One more last reminder though, this is the point prior to the convention, when everyone decides they had better register and get on the band wagon. As you will remember from our '92 Convention, the trips and tours sell out and everyone can't go. From the last two or three years now this has become a growing concern and there are literally people standing at the buses begging for tickets and attempting to get someone else's seat. Don't allow this to happen to you. Make your plans and register quickly.

### Tours

San Francisco Shopping Tour  
(both Thursday and Friday)  
Napa Wine Country Tour and Tasting  
(both Thursday and Friday)  
S.S. Jeremiah O'Brien and U.S.S. Pampanito  
(Thursday)  
Travis Air Force Base and the Travis AFB  
Museum (Thursday)  
Castle Air Museum (Friday)  
Moffett Field and NASA-Ames Research  
Center (Friday)  
Behring Auto Museum (Friday)  
Western Aerospace Museum (Thursday)

### Seminars

IPMS SemiCon and Eagle Editions have joined forces to present a World War II Fighter Pilots' Symposium, featuring four veterans of the war in the air:

- Richard Peterson, pilot of P-51D "Hurry Home Honey" and a 15-kill ace.
- Host Petschler, who downed more than 30 aircraft in his Bf 109.

•Dan Cunningham, who used the F4U Corsair to destroy seven Japanese planes and flew with the Jolly Rogers of VF-17.

•Gerhard Krol, who flew the Fw 190D-8 in combat and scored once kill-but was shot down six times himself!

This event-scheduled for 7:30 p.m. on Friday, July 3 - costs just \$25. Tickets can be purchased in advance along with your registration. For a new registration form that includes this just-added event, e-mail Chris Bucholtz.

Ralph Forehand's seminar moves from 10 a.m. Friday, July 3 to 2:30 Friday, July 3.

Colors and Camouflage of the Royal Navy in World War II, with Alan Raven, 10 a.m., Friday, July 3. Colors and Camouflage of the U.S. Navy in World War II, with Jeff Herne 11 am, Friday, July 3. They were among the most dazzling ships of WWII, but how do you get a handle on the markings of a navy whose camouflage varied from ship to ship and could remain constant for as little as one week? Noted author, historian and sometime modeler Alan Raven shares his knowledge of the ideosyncracies of British naval markings with words and pictures, illustrating why the Royal Navy marked its ships as it did, what they REALLY looked like and how he researched this topic for his upcoming book.

Even for a navy with a set of proscribed camouflage patterns and colors, nailing down details can be difficult. Jeff Herne, author of books on the Fletcher Gearing and Sumner-class destroyers and the Cleveland-class cruisers, helps you navigate through patterns, paint colors and the purposes of the U.S. Navy's vivid and varied camouflage schemes. Computer graphics and Jeff's strong knowledge of the subject promise to make this seminar well worth attending.

World War II naval colors and markings: a Q&A Roundtable. Alan Raven and Jeff Herne take your questions about how the sea powers of World War II camouflaged their vessels. From Mountbatten Pink to Haze Gray, if you have a question on the subject, these two can provide a likely answer. 12 a.m., Friday, July 3.

"I Survived the Indianapolis Sailing". Unescorted, on its way home from delivering the materials for the atomic bomb, the cruiser U.S.S. Indianapolis was hit and sunk by a Japanese Kaiten suicide torpedo. 900 of her crew escaped the sinking ship, but a combination of bad luck, bureaucracy and bungling meant that no knew the ship was lost for days-during which time 600 of the crew perished.

Al Celaya relates what it was like to survive this ordeal, both in his own words and with film. 1:00 p.m., Friday, July 3.

### Tours Highlights:

To share with you some of the history and flavor for a few of the more notable tours, I have enclosed the pertinent history and information for several of the tours below. This information came from the related web site summaries.

### Moffett Field

While there is not as much a chance for you to see the many Navy, Marine Corps and Army aircraft at Moffett Field now as there was prior to the closing of the Naval Air Station in 1994, this base still offers a very rich aviation history. One of its' greatest assets are the dirigible hangers, build for the Navy's lighter-than-air-ships. Not only can they be seen for many miles, but the call back the history of those beautiful and graceful "queens of the sky." One of the most notable was the Macon.

[Ed: The Moffett Field web site also has a lengthy and very interesting summary of the Macon's history, operations, discovery of her remains and recovery attempts to date.]

### Travis Air Force Museum

Aircraft on display:

Douglas A-26 b/k "Invader"  
Douglas A-26 b "Invader"  
Boeing B-29 "Superfortress"  
Boeing B-52D "Stratofortress"  
Vultee BT-13 "Valiant"  
Douglas C-118a "Liftmaster"  
Fairchild C-119 "Packet"  
Douglas C-124c "Globemaster II"  
C-131d "Samaritan"  
C-140  
Beech C-45h "Expeditor"  
Lockheed C-56 "Lodestar"  
Rockwell CT-39 "Saberliner"  
McDonnell F-101b "Voodoo"  
Lockheed F-104a "Starfighter"  
Republic F-105d "Thunderchief"  
F-4c "Phantom II"  
Republic F-84f "Thunderstreak"  
North American F-861 "Sabre"  
Stinson L-5 "Sentinel"  
Cessna O/2a  
Fairchild PT-19  
T-37  
T-37 Cockpit  
Cessna U-3a  
H-34  
Koman HH-43b "Huskie"  
Piaseki H-21 "Workhorse"  
Boeing B-29 "Superfortress"  
T-28 Flight Simulator  
ANT-18 Link Flight Simulator  
"Fatman" A-Bomb

14.3 mm KPV  
1943 Ford 1/4 ton 4x4  
1928 Studebaker  
1928 Studebaker

## Western Aerospace Museum

Located on one of the world's most historic airfields. Former home of Boeing Air Transport, Pacific Air Transport, Boeing School of Aeronautics, Transocean, World, and Transamerica Airlines, Oakland Naval Reserve Air Station, US Marine Corps and Army Air Corps Reserve Units. Departure and arrival point for many historic flights including Hegenberger and Maitland, Smith and Bronte, the Dole Races, Kingsford Smith and crew and Amelia Earhart. Currently a very active airfield with private, business, and commercial propeller and jet aircraft including helicopters and blimps.

Lockheed L-10A (Electra)  
Attack Bomber (Light)  
Douglas A-4M (Skyhawk) - Serial No: 158195  
LTV A-7E (Corsair II) - Serial No: 159301  
Bomber  
General Motors (East TBM-3E (Avenger)  
General Reconnaissance  
Lockheed RP-3A - Serial No: 150520  
Tanker  
Douglas KA-3B - Serial No: 147666  
Grumman KA-6B - Serial No: 152910  
Trainer (Primary)  
Stearman PT-13 (Kaydet)

## Castle Air Museum

Castle Air Museum is a history lesson that the whole family should share. While there is nothing glamorous about war, these majestic birds serve as awe-inspiring reminders of how fragile our freedom is and how men and women stepped forward when that freedom was threatened. The Castle Air Museum is continuing to add to its fine collection of World War II, Korean War, and Vietnam Conflict historic aircraft. At the present time the Museum maintains and preserves 42 aircraft. Sit back and take a brief virtual tour of the aircraft located at one of California's premier air museums. Then plan an afternoon to visit the museum in person to see these majestic airplanes up close!

A-26C Invader  
F-4E Phantom  
B-2 Vulcan MK II  
F-80C Shooting Star  
B-17G  
Flying Fortress  
F-84F Thunder Streak  
B-18 Bolo  
F-86H Sabre  
B-23 Dragon  
F-89J Scorpion

B-24M Liberator  
F-101B Voodoo  
B-25J Mitchell  
F-104B Starfighter  
B-29 Superfortress  
F-105B Thunderchief  
RB-36H Peacemaker  
F-111A Ardvard  
B-45A Tornado  
HH-43B Huskie  
B-47E Stratojet  
KAQ-1 Drone  
WB-50D Superfortress  
KC-97L Stratofreighter  
B-52D Stratofortress  
KC-135A Stratotanker  
B-57 Canberra  
O-2A Super Skymaster  
BT-13 Valiant  
R-5D Skymaster  
C-45 Expeditor  
SR-71 Blackbird  
C-46D Commando  
T-6 Texan  
C-47 Skytrain  
T-33A Shooting Star  
C-56 Lodestar  
T-34 Mentor  
C-123K Provider  
U-3A Blue Canoe  
CF-100 MK V Canuck  
U-6A Beaver

## USS Pampanito (SS-383)

USS Pampanito (SS-383) is a World War II Balao class Fleet submarine that is open for visitors daily at San Francisco's Fisherman's Wharf. Pampanito made six patrols in the Pacific during World War II and sank six Japanese ships and damaged four others. Operated By the National Maritime Museum Association, Pampanito hosts over 250,000 visitors a year and is one of the most popular historic vessels in the country. In addition to day time visitors, 3,000 kids a year participate in Pampanito's educational overnight program. Pampanito is a National Historic Landmark.

The Pampanito headed out under the Golden Gate Bridge with volunteer Bob Taylor at the helm in 1995, when the submarine was featured in the film Down Periscope. It had been fifty years since Pampanito sailed under the bridge.

Pampanito's is being restored to a specific point in time, late summer, 1945, to represent the height of WW II submarine development. The National Maritime Museum Association has scoured the country in search of missing equipment and spare parts. Almost all of the missing items have now been replaced and much of the equipment on board has been restored to operation.

Located at Pier 45 at Fisherman's Wharf, Pampanito is open to the public seven

days a week. The self-guided tour is narrated by Captain Edward L. Beach, noted historian and author of the submarine classic *Run Silent, Run Deep*. This site is an in depth look at many issues involving one ship, USS Pampanito, and includes a tour of the submarine, her history, lists of Pampanito's wartime crew, descriptions of WW II submarine technology, historic photographs, a WW II submarine memorial with the name of every submariner lost during the war, information about educational programs aboard Pampanito and a description of Pampanito's preservation and restoration programs.

## S.S. Jeremiah O'Brien

This vessel is one of two fully-restored operating survivors of 2,710 World War II Liberty Ships. It is the only ship that participated in the Normandy invasions that returned fifty years later to take part in the 50th anniversary of D-Day.

Before World War II, shipbuilding in the U.S. was not a major industry. But with German U-boats sinking ships off the east coast within sight of land, England on her knees, and the Japanese conquering Asia and the Western Pacific, it was absolutely essential to build a large, strong U.S. Merchant Marine to carry combat supplies and materials to Allied fighting forces. The U.S. became the "Arsenal of Democracy". Typewriter firms built rifles, auto makers turned out tanks, and millions of American migrated to the West Coast to build Liberty Ships in yards springing up near major cities.

The liberty design was a modification of an earlier British hull. Economical and simple to build, it ushered in the era of prefabricated mass production. Eighteen yards built Liberty ships and one third of the workforce were women. Without these ships the war simply would not have been won.

Built in 1943 in 56 days in So. Portland, Maine, the S.S. Jeremiah O'Brien was launched on June 19th, 1943. From July 1943 to October 1944, she made four voyages between the U.S. and Great Britain traveling as part of a convoy, a proven and effective deterrent to submarine attack.

On her fourth voyage she was diverted into a shuttle run between England and the newly taken Omaha and Utah beachheads at Normandy. She completed 11 such trips before returning to the States. Crewmen report her guns engaged enemy aircraft and that she was the target of at least two bomb attacks and one torpedo. Her fifth voyage, beginning in October 1944, went from New York through the Panama Canal to Chile and Peru, returning to New Orleans. Her sixth was a quick trip to the Philippines and back to San Francisco. The gallant ship's seventh voyage took place from July 1945 to January 1946. Sailing from San

Francisco, she went to Australia, Calcutta, Shanghai, Manila and back to San Francisco. On her return she carried Australian war brides to the U.S. to join their new American husbands.

With the war over there were far more ships than needed for peacetime. In February 1946 she joined hundreds of her sisters in a reserve fleet near San Francisco. As time passed, some were sold to foreign countries or went into commercial service under the U.S. flag. Others were scrapped or sunk as artificial fishing reefs.

In the 1960's, a plan was conceived to save a Liberty Ship for posterity. In 1978, the National Liberty Ship memorial, Inc., a California non-profit corporation was formed to restore, preserve, maintain and present to the public, an original, unaltered Liberty Ship. They chose the O'Brien, which met all those criteria and was in excellent condition. She returned to service in 1979. Since then an enormous amount of work, mostly by volunteers, has gone into restoring and preserving the ship. The first annual cruise was on May 21, 1980 and she has been sailing ever since.

In 1994, the volunteer crew of the O'Brien returned the ship to the beaches of Normandy for D-Day +50 years. The Commemorative Voyage was made in honor of all those in the war zones, and on the home front, whose sacrifices were vital to the war effort. In order to return to ocean steaming the ship had to be recertified. That was accomplished only through the devotion of the volunteers and the cooperation and support of various maritime and government agencies. Our voyage could not have been accomplished without the generosity of our faithful members and friends. The voyage, from April 18, to September 23, 1995, included 14 port calls. On the morning of June 6, 1994, the O'Brien was at anchor off Pointe du Hoc, a visible reminder of the fleet of over 6,000 ships in the 1944 invasion armada. The O'Brien was the only Normandy 1944 ship to return for the Commemoration Ceremonies.

## Don't Delay !

If you're planning on going to Santa Clara for the '98 IPMS-USA Convention, don't delay sending in your reservations now!

## (Details, Damed Details!

Cont'd from page 15)  
cast off goods for model use.

**If It Can't Be Seen:** don't model it.

Don't even paint it. A lot of new kits have all manner of interior detail that cannot be seen on the finished model. Leave it out, or if you can't leave it out, paint it black or don't paint it at all. Don't make work for yourself. Your modeling time is precious and indeterminately finite. Or are you so young that you still believe you're going to live forever?

A couple of examples: The new Hasegawa 1/72nd "Betty" bomber has tons of great interior detail, almost none of which can be seen from outside the finished model. So don't bother with it. The Revell-Germany Junkers F.13 kit includes a beautiful little engine that serves no purpose other than being a place to glue the rhino-horn exhaust stack. Put the engine in your parts box and blank off the underside of the engine cowl to provide a base for that prominent exhaust stack.

This approach also applies to many cockpit interiors. If you build your model with the canopy hood closed, how much can really be seen in the interior? Not much. So scrimp on your work in there and/or use lots of black paint or darkened interior color. I frequently use one of the old Modelaid printed, fold-up cockpit interiors to save time. Save your precious time for things that really matter to the final appearance of your model.

As a further example of leaving out detail: In last month's issue of this newsletter John Amendola referred to the beautiful model work in some of the corporate exhibits at the 1939 New York World's Fair. In GM's Futurama model there were a lot of steam locomotives running around pulling passenger and freight trains. Because of the scale of the models and the distances from which they could be viewed, Norman Bel Geddes, the designer of the exhibit, had the model makers leave the leading and trailing trucks, side rods and valve gear off the locomotives. That is something no self respecting model railroader would ever do, but as none of it would be seen, Bel Geddes didn't waste the model makers' time or GM's money on those useless details. Think about it when you're planning your next model.

## PANEL LINES AN ALTERNATIVE WAY

By Les Knerr

In our hobby, we as modelers often use different paths to reach a common goal; a finished model.

As far as delineating panel lines on

models, I have seen various methods used; a wash, a fine line pencil or pen, etc. The method I've been using recently is pastel chalk. This works equally well on aircraft and armor. I've even used it on a car model.

Depending on how much I want the panel line to stand out, I'll either use black or brown chalk. On say the olive drab upper surfaces of a P-51, I'll use black, and on the neutral gray undersides, I'll use the brown.

A couple advantages of this method are that it can be done on a flat finish, even directly over decals. The panel lines don't have to be super crisp, thus no rescribing of panel lines in order to get a wash to flow evenly. One disadvantage is that it can be messy, because of chalk dust and eraser crumbs, especially if you're doing a large area.

How it's done—

You'll need pastel chalk, I bought mine at Fred Meyers, and it came in a set. But basically you only need black and brown. You can pick it up at any store with an art supply department. Either square or round shaped sticks of chalk can be used. The sticks of chalk aren't going near the model, so their shape doesn't matter.

To apply the chalk I use a "0" wide stiff-bristled brush. Rub the brush on the chalk stick to pick up dust in the bristles, then scrub the chalk dust into the panel line. You don't have to apply too much pressure, just make sure the chalk is down in the panel line. And don't worry about getting the chalk dust on the areas surrounding the panel line. After you've finished scrubbing in the chalk, blow the excess dust off the surface. At this point it may look like you've ruined your model, but don't worry you haven't. Now, take a common gummed eraser, the kind we used as kids in school, and just erase the excess chalk dust that surrounds your panel line. If you need to, you can cut your eraser into smaller pieces so you can reach into any tighter areas you may have. I've also used pencil erasers or stick erasers to get into the smaller areas. Dust the eraser crumbs of the model and there you have it, a nice dark panel line.

As with any technique, it may take some practice. If you scrub the chalk on with too much pressure the eraser may not take all the excess off. So, you might want to practice on a scrap wing or something. And even with a lighter pressure the excess may not all come off. But this isn't a bad thing. Simply buff the area with a tissue or a soft cloth to blend the excess a little better. After you seal it the excess will most likely disappear, or if it doesn't, it will just add to the weathering and character of the model because it will look like dirt.

As I mentioned earlier I do this on the model while the finish is still flat. You can do it directly on the paint, or on a surface that's



been sprayed with a flat sealer. However, this method doesn't work too well on a gloss finish because the surface is too slick for the chalk dust to adhere.

After I'm finished applying the chalk, I seal it with either a flat or gloss coat to set the chalk and protect it from rubbing off.

There you have it, an alternative way of highlighting panel lines.

## The Last American Hero: Jimmy Stewart 1908-1997

[The following, courtesy of Mark Fiedler, is reprinted from a Spring 1997 article in the 2ND AIR DIVISION JOURNAL by Hap Chandler and Andy Low. Many thanks to Nancy Quan for graciously (and very competently) transcribing the original text. Next month we will feature a second installment on Brig. Gen. Stewart and his WWII exploits. — Ed.]

In February of 1941, Metro-Goldwyn-Mayer gave one of the greatest farewell parties to Academy Award-winning superstar Jimmy Stewart. Louis B. Mayer, legendary chief of the studio, "wanted to fly the flag at half-mast." Mayer had used his considerable persuasive talents to convince Stewart that his best interest would be served by remaining in Hollywood. Stewart demurred, and nine months before Pearl Harbor, enlisted as a private at the age of 32, well beyond draft age. In October of 1943, he would lead the 703rd squadron of the 445th Bomb Group to Tivenham, England, and combat with the United States 8th Air Force.

After qualifying initially as a B-24 instructor pilot, he sought assignment to an overseas combat unit. Col. Robert Terrell, Commander of the 445th Bomb Group, selected Stewart to command the 703rd Squadron. As its commander, he led sixteen of the squadron's aircraft to England in October of 1943. Over the next 21 months he flew a complete tour of missions as a command pilot. By the end of the war he was a colonel in the 2nd Combat Bomb Wing of the 2nd Air Division, which consisted of the 445th, 453rd and 389th Bomb Groups. He brought his wing home from England on the Queen Elizabeth. Legend has it that Stewart personally shook the hand of every man in his organization as they debarked in New York.

You will find many prominent members of the 2nd Air Division Association in the course of Stewart's career, including Andy Low, his roommate at the 453rd BGen. Robert Terrell of the 445th, who brought him to England; Ramsey Potts, Commander of the

453rd when Jimmy was transferred there to become Operations Officer after 20 combat missions with the 445th; and Gen. Ted Timberlake, under whom he served as Executive Officer of the 2nd Wing. Stewart earned a reputation as an officer who had a special regard for his men. Walter Strawinski thinks this was noticeable when he was flying "Stewart was known as being one of the few officers who never left the airfield tower until every single plane returned... Jimmy would never move until every single plane was back on the ground and accounted for. It was the kind of small detail that was very important among the men, and they all tucked it away. Walter Matthau, another "Hollywood legend" who recently turned into a "grumpy old man," was then a staff sergeant in the 453rd Bomb Group. Matthau tells of his rapport with those who flocked to briefings to hear "Jimmy Stewart by Jimmy Stewart." Jimmy continued serving in the Air Force Reserve until retirement at age 60 as a Brigadier General. His old roommate, Andy Low, recalls that he was frequently called upon by Senior Air Force officials for advice and counsel regarding Air Force concerns. In 1955, he starred in the panoramic movie "Strategic Air Command," gaining widespread acceptance and understanding of SAC and its importance at the height of the Cold War.

Stewart's father was a dominant influence in his life. A most moving scene occurred on the eve of Stewart's departure to England. At a loss for words, Stewart's father gave him a letter which included the 91st Psalm. He has written of the comfort this letter and Biblical passage gave him during his perilous missions over Europe. His ETO experience and the death of his stepson Ronald McLean in Vietnam were seminal events in Stewart's long and illustrious life. Military service was a given in his family. His father served in the Spanish-American War and World War I. His ancestors fought in every American war from Revolutionary times. He reflected the ideals of his generation toward military service. Instead of duty in some Hollywood battalion grinding out training films in California, he served in the bitter cold battles for air supremacy in 1943-45.

Jimmy Stewart's film career is legendary. He has played opposite the queens of Hollywood for fifty years, and was romantically involved with stars Olivia DeHavilland, Dinah Shore, and Loretta Young. He married Gloria McClean, adopting her two sons from a previous marriage. His marriage reflects his smalltown-values, as he was regarded as Hollywood's model husband.

Stewart [was] one of the living icons of classic Hollywood and, arguably, its most beloved. The big-screen embodiment of the decent, honest American who makes us feel

better by being such a good guy. Not backstabbing, not cunning, not even his considerable talent, got Stewart to the top. His biography contains no scandal, and none of the flaws so prevalent in insecure, ego-ridden Hollywood.

[Reprinted from the IPMS North Central Texas "Flak Sheet"]

## Boeing RC-135U 'Combat Sent' conversion kit by Mike Quan IPMS #3925

*Maintrack Models* Kit No. 72:42, Price: \$31.50 + shipping, from *Precision Enterprises Unlimited*, PO Box 97, Springfield, VT 05156

When word first got out that there was to be a conversion for the 'U' variant of the venerable C-135, I was drooling in anticipation. Not only was I an avid fan of the Stratotanker family, but having seen and worked on the Combat Sent variant really peaked my interest. Tempering that anticipation however, was the realization that *Maintrack Models* of England was producing this kit. Their previous releases were all known for their inaccuracies and shortcomings.

The RC-135U Combat Sent is one of the ugliest, (okay, I say beautiful!), versions of the C-135 clan because of the abundance of fairings, lumps and bumps. Originally built by Boeing, this airframe has been constantly modified by the likes of Martin-Marietta, General Dynamics, and now Raytheon Systems. It is intended for classified, worldwide Scientific and Technical missions out of it's Offutt AFB, Nebraska home base. It has been regularly photographed in Japan and Europe when deployed at offsite locales. The applicable serial numbers are 64-14847 and 64-14849, (the very last C-135 serial number assigned!), for the two aircraft in service.

The contents of the *Maintrack Models* conversion are intended to be used with the *AMT* Boeing EC-135C Airborne Command Post, but in reality will work with the *AMT* RC-135V Rivet Joint kit, or with any other *AMT* C-135 kit provided you supply the turbofan engines. (A plug here is in order for the excellent *Seamless Sucker* resin TF-33 engines produced by Robert Brown in Wichita KS. They feature more detailed fan and inlet bullet detail, and obviate the need to remove those pesky, hard-to-get-at inlet throat seams!) The thirteen resin parts comprise the left and right hand 'cheek' fairings for the forward fuselage, a new nose that contains the characteristic chin fairing, the forward ventral radome, a new fuselage tail featuring the tail extension, new

left and right hand wingtip fairings, a new vertical fin segment to be spliced in, & containing the bullet fairing, four engine pylon fairings for the "Ten High" system, and finally a new antenna fairing to replace the boom operators pod. The sparse, one page instruction sheet mentions 'white metal' engine fairings, but my example had all-resin parts. The casting quality was typical *Maintrack Models*: not especially good, but certainly usable. There was a very pronounced 'cold slag run' down the face of one of my 'cheek' fairings, but otherwise, there were minimal detailing or flaws to contend with other than the usual heavy resin sprue pouring gates. The resin is the usual dark yellow variety that is easy to work with, though a little brittle. The conversion depicts Combat Sent in it's current configuration, with the later, larger E-Systems-designed 'cheek' fairings. As such, this kit represents the first commercial version of these cheeks to be modeled, and by use of these two pieces alone, can be used to convert the *AMT* RC-135V kit to a current 'V' or any of the RC-135W model aircraft. Aside from a lack of surface detail, (though easily scribed in), the fairings have the correct shape other than needing to be more tapered in profile view, at the top and bottom edges for the forward \_" or so. The new nose piece has a chin fairing that is about 1/8" too deep, but this inaccuracy can be remedied by lots of sanding - better too much to sand, rather than to have to build up a shortfall! On the other hand, the ventral radome is too narrow by about .15", which is a considerable amount that will need to be added. The "Ten High" fairings are a bit on the skinny side in diameter, but are an 1/8" too short overall. The tail fairing is also too narrow, but would require considerable rework to obtain the exact contours. All of this is to say that *Maintrack* has done it again! With respect to exact, (dare we say: *Accurate Miniatures?*), contours and dimensions, this conversion is NOT the last word, but what is in the box is a start that can be reworked. For those wanting a shelf replica, this conversion will suffice very nicely indeed. For those wanting an accurate replica, there is no better place to start than with this kit. Recommended for the Stratotanker hard-core!

References on building the Combat Sent airplane:

Hopkins, Robert, "Building AMT/ERTL's RC-135V "Rivet Joint," IPMS Journal, November/December 1994.

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Archer, Bob, and Joe Bruch, "Offutt's White-tops: The Special Boeings of the 55<sup>th</sup> Wing," World Air Power Journal, Vol. 17.

Davenport, Chuck, "Stratotanker!" IPMS Journal, July 1993.

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Peacock, Lindsay, "Boeing RC-135 Super Snooper," Warplane #53, 1986.

## Tamiya F4D-1 Skyray by Phil Brandt IPMS 14091

Tamiya F4D-1 Skyray, Kit # 61055,  
Obtained through: Hobbylink Japan

New Kit Review: Put down that Lindberg Skyray, son; the Tamiya Ford is here! Once again, one of my long range projects has been permanently (and happily!) shelved by events in the plastic aircraft model industry. This time it's a most welcome addition by the master modelers at Tamiya to the heretofore thin ranks of quality 1/48 kits of Fifties-era Naval jets, the Douglas F4D-1, or Ford.

Prior to this new offering, the dedicated quarter scale Navy jet fan was forced to intensively kitbash the semi-prototype Ford that Lindberg issued in the Fifties. But hey, you could at least open the little fuselage hatch and see the compressor section of the engine!

The overall Tamiya molding quality of the Ford is, what can I say, what we all now expect of this primo firm. In short, nil flash, sharp detail and lots'a delicately engraved panels. An interesting variation to the now customary scribing is that the external tanks have raised, circumferential lines, and there is a solitary raised line on the aft top fuselage half, near the burner assembly. The corresponding line on the bottom half is engraved!

This is a kit that is made to order for the OOTB builder, because the cockpit is only moderately detailed, with side consoles that taper forward incorrectly instead of aft, as plainly shown in Steve Ginter's excellent Skyray reference work, Naval Fighters #13. Additionally, there are no throttles, and the early Douglas ejection seat is rather plain, with no harness, molded or otherwise. The instrument panel is not bad and has molded-in instrument hands for those that do the drybrushing or colored pencil routine. Otherwise, an ESCI-like instrument decal is included. The plumbing/electrics shelf behind the seat helps crowd the cockpit, and Tamiya includes a decently detailed pilot figure which should also serve to more properly 'busy' the area. I wouldn't call him "hunchbacked," as one Internet newsgroup reviewer said; he's merely leaning forward, a common body position in fighters. Only in an F-16 or some equivalent late model birds do you get to assume the 'Harley cruising position', laid back against the 'Sissy bar'. And, contrary to a depressing early Internet quote that the

windscreen and canopy were cast as one piece, they're separate but, strangely, Tamiya has not included any parts to fix the canopy in the raised positi

The wings can be displayed folded, if you wish, and appropriate internal detail has been cast on the ribs which show. Ailerons are not separate, and a knowledgeable person has stated that, anyhow, they didn't droop when the airplane was parked. However, the thick 'flaperons' which are on either side of the burner area, have been engineered by Tamiya to pivot. Positionable leading edge flaps are also included (they drooped slightly at rest).

The gear struts are relatively plain, with no plumbing, but the mains do have disk brake calipers molded in. The nose wheel is especially delicately molded, with see-through areas between the spokes! The gear wells have inner sidewall ribbing and rivets above, but no plumbing. Gear doors have nice internal structural details.

As far as objects hanging from the wings, Tamiya has included a full load for the NORAD air defense birds of VF(AW)-3 (Ginter sez they used 'em that way): two external tanks, one with the air refueling probe; two pods containing air-to-air, free flying rockets, two Sidewinders and a NAVPAC pod.

Two sheets of Tamiya decals provide markings for both Marine squadron VMF (AW)-114 and what is probably the most colorful Skyray unit of all, VF(AW)-3, "PA", with the yellow lightning bolt and star-sprinkled blue field on the spine, vertical fin and external tanks. Printing and registration are beautiful, but the decal film seems a bit thick; we'll see what effect Solvaset has. Superscale has had Skyray sheets on the market for years, and I'm sure Aeromaster or one of the other leading aftermarket decal firms will also jump on this business opportunity quickly, that is if they've finally tired of doing the Messerschmitt and Focke-Wulf family!

Although this kit still cries out for attention by KMC or Cutting Edge, Tamiya has a winner here.....again. Let's hope it's only a start into the wonderful jet aircraft of the Fifties and Sixties; I'm more than ready to move past WWII.

## Italeri OH-13S Sioux by Norm Filer

When you first look at the parts, the first thing that comes to mind is that there is nothing on the two trees or clear parts to indicate this thing is an aircraft kit ( term used loosely). It looks more like a power line tower or a windmill! This 1/72nd kit is priced at about \$ 8.50.

This is a dinky little thing! I guess this shouldn't surprise me as I actually have tried to

build an H-13 a couple of times. The first was a scratch built effort that never got past the tubular rear body. I used styrene rod and it actually went together pretty well. After a few days of sitting on my work bench (OK, it may have actually been a few weeks) the next time I picked it up it had a significant port side list. Since I really was not happy with the engine effort, and had not arrived at a plausible method for the clear part, that was the end of round one.

Round two was the Esoteric etched brass kit. That one did not get very far either. The flat brass "tubing" for the rear end just didn't pass muster at all. The white metal engine was not very impressive either. End of round two.

When I first heard this kit was planned I was pretty skeptical. To do it right it needs to be really delicate. So, how did they do?? In a nutshell, very well. It may be a bit oversize on the diameter of the tubing, but not enough to worry about. All the exposed engine parts and interior stuff is there. In short, this little bug should be about an evening's work!!

It provides you with the two different tail rotors, two sets of fuel tanks and some alternate parts to arm this thing. Yep, some of them actually were armed. All three choices are for early Viet Nam U.S. Army birds. Since the differences in markings are pretty much limited to different serial numbers, they could have probably included another dozen alternate markings and still kept the decal size to about a large postage stamp. On the real bird the usual practice was to wire a national insignia sized piece of sheet metal to the booms and apply the stars to that. Any other significant markings got the same treatment.

Now for what you don't get. This is NOT a Korean era M.A.S.H. chopper. This is a much later version of it, but there are some significant differences. Perhaps most noticeable is the fuel tanks. The early H-13 (Korea) had one fuel tank across the fuselage behind the engine. Later ones like in the kit had two tanks, one on each side of the engine. (Still later, again like the kit, had them on the sides only they increased the size). Fixing this is not a big deal. All you need to do is make the early tank and stick it on. There is nothing aerodynamic or complicated about this little chopper. Everything just is bolted to the frame somewhere.

Another noticeable difference is that the early birds only had two seats. The thing was just not capable of lifting much more than that. Two people were a load! The medivac configuration was one guy flying and one guy laying on the litter. No nurse, no co-pilot, no extra fuel, nothing!! Rumor had it that they picked little guys to fly choppers for two reasons;

1. If they didn't weigh much they could carry more useful stuff like cargo and fuel.

2. A little guy could hide behind the control stick when they shot at you. And that was just about all there was to hide behind.

Later birds developed considerably more power and they added the middle seat. Again this is an easy fix. Just cut out the section between the two seats. About like converting from a bench seat to two buckets. Other little stuff like where the battery is located come to mind, but that's dinky stuff.

There are a lot of interesting possibilities with this little jewel. External litter, floats, Presidential bird, Coast Guard, etc. etc. Yeah, you heard me right. President Eisenhower used a pair of H-13Js to hop back and forth between Washington and his retreat at Gettysburg. Might even have hauled him to the golf course now and then. Some things don't change much. Air Force One is a WHAT???

In summary, this is a really nice kit of what could be argued is the first really successful helicopter. Lots of alternatives and markings possible. While it may not be as glamorous as those Mustangs and Phantoms, this judge is holding up a 9.5 card. If they had included a figure of either Hotlips or Hawkeye it would have had a perfect 10!!

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## Airfix EE/ BAC Lightning by Andrew Birkbeck

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I have long had a great love for the EE/BAC Lightning, the massive, twin-engined, single seat RAF jet fighter. This great piece of British aviation engineering first entered front line service in 1960, and soldiered on, so to speak, until the 1980's. Starting service life as the F1, and ending up with the F6, with a couple of twin seat trainers showing up in the middle, these aircraft have over the years displayed an almost breathtaking series of schemes. In particular, the earlier variants were very colorful, being mainly bare metal, with colorful spines and tails, with extra large tail markings. Later in its career, the Lightning took on camouflaged schemes of grays or grays and greens, again with some of the aircraft having very colorful markings. It is probably the great displays of color that initially attracted me to this aircraft as a modelling subject.

Until now, those wishing to build a model of the Lightning for their collection have been rather ill-served. Most of the 1/72nd models in existence are VERY old in the tooth. The first 1/72nd kits came from Airfix, back in the 1960's, in the guise of an F.1 model. At the time, it was a decent model. At the time, the Beatles were top of the charts, and Mick Jagger was in his very early 20's. Airfix took the original F.1 molds, and produced an F.3 version

of the Lightning, and unfortunately didn't do a very good job. Whatever one might have thought of the attempt at an F.3, it was still basically 1960's tooling.

The "best" Lightning in 1/72nd is the Hasegawa F.6 variant. This said, "best" still isn't that good, in that this too is a kit long in the tooth. The kit is in fact, a Frog (UK) tooling, and Frog went bankrupt in the mid 70's. The kit is all raised panel lines, and some of the detail is rather heavy. Despite this, a decent kit can be built with effort. And there is nothing wrong with a little effort now and then!!

Finally in 1/72nd, we have some Matchbox kits. Strange as it might seem, these aren't particularly horrible, and in some ways are better than the Hasegawa/Frog kits. Matchbox is also the only firm to do a twin-seat trainer version of the Lightning in 1/72nd.

Lastly in the smaller scales, we have my favorite Lightning kit, the Tamiya 1/100th Lightning F.6. Yes, for all those who have not brushed up on their "History of Modelling" lately, Tamiya once produced a series of 1/100th aircraft kits. And get this, this Lightning has ENGRAVED panel lines!! Anyway, if you are a Lightning fan, I highly recommend that you search out the second hand dealers, and pick up this kit.

And from the smallest, to the largest Lightning, Echelon's SUPERB 1/32nd vacuformed kit. This is unfortunately now out of production, Echelon having gone the way of the Doodoo bird. This firm produced three kits, prior to going under, all to 1/32nd scale, all lovely, all British, and all vacuformed. Namely, single and twin seat Hunters, and a single seat Lightning. Unfortunately, relatively few modellers build modern jets in 1/32nd scale, fewer yet build British jets, and less still build vacuforms. Still, if you can find any of these kits, they produce excellent models with a little skill and patience.

Moving into 1/48th scale, Aeroclub a few years back produced a series of very nice vacuformed kits of the Lightning, including the single seat fighters as well as the twin-seat trainers. These were part of the "new look" Aeroclub, in that while there was still the usual high quality vacuformed parts for the main fuselage, much of the wing and other smaller components were actually made of injection plastic, as well as the usual white metal parts. At the time, these were very nice kits, but being "vacuformed", many modellers kept away from them. Recently, our own Jeff Smith took one of the Aeroclub kits, and worked his usual stuff, producing a gem of a model. Jeff was working against the clock, knowing that Airfix was shortly to release their Lightning kits in 1/48th. I take my hat off to Geoff for his valiant efforts, and the first rate model that resulted from his hard work.

All this said, and Jeff, put your hands over your eyes and ears now, the Airfix kits are now here, and all I can say is "WOW". Can I say that again? Sure, why not!! "WOW". Airfix has really done themselves proud with their two Lightning kits, one which produces the earlier variants, the F1, F1A, F2 and F3, while a second kit produces the later F.2A and F.6 variants. For those who wish to build a twin-seat trainer, fear not, as Aeroclub has produced a conversion set for the Airfix kits to allow you to do just that.

But what of these new "WOW" Airfix kits. For those of us who saw the Airfix Spitfire/Seafire kits from last year, we quickly realized that this was not the Airfix of old. Tooled in Korea, these new kits were very well made, highly detailed kits with state of the art engraved panel lines. Well, the Lightnings are better than the Spitfire kits. Firstly, Airfix has gone to the trouble, and considerable expense, of providing different fuselage halves to show the differences between the various Marks of Lightnings. And these parts are beautifully detailed with the various scoops and panels all nicely done. Airfix has also produced the differences in the Lightning's wings, with common underwing parts in both kits, but different top wing pieces to reflect the differences between the Marks.

Moving to the cockpit, this is made up of various injection molded parts with raised detail, and decals. This was obviously a purely cost saving move by Airfix, and with the cockpit closed, will be acceptable to most people. Should you wish to build the cockpit open, I would suggest looking at appropriate pictures of the real thing, and replacing the decals with either some suitable photoetched bezels etc. (Reheat has a set of "generic" parts that would work) or some scratch built parts. It won't take that much, either way. The ejection seat is a four part affair, and is quite nice, needing the addition of some harness detail, again either scratch built or etched. (Airwaves has just released an etched set for the kit, and almost certainly Eduard will do the same shortly).

For those of us who are never happy with what the kit manufacturers put in their kit cockpits, help is at hand. Cutting Edge (Meteor Productions) has produced a resin cockpit set, and Kendall (KMC) are also working on one as well. Either of these when installed in the Airfix kit, and suitably painted and drybrushed, will turn a decent cockpit into a stunner.

Airfix has included two sets of missiles in their kits, the Skyflash and later Red Top missiles. These are very well molded and detailed. Also included for the F.6 version of the Lightning, very nice over wing fuel tanks. These by the way, I am told, were used strictly for ferrying the Lightning (a known fuel hog)

between bases in the UK, and Germany etc. They were in no way standard for F.6's on normal air patrol.

Other nice areas on the kit include the air intake area, and the jet nozzle, and the undercarriage units. The wheel wells are fully boxed in, but completely lacking in detail, another obvious cost saving measure by Airfix. However, being that most folks don't display their aircraft models in the inverted position, most will accept this situation, and for those who don't, again some simple application of appropriate stretched sprue or wire will improve the situation immensely.

Finally, the instructions and decals. The former are well done, in the form of a 17 page (8x11 inch) booklet, the usual exploded diagram method being employed for assembly instructions. And then we have the color and marking instructions, being 8 or more pages in length, and very impressive. However, not nearly as impressive as the decal sheet you get in each kit. Dare I use the word again? "WOW". Unlike the decals that came with my Airfix Spitfire/Seafire kits, the ones that come with the Lightnings look to be VERY useable. The sheets are HUGE, measuring 13 inches by 8 inches, and covering six or seven (depending on whichkit) aircraft, as well as full stencil etc. markings for one aircraft. And when I say full, I mean full: over 200 decals will be used per model!!

And these decals are superbly printed, and in my kits at least, in perfect register. They also look to be thinner than the decals which came with the Spitfire kits. I highly recommend that you give the decals that come in the kit a try. However, if you wish aftermarket decals, then be prepared to be DROWNED in them: Aeromaster is set to release three sheets, Cutting Edge has already issued three sheets, and these are just the US firms!! We have yet to hear from Xtracolor or any of the other UK firms!!

In short, then, GET THESE KITS if you have any interest in "modern" RAF aircraft, or an interest in brutish machines with pretty color schemes. At a full retail price of \$33, they represent very good value for money, and of course, who pays full retail!! I picked mine up for \$24.75 from Kevin Callahan at the Supply Depot, which is a STEAL for such quality. I am sure they are also available from Emil Minerich's Skyway Models as well. Or at least they were. Being such great kits, who knows if there are any left. I myself have seven of the kits already!



## WWP's GMC CCKW 353 & 352 Book by Andrew Birkbeck

One thing that never ceases to amaze me in this grand hobby of ours, is the ability of tiny nations in Eastern Europe to produce some of the best hobby related products on the market today. In fact, in terms of new kits produced, Eastern Europe is now more important than any other region in the world for kit production, at least when it comes to military model kits. The likes of Eduard, MPM, Toko, Classic Airframes easily come to mind. However, a number of Revell Germany and Italeri kits also spring from East European-tooled molds.

And then there are the detailing sets: Eduard again, Aber, Aires, FM etc. And finally, the books. Far too many publishers to mention, and many of them seem to only produce a few titles a year, but boy are many of them lovely, packed with excellent color profiles, scale drawings, detail sketches, and plenty of photographs.

One such recent book is from a small firm called WINGS & WHEELS Publications, in their small but growing "Photo Manual For Modelers" series. The series is a bit eclectic, bouncing between military vehicles and military aircraft. So far the series includes books on the UH-60A Black Hawk, BMP-1, Opel Blitz, IL-2 Stormovik, and now the newest in the series, the GMC type CCKW 353& 352. The CCKW 352 is better known to some as the "Duce and a Half", the 2.5 ton 6x6 military truck used by the Americans during WW2 (and post war) in huge numbers. Tamiya has recently released a lovely 1/35th scale model of this vehicle, so the release of the book is very timely.

Unlike many of the East European books, this one is in both English and (in the case of W&W) Czech. The book's pages measure 9.25 x 9 inches, and there are 70 pages to the title. The book is basically a "Walk Around" on the two vehicles covered, for those of you familiar with the Squadron Signal books by this name. As well as a ton of pictures taken of a number of Czech based preserved vehicles in private and museum hands, there is a wealth of detail sketches, and four pages of 1/35th scale plans. Half the pictures are in color, half are in black and white, and all are very well taken and reproduced. And the authors have climbed all over, inside, and underneath the two vehicles concerned, so there isn't a relevant detail on either vehicle that doesn't have at least one photo covering it, or a sketch, or both. And there are hundreds of pictures to look at. Also included are a series of color side profiles.

Well, there you have it. I can't recommend this book highly enough for anyone contemplating building the new Tamiya "Duce and a Half", or for that matter anyone who has the older kits by Italeri or Heller of the same vehicles. While the Tamiya kit is a gem-quality example of the toolmaker's art, this book will allow the modeller to add a host of detail not included in the kit.

## Space Shuttle Decals by Bob LaBouy

Space Shuttle Decals, 1/72nd scale, by RealSpace Models, RealSpace Models, 813 Watt Drive, Tallahassee, FL 32303; \$ 9.50 (cost \$ 6.50 plus \$ 3.00 for P&H).

If you're planning to do a space shuttle, these decals are for you! They are not only beautifully done (printed I suspect by MicroScale as usual), but crisp details, excellent register, lots of missing detail (from the current kit decals that is) and available in either 1/144th or 1/72nd scale. I am impressed. I sent off my check about 8 days ago and received them via "priority mail" today in a heavy cardboard package (though my postal carrier, the clever little guy he is, was able to overcome the post office's own protective package and rolled it together to cram it into my box....ringing the bell or leaving it under the box would be a technological stretch way beyond his position description or pay grade....).

This nifty sheet and its rudimentary instruction sheet allow the builder to portray any one of the four shuttles, the Atlantis, Challenger, Discovery or Endeavor, and contains not only the necessary markings for the shuttle itself, but the cockpit area tiles, the entry door details and the solid rocket booster (SRB) packs.

If there is anything missing, its the necessary color references and call-outs on the decal instruction sheets. They just aren't there, which is a loss, especially when there are two sheets full of nice (though a bit rough) drawings of the shuttles and tanks themselves. In that regard however, not have there been a few notes in IPMS-USA publications, but a serious modeller should also consider obtaining Mike Mackowski's beautifully done, comprehensive and very nicely done Space Shuttle publication. It is hopefully still available for about \$ 8.50 from Mike and possibly the Gateway Chapter-IPMS. And of course there are about 10 billion pictures of the Shuttle at various stages of movement, pre-launch and during actual space flight. National Geographic is still one of my favorite resource locations in this regard, though there are certainly lots of good commercial publications

and books available for color references on the various shuttles and their operations.

Being a fan of both the Space Shuttle program and the 1/72nd scale kits (I favor the 1/72nd Monogram kit), this sheet is a must and I certainly recommend it to any devotee or modeler of our country's space efforts.

## Italeri 1/72nd A-10A Thunderbolt II & F-51D Mustang 'U.S. Fighter' by Mike Quan, IPMS #3925

Italeri has been known not only for producing kits of some of the more desirable model aircraft subjects, (1/72nd Bf 110C/D/G, B-57 Canberra, B-66 Destroyer, and He 111Z Zwilling), but also for competing head-to-head with other kit manufacturers with respect to having a kit "stable" of the more popular aircraft types, (1/72nd F-4 Phantom, F-16 Viper, F-15 Eagle, Junkers Ju 87 Stuka). Their recent release of a 1/72nd Fairchild A-10A Thunderbolt II and North American F-51D Mustang definitely fall into the latter category. So how do these kits stack up against their competition for the modeler's spending money, and is the modeling world ready for another release of these venerable subjects?

First, let's examine kit no. 087, the A-10 Thunderbolt II, retailing for \$18. The kit features 124 parts molded in the familiar Italeri soft medium gray, and clear plastic. The clear parts cover the two-piece positionable canopy, HUD, IR Maverick glass noses, and wingtip lights. A complete selection of underwing ordnance includes 600-gal. drop tanks, alternative ECM pods, Sidewinders, Mavericks, Rockeyes, and what appear to be SUU-30 bomblet dispensers. The ubiquitous Pave Penny pod is also included. A six-piece interior features raised dials on the instrument panels and side consoles, but fuselage sidewall detail is absent. The ACES II ejection seat is acceptable, though I suspect most modelers will replace it with an aftermarket item.

Fine, engraved panel-line detail abounds in this Italeri rendition of the 'Warthog.' Unusually fine detail is featured in the GE TF-34 engine bypass fan blades, the multi-piece jet exhaust cores, split aileron/speedbrakes that can be positioned opened or closed, and opened boarding ladder and forward-fuselage equipment access panel. The treatment of the engine-exhaust "hot section" is especially noteworthy and the best of all kit choices in this scale. Split aileron/speedbrakes were a feature only of the previous 1/48th Monogram kit, and you could only build the kit with the

speedbrakes open! This kit features the current, uncovered under-wingtip and main landing gear fairing chaff/flare dispensers that have been badly duplicated or missing in all previous kits. A first in this scale are replicas of the single Maverick launch rails, in lieu of the triple launcher featured in previous 1/72 kits. The single Maverick launcher is much more common operationally and was exclusively used in the Gulf War, as it allows much greater maneuverability for the aircraft when dodging AAA or SAMs! Another kit plus is the first rendition of the twin-Sidewinder launch rails widely seen on TV on all Gulf War A-10As and now a "standard" feature of all A-10s, even at airshows. Note that both Sidewinder launch rails will have to be bent slightly downwards (about 10 degrees or so) from the horizontal to be completely accurate.

Markings are featured for the Massachusetts Air National Guard and the AFRes unit at New Orleans, cat 1992. They are welcome alternatives to the more commonly seen 23rd TFW

Sharkmouth or AFRes "Warthog" decorations. The kit instructions are the fine, easy-to-understand, isometric drawings that Italeri are well known for. A very nice touch that I wish more manufacturers would provide in their instructions is the specified amount of weight to be added to the forward fuselage in order to enable the kit to rest on its tricycle landing gear—in this case, a hefty 30 grams.

So now the question is, just how does it compare to the other Warthog kits out there? This kit is definitely recommended as the kit of choice! Matchbox's version can be dismissed as representing the (quite different) prototype aircraft. Monogram's 1/72nd version was the first A-10 release and is very nice, but it featured raised panel lines and was difficult to assemble. Many modelers consider Hasegawa's Thunderbolt II to be the premiere kit, but it is also dated, featuring raised panel lines and lacking accurate chaff/flare dispensers and inboard leading-edge slats. The Airfix Thunderbolt does have the slats but suffers from simplified detail and raised panel lines. The Academy-Minica kit does have contemporary, state-of-the-art engraved panel lines; but the combination of more current armament, inboard leading-edge slats, accurate chaff/flare dispensers, and optional speedbrakes make this the kit to build over the competition!

Next up is Italeri kit no. 086, the 1/72nd F-51D Mustang 'U. S. Fighter,' retailing at \$8.50. Another Mustang, you say? Yes, but this is a Mustang kit with a difference. First indications are the box art featuring a Korean War-vintage USAF Mustang, (hence the "F-51D" designation as opposed to the "P-51D" moniker), with the back of the box illustrating the alternate decal schemes provided for an

Readers of this review will note the

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**See you on April 11th.**

If coming from South Seattle, take Highway 99 onto the Alaska Way viaduct to Western Ave. Follow Western Ave. north to Elliott Ave. until it turns into 15th Ave N.W., then to the Armory Way turnoff.

