

HI-LOW LANDINGS The Newsletter of the Navy Carrier Society

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Editor's Notes, Dick Perry:

I hope you're enjoying the COVID-induced building opportunities this spring, and are eagerly anticipating the NCS Spring Postal Carrier Contest (1-31 May, details in the previous H-L-L). I have resolved to compete this year with scheduling around likely knee surgery. I want to hold off on the surgery until at least after the NATS, maybe long enough to enjoy a couple of summer contests and the September Tucson contest, depending on what's offered this season.

I've enjoyed exchanges with some of you this last month, and will be reporting on those in this issue. There are some photos of new creations as well as some reminiscences of past events and technology.

There has been interest in the fuel tank article from the last H-L-L, so, as promised, the fuel tank reprints by Bill Bischoff and Bill Calkins are in this issue.

I hope you enjoy this issue of H-L-L. Keep your hook dry!

Rules Change Proposals

There are nine rules change proposals for the current cycle. Rules approved over the next few months will become effective on 1 January 2022. You can review those applicable to CL Navy Carrier and other events at: [Rules Proposals | Academy of Model Aeronautics \(modelaircraft.org\)](http://www.modelaircraft.org). The first voting will take place on 1 May 2021, but you should express your opinions no later than 15 April if you want them to be considered by the CL Navy Carrier Contest Board (CLNCCB). There will be opportunities to comment on cross proposals and the final proposals later in the cycle. Send your comments to your CLNCCB representative or to Chairman Dick Perry (tailhooker@comcast.net) and he will distribute them to the CLNCCB. We will also have an opportunity to discuss rules at any contests or other gatherings over the next few months, including at the Nationals.

NATS Registration Open

The online registration for the NATS has just opened, and there are already four registrations for the CLNC events at the Nationals. To register, go to the AMA home page, <https://www.modelaircraft.org/>, sign in, select "Events" then "National Aeromodeling Championships (Nats)" then "Register" then "CL NAVY CARRIER." From there, use the "REGISTER USER TO THE EVENT" button at the bottom of the page and you're ready to register. If you fly any official events, your official registration fee will cover the unofficial events. If you fly **only** unofficial events, there is a registration fee for unofficial events of \$10. Either way, please register for unofficial events so we can plan for you. We'll collect the individual unofficial event registration fees at the field. **If this will be your first NATS, AMA is waiving the basic registration fee (YOU'LL SAVE \$50).** Come join us!

FUEL TANKS for NAVY CARRIER

The following articles on fuel tanks were written by Bill Calkins and Bill Bischoff and were published in the H-L-L newsletters in 1995. They are still quite relevant. Forgive the reproduction quality as I was working from original printed H-L-L, and technology was not as advanced a quarter of a century ago!

FUEL TANKS FOR PROFILE CARRIER: WHAT YOU REALLY NEED TO KNOW

Bill Bischoff

THE PHYSICAL CHARACTERISTICS OF A PROFILE CARRIER FUEL TANK ARE SOMEWHAT CONSTRAINED BY THE AIRCRAFT ITSELF. THE TANK NEEDS TO HOLD ENOUGH FUEL THAT YOU DON'T RUN OUT, YET THE TANK ALSO NEEDS TO FIT ON THE AIRPLANE. ONE SOLUTION TO LIMITED TANK SPACE IS THE TWO TANK "CHICKEN HOPPER" SYSTEM. TWO EXAMPLES WERE FEATURED IN THE JULY/AUGUST 1995 NEWSLETTER. COMPARED TO A SINGLE TANK, THE CHICKEN HOPPER SYSTEM IS MORE COMPLICATED, AND ARGUABLY MORE DIFFICULT TO MAKE WORK RELIABLY. I WILL ADMIT THAT SOME OF THE TOP FLIERS USE CHICKEN HOPPER TANKS WITH COMPLETE SUCCESS, YET I HAVE ALSO SEEN MANY LESS THAN PERFECT EXAMPLES. I PERSONALLY PREFER THE SIMPLICITY AND RELIABILITY OF A SINGLE TANK, AND WITH THE FOAM WING TYPE OF CONSTRUCTION I USE, I CAN CUT OUT THE WING IF NECESSARY TO MAKE MORE ROOM FOR THE TANK. FOR THIS ARTICLE, I WILL BE CONCENTRATING ONLY ON SINGLE TANK SYSTEMS.

MY MO-1 TANK IS SHOWN. THE TANK HAD TO FIT IN THE SPACE BETWEEN THE ENGINE AND THE WING SPAR, AND THAT DETERMINED MAXIMUM LENGTH. I ALSO WANTED THE TANK TO BE "HIDDEN" BEHIND THE ENGINE IN THE FRONT VIEW, TO REDUCE DRAG. THIS HELPED ESTABLISH THE HEIGHT AND WIDTH OF THE TANK. STARTING WITH A DESIRED CAPACITY OF 5 OUNCES, A LITTLE WORK WITH A CALCULATOR RESULTED IN THE SIZE SHOWN. THE CALCULATED CAPACITY OF THE TANK IS 5.2 OUNCES. (FOR REFERENCE PURPOSES, ONE FLUID OUNCE EQUALS 1.8 CUBIC INCHES).

THE OPERATING CHARACTERISTICS OF A SUCTION FUEL TANK ARE NOT DETERMINED SO MUCH BY THE SHAPE OF THE TANK, BUT BY THE LOCATION OF THE TUBES IN THE TANK. **THE IMPORTANT THING IS WHERE THE TUBES GO INSIDE THE TANK. THE TUBES CAN EMERGE FROM THE TANK ANYWHERE IT IS CONVENIENT.**

LIKE MOST TANKS, MINE HAS 3 TUBES; A VENT, AN OVERFLOW, AND A PICKUP. THE LOCATION OF THE PICKUP TUBE AND

OVERFLOW TUBE SHOULD BE OBVIOUS. THE PICKUP GOES WHERE IT CAN REACH EVERY LAST DROP OF FUEL WHILE THE AIRPLANE IS FLYING NOSE HIGH, AND THE OVERFLOW GOES TO THE HIGHEST POINT IN THE TANK SO IT CAN BE FILLED COMPLETELY.

THE MOST IMPORTANT ELEMENT IN GETTING THE TANK TO FUNCTION CORRECTLY IS THE LOCATION OF THE VENT TUBE. I AM GOING TO SKIP ALL THE PHYSICS, BUT YOU CAN BELIEVE ME ON THIS. **AS LONG AS THE END OF THE VENT TUBE IS SUBMERGED IN FUEL, AND THERE IS NO PLACE ELSE FOR AIR TO ENTER THE TANK, THE ENGINE "THINKS" THE FUEL IS LOCATED PRECISELY AT THE END OF THE VENT TUBE.** THIS MEANS THE TANK MUST NOT HAVE ANY LEAKS, AND THE OVERFLOW MUST BE CAPPED OFF FOR FLIGHT.

PROPER LOCATION OF THE VENT TUBE ALLOWS US TO FINE TUNE THE ENGINE RUN DURING THE HIGH SPEED PORTION OF THE FLIGHT. THE CHART BELOW LISTS COMMON PROBLEMS, THEIR CAUSES, AND THEIR SOLUTIONS. AFTER READING THE CHART, YOU SHOULD HAVE A GOOD UNDERSTANDING OF WHY THE VENT TUBE IS LOCATED WHERE IT IS.

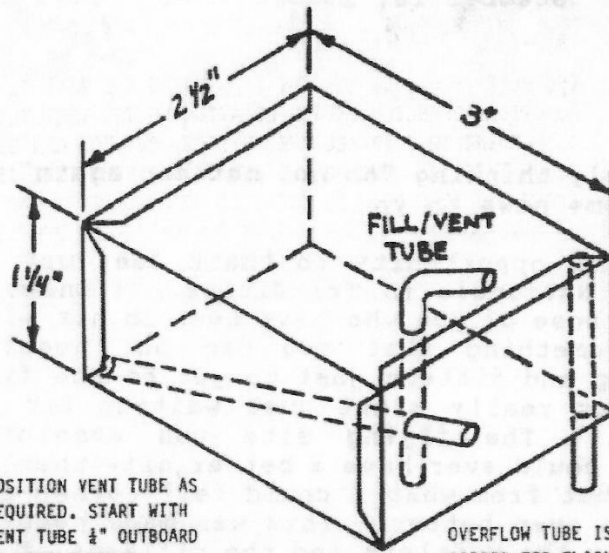
YOU MAY BE WONDERING ABOUT WHAT HAPPENS WHEN PART OF THE FUEL IS USED UP, AND THE VENT TUBE IS NO LONGER SUBMERGED. THIS WILL OCCUR SOMETIME DURING THE LOW SPEED PHASE OF THE FLIGHT. WHEN THAT HAPPENS, THE ENGINE THEN SEES THE ACTUAL LOCATION OF THE FUEL, AND IT ALSO SEES THE FUEL LOCATION MOVE AS FUEL IS USED UP. FORTUNATELY THIS IS NOT A PROBLEM, FOR A FEW REASONS. FIRST, THE AIRPLANE IS NOT ENCOUNTERING ANY DRASTIC ACCELERATION FORCES. SECOND, THE AIRPLANE IS FLYING SLOWLY ENOUGH THAT THERE IS VERY LITTLE CENTRIFUGAL FORCE ACTING ON THE FUEL. AND THIRD, AT PARTIAL THROTTLE SETTINGS, FUEL DRAW IS STRONGER THAN AT FULL THROTTLE, ALLOWING THE ENGINE TO BETTER WITHSTAND MINOR VARIATIONS IN FUEL PRESSURE.

I HOPE YOU WILL HAVE FOUND THIS INFORMATION HELPFUL WITHOUT BEING OVERLY TECHNICAL. IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL ME AT (214)247-5046.

FUEL TANK TROUBLESHOOTING

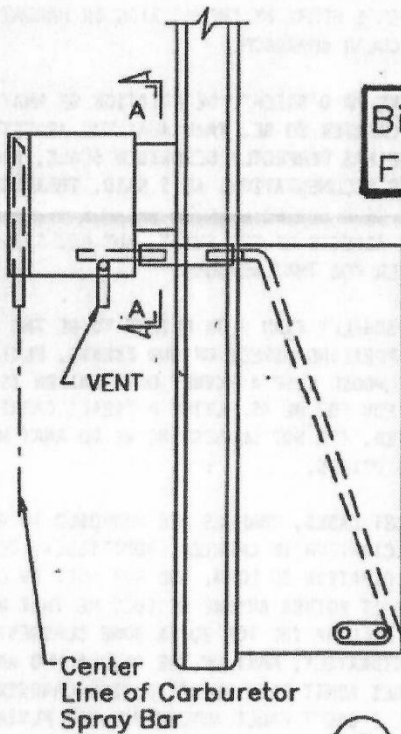
PROBLEM	CAUSE	REMEDY
NEEDLE SETTING OK ON GROUND; GOES RICH DURING HIGH SPEED	CENTRIFUGAL FORCE CAUSING FUEL PRESSURE TO INCREASE; VENT TOO FAR INBOARD OF CARB	MOVE VENT TUBE OUTBOARD
NEEDLE SETTING OK ON GROUND; GOES LEAN DURING HIGH SPEED	CENTRIFUGAL FORCE CAUSING FUEL PRESSURE TO DECREASE; VENT TOO FAR OUTBOARD OF CARB	MOVE VENT TUBE INBOARD
ENGINE SAGS LEAN ON TAKEOFF	ACCELERATION FORCE CAUSING FUEL PRESSURE TO DECREASE; TANK OR VENT TOO FAR BACK	LOCATE TANK AS CLOSE AS POSSIBLE BEHIND ENGINE; PUT VENT TUBE AT FRONT OF TANK
ENGINE SAGS LEAN ON TAKEOFF EVEN WITH TANK AND VENT TUBE MOVED FORWARD	ACCELERATION FORCE CAN'T BE COMPLETELY COMPENSATED FOR; CARB MAY BE TOO BIG	RICHEN NEEDLE VALVE AS REQUIRED FOR TAKEOFF; ADJUST IN FLIGHT MIXTURE AS DESCRIBED ABOVE

PROFILE CARRIER FUEL TANK



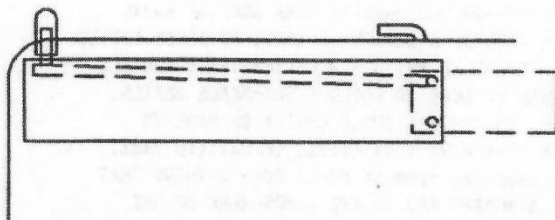
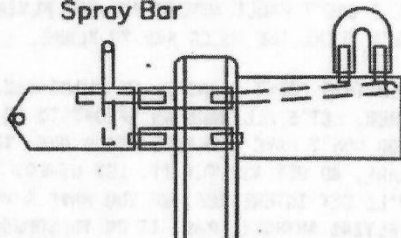
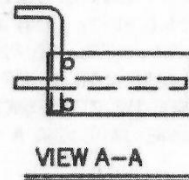
POSITION VENT TUBE AS REQUIRED. START WITH VENT TUBE 1/4" OUTBOARD OF NEEDLE VALVE.

OVERFLOW TUBE IS CAPPED FOR FLIGHT



Bill Calkins Chicken Hopper tank For Profile Carrier Models

Note: All Solder Joints Must Be Airtight or else this design won't work. The two tanks are connected together using Silicon Tubing. The Fuel Feed Line to the engine must line up with the carburetor spray bar in the plan view.



The chicken hopper tank, as shown in this drawing, is used when it is not practical to make a tank big enough to fit on the outboard side of a profile model. The shape of the outboard tank is not critical at all, but the placement of the outboard tank is critical to get the system to work. The actual location of the outboard tank is determined by flying the model and moving the outboard tank in or out to keep the model from going rich or lean in the air.

OOPS!



This photo from the last H-L-L was incorrectly identified as a model belonging to Gary Hull. It is, in fact, a Brewster-designed SBN belonging to Marc Warwashana. Both Marc and Leon Ryktarsyk brought SBNs to the NATS in 1999.

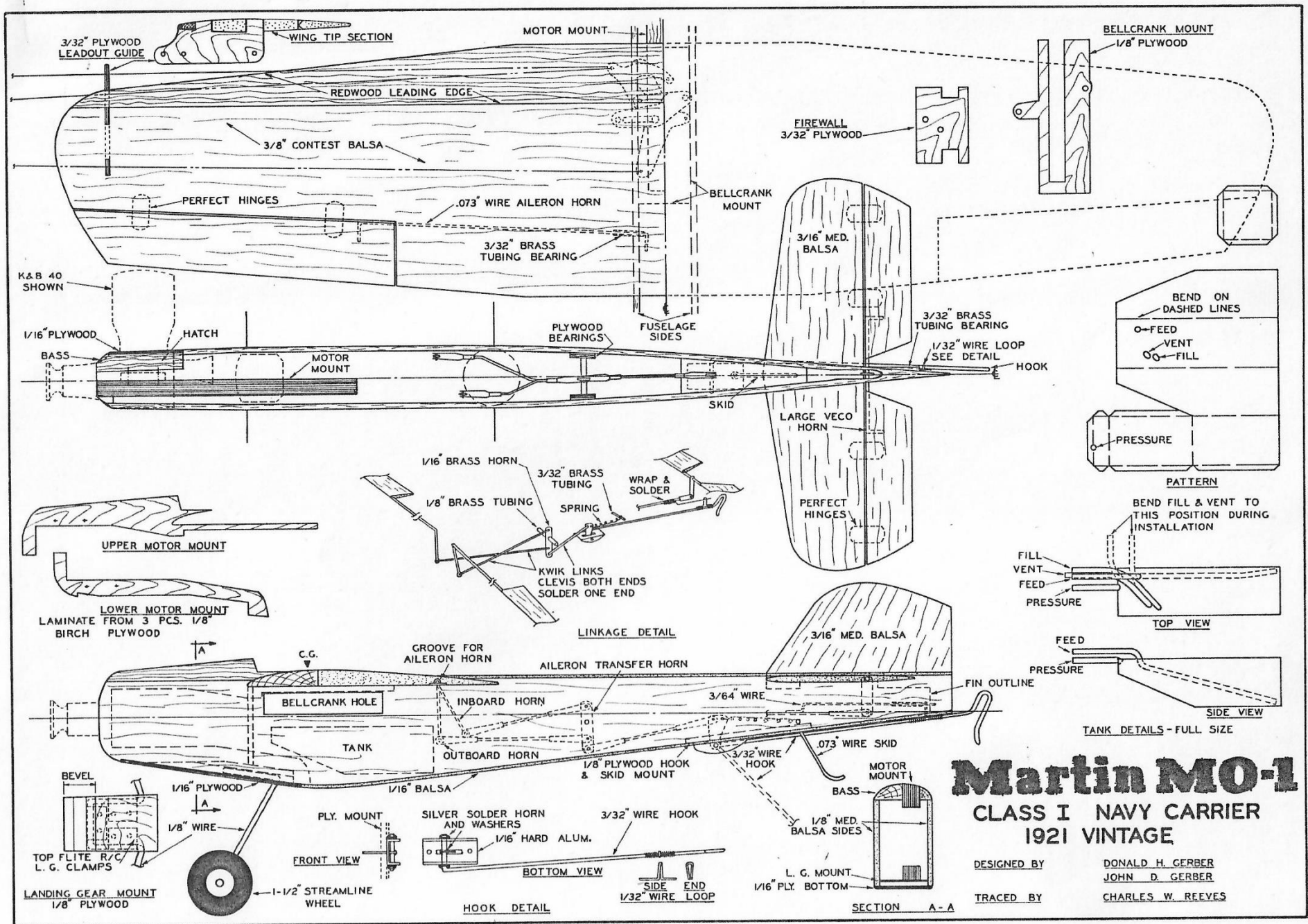
New Models

Johnny Lickley (Redmond, Oregon) is eagerly seeking Navy Carrier flying companions on the dry (east) side of Oregon's coastal mountains. He's flying a Profile MO-1 and building a Class I Short Seamew (both designed by your editor) and a Class II Nakajima Myrt design by Roland Baltes. The Seamew will have a K&B 40 and the Myrt will be powered by a K&B 61. The Myrt was ready for paint when I talked to Johnny, so it should be almost ready for flight. He sent along this photo of his newest creation, a Hawker Sea Hurricane for the .15 Carrier event. Johnny had just starting test flying the Sea Hurricane as of the first week in March. It's powered by a Magnum 15.



Memory Lane 1969

In the first few decades of CL Navy Carrier flying, the variety of aircraft was great as modelers looked for a good design that would give them a competitive advantage. It soon became apparent that the high-speed portion of the event was very important to good performance, and the Grumman Guardian became very common with its relatively small fuselage and the ready availability of a kit from Sterling. Originally, there was only one class – the current Class II – except for a short-lived 1/2A event introduced by the Navy. After a decade or so, the smaller Class I was introduced. In the late 1960's Don Gerber decided that a simple model that looked more like a Rat Race model than a traditional Carrier airplane might have a performance advantage. The result was his MO-1, published in *American Aircraft Modeler* in the August 1969 issue. Since then, the simplicity of the MO-1 design and its performance record has led to its becoming the dominant design in our event. These are the plans that appeared over 60 years ago and started it all!



Martin MO-1

CLASS I NAVY CARRIER

1921 VINTAGE

DESIGNED BY

DONALD H. GERBER
JOHN D. GERBER

TRACED BY

CHARLES W. REEVES

Memory Lane -- 1978



I heard from Jim Dross last month. Jim moved from Florida to Oklahoma around 1978. He was very active and successful in the '70s and '80s. He sent along some photos of a few of his Supertigre G65 engines, which were a favorite of his. His notes follow:
"I enjoyed your article on fuel systems. I was a past Navy Carrier guy that competed in the "Old Daze". You wrote an article which included some of my planes a long time ago. I had won the King Orange, Great Lakes Carrier Event in Detroit plus many others.

"The best fuel system that I used was a Kavan Pressure Carb -- minimal fiddling required, instant throttle response, launch with the needle set for high speed. Transition from pressure to suction was effortless along with "blips of throttle when needed. MECOA still sells these, but supplies are limited. I would buy the biggest bore and turn the OD to fit my engine. Would also mate an exhaust baffle with linkage to the carb. I enjoyed the Supertigre G-65s, G40 RV, HP 40s and K&B 6.5 engines. I spent many hours hand fitting engines then teaching them to idle on 60% Nitro before ever putting them in the air.



"The picture of the ST 65 shows everything. I used a Perry Ported crankcase from a G-60, ABC cylinder and piston from a G-65 after adding the extra side ports, G-71 RV crankshaft (same stroke as the 65 that uses a standard prop nut) then added G-65 RV parts to build the engine."

Jim used this engine/carb setup in a small Douglas Dauntless at the King Orange in 1976 and reported a high speed of 133 mph.

Van Nuys, California 1979



I was rummaging through my archives recently and came across some photos that my notes indicate were from a contest in Van Nuys, California, in 1979. They include Ron Duly with his Class I prototype Grumman Guardian which he reprised a few years ago for Nostalgia competition and flew at the NATS. The engine was an O.S. 40 RSR.



The other models are attributed to Roland Baltes, a prolific designer of CL Navy Carrier models and a very active Carrier competitor from the period. Roland's North American SNJ, if I recall correctly, used the canopy and decals and maybe the cowling from the Guillows kit to simplify construction. The other models are Douglas TBD Devastators.



Temporary Editor

For the next couple of months, I'll be producing and distributing the H-L-L newsletter. It will be primarily a means of distributing information about the NCS Postal Carrier Contest, but I'll be including additional items from my archives. If you have an item to share, send it to me at tailhooker@comcast.net.



Dick Perry,
Temporary Editor